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*I-ASTM Jet A Fuel and Dry Air*

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**NASA**

National Aeronautics  
and Space Administration

Scientific and Technical  
Information Branch

## Summary

A series of computations has been made to produce the equilibrium temperature and gas composition for ASTM Jet A fuel and dry air. The computed tables and figures provide combustion gas property data for pressures from 0.5 to 50 atmospheres and equivalence ratios from 0 to 2.0. Only sample tables and figures are provided in this report. The complete set of tables and figures is provided on four microfiche films supplied with this report.

## Introduction

A series of computations was made to determine the equilibrium properties of combustion gas products resulting from the combustion of ASTM Jet A fuel and dry air. During combustion research it is important that the properties of combustion gases be readily available and in a form that is convenient and useful to the designer and researcher.

In the past, the combustion gas properties of gas turbine fuels as well as a variety of other hydrocarbon fuels have been computed and reported (refs. 1 to 5). These reports have been used extensively at NASA and throughout industry. The computational schemes that have been developed over the years by Huff, Gordon, Zeleznik, and McBride (refs. 6 to 8) form the basis for these reports and have been used to compute combustion gas properties for a wide spectrum of fuel and oxidant combinations. Often, however, the tables and charts have not been prepared for specific fuels. For example, the data of reference 5 are in a tabular form for hydrogen-carbon (H/C) ratios of 1.7, 2.0, and 2.1 for a range of assigned pressures, temperatures, and fuel-air mixtures. The data in this report also include combustion thermodynamic properties for a range of inlet-air temperatures, but the data herein are plotted to facilitate their use. The resulting figures have proven to be extremely useful in combustion research, and copies of such figures have been prepared for a wide variety of fuels. Because of the numerous requests for these figures as well as the interest in high pressure combustion research (ref. 9), we have decided to prepare a new series of figures and tables and extend the applicable range of the parameters covered.

This report presents tables and figures for the combustion gas properties of ASTM Jet A fuel and dry air for pressures from 0.5 to 50 atmospheres, inlet-air temperatures from 250 to 1150 K, and equivalence ratios from 0 to 2. Only sample tables and figures are provided in this report. The complete set of tables and figures is provided on the four microfiche films supplied with this report.

## Procedure

The computations for this report were performed using the NASA Lewis chemical equilibrium computer program documented in reference 8 by Gordon and McBride. The computational method uses a free energy minimization method assuming all gases are ideal and interaction among phases can be neglected. The possible products of reaction are Ar, C (graphite), CH<sub>4</sub>, CO, CO<sub>2</sub>, H, HO<sub>2</sub>, H<sub>2</sub>, H<sub>2</sub>O(l), H<sub>2</sub>O, N H<sub>3</sub>, N, NO, NO<sub>2</sub>, N<sub>2</sub>, O, OH, and O<sub>2</sub>. These data, the atomic weights, and physical constants are the same as those used in reference 5.

The computations presented in this report were made for ASTM Jet A and dry air. ASTM Jet A is a kerosene-type commercial grade aviation fuel. The molecular hydrogen-carbon ratio of 1.9067 and lower heat of combustion of 18 600 Btu/lb used in the computations were average values obtained from the analysis of several fuel samples.

Charts of various useful combustion gas properties were also generated and plotted using computer programs. In the past, these figures had to be generated by crossplotting values from the tables. It was possible to avoid the manual crossplotting of tabular data by having the computer calculate the desired values for a given set of input parameters. For example, the plots in figure 1 are of equilibrium combustion temperature generated over a range of inlet-air temperatures, pressures, and fuel-air ratios. This was done by selecting the final equilibrium combustion temperature, assigning a pressure and fuel-air ratio, and then computing, in an iterative manner, the required value of inlet-air temperature. These computed values were then stored as a data set and figures were produced by the computer. In regions where the results became highly nonlinear, additional computations were

performed in order to present the computed results with the same level of accuracy. A careful examination of these regions shows that the curve fit consists of very short linear segments. In a similar fashion, an appropriate iterative procedure was used to produce the other combustion gas property figures.

## Results

The computation procedure was used to produce the tables and the figures that are presented with this report. The major portion of the information is included on the four microfiche films enclosed at the back of this report. Only sample tables and figures are shown and discussed within the report.

### Tabular Listing

The computations are listed in tabular form on the microfiche. Table I(a) is a copy of a typical listing of the combustion gas properties and species. Included in each table are the following:

(1) The case number and description of reactants, the oxidant-fuel weight ratio (O/F), the fuel-air weight ratio (F/A), the percent fuel, and the equivalence ratio,  $\phi$ , which is the ratio of the F/A value to the stoichiometric F/A value, are included. The variation or change in case number has been used to specify a different inlet-air temperature; e.g., case 1 (shown) is 250 K; case 3 is 600 K; case 7 is 1150 K.

(2) Combustion gas properties:

- (a) Equilibrium temperature,  $T$ , K and  $^{\circ}\text{F}$
- (b) Density,  $\rho$ , g/cc
- (c) Molecular weight,  $M$
- (d) Specific heat (at constant pressure),  $C_p$ , cal/g-K
- (e) Isentropic exponent,  $\gamma(s)$  (as defined in ref. 8)
- (f) Sonic velocity, m/sec

(3) Mole fractions of the various combustion gas species are given when the concentration is equal to or greater than 5 parts per million by volume (ppm).

The listing at the beginning of table I(a) is the input information on the fuel and oxidant. Listed are, from left to right, the fuel and oxidant atomic formulas, the weight fraction of each component, the heats of formation, the inlet temperature (fuel was introduced at 298 K and air for case 1 is 250 K), and the density of the fuel in the last column. This is a typical input listing used by Gordon in reference 5. Table I(a) lists the gas properties and species concentrations for 1820 different combinations of parametric conditions. The parameters and values used are as follows:

- (1) Combustion pressure, atm: 0.5, 1, 1.5, 2, 3, 4, 6, 10, 15, 20, 30, 40, 50
- (2) Inlet air temperature, K: 250, 400, 600, 800, 1000, 1100, 1150 (case numbers 1 through 7, respectively)
- (3) Equivalence ratio,  $\phi$ : 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.85, 0.9, 0.95, 1.0, 1.05, 1.10, 1.15, 1.2, 1.4, 1.6, 1.8, 2.0

Information contained in table I(a) has been used to generate figures 1, 2, 3, and 6.

Table I(b) lists the combustion gas properties for different combinations of parametric conditions. These tables were computed by assigning pressure, temperature, and fuel-air ratio and then performing iterative calculations to obtain equilibrium composition and properties. The parameters used are the following:

- (1) Pressure, atm: 0.5 to 50 (in steps as indicated previously)
- (2) Temperature, K: 300 to 2800 in 100 K increments
- (3) Fuel-air ratio (weight): 0.000 to 0.100 in increments of 0.010

Information contained in table I(b) has been used to generate figures 4 and 5.

### Graphical Presentations

Some typical figures have been included to illustrate the nature of the figures available on the included microfiche. Table II is a listing of the parameter variations and the range of computed gas properties for each of the six figures presented herein. Figure 1 gives computed values showing the effect of varying the inlet-air temperature, fuel-air ratio, and combustion pressure on equilibrium gas temperature. This figure covers pressures from 4 to 50 atmospheres. Figures at lower pressures, 0.5 to 4 atmospheres, are available on the microfiche.

Figure 2 is similar to figure 1 except that the equilibrium temperature is plotted as a function of fuel-air ratio for various values of inlet-air temperature at a single specified level of combustion pressure; in this case, 1 atmosphere.

Figure 3 is similar to figure 2 except that temperature rise values are plotted versus fuel-air ratio for a range of inlet-air temperatures, again at the 1-atmosphere pressure level. Curves at other pressure levels are to be found on the microfiche.

Figure 4 presents the variation in the isentropic exponent  $\gamma$  (ref. 8) as a function of the mixture temperature for various values of fuel-air ratio at single values of combustion pressure; again, at the 1-atmosphere pressure level. For the purposes of this report, mixture temperature and equilibrium temperature may be used interchangeably.

Figure 5 presents the variation in mixture molecular weight as a function of mixture temperature for various fuel-air ratios at specified levels of combustion pressure.

Figure 6 presents the relationship between the computed equilibrium temperature as a function of the initial temperature for various values of the equivalence ratio ( $\phi$ ) at specified pressure levels.

## Summary of Results

Advanced computational schemes have been used to produce a series of tables and figures specifically for the combustion properties of ASTM Jet A fuel and dry air. Complete tabular listings and graphical representations are provided on the four enclosed microfiche.

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TABLE I. - CONCLUDED.

(b) Assigned temperature, pressure, and fuel-air ratio

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901	PHI= 0.1465														
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0						
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3						
RHO, G/CC	1.1767-4	1.2607-4	1.3577-4	1.4709-4	1.6046-4	1.7651-4	1.9612-4	2.2063-4	2.5215-4	2.9418-4	3.5301-4	4.4126-4	5.8835-4						
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967						
CP, CAL/(G)(K)	0.2996	0.2950	0.2907	0.2864	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2422						
GAMMA (S)	1.2971	1.3030	1.3089	1.3151	1.3215	1.3285	1.3369	1.3466	1.3574	1.3688	1.3799	1.3893	1.3952						
SON VEL,M/SEC	747.3	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	346.6						
MOLE FRACTIONS																			
AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O	0.01960	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17642	0.17667	0.17683	0.17693	0.17699	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703
MOLE FRACTIONS																			
AR	0.00907	0.00912	0.00915	0.00918	0.00920	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00574	0.00408	0.00273	0.00172	0.00102	0.00057	0.00030	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.01477	0.01654	0.01797	0.01905	0.01979	0.02027	0.02056	0.02072	0.02081	0.02085	0.02087	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H	0.00213	0.00128	0.00072	0.00039	0.00019	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00069	0.00051	0.00036	0.00024	0.00015	0.00009	0.00005	0.00003	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01210	0.01373	0.01513	0.01629	0.01723	0.01795	0.01849	0.01889	0.01916	0.01935	0.01947	0.01954	0.01959	0.01959	0.01959	0.01959	0.01959	0.01959	0.01959
NO	0.03138	0.02779	0.02423	0.02080	0.01756	0.01455	0.01182	0.00940	0.00729	0.00549	0.00401	0.00281	0.00189	0.00114	0.00071	0.00044	0.00027	0.00016	0.00009
NO2	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.74368	0.74963	0.75454	0.75853	0.76173	0.76429	0.76633	0.76797	0.76927	0.77032	0.77114	0.77178	0.77227	0.77261	0.77281	0.77291	0.77294	0.77295	0.77295
O	0.02082	0.01410	0.00922	0.00580	0.00351	0.00202	0.00111	0.00057	0.00028	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01083	0.00899	0.00720	0.00557	0.00416	0.00299	0.00207	0.00137	0.00087	0.00052	0.00030	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000
O2	0.14877	0.15421	0.15871	0.16241	0.16546	0.16795	0.16999	0.17165	0.17299	0.17406	0.17491	0.17556	0.17606	0.17641	0.17661	0.17671	0.17674	0.17675	0.17675

TABLE II.—LISTING OF PARAMETER VARIATIONS FOR FIGURES 1 to 6

Figure	Fuel-air ratio (weight)	(Fuel-air ratio)/(stoichiometric fuel-air ratio), $\phi$	Initial temperature, K	Equilibrium temperature, K	Temperature rise, K, kelvins	Combustion pressure, atm	Mixture temperature, K	$\gamma(s)$	Molecular weight
1(a)	0.000-0.080	-----	250-1150	500-2600	-----	0.5-4.0	-----	-----	-----
(b)	.060-0.140	-----	↓	2600-1600	-----	0.5-4.0	-----	-----	-----
(c)	.000-0.080	-----	↓	500-2700	-----	4.0-50.0	-----	-----	-----
(d)	.060-0.140	-----	↓	2700-1600	-----	4.0-50.0	-----	-----	-----
2(a)	0.000-0.095	-----	250-1200	250-2580	-----	0.5	-----	-----	-----
(b)	↓	-----	↓	250-2630	-----	1.0	-----	-----	-----
(c)	↓	-----	↓	250-2650	-----	1.5	-----	-----	-----
(d)	↓	-----	↓	250-2670	-----	2.0	-----	-----	-----
(e)	↓	-----	↓	250-2690	-----	3.0	-----	-----	-----
(f)	↓	-----	↓	250-2705	-----	4.0	-----	-----	-----
(g)	↓	-----	↓	250-2730	-----	6.0	-----	-----	-----
(h)	↓	-----	↓	250-2755	-----	10.0	-----	-----	-----
(i)	↓	-----	↓	250-2775	-----	15.0	-----	-----	-----
(j)	↓	-----	↓	250-2780	-----	20.0	-----	-----	-----
(k)	↓	-----	↓	250-2800	-----	30.0	-----	-----	-----
(l)	↓	-----	↓	250-2815	-----	40.0	-----	-----	-----
(m)	↓	-----	↓	250-2830	-----	50.0	-----	-----	-----
3(a)	0.000-0.095	-----	250-1200	-----	0-2000	0.5	-----	-----	-----
(b)	↓	-----	↓	-----	0-2025	1.0	-----	-----	-----
(c)	↓	-----	↓	-----	0-2030	1.5	-----	-----	-----
(d)	↓	-----	↓	-----	0-2040	2.0	-----	-----	-----
(e)	↓	-----	↓	-----	0-2045	3.0	-----	-----	-----
(f)	↓	-----	↓	-----	0-2050	4.0	-----	-----	-----
(g)	↓	-----	↓	-----	0-2060	6.0	-----	-----	-----
(h)	↓	-----	↓	-----	0-2070	10.0	-----	-----	-----
(i)	↓	-----	↓	-----	0-2080	15.0	-----	-----	-----
(j)	↓	-----	↓	-----	0-2085	20.0	-----	-----	-----
(k)	↓	-----	↓	-----	0-2090	30.0	-----	-----	-----
(l)	↓	-----	↓	-----	0-2095	40.0	-----	-----	-----
(m)	↓	-----	↓	-----	0-2098	50.0	-----	-----	-----
4(a)	0.000-0.06824	-----	-----	-----	-----	0.5	300-2800	1.400-1.134	-----
(b)	↓	-----	-----	-----	-----	1.0	↓	1.400-1.139	-----
(c)	↓	-----	-----	-----	-----	1.5	↓	1.400-1.143	-----
(d)	↓	-----	-----	-----	-----	2.0	↓	1.400-1.146	-----
(e)	↓	-----	-----	-----	-----	3.0	↓	1.400-1.149	-----
(f)	↓	-----	-----	-----	-----	4.0	↓	1.400-1.151	-----
(g)	↓	-----	-----	-----	-----	6.0	↓	1.400-1.156	-----
(h)	↓	-----	-----	-----	-----	10.0	↓	1.400-1.160	-----
(i)	↓	-----	-----	-----	-----	15.0	↓	1.400-1.165	-----
(j)	↓	-----	-----	-----	-----	20.0	↓	1.400-1.168	-----
(k)	↓	-----	-----	-----	-----	30.0	↓	1.400-1.172	-----
(l)	↓	-----	-----	-----	-----	40.0	↓	1.400-1.175	-----
(m)	↓	-----	-----	-----	-----	50.0	↓	1.400-1.178	-----
5(a)	0.000-0.06824	-----	-----	-----	-----	0.5	300-2800	-----	28.97-27.60
(b)	↓	-----	-----	-----	-----	1.0	↓	-----	28.97-27.60
(c)	↓	-----	-----	-----	-----	1.5	↓	-----	28.97-27.62
(d)	↓	-----	-----	-----	-----	2.0	↓	-----	28.97-27.76
(e)	↓	-----	-----	-----	-----	3.0	↓	-----	28.97-28.00
(f)	↓	-----	-----	-----	-----	4.0	↓	-----	28.97-28.00
(g)	↓	-----	-----	-----	-----	6.0	↓	-----	28.97-28.06
(h)	↓	-----	-----	-----	-----	10.0	↓	-----	28.97-28.21
(i)	↓	-----	-----	-----	-----	15.0	↓	-----	28.97-28.30
(j)	↓	-----	-----	-----	-----	20.0	↓	-----	28.97-28.35
(k)	↓	-----	-----	-----	-----	30.0	↓	-----	28.97-28.42
(l)	↓	-----	-----	-----	-----	40.0	↓	-----	28.97-28.50
(m)	↓	-----	-----	-----	-----	50.0	↓	-----	28.97-28.50
6(a)	-----	0.10-1.00	250-1250	540-2580	-----	0.5	-----	-----	-----
(b)	-----	↓	↓	540-2620	-----	1.0	-----	-----	-----
(c)	-----	↓	↓	540-2650	-----	1.5	-----	-----	-----
(d)	-----	↓	↓	540-2665	-----	2.0	-----	-----	-----
(e)	-----	↓	↓	540-2685	-----	3.0	-----	-----	-----
(f)	-----	↓	↓	540-2700	-----	4.0	-----	-----	-----
(g)	-----	↓	↓	540-2725	-----	6.0	-----	-----	-----
(h)	-----	↓	↓	540-2750	-----	10.0	-----	-----	-----
(i)	-----	↓	↓	540-2770	-----	15.0	-----	-----	-----
(j)	-----	↓	↓	540-2790	-----	20.0	-----	-----	-----
(k)	-----	↓	↓	540-2805	-----	30.0	-----	-----	-----
(l)	-----	↓	↓	540-2815	-----	40.0	-----	-----	-----
(m)	-----	↓	↓	540-2830	-----	50.0	-----	-----	-----



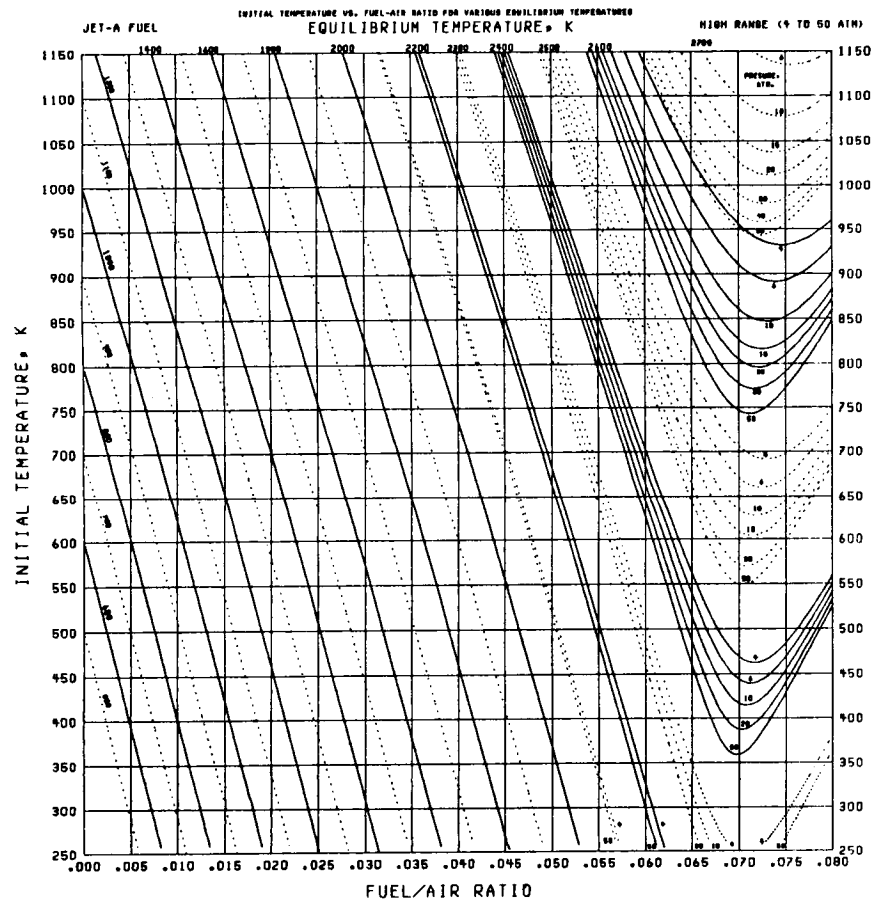


Figure 1.—Equilibrium temperature as function of initial temperature, fuel-air ratio, and pressure range of 4 to 50 atmospheres. Reproduction of microfiche figure 1(c).

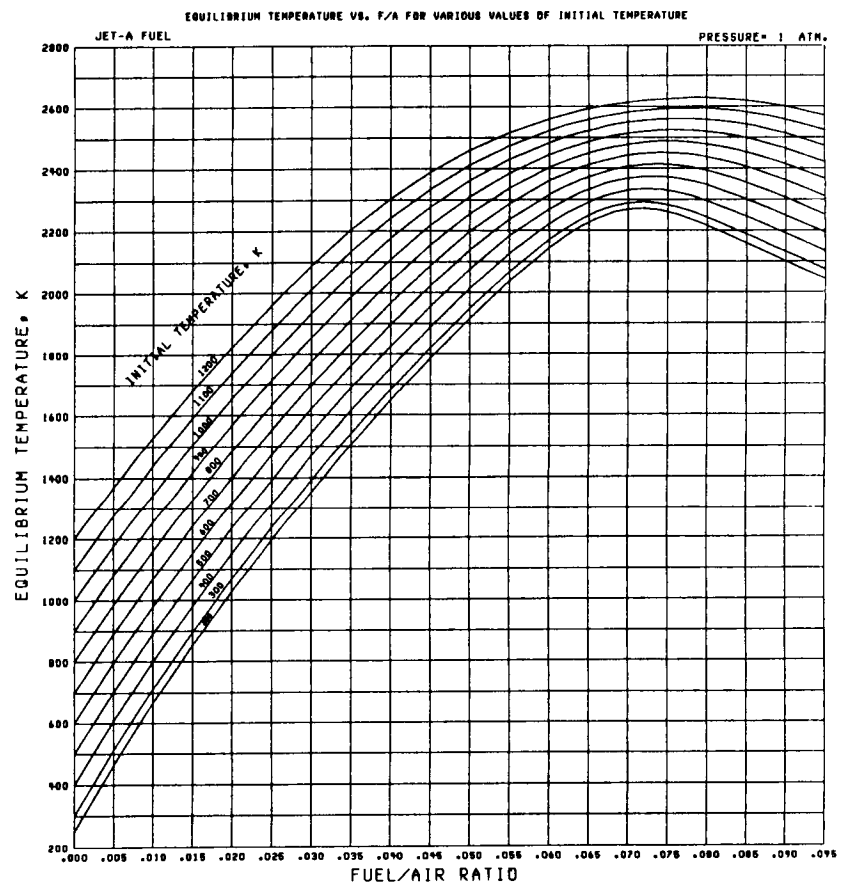


Figure 2.—Equilibrium temperature as function of initial temperature and fuel-air ratio at pressure of 1 atmosphere. Reproduction of microfiche figure 2(b).

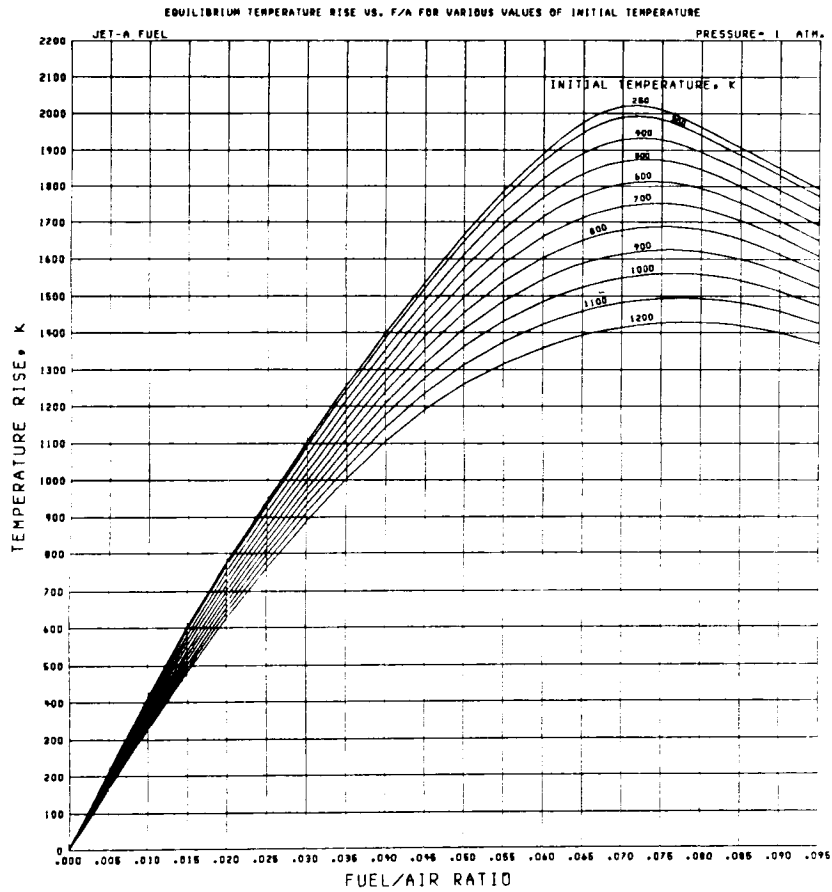


Figure 3.—Equilibrium temperature rise as function of initial temperature and fuel-air ratio at pressure of 1 atmosphere. Reproduction of microfiche figure 3(b).

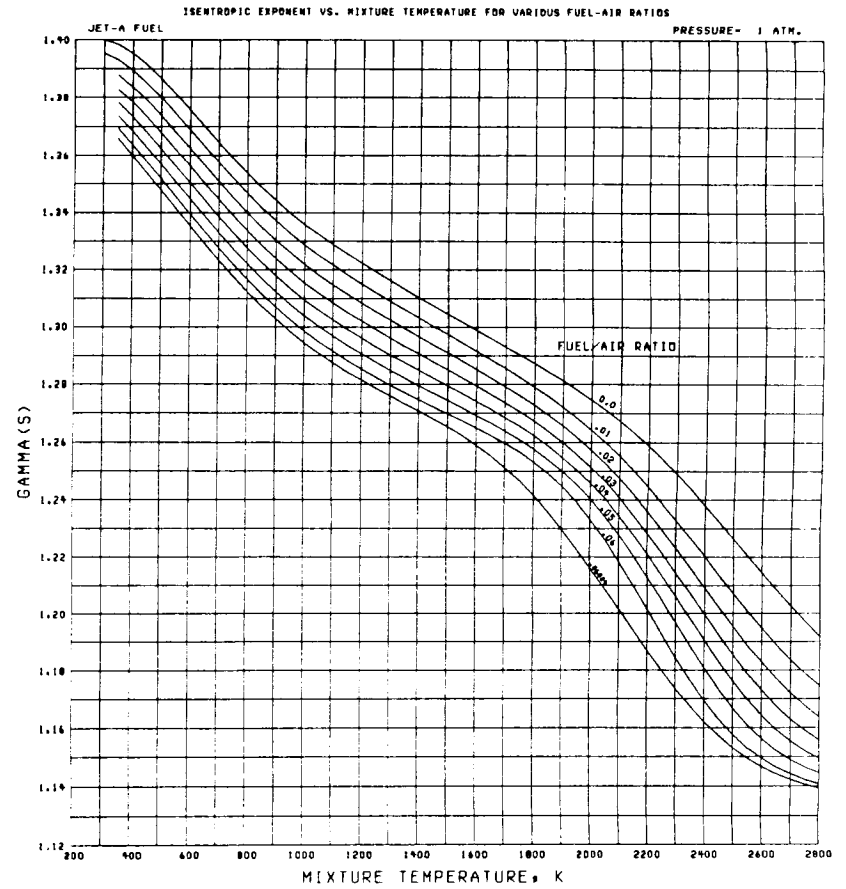


Figure 4.— $\gamma(s)$  as function of mixture temperature and fuel-air ratio at pressure of 1 atmosphere. Reproduction of microfiche figure 4(b).

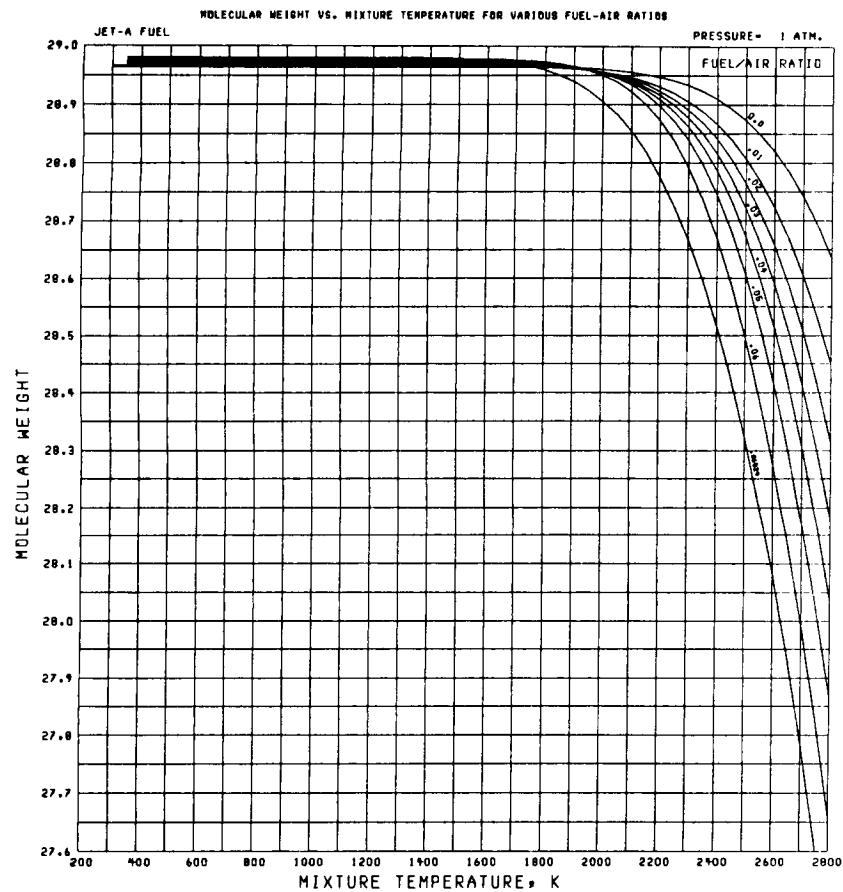


Figure 5.—Molecular weight as function of mixture temperature and fuel-air ratio at pressure of 1 atmosphere. Reproduction of microfiche figure 5(b).

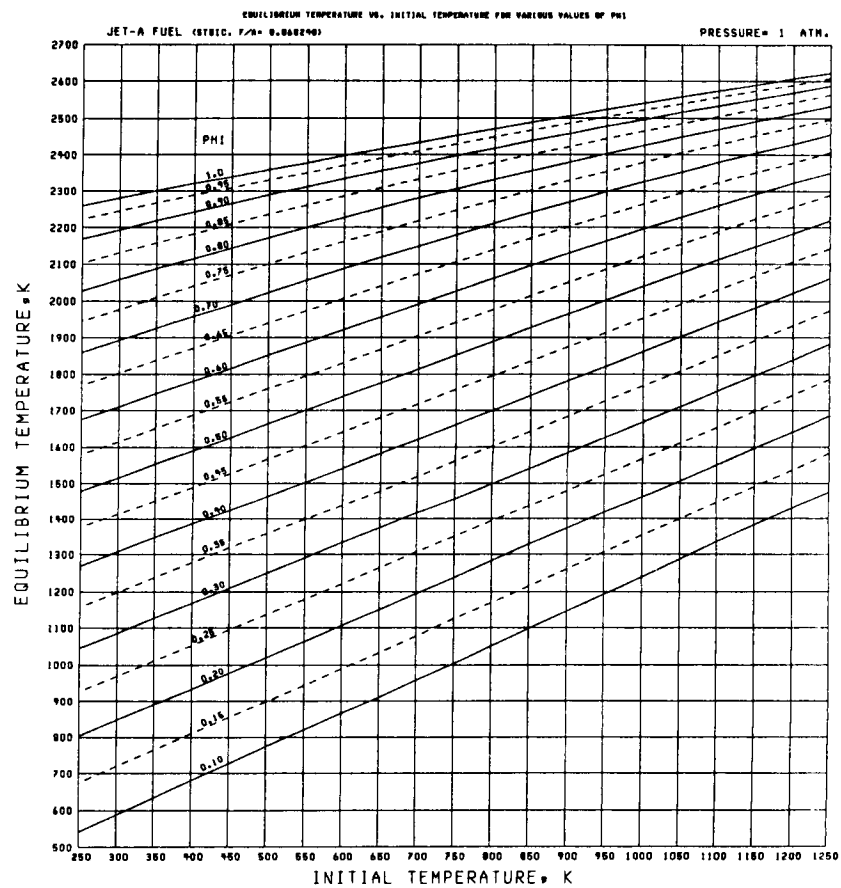


Figure 6.—Equilibrium temperature as function of initial temperature and equivalence ratio  $\phi$  at pressure of 1 atmosphere. Reproduction of microfiche figure 6(b).

1. Report No. NASA TP-2359		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle  Combustion Gas Properties I - ASTM Jet A Fuel and Dry Air				5. Report Date October 1984	
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12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D.C. 20546				14. Sponsoring Agency Code	
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16. Abstract  A series of computations has been made to produce the equilibrium temperature and gas composition for ASTM Jet A fuel and dry air. The computed tables and figures provide combustion gas property data for pressures from 0.5 to 50 atmospheres and equivalence ratios from 0 to 2.0. Only sample tables and figures are provided in this report. The complete set of tables and figures is provided on four microfiche films supplied with this report.					
17. Key Words (Suggested by Author(s))  Combustion gas properties			18. Distribution Statement  Unclassified - unlimited STAR Category 07		
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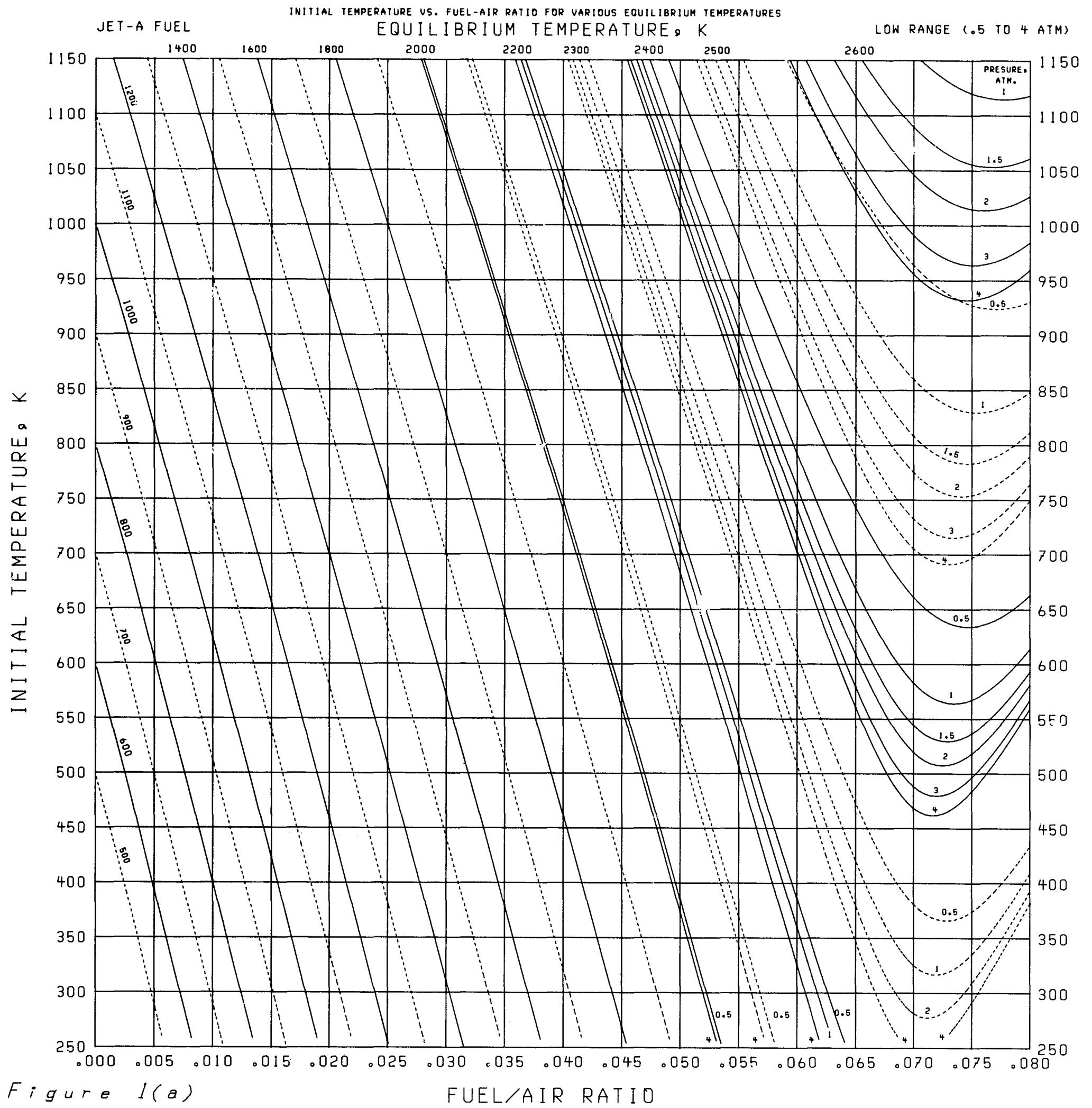


Figure 1(a)

FUEL/AIR RATIO

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

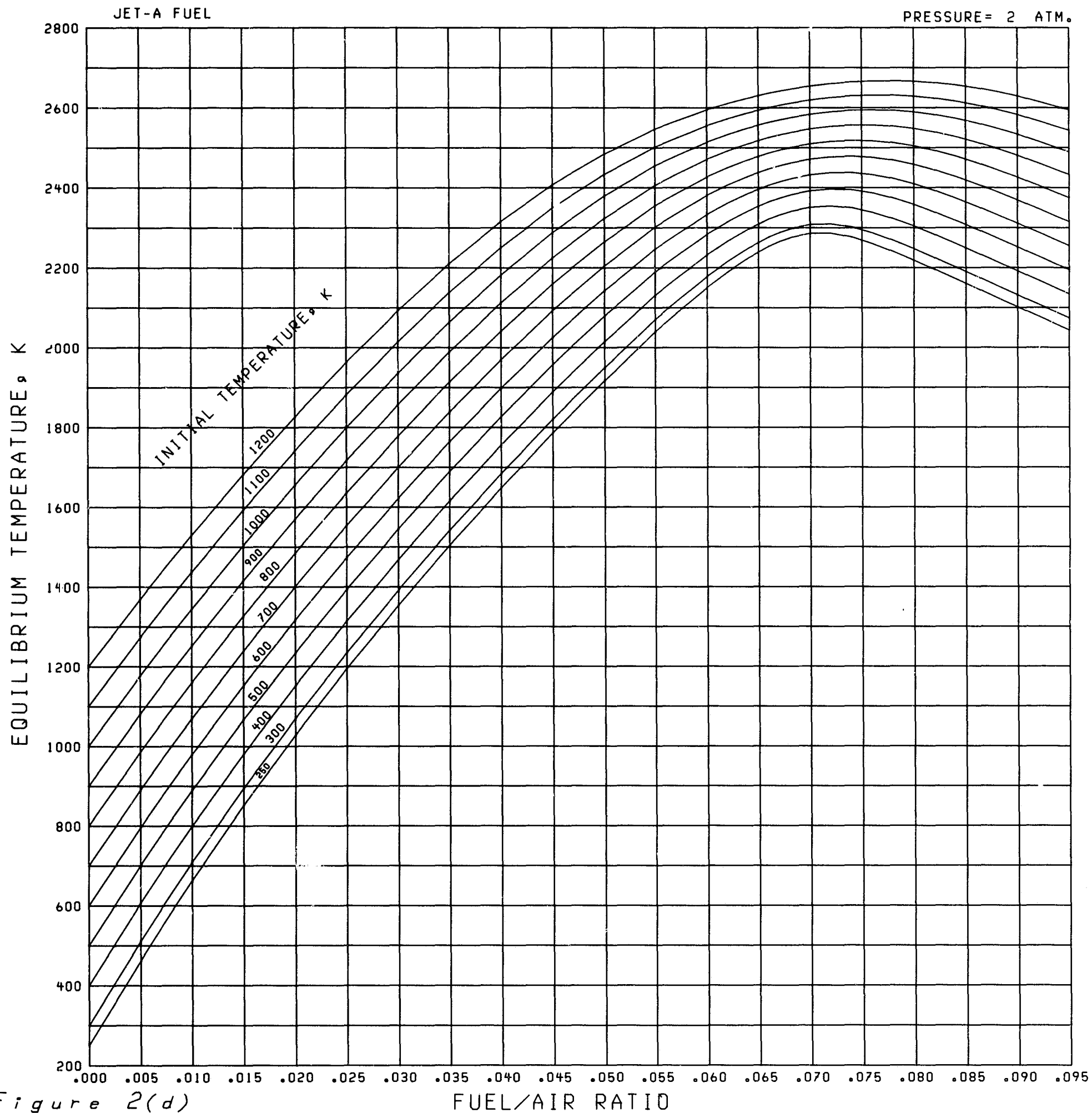


Figure 2(d)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE=30 ATM.

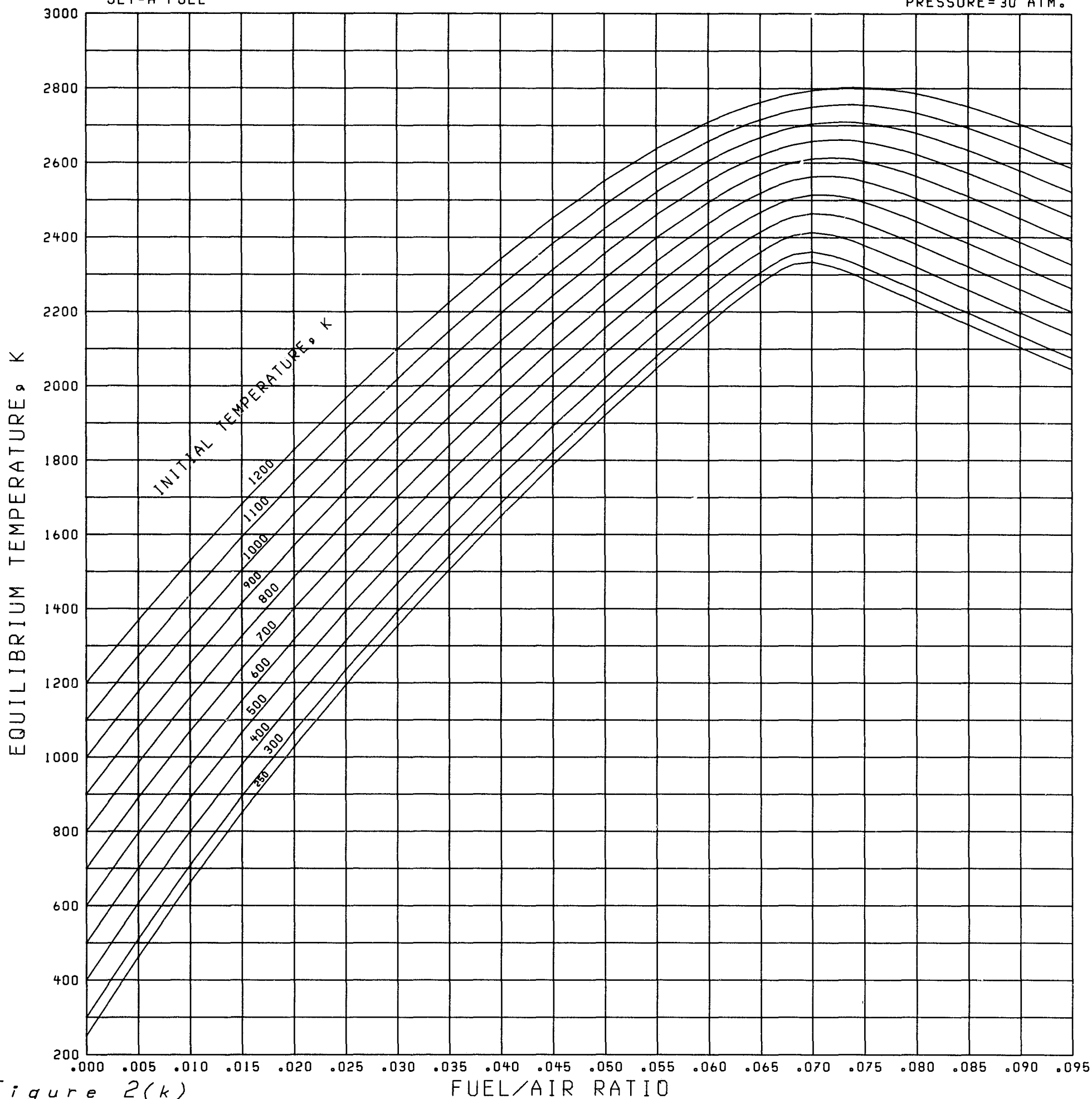


Figure 2(k)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

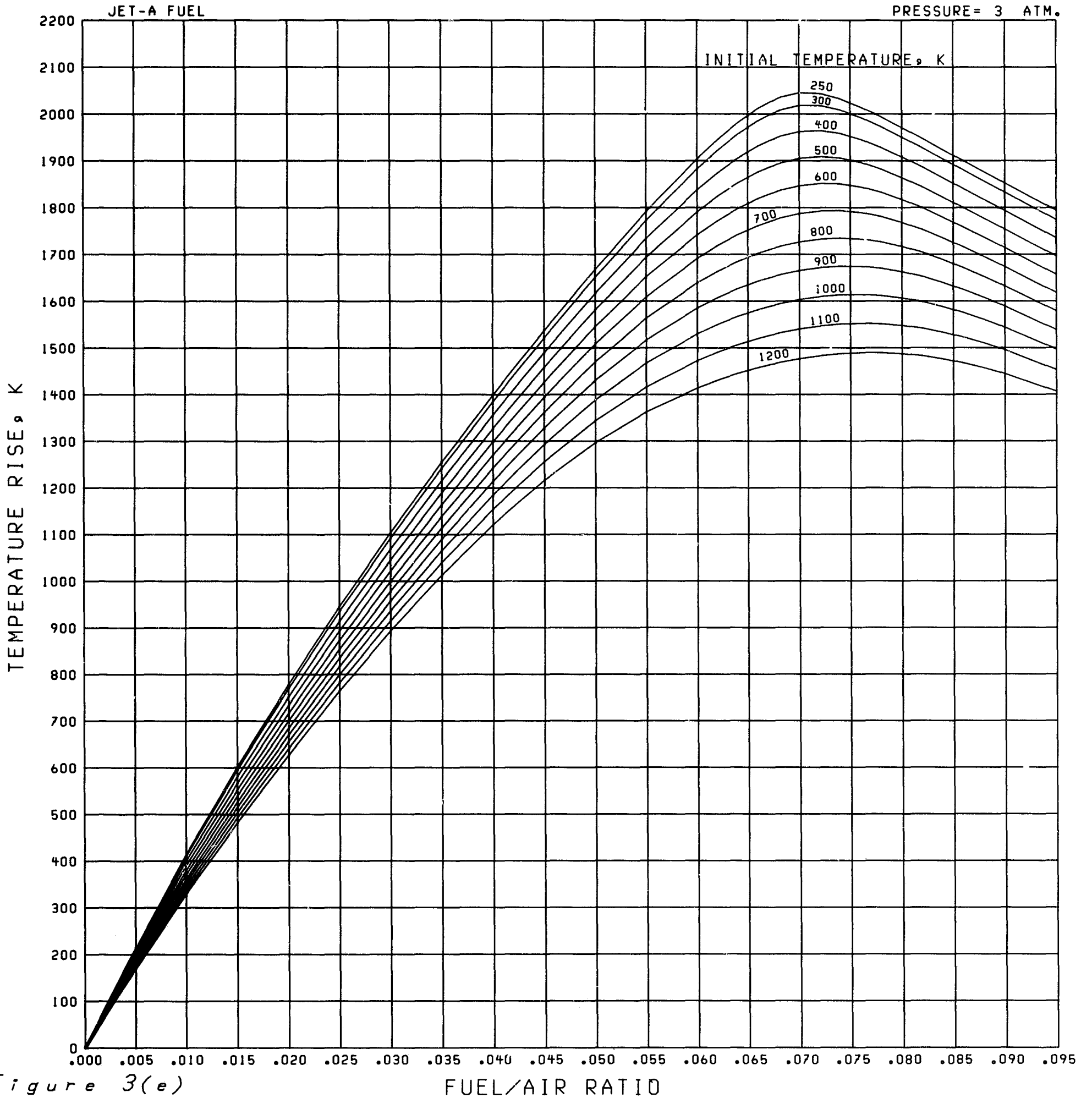


Figure 3(e)



EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

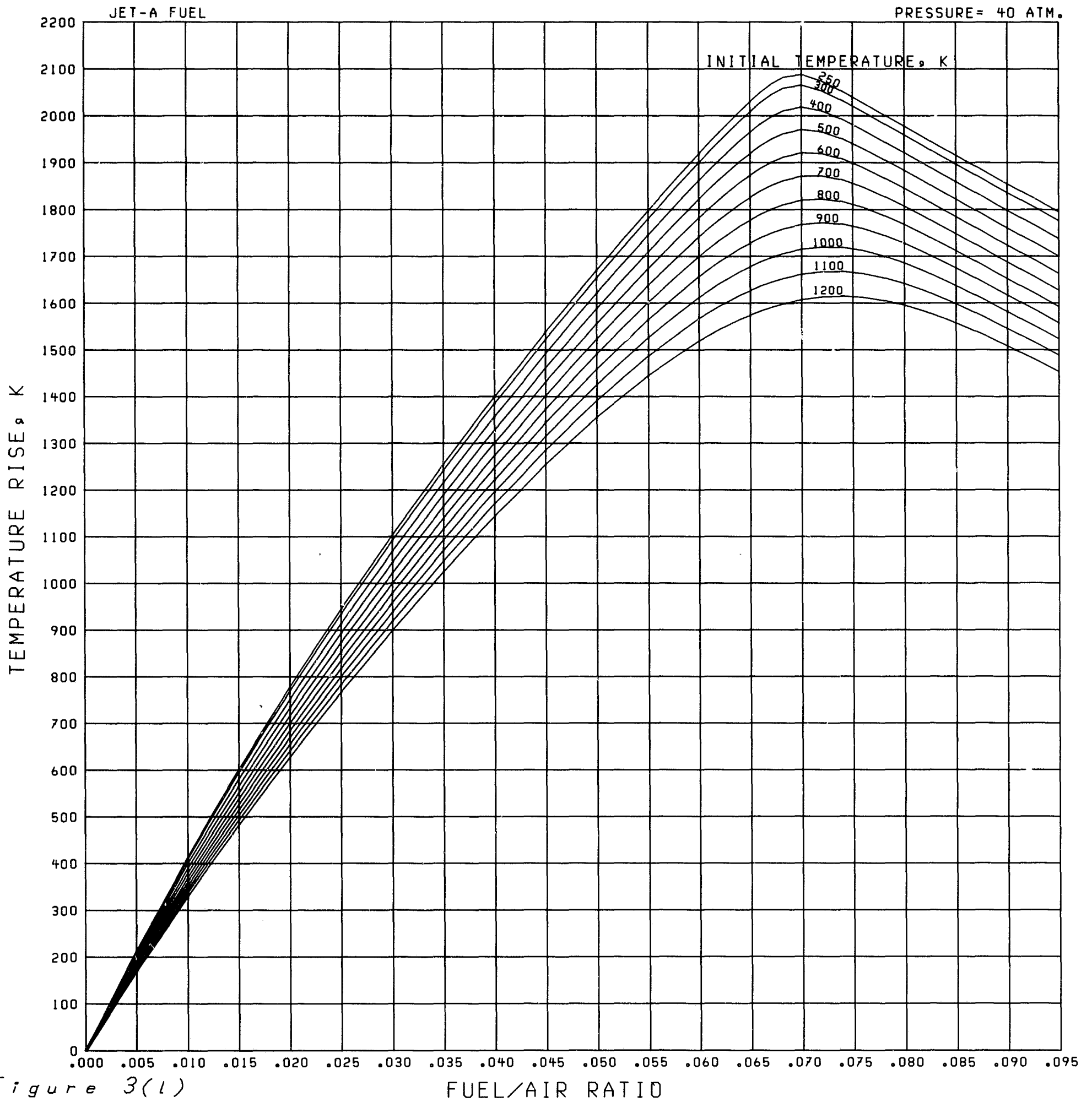


Figure 3(1)

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 4 ATM.

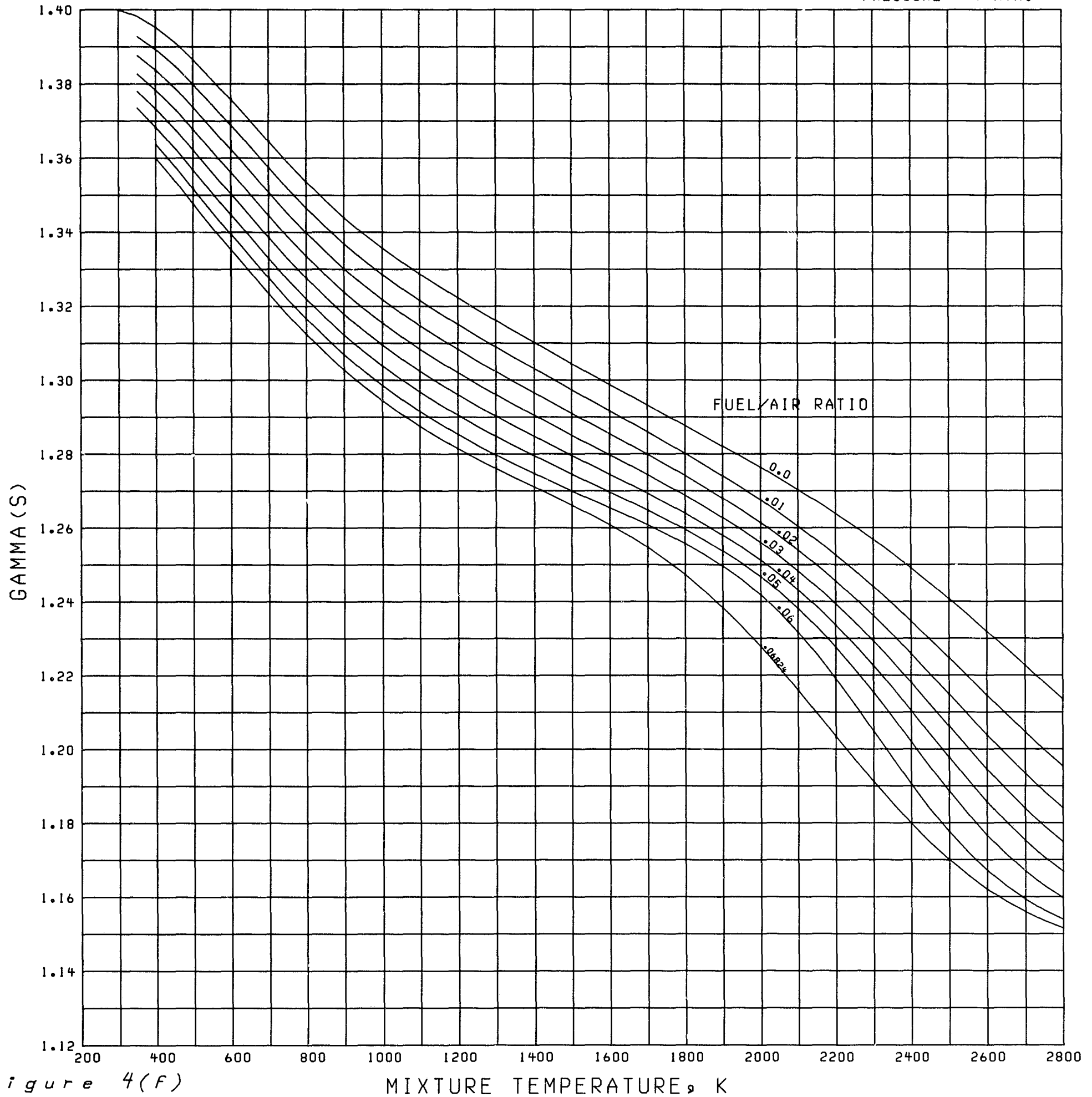


Figure 4(f)

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 50 ATM.

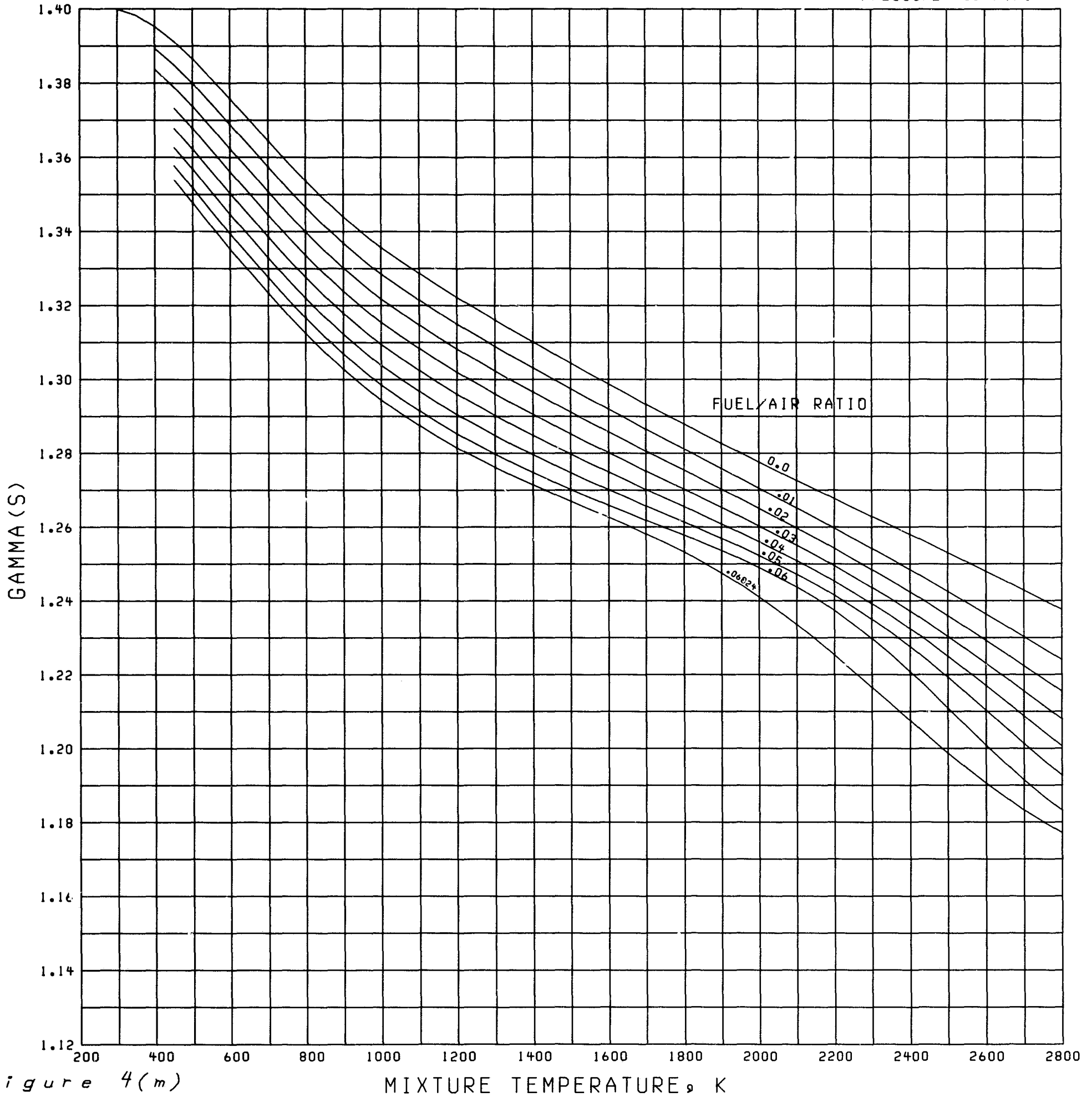


Figure 4(m)

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 6 ATM.

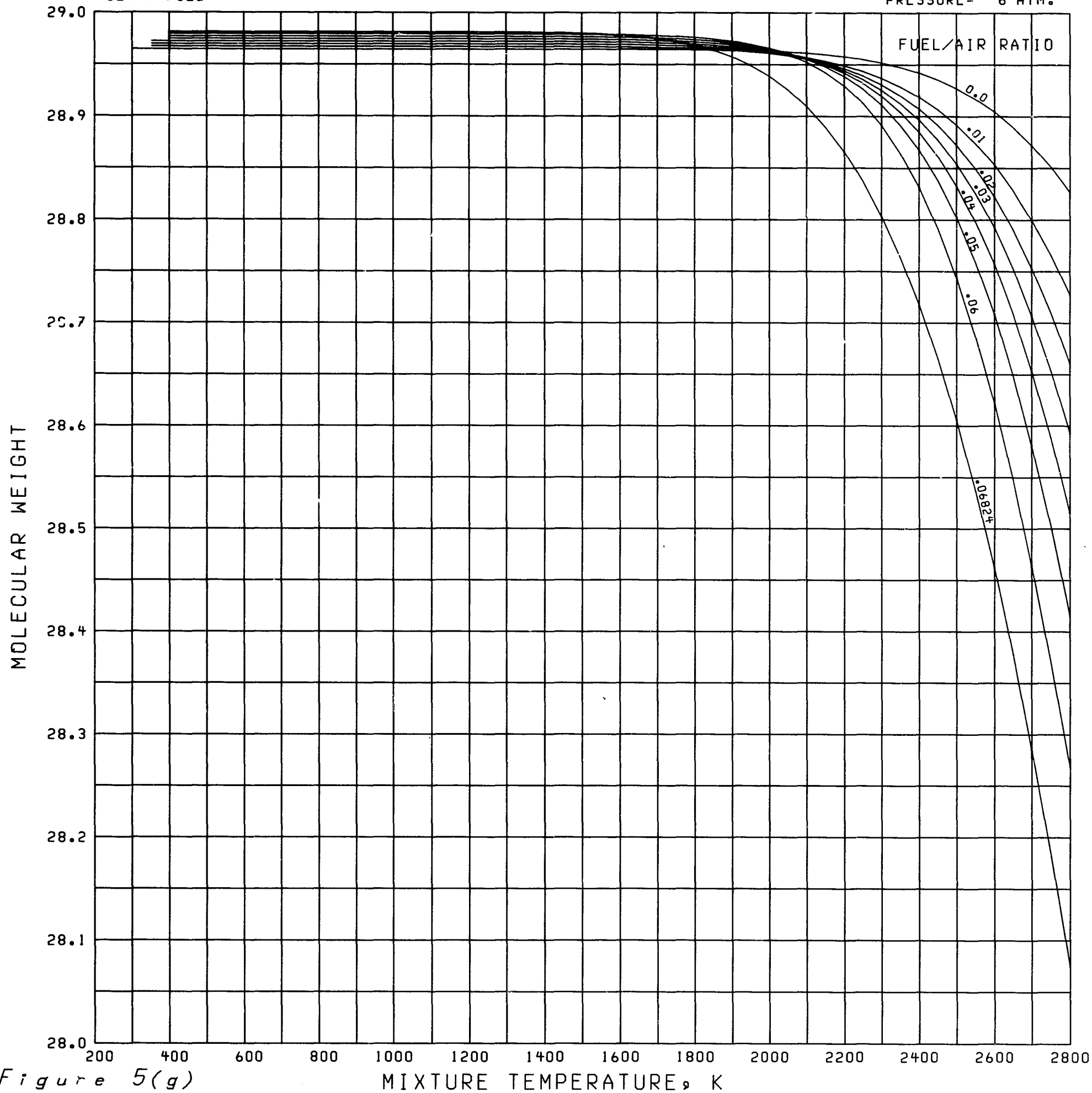


Figure 5(g)

EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE=0.5 ATM.

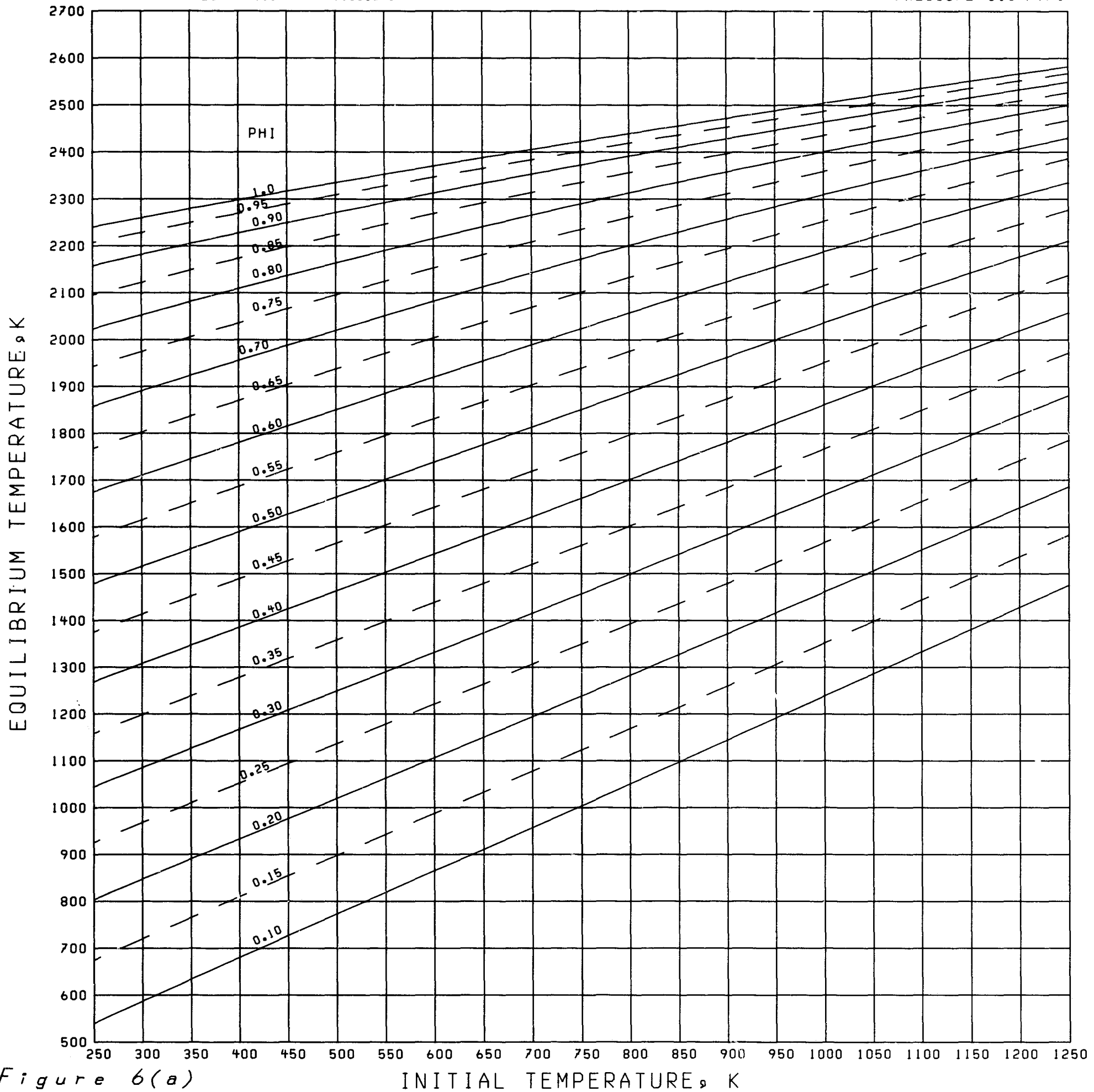


Figure 6(a)

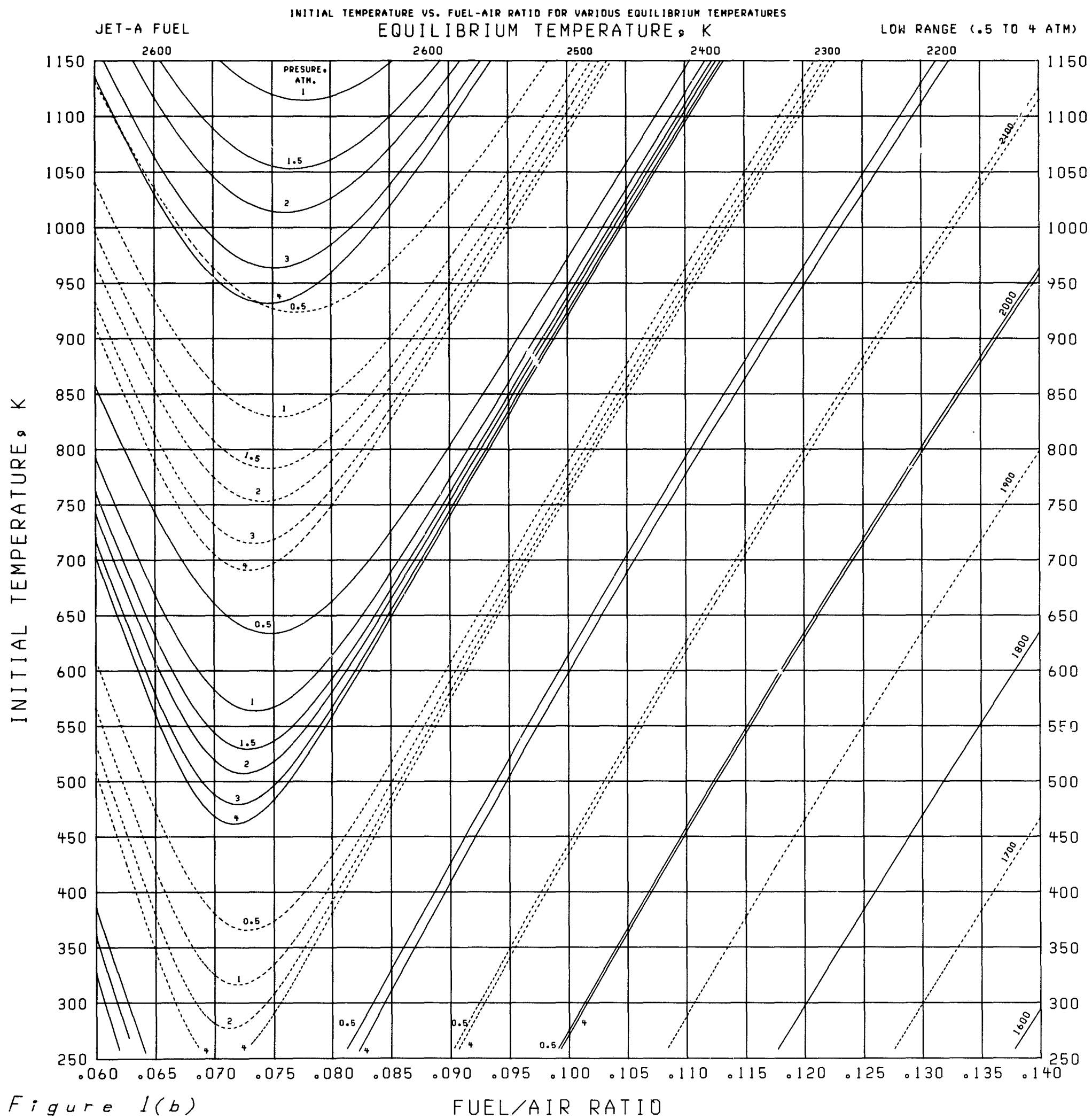


Figure 1(b)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE= 3 ATM.

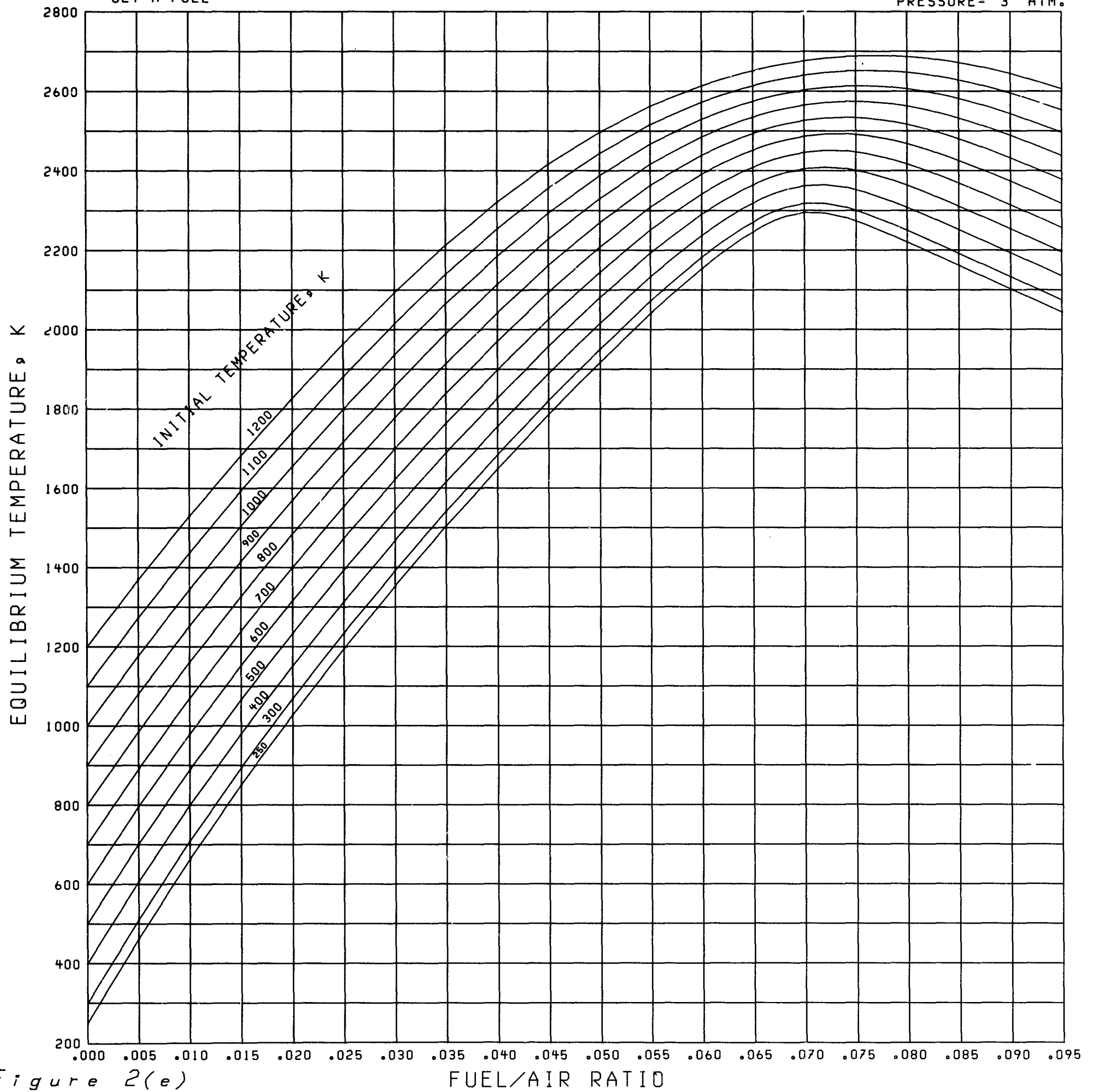


Figure 2(e)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE=40 ATM.

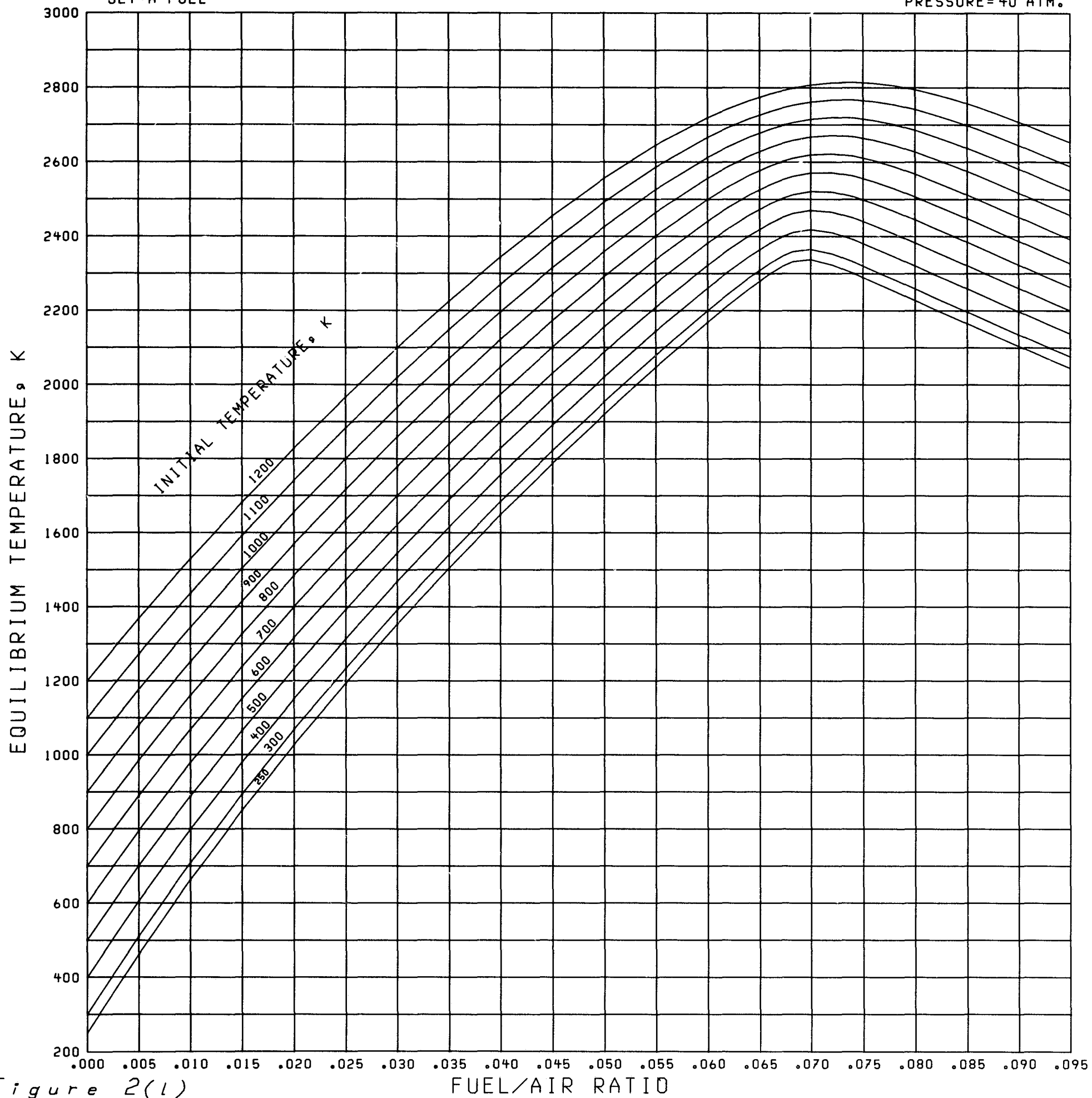


Figure 2(1)



EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

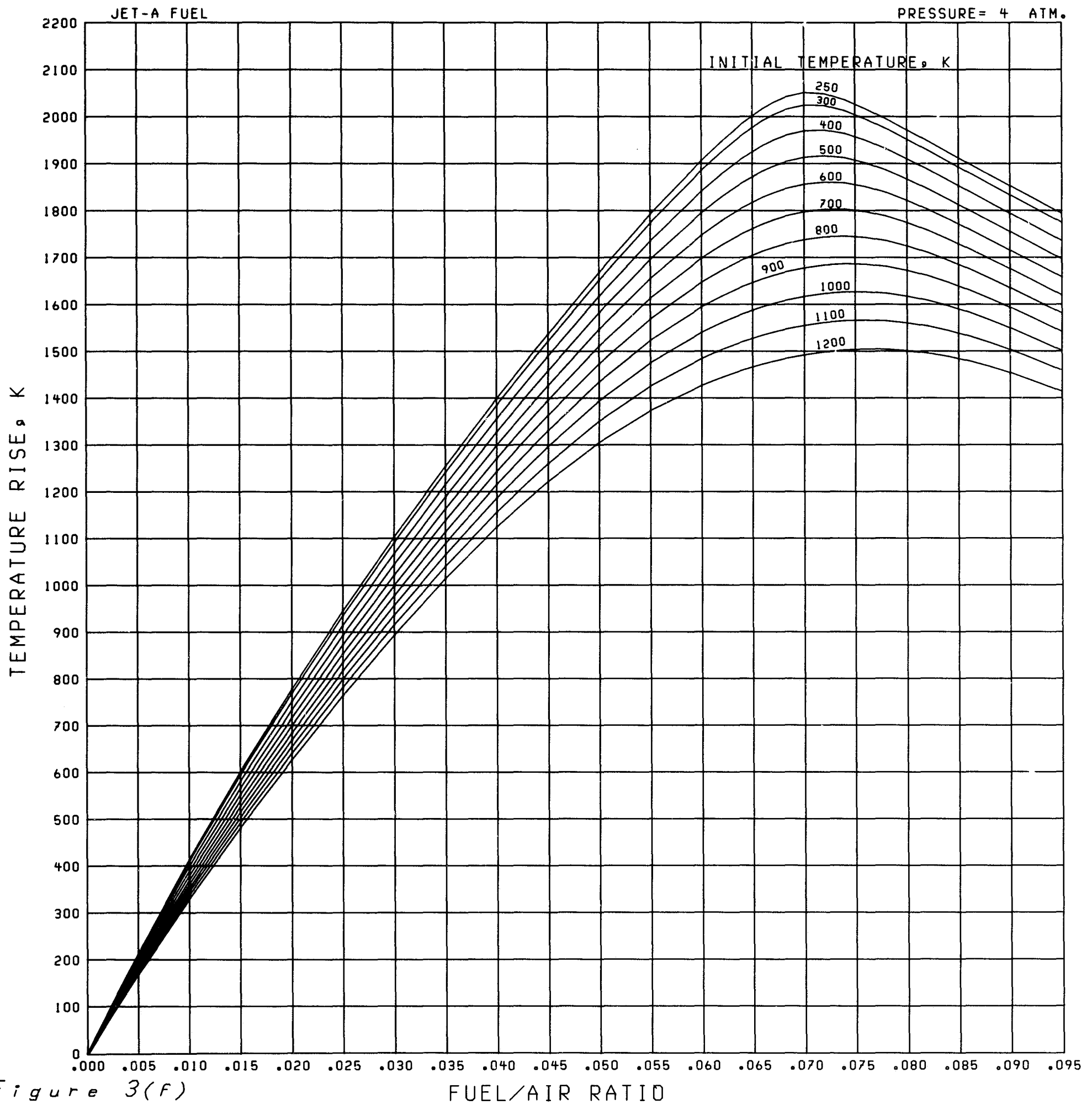
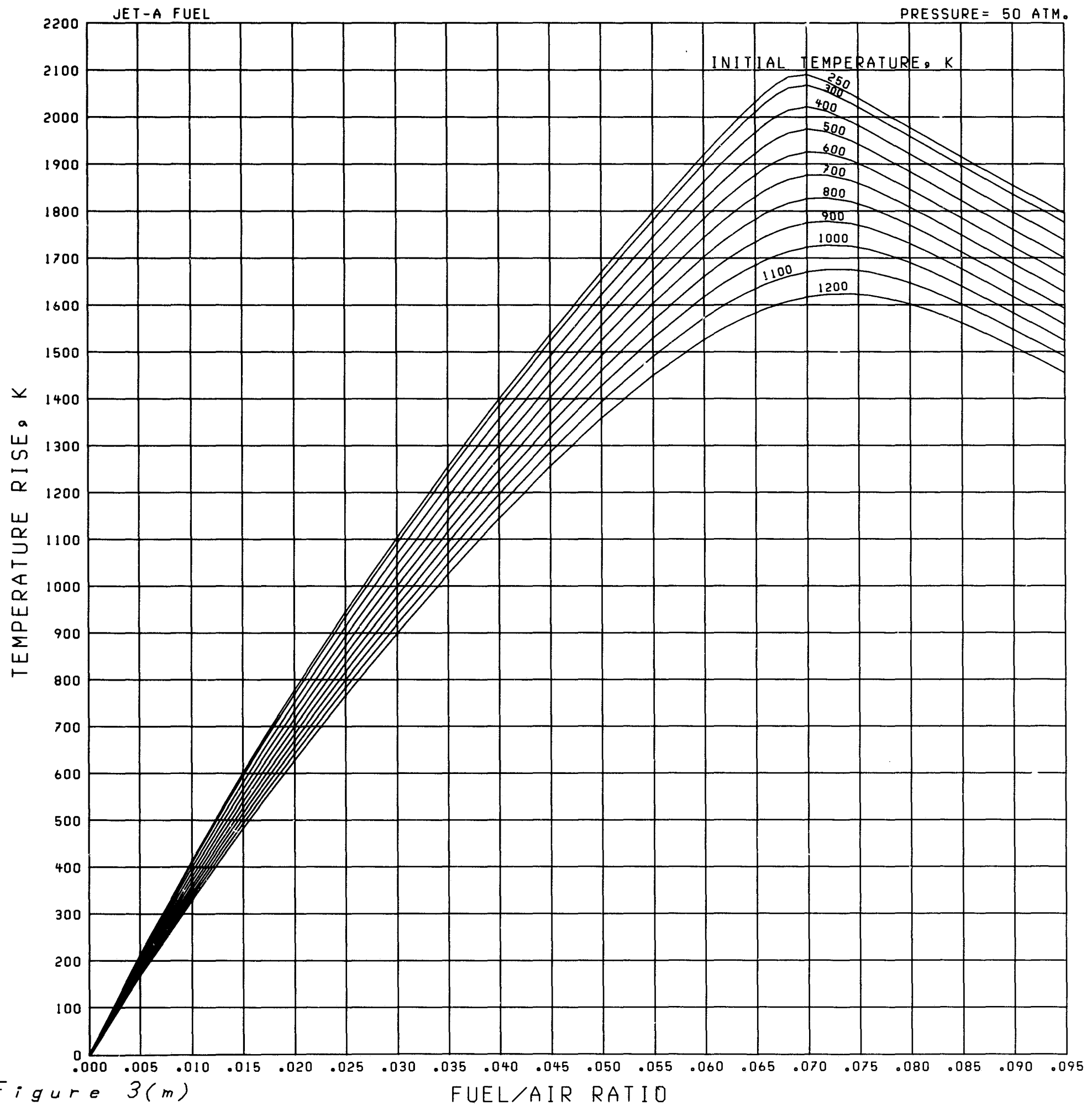


Figure 3(f)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE



ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 6 ATM.

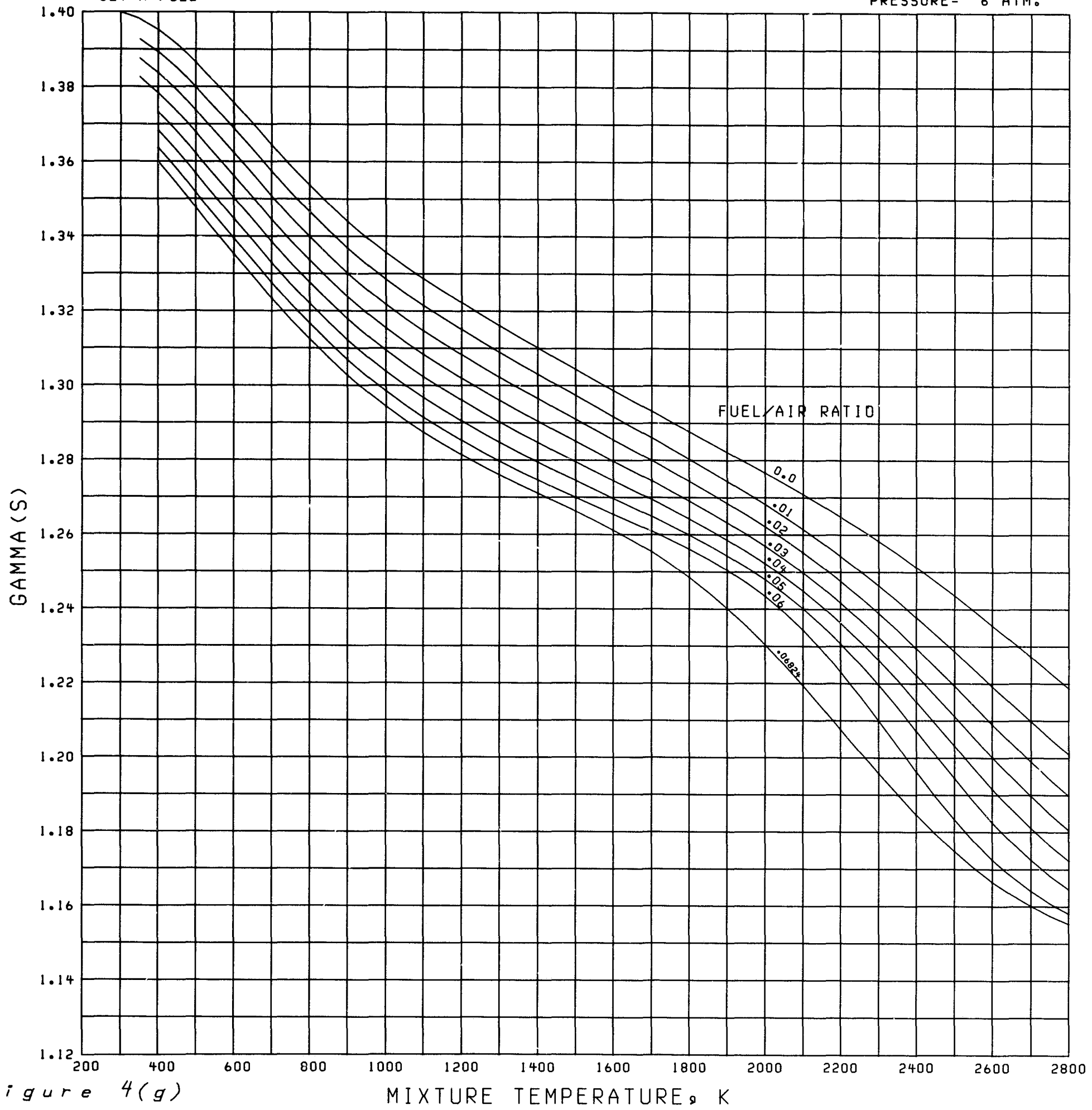


Figure 4(g)

MIXTURE TEMPERATURE, K

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE=0.5 ATM.

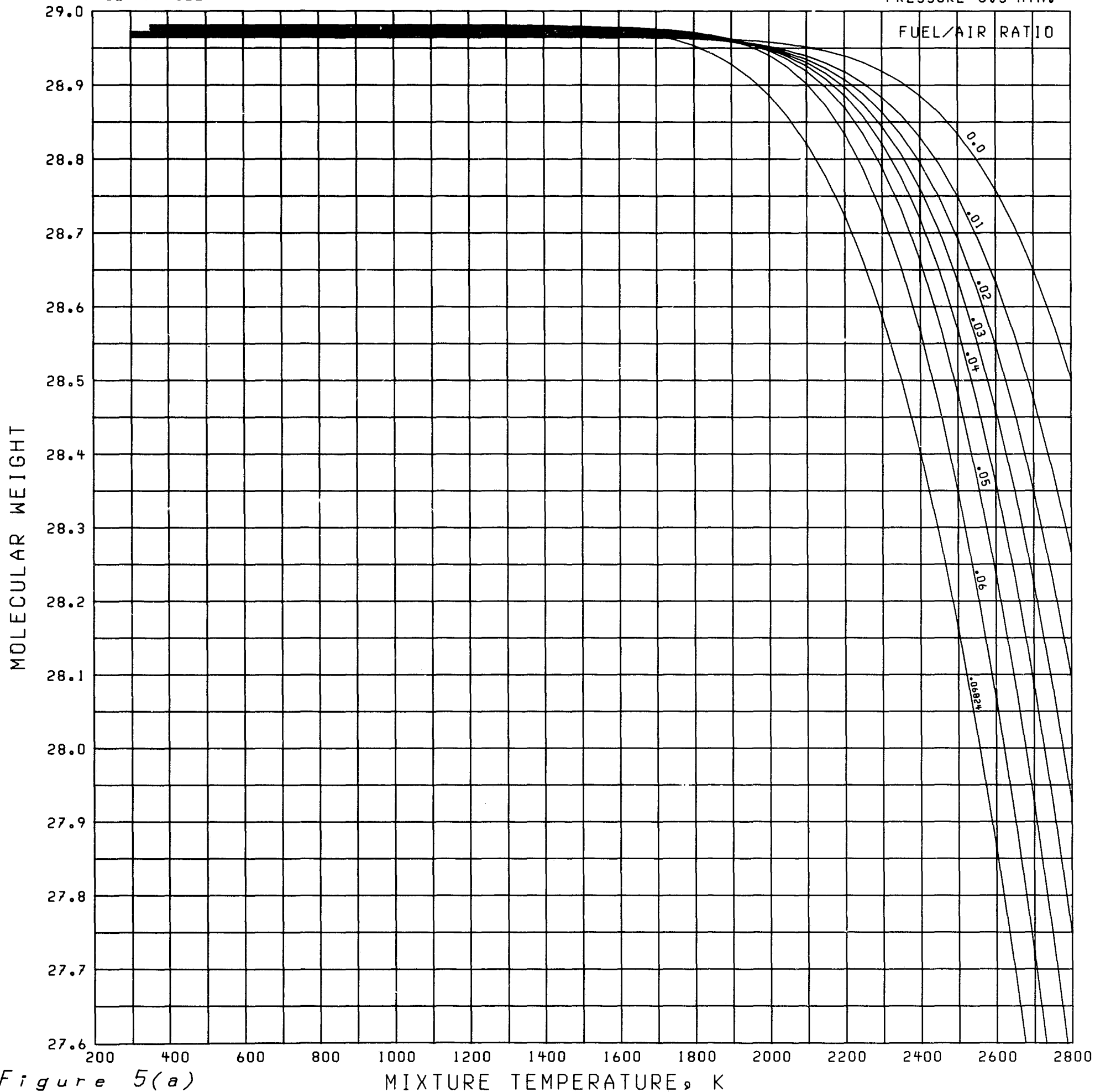


Figure 5(a)

MIXTURE TEMPERATURE, K

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 10 ATM.

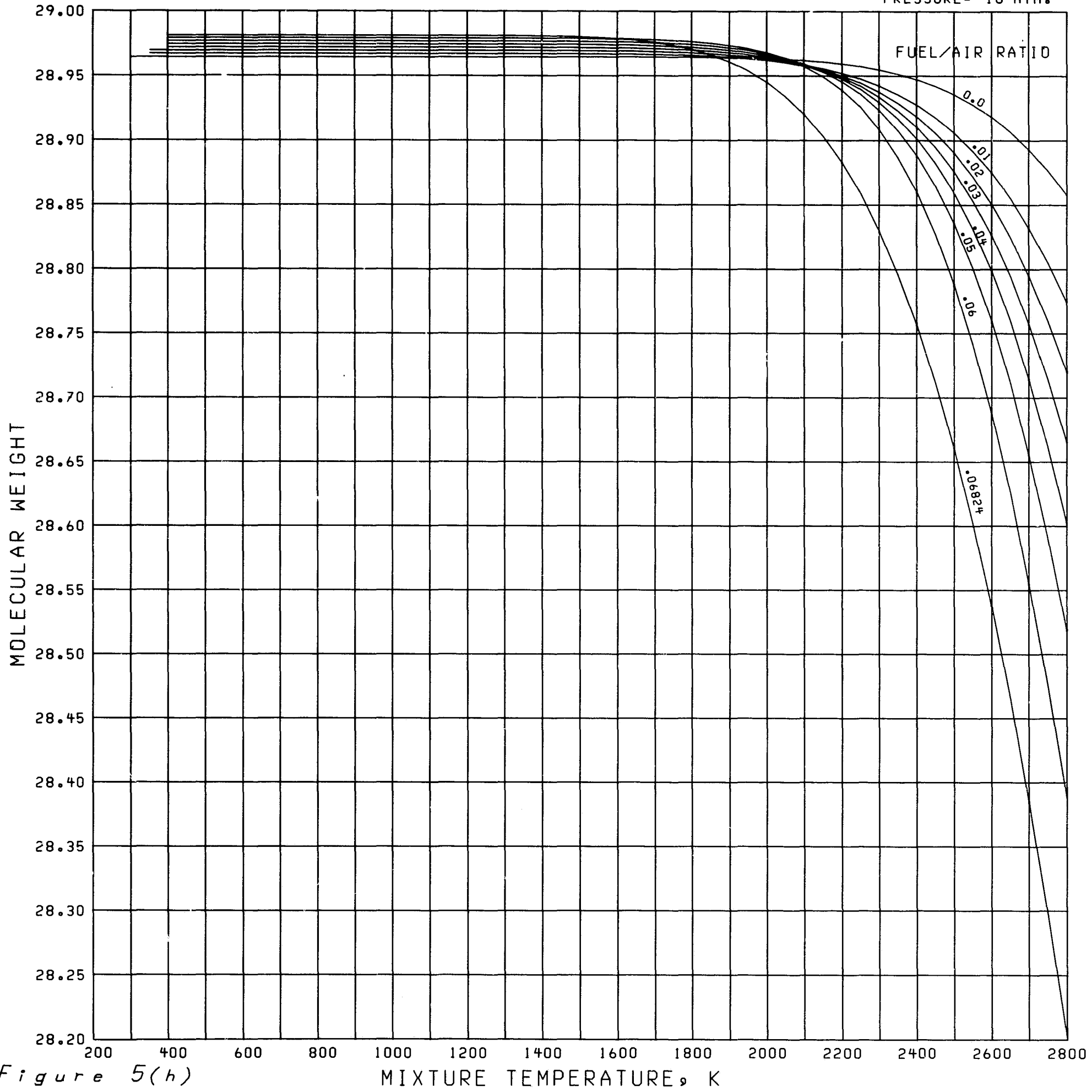


Figure 5(h)

MIXTURE TEMPERATURE, K

Figure 6(a)

INITIAL TEMPERATURE, K

EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE= 1 ATM.

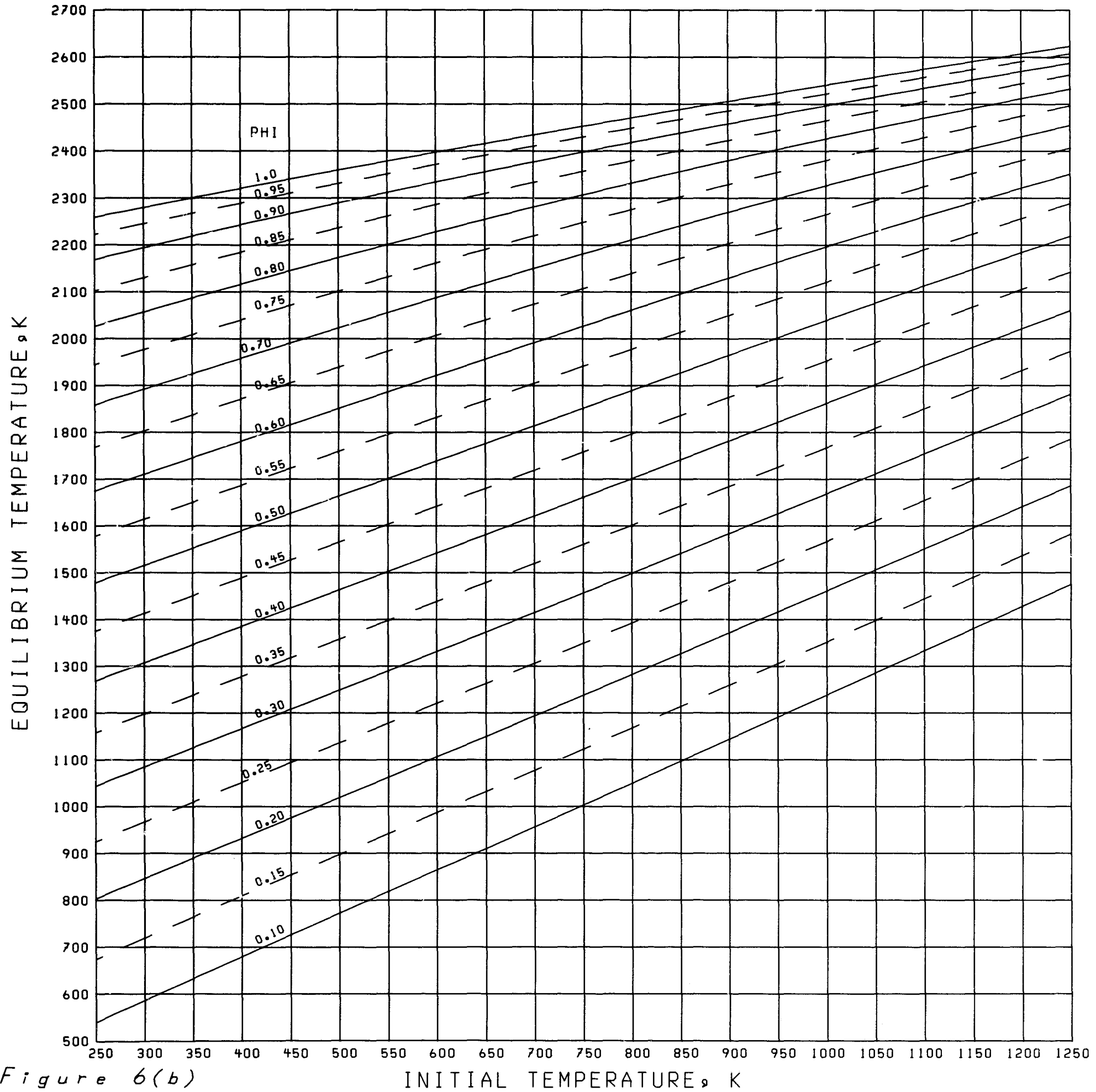


Figure 6(b)

INITIAL TEMPERATURE, K

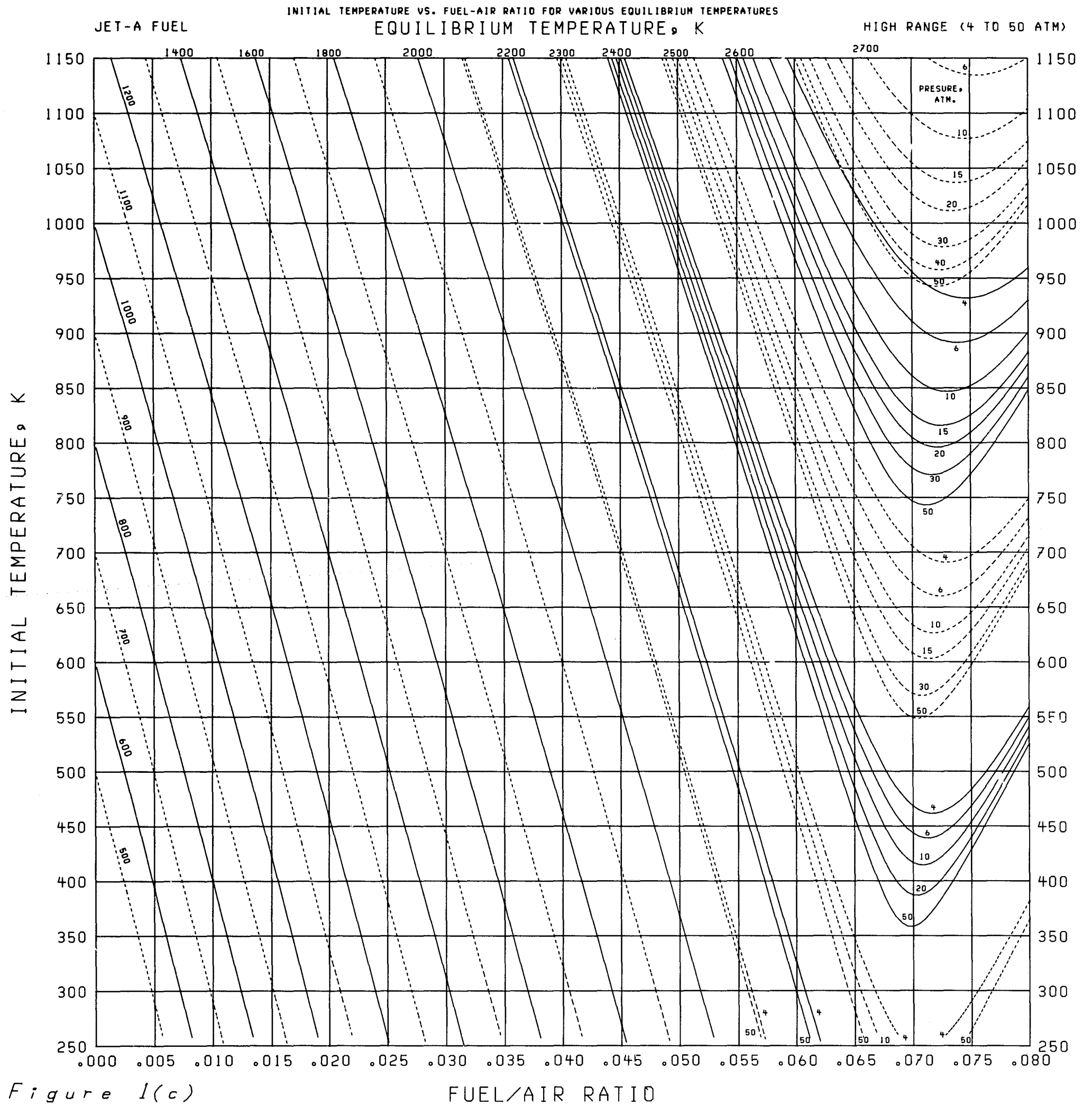


Figure 1(c)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE = 4 ATM.

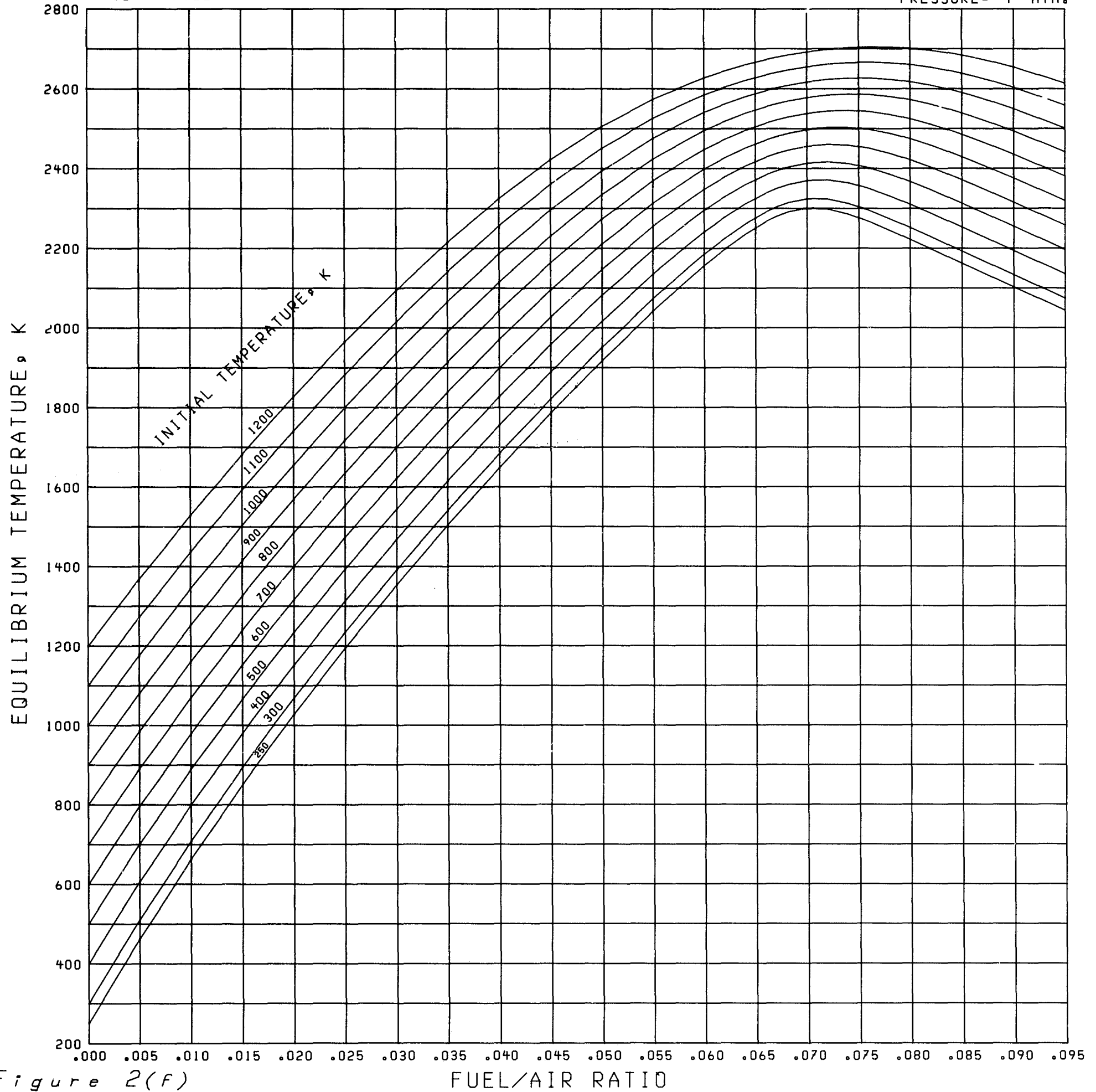


Figure 2(f)



EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE=50 ATM.

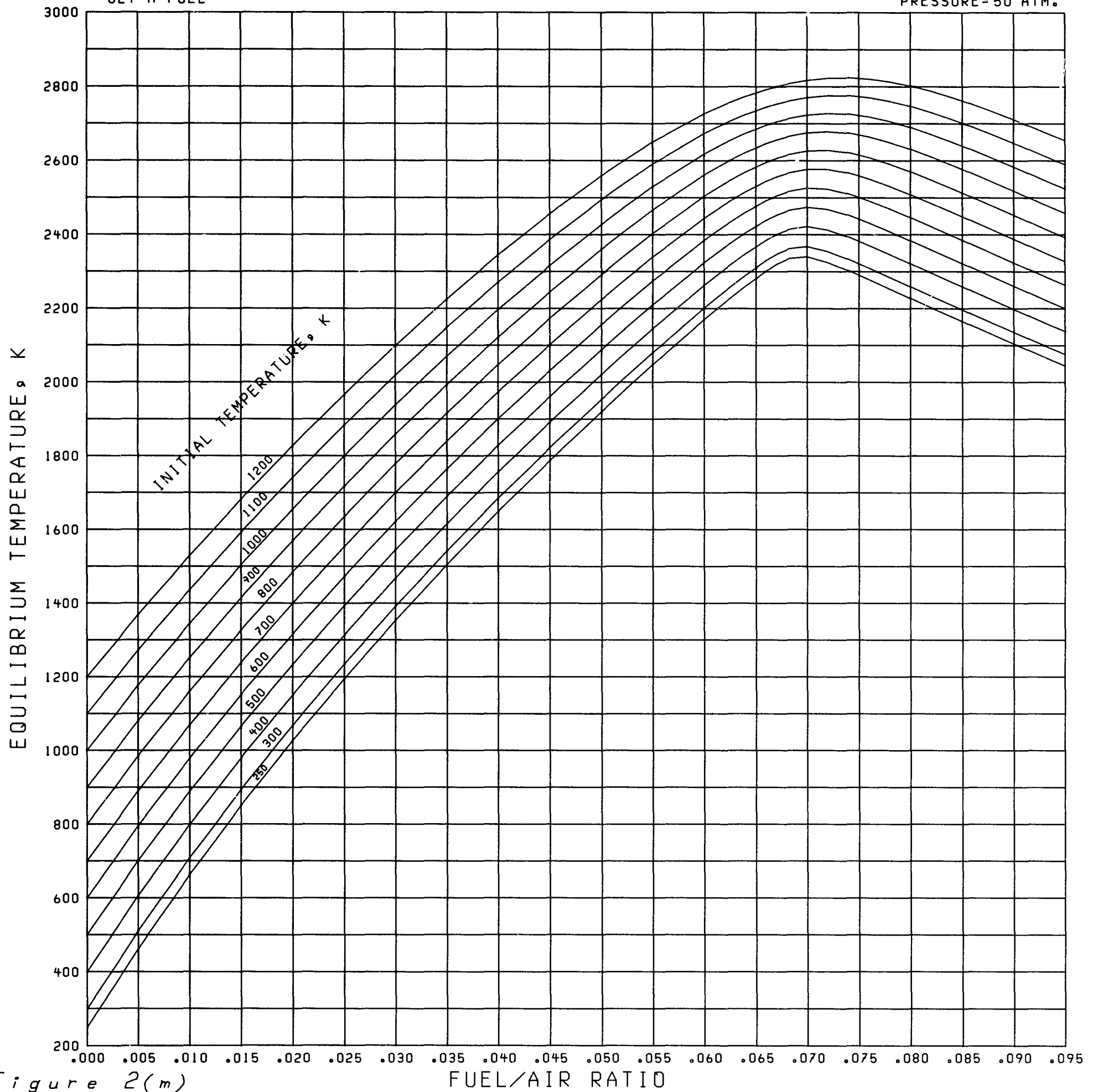


Figure 2(m)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

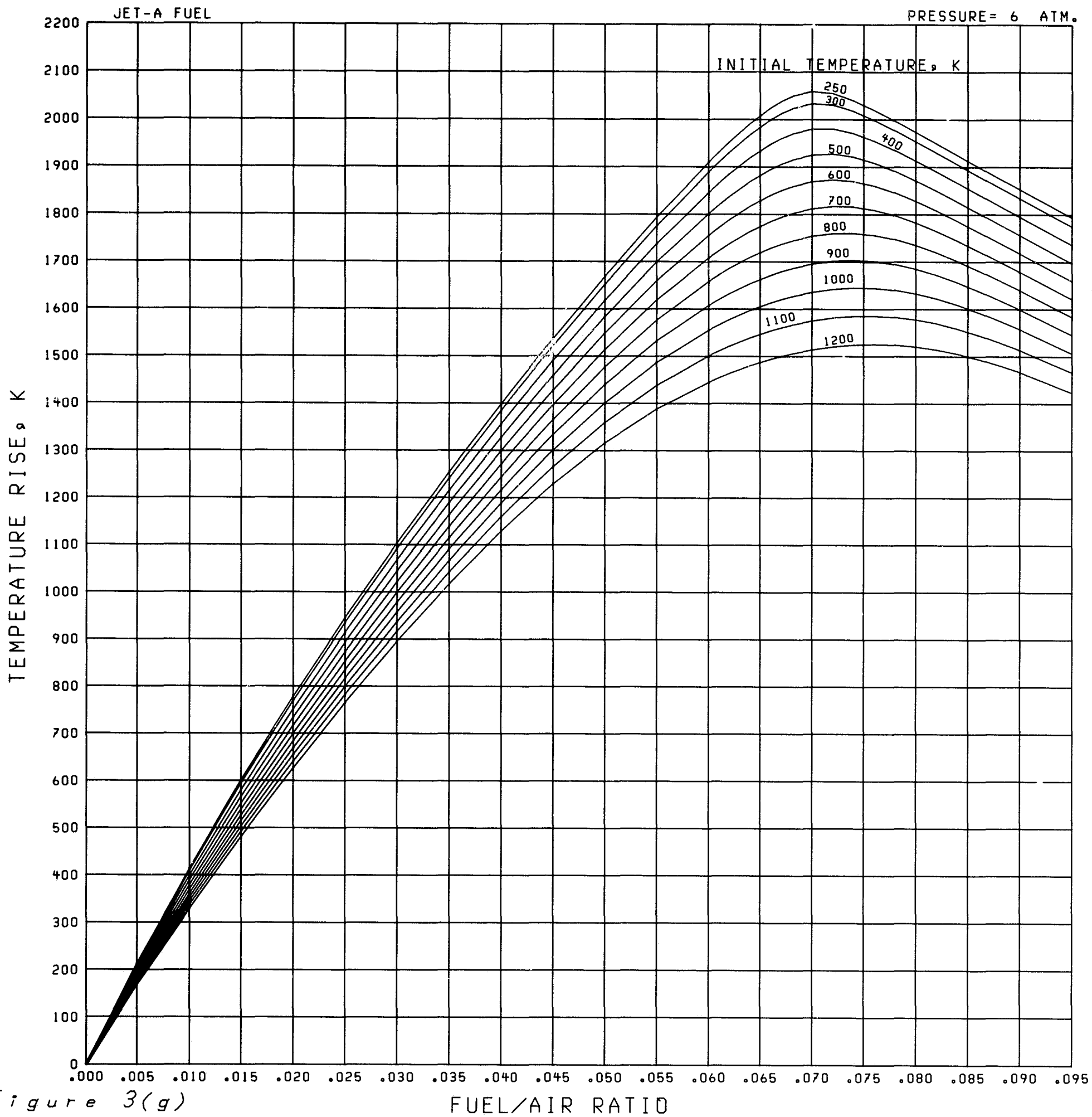


Figure 3(g)

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 0.5 ATM.

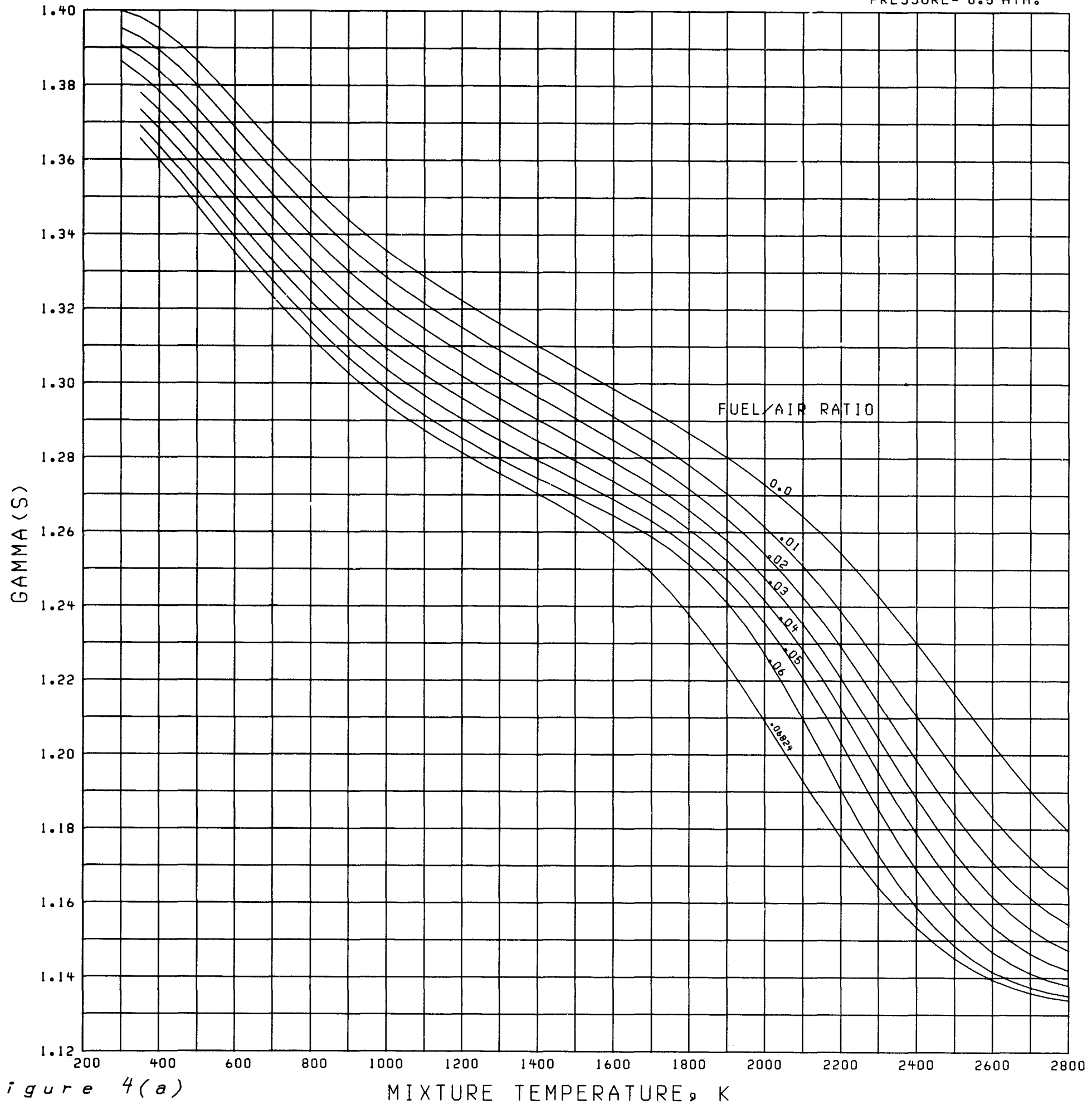


Figure 4(a)

MIXTURE TEMPERATURE, K

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 10 ATM.

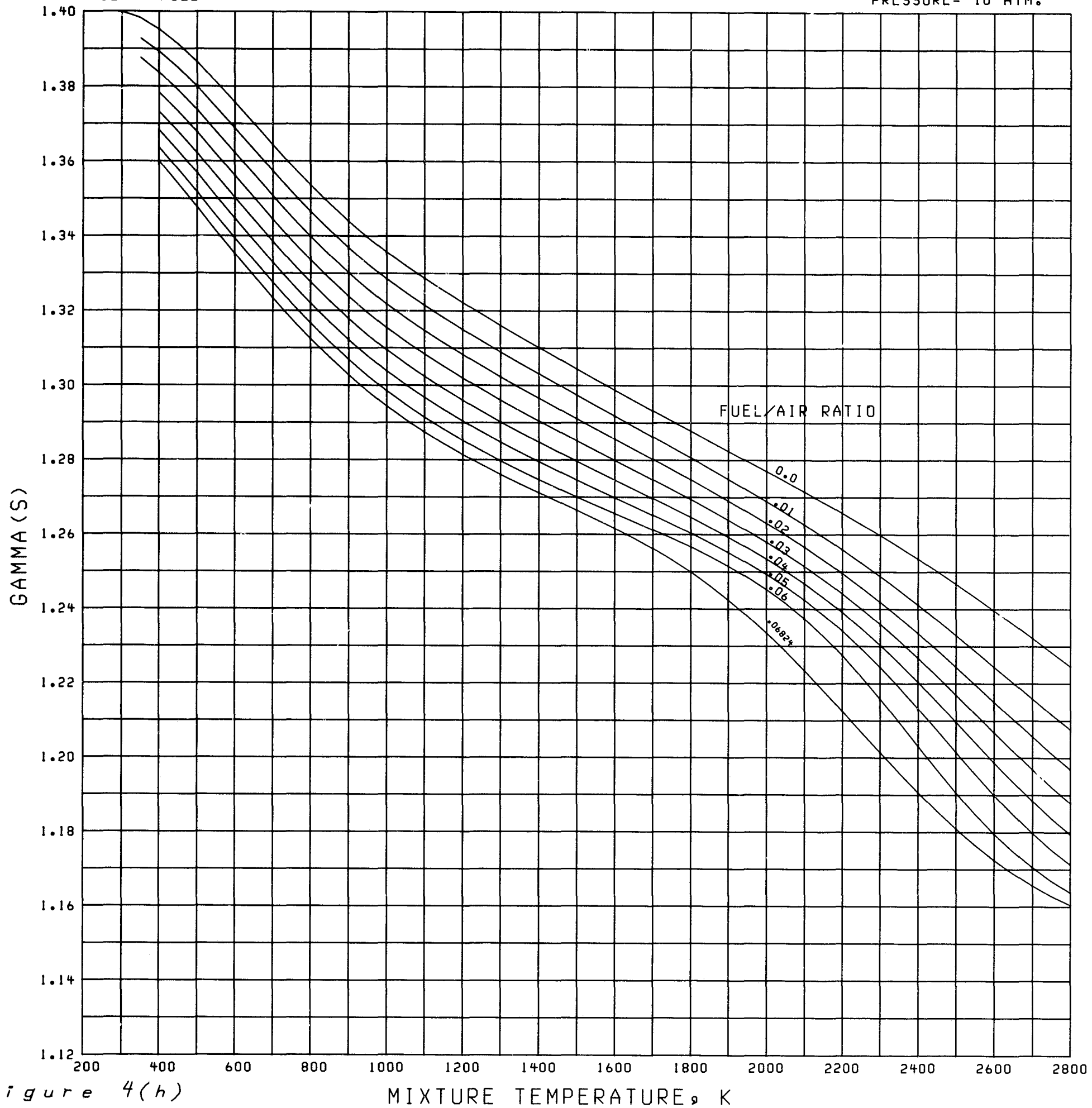


Figure 4(h)

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 1 ATM.

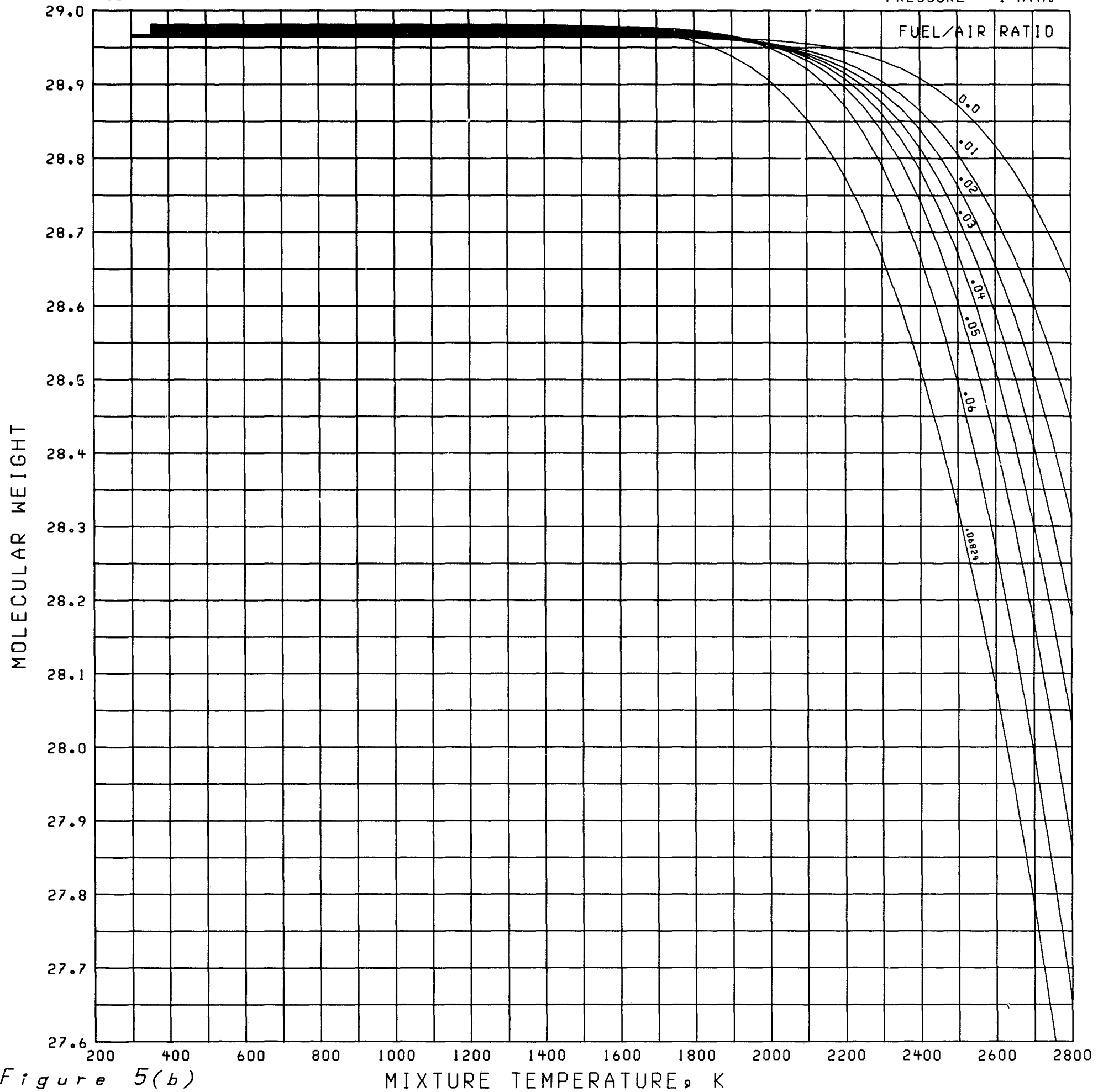


Figure 5(b)

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 15 ATM.

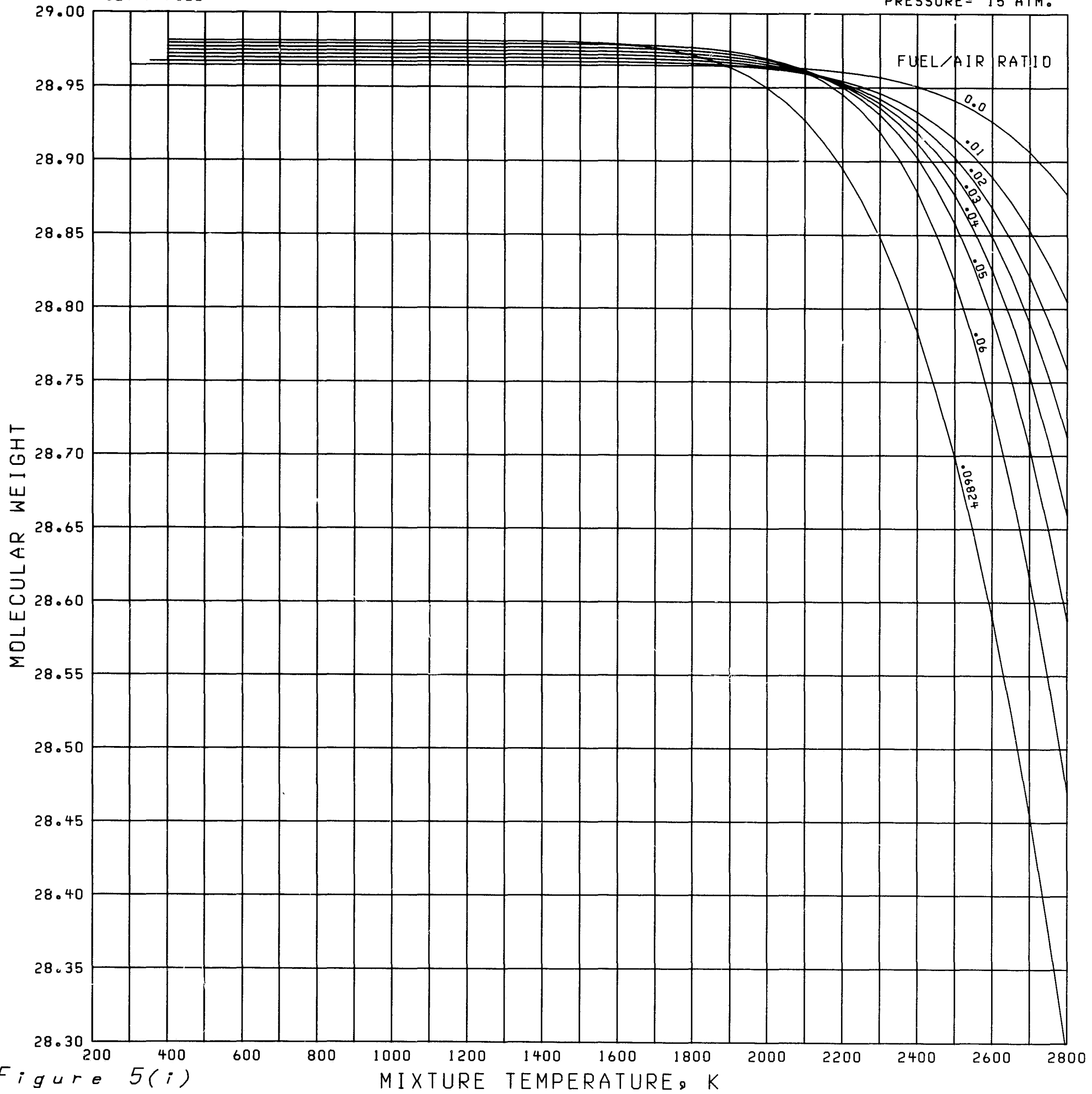


Figure 5(i)

EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE=1.5 ATM.

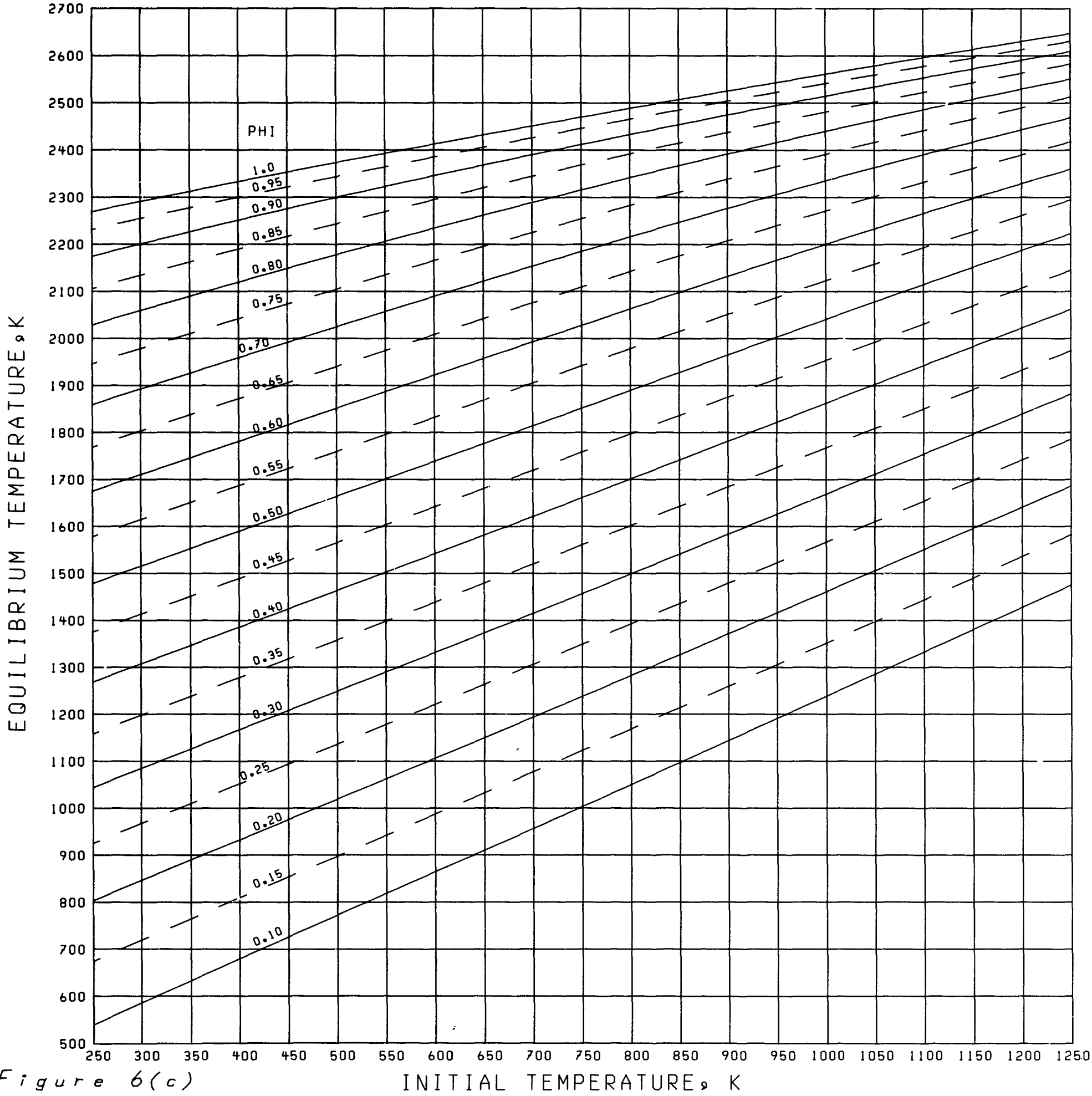
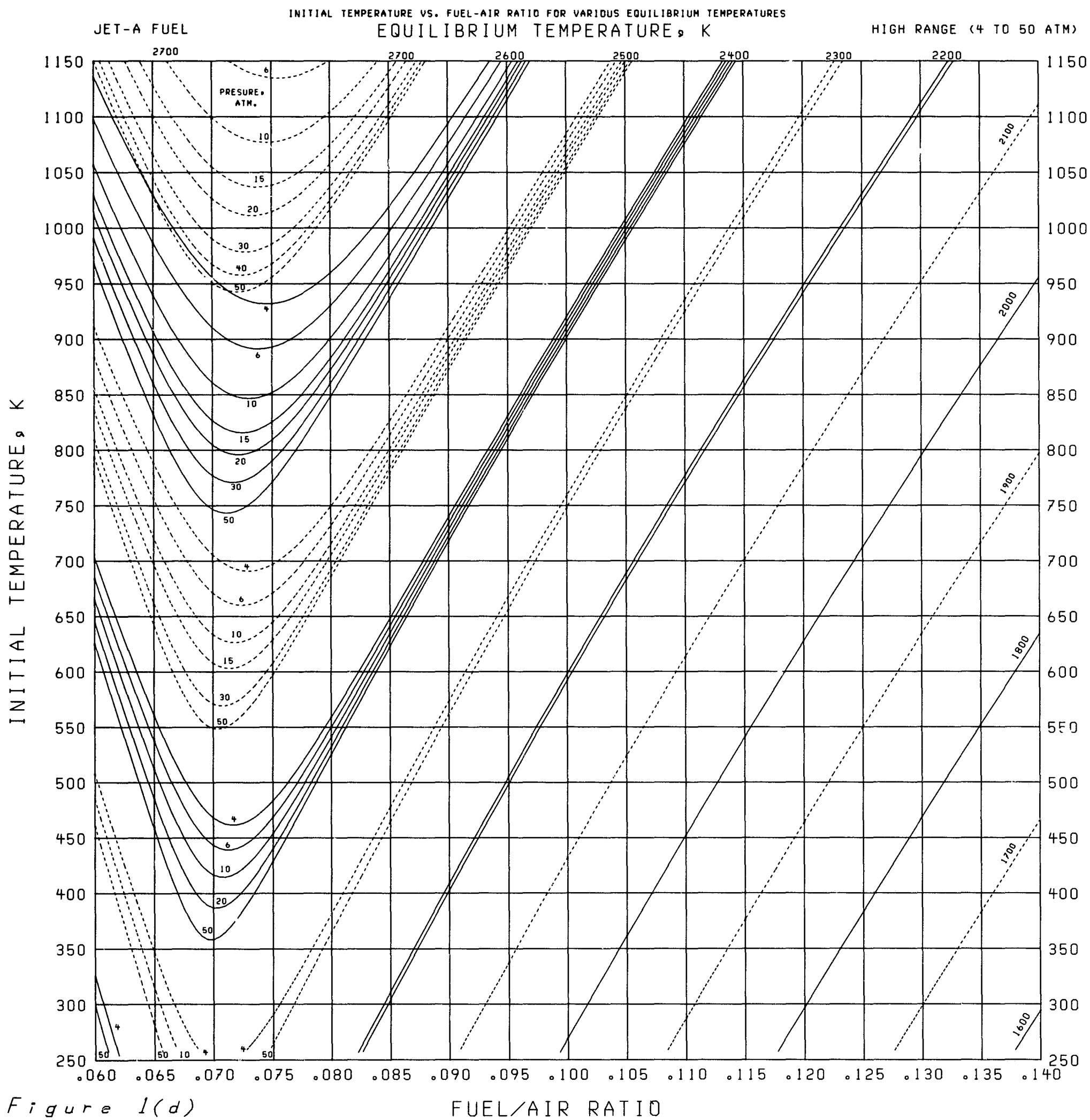


Figure 6(c)





EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE= 6 ATM.

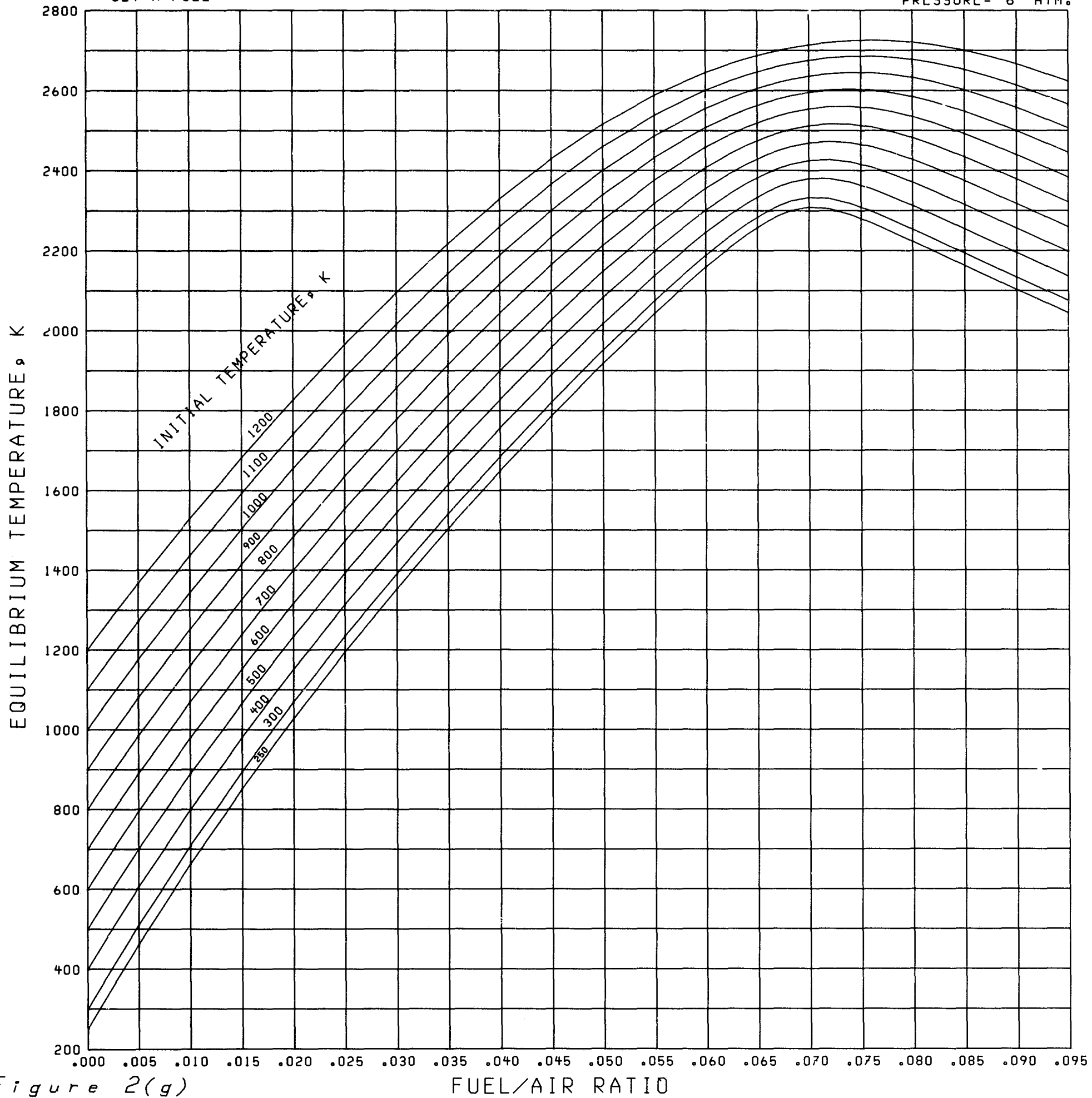


Figure 2(g)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

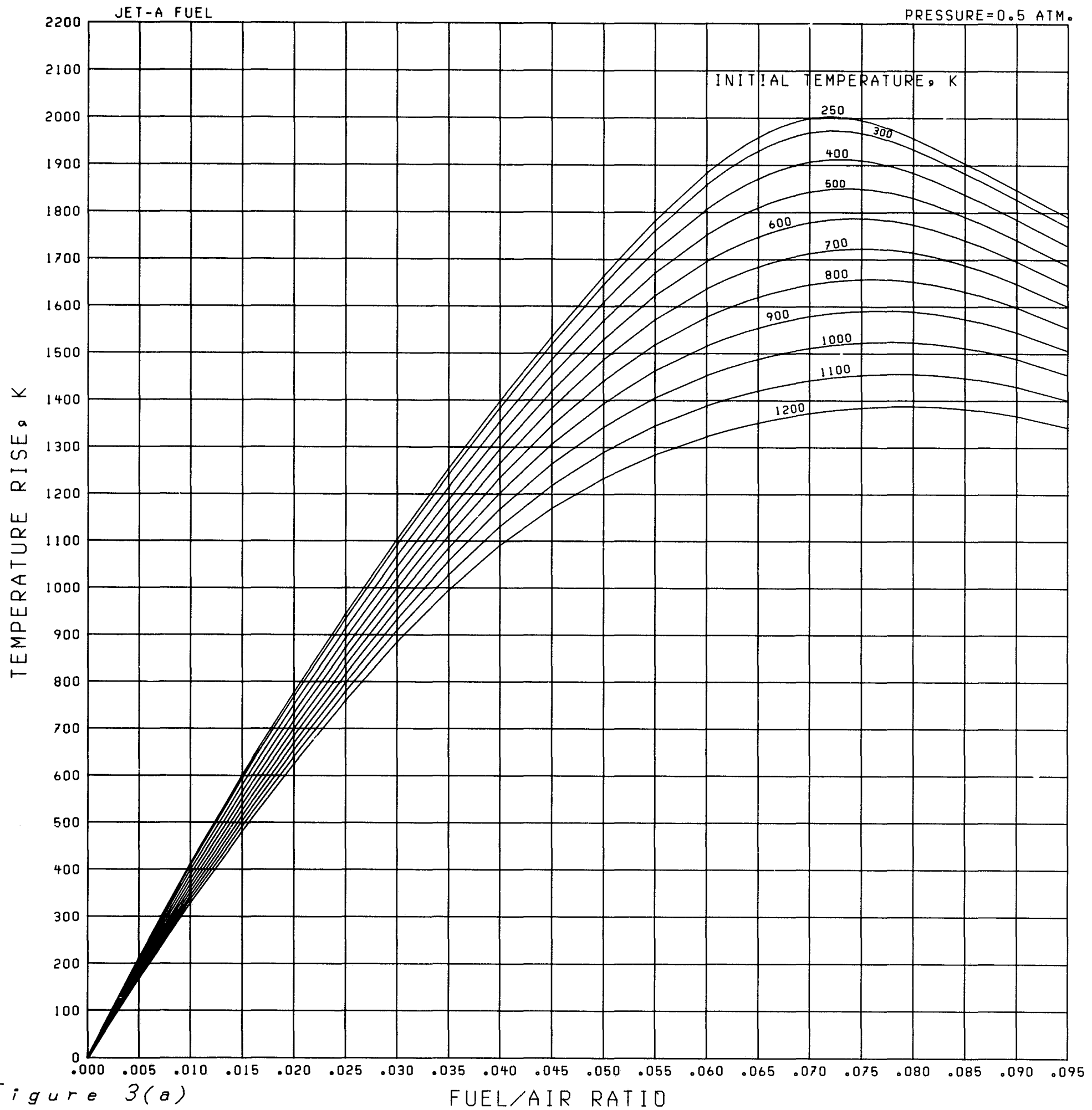
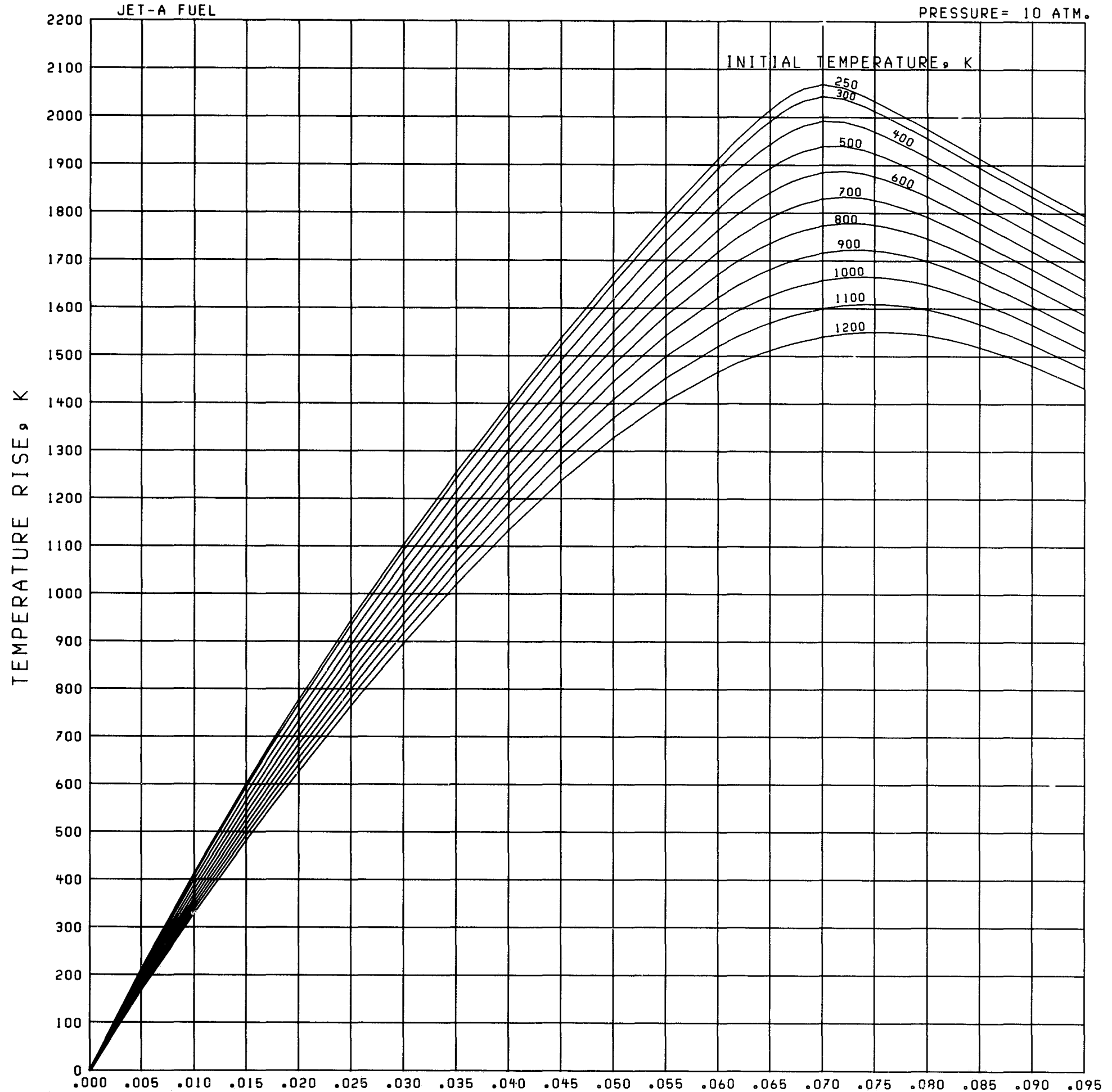
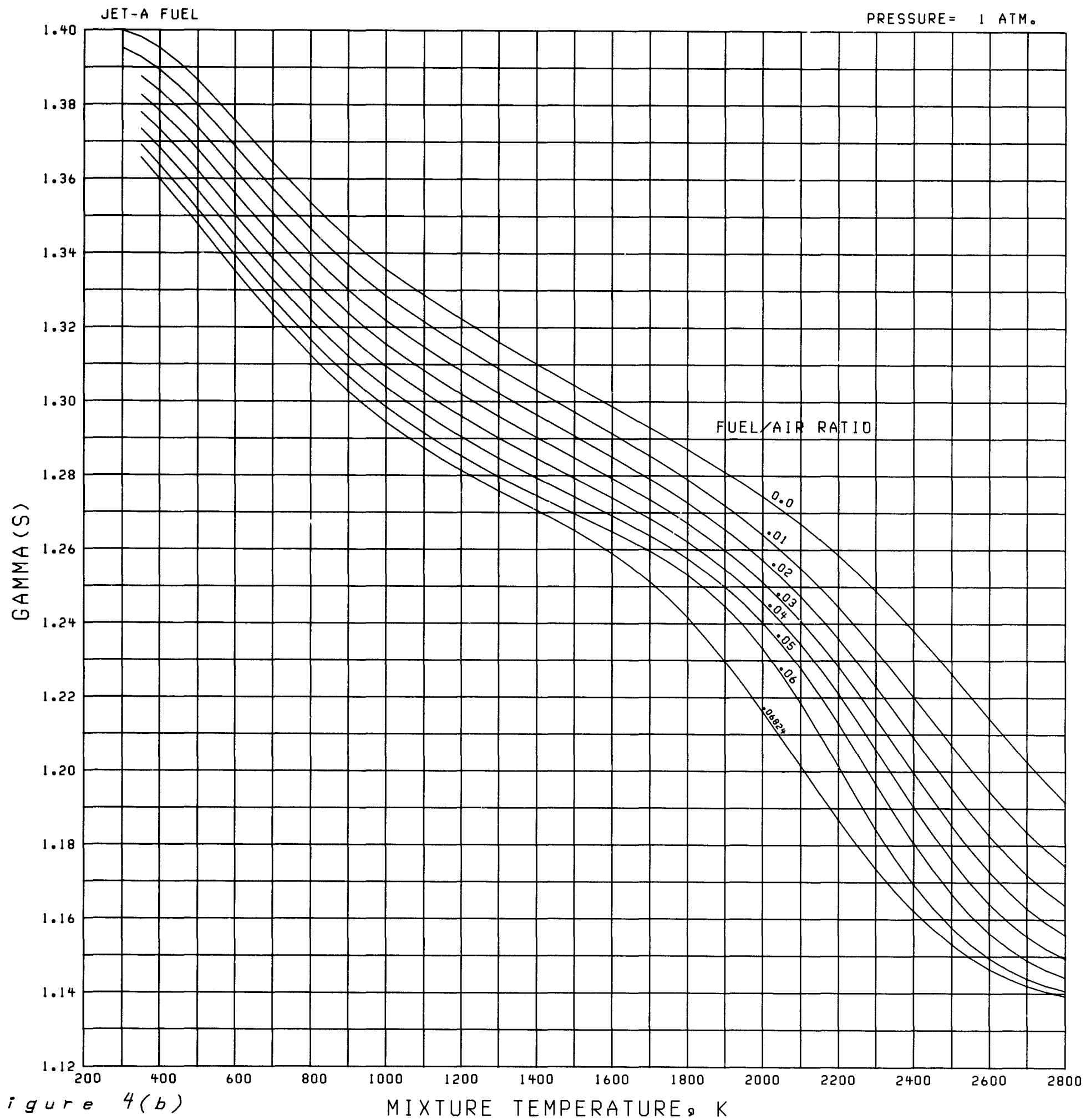


Figure 3(a)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE



ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS



ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 15 ATM.

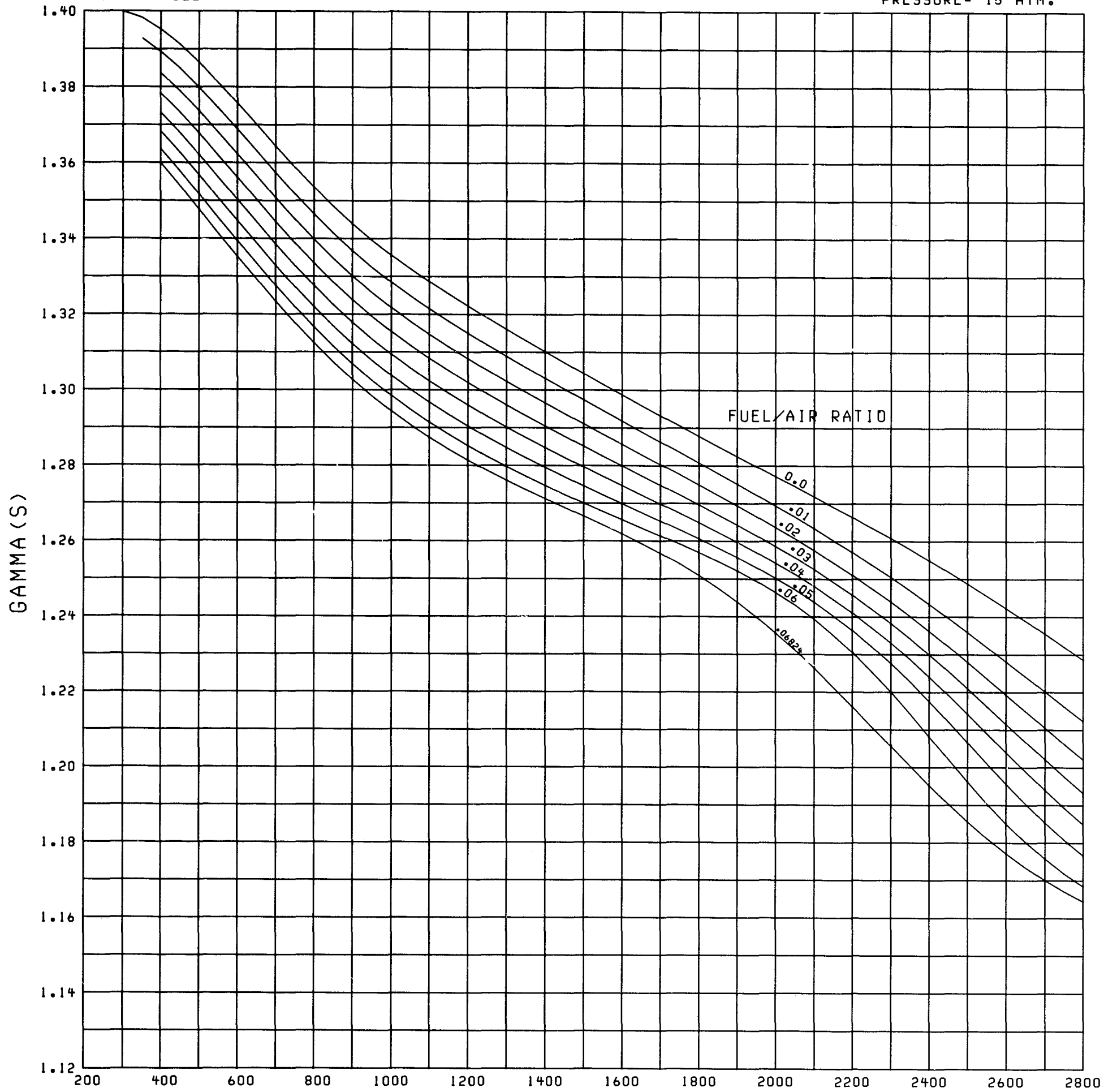


Figure 5(b)

MIXTURE TEMPERATURE, K

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE=1.5 ATM.

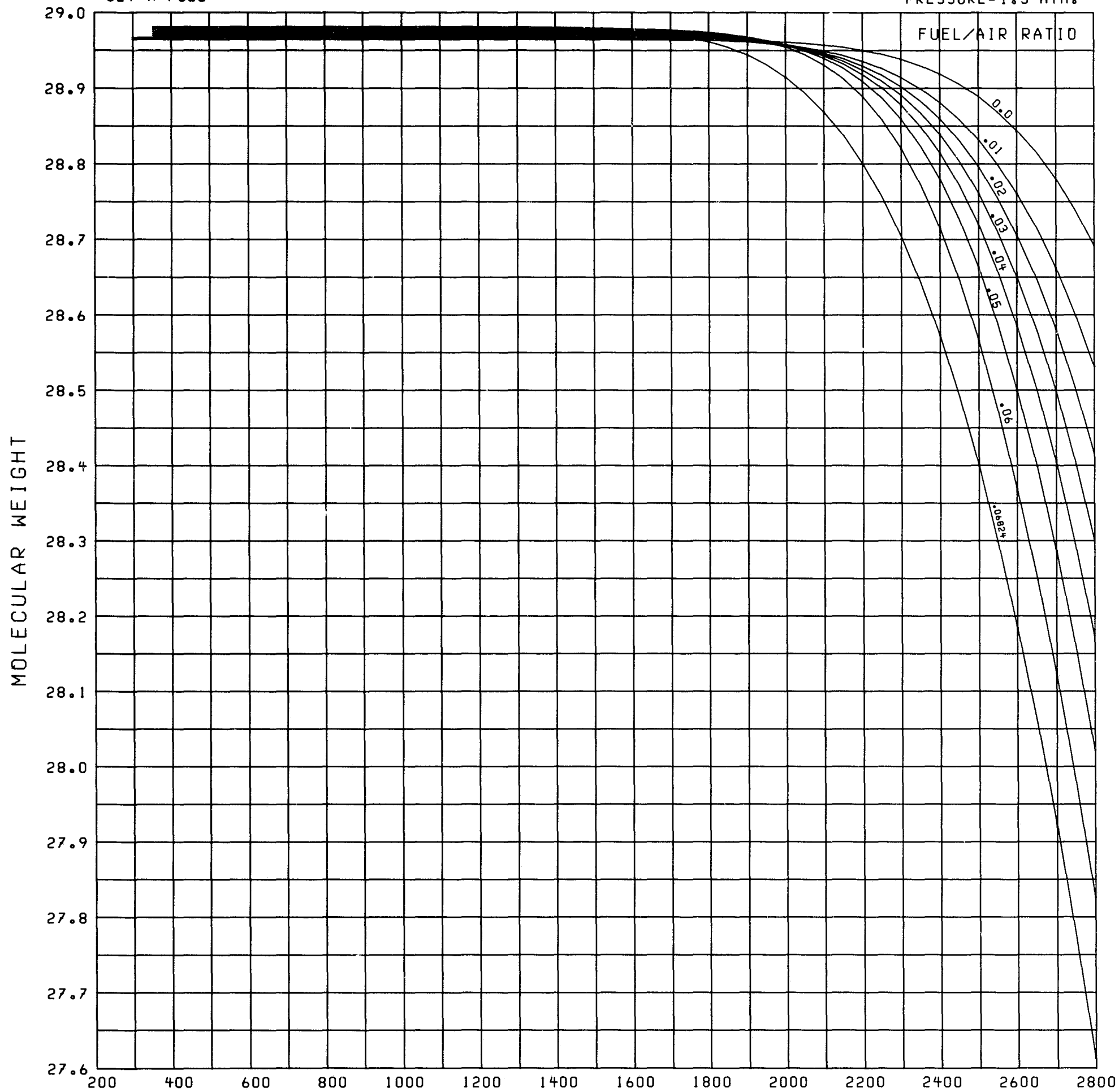


Figure 5(c)

MIXTURE TEMPERATURE, K

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 20 ATM.

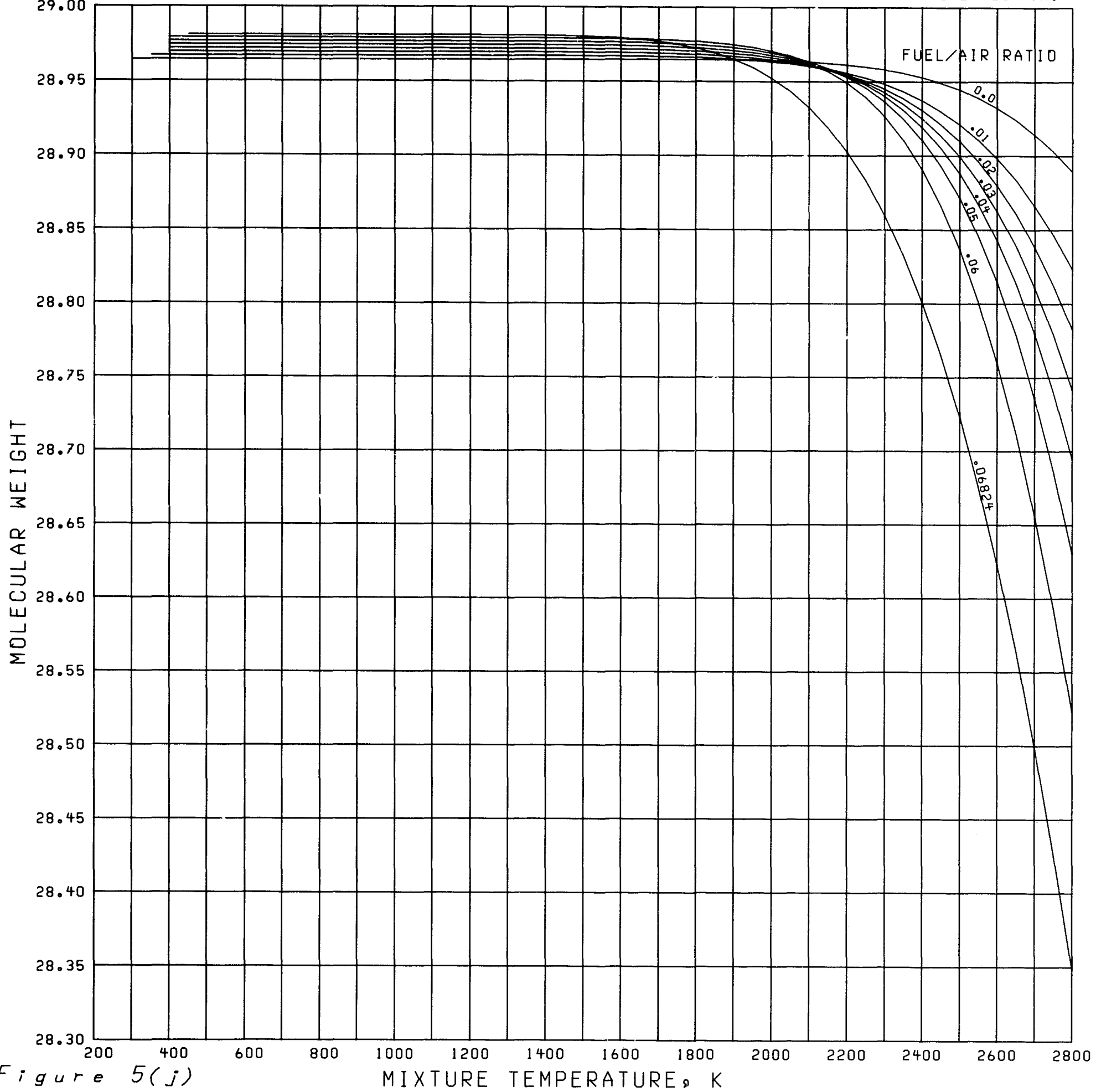


Figure 5(j)

EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE= 2 ATM.

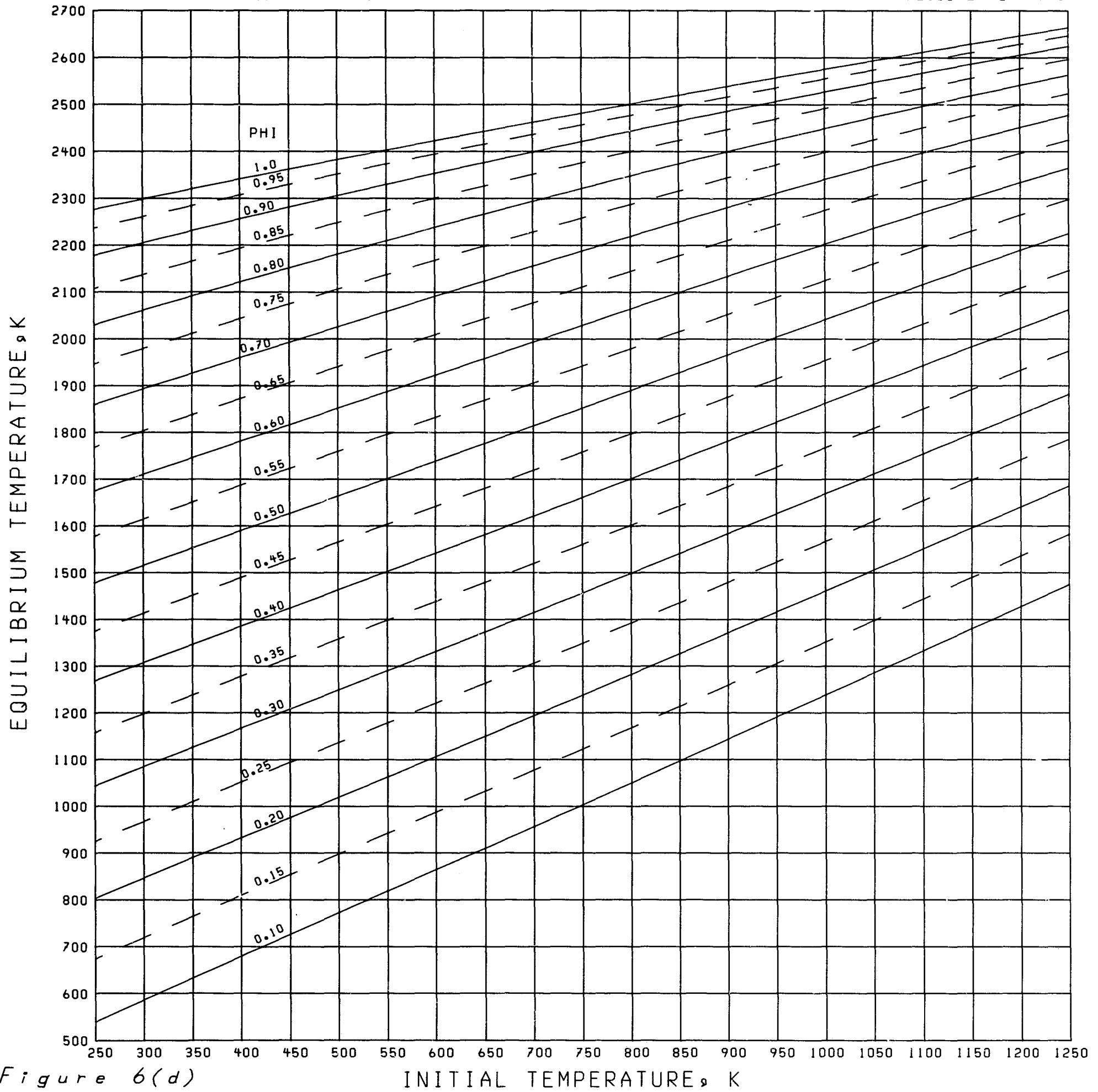


Figure 6(d)



## EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

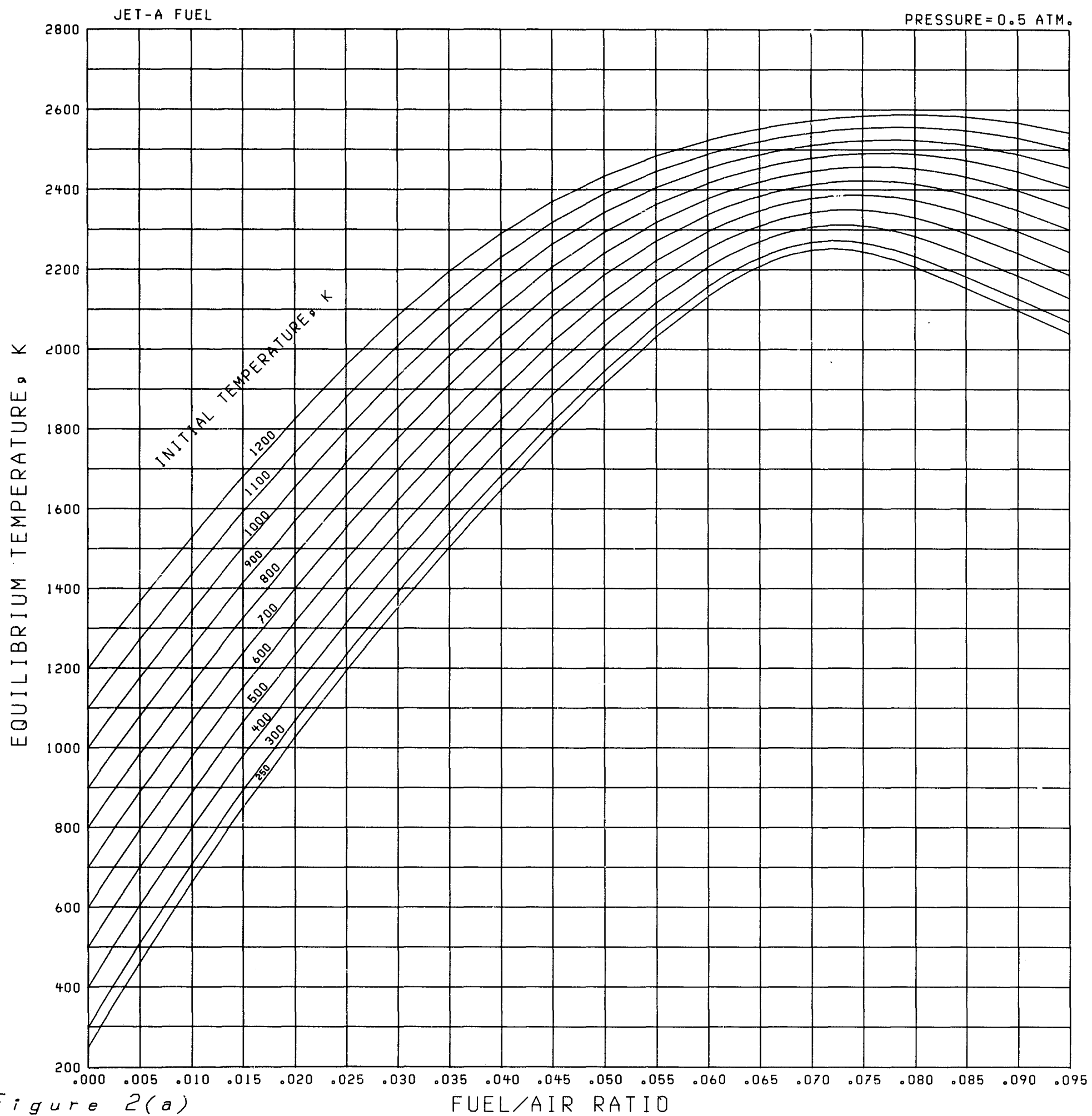


Figure 2(a)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

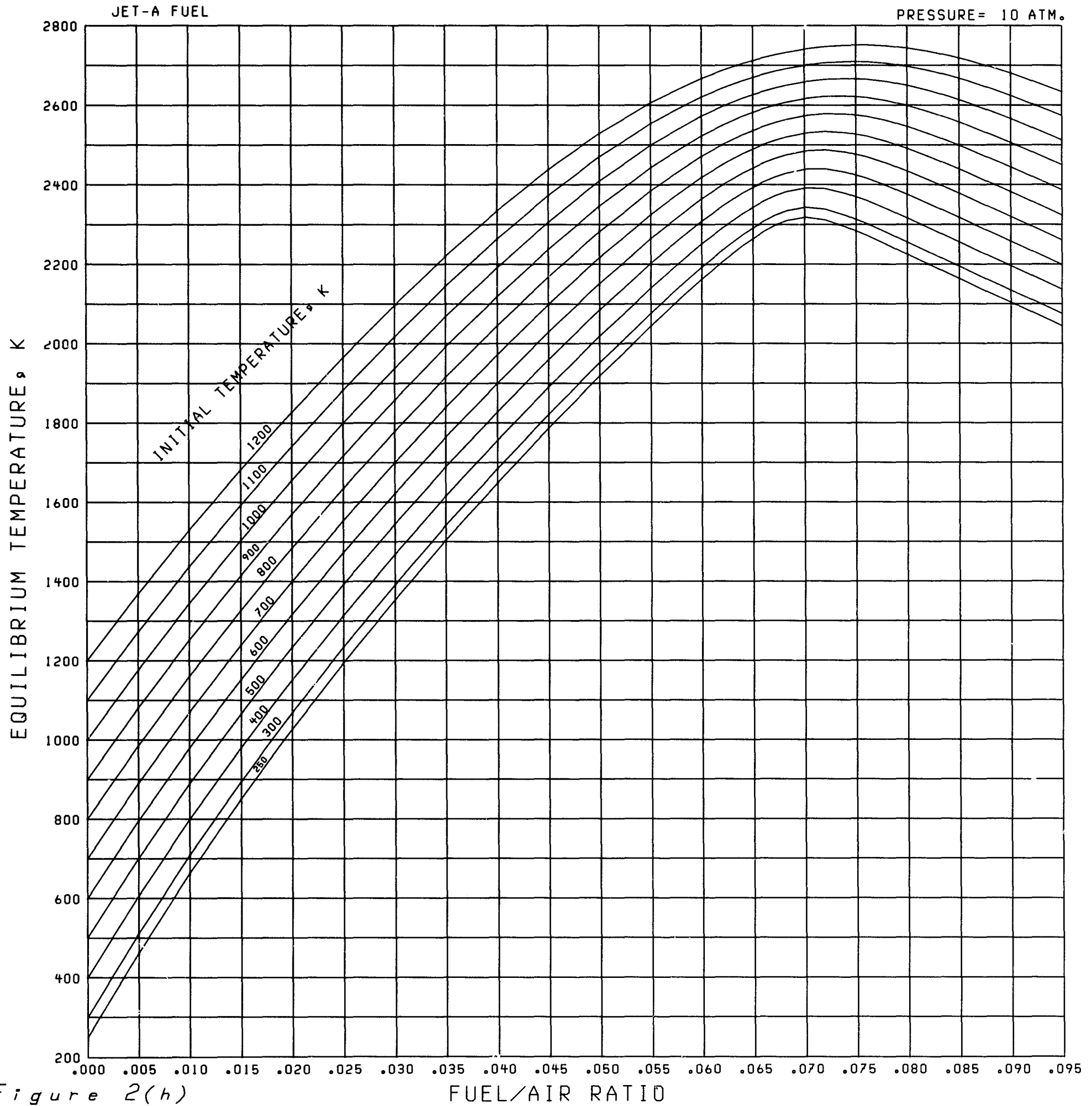


Figure 2(h)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

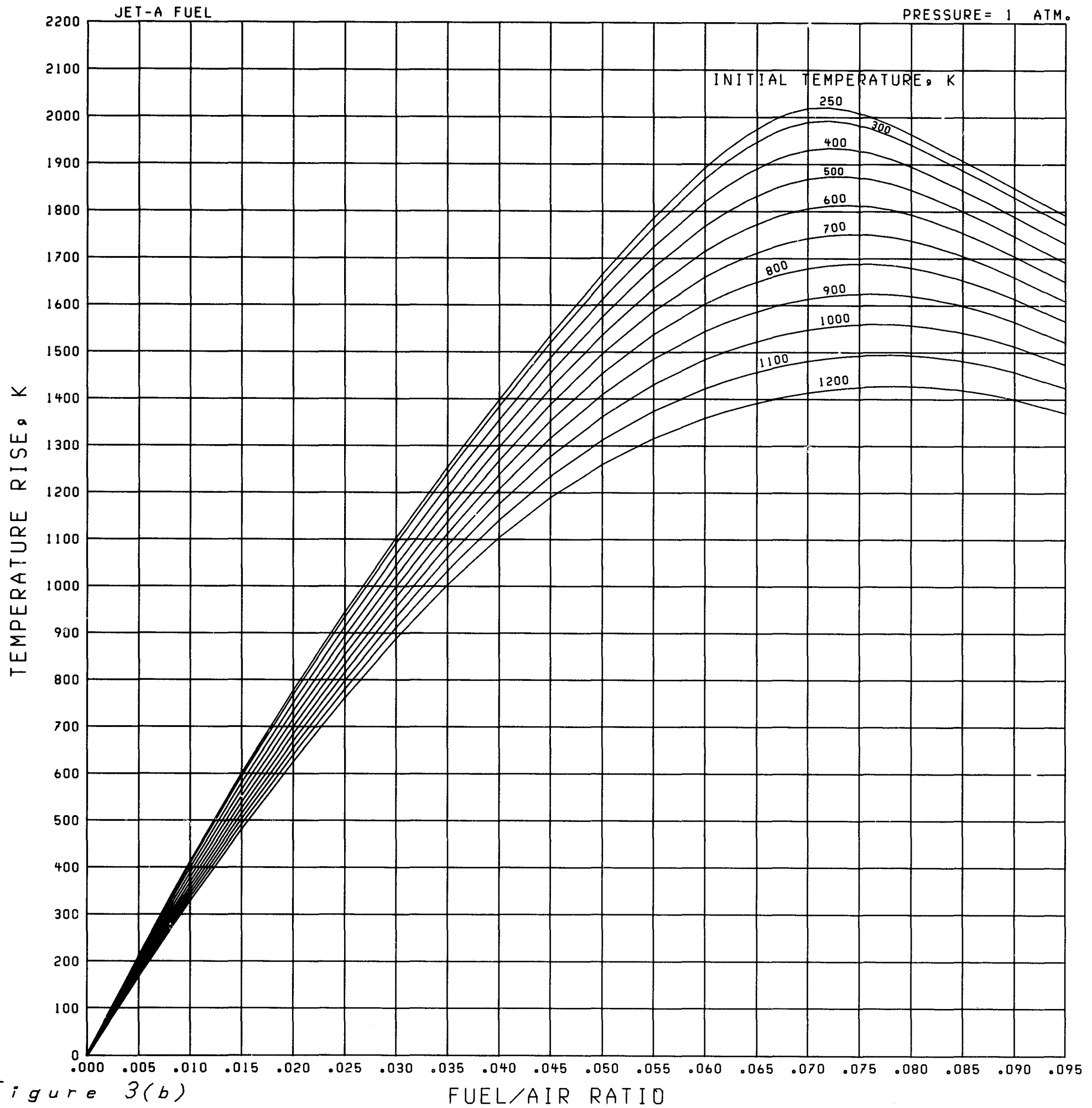
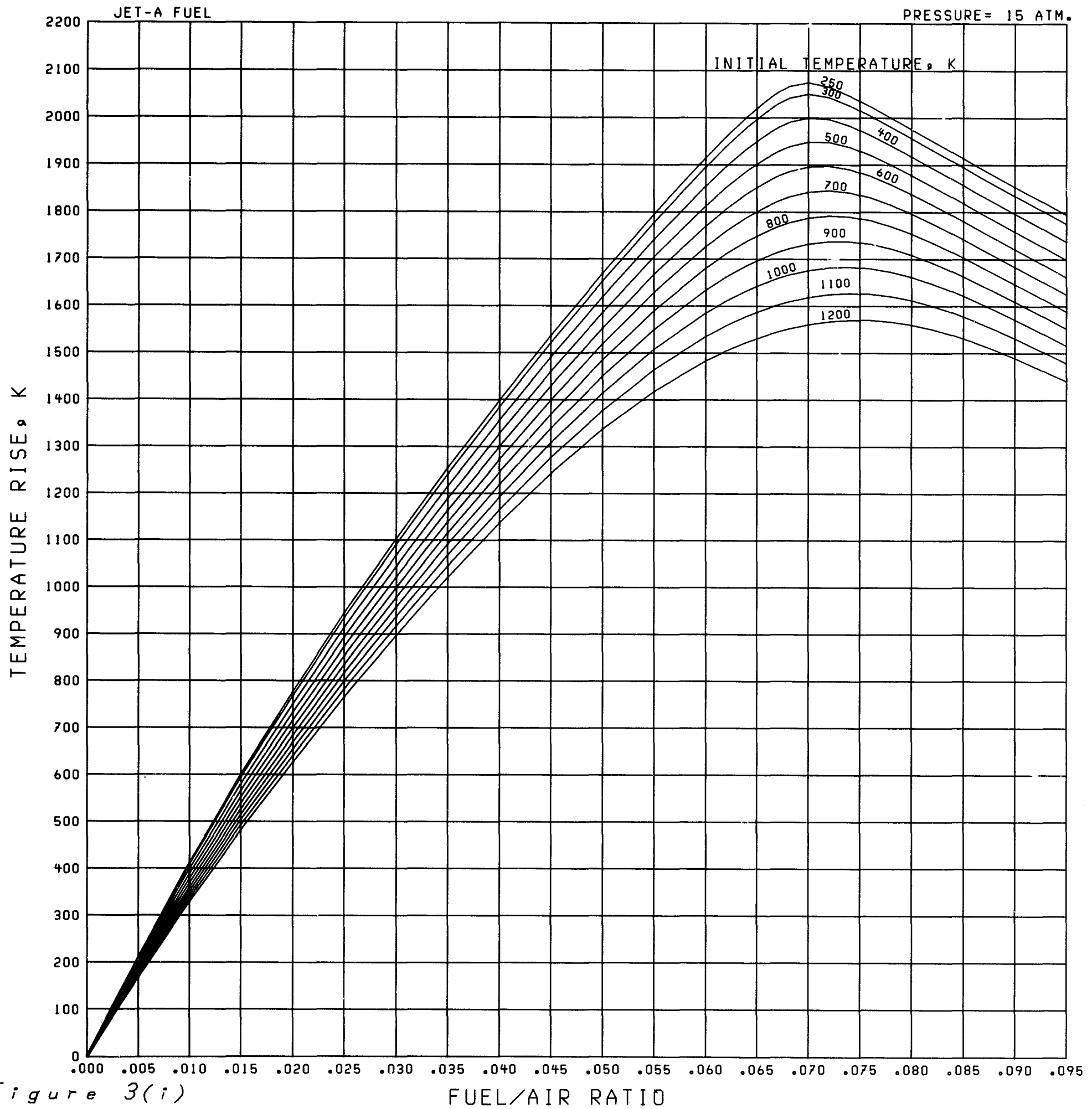


Figure 3(b)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE



ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

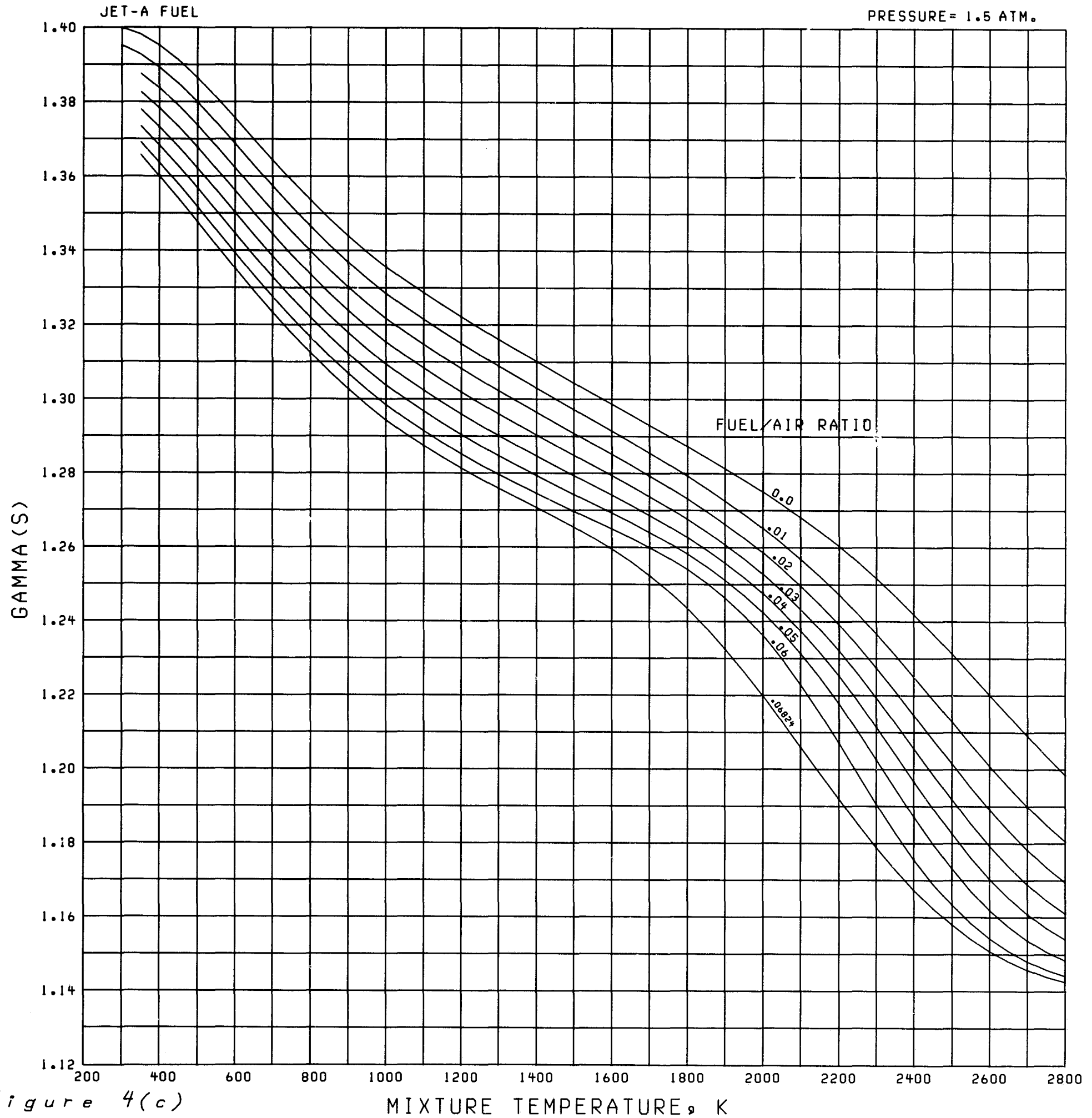


Figure 4(c)

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 20 ATM.

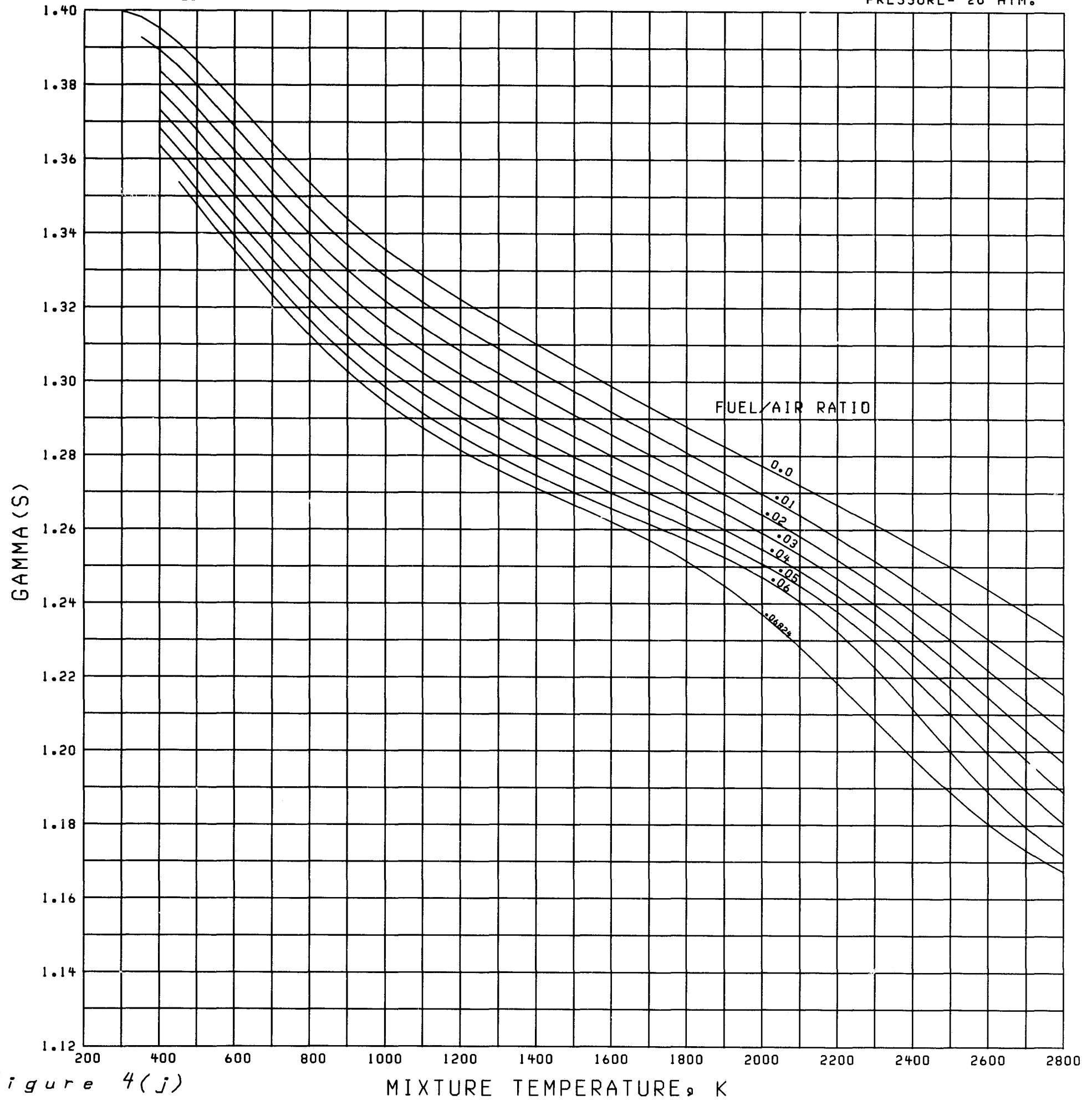


Figure 4(j)

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 2 ATM.

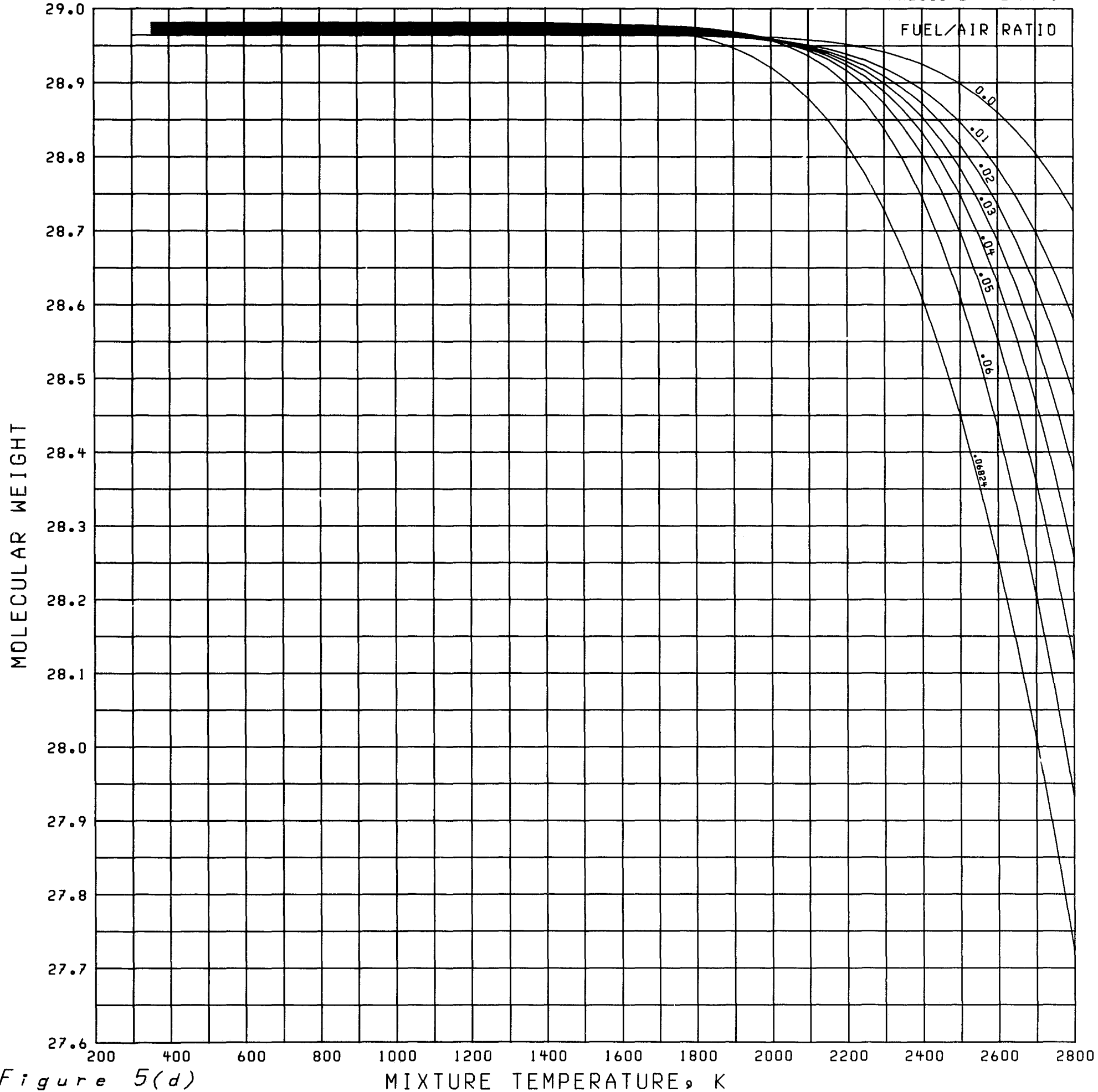


Figure 5(d)

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 30 ATM.

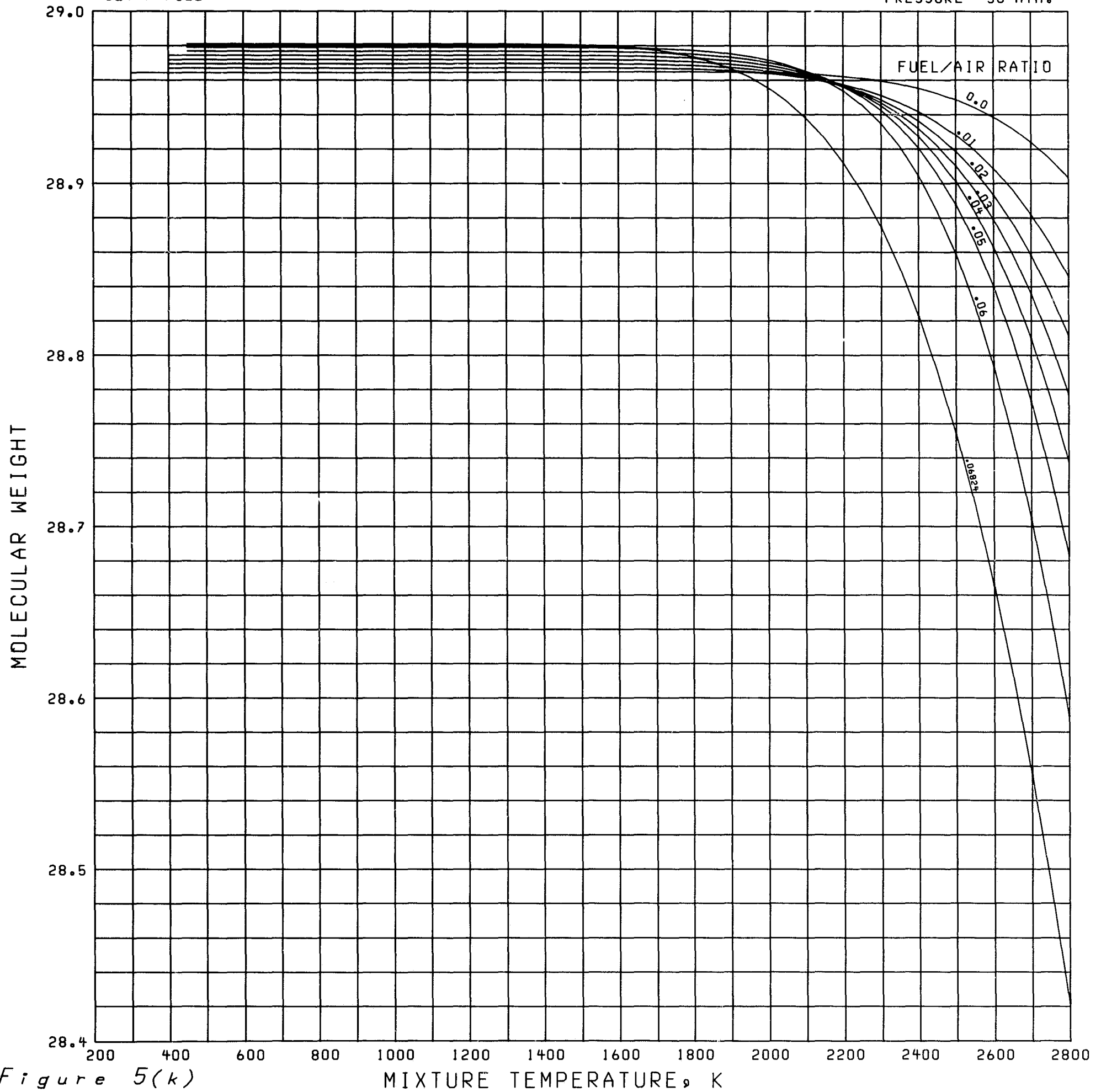


Figure 5(k)



EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE= 3 ATM.

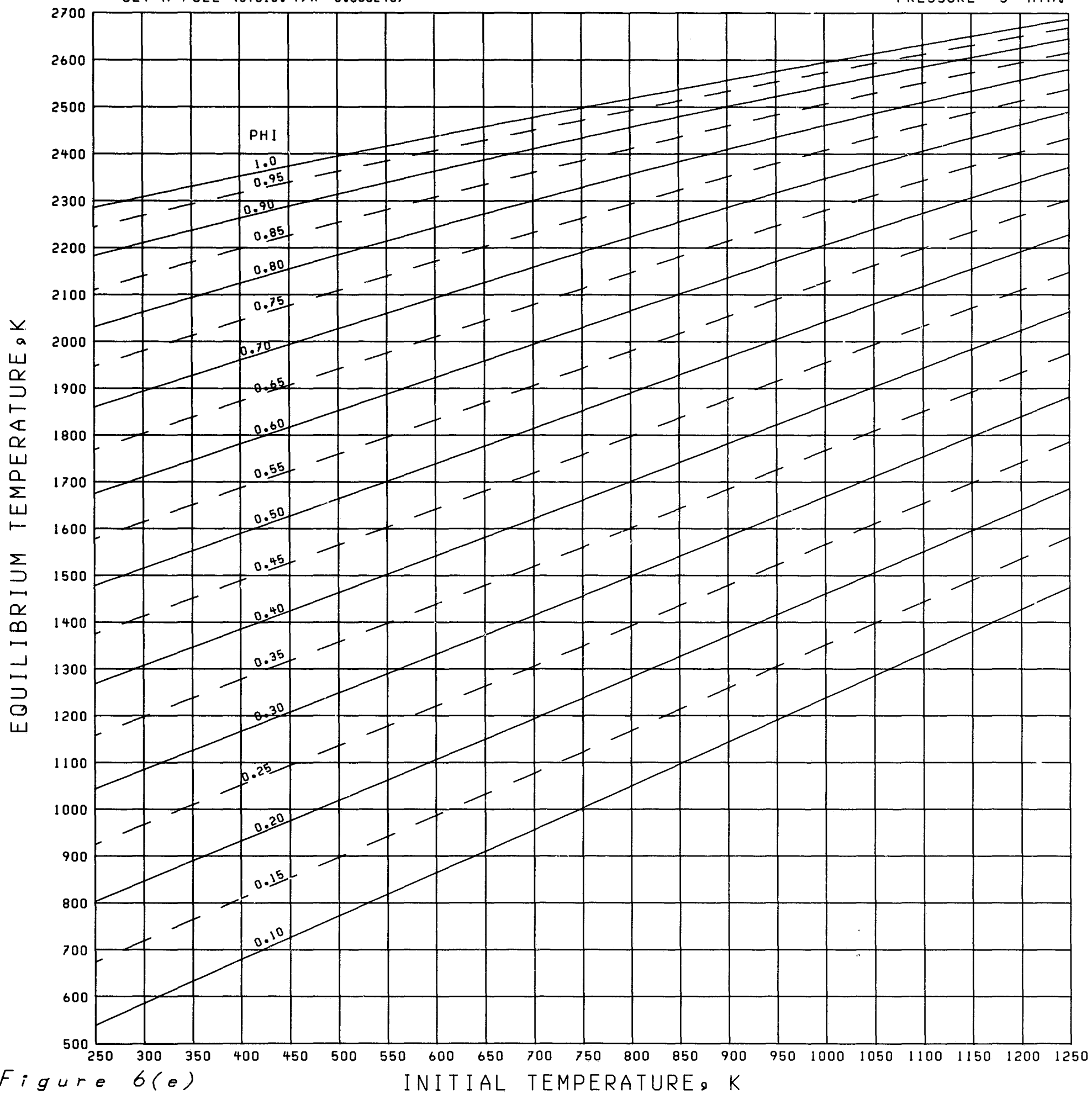


Figure 6(e)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE = 1 ATM.

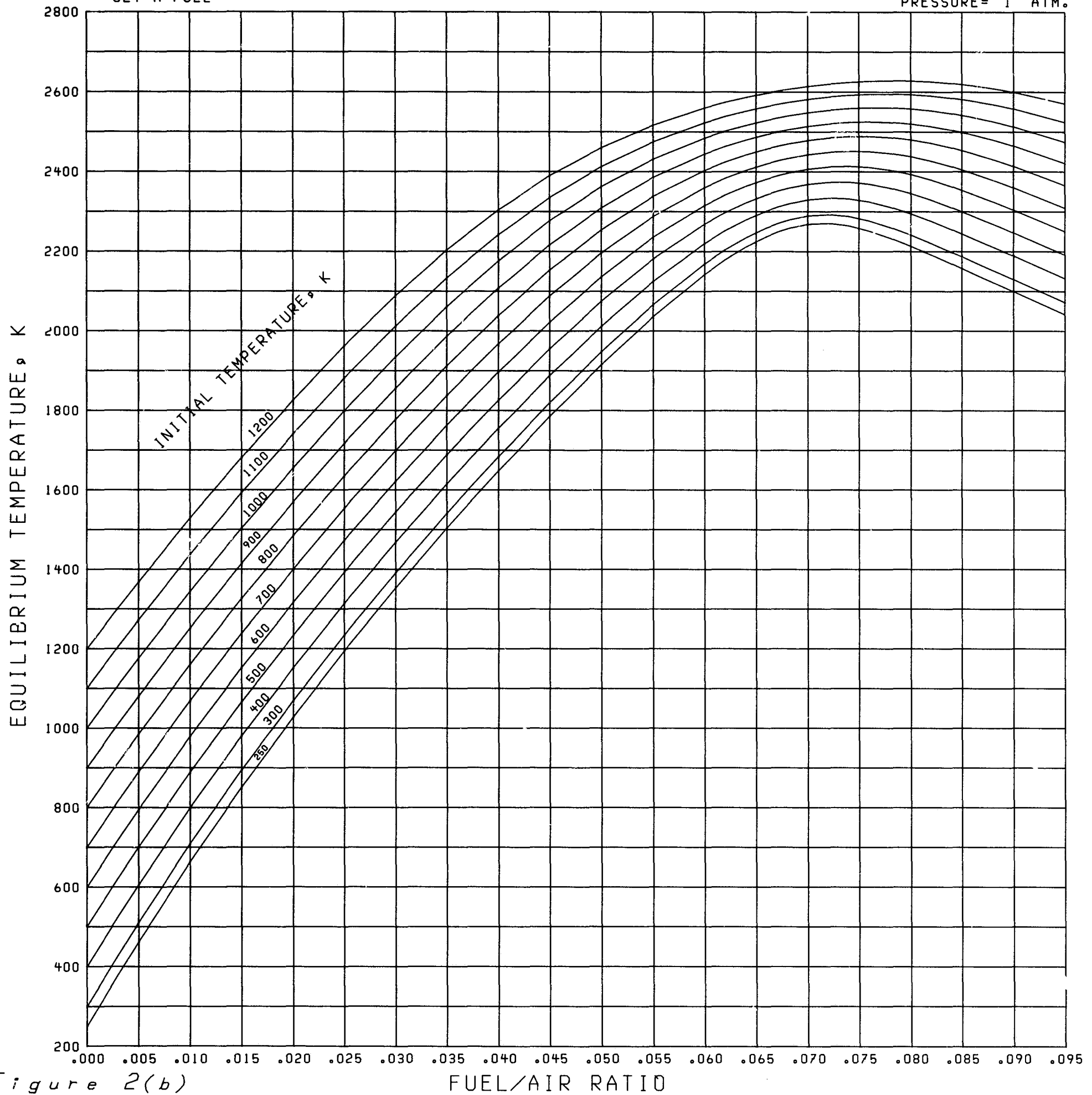


Figure 2(b)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE= 15 ATM.

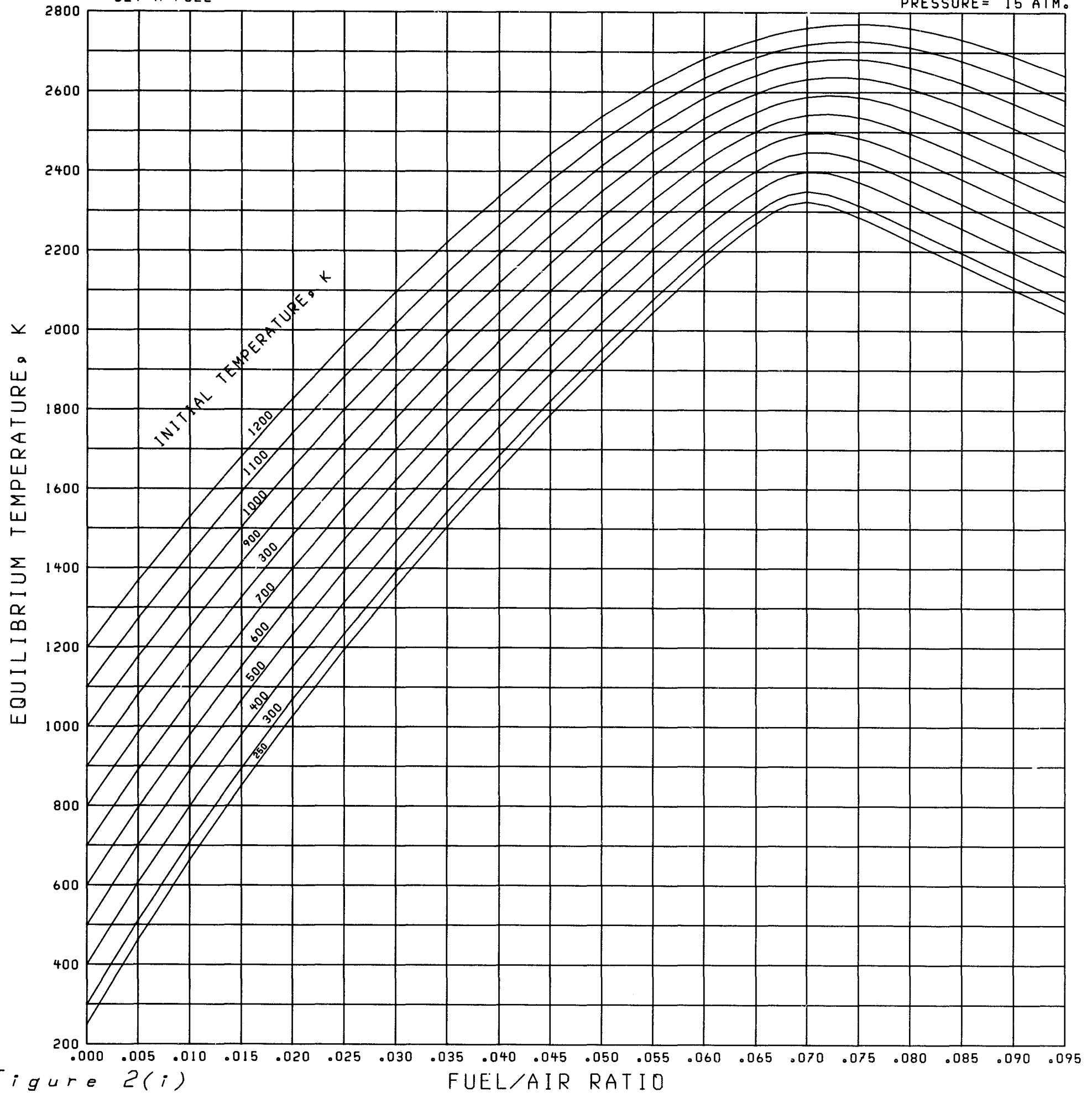


Figure 2(i)

FUEL/AIR RATIO

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

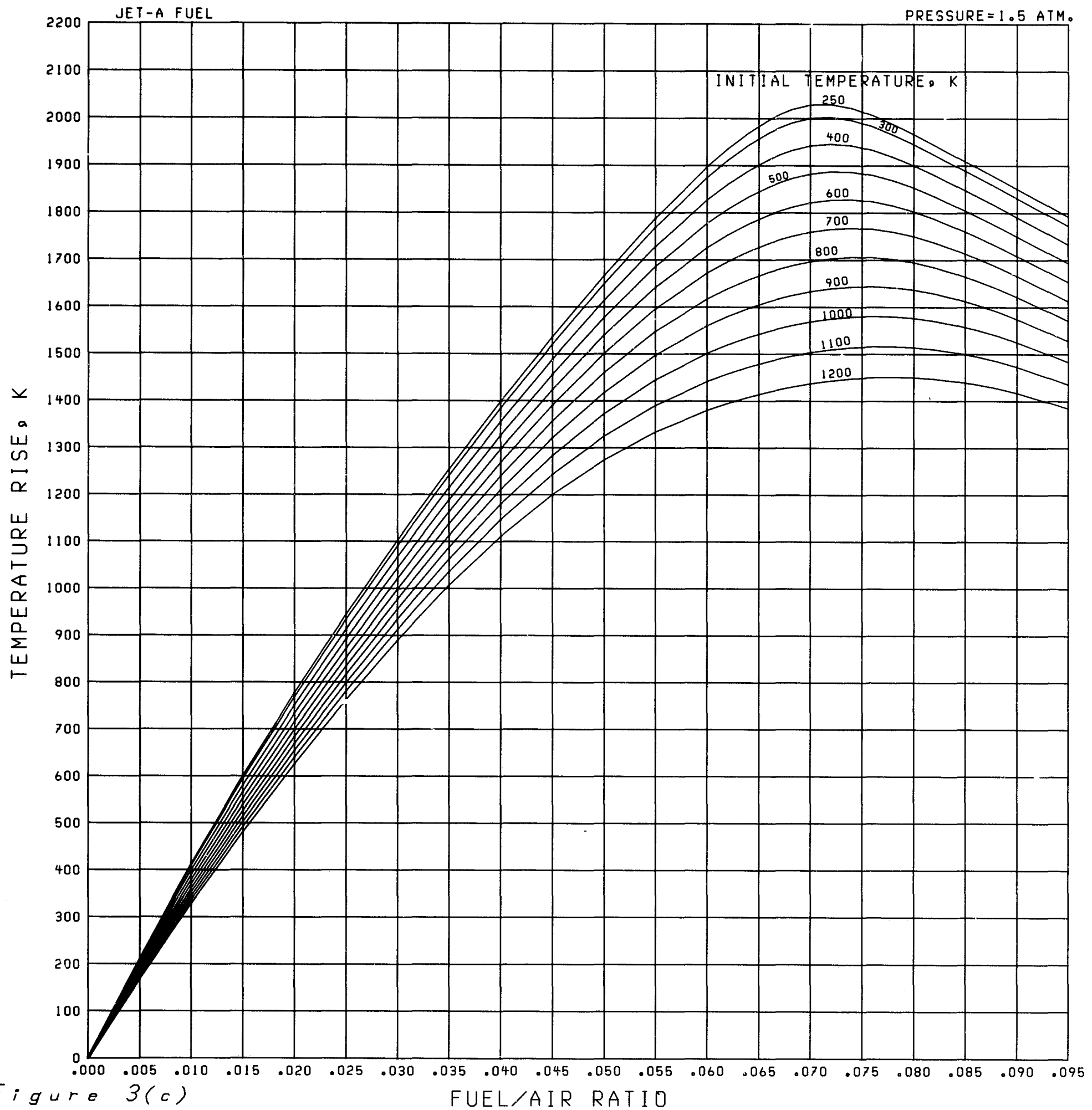


Figure 3(c)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

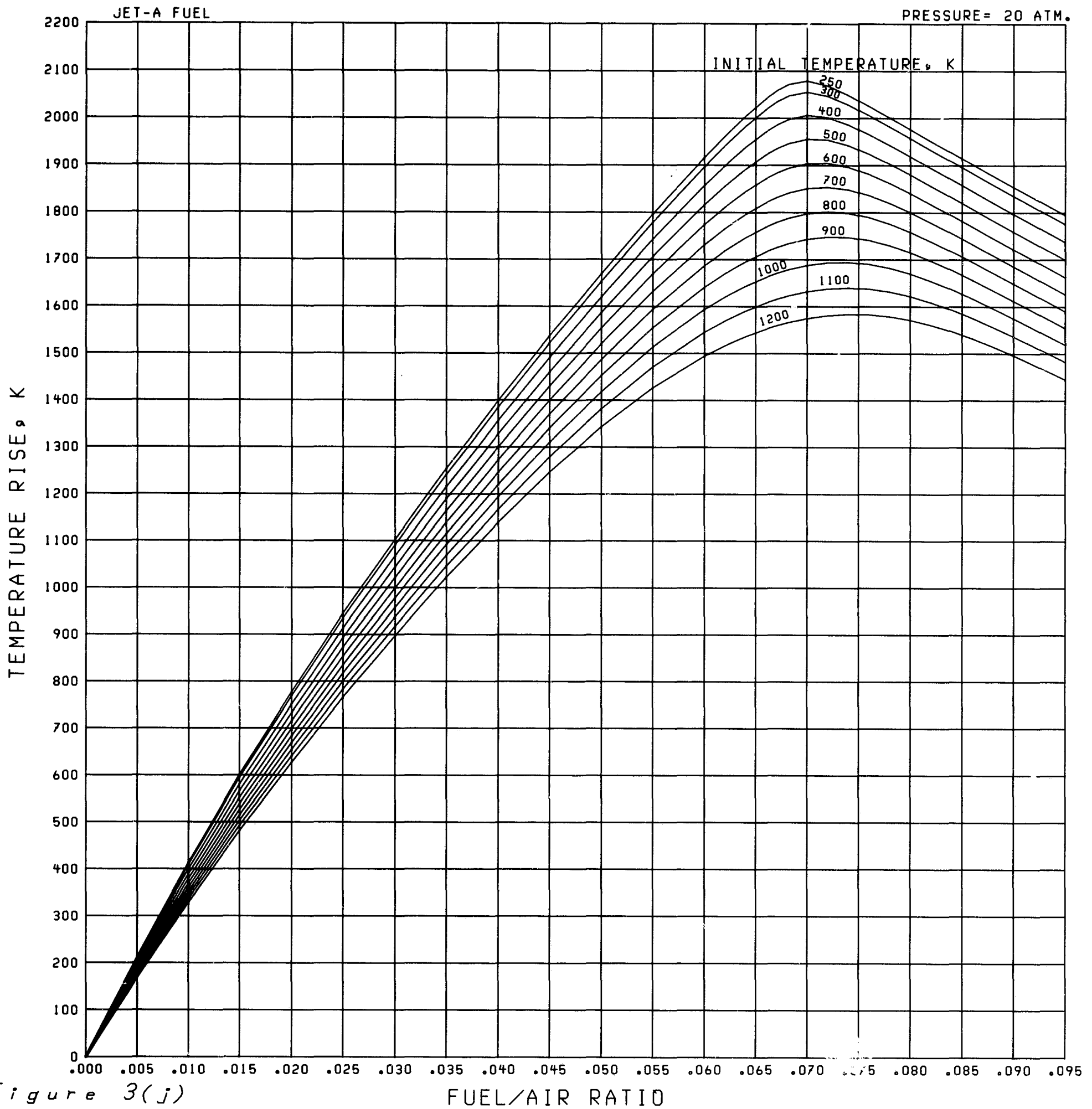


Figure 3(j)

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 2 ATM.

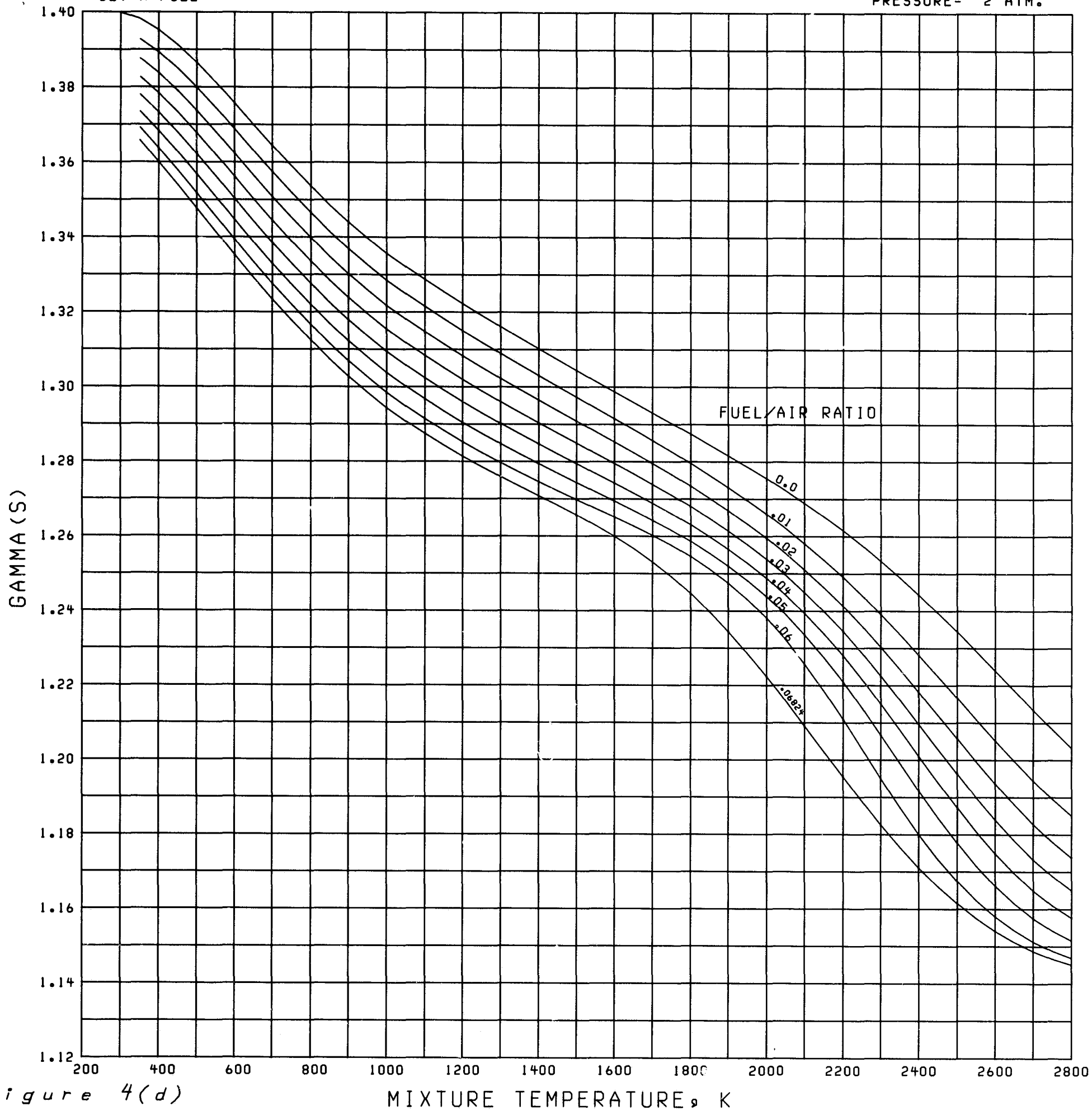


Figure 4(d)

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 30 ATM.

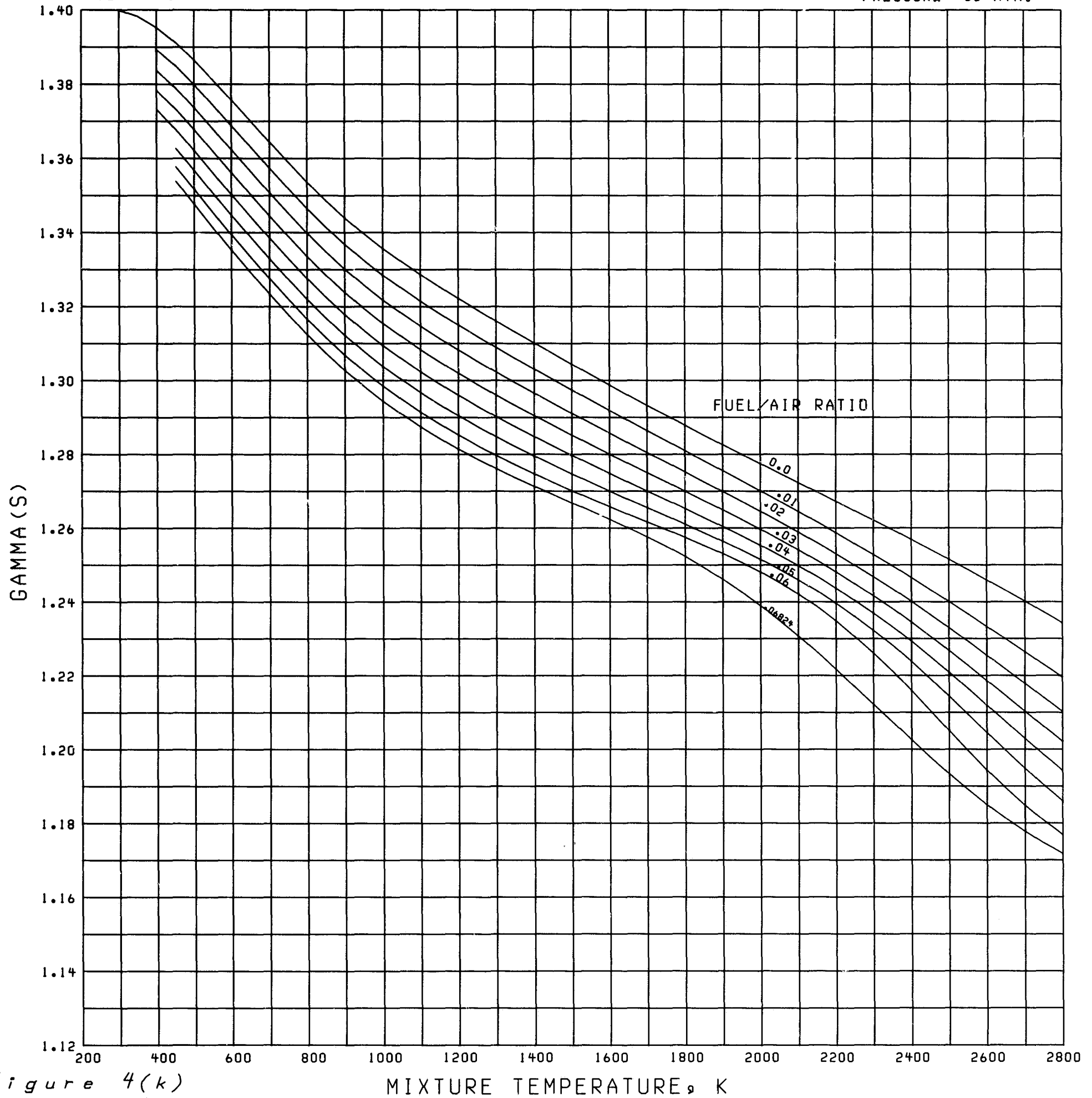


Figure 4(k)

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 3 ATM.

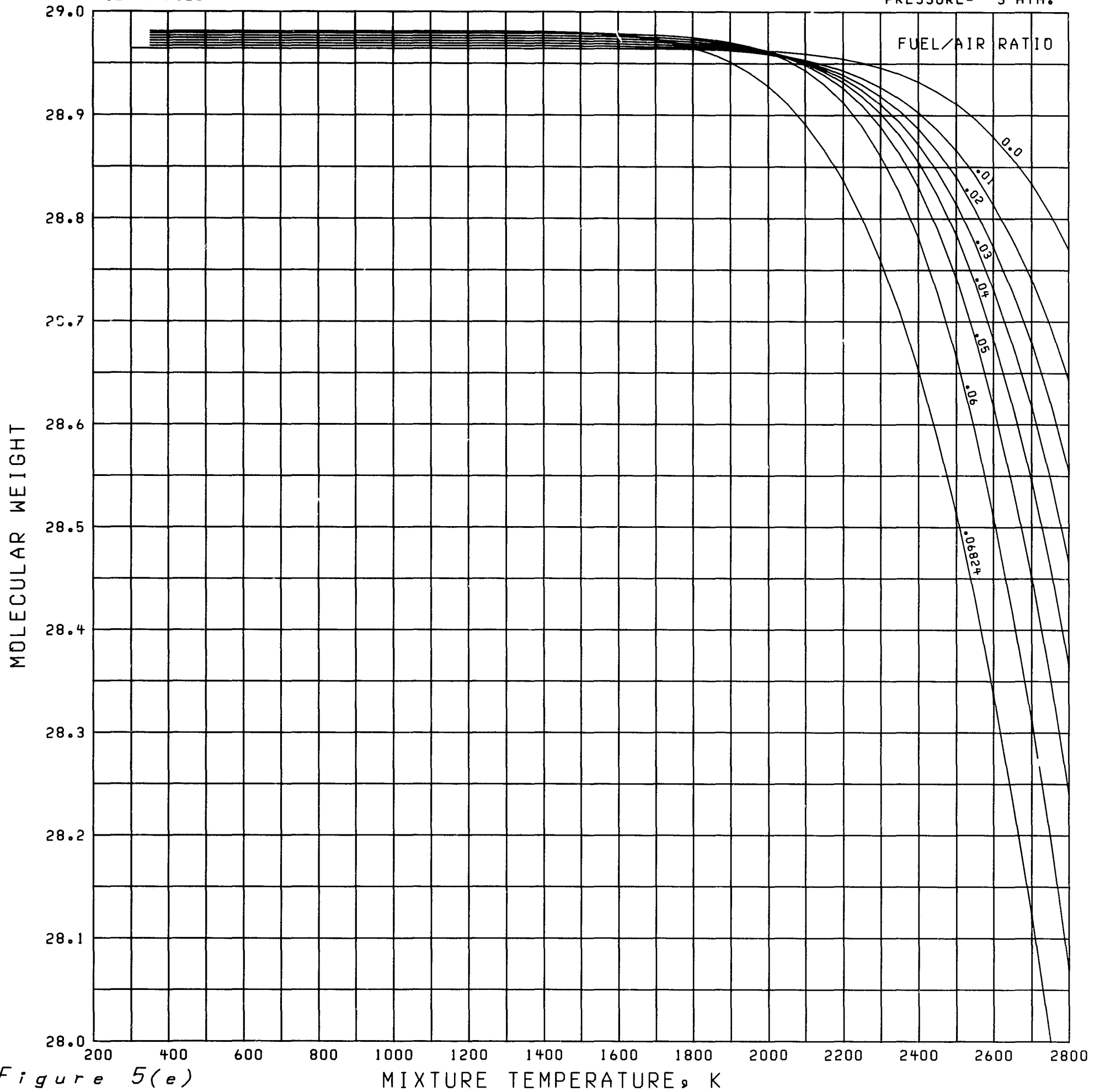


Figure 5(e)



MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 40 ATM.

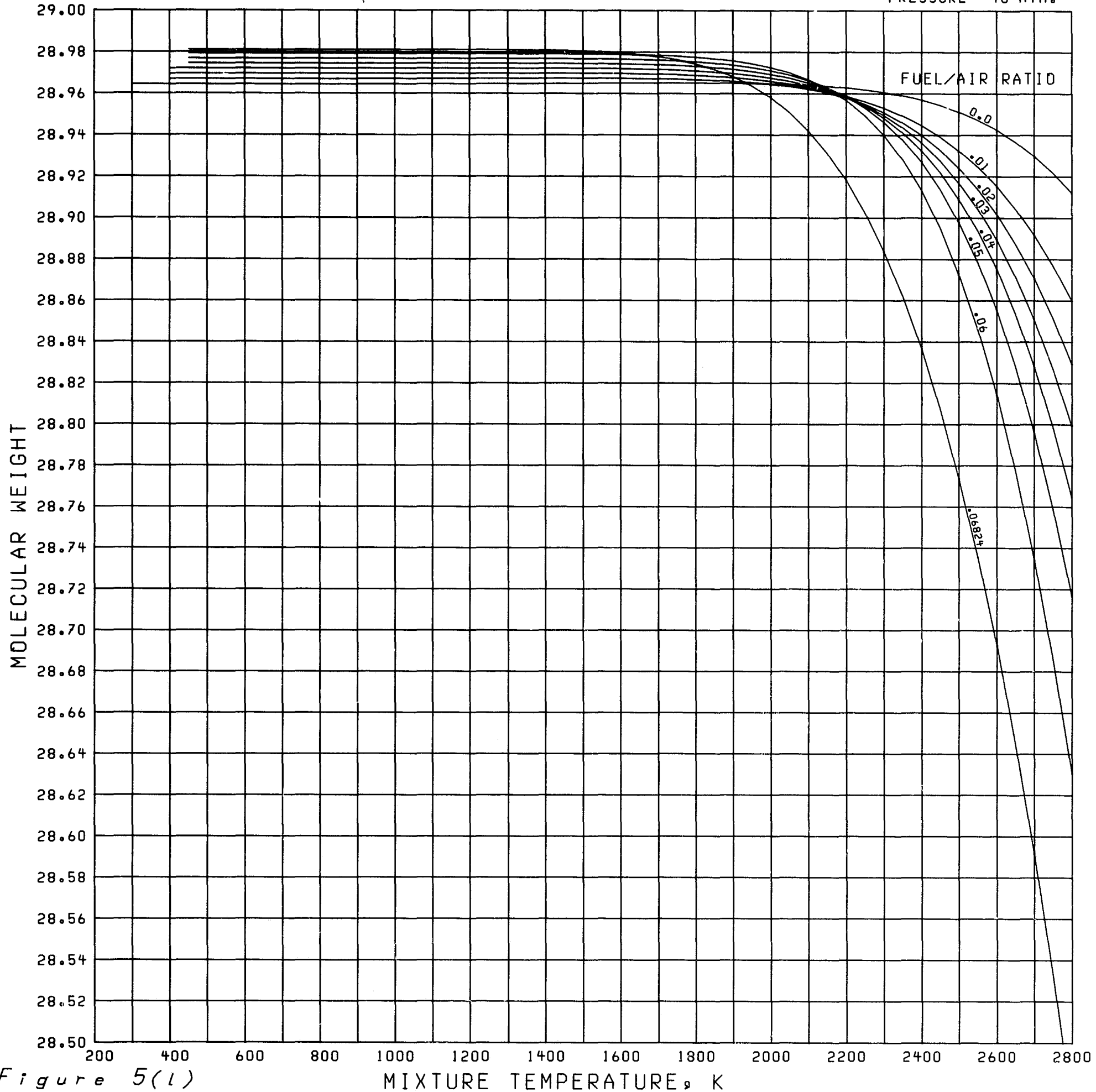


Figure 5(1)

EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE= 4 ATM.

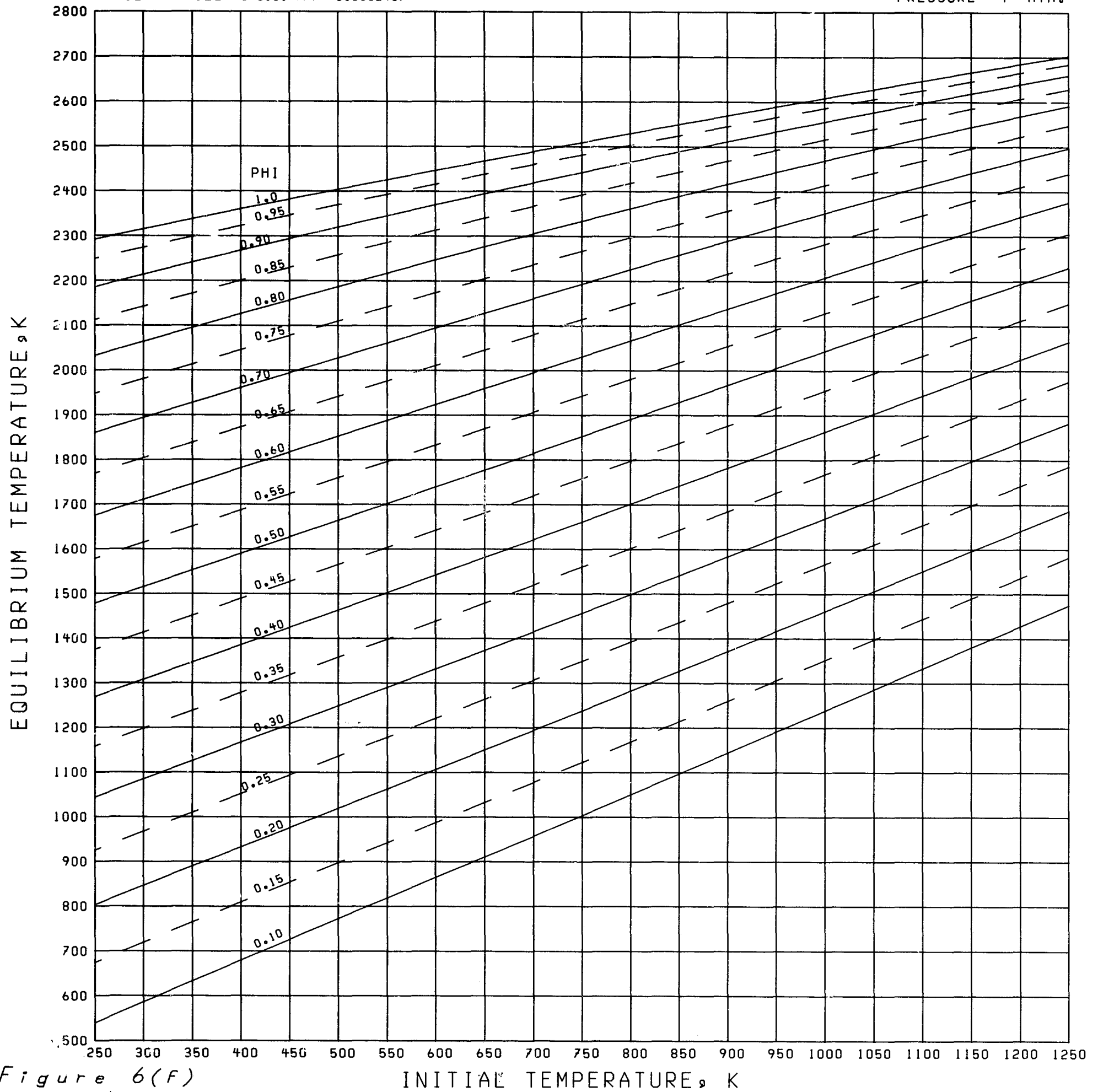


Figure 6(F)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE = 1.5 ATM.

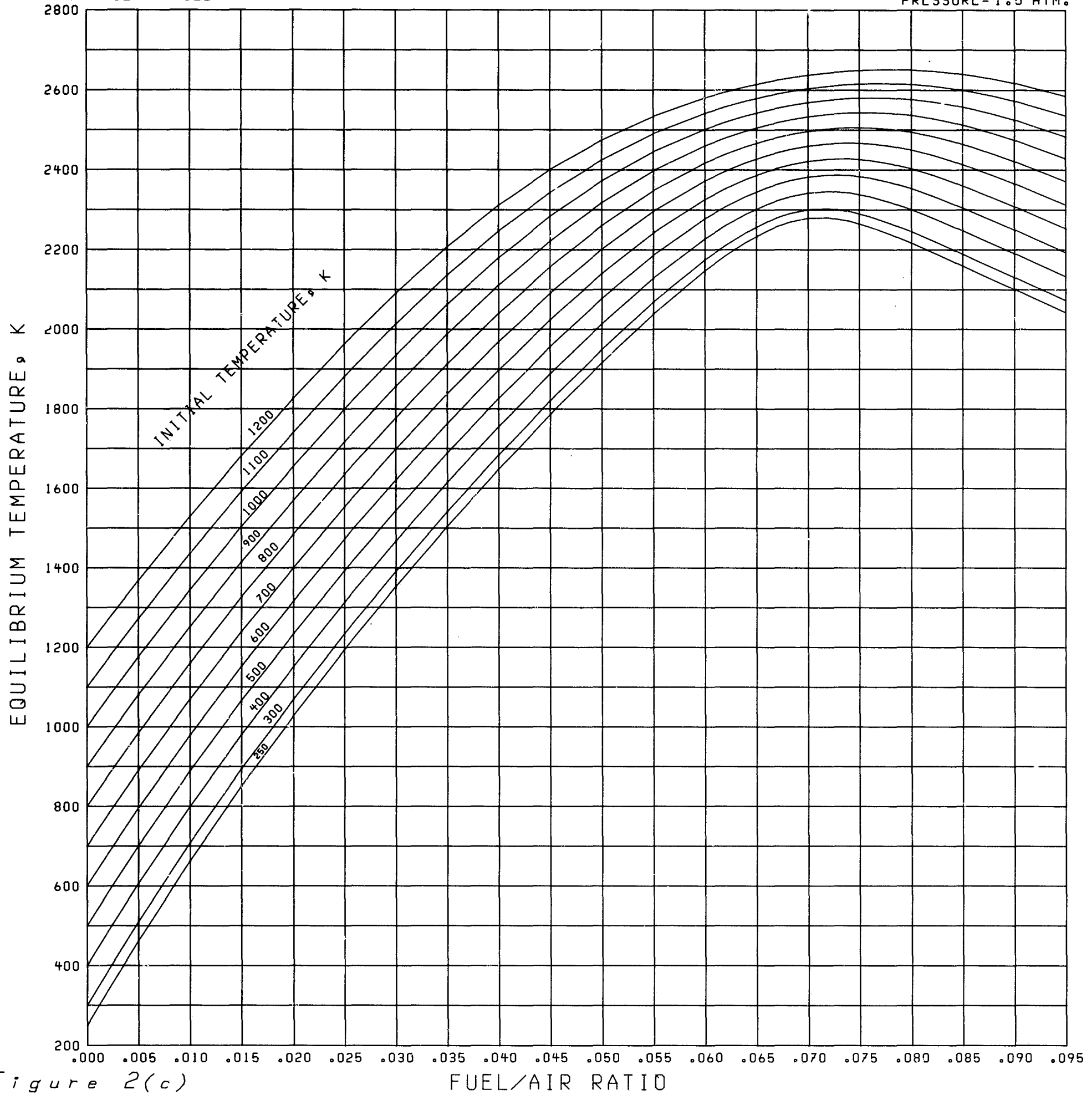


Figure 2(c)

EQUILIBRIUM TEMPERATURE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

JET-A FUEL

PRESSURE = 20 ATM.

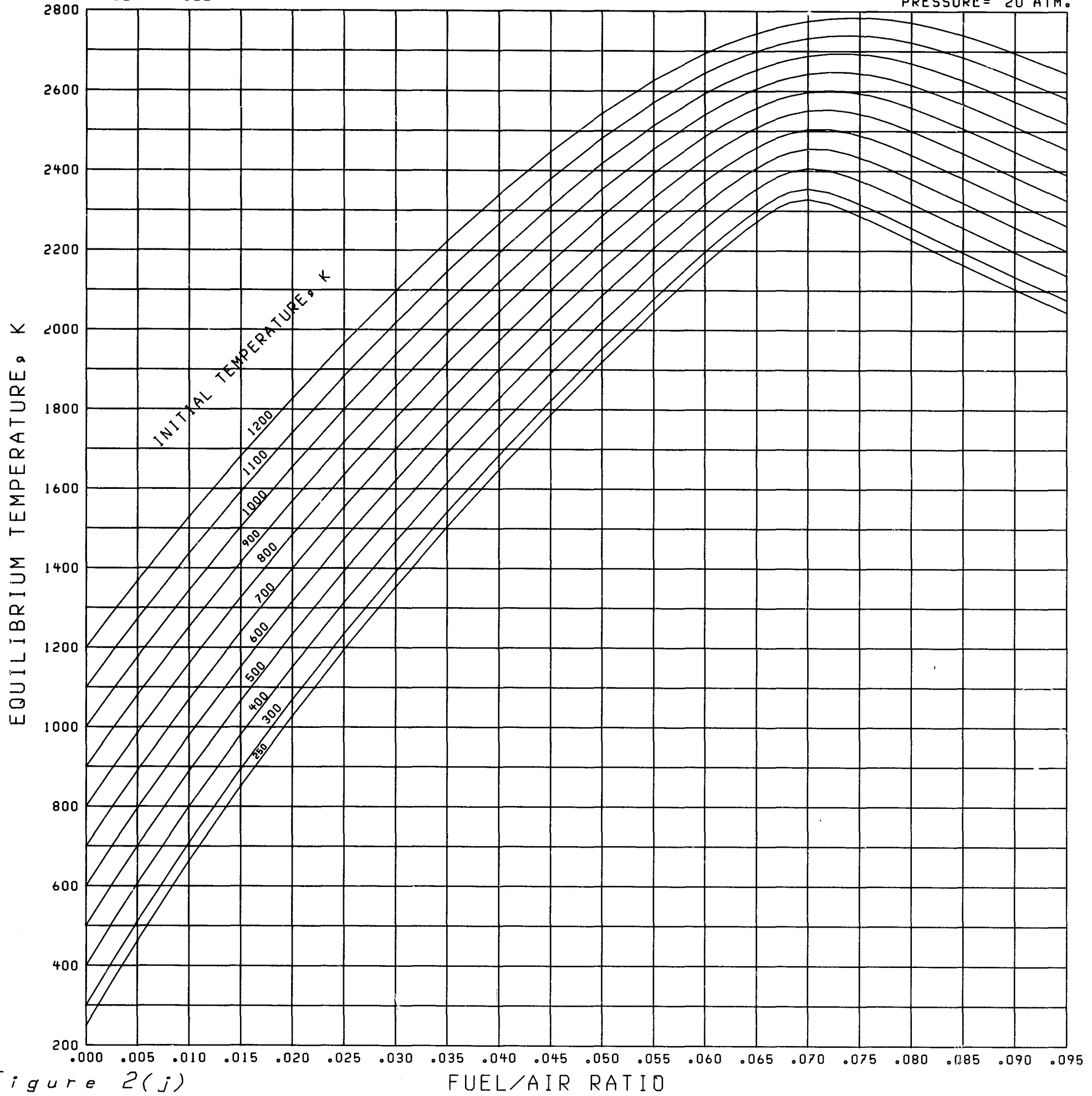


Figure 2(j)

FUEL/AIR RATIO

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

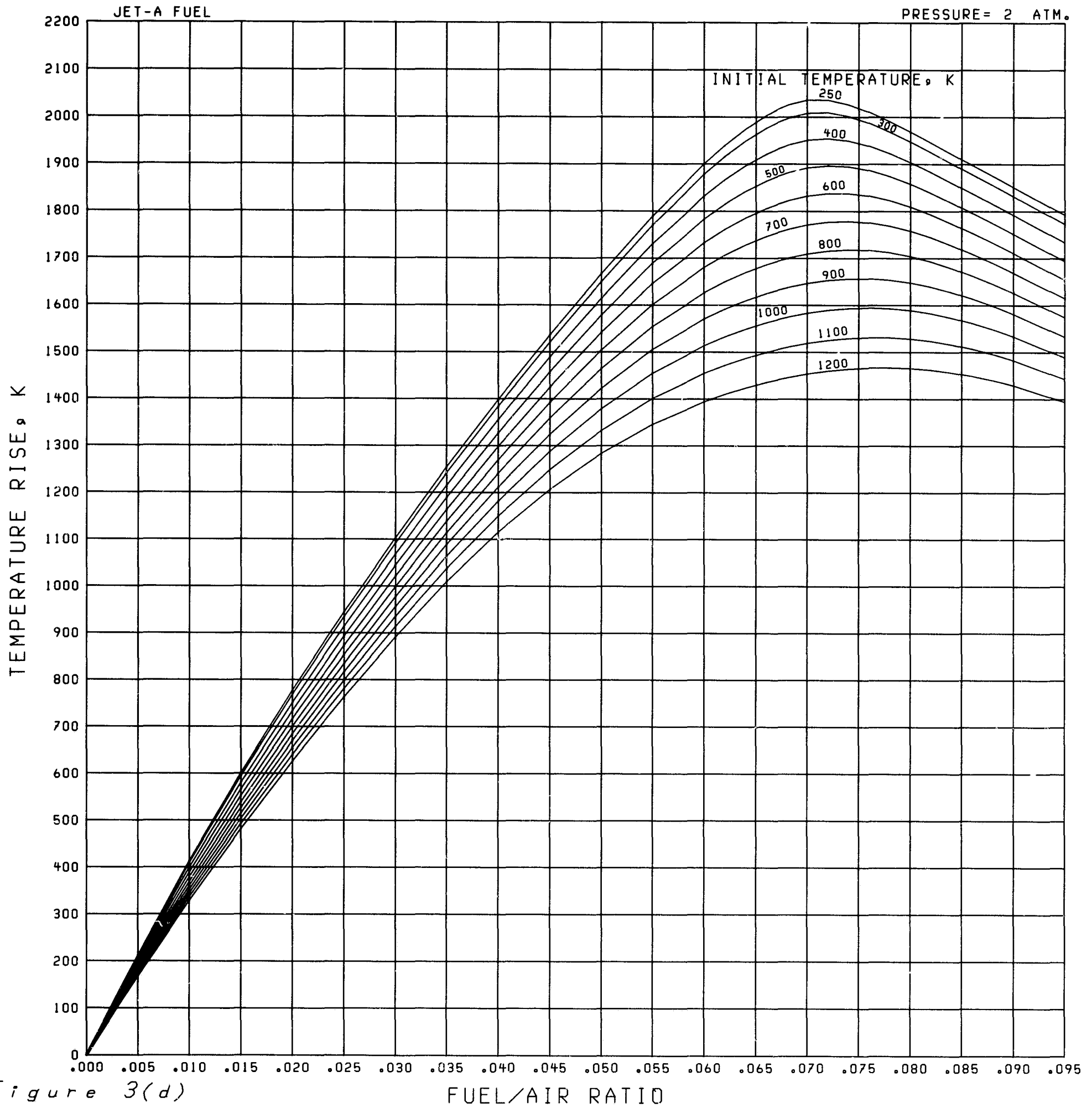


Figure 3(d)

EQUILIBRIUM TEMPERATURE RISE VS. F/A FOR VARIOUS VALUES OF INITIAL TEMPERATURE

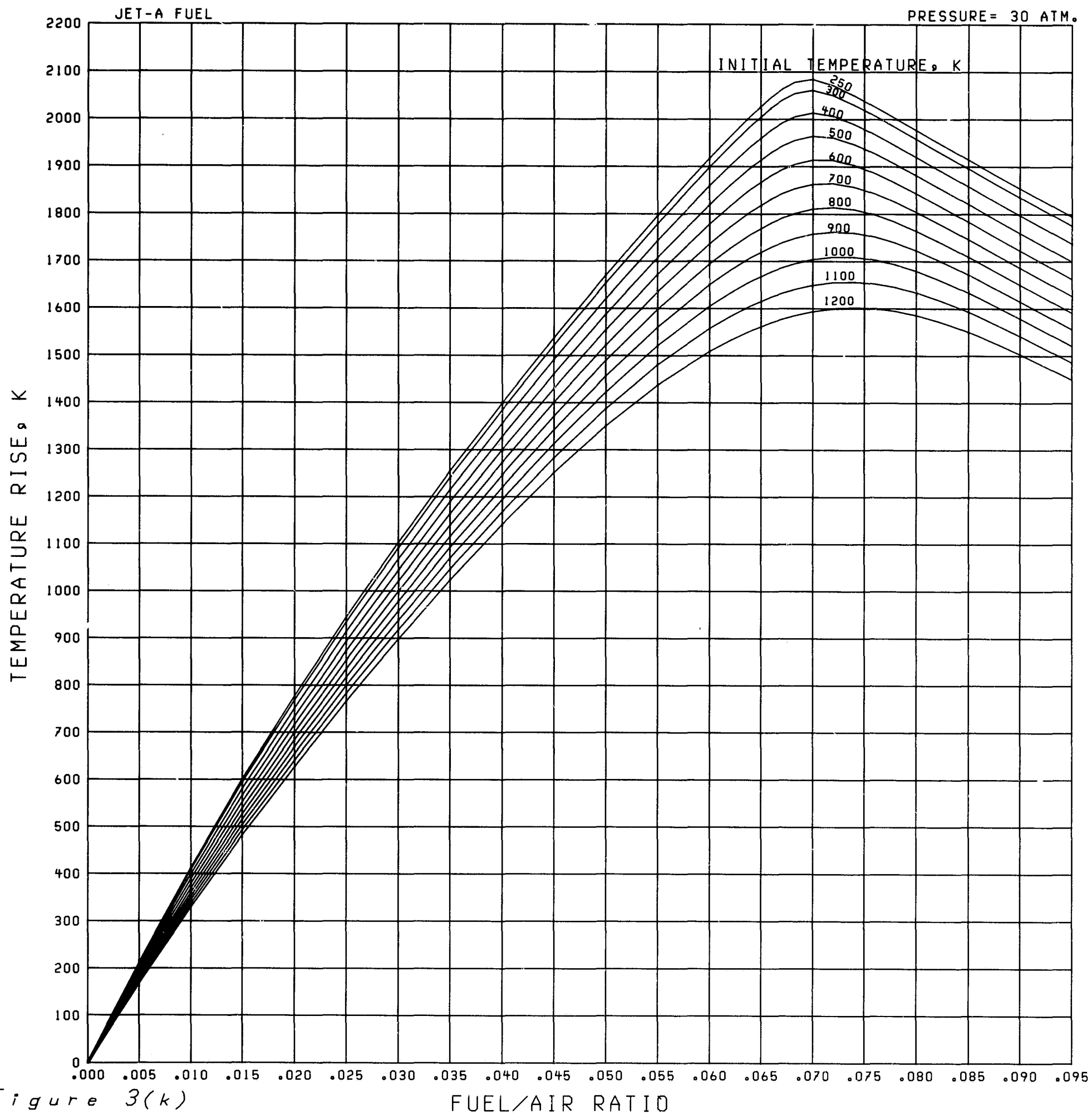


Figure 3(k)

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 3 ATM.

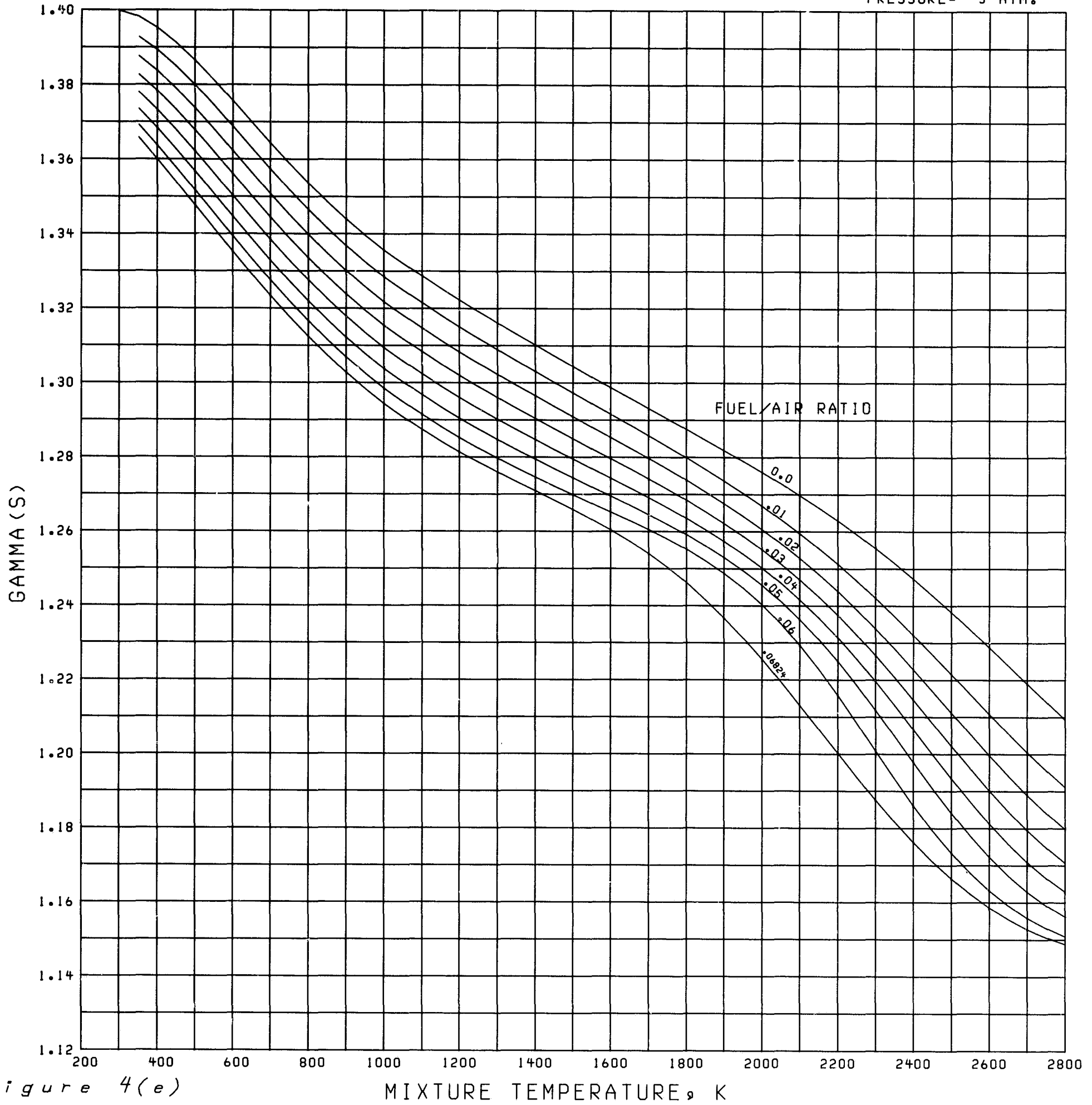


Figure 4(e)

MIXTURE TEMPERATURE, K

ISENTROPIC EXPONENT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 40 ATM.

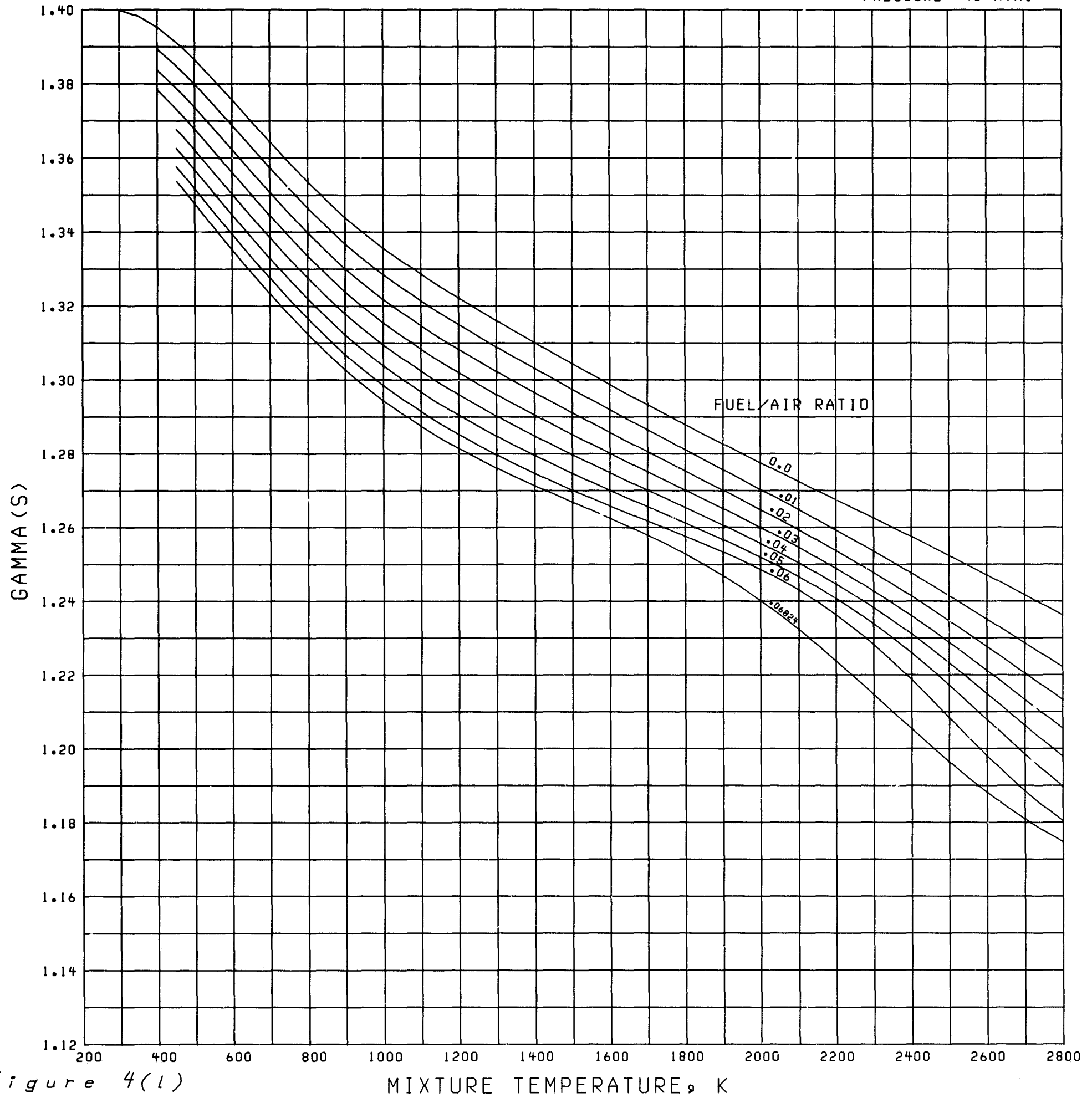


Figure 4(1)

MIXTURE TEMPERATURE, K



MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE = 4 ATM.

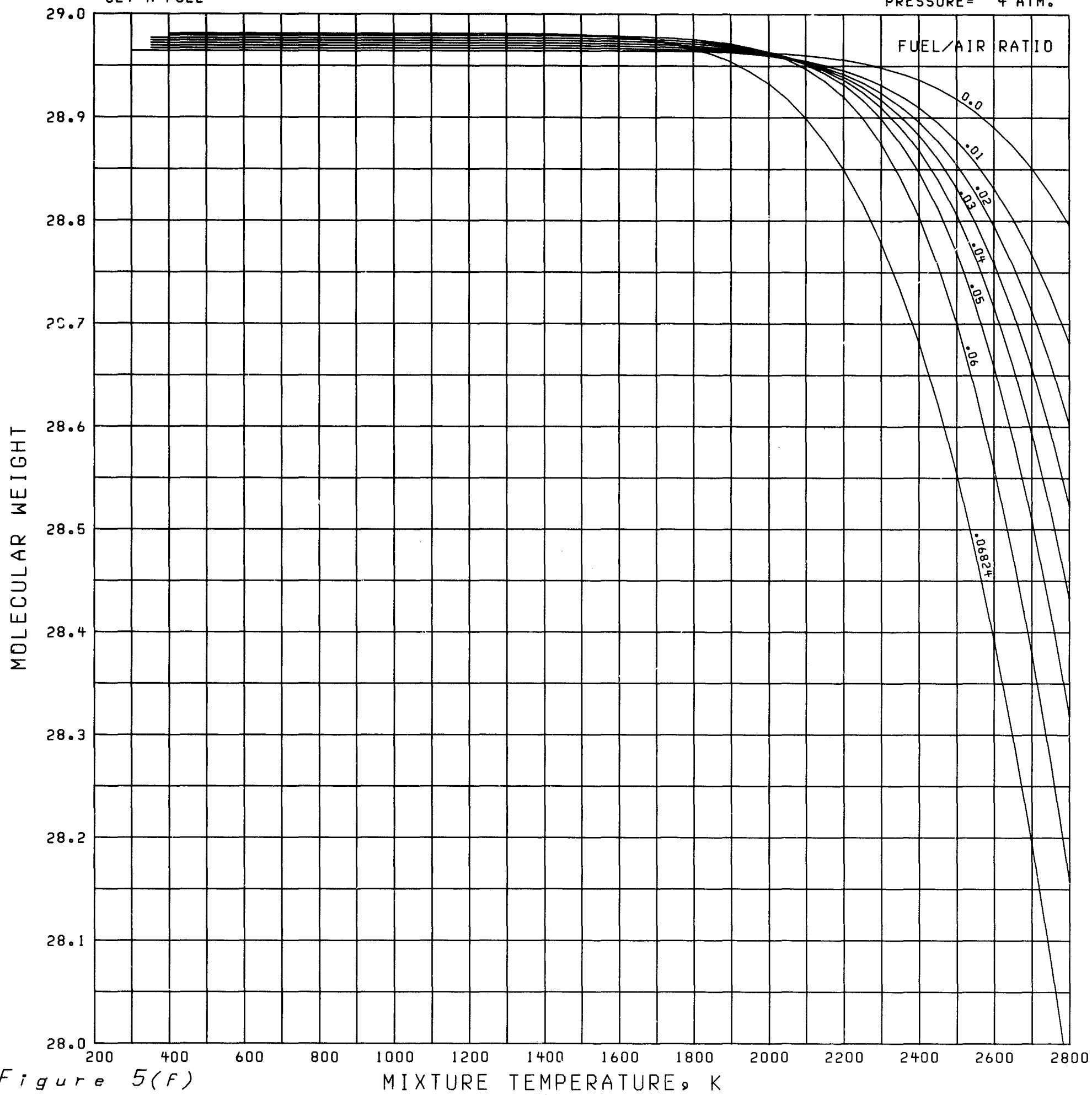


Figure 5(F)

MIXTURE TEMPERATURE, K

MOLECULAR WEIGHT VS. MIXTURE TEMPERATURE FOR VARIOUS FUEL-AIR RATIOS

JET-A FUEL

PRESSURE= 50 ATM.

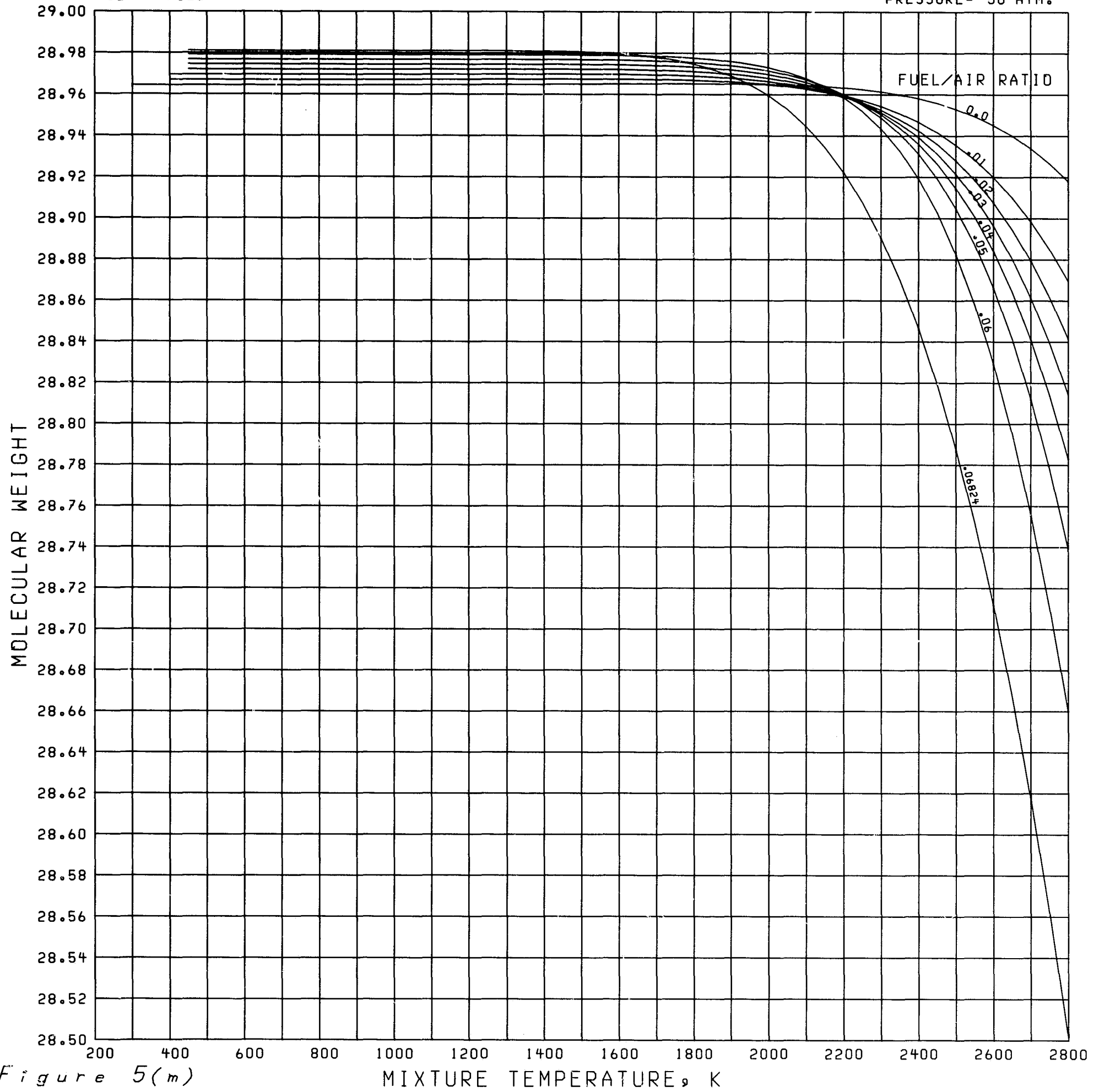


Figure 5(m)

MIXTURE TEMPERATURE, K

EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE= 6 ATM.

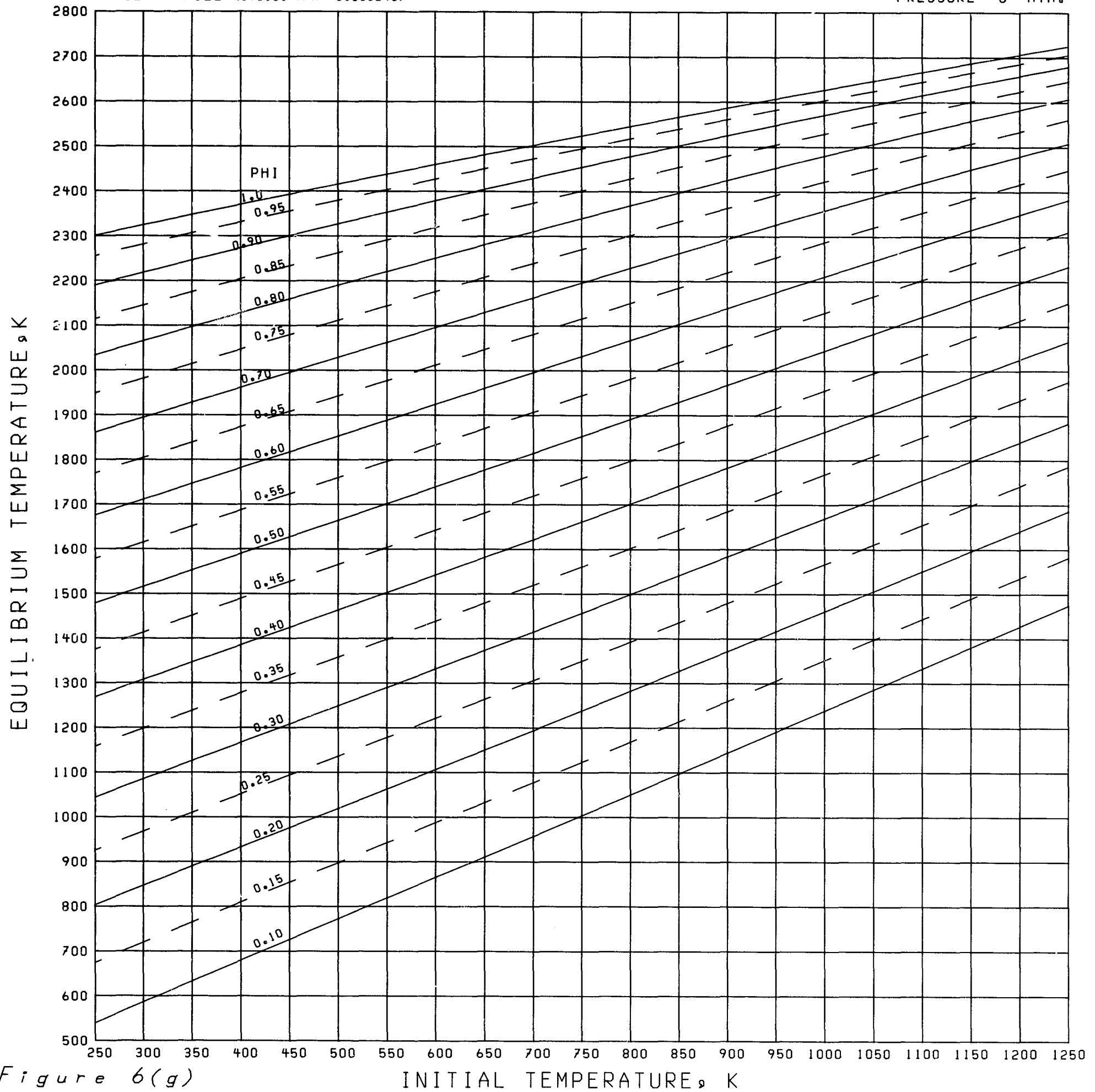


Figure 6(g)

JET-A FUEL (STOIC. F/A= 0.069240)

PRESSURE=10 ATM.

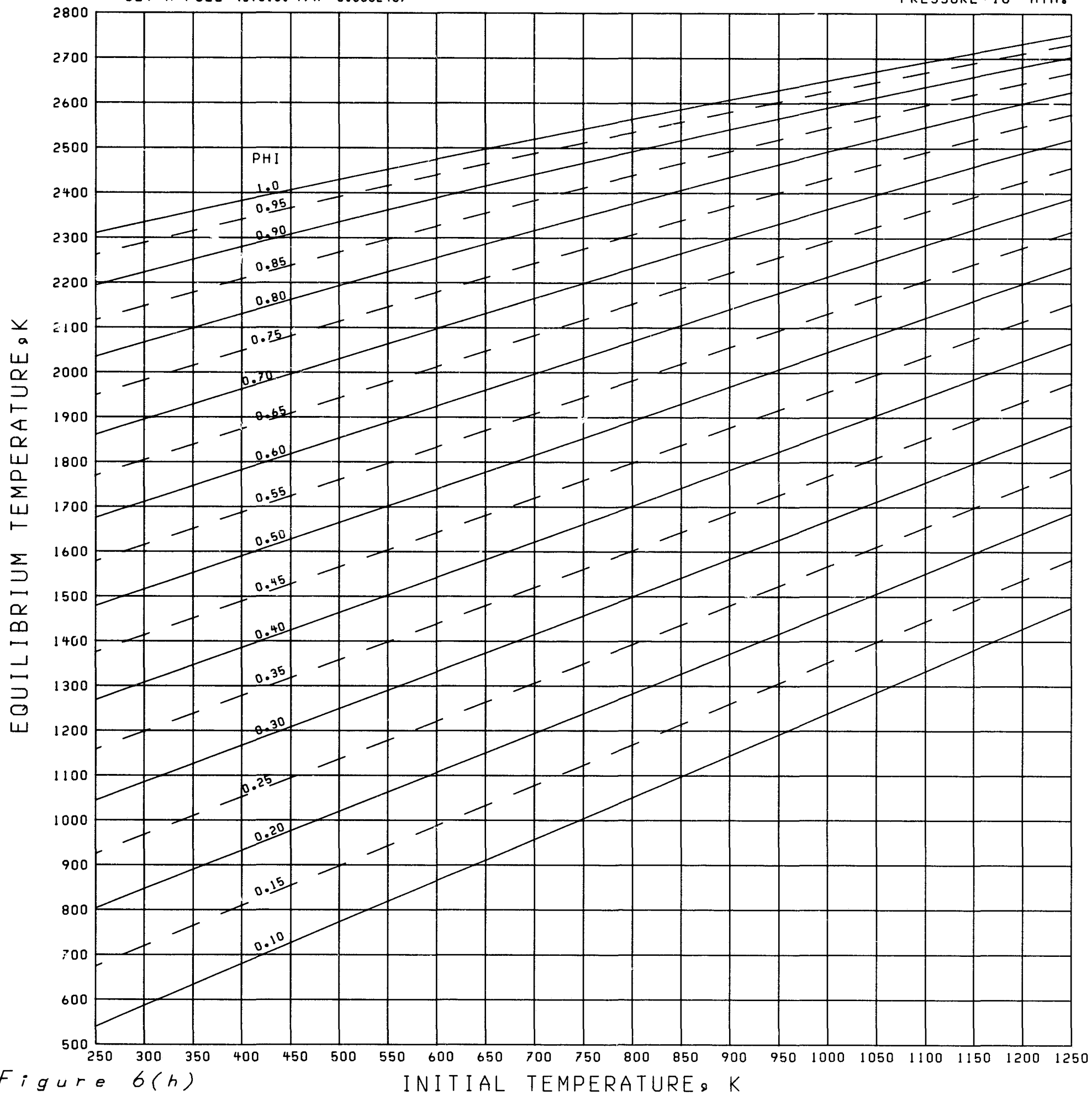


Figure 6(h)

INITIAL TEMPERATURE, K

EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE=15 ATM.

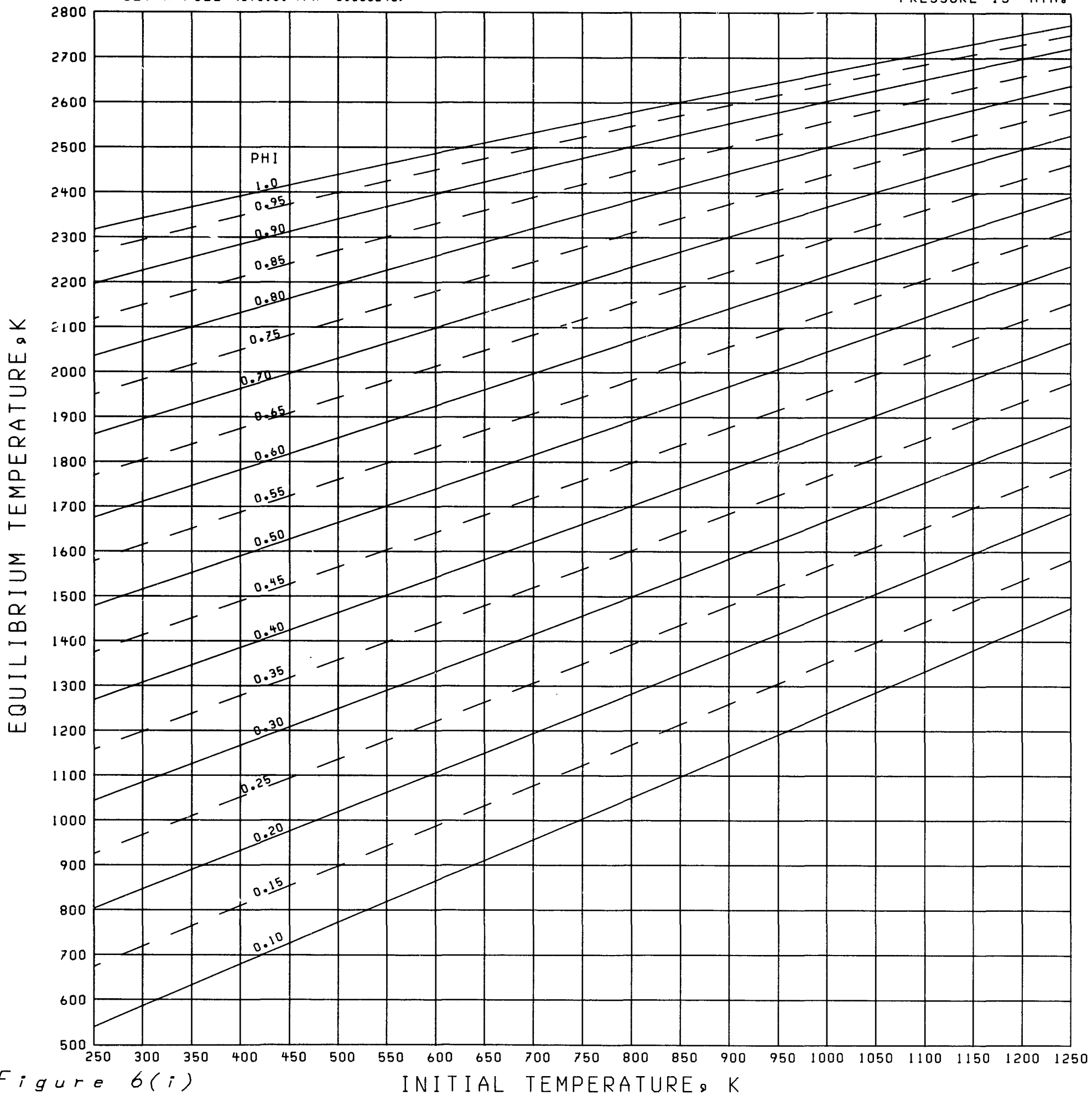
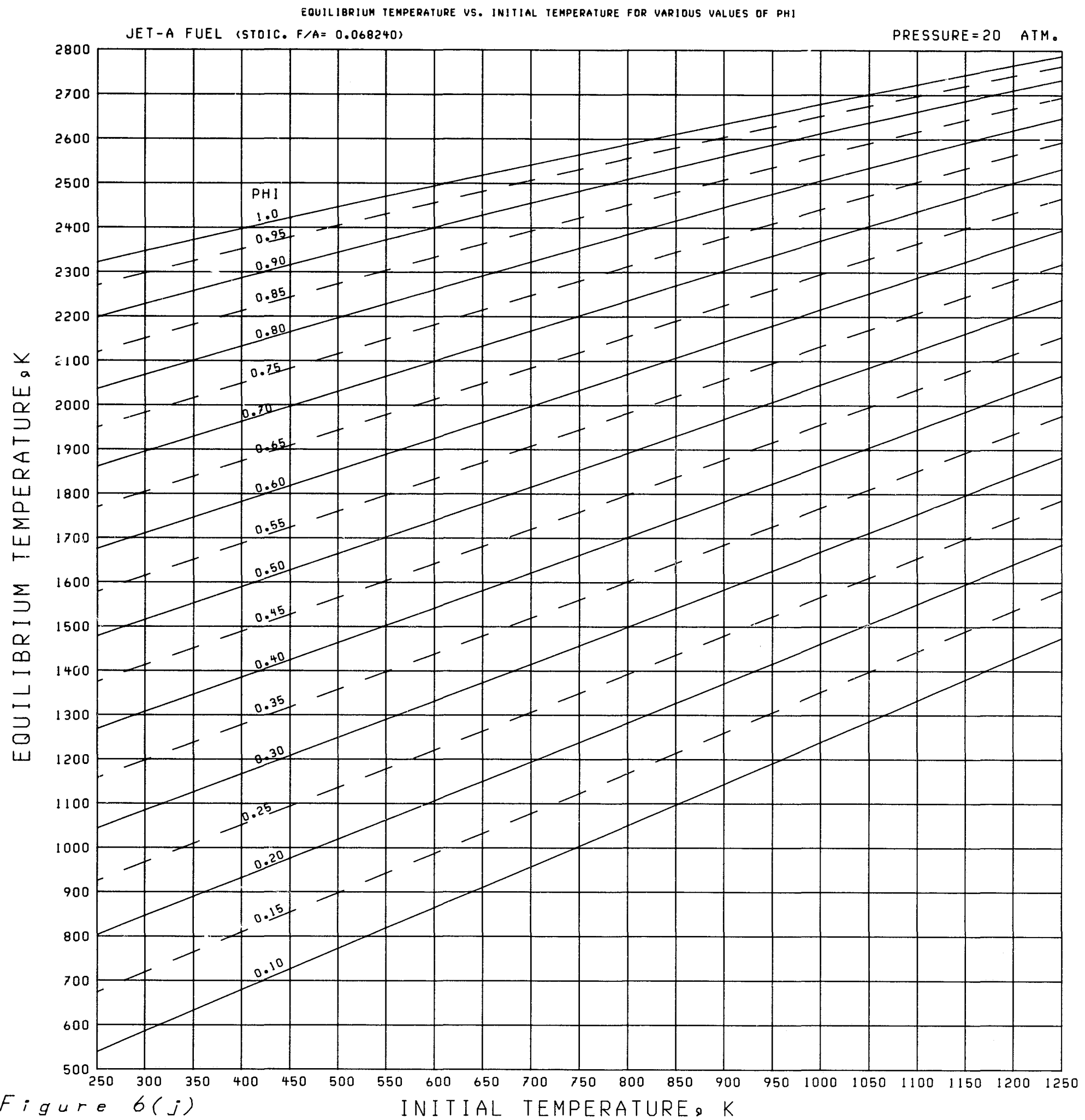


Figure 6(i)



EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE= 30 ATM.

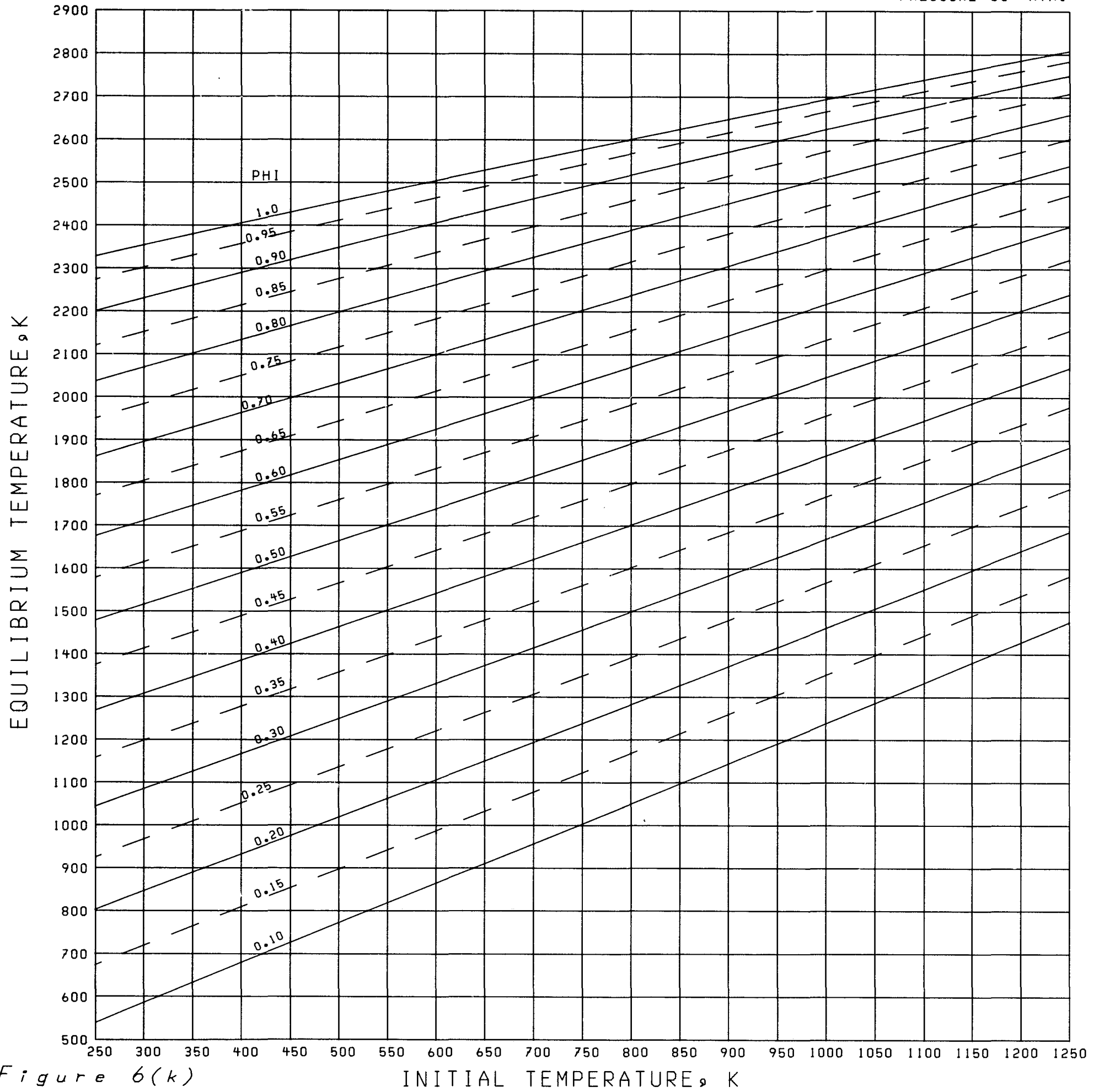


Figure 6(k)

INITIAL TEMPERATURE, K

EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE= 40 ATM.

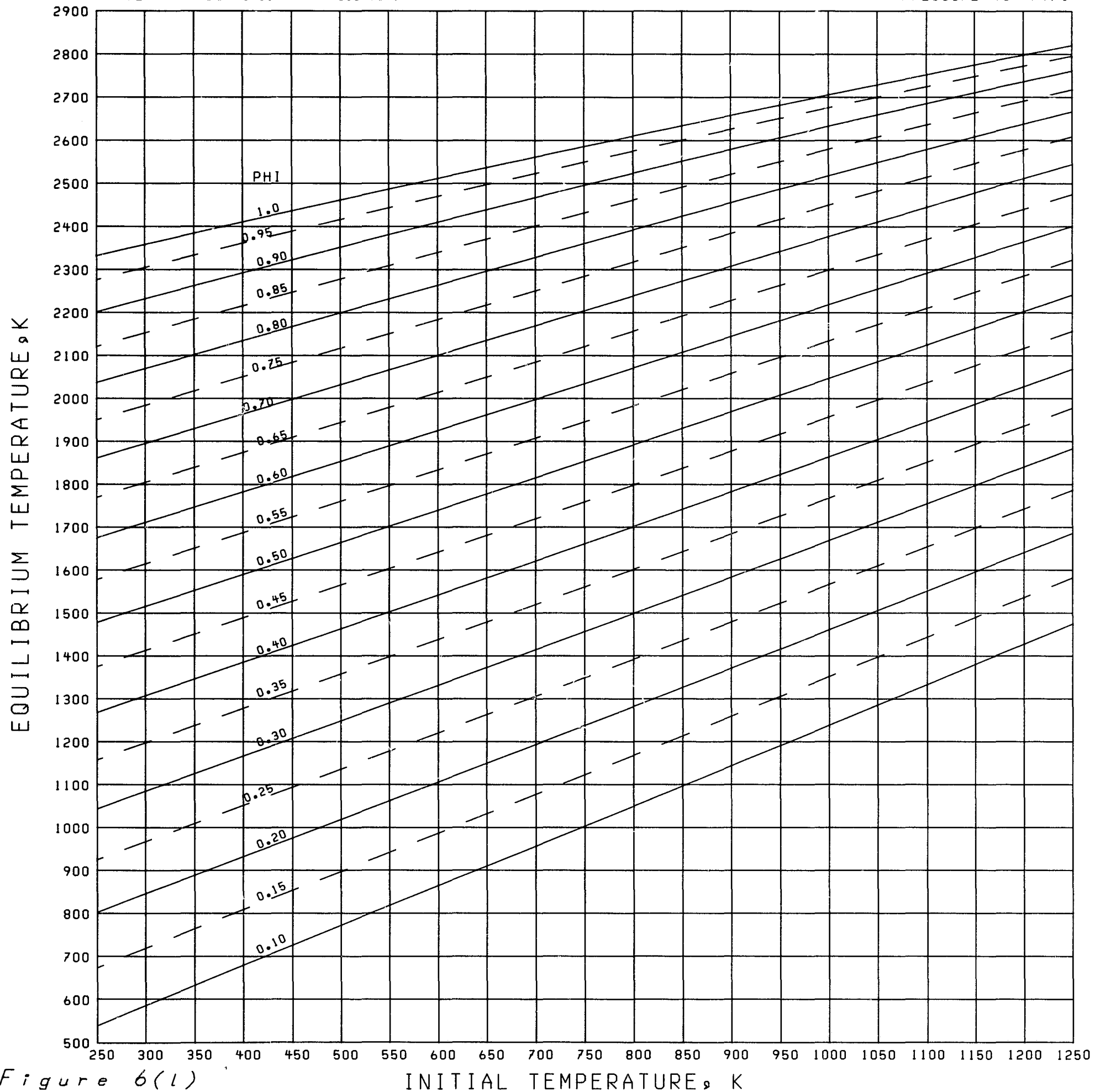


Figure 6(1)



EQUILIBRIUM TEMPERATURE VS. INITIAL TEMPERATURE FOR VARIOUS VALUES OF PHI

JET-A FUEL (STOIC. F/A= 0.068240)

PRESSURE=50 ATM.

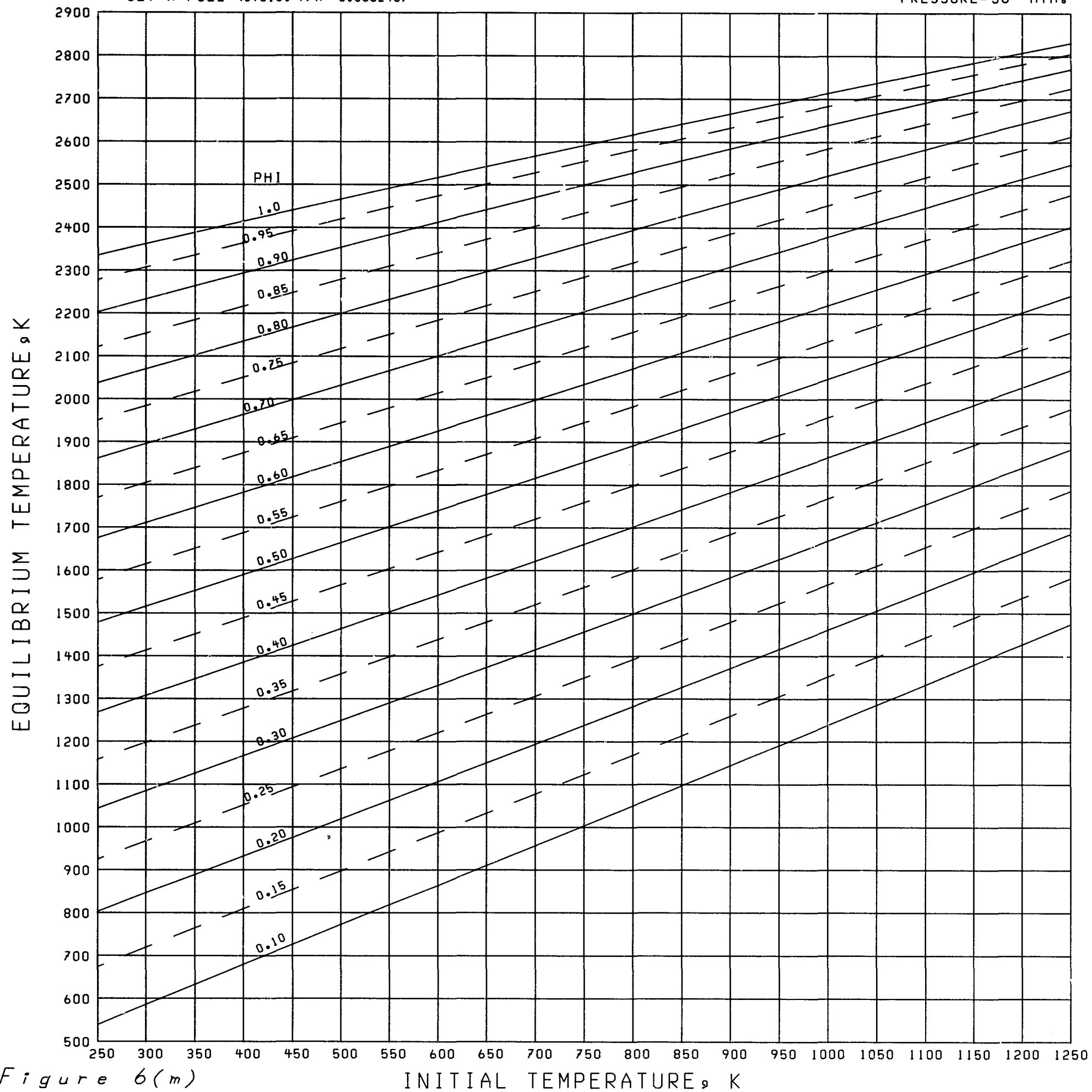


Figure 6(m)



	CASE= 2	O/F= 15.4253	F/A= 0.06483	PERCENT FUEL= 6.0882			PHI= 0.9500						
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2269.5	2289.4	2300.1	2307.3	2316.9	2323.2	2331.6	2341.1	2348.0	2352.4	2358.1	2361.8	2364.4
T, DEG F	3625.5	3661.2	3680.5	3693.4	3710.6	3722.1	3737.1	3754.4	3766.6	3774.6	3784.9	3791.5	3796.3
RHD, G/CC	7.707E-5	1.5305E-4	2.2868E-4	3.0412E-4	4.5463E-4	6.0480E-4	9.0451E-4	1.5024E-3	2.2482E-3	2.9930E-3	4.4805E-3	5.9644E-3	7.4511E-3
M, MOL WT	28.708	28.751	28.774	28.790	28.810	28.824	28.842	28.863	28.877	28.887	28.899	28.907	28.913
CP, CAL/(G)(K)	0.5673	0.5330	0.5147	0.5025	0.4862	0.4754	0.4612	0.4448	0.4331	0.4254	0.4155	0.4090	0.4044
GAMMA (S)	1.1712	1.1784	1.1828	1.1858	1.1901	1.1932	1.1975	1.2027	1.2068	1.2095	1.2133	1.2158	1.2177
SON VEL, M/SEC	877.4	883.3	886.6	888.9	892.1	894.2	897.1	900.6	903.2	905.0	907.3	908.8	909.9

MOLE FRACTIONS

AR	0.0086E	0.00869	0.00870	0.00870	0.00871	0.00871	0.00872	0.00872	0.00873	0.00873	0.00874	0.00874	0.00874
CO	0.01273	0.01080	0.00974	0.00902	0.00805	0.00740	0.00653	0.00554	0.00483	0.00436	0.00376	0.00337	0.00309
CO2	0.11299	0.11511	0.11627	0.11706	0.11812	0.11884	0.11978	0.12086	0.12164	0.12215	0.12280	0.12323	0.12353
H	0.00056	0.00040	0.00033	0.00028	0.00023	0.00020	0.00016	0.00012	0.00009	0.00008	0.00006	0.00005	0.00004
H2	0.00237	0.00197	0.00175	0.00161	0.00142	0.00130	0.00114	0.00095	0.00082	0.00074	0.00063	0.00057	0.00052
H2O	0.11478	0.11567	0.11615	0.11647	0.11690	0.11718	0.11755	0.11798	0.11828	0.11848	0.11873	0.11890	0.11902
NO	0.00385	0.00387	0.00388	0.00388	0.00387	0.00387	0.00386	0.00385	0.00383	0.00382	0.00381	0.00380	0.00379
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001
N2	0.72493	0.72601	0.72659	0.72699	0.72751	0.72786	0.72832	0.72885	0.72923	0.72948	0.72980	0.73000	0.73015
O	0.00069	0.00053	0.00045	0.00040	0.00034	0.00030	0.00025	0.00020	0.00017	0.00015	0.00012	0.00011	0.00010
OH	0.00432	0.00386	0.00359	0.00341	0.00317	0.00300	0.00277	0.00255	0.00230	0.00216	0.00198	0.00186	0.00177
O2	0.01409	0.01308	0.01254	0.01217	0.01167	0.01135	0.01092	0.01042	0.01007	0.00985	0.00956	0.00937	0.00924

	CASE= 2	O/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3881			PHI= 1.0000						
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2298.1	2320.6	2332.9	2341.4	2352.7	2360.4	2370.7	2382.8	2391.8	2397.7	2405.6	2410.9	2414.7
T, DEG F	3676.8	3717.3	3739.6	3754.8	3775.2	3789.0	3807.6	3829.4	3845.5	3856.2	3870.4	3879.9	3886.8
RHD, G/CC	7.580E-5	1.5040E-4	2.2460E-4	2.9858E-4	4.4609E-4	5.9319E-4	8.6659E-4	1.4715E-3	2.2004E-3	2.9279E-3	4.3799E-3	5.8294E-3	7.2771E-3
M, MOL WT	28.590	28.638	28.665	28.683	28.707	28.723	28.745	28.771	28.790	28.803	28.820	28.831	28.839
CP, CAL/(G)(K)	0.6063	0.5710	0.5521	0.5394	0.5226	0.5114	0.4966	0.4795	0.4671	0.4589	0.4482	0.4411	0.4359
GAMMA (S)	1.1646	1.1711	1.1749	1.1777	1.1815	1.1841	1.1879	1.1925	1.1961	1.1986	1.2020	1.2044	1.2062
SON VEL, M/SEC	882.2	888.3	891.7	894.0	897.3	899.5	902.5	906.2	909.0	910.8	913.4	915.1	916.4

MOLE FRACTIONS

AR	0.00861	0.00863	0.00864	0.00864	0.00865	0.00865	0.00866	0.00867	0.00867	0.00868	0.00868	0.00869	0.00869
CO	0.01929	0.01716	0.01596	0.01513	0.01400	0.01323	0.01218	0.01093	0.00999	0.00937	0.00853	0.00797	0.00755
CO2	0.11207	0.11442	0.01050	0.11655	0.11790	0.11875	0.11990	0.12127	0.12229	0.12297	0.12389	0.12450	0.12495
H	0.00082	0.00060	0.00044	0.00036	0.00032	0.00026	0.00020	0.00016	0.00014	0.00011	0.00010	0.00009	0.00009
H2	0.00368	0.00320	0.00293	0.00276	0.00252	0.00236	0.00215	0.00190	0.00173	0.00161	0.00145	0.00135	0.00127
H2O	0.11871	0.11976	0.12034	0.12071	0.12123	0.12157	0.12203	0.12257	0.12296	0.12321	0.12355	0.12378	0.12394
NO	0.00320	0.00313	0.00307	0.00303	0.00296	0.00291	0.00282	0.00271	0.00263	0.00255	0.00244	0.00237	0.00231
NO2	0.71995	0.72121	0.72191	0.72238	0.72303	0.72347	0.72407	0.72478	0.72530	0.72566	0.72613	0.72645	0.72668
N2	0.00064	0.00048	0.00041	0.00036	0.00030	0.00026	0.00021	0.00017	0.00013	0.00012	0.00009	0.00008	0.00007
OH	0.00433	0.00384	0.00356	0.00336	0.00310	0.00292	0.00267	0.00238	0.00216	0.00201	0.00182	0.00169	0.00159
O2	0.00869	0.00757	0.00694	0.00652	0.00595	0.00556	0.00504	0.00443	0.00398	0.00368	0.00329	0.00303	0.00284



CASE= 5 O/F= 15.4253 F/A= 0.06483 PERCENT FUEL= 6.0882 PHI= 0.9500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2487.2	2521.9	2541.5	2555.1	2573.7	2586.5	2604.1	2625.2	2641.1	2651.9	2666.5	2676.4	2683.7
T, DEG F	4017.3	4079.7	4115.0	4139.4	4173.0	4196.1	4227.6	4265.6	4294.2	4313.7	4340.0	4357.7	4371.0
RHO, G/CC	6.9293-5	1.3705-4	2.0429-4	2.7122-4	4.0447-4	5.3714-4	8.0135-4	1.3270-3	1.9809-3	2.6325-3	3.9315-3	5.2266-3	6.5189-3
M, MOL WT	28.285	28.360	28.403	28.433	28.473	28.501	28.539	28.585	28.619	28.643	28.674	28.696	28.712
CP, CAL/(G)(K)	0.7711	0.7200	0.6923	0.6736	0.6485	0.6315	0.6088	0.5820	0.5621	0.5487	0.5309	0.5189	0.5100
GAMMA (S)	1.1470	1.1526	1.1559	1.1584	1.1618	1.1643	1.1678	1.1724	1.1760	1.1785	1.1823	1.1849	1.1869
SON VEL, M/SEC	915.8	923.1	927.4	930.3	934.4	937.3	941.3	946.1	949.9	952.5	956.1	958.5	960.4

MOLE FRACTIONS

AR	0.00855	0.00857	0.00859	0.00859	0.00861	0.00862	0.00863	0.00864	0.00865	0.00866	0.00867	0.00867	0.00868
CO	0.03079	0.02802	0.02638	0.02522	0.02358	0.02243	0.02082	0.01883	0.01729	0.01623	0.01477	0.01378	0.01303
CO2	0.09308	0.09618	0.09801	0.09930	0.10111	0.10239	0.10417	0.10636	0.10805	0.10921	0.11080	0.11189	0.11271
H	0.00253	0.00196	0.00167	0.00149	0.00126	0.00111	0.00093	0.00074	0.00061	0.00053	0.00044	0.00038	0.00034
H02	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00575	0.00507	0.00468	0.00442	0.00406	0.00381	0.00348	0.00308	0.00279	0.00259	0.00232	0.00215	0.00202
H20	0.10594	0.10758	0.10850	0.10913	0.10999	0.11058	0.11134	0.11234	0.11305	0.11354	0.11418	0.11462	0.11494
NO	0.00711	0.00729	0.00737	0.00742	0.00748	0.00751	0.00754	0.00755	0.00755	0.00754	0.00751	0.00749	0.00746
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.71259	0.71441	0.71545	0.71617	0.71717	0.71786	0.71881	0.71996	0.72084	0.72144	0.72225	0.72280	0.72322
O	0.00278	0.00225	0.00197	0.00179	0.00156	0.00141	0.00121	0.00100	0.00085	0.00076	0.00065	0.00057	0.00052
OH	0.00974	0.00903	0.00860	0.00829	0.00786	0.00754	0.00711	0.00657	0.00614	0.00585	0.00545	0.00517	0.00496
O2	0.02113	0.01964	0.01877	0.01816	0.01732	0.01673	0.01591	0.01492	0.01416	0.01364	0.01294	0.01246	0.01211

CASE= 5 O/F= 14.6540 F/A= 0.06824 PERCENT FUEL= 6.3881 PHI= 1.0000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2504.5	2540.8	2561.3	2575.6	2595.3	2608.9	2627.6	2650.2	2667.4	2679.2	2695.1	2706.0	2714.2
T, DEG F	4048.4	4113.7	4150.7	4176.4	4211.8	4236.3	4269.9	4310.6	4341.6	4362.8	4391.5	4411.2	4425.9
RHO, G/CC	6.8489-5	1.3540-4	2.0179-4	2.6785-4	3.9932-4	5.3020-4	7.9077-4	1.3089-3	1.9533-3	2.5952-3	3.8744-3	5.1493-3	6.4211-3
M, MOL WT	28.151	28.229	28.274	28.305	28.347	28.376	28.416	28.465	28.502	28.527	28.561	28.585	28.602
CP, CAL/(G)(K)	0.7999	0.7473	0.7189	0.6998	0.6741	0.6567	0.6335	0.6063	0.5861	0.5726	0.5545	0.5424	0.5334
GAMMA (S)	1.1450	1.1503	1.1535	1.1558	1.1590	1.1614	1.1647	1.1689	1.1723	1.1747	1.1781	1.1805	1.1823
SON VEL, M/SEC	920.3	927.8	932.1	935.1	939.3	942.2	946.3	951.2	955.1	957.7	961.4	963.9	965.8

MOLE FRACTIONS

AR	0.00848	0.00851	0.00852	0.00853	0.00854	0.00855	0.00856	0.00858	0.00859	0.00860	0.00861	0.00861	0.00862
CO	0.03777	0.03501	0.03337	0.03220	0.03054	0.02936	0.02771	0.02555	0.02404	0.02292	0.02138	0.02031	0.01950
CO2	0.09158	0.09469	0.09654	0.09786	0.09971	0.10102	0.10286	0.10514	0.10692	0.10815	0.10985	0.11103	0.11192
H	0.00309	0.00242	0.00208	0.00187	0.00160	0.00142	0.00121	0.00097	0.00082	0.00072	0.00060	0.00052	0.00047
H02	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00734	0.00659	0.00616	0.00587	0.00546	0.00519	0.00481	0.00436	0.00402	0.00379	0.00348	0.00327	0.00312
H20	0.10926	0.11107	0.11208	0.11277	0.11373	0.11438	0.11527	0.11634	0.11714	0.11768	0.11841	0.11890	0.11927
NO	0.00642	0.00651	0.00654	0.00655	0.00654	0.00652	0.00648	0.00640	0.00631	0.00623	0.00611	0.00601	0.00593
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001
N2	0.70726	0.70920	0.71030	0.71108	0.71215	0.71290	0.71394	0.71521	0.71618	0.71685	0.71778	0.71841	0.71890
O	0.00266	0.00214	0.00186	0.00169	0.00146	0.00131	0.00112	0.00091	0.00077	0.00068	0.00057	0.00050	0.00045
OH	0.00980	0.00906	0.00861	0.00829	0.00783	0.00751	0.00705	0.00648	0.00603	0.00573	0.00530	0.00500	0.00478
O2	0.01633	0.01481	0.01393	0.01330	0.01244	0.01183	0.01099	0.00996	0.00918	0.00864	0.00790	0.00740	0.00703

C	1.000000	H	1.906699	0.000000	0.000000	0.000000	0.000000	100.00000000	-5059.80	L	298.150	F	0.80700
AR	1.000000		0.000000	0.000000	0.000000	00	0.000000	0.01285800	0.00	G	1150.000	0	0.00000
C	1.000000	O	2.000000	0.000000	0.000000	00	0.000000	0.00045600	0.00	G	1150.000	0	0.00000
N	2.000000		0.000000	0.000000	0.000000	00	0.000000	0.75525296	0.00	G	1150.000	0	0.00000
O	2.000000		0.000000	0.000000	0.000000	00	0.000000	0.23143297	0.00	G	1150.000	0	0.00000

CASE= 7 O/F=146.3400 F/A= 0.00682 PERCENT FUEL= 0.6778 PHI= 0.1000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1380.7	1380.8	1380.8	1380.8	1380.8	1380.8	1380.8	1380.8	1380.8	1380.8	1380.8	1380.8	1380.8
T, DEG F	2025.6	2025.7	2025.7	2025.7	2025.7	2025.7	2025.7	2025.7	2025.7	2025.7	2025.7	2025.7	2025.7
RHO, G/CC	1.2783-4	2.5566-4	3.8349-4	5.1132-4	7.6697-4	1.0226-3	1.5339-3	2.5566-3	3.8349-3	5.1132-3	7.6698-3	1.0226-2	1.2783-2
M, MOL WT	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.967	28.967
CP, CAL/(G)(K)	0.2926	0.2925	0.2925	0.2925	0.2925	0.2925	0.2925	0.2925	0.2925	0.2925	0.2925	0.2925	0.2925
GAMMA (S)	1.3063	1.3064	1.3064	1.3064	1.3064	1.3064	1.3064	1.3064	1.3064	1.3064	1.3064	1.3064	1.3064
SON VEL, M/SEC	719.5	719.6	719.6	719.6	719.6	719.6	719.6	719.6	719.6	719.6	719.6	719.6	719.6

MOLE FRACTIONS

AR	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926
CO2	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439
H2O	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343
NO	0.00066	0.00066	0.00066	0.00066	0.00066	0.00066	0.00066	0.00066	0.00066	0.00066	0.00066	0.00066	0.00066
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77531	0.77531	0.77531	0.77531	0.77531	0.77531	0.77531	0.77531	0.77531	0.77531	0.77531	0.77531	0.77531
OH	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
O2	0.18693	0.18693	0.18693	0.18693	0.18693	0.18693	0.18693	0.18693	0.18693	0.18693	0.18693	0.18693	0.18693

CASE= 7 O/F= 73.2700 F/A= 0.01365 PERCENT FUEL= 1.3464 PHI= 0.2000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1596.1	1596.2	1596.2	1596.2	1596.3	1596.3	1596.3	1596.3	1596.4	1596.4	1596.4	1596.4	1596.4
T, DEG F	2413.2	2413.4	2413.5	2413.5	2413.6	2413.7	2413.7	2413.7	2413.7	2413.8	2413.8	2413.8	2413.8
RHO, G/CC	1.1059-4	2.2117-4	3.3174-4	4.4231-4	6.6346-4	8.8460-4	1.3269-3	2.2114-3	3.3171-3	4.4228-3	6.6342-3	8.8456-3	1.1057-2
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968
CP, CAL/(G)(K)	0.3062	0.3060	0.3059	0.3058	0.3057	0.3056	0.3055	0.3055	0.3054	0.3054	0.3053	0.3053	0.3053
GAMMA (S)	1.2890	1.2892	1.2893	1.2894	1.2895	1.2896	1.2896	1.2897	1.2898	1.2898	1.2898	1.2898	1.2898
SON VEL, M/SEC	768.5	768.5	768.6	768.6	768.6	768.7	768.7	768.7	768.7	768.7	768.8	768.8	768.8

MOLE FRACTIONS

AR	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920
CO2	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829
H2O	0.02664	0.02664	0.02665	0.02665	0.02666	0.02666	0.02666	0.02666	0.02667	0.02667	0.02667	0.02667	0.02667
NO	0.00179	0.00179	0.00179	0.00179	0.00179	0.00179	0.00179	0.00179	0.00179	0.00179	0.00180	0.00180	0.00180
NO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004
N2	0.76955	0.76955	0.76956	0.76956	0.76956	0.76956	0.76956	0.76956	0.76956	0.76956	0.76956	0.76956	0.76956
O	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00010	0.00009	0.00008	0.00007	0.00007	0.00006	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003
O2	0.16442	0.16442	0.16442	0.16442	0.16443	0.16443	0.16442	0.16442	0.16442	0.16442	0.16441	0.16441	0.16441

CASE=	1	0/F=	48.8467	F/A=	0.02047	PERCENT FUEL=	2.0062	PHI=	0.3000											
P. ATM		0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P. PSIA		7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T. DEG K		1044.1	1044.1	1044.1	1044.0	1044.0	1044.0	1044.0	1044.0	1044.0	1044.0	1044.0	1044.0	1044.0						
T. DEG F		1419.6	1419.6	1419.6	1419.6	1419.6	1419.6	1419.6	1419.6	1419.6	1419.6	1419.6	1419.6	1419.6						
RHO		1.6907-4	3.3315-4	5.0722-4	6.7630-4	1.0144-3	1.3526-3	2.0289-3	3.3815-3	5.0722-3	6.7630-3	1.0145-2	1.3526-2	1.6908-2						
M. MOL WT		28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970						
CP, CAL/(G*IK)		0.2841	0.2841	0.2841	0.2841	0.2841	0.2841	0.2841	0.2841	0.2841	0.2841	0.2841	0.2841	0.2841						
GAMMA (S)		1.3183	1.3183	1.3183	1.3183	1.3183	1.3183	1.3183	1.3183	1.3183	1.3183	1.3183	1.3183	1.3182						
SON VEL,M/SEC		628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5	628.5						

MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914						
CO2	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201						
H2O	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977						
NO	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005						
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001						
N2	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534	0.76534						
O2	0.14370	0.14370	0.14370	0.14370	0.14370	0.14370	0.14370	0.14370	0.14370	0.14370	0.14370	0.14370	0.14369	0.14369						

CASE=	1	0/F=	36.6350	F/A=	0.02730	PERCENT FUEL=	2.6571	PHI=	0.4000											
P. ATM		0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P. PSIA		7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T. DEG K		1268.6	1268.6	1268.6	1268.6	1268.6	1268.6	1268.6	1268.6	1268.6	1268.6	1268.6	1268.6	1268.6						
T. DEG F		1823.8	1823.9	1823.9	1823.9	1823.9	1823.9	1823.9	1823.9	1823.9	1823.9	1823.9	1823.9	1823.9						
RHO		1.3915-4	2.7830-4	4.1745-4	5.5660-4	8.3490-4	1.1132-3	1.6698-3	2.7830-3	4.1745-3	5.5660-3	8.3490-3	1.1132-2	1.3915-2						
M. MOL WT		28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971						
CP, CAL/(G*IK)		0.2976	0.2976	0.2976	0.2976	0.2976	0.2976	0.2976	0.2976	0.2976	0.2976	0.2976	0.2976	0.2976						
GAMMA (S)		1.2995	1.2995	1.2995	1.2995	1.2995	1.2995	1.2995	1.2995	1.2995	1.2995	1.2995	1.2995	1.2995						
SON VEL,M/SEC		687.8	687.8	687.8	687.8	687.8	687.9	687.9	687.9	687.9	687.9	687.8	687.8	687.8						

MOLE FRACTIONS

AR	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908						
CO2	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554						
H2O	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267						
NO	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026						
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001						
N2	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019	0.76019						
OH	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
O2	0.12225	0.12225	0.12225	0.12224	0.12224	0.12224	0.12224	0.12224	0.12224	0.12224	0.12224	0.12224	0.12224	0.12223						

CASE=	2	O/F=	13.9562	F/A=	0.07165	PERCENT FUEL=	6.6862	PHI=	1.0500										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2312.0	2334.2	2346.2	2354.2	2364.9	2372.0	2381.2	2391.6	2398.9	2403.5	2409.2	2412.9	2415.4						
T, DEG F	3701.9	3741.8	3763.4	3777.9	3797.1	3809.8	3826.5	3845.2	3858.2	3866.5	3876.9	3883.4	3888.0						
RHO, G/CC	7.4960-5	1.4874-4	2.2217-4	2.9538-4	4.4142-4	5.8711-4	8.7785-4	1.4578-3	2.1813-3	2.9037-3	4.3469-3	5.7887-3	7.2296-3						
M, MOL WT	28.442	28.489	28.514	28.531	28.554	28.568	28.588	28.609	28.624	28.634	28.645	28.653	28.658						
CP, CAL/(G)(K)	0.6016	0.5614	0.5396	0.5248	0.5049	0.4915	0.4736	0.4528	0.4376	0.4277	0.4149	0.4067	0.4008						
GAMMA (S)	1.1663	1.1739	1.1785	1.1819	1.1868	1.1903	1.1953	1.2018	1.2069	1.2105	1.2154	1.2188	1.2213						
SON VEL, M/SEC	887.8	894.2	897.9	900.5	904.0	906.5	909.9	914.0	917.0	919.1	921.9	923.8	925.1						

MOLE FRACTIONS

AR	0.00854	0.00856	0.00856	0.00857	0.00858	0.00858	0.00859	0.00859	0.00860	0.00860	0.00860	0.00861	0.00861	0.00861	0.00861	0.00861	0.00861	0.00861	0.00861
CO	0.02762	0.02569	0.02462	0.02290	0.02293	0.02228	0.02144	0.02048	0.01981	0.01939	0.01886	0.01853	0.01831						
CO2	0.10914	0.11130	0.11249	0.11330	0.11437	0.11509	0.11603	0.11709	0.11783	0.11830	0.11888	0.11925	0.11950						
H	0.00108	0.00081	0.00069	0.00061	0.00051	0.00045	0.00037	0.00030	0.00024	0.00021	0.00018	0.00015	0.00014						
H2	0.00553	0.00503	0.00476	0.00458	0.00435	0.00420	0.00400	0.00379	0.00364	0.00354	0.00343	0.00336	0.00331						
H2O	0.12206	0.12319	0.12379	0.12419	0.12472	0.12507	0.12553	0.12600	0.12640	0.12663	0.12692	0.12710	0.12722						
NO	0.00243	0.00226	0.00215	0.00206	0.00192	0.00182	0.00168	0.00149	0.00134	0.00123	0.00109	0.00099	0.00091						
N2	0.71432	0.71559	0.71628	0.71675	0.71738	0.71781	0.71836	0.71900	0.71945	0.71975	0.72011	0.72035	0.72051						
O	0.00052	0.00037	0.00030	0.00025	0.00020	0.00017	0.00013	0.00009	0.00007	0.00006	0.00004	0.00003	0.00003						
OH	0.00398	0.00343	0.00312	0.00291	0.00262	0.00242	0.00215	0.00183	0.00160	0.00144	0.00124	0.00111	0.00102						
O2	0.00478	0.00377	0.00324	0.00288	0.00241	0.00211	0.00172	0.00130	0.00102	0.00085	0.00065	0.00053	0.00045						

CASE=	2	O/F=	13.3218	F/A=	0.07506	PERCENT FUEL=	6.9824	PHI=	1.1000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2310.5	2329.1	2338.6	2344.7	2352.4	2357.3	2363.2	2369.5	2373.5	2375.9	2378.8	2380.5	2381.7						
T, DEG F	3699.1	3732.7	3749.8	3760.8	3774.7	3783.4	3794.1	3805.3	3812.6	3816.9	3822.1	3825.2	3827.3						
RHO, G/CC	7.4538-5	1.4809-4	2.2138-4	2.9454-4	4.4061-4	5.8648-4	8.7787-4	1.4599-3	2.1868-3	2.9132-3	4.3654-3	5.8171-3	7.2684-3						
M, MOL WT	28.263	28.302	28.322	28.335	28.350	28.360	28.373	28.385	28.393	28.398	28.404	28.407	28.410						
CP, CAL/(G)(K)	0.5507	0.5062	0.4828	0.4676	0.4480	0.4355	0.4199	0.4036	0.3930	0.3867	0.3791	0.3747	0.3717						
GAMMA (S)	1.1773	1.1878	1.1942	1.1988	1.2052	1.2096	1.2155	1.2223	1.2271	1.2301	1.2338	1.2361	1.2377						
SON VEL, M/SEC	894.5	901.5	905.5	908.2	911.8	914.3	917.5	921.1	923.5	925.0	926.9	928.0	928.8						

MOLE FRACTIONS

AR	0.00846	0.00847	0.00848	0.00848	0.00849	0.00849	0.00849	0.00850	0.00850	0.00850	0.00850	0.00851	0.00851	0.00851	0.00851	0.00851	0.00851	0.00851	0.00851
CO	0.03764	0.03625	0.03554	0.03508	0.03451	0.03415	0.03372	0.03327	0.03299	0.03282	0.03263	0.03251	0.03244						
CO2	0.10428	0.10586	0.10667	0.10719	0.10784	0.10825	0.10874	0.10925	0.10958	0.10977	0.10999	0.11012	0.11021						
H	0.00129	0.00098	0.00082	0.00073	0.00061	0.00054	0.00045	0.00036	0.00029	0.00026	0.00021	0.00018	0.00017						
H2	0.00806	0.00763	0.00742	0.00729	0.00712	0.00702	0.00690	0.00677	0.00669	0.00665	0.00659	0.00656	0.00654						
H2O	0.12466	0.12572	0.12626	0.12661	0.12706	0.12734	0.12769	0.12806	0.12830	0.12845	0.12863	0.12873	0.12881						
NO	0.00168	0.00146	0.00132	0.00122	0.00109	0.00099	0.00086	0.00072	0.00061	0.00054	0.00046	0.00040	0.00036						
N2	0.70794	0.70903	0.70960	0.70996	0.71043	0.71073	0.71110	0.71149	0.71174	0.71190	0.71209	0.71220	0.71228						
O	0.00036	0.00023	0.00018	0.00015	0.00011	0.00009	0.00006	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001						
OH	0.00333	0.00275	0.00243	0.00222	0.00193	0.00174	0.00149	0.00121	0.00102	0.00090	0.00076	0.00066	0.00060						
O2	0.00231	0.00161	0.00127	0.00107	0.00082	0.00067	0.00049	0.00033	0.00024	0.00019	0.00013	0.00010	0.00008						



CASE=	4	0/F=	48.8467	F/A=	0.02047	PERCENT FUEL=	2.0062	PHI=	0.3000										
P, ATM		0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000					
P, PSIA		7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8					
T, DEG K		1499.0	1499.1	1499.1	1499.1	1499.1	1499.1	1499.1	1499.2	1499.2	1499.2	1499.2	1499.2	1499.2					
T, DEG F		2238.6	2238.6	2238.7	2238.7	2238.7	2238.7	2238.8	2238.8	2238.8	2238.8	2238.8	2238.8	2238.8					
RHO, G/CC		1.1776-4	2.3551-4	3.5325-4	4.7100-4	7.0649-4	9.4199-4	1.4170-3	2.3549-3	3.5324-3	4.7098-3	7.0648-3	9.4197-3	1.1775-2					
M, MOL WT		28.969	28.969	28.969	28.969	28.969	28.969	28.969	28.970	28.970	28.970	28.970	28.970	28.970					
CP, CAL/(G)(K)		0.3049	0.3049	0.3047	0.3047	0.3046	0.3046	0.3046	0.3045	0.3045	0.3045	0.3044	0.3044	0.3044					
GAMMA (S)		1.2904	1.2906	1.2906	1.2907	1.2907	1.2907	1.2908	1.2908	1.2908	1.2909	1.2909	1.2909	1.2909					
SON VEL, M/SEC		745.1	745.2	745.2	745.2	745.2	745.2	745.2	745.2	745.3	745.3	745.3	745.3	745.3					

MOLE FRACTIONS

AR		0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914					
CO2		0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201					
H2O		0.03974	0.03974	0.03975	0.03975	0.03975	0.03975	0.03975	0.03975	0.03975	0.03976	0.03976	0.03976	0.03976					
NO		0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107	0.00107					
NO2		0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002					
N2		0.76482	0.76482	0.76482	0.76482	0.76482	0.76482	0.76482	0.76482	0.76482	0.76482	0.76482	0.76482	0.76482					
OH		0.00005	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002					
O2		0.14317	0.14317	0.14317	0.14317	0.14317	0.14317	0.14317	0.14317	0.14316	0.14316	0.14316	0.14316	0.14316					

CASE=

CASE=	4	0/F=	36.6350	F/A=	0.02730	PERCENT FUEL=	2.6571	PHI=	0.4000										
P, ATM		0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000					
P, PSIA		7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8					
T, DEG K		1701.0	1701.2	1701.4	1701.5	1701.6	1701.6	1701.7	1701.8	1701.9	1701.9	1702.0	1702.0	1702.0					
T, DEG F		2602.0	2602.5	2602.8	2602.9	2603.1	2603.2	2603.4	2603.5	2603.7	2603.7	2603.8	2603.9	2603.9					
RHO, G/CC		1.0377-4	2.0752-4	3.1125-4	4.1499-4	6.2245-4	8.2991-4	1.2448-3	2.0746-3	3.1118-3	4.1490-3	6.2233-3	8.2976-3	1.0372-2					
M, MOL WT		28.969	28.969	28.969	28.970	28.970	28.970	28.970	28.970	28.971	28.971	28.971	28.971	28.971					
CP, CAL/(G)(K)		0.3194	0.3187	0.3184	0.3182	0.3179	0.3177	0.3175	0.3173	0.3172	0.3171	0.3169	0.3169	0.3168					
GAMMA (S)		1.2743	1.2749	1.2752	1.2753	1.2756	1.2757	1.2759	1.2761	1.2762	1.2764	1.2764	1.2764	1.2765					
SON VEL, M/SEC		788.7	789.0	789.1	789.2	789.3	789.3	789.4	789.5	789.5	789.5	789.6	789.6	789.6					

MOLE FRACTIONS

AR		0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908					
CO		0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
CO2		0.05552	0.05553	0.05553	0.05553	0.05553	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554					
H2O		0.05252	0.05255	0.05256	0.05257	0.05258	0.05258	0.05259	0.05260	0.05261	0.05261	0.05262	0.05262	0.05263					
NO		0.00233	0.00233	0.00233	0.00233	0.00233	0.00233	0.00233	0.00233	0.00234	0.00234	0.00234	0.00234	0.00234					
NO2		0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003					
N2		0.75909	0.75910	0.75911	0.75911	0.75912	0.75912	0.75912	0.75913	0.75913	0.75913	0.75913	0.75913	0.75913					
O		0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
OH		0.00026	0.00024	0.00021	0.00020	0.00018	0.00017	0.00015	0.00013	0.00012	0.00011	0.00010	0.00009	0.00009					
O2		0.12113	0.12114	0.12115	0.12115	0.12115	0.12116	0.12116	0.12116	0.12116	0.12116	0.12116	0.12116	0.12116					

CASE=	5	O/F=	13.9562	F/A=	0.07165	PERCENT FUEL=	6.6862	PHI=	1.0500										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2516.5	2553.4	2574.3	2588.9	2608.8	2622.6	2641.4	2664.2	2681.4	2693.9	2708.9	2719.6	2727.6						
T, DEG F	4070.1	4136.5	4174.1	4200.2	4236.1	4260.9	4294.9	4335.8	4366.8	4387.9	4416.4	4435.6	4450.0						
RHO, G/CC	6.7815-5	1.3405-4	1.9976-4	2.6514-4	3.9527-4	5.2480-4	7.8270-4	1.2956-3	1.9334-3	2.5688-3	3.8352-3	5.0976-3	6.3570-3						
M, MOL WT	28.008	28.087	28.132	28.163	28.205	28.235	28.275	28.323	28.359	28.384	28.417	28.440	28.457						
CP, CAL/(G)(K)	0.8105	0.7555	0.7256	0.7054	0.6782	0.6598	0.6351	0.6059	0.5841	0.5694	0.5496	0.5362	0.5262						
GAMMA (S)	1.1447	1.1502	1.1535	1.1558	1.1592	1.1617	1.1652	1.1698	1.1734	1.1761	1.1799	1.1826	1.1847						
SON VEL, M/SEC	924.8	932.4	936.8	939.9	944.2	947.2	951.4	956.5	960.5	963.2	967.0	969.7	971.7						

### MOLE FRACTIONS

AR	0.00841	0.00844	0.00845	0.00846	0.00847	0.00848	0.00849	0.00851	0.00852	0.00853	0.00854	0.00854	0.00855
CO	0.04530	0.04268	0.04112	0.04090	0.03843	0.03731	0.03575	0.03381	0.03230	0.03126	0.02984	0.02886	0.02812
CO2	0.08938	0.09237	0.09415	0.09542	0.09720	0.09846	0.10021	0.10239	0.10407	0.10523	0.10681	0.10790	0.10871
H	0.00365	0.00289	0.00250	0.00226	0.00194	0.00174	0.00149	0.00121	0.00102	0.00093	0.00076	0.00067	0.00061
H02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00922	0.00842	0.00797	0.00765	0.00722	0.00693	0.00653	0.00605	0.00569	0.00545	0.00513	0.00491	0.00475
H20	0.11229	0.11423	0.11531	0.11606	0.11709	0.11779	0.11875	0.11989	0.12074	0.12132	0.12210	0.12262	0.12300
NO	0.00566	0.00566	0.00562	0.00558	0.00551	0.00544	0.00532	0.00514	0.00496	0.00482	0.00461	0.00444	0.00431
N2	0.70178	0.70377	0.70492	0.70572	0.70683	0.70760	0.70867	0.70998	0.71098	0.71167	0.71261	0.71326	0.71375
O	0.00245	0.00194	0.00167	0.00150	0.00128	0.00114	0.00096	0.00077	0.00063	0.00055	0.00045	0.00039	0.00034
OH	0.00959	0.00881	0.00834	0.00800	0.00751	0.00717	0.00668	0.00607	0.00560	0.00526	0.00481	0.00449	0.00425
O2	0.01227	0.01079	0.00994	0.00934	0.00851	0.00794	0.00715	0.00620	0.00548	0.00499	0.00435	0.00391	0.00359

CASE=	5	O/F=	13.3218	F/A=	0.07506	PERCENT FUEL=	6.9824	PHI=	1.1000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2523.3	2559.9	2580.4	2594.6	2614.0	2627.2	2645.2	2666.6	2682.4	2692.9	2706.9	2716.1	2722.8						
T, DEG F	4082.3	4148.0	4185.1	4210.6	4245.5	4269.3	4301.7	4340.1	4368.5	4387.6	4412.7	4429.3	4441.4						
RHO, G/CC	6.7265-5	1.3298-4	1.9819-4	2.6309-4	3.9229-4	5.2093-4	7.7712-4	1.2869-3	1.9212-3	2.5535-3	3.8144-3	5.0721-3	6.3275-3						
M, MOL WT	27.855	27.933	27.977	28.007	28.048	28.076	28.114	28.158	28.191	28.213	28.242	28.264	28.274						
CP, CAL/(G)(K)	0.8008	0.7418	0.7096	0.6877	0.6580	0.6378	0.6105	0.5780	0.5537	0.5373	0.5152	0.5005	0.4895						
GAMMA (S)	1.1463	1.1524	1.1561	1.1588	1.1628	1.1657	1.1699	1.1755	1.1801	1.1835	1.1884	1.1920	1.1947						
SON VEL, M/SEC	929.2	937.0	941.6	944.8	949.2	952.3	956.7	962.1	966.2	969.2	973.2	976.0	978.1						

### MOLE FRACTIONS

AR	0.00834	0.00836	0.00838	0.00839	0.00840	0.00841	0.00842	0.00843	0.00844	0.00845	0.00846	0.00846	0.00847
CO	0.05333	0.05097	0.04957	0.04858	0.04719	0.04621	0.04486	0.04322	0.04198	0.04114	0.04002	0.03928	0.03874
CO2	0.08653	0.08928	0.09090	0.09205	0.09364	0.09476	0.09630	0.09816	0.09957	0.10052	0.10178	0.10262	0.10323
H	0.00419	0.00333	0.00290	0.00262	0.00226	0.00203	0.00174	0.00143	0.00121	0.00108	0.00091	0.00081	0.00073
H2	0.01145	0.01063	0.01017	0.00985	0.00941	0.00912	0.00872	0.00826	0.00792	0.00769	0.00740	0.00721	0.00707
H20	0.11496	0.11700	0.11814	0.11893	0.11999	0.12072	0.12170	0.12286	0.12372	0.12429	0.12505	0.12554	0.12591
NO	0.00486	0.00476	0.00467	0.00459	0.00445	0.00434	0.00416	0.00389	0.00366	0.00348	0.00322	0.00303	0.00288
N2	0.69613	0.69813	0.69927	0.70006	0.70116	0.70191	0.70295	0.70420	0.70514	0.70578	0.70664	0.70721	0.70763
O	0.00215	0.00167	0.00142	0.00126	0.00106	0.00093	0.00076	0.00059	0.00047	0.00040	0.00031	0.00026	0.00023
OH	0.00915	0.00931	0.00781	0.00744	0.00692	0.00656	0.00603	0.00539	0.00488	0.00454	0.00406	0.00373	0.00349
O2	0.00890	0.00754	0.00677	0.00624	0.00551	0.00501	0.00434	0.00356	0.00300	0.00263	0.00215	0.00185	0.00164

CASE= 7 O/F= 48.8467 F/A= 0.02047 PERCENT FUEL= 2.0062 PHI= 0.3000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1796.2	1796.8	1797.0	1797.2	1797.4	1797.5	1797.6	1797.8	1797.9	1798.0	1798.1	1798.1	1798.2
T, DEG F	2773.5	2774.5	2774.9	2775.2	2775.5	2775.8	2776.0	2776.3	2776.5	2776.7	2776.8	2776.9	2777.0
RHO, G/CC	9.8256-5	1.9646-4	2.9466-4	3.9285-4	5.8922-4	7.8558-4	1.1783-3	1.9636-3	2.9453-3	3.9269-3	5.8902-3	7.8534-3	9.8165-3
M, MOL WT	28.965	28.966	28.966	28.967	28.967	28.967	28.968	28.968	28.968	28.968	28.968	28.969	28.969
CP, CAL/(G)(K)	0.3225	0.3213	0.3207	0.3203	0.3199	0.3196	0.3192	0.3189	0.3186	0.3185	0.3183	0.3181	0.3180
GAMMA (S)	1.2717	1.2726	1.2731	1.2734	1.2738	1.2740	1.2743	1.2746	1.2748	1.2749	1.2751	1.2752	1.2753
SON VEL, M/SEC	809.7	810.2	810.4	810.5	810.6	810.7	810.9	811.0	811.1	811.1	811.2	811.2	811.3

MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.04197	0.04198	0.04198	0.04199	0.04199	0.04199	0.04200	0.04200	0.04200	0.04200	0.04200	0.04200	0.04200
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.03952	0.03956	0.03958	0.03959	0.03961	0.03962	0.03963	0.03965	0.03966	0.03966	0.03967	0.03968	0.03969
NO	0.00355	0.00355	0.00356	0.00356	0.00356	0.00356	0.00356	0.00357	0.00357	0.00357	0.00357	0.00357	0.00357
NO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004	0.00005
N2	0.76346	0.76348	0.76349	0.76350	0.76351	0.76351	0.76352	0.76353	0.76353	0.76354	0.76354	0.76354	0.76354
O	0.00006	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
OH	0.00047	0.00039	0.00036	0.00033	0.00030	0.00028	0.00025	0.00022	0.00020	0.00019	0.00017	0.00016	0.00015
O2	0.14179	0.14182	0.14183	0.14183	0.14184	0.14184	0.14185	0.14185	0.14185	0.14185	0.14185	0.14185	0.14185

CASE= 7 O/F= 36.6350 F/A= 0.02730 PERCENT FUEL= 2.6571 PHI= 0.4000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1980.0	1982.0	1983.0	1983.6	1984.3	1984.8	1985.4	1986.0	1986.4	1936.7	1987.0	1987.2	1987.4
T, DEG F	3104.3	3107.9	3109.6	3110.7	3112.1	3112.9	3114.0	3115.1	3115.9	3116.4	3117.0	3117.3	3117.6
RHO, G/CC	8.9100-5	1.7804-4	2.6695-4	3.5585-4	5.3360-4	7.1132-4	1.0667-3	1.7774-3	2.6655-3	3.5537-3	5.3297-3	7.1056-3	8.8815-3
M, MOL WT	28.952	28.957	28.958	28.960	28.961	28.962	28.963	28.965	28.966	28.966	28.967	28.967	28.968
CP, CAL/(G)(K)	0.3468	0.3424	0.3403	0.3390	0.3375	0.3365	0.3353	0.3340	0.3331	0.3326	0.3319	0.3315	0.3312
GAMMA (S)	1.2516	1.2544	1.2558	1.2567	1.2578	1.2584	1.2593	1.2602	1.2608	1.2612	1.2616	1.2619	1.2622
SON VEL, M/SEC	843.6	844.9	845.6	846.0	846.5	846.8	847.2	847.6	847.9	848.1	848.3	848.4	848.5

MOLE FRACTIONS

AR	0.00907	0.00907	0.00907	0.00907	0.00907	0.00907	0.00907	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908
CO	0.00025	0.00018	0.00015	0.00013	0.00011	0.00009	0.00008	0.00006	0.00005	0.00004	0.00003	0.00003	0.00003
CO2	0.05526	0.05533	0.05537	0.05539	0.05542	0.05543	0.05545	0.05547	0.05548	0.05549	0.05550	0.05551	0.05551
H	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001
H2	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2O	0.05188	0.05201	0.05207	0.05211	0.05217	0.05220	0.05225	0.05230	0.05234	0.05236	0.05239	0.05241	0.05243
NO	0.00568	0.00571	0.00573	0.00574	0.00575	0.00576	0.00577	0.00578	0.00579	0.00580	0.00580	0.00580	0.00580
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00005	0.00005
N2	0.75699	0.75708	0.75712	0.75715	0.75718	0.75720	0.75722	0.75725	0.75727	0.75728	0.75729	0.75730	0.75731
O	0.00028	0.00020	0.00016	0.00014	0.00012	0.00010	0.00008	0.00007	0.00005	0.00005	0.00004	0.00003	0.00003
OH	0.00141	0.00120	0.00109	0.00101	0.00092	0.00086	0.00078	0.00069	0.00062	0.00058	0.00053	0.00049	0.00046
O2	0.11912	0.11917	0.11919	0.11921	0.11923	0.11924	0.11925	0.11927	0.11928	0.11929	0.11929	0.11929	0.11930



CASE= 2 O/F= 12.7426 F/A= 0.07848 PERCENT FUEL= 7.2766 PHI= 1.1500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2294.6	2308.2	2314.7	2318.7	2323.6	2326.6	2330.2	2333.7	2336.0	2337.4	2339.0	2339.9	2340.6
T, DEG F	3670.5	3695.1	3706.8	3714.0	3722.8	3728.2	3734.6	3741.0	3745.1	3747.6	3750.4	3752.1	3753.3
RHO, G/CC	7.4508-5	1.4329-4	2.2191-4	2.9545-4	4.4240-4	5.8924-4	8.8274-4	1.4694-3	2.2022-3	2.9349-3	4.3999-3	5.8645-3	7.3289-3
M, MOL WT	28.058	28.086	28.099	28.108	28.118	28.124	28.131	28.138	28.143	28.145	28.149	28.150	28.152
CP, CAL/(G)(K)	0.4870	0.4492	0.4311	0.4199	0.4065	0.3984	0.3889	0.3793	0.3734	0.3699	0.3659	0.3635	0.3619
GAMMA (S)	1.1947	1.2067	1.2133	1.2176	1.2233	1.2269	1.2314	1.2361	1.2392	1.2411	1.2434	1.2447	1.2456
SON VEL./M/SEC	901.3	908.0	911.6	913.9	916.8	918.6	920.9	923.3	924.8	925.7	926.8	927.5	927.9

MOLE FRACTIONS

AR	0.00837	0.00838	0.00839	0.00839	0.00839	0.00839	0.00840	0.00840	0.00840	0.00840	0.00840	0.00840	0.00840
CO	0.04888	0.04811	0.04774	0.04753	0.04727	0.04711	0.04693	0.04676	0.04665	0.04659	0.04651	0.04647	0.04644
CO2	0.09793	0.09885	0.09928	0.09954	0.09985	0.10004	0.10026	0.10047	0.10060	0.10068	0.10077	0.10082	0.10085
H	0.00141	0.00106	0.00089	0.00078	0.00065	0.00057	0.00047	0.00037	0.00031	0.00027	0.00022	0.00019	0.00017
H2	0.01139	0.01110	0.01097	0.01089	0.01073	0.01074	0.01067	0.01061	0.01057	0.01055	0.01053	0.01051	0.01050
H2O	0.12632	0.12720	0.12763	0.12789	0.12822	0.12842	0.12866	0.12891	0.12907	0.12917	0.12928	0.12935	0.12940
NO	0.00106	0.00086	0.00075	0.00068	0.00058	0.00052	0.00044	0.00035	0.00029	0.00026	0.00021	0.00019	0.00017
N2	0.70088	0.70168	0.70207	0.70231	0.70261	0.70279	0.70301	0.70324	0.70338	0.70347	0.70357	0.70363	0.70367
O	0.00021	0.00013	0.00009	0.00007	0.00005	0.00004	0.00003	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000
OH	0.00256	0.00202	0.00174	0.00155	0.00132	0.00117	0.00098	0.00078	0.00065	0.00057	0.00047	0.00041	0.00037
O2	0.00099	0.00062	0.00046	0.00037	0.00026	0.00021	0.00015	0.00009	0.00006	0.00005	0.00003	0.00003	0.00002

CASE= 2 O/F= 12.2117 F/A= 0.08189 PERCENT FUEL= 7.5691 PHI= 1.2000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2268.0	2277.4	2281.7	2284.3	2287.3	2289.3	2291.6	2293.8	2295.2	2296.1	2297.1	2297.7	2298.1
T, DEG F	3622.7	3639.6	3647.4	3652.1	3657.7	3661.1	3665.1	3669.2	3671.7	3673.2	3675.0	3676.1	3676.9
RHO, G/CC	7.4780-5	1.4905-4	2.2322-4	2.9735-4	4.4551-4	5.9361-4	8.8969-4	1.4816-3	2.2213-3	2.9608-3	4.4396-3	5.9181-3	7.3966-3
M, MOL WT	27.834	27.854	27.862	27.868	27.874	27.878	27.883	27.887	27.890	27.892	27.894	27.895	27.896
CP, CAL/(G)(K)	0.4391	0.4126	0.4007	0.3936	0.3852	0.3802	0.3744	0.3687	0.3651	0.3630	0.3605	0.3591	0.3581
GAMMA (S)	1.2123	1.2229	1.2282	1.2315	1.2356	1.2381	1.2412	1.2444	1.2464	1.2476	1.2490	1.2499	1.2505
SON VEL./M/SEC	906.3	911.8	914.5	916.1	918.2	919.4	921.0	922.5	923.5	924.1	924.8	925.2	925.5

MOLE FRACTIONS

AR	0.00828	0.00829	0.00829	0.00829	0.00829	0.00829	0.00830	0.00830	0.00830	0.00830	0.00830	0.00830	0.00830
CO	0.06063	0.06028	0.06013	0.06005	0.05995	0.05989	0.05982	0.05976	0.05972	0.05970	0.05967	0.05966	0.05965
CO2	0.09085	0.09130	0.09150	0.09161	0.09175	0.09183	0.09192	0.09201	0.09206	0.09209	0.09213	0.09215	0.09217
H	0.00143	0.00106	0.00088	0.00077	0.00064	0.00056	0.00046	0.00036	0.00030	0.00026	0.00021	0.00018	0.00017
H2	0.01554	0.01538	0.01531	0.01526	0.01522	0.01519	0.01516	0.01513	0.01511	0.01510	0.01509	0.01508	0.01508
H2O	0.12698	0.12765	0.12796	0.12816	0.12839	0.12853	0.12870	0.12887	0.12898	0.12904	0.12912	0.12917	0.12920
NO	0.00063	0.00049	0.00041	0.00037	0.00031	0.00027	0.00023	0.00018	0.00015	0.00013	0.00011	0.00009	0.00008
N2	0.69331	0.69386	0.69412	0.69428	0.69447	0.69458	0.69472	0.69486	0.69494	0.69499	0.69506	0.69509	0.69512
O	0.00011	0.00007	0.00005	0.00004	0.00002	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00185	0.00140	0.00119	0.00105	0.00088	0.00077	0.00064	0.00050	0.00042	0.00036	0.00030	0.00026	0.00023
O2	0.00039	0.00023	0.00016	0.00013	0.00009	0.00007	0.00005	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001

CASE= 4 O/F= 29.3080 F/A= 0.03412 PERCENT FUEL= 3.2995 PHI= 0.5000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1888.2	1889.3	1889.9	1890.3	1890.7	1891.0	1891.3	1891.7	1892.0	1892.1	1892.3	1892.5	1892.6
T, DEG F	2939.0	2941.1	2942.1	2942.8	2943.6	2944.1	2944.7	2945.4	2945.9	2946.2	2946.5	2946.8	2946.9
RHO, G/CC	9.3464-5	1.8683-4	2.8017-4	3.7349-4	5.6012-4	7.4674-4	1.1199-3	1.8662-3	2.7990-3	3.7317-3	5.5971-3	7.4623-3	9.3275-3
M, MOL WT	28.962	28.964	28.965	28.966	28.967	28.967	28.968	28.969	28.970	28.970	28.970	28.971	28.971
CP, CAL/(G)(K)	0.3392	0.3364	0.3351	0.3343	0.3333	0.3326	0.3319	0.3310	0.3305	0.3301	0.3297	0.3294	0.3292
GAMMA (S)	1.2566	1.2586	1.2595	1.2601	1.2608	1.2613	1.2618	1.2624	1.2628	1.2631	1.2634	1.2636	1.2638
SON VEL, M/SEC	825.3	826.2	826.6	826.9	827.2	827.4	827.6	827.9	828.1	828.2	828.3	828.4	828.5

MOLE FRACTIONS

AR	0.00901	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902
CO	0.00015	0.00011	0.00009	0.00008	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002
CO2	0.06873	0.06877	0.06880	0.06881	0.06883	0.06883	0.06885	0.06886	0.06887	0.06887	0.06888	0.06888	0.06888
H	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000
H2O	0.06488	0.06497	0.06501	0.06504	0.06508	0.06510	0.06513	0.06517	0.06519	0.06521	0.06523	0.06524	0.06525
NO	0.00395	0.00397	0.00398	0.00398	0.00399	0.00399	0.00399	0.00400	0.00400	0.00400	0.00401	0.00401	0.00401
NO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003	0.00004
N2	0.75308	0.75313	0.75316	0.75318	0.75320	0.75321	0.75322	0.75324	0.75325	0.75326	0.75327	0.75327	0.75327
O	0.00012	0.00009	0.00007	0.00006	0.00005	0.00004	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001
OH	0.00093	0.00079	0.00071	0.00067	0.00060	0.00056	0.00051	0.00045	0.00041	0.00038	0.00034	0.00032	0.00030
O2	0.09910	0.09912	0.09914	0.09914	0.09916	0.09916	0.09917	0.09918	0.09919	0.09919	0.09919	0.09919	0.09919

CASE= 4 O/F= 24.4233 F/A= 0.04094 PERCENT FUEL= 3.9334 PHI= 0.6000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2057.3	2061.3	2063.2	2064.4	2065.8	2066.8	2067.9	2069.2	2070.0	2070.5	2071.2	2071.6	2071.9
T, DEG F	3243.4	3250.6	3254.0	3256.1	3258.8	3260.5	3262.6	3264.8	3266.3	3267.2	3268.4	3269.1	3269.7
RHO, G/CC	8.5706-5	1.7113-4	2.5650-4	3.4183-4	5.1242-4	6.8297-4	1.0240-3	1.7057-3	2.5577-3	3.4096-3	5.1130-3	6.8162-3	8.5193-3
M, MOL WT	28.937	28.945	28.949	28.952	28.955	28.957	28.959	28.962	28.963	28.964	28.966	28.967	28.967
CP, CAL/(G)(K)	0.3738	0.3650	0.3608	0.3582	0.3550	0.3531	0.3507	0.3481	0.3464	0.3454	0.3441	0.3433	0.3427
GAMMA (S)	1.2338	1.2386	1.2410	1.2425	1.2443	1.2455	1.2470	1.2486	1.2496	1.2503	1.2511	1.2516	1.2520
SON VEL, M/SEC	854.0	856.4	857.5	858.2	859.2	859.7	860.4	861.2	861.7	862.0	862.4	862.7	862.9

MOLE FRACTIONS

AR	0.00895	0.00895	0.00895	0.00895	0.00895	0.00895	0.00895	0.00896	0.00896	0.00896	0.00896	0.00896	0.00896
CO	0.00086	0.00063	0.00052	0.00046	0.00038	0.00033	0.00027	0.00021	0.00017	0.00015	0.00012	0.00011	0.00010
CO2	0.08112	0.08138	0.08149	0.08157	0.08165	0.08171	0.08177	0.08184	0.08188	0.08191	0.08194	0.08196	0.08197
H	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00017	0.00012	0.00010	0.00009	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002
H2O	0.07658	0.07681	0.07693	0.07701	0.07711	0.07717	0.07725	0.07734	0.07741	0.07745	0.07750	0.07754	0.07756
NO	0.00559	0.00565	0.00567	0.00569	0.00571	0.00573	0.00574	0.00576	0.00578	0.00578	0.00579	0.00580	0.00580
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003	0.00004
N2	0.74667	0.74686	0.74694	0.74700	0.74707	0.74711	0.74716	0.74722	0.74725	0.74728	0.74730	0.74732	0.74734
O	0.00040	0.00029	0.00024	0.00021	0.00017	0.00015	0.00013	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004
OH	0.00222	0.00191	0.00174	0.00163	0.00148	0.00139	0.00126	0.00112	0.00101	0.00094	0.00086	0.00080	0.00076
O2	0.07739	0.07738	0.07737	0.07737	0.07737	0.07738	0.07738	0.07739	0.07740	0.07740	0.07741	0.07741	0.07741

CASE= 5 O/F= 12.7426 F/A= 0.07848 PERCENT FUEL= 7.2766 PHI= 1.1500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2524.8	2559.9	2579.4	2592.7	2610.7	2622.8	2638.9	2657.4	2670.8	2679.5	2690.6	2697.7	2702.7
T, DEG F	4084.9	4148.1	4183.3	4207.2	4239.5	4261.2	4290.2	4323.7	4347.7	4363.3	4383.3	4396.1	4405.2
RHO, G/CC	6.6838-5	1.3219-4	1.9708-4	2.6169-4	3.9036-4	5.1855-4	7.7401-4	1.2828-3	1.9164-3	2.5485-3	3.8101-3	5.0693-3	6.3271-3
M, MOL WT	27.694	27.769	27.810	27.837	27.875	27.900	27.934	27.972	27.999	28.017	28.040	28.054	28.064
CP, CAL/(G)(K)	0.7711	0.7078	0.6731	0.6495	0.6177	0.5961	0.5672	0.5335	0.5089	0.4927	0.4718	0.4583	0.4487
GAMMA (S)	1.1500	1.1571	1.1616	1.1649	1.1698	1.1734	1.1787	1.1856	1.1914	1.1955	1.2012	1.2053	1.2083
SON VEL, M/SEC	933.6	941.7	946.5	949.8	954.4	957.7	962.2	967.8	972.0	975.0	979.0	981.6	983.6

MOLE FRACTIONS

AR	0.00827	0.00829	0.00830	0.00831	0.00832	0.00833	0.00834	0.00835	0.00836	0.00836	0.00837	0.00837	0.00838
CO	0.06181	0.05981	0.05864	0.05782	0.05670	0.05552	0.05487	0.05365	0.05275	0.05217	0.05143	0.05095	0.05061
CO2	0.08309	0.08549	0.08687	0.08763	0.08915	0.09006	0.09128	0.09271	0.09375	0.09442	0.09529	0.09584	0.09623
H	0.00467	0.00373	0.00324	0.00293	0.00253	0.00228	0.00195	0.00160	0.00136	0.00120	0.00101	0.00090	0.00081
H2	0.01408	0.01328	0.01284	0.01254	0.01213	0.01186	0.01150	0.01109	0.01080	0.01061	0.01038	0.01023	0.01013
H2O	0.11723	0.11932	0.12048	0.12127	0.12234	0.12305	0.12401	0.12512	0.12599	0.12644	0.12711	0.12754	0.12785
NO	0.00405	0.00387	0.00373	0.00362	0.00344	0.00330	0.00308	0.00279	0.00254	0.00237	0.00212	0.00194	0.00181
N2	0.69030	0.69224	0.69333	0.69409	0.69512	0.69582	0.69676	0.69786	0.69867	0.69920	0.69989	0.70034	0.70066
O	0.00181	0.00136	0.00114	0.00099	0.00081	0.00070	0.00056	0.00041	0.00032	0.00026	0.00020	0.00016	0.00014
OH	0.00848	0.00759	0.00765	0.00666	0.00612	0.00573	0.00519	0.00453	0.00402	0.00368	0.00322	0.00292	0.00269
O2	0.00621	0.00503	0.00438	0.00394	0.00335	0.00296	0.00246	0.00189	0.00151	0.00127	0.00099	0.00081	0.00070

CASE= 5 O/F= 12.2117 F/A= 0.08189 PERCENT FUEL= 7.5691 PHI= 1.2000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2520.7	2553.5	2571.2	2583.2	2599.0	2609.4	2623.0	2638.2	2648.8	2655.4	2663.8	2668.9	2672.6
T, DEG F	4077.6	4136.5	4168.5	4190.0	4218.5	4237.3	4261.8	4289.1	4308.1	4320.1	4335.1	4344.4	4350.9
RHO, G/CC	6.6535-5	1.3169-4	1.9643-4	2.6093-4	3.8948-4	5.1763-4	7.7320-4	1.2827-3	1.9178-3	2.5519-3	3.8182-3	5.0830-3	6.3468-3
M, MOL WT	27.525	27.593	27.630	27.655	27.688	27.709	27.737	27.768	27.790	27.803	27.820	27.830	27.837
CP, CAL/(G)(K)	0.7252	0.6593	0.6237	0.5997	0.5680	0.5469	0.5194	0.4885	0.4671	0.4536	0.4367	0.4262	0.4189
GAMMA (S)	1.1558	1.1644	1.1699	1.1739	1.1798	1.1841	1.1903	1.1982	1.2044	1.2086	1.2143	1.2181	1.2209
SON VEL, M/SEC	938.1	946.5	951.4	954.8	959.6	962.9	967.4	972.9	977.0	979.7	983.2	985.5	987.2

MOLE FRACTIONS

AR	0.00819	0.00821	0.00822	0.00823	0.00824	0.00824	0.00825	0.00826	0.00827	0.00827	0.00828	0.00828	0.00828
CO	0.07066	0.06908	0.06819	0.06758	0.06676	0.06621	0.06549	0.06468	0.06411	0.06376	0.06332	0.06306	0.06287
CO2	0.07913	0.08108	0.08218	0.08232	0.08392	0.08459	0.08546	0.08644	0.08712	0.08755	0.08807	0.08840	0.08863
H	0.00507	0.00404	0.00351	0.00317	0.00273	0.00245	0.00209	0.00170	0.00144	0.00127	0.00107	0.00094	0.00085
H2	0.01719	0.01646	0.01606	0.01580	0.01545	0.01522	0.01493	0.01461	0.01439	0.01425	0.01409	0.01399	0.01392
H2O	0.11902	0.12109	0.12222	0.12298	0.12400	0.12467	0.12555	0.12655	0.12724	0.12768	0.12824	0.12858	0.12883
NO	0.00326	0.00303	0.00286	0.00273	0.00254	0.00239	0.00218	0.00190	0.00169	0.00154	0.00134	0.00121	0.00111
N2	0.68427	0.68610	0.68711	0.68779	0.68870	0.68931	0.69012	0.69103	0.69167	0.69207	0.69259	0.69292	0.69314
O	0.00145	0.00105	0.00085	0.00073	0.00058	0.00049	0.00038	0.00027	0.00020	0.00016	0.00012	0.00009	0.00008
OH	0.00762	0.00668	0.00613	0.00573	0.00518	0.00479	0.00426	0.00363	0.00316	0.00285	0.00245	0.00219	0.00200
O2	0.00413	0.00318	0.00267	0.00234	0.00191	0.00164	0.00130	0.00095	0.00072	0.00059	0.00043	0.00035	0.00029

CASE= 7 O/F= 29.3080 F/A= 0.03412 PERCENT FUEL= 3.2995 PHI= 0.5000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2142.9	2148.8	2151.6	2153.4	2155.7	2157.1	2158.8	2160.7	2162.0	2162.8	2163.8	2164.4	2164.8
T, DEG F	3397.6	3408.1	3413.2	3416.5	3420.5	3423.0	3426.2	3429.6	3431.8	3433.3	3435.1	3436.2	3437.0
RHO, G/CC	8.2221-5	1.6406-4	2.4582-4	3.2753-4	4.9087-4	6.5413-4	9.8052-4	1.6330-3	2.4483-3	3.2634-3	4.8932-3	6.5227-3	8.1520-3
M, MOL WT	28.916	28.928	28.934	28.938	28.943	28.946	28.949	28.953	28.956	28.957	28.960	28.961	28.962
CP, CAL/(G)(K)	0.3896	0.3774	0.3716	0.3680	0.3635	0.3608	0.3574	0.3538	0.3514	0.3499	0.3481	0.3470	0.3462
GAMMA (S)	1.2263	1.2322	1.2352	1.2371	1.2396	1.2411	1.2430	1.2451	1.2466	1.2474	1.2485	1.2492	1.2497
SON VEL, M/SEC	869.3	872.4	873.9	874.9	876.1	876.9	877.9	879.0	879.7	880.1	880.7	881.0	881.3

MOLE FRACTIONS

AR	0.00900	0.00900	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901
CO	0.00122	0.00090	0.00076	0.00066	0.00055	0.00048	0.00040	0.00031	0.00026	0.00023	0.00019	0.00016	0.00015
CO2	0.06755	0.06789	0.06805	0.06815	0.06828	0.06835	0.06845	0.06854	0.06860	0.06864	0.06868	0.06871	0.06873
H	0.00009	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000
H02	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00023	0.00017	0.00014	0.00012	0.00010	0.00009	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00003
H20	0.06345	0.06376	0.06392	0.06403	0.06417	0.06425	0.06437	0.06450	0.06459	0.06464	0.06472	0.06477	0.06480
NO	0.00074	0.00075	0.00079	0.00079	0.00078	0.00080	0.00084	0.00088	0.00088	0.00088	0.00088	0.00088	0.00088
NO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004	0.00005
N2	0.74999	0.75026	0.75038	0.75046	0.75056	0.75063	0.75070	0.75079	0.75084	0.75087	0.75092	0.75094	0.75096
O	0.00082	0.00060	0.00050	0.00044	0.00036	0.00032	0.00026	0.00021	0.00017	0.00015	0.00012	0.00011	0.00009
OH	0.00313	0.00270	0.00247	0.00232	0.00212	0.00199	0.00181	0.00161	0.00146	0.00136	0.00124	0.00116	0.00110
O2	0.09680	0.09680	0.09681	0.09682	0.09683	0.09684	0.09685	0.09687	0.09688	0.09689	0.09690	0.09691	0.09691

CASE= 7 O/F= 24.4233 F/A= 0.04094 PERCENT FUEL= 3.9334 PHI= 0.6000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2278.7	2291.6	2298.1	2302.3	2307.6	2311.0	2315.2	2319.9	2323.0	2325.0	2327.5	2329.0	2330.1
T, DEG F	3641.9	3665.1	3676.9	3684.4	3694.0	3700.1	3707.7	3716.1	3721.7	3725.3	3729.8	3732.6	3734.5
RHO, G/CC	7.7109-5	1.5350-4	2.2971-4	3.0581-4	4.5784-4	6.0972-4	9.1318-4	1.5194-3	2.2766-3	3.0333-3	4.5460-3	6.0580-3	7.5696-3
M, MOL WT	28.836	28.864	28.878	28.887	28.898	28.905	28.915	28.924	28.931	28.936	28.941	28.944	28.947
CP, CAL/(G)(K)	0.4621	0.4368	0.4243	0.4163	0.4063	0.4000	0.3922	0.3836	0.3780	0.3745	0.3702	0.3675	0.3656
GAMMA (S)	1.1982	1.2065	1.2110	1.2140	1.2180	1.2207	1.2241	1.2279	1.2306	1.2323	1.2345	1.2359	1.2368
SON VEL, M/SEC	887.3	892.4	895.1	896.9	899.3	900.8	902.7	904.9	906.4	907.4	908.5	909.3	909.8

MOLE FRACTIONS

AR	0.00892	0.00892	0.00893	0.00893	0.00894	0.00894	0.00894	0.00894	0.00895	0.00895	0.00895	0.00895	0.00895
CO	0.00400	0.00312	0.00267	0.00238	0.00202	0.00180	0.00151	0.00121	0.00101	0.00089	0.00074	0.00065	0.00058
CO2	0.07769	0.07866	0.07914	0.07945	0.07985	0.08010	0.08041	0.08073	0.08095	0.08109	0.08125	0.08136	0.08143
H	0.00032	0.00021	0.00017	0.00014	0.00011	0.00009	0.00007	0.00005	0.00004	0.00003	0.00002	0.00002	0.00002
H02	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
H2	0.00070	0.00054	0.00046	0.00041	0.00034	0.00030	0.00025	0.00020	0.00017	0.00015	0.00012	0.00011	0.00010
H20	0.07402	0.07462	0.07494	0.07515	0.07542	0.07560	0.07583	0.07609	0.07628	0.07640	0.07656	0.07666	0.07673
NO	0.00921	0.00945	0.00958	0.00965	0.00976	0.00982	0.00991	0.01000	0.01006	0.01010	0.01015	0.01018	0.01020
NO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004
N2	0.74223	0.74283	0.74314	0.74333	0.74358	0.74373	0.74393	0.74414	0.74428	0.74437	0.74448	0.74454	0.74459
O	0.00170	0.00129	0.00109	0.00097	0.00082	0.00072	0.00060	0.00048	0.00040	0.00035	0.00029	0.00025	0.00023
OH	0.00547	0.00484	0.00449	0.00425	0.00392	0.00370	0.00340	0.00304	0.00279	0.00261	0.00238	0.00223	0.00212
O2	0.07574	0.07551	0.07539	0.07532	0.07524	0.07519	0.07514	0.07508	0.07505	0.07503	0.07501	0.07500	0.07499



CASE= 1 O/F= 20.9343 F/A= 0.04777 PERCENT FUEL= 4.5591 PHI= 0.7000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1857.6	1858.7	1859.3	1859.6	1860.0	1860.3	1860.6	1861.0	1861.2	1861.4	1861.6	1861.7	1861.8
T, DEG F	2884.0	2886.0	2887.0	2887.6	2888.4	2888.8	2889.4	2890.1	2890.5	2890.8	2891.1	2891.3	2891.5
RHO, G/CC	9.5014-5	1.8393-4	2.8482-4	3.7970-4	5.6944-4	7.5915-4	1.1386-3	1.8973-3	2.8456-3	3.7939-3	5.6903-3	7.5867-3	9.4830-3
M, MOL WT	28.966	28.968	28.969	28.970	28.971	28.971	28.972	28.973	28.973	28.973	28.974	28.974	28.974
CP, CAL/(G*IK)	0.3436	0.3407	0.3394	0.3386	0.3375	0.3369	0.3361	0.3353	0.3347	0.3344	0.3340	0.3337	0.3335
GAMMA (S)	1.2524	1.2543	1.2553	1.2559	1.2566	1.2570	1.2576	1.2582	1.2586	1.2588	1.2591	1.2593	1.2595
SON VEL, M/SEC	817.2	818.0	818.4	818.7	819.0	819.2	819.5	819.7	819.9	820.0	820.1	820.2	820.3

MOLE FRACTIONS

AR	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890
CO	0.00020	0.00014	0.00012	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002
CO2	0.09487	0.09493	0.09496	0.09498	0.09500	0.09501	0.09503	0.09504	0.09505	0.09506	0.09507	0.09507	0.09508
H	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00005	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000
H2O	0.08991	0.08999	0.09003	0.09006	0.09009	0.09011	0.09014	0.09017	0.09020	0.09021	0.09023	0.09024	0.09025
NO	0.00275	0.00276	0.00276	0.00276	0.00277	0.00277	0.00277	0.00278	0.00278	0.00278	0.00278	0.00278	0.00278
NO2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
N2	0.74395	0.74400	0.74403	0.74405	0.74407	0.74408	0.74409	0.74411	0.74412	0.74413	0.74413	0.74414	0.74414
O	0.00007	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001
OH	0.00081	0.00068	0.00062	0.00058	0.00052	0.00049	0.00044	0.00039	0.00035	0.00033	0.00030	0.00028	0.00026
O2	0.05850	0.05850	0.05850	0.05851	0.05851	0.05851	0.05852	0.05852	0.05852	0.05853	0.05853	0.05853	0.05853

CASE= 1 O/F= 18.3175 F/A= 0.05459 PERCENT FUEL= 5.1767 PHI= 0.8000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2022.7	2026.8	2028.8	2030.1	2031.6	2032.5	2033.7	2035.0	2035.8	2036.3	2037.0	2037.4	2037.7
T, DEG F	3181.1	3188.6	3192.2	3194.4	3197.2	3198.9	3201.0	3203.3	3204.8	3205.7	3206.9	3207.6	3208.1
RHO, G/CC	8.7180-5	1.7406-4	2.6087-4	3.4764-4	5.2112-4	6.9455-4	1.0413-3	1.7346-3	2.6010-3	3.4672-3	5.1995-3	6.9314-3	8.6633-3
M, MOL WT	28.939	28.948	28.952	28.955	28.958	28.960	28.963	28.965	28.967	28.968	28.969	28.970	28.971
CP, CAL/(G*IK)	0.3811	0.3711	0.3663	0.3634	0.3598	0.3576	0.3549	0.3520	0.3502	0.3490	0.3476	0.3467	0.3461
GAMMA (S)	1.2290	1.2343	1.2369	1.2385	1.2406	1.2419	1.2435	1.2452	1.2463	1.2471	1.2479	1.2485	1.2489
SON VEL, M/SEC	845.1	847.7	848.9	849.7	850.7	851.3	852.0	852.9	853.4	853.7	854.2	854.4	854.6

MOLE FRACTIONS

AR	0.00883	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884
CO	0.00122	0.00089	0.00074	0.00065	0.00054	0.00047	0.00039	0.00030	0.00025	0.00022	0.00018	0.00016	0.00014
CO2	0.10659	0.10695	0.10711	0.10721	0.10734	0.10741	0.10751	0.10760	0.10766	0.10770	0.10774	0.10777	0.10779
H	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00025	0.00018	0.00015	0.00013	0.00011	0.00010	0.00008	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003
H2O	0.10133	0.10156	0.10168	0.10175	0.10185	0.10191	0.10199	0.10208	0.10214	0.10217	0.10222	0.10225	0.10228
N	0.00356	0.00360	0.00361	0.00362	0.00364	0.00364	0.00366	0.00367	0.00367	0.00368	0.00369	0.00369	0.00369
NO2	0.00007	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002
N2	0.73805	0.73826	0.73835	0.73841	0.73849	0.73854	0.73859	0.73865	0.73869	0.73872	0.73875	0.73877	0.73878
O	0.00022	0.00016	0.00013	0.00011	0.00009	0.00008	0.00007	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002
OH	0.00182	0.00156	0.00142	0.00133	0.00121	0.00114	0.00103	0.00091	0.00083	0.00077	0.00070	0.00065	0.00062
O2	0.03809	0.03798	0.03793	0.03790	0.03787	0.03785	0.03783	0.03782	0.03781	0.03780	0.03779	0.03779	0.03779

CASE=	2	0/F=	10.4671	F/A=	0.09554	PERCENT FUEL=	8.7206	PHI=	1.4000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2123.6	2126.2	2127.4	2128.2	2129.0	2129.5	2130.1	2130.8	2131.2	2131.4	2131.7	2131.8	2132.0						
T, DEG F	3362.8	3367.5	3369.7	3371.0	3372.5	3373.5	3374.6	3375.7	3376.4	3376.8	3377.3	3377.6	3377.8						
RHO, G/CC	7.7203-5	1.5425-4	2.3126-4	3.0826-4	4.6224-4	6.1619-4	9.2407-4	1.5397-3	2.3093-3	3.0787-3	4.6176-3	6.1564-3	7.6952-3						
M, MOL WT	26.906	26.912	26.914	26.916	26.918	26.919	26.920	26.921	26.922	26.923	26.924	26.924	26.924						
CP, CAL/(G)(K)	0.3769	0.3702	0.3673	0.3655	0.3634	0.3622	0.3607	0.3592	0.3582	0.3576	0.3570	0.3566	0.3563						
GAMMA (S)	1.2497	1.2505	1.2552	1.2563	1.2575	1.2583	1.2592	1.2601	1.2607	1.2611	1.2615	1.2618	1.2619						
SON VEL, M/SEC	905.6	907.4	908.3	908.8	909.4	909.7	910.2	910.6	910.9	911.1	911.3	911.4	911.5						

MOLE FRACTIONS

AR	0.00790	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791						
CO	0.10336	0.10342	0.10344	0.10346	0.10348	0.10349	0.10350	0.10352	0.10353	0.10353	0.10354	0.10354	0.10354						
CO2	0.06530	0.06528	0.06527	0.06526	0.06525	0.06525	0.06524	0.06524	0.06524	0.06524	0.06523	0.06523	0.06523						
H	0.00099	0.00071	0.00059	0.00051	0.00042	0.00036	0.00030	0.00023	0.00019	0.00016	0.00013	0.00012	0.00012						
H2	0.03854	0.03856	0.03858	0.03858	0.03859	0.03860	0.03861	0.03861	0.03862	0.03862	0.03862	0.03862	0.03862						
H2O	0.12132	0.12152	0.12161	0.12167	0.12173	0.12177	0.12182	0.12186	0.12189	0.12191	0.12193	0.12194	0.12195						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
NO	0.00007	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001						
N2	0.66211	0.66226	0.66232	0.66236	0.66241	0.66244	0.66248	0.66251	0.66253	0.66255	0.66256	0.66257	0.66258						
O	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
OH	0.00040	0.00029	0.00024	0.00021	0.00017	0.00015	0.00012	0.00009	0.00008	0.00007	0.00005	0.00005	0.00004						
O2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						

CASE=	2	0/F=	9.1588	F/A=	0.10919	PERCENT FUEL=	9.8437	PHI=	1.6000										
P, ATM	0.5000	1.0000	1.5030	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	1973.8	1974.8	1975.2	1975.5	1975.8	1976.0	1976.2	1976.5	1976.6	1976.7	1976.8	1976.9	1976.9						
T, DEG F	3093.1	3094.9	3095.7	3096.2	3096.8	3097.1	3097.5	3098.0	3098.2	3098.4	3098.6	3098.7	3098.8						
RHO, G/CC	8.0357-5	1.6065-4	2.4092-4	3.2119-4	4.8173-4	6.4225-4	9.6328-4	1.6053-3	2.4078-3	3.2103-3	4.8153-3	6.4202-3	8.0251-3						
M, MOL WT	26.029	26.032	26.033	26.033	26.034	26.034	26.035	26.035	26.036	26.036	26.036	26.037	26.037						
CP, CAL/(G)(K)	0.3670	0.3643	0.3631	0.3624	0.3616	0.3611	0.3605	0.3598	0.3595	0.3592	0.3590	0.3588	0.3587						
GAMMA (S)	1.2652	1.2669	1.2677	1.2681	1.2687	1.2690	1.2694	1.2698	1.2701	1.2702	1.2704	1.2705	1.2706						
SON VEL, M/SEC	893.1	893.9	894.3	894.5	894.7	894.9	895.1	895.3	895.4	895.4	895.5	895.6	895.6						

MOLE FRACTIONS

AR	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00756	0.00756	0.00756	0.00756	0.00756	0.00756						
CO	0.13580	0.13584	0.13586	0.13587	0.13588	0.13589	0.13590	0.13591	0.13591	0.13591	0.13592	0.13592	0.13592						
CO2	0.04835	0.04832	0.04831	0.04830	0.04830	0.04829	0.04829	0.04828	0.04828	0.04828	0.04828	0.04828	0.04828						
H	0.00050	0.00035	0.00029	0.00025	0.00021	0.00018	0.00015	0.00011	0.00009	0.00008	0.00007	0.00006	0.00005						
H2	0.06767	0.06771	0.06772	0.06773	0.06774	0.06775	0.06776	0.06776	0.06777	0.06777	0.06777	0.06777	0.06777						
H2O	0.10737	0.10743	0.10745	0.10747	0.10749	0.10750	0.10752	0.10753	0.10754	0.10754	0.10755	0.10755	0.10755						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001						
NO	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
N2	0.63268	0.63274	0.63276	0.63278	0.63279	0.63280	0.63282	0.63283	0.63284	0.63284	0.63285	0.63285	0.63285						
OH	0.00008	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001						

CASE= 4 O/F= 20.9343 F/A= 0.04777 PERCENT FUEL= 4.5591 PHI= 0.7000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2201.3	2211.3	2216.3	2219.4	2223.4	2226.0	2229.1	2232.5	2234.8	2236.3	2238.1	2239.2	2240.0
T, DEG F	3502.6	3520.6	3529.6	3535.3	3542.5	3547.0	3552.8	3558.9	3563.0	3565.6	3568.8	3570.8	3572.3
RHO, G/CC	7.9924-5	1.5324-4	2.3842-4	3.1751-4	4.7555-4	6.3346-4	9.4907-4	1.5798-3	2.3676-3	3.1551-3	4.7295-3	6.3034-3	7.8769-3
M, MOL WT	28.874	28.895	28.906	28.913	28.921	28.927	28.933	28.941	28.945	28.949	28.952	28.955	28.956
CP, CAL/(G)(K)	0.4380	0.4170	0.4067	0.4002	0.3921	0.3870	0.3807	0.3740	0.3696	0.3668	0.3634	0.3613	0.3599
GAMMA (S)	1.2054	1.2132	1.2174	1.2202	1.2238	1.2261	1.2291	1.2324	1.2347	1.2361	1.2379	1.2391	1.2399
SON VEL, M/SEC	874.1	878.6	881.0	882.5	884.4	885.7	887.3	889.1	890.3	891.0	892.0	892.6	893.0

MOLE FRACTIONS

AR	0.00887	0.00888	0.00888	0.00888	0.00888	0.00889	0.00889	0.00889	0.00889	0.00889	0.00889	0.00889	0.00890
CO	0.00326	0.00249	0.00212	0.00188	0.00158	0.00140	0.00117	0.00093	0.00077	0.00068	0.00056	0.00049	0.00044
CO2	0.09151	0.09234	0.09275	0.09301	0.09334	0.09354	0.09379	0.09405	0.09423	0.09433	0.09446	0.09454	0.09460
H	0.00019	0.00013	0.00010	0.00008	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001
H02	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00059	0.00045	0.00038	0.00034	0.00028	0.00025	0.00021	0.00016	0.00014	0.00012	0.00010	0.00009	0.00008
H20	0.08734	0.08783	0.08809	0.08825	0.08847	0.08861	0.08879	0.08900	0.08914	0.08923	0.08935	0.08943	0.08948
NO	0.00674	0.00688	0.00695	0.00699	0.00705	0.00709	0.00713	0.00719	0.00722	0.00724	0.00727	0.00729	0.00730
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003
N2	0.73958	0.74007	0.74031	0.74046	0.74065	0.74077	0.74092	0.74108	0.74119	0.74125	0.74134	0.74139	0.74142
O	0.00091	0.00069	0.00058	0.00051	0.00043	0.00038	0.00031	0.00025	0.00020	0.00018	0.00015	0.00013	0.00012
OH	0.00409	0.00359	0.00331	0.00312	0.00287	0.00270	0.00247	0.00220	0.00201	0.00188	0.00171	0.00160	0.00152
O2	0.05691	0.05665	0.05653	0.05646	0.05637	0.05632	0.05626	0.05620	0.05616	0.05614	0.05612	0.05611	0.05610

CASE= 4 O/F= 18.3175 F/A= 0.05459 PERCENT FUEL= 5.1767 PHI= 0.8000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2313.1	2331.8	2341.6	2348.1	2356.5	2362.0	2369.1	2376.9	2382.3	2387.7	2390.1	2392.8	2394.8
T, DEG F	3703.9	3737.6	3755.3	3766.9	3782.1	3791.9	3804.6	3818.7	3828.4	3834.6	3842.5	3847.4	3850.9
RHO, G/CC	7.5737-5	1.5047-4	2.2493-4	2.9923-4	4.4752-4	5.9556-4	8.9115-4	1.4812-3	2.2177-3	2.9534-3	4.4235-3	5.8925-3	7.3607-3
M, MOL WT	28.751	28.792	28.813	28.827	28.846	28.858	28.873	28.890	28.902	28.909	28.919	28.925	28.929
CP, CAL/(G)(K)	0.5384	0.5028	0.4843	0.4721	0.4565	0.4463	0.4333	0.4190	0.4092	0.4030	0.3952	0.3903	0.3869
GAMMA (S)	1.1779	1.1863	1.1912	1.1946	1.1993	1.2026	1.2070	1.2122	1.2160	1.2185	1.2217	1.2239	1.2254
SON VEL, M/SEC	887.6	893.8	897.2	899.5	902.6	904.7	907.4	910.6	912.9	914.4	916.3	917.5	918.4

MOLE FRACTIONS

AR	0.00877	0.00879	0.00879	0.00880	0.00880	0.00881	0.00881	0.00882	0.00882	0.00882	0.00883	0.00883	0.00883
CO	0.00878	0.00716	0.00629	0.00572	0.00498	0.00449	0.00386	0.00317	0.00269	0.00239	0.00201	0.00178	0.00161
CO2	0.09833	0.10010	0.10104	0.10167	0.10248	0.10301	0.10370	0.10446	0.10498	0.10531	0.10572	0.10598	0.10616
H	0.00057	0.00040	0.00032	0.00027	0.00021	0.00018	0.00014	0.00010	0.00008	0.00007	0.00005	0.00004	0.00004
H02	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00155	0.00124	0.00108	0.00097	0.00084	0.00075	0.00064	0.00052	0.00044	0.00039	0.00033	0.00029	0.00026
H20	0.09699	0.09784	0.09829	0.09859	0.09898	0.09924	0.09958	0.09997	0.10025	0.10042	0.10066	0.10081	0.10091
NO	0.00704	0.00725	0.00736	0.00743	0.00752	0.00758	0.00766	0.00775	0.00781	0.00785	0.00790	0.00793	0.00795
NO2	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
N2	0.73149	0.73243	0.73292	0.73325	0.73367	0.73394	0.73430	0.73469	0.73496	0.73513	0.73534	0.73548	0.73557
O	0.00149	0.00116	0.00099	0.00089	0.00076	0.00067	0.00057	0.00046	0.00039	0.00034	0.00028	0.00025	0.00022
OH	0.00602	0.00541	0.00507	0.00482	0.00449	0.00426	0.00394	0.00356	0.00328	0.00309	0.00283	0.00266	0.00254
O2	0.03897	0.03823	0.03784	0.03758	0.03726	0.03704	0.03678	0.03649	0.03629	0.03617	0.03602	0.03593	0.03587



CASE= 7 O/F= 20.9343 F/A= 0.04777 PERCENT FUEL= 4.5591 PHI= 0.7000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2384.1	2405.8	2417.3	2425.0	2434.9	2441.5	2449.9	2459.4	2465.9	2470.2	2475.5	2478.9	2481.3
T, DEG F	3831.7	3870.8	3891.5	3905.2	3923.2	3934.9	3950.2	3967.1	3979.0	3986.6	3996.2	4002.3	4006.6
RHO, G/CC	7.3352-4	1.4562-4	2.1758-4	2.8937-4	4.3260-4	5.7554-4	8.6089-4	1.4303-3	2.1408-3	2.8505-3	4.2682-3	5.6846-3	7.1002-3
M, MOL WT	28.700	28.748	28.773	28.790	28.812	28.826	28.844	28.865	28.879	28.889	28.900	28.908	28.913
CP, CAL/(G*IK)	0.5641	0.5247	0.5041	0.4906	0.4731	0.4618	0.4472	0.4311	0.4200	0.4130	0.4041	0.3985	0.3946
GAMMA (S)	1.1737	1.1821	1.1869	1.1904	1.1951	1.1984	1.2029	1.2083	1.2122	1.2149	1.2183	1.2206	1.2222
SOM VEL, M/SEC	900.4	906.9	910.6	913.0	916.4	918.7	921.7	925.2	927.7	929.3	931.5	932.9	933.9

MOLE FRACTIONS

AR	0.00882	0.00883	0.00884	0.00884	0.00885	0.00886	0.00886	0.00887	0.00887	0.00887	0.00888	0.00888	0.00888
CO	0.00957	0.00789	0.00698	0.00637	0.00557	0.00505	0.00436	0.00360	0.00307	0.00274	0.00232	0.00205	0.00186
CO2	0.08462	0.08466	0.08745	0.08512	0.08899	0.08956	0.09031	0.09113	0.09171	0.09208	0.09254	0.09283	0.09303
H	0.00084	0.00059	0.00048	0.00041	0.00032	0.00027	0.00022	0.00016	0.00012	0.00010	0.00008	0.00006	0.00006
H2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002
H2O	0.00163	0.00131	0.00115	0.00104	0.00090	0.00081	0.00070	0.00057	0.00048	0.00043	0.00036	0.00032	0.00029
N	0.08353	0.08448	0.08495	0.08534	0.08580	0.08610	0.08650	0.08697	0.08730	0.08752	0.08780	0.08799	0.08812
NO	0.00981	0.01017	0.01036	0.01049	0.01066	0.01077	0.01091	0.01108	0.01119	0.01126	0.01136	0.01142	0.01146
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003	0.00003
N2	0.73358	0.73463	0.73518	0.73555	0.73603	0.73634	0.73674	0.73719	0.73750	0.73770	0.73795	0.73811	0.73822
O	0.00267	0.00211	0.00183	0.00164	0.00141	0.00126	0.00107	0.00087	0.00073	0.00065	0.00054	0.00048	0.00043
OH	0.00790	0.00717	0.00674	0.00644	0.00603	0.00573	0.00544	0.00516	0.00488	0.00462	0.00438	0.00416	0.00399
O2	0.05702	0.05634	0.05598	0.05574	0.05543	0.05523	0.05497	0.05469	0.05450	0.05439	0.05424	0.05416	0.05410

CASE= 7 O/F= 18.3175 F/A= 0.05459 PERCENT FUEL= 5.1767 PHI= 0.8000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2461.6	2491.5	2508.1	2519.3	2534.4	2544.6	2558.1	2573.9	2585.3	2592.8	2602.6	2609.0	2613.6
T, DEG F	3971.2	4025.1	4054.8	4075.0	4102.2	4120.5	4144.9	4173.3	4193.8	4207.4	4225.0	4236.5	4244.8
RHO, G/CC	7.0577-5	1.3978-4	2.0895-4	2.7707-4	4.1361-4	5.4971-4	8.2104-4	1.3617-3	2.0353-3	2.7074-3	4.0488-3	5.3878-3	6.7252-3
M, MOL WT	28.512	28.578	28.614	28.639	28.672	28.694	28.724	28.759	28.784	28.801	28.822	28.836	28.846
CP, CAL/(G*IK)	0.6794	0.6301	0.6035	0.5856	0.5619	0.5460	0.5250	0.5007	0.4833	0.4718	0.4570	0.4473	0.4404
GAMMA (S)	1.1566	1.1636	1.1678	1.1709	1.1752	1.1784	1.1828	1.1884	1.1929	1.1959	1.2002	1.2031	1.2053
SOM VEL, M/SEC	911.2	918.4	922.5	925.4	929.4	932.1	935.9	940.4	943.8	946.1	949.2	951.3	952.9

MOLE FRACTIONS

AR	0.00870	0.00872	0.00873	0.00874	0.00875	0.00876	0.00877	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880
CO	0.01816	0.01576	0.01440	0.01315	0.01215	0.01126	0.01006	0.00864	0.00760	0.00691	0.00601	0.00543	0.00500
CO2	0.08806	0.09070	0.09220	0.09324	0.09466	0.09563	0.09695	0.09849	0.09963	0.01038	0.01036	0.01020	0.01024
H	0.00167	0.00124	0.00103	0.00090	0.00074	0.00064	0.00052	0.00040	0.00032	0.00027	0.00021	0.00018	0.00016
H2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002	0.00002
H2O	0.00315	0.00266	0.00239	0.00221	0.00197	0.00180	0.00159	0.00135	0.00117	0.00106	0.00091	0.00082	0.00075
H2O	0.09205	0.09337	0.09409	0.09459	0.09525	0.09570	0.09631	0.09702	0.09754	0.09789	0.09834	0.09865	0.09887
NO	0.00957	0.00996	0.01017	0.01031	0.01050	0.01063	0.01080	0.01099	0.01113	0.01122	0.01134	0.01142	0.01148
NO2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002
N2	0.72411	0.72560	0.72643	0.72699	0.72774	0.72825	0.72893	0.72972	0.73029	0.73066	0.73115	0.73147	0.73170
O	0.00341	0.00276	0.00243	0.00221	0.00193	0.00174	0.00150	0.00124	0.00106	0.00095	0.00081	0.00072	0.00065
OH	0.00989	0.00915	0.00870	0.00838	0.00793	0.00761	0.00715	0.00659	0.00616	0.00585	0.00544	0.00515	0.00494
O2	0.04121	0.04006	0.03942	0.03897	0.03836	0.03795	0.03740	0.03675	0.03629	0.03598	0.03558	0.03533	0.03514

CASE= 1 O/F= 17.2400 F/A= 0.05800 PERCENT FUEL= 5.4825 PHI= 0.8500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2095.1	2102.3	2105.8	2108.0	2110.8	2112.5	2114.7	2116.9	2118.5	2119.4	2120.6	2121.3	2121.8
T, DEG F	3311.5	3324.4	3330.7	3334.7	3339.7	3342.8	3346.7	3350.8	3353.5	3355.2	3357.4	3358.7	3359.6
RHO, G/CC	8.4080-5	1.6767-4	2.5116-4	3.3458-4	5.0131-4	6.6795-4	1.0011-3	1.6669-3	2.4989-3	3.3306-3	4.9935-3	6.6561-3	8.3184-3
M, MOL WT	28.909	28.925	28.932	28.937	28.943	28.947	28.951	28.956	28.959	28.961	28.964	28.965	28.966
CP, CAL/(G)(K)	0.4147	0.3980	0.3899	0.3848	0.3785	0.3746	0.3698	0.3647	0.3613	0.3593	0.3568	0.3552	0.3541
GAMMA (S)	1.2134	1.2206	1.2244	1.2268	1.2299	1.2319	1.2344	1.2372	1.2391	1.2402	1.2417	1.2426	1.2432
SON VEL./M/SEC	855.1	858.8	860.8	862.0	863.6	864.6	865.8	867.2	868.1	868.7	869.4	869.8	870.2

MOLE FRACTIONS

AR	0.00879	0.00880	0.00880	0.00880	0.00881	0.00881	0.00881	0.00881	0.00881	0.00881	0.00881	0.00881	0.00881
CO	0.00260	0.00196	0.00165	0.00146	0.00122	0.00107	0.00089	0.00071	0.00058	0.00051	0.00042	0.00037	0.00033
CO2	0.11144	0.11214	0.11248	0.11269	0.11295	0.11311	0.11331	0.11352	0.11365	0.11373	0.11383	0.11389	0.11394
H	0.00010	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000
H2	0.00051	0.00038	0.00032	0.00028	0.00024	0.00021	0.00017	0.00014	0.00011	0.00010	0.00008	0.00007	0.00006
H2O	0.10668	0.10704	0.10723	0.10734	0.10749	0.10759	0.10772	0.10785	0.10794	0.10800	0.10808	0.10813	0.10817
NO	0.00371	0.00376	0.00378	0.00380	0.00382	0.00383	0.00384	0.00386	0.00387	0.00388	0.00389	0.00389	0.00390
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.73483	0.73519	0.73537	0.73548	0.73562	0.73571	0.73582	0.73593	0.73601	0.73606	0.73611	0.73615	0.73618
O	0.00032	0.00024	0.00020	0.00017	0.00014	0.00013	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00004
OH	0.00243	0.00211	0.00193	0.00181	0.00166	0.00156	0.00142	0.00126	0.00115	0.00107	0.00097	0.00091	0.00086
O2	0.02860	0.02832	0.02819	0.02811	0.02801	0.02796	0.02789	0.02782	0.02778	0.02775	0.02773	0.02771	0.02770

CASE= 1 O/F= 16.2822 F/A= 0.06142 PERCENT FUEL= 5.7863 PHI= 0.9000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2157.6	2168.9	2174.7	2178.4	2183.1	2186.1	2189.9	2194.0	2196.7	2198.4	2200.6	2201.9	2202.8
T, DEG F	3423.9	3444.4	3454.7	3461.4	3469.9	3475.3	3482.1	3489.4	3494.4	3497.5	3501.3	3503.7	3505.4
RHO, G/CC	8.1506-5	1.6230-4	2.4291-4	3.2341-4	4.8424-4	6.4491-4	9.6597-4	1.6074-3	2.4086-3	3.2094-3	4.8102-3	6.4103-3	8.0100-3
M, MOL WT	28.860	28.885	28.897	28.905	28.915	28.922	28.930	28.939	28.944	28.948	28.953	28.956	28.958
CP, CAL/(G)(K)	0.4621	0.4377	0.4253	0.4174	0.4073	0.4009	0.3928	0.3841	0.3782	0.3746	0.3701	0.3673	0.3653
GAMMA (S)	1.1964	1.2046	1.2092	1.2123	1.2164	1.2192	1.2228	1.2269	1.2297	1.2315	1.2339	1.2353	1.2364
SON VEL./M/SEC	862.4	867.2	869.8	871.6	873.8	875.3	877.3	879.4	880.9	881.8	883.0	883.8	884.3

MOLE FRACTIONS

AR	0.00875	0.00876	0.00876	0.00877	0.00877	0.00877	0.00877	0.00878	0.00878	0.00878	0.00878	0.00878	0.00878
CO	0.00508	0.00399	0.00344	0.00308	0.00262	0.00233	0.00197	0.00158	0.00133	0.00117	0.00097	0.00085	0.00077
CO2	0.11506	0.11625	0.11686	0.11725	0.11774	0.11806	0.11846	0.11888	0.11916	0.11934	0.11955	0.11969	0.11978
H	0.00019	0.00013	0.00010	0.00008	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001
H2	0.00097	0.00075	0.00064	0.00057	0.00049	0.00043	0.00036	0.00029	0.00024	0.00021	0.00018	0.00015	0.00014
H2O	0.11171	0.11224	0.11251	0.11269	0.11292	0.11307	0.11325	0.11346	0.11361	0.11370	0.11382	0.11389	0.11395
NO	0.00359	0.00364	0.00367	0.00368	0.00370	0.00371	0.00373	0.00375	0.00376	0.00377	0.00378	0.00378	0.00379
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.73126	0.73186	0.73217	0.73236	0.73261	0.73276	0.73296	0.73318	0.73332	0.73341	0.73352	0.73359	0.73364
O	0.00041	0.00031	0.00026	0.00023	0.00019	0.00017	0.00014	0.00011	0.00009	0.00008	0.00007	0.00006	0.00005
OH	0.00297	0.00261	0.00241	0.00227	0.00209	0.00197	0.00180	0.00161	0.00147	0.00138	0.00126	0.00117	0.00111
O2	0.01999	0.01946	0.01919	0.01902	0.01880	0.01867	0.01850	0.01833	0.01821	0.01814	0.01806	0.01801	0.01798

CASE= 2 O/F= 8.1411 F/A= 0.12283 PERCENT FUEL= 10.9396 PHI= 1.8000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1830.7	1831.1	1831.3	1831.4	1831.5	1831.6	1831.7	1831.8	1831.8	1831.9	1831.9	1832.0	1832.0
T, DEG F	2835.6	2836.3	2836.6	2836.8	2837.0	2837.2	2837.3	2837.5	2837.6	2837.7	2837.8	2837.9	2837.9
RHO, G/CC	8.3946-5	1.6786-4	2.5177-4	3.3568-4	5.0350-4	6.7131-4	1.0069-3	1.6781-3	2.5171-3	3.3561-3	5.0341-3	6.7121-3	8.3901-3
M, MOL WT	25.222	25.223	25.223	25.223	25.223	25.224	25.224	25.224	25.224	25.224	25.225	25.225	25.225
CP, CAL/(G)(K)	0.3649	0.3638	0.3633	0.3630	0.3626	0.3624	0.3622	0.3619	0.3618	0.3617	0.3616	0.3615	0.3615
GAMMA (S)	1.2764	1.2772	1.2775	1.2777	1.2780	1.2781	1.2783	1.2785	1.2786	1.2787	1.2787	1.2788	1.2788
SON VEL, M/SEC	877.7	878.0	878.2	878.3	878.4	878.4	878.5	878.6	878.7	878.7	878.7	878.7	878.7

MOLE FRACTIONS

AR	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723
CO	0.16096	0.16098	0.16098	0.16099	0.16099	0.16100	0.16100	0.16100	0.16100	0.16101	0.16101	0.16101	0.16101
CO2	0.03731	0.03730	0.03729	0.03729	0.03729	0.03729	0.03728	0.03728	0.03728	0.03728	0.03728	0.03728	0.03729
H	0.00020	0.00014	0.00012	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002
H2	0.09888	0.09890	0.09891	0.09892	0.09892	0.09892	0.09893	0.09893	0.09893	0.09892	0.09892	0.09891	0.09890
H2O	0.08980	0.08982	0.08983	0.08983	0.08984	0.08984	0.08985	0.08985	0.08985	0.08985	0.08985	0.08985	0.08985
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00003	0.00003
N2	0.60560	0.60562	0.60563	0.60563	0.60564	0.60564	0.60565	0.60565	0.60566	0.60566	0.60566	0.60566	0.60566
OH	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE= 2 O/F= 7.3270 F/A= 0.13648 PERCENT FUEL= 12.0091 PHI= 2.0000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1694.8	1694.9	1695.0	1695.0	1695.1	1695.1	1695.1	1695.2	1695.2	1695.2	1695.3	1695.3	1695.4
T, DEG F	2590.9	2591.2	2591.3	2591.3	2591.4	2591.5	2591.5	2591.6	2591.7	2591.7	2591.8	2591.9	2591.9
RHO, G/CC	8.8006-5	1.7600-4	2.6399-4	3.5198-4	5.2797-4	7.0394-4	1.0559-3	1.7598-3	2.6397-3	3.5136-3	5.2793-3	7.0390-3	8.7987-3
M, MOL WT	24.478	24.478	24.478	24.478	24.479	24.479	24.479	24.479	24.479	24.479	24.480	24.480	24.481
CP, CAL/(G)(K)	0.3653	0.3649	0.3647	0.3645	0.3644	0.3643	0.3642	0.3641	0.3641	0.3641	0.3641	0.3641	0.3642
GAMMA (S)	1.2861	1.2865	1.2866	1.2867	1.2868	1.2869	1.2869	1.2870	1.2870	1.2871	1.2871	1.2871	1.2871
SON VEL, M/SEC	860.5	860.6	860.7	860.7	860.7	860.8	860.8	860.8	860.8	860.9	860.9	860.9	860.9

MOLE FRACTIONS

AR	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001
CO	0.18169	0.18169	0.18170	0.18170	0.18170	0.18170	0.18170	0.18170	0.18170	0.18170	0.18170	0.18170	0.18170
CO2	0.02952	0.02952	0.02951	0.02951	0.02951	0.02951	0.02951	0.02951	0.02951	0.02951	0.02952	0.02952	0.02952
H	0.00007	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.12983	0.12984	0.12984	0.12984	0.12984	0.12984	0.12984	0.12984	0.12983	0.12982	0.12980	0.12978	0.12976
H2O	0.07127	0.07128	0.07128	0.07128	0.07128	0.07128	0.07128	0.07129	0.07129	0.07129	0.07129	0.07129	0.07129
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00003	0.00004	0.00005	0.00007
N2	0.58068	0.58069	0.58069	0.58069	0.58070	0.58070	0.58070	0.58070	0.58070	0.58070	0.58071	0.58071	0.58072

CASE= 4 O/F= 17.2400 F/A= 0.05800 PERCENT FUEL= 5.4825 PHI= 0.8500  
P, ATM 0.5000 1.0000 1.5000 2.0000 3.0000 4.0000 6.0000 10.000 15.000 20.000 30.000 40.000 50.000  
P, PSIA 7.3 14.7 22.0 29.4 44.1 58.8 88.2 147.0 220.4 293.9 440.9 587.8 734.8  
T, DEG K 2356.3 2379.4 2391.9 2400.2 2411.2 2418.6 2428.2 2439.1 2446.8 2451.8 2458.2 2462.3 2465.2  
T, DEG F 3781.6 3823.2 3845.6 3860.7 3880.5 3893.7 3911.0 3930.6 3944.5 3953.5 3965.0 3972.4 3977.6  
RHO, G/CC 7.4126-5 1.4707-4 2.1967-4 2.9206-4 4.3645-4 5.8049-4 8.6792-4 1.4413-3 2.1563-3 2.8703-3 4.2964-3 5.7208-3 7.1440-3  
M, MOL WT 28.665 28.715 28.743 28.761 28.785 28.801 28.822 28.846 28.863 28.873 28.887 28.896 28.903  
CP, CAL/(G)(K) 0.5959 0.5558 0.5340 0.5194 0.5003 0.4876 0.4711 0.4523 0.4391 0.4306 0.4197 0.4127 0.4078  
GAMMA (S) 1.1670 1.1747 1.1793 1.1826 1.1873 1.1906 1.1952 1.2008 1.2051 1.2080 1.2119 1.2145 1.2164  
SON VEL,/M/SEC 893.1 899.6 903.3 905.9 909.4 911.7 915.0 918.8 921.6 923.5 926.0 927.6 928.8

MOLE FRACTIONS

AR 0.00872 0.00874 0.00874 0.00875 0.00876 0.00876 0.00877 0.00878 0.00878 0.00878 0.00879 0.00879 0.00879  
CO 0.01298 0.01093 0.00980 0.00904 0.00801 0.00733 0.00642 0.00539 0.00466 0.00418 0.00357 0.00319 0.00291  
CO2 0.10010 0.10234 0.10358 0.10442 0.10554 0.10628 0.10727 0.10840 0.10920 0.10972 0.11038 0.11080 0.11110  
H 0.00087 0.00062 0.00051 0.00044 0.00035 0.00030 0.00024 0.00018 0.00014 0.00012 0.00009 0.00008 0.00007  
HO2 0.00000 0.00000 0.00000 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001  
H2 0.00230 0.00189 0.00167 0.00153 0.00134 0.00122 0.00106 0.00088 0.00075 0.00067 0.00057 0.00051 0.00046  
H2O 0.10140 0.10243 0.10299 0.10336 0.10386 0.10419 0.10463 0.10514 0.10550 0.10574 0.10605 0.10625 0.10640  
NO 0.00686 0.00706 0.00717 0.00724 0.00733 0.00739 0.00747 0.00756 0.00762 0.00766 0.00771 0.00775 0.00777  
NO2 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00002  
N2 0.72702 0.72820 0.72364 0.72927 0.72984 0.73022 0.73071 0.73127 0.73167 0.73193 0.73225 0.73246 0.73261  
O 0.00170 0.00134 0.00116 0.00105 0.00090 0.00080 0.00068 0.00056 0.00047 0.00042 0.00035 0.00031 0.00028  
OH 0.00680 0.00618 0.00581 0.00556 0.00520 0.00496 0.00462 0.00420 0.00399 0.00368 0.00339 0.00319 0.00305  
O2 0.03127 0.03026 0.02971 0.02935 0.02886 0.02853 0.02811 0.02763 0.02730 0.02709 0.02682 0.02665 0.02653

CASE= 4 O/F= 16.2822 F/A= 0.06142 PERCENT FUEL= 5.7863 PHI= 0.9000  
P, ATM 0.5000 1.0000 1.5000 2.0000 3.0000 4.0000 6.0000 10.000 15.000 20.000 30.000 40.000 50.000  
P, PSIA 7.3 14.7 22.0 29.4 44.1 58.8 88.2 147.0 220.4 293.9 440.9 587.8 734.8  
T, DEG K 2391.4 2418.4 2433.2 2443.3 2456.9 2466.0 2478.2 2492.4 2502.8 2509.6 2518.5 2524.3 2528.5  
T, DEG F 3844.9 3893.3 3920.0 3938.2 3962.6 3979.1 4001.1 4026.7 4045.3 4057.6 4073.6 4084.0 4091.6  
RHO, G/CC 7.2778-5 1.4423-4 2.1527-4 2.8606-4 4.2716-4 5.6783-4 8.4834-4 1.4073-3 2.1039-3 2.7991-3 4.1866-3 5.5718-3 6.9553-3  
M, MOL WT 28.563 28.622 28.654 28.676 28.706 28.726 28.752 28.783 28.806 28.821 28.840 28.853 28.862  
CP, CAL/(G)(K) 0.6539 0.6097 0.5858 0.5698 0.5483 0.5339 0.5148 0.4926 0.4765 0.4659 0.4520 0.4429 0.4363  
GAMMA (S) 1.1586 1.1655 1.1696 1.1726 1.1768 1.1799 1.1842 1.1897 1.1940 1.1970 1.2011 1.2040 1.2062  
SON VEL,/M/SEC 898.1 904.9 908.7 911.4 915.1 917.7 921.2 925.5 928.7 930.9 933.9 935.9 937.3

MOLE FRACTIONS

AR 0.00866 0.00868 0.00869 0.00870 0.00870 0.00871 0.00872 0.00873 0.00874 0.00874 0.00875 0.00875 0.00875  
CO 0.01815 0.01577 0.01441 0.01318 0.01219 0.01132 0.01013 0.00874 0.00771 0.00703 0.00613 0.00554 0.00512  
CO2 0.10075 0.10338 0.10487 0.10590 0.10730 0.10826 0.10956 0.11108 0.11220 0.11295 0.11392 0.11456 0.11503  
H 0.00123 0.00091 0.00075 0.00066 0.00054 0.00047 0.00038 0.00029 0.00023 0.00020 0.00015 0.00013 0.00011  
HO2 0.00000 0.00000 0.00000 0.00000 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001  
H2 0.00327 0.00276 0.00248 0.00230 0.00205 0.00189 0.00167 0.00142 0.00124 0.00112 0.00097 0.00087 0.00080  
H2O 0.10552 0.10674 0.10740 0.10785 0.10846 0.10887 0.10941 0.11005 0.11051 0.11082 0.11122 0.11149 0.11168  
NO 0.00647 0.00664 0.00673 0.00678 0.00685 0.00690 0.00695 0.00701 0.00705 0.00708 0.00711 0.00713 0.00714  
NO2 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001  
N2 0.72227 0.72368 0.72446 0.72499 0.72571 0.72619 0.72684 0.72760 0.72815 0.72852 0.72899 0.72930 0.72953  
O 0.00182 0.00145 0.00126 0.00114 0.00098 0.00088 0.00075 0.00062 0.00052 0.00046 0.00039 0.00035 0.00031  
OH 0.00737 0.00674 0.00637 0.00611 0.00574 0.00548 0.00513 0.00469 0.00436 0.00414 0.00383 0.00361 0.00346  
O2 0.02449 0.02326 0.02257 0.02210 0.02146 0.02102 0.02044 0.01976 0.01927 0.01894 0.01852 0.01824 0.01804



CASE=	5	O/F=	8.1411	F/A=	0.12283	PERCENT FUEL=	10.9396	PHI=	1.8000									
P, ATH	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000					
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8					
T, DEG K	2192.9	2197.4	2199.5	2200.7	2202.3	2203.2	2204.3	2205.4	2206.1	2206.6	2207.1	2207.4	2207.6					
T, DEG F	3487.5	3495.6	3499.4	3501.6	3504.4	3506.0	3508.0	3510.0	3511.3	3512.1	3513.0	3513.6	3514.0					
RHO, G/CC	6.9997-5	1.3376-4	2.0947-4	2.7916-4	4.1851-4	5.5782-4	8.3639-4	1.3934-3	2.0896-3	2.7856-3	4.1776-3	5.5696-3	6.9614-3					
M, MOL WT	25.190	25.200	25.204	25.207	25.210	25.212	25.214	25.216	25.218	25.219	25.220	25.221	25.221					
CP, CAL/(G*IK)	0.4029	0.3929	0.3883	0.3855	0.3822	0.3802	0.3778	0.3753	0.3738	0.3728	0.3717	0.3711	0.3706					
GAMMA (S)	1.2532	1.2584	1.2609	1.2625	1.2644	1.2655	1.2669	1.2683	1.2693	1.2698	1.2705	1.2709	1.2712					
SON VEL, M/SEC	952.4	955.2	956.5	957.3	958.3	958.9	959.6	960.4	960.8	961.1	961.5	961.7	961.8					

MOLE FRACTIONS

AR	0.00722	0.00722	0.00722	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723					
CO	0.16575	0.16589	0.16595	0.16599	0.16604	0.16606	0.16610	0.16613	0.16615	0.16617	0.16618	0.16619	0.16620					
CO2	0.03227	0.03221	0.03218	0.03216	0.03214	0.03212	0.03211	0.03209	0.03208	0.03208	0.03207	0.03207	0.03207					
H	0.00232	0.00168	0.00139	0.00121	0.00100	0.00087	0.00072	0.00056	0.00046	0.00040	0.00033	0.00028	0.00025					
H2	0.09292	0.09314	0.09324	0.09330	0.09337	0.09341	0.09347	0.09352	0.09355	0.09357	0.09359	0.09360	0.09361					
H2O	0.09431	0.09453	0.09463	0.09469	0.09476	0.09481	0.09486	0.09491	0.09495	0.09497	0.09499	0.09500	0.09501					
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00002					
NO	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000					
N2	0.60483	0.60506	0.60516	0.60523	0.60530	0.60535	0.60541	0.60546	0.60550	0.60552	0.60555	0.60557	0.60558					
O	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
OH	0.00033	0.00024	0.00020	0.00018	0.00015	0.00013	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00004					

CASE=	5	O/F=	7.3270	F/A=	0.13648	PERCENT FUEL=	12.0091	PHI=	2.0000									
P, ATH	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000					
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8					
T, DEG K	2057.3	2059.4	2060.4	2061.0	2061.7	2062.2	2062.7	2063.2	2063.5	2063.7	2064.0	2064.1	2064.2					
T, DEG F	3243.3	3247.3	3249.1	3250.1	3251.4	3252.2	3253.1	3254.0	3254.6	3255.0	3255.4	3255.7	3255.9					
RHO, G/CC	7.2458-5	1.4479-4	2.1709-4	2.8939-4	4.3396-4	5.7852-4	8.6760-4	1.4457-3	2.1683-3	2.8908-3	4.3358-3	5.7807-3	7.2253-3					
M, MOL WT	24.463	24.468	24.470	24.471	24.472	24.473	24.474	24.475	24.476	24.477	24.477	24.478	24.478					
CP, CAL/(G*IK)	0.3989	0.3835	0.3811	0.3797	0.3780	0.3769	0.3757	0.3744	0.3736	0.3732	0.3726	0.3723	0.3721					
GAMMA (S)	1.2593	1.2725	1.2740	1.2749	1.2759	1.2766	1.2774	1.2782	1.2787	1.2790	1.2793	1.2796	1.2797					
SON VEL, M/SEC	942.1	943.7	944.4	944.8	945.4	945.7	946.1	946.5	946.7	946.9	947.1	947.2	947.2					

MOLE FRACTIONS

AR	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693					
CO	0.18686	0.18693	0.18696	0.18698	0.18700	0.18702	0.18703	0.18705	0.18706	0.18707	0.18707	0.18708	0.18708					
CO2	0.02422	0.02419	0.02418	0.02417	0.02416	0.02415	0.02414	0.02414	0.02413	0.02413	0.02413	0.02413	0.02413					
H	0.00118	0.00084	0.00069	0.00050	0.00050	0.00043	0.00035	0.00027	0.00022	0.00019	0.00016	0.00014	0.00012					
H2	0.12397	0.12411	0.12417	0.12421	0.12425	0.12428	0.12431	0.12434	0.12436	0.12436	0.12437	0.12437	0.12437					
H2O	0.07642	0.07650	0.07653	0.07655	0.07658	0.07659	0.07661	0.07663	0.07664	0.07664	0.07665	0.07665	0.07666					
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00003	0.00003					
NO	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
N2	0.58033	0.58044	0.58049	0.58051	0.58055	0.58057	0.58059	0.58062	0.58063	0.58064	0.58066	0.58066	0.58067					
OH	0.00008	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001					

CASE= 7 O/F= 17.2400 F/A= 0.05800 PERCENT FUEL= 5.4825 PHI= 0.8500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	5.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2491.4	2524.7	2543.4	2556.2	2573.5	2585.4	2601.4	2620.4	2634.4	2643.7	2656.1	2664.3	2670.3
T, DEG F	4024.9	4084.8	4118.3	4141.4	4172.7	4194.0	4222.9	4256.9	4282.2	4299.0	4321.3	4336.0	4346.9
RHO, G/CC	6.9461-5	1.3744-4	2.0495-4	2.7217-4	4.0603-4	5.3938-4	8.0509-4	1.3340-3	1.9926-3	2.6492-3	3.9591-3	5.2659-3	6.5705-3
M, MOL WT	28.401	28.474	28.515	28.543	28.582	28.608	28.643	28.684	28.715	28.736	28.763	28.781	28.794
CP, CAL/(G)(K)	0.7343	0.6822	0.6539	0.6348	0.6091	0.5919	0.5688	0.5417	0.5219	0.5086	0.4912	0.4797	0.4712
GAMMA (S)	1.1508	1.1570	1.1608	1.1636	1.1676	1.1704	1.1745	1.1798	1.1840	1.1870	1.1912	1.1941	1.1964
SON VEL, M/SEC	916.2	923.6	927.8	930.8	934.9	937.8	941.8	946.6	950.3	952.9	956.3	958.7	960.5

MOLE FRACTIONS

AR	0.00864	0.00866	0.00867	0.00868	0.00870	0.00870	0.00871	0.00873	0.00874	0.00874	0.00875	0.00876	0.00876
CO	0.02347	0.02084	0.01930	0.01932	0.01671	0.01567	0.01423	0.01249	0.01118	0.01029	0.00911	0.00832	0.00773
CO2	0.08856	0.09149	0.09319	0.09438	0.09603	0.09718	0.09876	0.10067	0.10210	0.10306	0.10436	0.10522	0.10585
H	0.00220	0.00167	0.00141	0.00124	0.00103	0.00091	0.00075	0.00058	0.00047	0.00040	0.00032	0.00028	0.00024
H2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
H2	0.00417	0.00358	0.00326	0.00304	0.00274	0.00254	0.00227	0.00196	0.00173	0.00158	0.00138	0.00125	0.00116
H2O	0.09597	0.09746	0.09829	0.09886	0.09963	0.10016	0.10087	0.10171	0.10234	0.10275	0.10331	0.10368	0.10396
NO	0.00919	0.00955	0.00975	0.00988	0.01005	0.01017	0.01032	0.01050	0.01062	0.01070	0.01080	0.01087	0.01092
NO2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
N2	0.71913	0.72082	0.72176	0.72241	0.72330	0.72390	0.72472	0.72570	0.72642	0.72690	0.72754	0.72796	0.72828
O	0.00362	0.00296	0.00261	0.00238	0.00208	0.00189	0.00164	0.00137	0.00118	0.00105	0.00090	0.00080	0.00073
OH	0.01062	0.00988	0.00943	0.00911	0.00865	0.00832	0.00786	0.00728	0.00693	0.00651	0.00607	0.00574	0.00554
O2	0.03443	0.03309	0.03233	0.03179	0.03105	0.03054	0.02984	0.02901	0.02839	0.02797	0.02742	0.02706	0.02679

CASE= 7 O/F= 16.2822 F/A= 0.06142 PERCENT FUEL= 5.7863 PHI= 0.9000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2516.1	2552.1	2572.5	2586.6	2605.9	2619.2	2637.4	2659.1	2675.5	2686.6	2701.5	2711.5	2718.9
T, DEG F	4069.2	4134.1	4170.8	4196.2	4231.0	4254.9	4287.6	4326.8	4356.2	4376.2	4402.9	4420.9	4434.3
RHO, G/CC	6.8490-5	1.3542-4	2.0184-4	2.6795-4	3.9953-4	5.3055-4	7.9145-4	1.3105-3	1.9561-3	2.5996-3	3.8823-3	5.1612-3	6.4375-3
M, MOL WT	28.281	28.360	28.405	28.436	28.478	28.507	28.547	28.594	28.630	28.654	28.687	28.709	28.725
CP, CAL/(G)(K)	0.7831	0.7292	0.6999	0.6801	0.6534	0.6354	0.6112	0.5826	0.5614	0.5472	0.5281	0.5154	0.5059
GAMMA (S)	1.1465	1.1522	1.1556	1.1581	1.1616	1.1642	1.1679	1.1727	1.1765	1.1792	1.1831	1.1859	1.1881
SON VEL, M/SEC	920.9	928.5	932.8	935.9	940.1	943.1	947.2	952.2	956.1	958.8	962.5	965.0	967.0

MOLE FRACTIONS

AR	0.00858	0.00860	0.00861	0.00862	0.00864	0.00864	0.00866	0.00867	0.00868	0.00869	0.00870	0.00871	0.00871
CO	0.02938	0.02660	0.02494	0.02377	0.02212	0.02095	0.01933	0.01733	0.01579	0.01473	0.01328	0.01230	0.01156
CO2	0.08835	0.09146	0.09330	0.09460	0.09643	0.09772	0.09950	0.10170	0.10339	0.10456	0.10614	0.10721	0.10802
H	0.00278	0.00215	0.00183	0.00163	0.00138	0.00122	0.00102	0.00080	0.00066	0.00057	0.00047	0.00040	0.00036
H2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
H2	0.00537	0.00470	0.00433	0.00407	0.00372	0.00348	0.00315	0.00277	0.00248	0.00229	0.00204	0.00187	0.00174
H2O	0.09965	0.10131	0.10225	0.10289	0.10377	0.10437	0.10519	0.10616	0.10689	0.10738	0.10804	0.10849	0.10882
NO	0.00867	0.00899	0.00915	0.00926	0.00940	0.00949	0.00960	0.00973	0.00981	0.00986	0.00992	0.00995	0.00997
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.71402	0.71587	0.71692	0.71765	0.71865	0.71934	0.72029	0.72144	0.72231	0.72290	0.72370	0.72423	0.72463
O	0.00371	0.00304	0.00269	0.00245	0.00215	0.00196	0.00170	0.00142	0.00122	0.00110	0.00094	0.00084	0.00077
OH	0.01113	0.01039	0.00994	0.00961	0.00915	0.00881	0.00834	0.00775	0.00729	0.00696	0.00651	0.00620	0.00596
O2	0.02836	0.02689	0.02604	0.02543	0.02459	0.02401	0.02320	0.02221	0.02145	0.02094	0.02025	0.01978	0.01943

	CASE= 1	O/F= 15.4253	F/A= 0.06483	PERCENT FUEL= 6.0882				PHI= 0.9500					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2207.1	2223.0	2231.4	2237.0	2244.3	2249.1	2255.3	2262.3	2267.1	2270.2	2274.2	2276.7	2278.4
T, DEG F	3513.0	3541.7	3556.9	3566.9	3580.1	3588.7	3599.9	3612.4	3621.2	3626.7	3633.8	3638.3	3641.5
RHO, G/CC	7.9469-5	1.5799-4	2.3623-4	3.1432-4	4.7020-4	6.2583-4	9.3659-4	1.5570-3	2.3313-3	3.1049-3	4.6507-3	6.1952-3	7.7390-3
M, MOL WT	28.784	28.819	28.837	28.849	28.865	28.875	28.888	28.903	28.914	28.920	28.929	28.934	28.938
CP, CAL/(G)(K)	0.5190	0.4894	0.4737	0.4633	0.4497	0.4407	0.4290	0.4159	0.4066	0.4007	0.3931	0.3882	0.3848
GAMMA (S)	1.1810	1.1887	1.1932	1.1963	1.2007	1.2038	1.2080	1.2130	1.2167	1.2193	1.2226	1.2248	1.2264
SON VEL./M/SEC	867.7	873.1	876.2	878.2	881.0	882.9	885.5	888.5	890.6	892.1	893.9	895.1	896.0

MOLE FRACTIONS

AR	0.00870	0.00871	0.00872	0.00872	0.00873	0.00873	0.00873	0.00874	0.00874	0.00874	0.00874	0.00875	0.00875
CO	0.00917	0.00758	0.00673	0.00616	0.00541	0.00451	0.00427	0.00354	0.00304	0.00272	0.00231	0.00205	0.00186
CO2	0.11689	0.11863	0.11956	0.12018	0.12100	0.12154	0.12225	0.12304	0.12359	0.12394	0.12439	0.12467	0.12487
H	0.00034	0.00024	0.00019	0.00016	0.00013	0.00011	0.00009	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002
H2	0.00174	0.00141	0.00124	0.00113	0.00098	0.00089	0.00076	0.00063	0.00054	0.00048	0.00040	0.00036	0.00033
H2O	0.11634	0.11706	0.11744	0.11767	0.11801	0.11823	0.11851	0.11882	0.11904	0.11919	0.11937	0.11948	0.11957
NO	0.00319	0.00320	0.00320	0.00320	0.00320	0.00319	0.00318	0.00318	0.00317	0.00316	0.00316	0.00315	0.00315
N2	0.72719	0.72806	0.72852	0.72883	0.72923	0.72949	0.72983	0.73022	0.73048	0.73065	0.73087	0.73101	0.73111
O	0.00045	0.00034	0.00029	0.00025	0.00021	0.00019	0.00016	0.00012	0.00010	0.00009	0.00007	0.00006	0.00006
OH	0.00332	0.00293	0.00272	0.00257	0.00237	0.00224	0.00206	0.00185	0.00169	0.00159	0.00145	0.00136	0.00129
O2	0.01266	0.01184	0.01140	0.01111	0.01073	0.01048	0.01016	0.00980	0.00956	0.00940	0.00920	0.00908	0.00899

	CASE= 1	O/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3881				PHI= 1.0000					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2240.1	2259.2	2269.5	2276.5	2285.8	2292.1	2300.5	2310.2	2317.3	2322.1	2328.2	2332.3	2335.3
T, DEG F	3572.6	3606.8	3625.4	3638.0	3654.8	3666.1	3681.2	3698.7	3711.5	3720.0	3731.1	3738.5	3743.9
RHO, G/CC	7.7995-5	1.5490-4	2.3146-4	3.0783-4	4.6018-4	6.1217-4	9.1548-4	1.5205-3	2.2749-3	3.0281-3	4.5321-3	6.0340-3	7.5344-3
M, MOL WT	28.674	28.715	28.737	28.752	28.772	28.785	28.803	28.824	28.839	28.849	28.862	28.870	28.877
CP, CAL/(G)(K)	0.5613	0.5304	0.5140	0.5031	0.4887	0.4791	0.4665	0.4521	0.4417	0.4348	0.4259	0.4201	0.4158
GAMMA (S)	1.1722	1.1789	1.1828	1.1856	1.1894	1.1921	1.1958	1.2003	1.2038	1.2062	1.2074	1.2117	1.2133
SON VEL./M/SEC	872.6	878.2	881.3	883.4	886.4	888.4	891.1	894.4	896.8	898.5	900.7	902.1	903.2

MOLE FRACTIONS

AR	0.00864	0.00865	0.00866	0.00866	0.00867	0.00867	0.00868	0.00868	0.00869	0.00869	0.00870	0.00870	0.00870
CO	0.01536	0.01350	0.01246	0.01176	0.01080	0.01015	0.00928	0.00826	0.00751	0.00700	0.00634	0.00590	0.00557
CO2	0.11639	0.11844	0.11957	0.12035	0.12140	0.12211	0.12306	0.12418	0.12500	0.12555	0.12627	0.12675	0.12710
H	0.00054	0.00039	0.00032	0.00028	0.00023	0.00020	0.00016	0.00012	0.00010	0.00008	0.00007	0.00006	0.00005
H2	0.00296	0.00255	0.00233	0.00218	0.00198	0.00185	0.00167	0.00147	0.00133	0.00123	0.00111	0.00103	0.00097
H2O	0.12045	0.12132	0.12179	0.12210	0.12252	0.12280	0.12317	0.12359	0.12390	0.12410	0.12437	0.12454	0.12466
NO	0.00254	0.00246	0.00240	0.00236	0.00229	0.00224	0.00216	0.00206	0.00197	0.00191	0.00182	0.00176	0.00171
N2	0.72241	0.72348	0.72406	0.72446	0.72500	0.72537	0.72585	0.72642	0.72685	0.72713	0.72750	0.72775	0.72793
O	0.00041	0.00030	0.00025	0.00022	0.00018	0.00015	0.00013	0.00010	0.00008	0.00007	0.00005	0.00004	0.00004
OH	0.00332	0.00290	0.00267	0.00251	0.00230	0.00215	0.00196	0.00173	0.00156	0.00145	0.00130	0.00120	0.00113
O2	0.00699	0.00602	0.00548	0.00512	0.00464	0.00432	0.00388	0.00339	0.00302	0.00279	0.00247	0.00227	0.00212



CASE=	4	O/F=	15.4253	F/A=	0.06483	PERCENT FUEL=				6.0882	PHI=					0.9500
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000			
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8			
T, DEG K	2418.9	2448.8	2465.5	2477.0	2492.6	2503.3	2517.8	2535.0	2547.8	2556.4	2567.8	2575.5	2581.2			
T, DEG F	3894.4	3948.1	3978.2	3998.9	4027.0	4046.2	4072.3	4103.2	4126.3	4141.8	4162.4	4176.2	4186.4			
RHO, G/CC	7.1656-5	1.4189-4	2.1166-4	2.8115-4	4.1958-4	5.5750-4	8.3235-4	1.3796-3	2.0611-3	2.7406-3	4.0961-3	5.4483-3	6.7983-3			
M, MOL WT	28.446	28.511	28.547	28.572	28.606	28.629	28.661	28.698	28.726	28.744	28.769	28.786	28.798			
CP, CAL/(G)(K)	0.7021	0.6566	0.6319	0.6152	0.5929	0.5779	0.5578	0.5341	0.5167	0.5051	0.4896	0.4792	0.4716			
GAMMA (S)	1.1530	1.1590	1.1627	1.1653	1.1690	1.1717	1.1755	1.1804	1.1843	1.1870	1.1909	1.1936	1.1957			
SON VEL./M/SEC	902.9	909.8	913.7	916.5	920.3	922.9	926.6	931.1	934.5	936.9	940.1	942.3	944.0			

MOLE FRACTIONS

AR	0.00860	0.00862	0.00863	0.00864	0.00865	0.00865	0.00866	0.00867	0.00868	0.00869	0.00870	0.00870	0.00870	0.00870	0.00870
CO	0.02426	0.02167	0.02017	0.01911	0.01765	0.01663	0.01523	0.01353	0.01224	0.01136	0.01018	0.00939	0.00880		
CO2	0.10032	0.10319	0.10486	0.10662	0.10763	0.10875	0.11029	0.11215	0.11356	0.11452	0.11581	0.11668	0.11732		
H	0.00164	0.00124	0.00104	0.00092	0.00077	0.00067	0.00056	0.00043	0.00035	0.00030	0.00025	0.00021	0.00019		
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001		
H2	0.00448	0.00388	0.00356	0.00333	0.00303	0.00282	0.00255	0.00222	0.00199	0.00183	0.00162	0.00148	0.00138		
H2O	0.10936	0.11075	0.11151	0.11204	0.11275	0.11323	0.11388	0.11464	0.11521	0.11559	0.11609	0.11642	0.11667		
NO	0.00592	0.00603	0.00607	0.00610	0.00612	0.00613	0.00614	0.00613	0.00611	0.00610	0.00607	0.00604	0.00602		
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001		
N2	0.71726	0.71886	0.71175	0.72037	0.72122	0.72180	0.72259	0.72354	0.72425	0.72473	0.72537	0.72580	0.72613		
O	0.00184	0.00146	0.00127	0.00115	0.00099	0.00089	0.00076	0.00062	0.00052	0.00046	0.00039	0.00034	0.00031		
OH	0.00769	0.00704	0.00666	0.00639	0.00601	0.00575	0.00538	0.00493	0.00459	0.00435	0.00403	0.00380	0.00364		
O2	0.01863	0.01726	0.01647	0.01593	0.01518	0.01466	0.01396	0.01311	0.01248	0.01206	0.01149	0.01111	0.01082		

CASE=	4	O/F=	14.6540	F/A=	0.06824	PERCENT FUEL=				6.3881	PHI=					1.0000
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000			
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8			
T, DEG K	2439.1	2470.8	2488.7	2501.0	2517.9	2529.5	2545.3	2564.3	2578.6	2588.3	2601.5	2610.3	2617.0			
T, DEG F	3930.7	3987.7	4019.9	4042.1	4072.4	4093.3	4121.8	4156.0	4181.8	4199.3	4222.9	4238.9	4250.9			
RHO, G/CC	7.0737-5	1.4000-4	2.0877-4	2.7725-4	4.1361-4	5.4943-4	8.2000-4	1.3585-3	2.0286-3	2.6966-3	4.0284-3	5.3564-3	6.6818-3			
M, MOL WT	28.315	28.384	28.422	28.449	28.485	28.510	28.544	28.585	28.616	28.636	28.664	28.683	28.697			
CP, CAL/(G)(K)	0.7337	0.6868	0.6615	0.6445	0.6217	0.6063	0.5858	0.5618	0.5442	0.5323	0.5166	0.5062	0.4984			
GAMMA (S)	1.1500	1.1557	1.1591	1.1615	1.1650	1.1675	1.1710	1.1754	1.1789	1.1814	1.1849	1.1874	1.1892			
SON VEL./M/SEC	907.5	914.6	918.6	921.4	925.3	928.0	931.7	936.3	939.8	942.3	945.6	947.9	949.6			

MOLE FRACTIONS

AR	0.00853	0.00855	0.00856	0.00857	0.00858	0.00859	0.00860	0.00861	0.00862	0.00863	0.00864	0.00864	0.00865		
CO	0.03123	0.02860	0.02706	0.02537	0.02445	0.02338	0.02189	0.02007	0.01866	0.01770	0.01638	0.01548	0.01480		
CO2	0.09887	0.10181	0.10353	0.10474	0.10644	0.10762	0.10926	0.11127	0.11281	0.11388	0.11532	0.11631	0.11706		
H	0.00208	0.00160	0.00136	0.00122	0.00103	0.00091	0.00076	0.00061	0.00050	0.00044	0.00036	0.00032	0.00028		
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001		
H2	0.00598	0.00532	0.00494	0.00469	0.00434	0.00410	0.00378	0.00340	0.00312	0.00293	0.00268	0.00251	0.00238		
H2O	0.11289	0.11442	0.11528	0.11587	0.11667	0.11721	0.11795	0.11882	0.11947	0.11991	0.12050	0.12089	0.12118		
NO	0.00525	0.00527	0.00526	0.00524	0.00520	0.00516	0.00509	0.00496	0.00488	0.00480	0.00467	0.00458	0.00450		
N2	0.71200	0.71372	0.71470	0.71538	0.71631	0.71696	0.71786	0.71894	0.71976	0.72033	0.72110	0.72162	0.72202		
O	0.00175	0.00138	0.00119	0.00107	0.00091	0.00081	0.00069	0.00055	0.00046	0.00040	0.00033	0.00029	0.00026		
OH	0.00773	0.00706	0.00666	0.00637	0.00598	0.00570	0.00531	0.00483	0.00446	0.00421	0.00387	0.00363	0.00346		
O2	0.01369	0.01227	0.01145	0.01088	0.01010	0.00955	0.00881	0.00791	0.00723	0.00676	0.00614	0.00572	0.00541		

C	1.000000	H	1.906699	0.000000	0.000000	0.000000	0.000000	100.0000000	-5059.80	L	298.150	F	0.80700
AR	1.000000		0.000000	0.000000	0.000000	00	0.000000	0.01285800	0.00	G	1100.000	0	0.00000
C	1.000000	0	2.000000	0.000000	0.000000	00	0.000000	0.00045600	0.00	G	1100.000	0	0.00000
N	2.000000		0.000000	0.000000	0.000000	00	0.000000	0.75525296	0.00	G	1100.000	0	0.00000
O	2.000000		0.000000	0.000000	0.000000	00	0.000000	0.23143297	0.00	G	1100.000	0	0.00000

CASE=	6	O/F=146.5400	F/A= 0.00682	PERCENT FUEL= 0.6778	PHI= 0.1000								
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1333.5	1333.5	1333.5	1333.5	1333.5	1333.5	1333.5	1333.5	1333.5	1333.5	1333.5	1333.5	1333.5
T, DEG F	1940.5	1940.5	1940.5	1940.5	1940.5	1940.5	1940.5	1940.5	1940.5	1940.5	1940.5	1940.5	1940.5
RHO, G/CC	1.3236-4	2.6473-4	3.9709-4	5.2945-4	7.9417-4	1.0589-3	1.5884-3	2.6473-3	3.9709-3	5.2945-3	7.9419-3	1.0589-2	1.3237-2
M, MDL WT	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.967	28.967
CP, CAL/(G)(K)	0.2905	0.2905	0.2905	0.2905	0.2905	0.2905	0.2905	0.2905	0.2905	0.2905	0.2905	0.2905	0.2905
GAMMA (S)	1.3091	1.3092	1.3092	1.3092	1.3092	1.3092	1.3092	1.3092	1.3092	1.3092	1.3092	1.3092	1.3092
SON VEL,M/SEC	707.9	707.9	707.9	707.9	707.9	707.9	707.9	707.9	707.9	707.9	707.9	707.9	707.9

MOLE FRACTIONS													
AR	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926
CO2	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439
H2O	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343
NO	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050	0.00050
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003
N2	0.77539	0.77539	0.77539	0.77539	0.77539	0.77539	0.77539	0.77539	0.77539	0.77539	0.77539	0.77539	0.77539
OH	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.18702	0.18702	0.18701	0.18701	0.18701	0.18701	0.18701	0.18701	0.18700	0.18700	0.18700	0.18700	0.18699

CASE=	6	O/F= 73.2700	F/A= 0.01365	PERCENT FUEL= 1.3464	PHI= 0.2000								
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1551.2	1551.2	1551.3	1551.3	1551.3	1551.3	1551.3	1551.4	1551.4	1551.4	1551.4	1551.4	1551.4
T, DEG F	2332.4	2332.4	2332.6	2332.6	2332.7	2332.7	2332.7	2332.8	2332.8	2332.8	2332.8	2332.8	2332.8
RHO, G/CC	1.1379-4	2.2757-4	3.4135-4	4.5513-4	6.8269-4	9.1024-4	1.3653-3	2.2756-3	3.4133-3	4.5511-3	6.8266-3	9.1022-3	1.1378-2
M, MDL WT	28.967	28.967	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968
CP, CAL/(G)(K)	0.3039	0.3038	0.3037	0.3036	0.3036	0.3035	0.3035	0.3034	0.3034	0.3034	0.3033	0.3033	0.3033
GAMMA (S)	1.2917	1.2919	1.2919	1.2920	1.2921	1.2921	1.2921	1.2922	1.2922	1.2922	1.2923	1.2923	1.2923
SON VEL,M/SEC	758.4	758.4	758.4	758.5	758.5	758.5	758.5	758.5	758.6	758.6	758.6	758.6	758.6

MOLE FRACTIONS													
AR	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920
CO2	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829
H2O	0.02665	0.02666	0.02666	0.02666	0.02666	0.02667	0.02667	0.02667	0.02667	0.02667	0.02668	0.02668	0.02668
NO	0.00147	0.00147	0.00147	0.00147	0.00147	0.00147	0.00147	0.00147	0.00147	0.00147	0.00147	0.00147	0.00147
NO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004
N2	0.76972	0.76972	0.76972	0.76972	0.76972	0.76972	0.76972	0.76972	0.76972	0.76973	0.76973	0.76973	0.76972
OH	0.00007	0.00006	0.00005	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002
O2	0.16459	0.16459	0.16459	0.16459	0.16459	0.16459	0.16459	0.16459	0.16459	0.16458	0.16458	0.16457	0.16457

CASE= 7 O/F= 15.4253 F/A= 0.06483 PERCENT FUEL= 6.0882 PHI= 0.9500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2536.0	2574.1	2595.8	2610.9	2631.7	2646.2	2665.9	2689.9	2708.1	2720.6	2737.6	2749.1	2757.8
T, DEG F	4105.1	4173.8	4212.8	4240.0	4277.4	4303.4	4339.0	4382.1	4414.9	4437.4	4467.9	4488.7	4504.3
RHO, G/CC	6.7644-5	1.3368-4	1.9917-4	2.6433-4	3.9400-4	5.2304-4	7.7993-4	1.2906-3	1.9256-3	2.5581-3	3.8183-3	5.0742-3	6.3269-3
M, MOL WT	28.153	28.236	28.283	28.316	28.361	28.393	28.436	28.488	28.527	28.555	28.591	28.616	28.635
CP, CAL/(G)(K)	0.8225	0.7672	0.7373	0.7170	0.6899	0.6715	0.6468	0.6178	0.5961	0.5816	0.5621	0.5490	0.5392
GAMMA (S)	1.1436	1.1489	1.1521	1.1543	1.1576	1.1599	1.1633	1.1676	1.1710	1.1735	1.1770	1.1795	1.1814
SON VEL./M/SEC	925.5	933.2	937.6	940.7	945.0	948.1	952.3	957.4	961.4	964.2	968.0	970.6	972.6

MOL FRACTIONS

AR	0.00851	0.00854	0.00855	0.00856	0.00857	0.00858	0.00860	0.00861	0.00862	0.00863	0.00864	0.00865	0.00866
CO	0.03582	0.03299	0.03128	0.03007	0.02834	0.02711	0.02537	0.02321	0.02152	0.02033	0.01870	0.01757	0.01671
CO2	0.08747	0.09067	0.09258	0.09394	0.09587	0.09724	0.09916	0.10155	0.10342	0.10472	0.10651	0.10775	0.10869
H	0.00340	0.00267	0.00230	0.00206	0.00176	0.00156	0.00132	0.00106	0.00089	0.00078	0.00064	0.00056	0.00050
HO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00678	0.00604	0.00561	0.00532	0.00492	0.00464	0.00427	0.00382	0.00348	0.00325	0.00294	0.00273	0.00258
H2O	0.10309	0.10492	0.10596	0.10667	0.10765	0.10832	0.10924	0.11034	0.11117	0.11173	0.11250	0.11301	0.11339
NO	0.00805	0.00829	0.00841	0.00849	0.00857	0.00863	0.00868	0.00873	0.00874	0.00874	0.00872	0.00870	0.00868
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.70878	0.71076	0.71150	0.71270	0.71380	0.71456	0.71562	0.71692	0.71791	0.71860	0.71954	0.72018	0.72067
O	0.00368	0.00301	0.00266	0.00243	0.00212	0.00193	0.00167	0.00139	0.00120	0.00107	0.00091	0.00081	0.00074
OH	0.01141	0.01067	0.01021	0.00987	0.00940	0.00906	0.00857	0.00797	0.00749	0.00715	0.00669	0.00636	0.00612
O2	0.02149	0.02145	0.02054	0.01989	0.01899	0.01836	0.01748	0.01639	0.01555	0.01497	0.01418	0.01364	0.01323

CASE= 7 O/F= 14.6540 F/A= 0.06824 PERCENT FUEL= 6.3881 PHI= 1.0000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2551.5	2591.0	2613.6	2629.4	2651.1	2666.2	2687.0	2712.3	2731.7	2745.0	2763.2	2775.6	2785.0
T, DEG F	4132.9	4204.2	4244.8	4273.1	4312.3	4339.5	4376.9	4422.5	4457.3	4481.3	4514.0	4536.4	4553.3
RHO, G/CC	6.6910-5	1.3218-4	1.9690-4	2.6127-4	3.8934-4	5.1678-4	7.7039-4	1.2744-3	1.9009-3	2.5248-3	3.7674-3	5.0054-3	6.2400-3
M, MOL WT	28.017	28.103	28.152	28.186	28.233	28.265	28.310	28.365	28.406	28.435	28.474	28.500	28.520
CP, CAL/(G)(K)	0.8495	0.7927	0.7620	0.7413	0.7134	0.6947	0.6695	0.6399	0.6179	0.6032	0.5835	0.5702	0.5603
GAMMA (S)	1.1421	1.1471	1.1502	1.1524	1.1556	1.1577	1.1609	1.1650	1.1682	1.1706	1.1738	1.1762	1.1780
SON VEL./M/SEC	929.9	937.7	942.3	945.4	949.8	952.9	957.2	962.4	966.5	969.3	973.2	975.9	978.0

MOL FRACTIONS

AR	0.00844	0.00847	0.00848	0.00849	0.00851	0.00852	0.00853	0.00855	0.00856	0.00857	0.00858	0.00859	0.00859
CO	0.04274	0.03995	0.03826	0.03735	0.03532	0.03409	0.03234	0.03014	0.02841	0.02719	0.02550	0.02432	0.02342
CO2	0.08599	0.08918	0.09109	0.09245	0.09440	0.09578	0.09773	0.10018	0.10211	0.10346	0.10533	0.10663	0.10762
H	0.00405	0.00321	0.00279	0.00251	0.00216	0.00194	0.00165	0.00134	0.00113	0.00100	0.00084	0.00074	0.00067
HO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00843	0.00762	0.00716	0.00683	0.00639	0.00608	0.00566	0.00516	0.00478	0.00452	0.00417	0.00393	0.00375
H2O	0.10627	0.10826	0.10939	0.11107	0.11124	0.11198	0.11299	0.11420	0.11512	0.11575	0.11660	0.11717	0.11760
NO	0.00734	0.00750	0.00756	0.00760	0.00762	0.00763	0.00761	0.00756	0.00749	0.00743	0.00732	0.00722	0.00714
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001
N2	0.70344	0.70552	0.70672	0.70756	0.70873	0.70955	0.71069	0.71209	0.71317	0.71393	0.71496	0.71568	0.71623
O	0.00353	0.00287	0.00253	0.00230	0.00200	0.00181	0.00156	0.00129	0.00110	0.00097	0.00082	0.00073	0.00066
OH	0.01147	0.01070	0.01022	0.00988	0.00938	0.00903	0.00852	0.00789	0.00739	0.00704	0.00655	0.00621	0.00595
O2	0.01829	0.01672	0.01580	0.01515	0.01423	0.01359	0.01269	0.01158	0.01073	0.01014	0.00932	0.00877	0.00835

CASE= 1 O/F= 13.9562 F/A= 0.07165 PERCENT FUEL= 6.6862 PHI= 1.0500  
P, ATM 0.5000 1.0000 1.5000 2.0000 3.0000 4.0000 6.0000 10.000 15.000 20.000 30.000 40.000 50.000  
P, PSIA 7.3 14.7 22.0 29.4 44.1 58.8 88.2 147.0 220.4 293.9 440.9 587.8 734.8  
T, DEG K 2253.3 2271.3 2280.8 2287.0 2295.0 2300.2 2306.8 2313.9 2318.6 2321.5 2325.0 2327.2 2328.6  
T, DEG F 3596.3 3628.7 3645.7 3656.9 3671.3 3680.7 3692.5 3705.3 3713.8 3719.1 3725.4 3729.2 3731.8  
RHO, G/CC 7.7129-5 1.5324-4 2.2907-4 3.0473-4 4.5576-4 6.0654-4 9.0764-4 1.5089-3 2.2594-3 3.0094-3 4.5084-3 6.0066-3 7.5044-3  
M, MOL WT 28.522 28.560 28.580 28.593 28.610 28.621 28.634 28.649 28.658 28.664 28.671 28.676 28.679  
CP, CAL/(G\*IK) 0.5476 0.5109 0.4910 0.4777 0.4599 0.4481 0.4327 0.4154 0.4034 0.3959 0.3866 0.3810 0.3771  
GAMMA (S) 1.1759 1.1846 1.1898 1.1936 1.1991 1.2030 1.2084 1.2151 1.2201 1.2234 1.2277 1.2305 1.2325  
SON VEL,/M/SEC 878.9 885.0 888.5 890.9 894.3 896.6 899.7 903.3 905.9 907.6 909.8 911.2 912.2

MOLE FRACTIONS

AR 0.00857 0.00858 0.00858 0.00859 0.00859 0.00860 0.00860 0.00860 0.00861 0.00861 0.00861 0.00861 0.00861  
CO 0.02399 0.02239 0.02154 0.02098 0.02025 0.01978 0.01918 0.01854 0.01812 0.01786 0.01756 0.01737 0.01725  
CO2 0.11316 0.11494 0.11589 0.11651 0.11733 0.11785 0.11851 0.11922 0.11969 0.11997 0.12031 0.12051 0.12065  
H 0.00074 0.00055 0.00046 0.00041 0.00034 0.00030 0.00025 0.00019 0.00016 0.00014 0.00011 0.00010 0.00009  
H2 0.00486 0.00445 0.00424 0.00410 0.00392 0.00381 0.00367 0.00353 0.00343 0.00337 0.00330 0.00326 0.00324  
H2O 0.12381 0.12471 0.12519 0.12550 0.12591 0.12617 0.12650 0.12686 0.12710 0.12725 0.12743 0.12754 0.12762  
NO 0.00177 0.00159 0.00148 0.00139 0.00127 0.00118 0.00106 0.00090 0.00079 0.00071 0.00061 0.00054 0.00050  
N2 0.71667 0.71772 0.71827 0.71864 0.71913 0.71944 0.71985 0.72029 0.72059 0.72078 0.72101 0.72114 0.72124  
O 0.00030 0.00020 0.00016 0.00013 0.00010 0.00008 0.00006 0.00004 0.00003 0.00002 0.00002 0.00001 0.00001  
OH 0.00291 0.00245 0.00219 0.00202 0.00178 0.00162 0.00141 0.00117 0.00100 0.00089 0.00075 0.00067 0.00061  
O2 0.00322 0.00241 0.00199 0.00172 0.00139 0.00117 0.00091 0.00065 0.00048 0.00039 0.00028 0.00022 0.00018

CASE= 1 O/F= 13.3218 F/A= 0.07506 PERCENT FUEL= 6.9824 PHI= 1.1000  
P, ATM 0.5000 1.0000 1.5000 2.0000 3.0000 4.0000 6.0000 10.000 15.000 20.000 30.000 40.000 50.000  
P, PSIA 7.3 14.7 22.0 29.4 44.1 58.8 88.2 147.0 220.4 293.9 440.9 587.8 734.8  
T, DEG K 2245.5 2256.6 2264.9 2268.7 2273.5 2276.4 2278.8 2283.2 2285.4 2286.7 2288.2 2289.1 2289.7  
T, DEG F 3582.2 3605.7 3617.0 3624.0 3632.6 3637.7 3643.9 3650.1 3654.0 3656.4 3659.1 3661.7 3661.8  
RHO, G/CC 7.6872-5 1.5300-4 2.2897-4 3.0485-4 4.5648-4 6.0800-4 9.1084-4 1.5161-3 2.2724-3 3.0285-3 4.5402-3 6.0516-3 7.5628-3  
M, MOL WT 28.328 28.356 28.369 28.376 28.386 28.392 28.399 28.406 28.410 28.413 28.416 28.418 28.419  
CP, CAL/(G\*IK) 0.4847 0.4488 0.4303 0.4191 0.4054 0.3971 0.3872 0.3774 0.3713 0.3677 0.3635 0.3611 0.3595  
GAMMA (S) 1.1932 1.2048 1.2113 1.2157 1.2214 1.2251 1.2298 1.2348 1.2380 1.2400 1.2423 1.2437 1.2447  
SON VEL,/M/SEC 866.8 893.2 896.7 899.0 901.9 903.7 906.0 908.4 910.0 910.9 912.0 912.7 913.1

MOLE FRACTIONS

AR 0.00848 0.00849 0.00849 0.00850 0.00850 0.00850 0.00850 0.00850 0.00851 0.00851 0.00851 0.00851 0.00851  
CO 0.03490 0.03395 0.03351 0.03323 0.03291 0.03271 0.03249 0.03226 0.03213 0.03205 0.03196 0.03191 0.03187  
CO2 0.10734 0.10842 0.10893 0.10925 0.10962 0.10985 0.11011 0.11037 0.11052 0.11061 0.11072 0.11078 0.11082  
H 0.00089 0.00066 0.00055 0.00049 0.00040 0.00035 0.00029 0.00023 0.00019 0.00017 0.00014 0.00012 0.00011  
H2 0.00762 0.00733 0.00719 0.00711 0.00702 0.00696 0.00689 0.00683 0.00679 0.00676 0.00674 0.00672 0.00671  
H2O 0.12616 0.12692 0.12730 0.12753 0.12782 0.12799 0.12821 0.12842 0.12856 0.12865 0.12875 0.12884 0.12894  
NO 0.00107 0.00086 0.00077 0.00070 0.00060 0.00054 0.00046 0.00037 0.00031 0.00027 0.00023 0.00020 0.00018  
O 0.70988 0.71066 0.71104 0.71127 0.71157 0.71174 0.71196 0.71218 0.71232 0.71240 0.71250 0.71256 0.71260  
OH 0.00019 0.00011 0.00008 0.00006 0.00005 0.00004 0.00003 0.00002 0.00001 0.00001 0.00001 0.00000 0.00000  
O2 0.00225 0.00178 0.00154 0.00138 0.00117 0.00104 0.00087 0.00070 0.00058 0.00051 0.00042 0.00037 0.00033  
O2 0.00124 0.00079 0.00059 0.00048 0.00035 0.00028 0.00020 0.00012 0.00009 0.00007 0.00005 0.00003 0.00003



CASE=	3	O/F=	48.8467	F/A=	0.02047	PERCENT FUEL=	2.0062	PHI=	0.3000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	1331.8	1331.8	1331.8	1331.8	1331.8	1331.8	1331.8	1331.8	1331.8	1331.8	1331.8	1331.8	1331.8						
T, DEG F	1937.5	1937.5	1937.5	1937.5	1937.5	1937.5	1937.5	1937.5	1937.5	1937.5	1937.5	1937.5	1937.5						
RHO, G/CC	1.3255-4	2.6509-4	3.9763-4	5.3018-4	7.9527-4	1.0604-3	1.5905-3	2.6509-3	3.9763-3	5.3018-3	7.9527-3	1.0604-2	1.3254-2						
M, MOL WT	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970						
CP, CAL/(G)(K)	0.2972	0.2972	0.2972	0.2972	0.2972	0.2971	0.2971	0.2971	0.2971	0.2971	0.2971	0.2971	0.2971						
GAMMA (S)	1.3001	1.3001	1.3001	1.3001	1.3001	1.3001	1.3001	1.3001	1.3001	1.3001	1.3001	1.3001	1.3001						
SON VEL,M/SEC	704.9	704.9	704.9	704.9	704.9	704.9	705.0	705.0	705.0	705.0	705.0	704.9	704.9						

MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914						
CO2	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201						
H2O	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976						
NO	0.00043	0.00043	0.00043	0.00043	0.00043	0.00043	0.00043	0.00043	0.00043	0.00043	0.00043	0.00043	0.00043						
NO2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001						
N2	0.76515	0.76515	0.76515	0.76515	0.76515	0.76515	0.76515	0.76515	0.76515	0.76515	0.76515	0.76515	0.76515						
OH	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000						
O2	0.14350	0.14350	0.14350	0.14350	0.14350	0.14350	0.14350	0.14350	0.14350	0.14349	0.14349	0.14349	0.14349						

CASE=	3	O/F=	36.6350	F/A=	0.02730	PERCENT FUEL=	2.6571	PHI=	0.4000										
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P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	1542.1	1542.1	1542.2	1542.2	1542.2	1542.2	1542.3	1542.3	1542.3	1542.3	1542.3	1542.3	1542.3						
T, DEG F	2316.0	2316.1	2316.2	2316.2	2316.3	2316.3	2316.4	2316.4	2316.4	2316.4	2316.5	2316.5	2316.5						
RHO, G/CC	1.1448-4	2.2894-4	3.4341-4	4.5787-4	6.8679-4	9.1571-4	1.3735-3	2.2892-3	3.4338-3	4.5784-3	6.8675-3	9.1567-3	1.1446-2						
M, MOL WT	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.972						
CP, CAL/(G)(K)	0.3104	0.3102	0.3101	0.3101	0.3100	0.3099	0.3099	0.3098	0.3097	0.3097	0.3097	0.3097	0.3096						
GAMMA (S)	1.2839	1.2841	1.2842	1.2842	1.2843	1.2843	1.2844	1.2845	1.2845	1.2845	1.2845	1.2846	1.2846						
SON VEL,M/SEC	753.8	753.9	753.9	753.9	753.9	754.0	754.0	754.0	754.0	754.0	754.0	754.0	754.1						

MOLE FRACTIONS

AR	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908						
CO2	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554						
H2O	0.05263	0.05264	0.05264	0.05264	0.05264	0.05265	0.05265	0.05265	0.05265	0.05265	0.05265	0.05265	0.05265						
NO	0.00121	0.00121	0.00121	0.00121	0.00121	0.00121	0.00121	0.00121	0.00121	0.00121	0.00121	0.00121	0.00121						
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001						
N2	0.75970	0.75971	0.75971	0.75971	0.75971	0.75971	0.75971	0.75971	0.75971	0.75971	0.75971	0.75971	0.75971						
OH	0.00009	0.00007	0.00007	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003						
O2	0.12175	0.12175	0.12175	0.12175	0.12175	0.12175	0.12175	0.12175	0.12175	0.12175	0.12175	0.12175	0.12174						

CASE= 4 O/F= 13.9562 F/A= 0.07165 PERCENT FUEL= 6.6862 PHI= 1.0500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2452.1	2484.3	2502.4	2514.9	2531.9	2543.5	2559.3	2578.1	2592.1	2601.6	2614.1	2622.5	2628.6
T, DEG F	3954.1	4012.1	4044.6	4067.1	4097.7	4118.6	4147.1	4180.9	4206.1	4223.1	4245.7	4260.7	4271.8
RHO, G/CC	7.0004-5	1.3853-4	2.0658-4	2.7433-4	4.0925-4	5.4364-4	8.1139-4	1.3443-3	2.0077-3	2.6690-3	3.9880-3	5.3036-3	6.6170-3
M, MOL WT	28.171	28.240	28.279	28.305	28.342	28.366	28.400	28.439	28.469	28.489	28.515	28.532	28.545
CP, CAL/(G)(K)	0.7413	0.6916	0.6645	0.6462	0.6216	0.6049	0.5825	0.5559	0.5361	0.5227	0.5048	0.4927	0.4837
GAMMA (S)	1.1499	1.1558	1.1594	1.1620	1.1658	1.1685	1.1724	1.1774	1.1815	1.1844	1.1886	1.1917	1.1940
SON VEL,/M/SEC	912.2	919.5	923.6	926.5	930.5	933.3	937.2	942.0	945.7	948.3	951.8	954.3	956.1

MOLE FRACTIONS

AR	0.00846	0.00848	0.00849	0.00850	0.00851	0.00852	0.00853	0.00854	0.00855	0.00856	0.00856	0.00857	0.00857
CO	0.03902	0.03652	0.03507	0.03404	0.03260	0.03160	0.03022	0.02854	0.02726	0.02640	0.02524	0.02446	0.02388
CO2	0.09644	0.09927	0.10092	0.10207	0.10368	0.10480	0.10634	0.10822	0.10963	0.11059	0.11188	0.11274	0.11338
H	0.00252	0.00197	0.00169	0.00151	0.00129	0.00115	0.00098	0.00079	0.00066	0.00058	0.00049	0.00043	0.00039
H2	0.00783	0.00712	0.00672	0.00645	0.00620	0.00583	0.00549	0.00510	0.00481	0.00462	0.00436	0.00419	0.00407
H2O	0.11604	0.11771	0.11864	0.11927	0.12013	0.12071	0.12150	0.12243	0.12312	0.12358	0.12418	0.12459	0.12488
NO	0.00449	0.00441	0.00434	0.00428	0.00417	0.00408	0.00393	0.00372	0.00353	0.00339	0.00318	0.00302	0.00290
N2	0.70648	0.70825	0.70926	0.70996	0.71093	0.71159	0.71251	0.71361	0.71445	0.71502	0.71578	0.71630	0.71668
O	0.00157	0.00121	0.00103	0.00091	0.00077	0.00067	0.00056	0.00043	0.00035	0.00030	0.00024	0.00020	0.00017
OH	0.00749	0.00677	0.00634	0.00604	0.00561	0.00531	0.00485	0.00437	0.00398	0.00370	0.00333	0.00308	0.00289
O2	0.00964	0.00828	0.00750	0.00696	0.00623	0.00573	0.00505	0.00425	0.00366	0.00326	0.00275	0.00242	0.00218

CASE= 4 O/F= 13.3218 F/A= 0.07506 PERCENT FUEL= 6.9824 PHI= 1.1000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2457.9	2489.1	2506.4	2518.2	2534.1	2544.8	2559.0	2575.4	2587.2	2594.9	2604.7	2610.9	2615.4
T, DEG F	3964.5	4020.7	4051.9	4073.1	4101.6	4120.9	4146.5	4176.0	4197.2	4211.0	4228.7	4240.0	4248.0
RHO, G/CC	6.9449-5	1.3748-4	2.0506-4	2.7238-4	4.0649-4	5.4013-4	8.0655-4	1.3373-3	1.9985-3	2.6583-3	3.9752-3	5.2900-3	6.6033-3
M, MOL WT	28.014	28.080	28.117	28.141	28.175	28.197	28.227	28.261	28.285	28.301	28.321	28.334	28.343
CP, CAL/(G)(K)	0.7318	0.6672	0.6373	0.6169	0.5893	0.5706	0.5454	0.5158	0.4940	0.4796	0.4607	0.4485	0.4397
GAMMA (S)	1.1528	1.1599	1.1642	1.1674	1.1721	1.1756	1.1806	1.1873	1.1927	1.1966	1.2021	1.2060	1.2089
SON VEL,/M/SEC	917.1	924.6	928.9	932.0	936.2	939.2	943.4	948.5	952.4	955.1	958.8	961.2	963.1

MOLE FRACTIONS

AR	0.00829	0.00841	0.00842	0.00843	0.00844	0.00844	0.00845	0.00846	0.00847	0.00847	0.00848	0.00848	0.00849
CO	0.04755	0.04536	0.04410	0.04323	0.04203	0.04121	0.04011	0.03882	0.03789	0.03728	0.03650	0.03600	0.03565
CO2	0.09311	0.09563	0.09707	0.09807	0.09944	0.10037	0.10162	0.10308	0.10414	0.10483	0.10571	0.10627	0.10667
H	0.00294	0.00231	0.00199	0.00179	0.00153	0.00137	0.00116	0.00094	0.00079	0.00070	0.00059	0.00052	0.00047
H2	0.01009	0.00938	0.00898	0.00872	0.00836	0.00813	0.00781	0.00746	0.00721	0.00705	0.00685	0.00672	0.00663
H2O	0.11879	0.12052	0.12148	0.12213	0.12300	0.12359	0.12437	0.12527	0.12591	0.12633	0.12687	0.12722	0.12747
NO	0.00370	0.00353	0.00340	0.00330	0.00313	0.00301	0.00281	0.00255	0.00233	0.00217	0.00195	0.00179	0.00167
N2	0.70368	0.70243	0.70341	0.70408	0.70500	0.70562	0.70647	0.70745	0.70817	0.70865	0.70926	0.70966	0.70995
O	0.00132	0.00099	0.00082	0.00072	0.00058	0.00050	0.00040	0.00029	0.00023	0.00019	0.00014	0.00011	0.00010
OH	0.00698	0.00621	0.00574	0.00542	0.00496	0.00463	0.00419	0.00365	0.00324	0.00296	0.00259	0.00234	0.00216
O2	0.00645	0.00524	0.00458	0.00413	0.00353	0.00313	0.00261	0.00203	0.00163	0.00138	0.00107	0.00089	0.00076

CASE=	6	O/F=	48.8467	F/A=	0.02047	PERCENT FUEL=				2.0062	PHI=					0.3000
P. ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000			
P. PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8			
T. DEG K	1753.9	1754.2	1754.4	1754.5	1754.7	1754.8	1754.9	1755.0	1755.1	1755.1	1755.2	1755.2	1755.3			
T. DEG F	2697.2	2697.9	2698.2	2698.4	2698.7	2698.9	2699.1	2699.3	2699.4	2699.5	2699.7	2699.7	2699.8			
RHO. G/CC	1.0064-4	2.0123-4	3.0182-4	4.0241-4	6.0357-4	8.0472-4	1.2070-3	2.0116-3	3.0172-3	4.0229-3	6.0341-3	8.0454-3	1.0057-2			
M. MOL HT	28.966	28.967	28.967	28.967	28.968	28.968	28.968	28.968	28.969	28.969	28.969	28.969	28.969			
CP. CAL/(G)(K)	0.3193	0.3184	0.3180	0.3177	0.3174	0.3172	0.3169	0.3166	0.3164	0.3163	0.3162	0.3161	0.3160			
GAMMA (S)	1.2747	1.2754	1.2758	1.2760	1.2763	1.2765	1.2767	1.2770	1.2771	1.2772	1.2773	1.2774	1.2775			
SON VEL./M/SEC	801.1	801.4	801.5	801.6	801.7	801.8	801.9	802.0	802.1	802.1	802.2	802.2	802.2			

MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.04198	0.04199	0.04199	0.04199	0.04200	0.04200	0.04200	0.04200	0.04200	0.04200	0.04200	0.04200	0.04200	0.04200	0.04200
H	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.03958	0.03961	0.03962	0.03963	0.03965	0.03965	0.03967	0.03968	0.03969	0.03969	0.03970	0.03970	0.03971		
H2O	0.00307	0.00307	0.00307	0.00307	0.00308	0.00308	0.00308	0.00308	0.00308	0.00308	0.00308	0.00308	0.00308		
NO	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004	0.00005		
NO2	0.76374	0.76375	0.76375	0.76376	0.76377	0.76377	0.76378	0.76378	0.76379	0.76379	0.76379	0.76379	0.76379		
O	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000		
OH	0.00036	0.00030	0.00027	0.00026	0.00023	0.00022	0.00019	0.00017	0.00015	0.00014	0.00013	0.00012	0.00011		
O2	0.14207	0.14209	0.14209	0.14210	0.14210	0.14211	0.14211	0.14211	0.14211	0.14211	0.14211	0.14211	0.14211		

CASE=	6	O/F=	36.6350	F/A=	0.02730	PERCENT FUEL=				2.6571	PHI=					0.4000
P. ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000			
P. PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8			
T. DEG K	1940.7	1942.3	1943.0	1943.5	1944.1	1944.4	1944.9	1945.4	1945.7	1945.9	1946.2	1946.3	1946.5			
T. DEG F	3033.6	3036.4	3037.7	3038.6	3039.6	3040.3	3041.1	3042.0	3042.6	3043.0	3043.4	3043.7	3043.9			
RHO. G/CC	9.0916-5	1.8171-4	2.7247-4	3.6322-4	5.4469-4	7.2613-4	1.0890-3	1.8146-3	2.7215-3	3.6283-3	5.4418-3	7.2552-3	9.0685-3			
M. MOL HT	28.957	28.960	28.961	28.962	28.963	28.964	28.965	28.966	28.967	28.967	28.968	28.968	28.969			
CP. CAL/(G)(K)	0.34113	0.3378	0.3362	0.3352	0.3339	0.3331	0.3322	0.3312	0.3305	0.3300	0.3295	0.3292	0.3289			
GAMMA (S)	1.2555	1.2579	1.2590	1.2598	1.2606	1.2612	1.2619	1.2626	1.2631	1.2634	1.2638	1.2641	1.2642			
SON VEL./M/SEC	836.4	837.5	838.0	838.4	838.8	839.0	839.3	839.7	839.9	840.0	840.2	840.3	840.4			

MOLE FRACTIONS

AR	0.00907	0.00907	0.00907	0.00907	0.00907	0.00907	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908
CO	0.00018	0.00013	0.00010	0.00009	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002		
CO2	0.05534	0.05539	0.05542	0.05543	0.05545	0.05546	0.05548	0.05549	0.05550	0.05551	0.05551	0.05552	0.05552		
H	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000		
HO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001		
H2	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000		
H2O	0.05203	0.05213	0.05219	0.05222	0.05226	0.05229	0.05233	0.05237	0.05240	0.05242	0.05245	0.05246	0.05247		
NO	0.00509	0.00511	0.00513	0.00513	0.00514	0.00515	0.00515	0.00516	0.00517	0.00517	0.00517	0.00518	0.00518		
NO2	0.00009	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004	0.00005		
N2	0.75740	0.75746	0.75750	0.75752	0.75754	0.75756	0.75758	0.75760	0.75761	0.75762	0.75763	0.75764	0.75764		
O	0.00020	0.00015	0.00012	0.00010	0.00009	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002		
OH	0.00115	0.00098	0.00089	0.00083	0.00075	0.00070	0.00064	0.00056	0.00051	0.00047	0.00043	0.00040	0.00038		
O2	0.11949	0.11953	0.11955	0.11956	0.11958	0.11959	0.11960	0.11962	0.11962	0.11963	0.11963	0.11963	0.11963		

	CASE= 7	O/F= 13.9562	F/A= 0.07165	PERCENT FUEL= 6.6862				PHI= 1.0500					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2562.7	2603.0	2625.9	2641.9	2664.0	2679.3	2700.4	2726.0	2745.6	2758.9	2777.1	2789.5	2798.9
T, DEG F	4153.2	4225.6	4267.0	4295.8	4335.5	4363.3	4401.0	4447.1	4482.3	4506.4	4539.1	4561.5	4578.3
RHO, G/CC	6.6278-5	1.3091-4	1.9499-4	2.5873-4	3.8553-4	5.1169-4	7.6276-4	1.2618-3	1.8819-3	2.4996-3	3.7299-3	4.9556-3	6.1781-3
M, MOL WT	27.875	27.961	28.010	28.045	28.092	28.125	28.170	28.224	28.266	28.294	28.332	28.359	28.378
CP, CAL/(G)(K)	0.8617	0.8026	0.7705	0.7488	0.7197	0.7000	0.6735	0.6422	0.6189	0.6031	0.5820	0.5677	0.5570
GAMMA (S)	1.1418	1.1469	1.1501	1.1523	1.1555	1.1578	1.1611	1.1654	1.1689	1.1713	1.1749	1.1774	1.1794
SON VEL, M/SEC	934.2	942.2	946.8	950.0	954.5	957.7	962.0	967.4	971.6	974.5	978.5	981.3	983.4

MOLE FRACTIONS

AR	0.00837	0.00840	0.00841	0.00842	0.00844	0.00845	0.00846	0.00848	0.00849	0.00850	0.00851	0.00852	0.00852
CO	0.05007	0.04743	0.04583	0.04467	0.04303	0.04165	0.04019	0.03810	0.03646	0.03532	0.03373	0.03262	0.03179
CO2	0.08396	0.08703	0.08886	0.09018	0.09205	0.09339	0.09526	0.09761	0.09945	0.10074	0.10251	0.10374	0.10467
H	0.00471	0.00376	0.00328	0.00297	0.00257	0.00231	0.00199	0.00163	0.00139	0.00124	0.00104	0.00092	0.00084
H2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2O	0.01035	0.00949	0.00899	0.00865	0.00818	0.00785	0.00740	0.00686	0.00646	0.00618	0.00581	0.00556	0.00537
N	0.10918	0.11131	0.11252	0.11336	0.11451	0.11530	0.11638	0.11769	0.11867	0.11934	0.12024	0.12085	0.12131
N2	0.00657	0.00663	0.00664	0.00663	0.00659	0.00654	0.00645	0.00630	0.00614	0.00601	0.00581	0.00565	0.00551
O	0.69798	0.70012	0.70136	0.70223	0.70344	0.70429	0.70546	0.70691	0.70803	0.70881	0.70988	0.71061	0.71117
O2	0.00329	0.00264	0.00231	0.00209	0.00180	0.00162	0.00138	0.00112	0.00094	0.00082	0.00068	0.00059	0.00053
OH	0.01129	0.01048	0.00998	0.00962	0.00910	0.00872	0.00819	0.00752	0.00698	0.00661	0.00609	0.00573	0.00545
02	0.01423	0.01270	0.01180	0.01117	0.01029	0.00967	0.00882	0.00778	0.00698	0.00643	0.00569	0.00519	0.00482

	CASE= 7	O/F= 13.3218	F/A= 0.07506	PERCENT FUEL= 6.9824				PHI= 1.1000					
P, ATM	0.5000	1.0000	1.5030	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	233.9	440.9	587.8	734.8
T, DEG K	2569.7	2609.9	2632.7	2648.6	2670.4	2685.4	2705.9	2730.7	2749.2	2761.9	2778.7	2790.1	2798.5
T, DEG F	4165.8	4238.2	4279.2	4307.8	4347.0	4374.0	4411.0	4455.5	4488.9	4511.6	4542.0	4562.4	4577.5
RHO, G/CC	6.5742-5	1.2986-4	1.9344-4	2.5668-4	3.8252-4	5.0775-4	7.5701-4	1.2526-3	1.8688-3	2.4826-3	3.7059-3	4.9253-3	6.1419-3
M, MOL WT	27.725	27.811	27.860	27.893	27.939	27.971	28.015	28.066	28.105	28.132	28.167	28.190	28.207
CP, CAL/(G)(K)	0.8573	0.7948	0.7607	0.7375	0.7063	0.6850	0.6563	0.6221	0.5965	0.5790	0.5556	0.5397	0.5278
GAMMA (S)	1.1428	1.1484	1.1518	1.1542	1.1578	1.1604	1.1642	1.1692	1.1733	1.1763	1.1807	1.1839	1.1864
SON VEL, M/SEC	938.4	946.6	951.3	954.6	959.2	962.4	966.9	972.5	976.9	979.9	984.1	987.0	989.3

MOLE FRACTIONS

AR	0.00830	0.00833	0.00834	0.00835	0.00836	0.00837	0.00839	0.00840	0.00841	0.00842	0.00843	0.00844	0.00845
CO	0.05779	0.05537	0.05392	0.05287	0.05139	0.05033	0.04886	0.04702	0.04560	0.04462	0.04329	0.04238	0.04170
CO2	0.08142	0.08427	0.08597	0.08718	0.08890	0.09011	0.09181	0.09391	0.09552	0.09663	0.09814	0.09917	0.09993
H	0.00534	0.00429	0.00376	0.00341	0.00296	0.00267	0.00231	0.00190	0.00162	0.00145	0.00123	0.00109	0.00100
H2	0.01257	0.01168	0.01118	0.01083	0.01034	0.01001	0.00956	0.00902	0.00861	0.00834	0.00798	0.00774	0.00757
H2O	0.11178	0.11403	0.11530	0.11618	0.11738	0.11821	0.11934	0.12069	0.12170	0.12238	0.12329	0.12390	0.12435
N	0.00576	0.00573	0.00568	0.00562	0.00552	0.00542	0.00527	0.00502	0.00480	0.00462	0.00435	0.00415	0.00399
N2	0.69241	0.69458	0.69582	0.69669	0.69790	0.69875	0.69991	0.70134	0.70242	0.70317	0.70419	0.70488	0.70539
O	0.00296	0.00234	0.00202	0.00181	0.00154	0.00137	0.00115	0.00091	0.00074	0.00064	0.00051	0.00044	0.00038
OH	0.01088	0.01002	0.00949	0.00911	0.00855	0.00815	0.00759	0.00687	0.00631	0.00591	0.00537	0.00499	0.00470
02	0.01078	0.00935	0.00852	0.00794	0.00714	0.00658	0.00583	0.00492	0.00425	0.00380	0.00321	0.00282	0.00254

CASE=	1	O/F=	12.7426	F/A=	0.07848	PERCENT FUEL=				7.2766	PHI=				1.1500
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000		
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8		
T, DEG K	2221.2	2229.5	2233.2	2235.5	2238.2	2239.7	2241.6	2243.5	2244.7	2245.4	2246.2	2246.7	2247.1		
T, DEG F	3538.5	3553.3	3560.1	3564.1	3569.0	3571.8	3575.3	3578.6	3580.8	3582.0	3583.5	3584.4	3585.0		
RHO, G/CC	7.7096-5	1.5371-4	2.3025-4	3.0674-4	4.5964-4	6.1249-4	9.1809-4	1.5291-3	2.2926-3	3.0560-3	4.5826-3	6.1090-3	7.6353-3		
M, MOL WT	28.104	28.121	28.129	28.133	28.139	28.142	28.146	28.150	28.152	28.153	28.155	28.156	28.157		
CP, CAL/(G)(K)	0.4292	0.4044	0.3933	0.3867	0.3790	0.3745	0.3692	0.3641	0.3609	0.3590	0.3568	0.3556	0.3547		
GAMMA (S)	1.2138	1.2242	1.2293	1.2325	1.2364	1.2388	1.2417	1.2446	1.2465	1.2476	1.2489	1.2497	1.2502		
SON VEL, M/SEC	893.1	898.3	900.8	902.4	904.3	905.4	906.8	908.2	909.0	909.6	910.2	910.5	910.8		

MOL FRACTIONS

AR	0.00839	0.00839	0.00839	0.00840	0.00340	0.00840	0.00840	0.00840	0.00840	0.00840	0.00840	0.00840	0.00840
CO	0.04708	0.04667	0.04650	0.04639	0.04627	0.04621	0.04613	0.04605	0.04601	0.04598	0.04595	0.04593	0.04592
CO2	0.09997	0.10046	0.10068	0.10061	0.10096	0.10104	0.10114	0.10123	0.10129	0.10133	0.10136	0.10139	0.10140
H	0.00095	0.00070	0.00058	0.00051	0.00042	0.00037	0.00030	0.00024	0.00019	0.00017	0.00014	0.00012	0.00011
H2	0.01131	0.01115	0.01108	0.01104	0.01093	0.01097	0.01094	0.01091	0.01089	0.01088	0.01087	0.01086	0.01086
H2O	0.12736	0.12792	0.12818	0.12834	0.12853	0.12864	0.12878	0.12892	0.12901	0.12906	0.12912	0.12916	0.12918
N0	0.00059	0.00046	0.00039	0.00035	0.00029	0.00026	0.00021	0.00017	0.00014	0.00012	0.00010	0.00009	0.00008
N2	0.70226	0.70276	0.70299	0.70312	0.70329	0.70338	0.70350	0.70362	0.70369	0.70374	0.70379	0.70382	0.70384
O	0.00009	0.00005	0.00004	0.00003	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00157	0.00119	0.00100	0.00089	0.00074	0.00065	0.00054	0.00042	0.00035	0.00030	0.00025	0.00022	0.00019
O2	0.00043	0.00024	0.00017	0.00014	0.00009	0.00007	0.00005	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001

CASE=	1	O/F=	12.2117	F/A=	0.08189	PERCENT FUEL=				7.5691	PHI=				1.2000
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000		
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8		
T, DEG K	2188.0	2193.2	2195.6	2197.0	2198.6	2199.6	2200.8	2202.0	2202.7	2203.2	2203.7	2204.0	2204.2		
T, DEG F	3478.6	3488.1	3492.3	3494.8	3497.8	3499.6	3501.7	3503.8	3505.2	3506.0	3506.9	3507.5	3507.9		
RHO, G/CC	7.7604-5	1.5490-4	2.3214-4	3.0935-4	4.6373-4	6.1808-4	9.2670-4	1.5438-3	2.3151-3	3.0862-3	4.6284-3	6.1705-3	7.7125-3		
M, MOL WT	27.866	27.877	27.881	27.884	27.888	27.890	27.892	27.895	27.896	27.897	27.898	27.899	27.899		
CP, CAL/(G)(K)	0.3981	0.3828	0.3762	0.3723	0.3677	0.3651	0.3619	0.3588	0.3569	0.3558	0.3544	0.3536	0.3531		
GAMMA (S)	1.2294	1.2369	1.2404	1.2426	1.2451	1.2467	1.2485	1.2503	1.2515	1.2522	1.2530	1.2535	1.2539		
SON VEL, M/SEC	895.9	899.5	901.2	902.2	903.4	904.1	905.0	905.9	906.4	906.8	907.2	907.4	907.5		

MOL FRACTIONS

AR	0.00829	0.00829	0.00829	0.00830	0.00830	0.00830	0.00830	0.00830	0.00830	0.00830	0.00830	0.00830	0.00830
CO	0.05942	0.05928	0.05922	0.05919	0.05915	0.05913	0.05911	0.05908	0.05907	0.05906	0.05905	0.05905	0.05904
CO2	0.09223	0.09243	0.09251	0.09256	0.09262	0.09265	0.09269	0.09272	0.09274	0.09276	0.09277	0.09278	0.09279
H	0.00093	0.00068	0.00056	0.00049	0.00040	0.00035	0.00029	0.00022	0.00018	0.00016	0.00013	0.00011	0.00010
H2	0.01581	0.01573	0.01570	0.01569	0.01567	0.01565	0.01564	0.01563	0.01562	0.01562	0.01561	0.01561	0.01561
H2O	0.12752	0.12792	0.12810	0.12820	0.12833	0.12841	0.12850	0.12860	0.12866	0.12869	0.12873	0.12876	0.12877
N0	0.00032	0.00024	0.00020	0.00017	0.00015	0.00013	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00004
N2	0.69425	0.69456	0.69470	0.69478	0.69488	0.69494	0.69502	0.69509	0.69513	0.69516	0.69519	0.69521	0.69522
O	0.00004	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00105	0.00078	0.00065	0.00057	0.00047	0.00041	0.00034	0.00026	0.00022	0.00019	0.00015	0.00013	0.00012
O2	0.00014	0.00008	0.00005	0.00004	0.00003	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000

CASE=	3	O/F=	29.3080	F/A=	0.03412	PERCENT FUEL=			3.2995	PHI=			0.5000
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1738.4	1738.8	1739.0	1739.1	1739.3	1739.4	1739.5	1739.6	1739.7	1739.8	1739.9	1739.9	1739.9
T, DEG F	2669.4	2670.1	2670.5	2670.7	2671.0	2671.2	2671.4	2671.6	2671.8	2671.9	2672.0	2672.1	2672.1
RHO, G/CC	1.0154-4	2.0304-4	3.0453-4	4.0602-4	6.0898-4	8.1193-4	1.2178-3	2.0296-3	3.0442-3	4.0589-3	6.0881-3	8.1173-3	1.0146-2
M, MOL WT	28.969	28.970	28.970	28.971	28.971	28.971	28.971	28.972	28.972	28.972	28.972	28.972	28.972
CP, CAL/(G)(K)	0.3254	0.3245	0.3240	0.3237	0.3233	0.3231	0.3228	0.3225	0.3223	0.3221	0.3220	0.3218	0.3218
GAMMA (S)	1.2682	1.2690	1.2694	1.2696	1.2699	1.2701	1.2703	1.2706	1.2707	1.2709	1.2710	1.2711	1.2711
SON VEL, M/SEC	795.5	795.8	795.9	796.0	796.2	796.2	796.3	796.4	796.5	796.6	796.6	796.7	796.7

MOLE FRACTIONS

AR	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902	0.00902
CO	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
CO2	0.06886	0.06887	0.06888	0.06888	0.06888	0.06889	0.06889	0.06889	0.06889	0.06889	0.06890	0.06890	0.06890
H2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.06520	0.06524	0.06525	0.06526	0.06528	0.06529	0.06530	0.06531	0.06532	0.06533	0.06534	0.06534	0.06535
NO	0.00242	0.00242	0.00242	0.00243	0.00243	0.00243	0.00243	0.00243	0.00243	0.00243	0.00243	0.00243	0.00243
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003
N2	0.75404	0.75406	0.75407	0.75407	0.75408	0.75408	0.75409	0.75410	0.75410	0.75410	0.75411	0.75411	0.75411
O	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.00038	0.00032	0.00029	0.00027	0.00025	0.00023	0.00021	0.00018	0.00017	0.00015	0.00014	0.00013	0.00012
O2	0.10000	0.10001	0.10002	0.10002	0.10003	0.10003	0.10004	0.10004	0.10004	0.10004	0.10004	0.10004	0.10004

CASE=	3	O/F=	24.4233	F/A=	0.04094	PERCENT FUEL=			3.9334	PHI=			0.6000
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1920.0	1921.6	1922.4	1922.9	1923.5	1923.8	1924.3	1924.8	1925.2	1925.4	1925.7	1925.8	1925.9
T, DEG F	2996.3	2999.2	3000.6	3001.5	3002.5	3003.2	3004.1	3005.0	3005.6	3006.0	3006.5	3006.8	3007.0
RHO, G/CC	9.1907-5	1.8368-4	2.7542-4	3.6715-4	5.5058-4	7.3398-4	1.1007-3	1.8341-3	2.7508-3	3.6674-3	5.5004-3	7.3333-3	9.1661-3
M, MOL WT	28.960	28.963	28.964	28.965	28.967	28.967	28.968	28.969	28.970	28.970	28.971	28.971	28.972
CP, CAL/(G)(K)	0.3476	0.3437	0.3419	0.3408	0.3394	0.3386	0.3375	0.3364	0.3357	0.3352	0.3346	0.3343	0.3340
GAMMA (S)	1.2500	1.2525	1.2537	1.2545	1.2554	1.2560	1.2567	1.2575	1.2580	1.2584	1.2588	1.2590	1.2592
SON VEL, M/SEC	830.1	831.2	831.8	832.1	832.5	832.8	833.1	833.5	833.7	833.9	834.1	834.2	834.3

MOLE FRACTIONS

AR	0.00895	0.00896	0.00896	0.00896	0.00896	0.00896	0.00896	0.00896	0.00896	0.00896	0.00896	0.00896	0.00896
CO	0.00027	0.00019	0.00016	0.00014	0.00011	0.00010	0.00008	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003
CO2	0.08178	0.08186	0.08190	0.08192	0.08195	0.08197	0.08199	0.08201	0.08202	0.08203	0.08204	0.08205	0.08205
H	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00006	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2O	0.07731	0.07742	0.07748	0.07752	0.07756	0.07759	0.07763	0.07768	0.07771	0.07773	0.07775	0.07777	0.07778
NO	0.00386	0.00388	0.00388	0.00389	0.00390	0.00390	0.00391	0.00391	0.00392	0.00392	0.00392	0.00393	0.00393
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003
N2	0.74812	0.74820	0.74823	0.74825	0.74828	0.74830	0.74832	0.74834	0.74835	0.74836	0.74838	0.74838	0.74839
O	0.00014	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001
OH	0.00114	0.00096	0.00087	0.00082	0.00074	0.00069	0.00063	0.00055	0.00050	0.00047	0.00042	0.00039	0.00037
O2	0.07837	0.07838	0.07839	0.07839	0.07840	0.07841	0.07842	0.07842	0.07843	0.07843	0.07844	0.07844	0.07844

CASE= 4 O/F= 12.7426 F/A= 0.07848 PERCENT FUEL= 7.2766 PHI= 1.1500

P. ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P. PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T. DEG K	2456.2	2485.1	2500.6	2511.0	2524.6	2533.6	2545.2	2558.0	2566.7	2572.2	2579.0	2583.2	2586.2
T. DEG F	3961.5	4013.4	4041.4	4060.1	4084.6	4100.8	4121.6	4144.6	4160.4	4170.3	4182.6	4190.1	4195.4
RHO, G/CC	6.9073-5	1.3684-4	2.0422-4	2.7138-4	4.0528-4	5.3882-4	8.0523-4	1.3366-3	1.9993-3	2.6611-3	3.9830-3	5.3037-3	6.6235-3
M. MOL WT	27.843	27.904	27.936	27.958	27.986	28.005	28.029	28.055	28.073	28.084	28.097	28.106	28.112
CP, CAL/(G*IK)	0.6784	0.6198	0.5880	0.5666	0.5382	0.5194	0.4949	0.4674	0.4484	0.4365	0.4217	0.4125	0.4062
GAMMA (S)	1.1592	1.1680	1.1735	1.1776	1.1835	1.1878	1.1940	1.2019	1.2079	1.2120	1.2174	1.2210	1.2236
SDN VEL./M/SEC	922.1	930.0	934.5	937.7	942.2	945.3	949.5	954.5	958.2	960.7	963.9	966.0	967.4

MOLE FRACTIONS

AR	0.00831	0.00833	0.00834	0.00834	0.00835	0.00836	0.00837	0.00837	0.00838	0.00838	0.00839	0.00839	0.00839
CO	0.05673	0.05499	0.05402	0.05336	0.05249	0.05152	0.05117	0.05035	0.04979	0.04944	0.04901	0.04875	0.04857
CO2	0.08896	0.09102	0.09215	0.09292	0.09394	0.09461	0.09548	0.09644	0.09710	0.09751	0.09801	0.09831	0.09852
H	0.00329	0.00258	0.00223	0.00200	0.00171	0.00152	0.00129	0.00104	0.00088	0.00077	0.00064	0.00057	0.00051
H2	0.01285	0.01219	0.01183	0.01160	0.01123	0.01110	0.01084	0.01057	0.01039	0.01028	0.01014	0.01006	0.01001
H2O	0.12102	0.12275	0.12368	0.12431	0.12514	0.12568	0.12639	0.12717	0.12772	0.12806	0.12849	0.12875	0.12894
NO	0.00291	0.00268	0.00252	0.00240	0.00221	0.00207	0.00188	0.00163	0.00144	0.00130	0.00113	0.00102	0.00093
N2	0.69459	0.69622	0.69711	0.69771	0.69851	0.69904	0.69974	0.70052	0.70106	0.70140	0.70183	0.70210	0.70229
O	0.00104	0.00074	0.00060	0.00051	0.00040	0.00034	0.00026	0.00018	0.00013	0.00011	0.00008	0.00006	0.00005
OH	0.00625	0.00542	0.00453	0.00459	0.00412	0.00380	0.00336	0.00284	0.00246	0.00221	0.00189	0.00168	0.00153
O2	0.00406	0.00309	0.00259	0.00225	0.00183	0.00156	0.00123	0.00089	0.00067	0.00054	0.00040	0.00032	0.00026

CASE= 4 O/F= 12.2117 F/A= 0.08189 PERCENT FUEL= 7.5691 PHI= 1.2000

P. ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P. PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T. DEG K	2447.1	2472.3	2485.4	2494.0	2504.9	2511.9	2520.7	2530.1	2536.3	2540.1	2544.7	2547.5	2549.4
T. DEG F	3945.0	3990.5	4014.1	4029.5	4049.2	4061.8	4077.6	4094.4	4105.6	4112.4	4120.7	4125.8	4129.2
RHO, G/CC	6.8875-5	1.3660-4	2.0402-4	2.7127-4	4.0545-4	5.3938-4	8.0677-4	1.3406-3	2.0068-3	2.6725-3	4.0028-3	5.3323-3	6.6612-3
M. MOL WT	27.660	27.713	27.740	27.758	27.780	27.794	27.812	27.831	27.844	27.851	27.861	27.866	27.870
CP, CAL/(G*IK)	0.6211	0.5633	0.5331	0.5134	0.4882	0.4721	0.4520	0.4306	0.4081	0.4081	0.3979	0.3918	0.3876
GAMMA (S)	1.1688	1.1795	1.1861	1.1908	1.1975	1.2022	1.2086	1.2161	1.2215	1.2250	1.2295	1.2323	1.2342
SDN VEL./M/SEC	927.2	935.4	940.0	943.2	947.5	950.5	954.3	958.7	961.8	963.8	966.3	967.8	968.9

MOLE FRACTIONS

AR	0.00823	0.00824	0.00825	0.00826	0.00826	0.00827	0.00827	0.00828	0.00828	0.00829	0.00829	0.00829	0.00829
CO	0.06642	0.06519	0.06454	0.06411	0.06357	0.06322	0.06279	0.06234	0.06205	0.06187	0.06166	0.06153	0.06145
CO2	0.08411	0.08563	0.08643	0.08695	0.08761	0.08804	0.08857	0.08912	0.08948	0.08970	0.08996	0.09012	0.09022
H	0.00355	0.00276	0.00237	0.00212	0.00180	0.00160	0.00135	0.00108	0.00090	0.00079	0.00066	0.00058	0.00052
H2	0.01619	0.01563	0.01535	0.01517	0.01494	0.01480	0.01462	0.01444	0.01432	0.01425	0.01417	0.01412	0.01409
H2O	0.12262	0.12426	0.12512	0.12568	0.12641	0.12688	0.12747	0.12811	0.12854	0.12880	0.12912	0.12932	0.12946
NO	0.00219	0.00193	0.00177	0.00165	0.00148	0.00136	0.00119	0.00100	0.00086	0.00077	0.00065	0.00058	0.00052
N2	0.68819	0.68963	0.69039	0.69089	0.69153	0.69195	0.69248	0.69305	0.69343	0.69367	0.69396	0.69413	0.69425
O	0.00075	0.00052	0.00040	0.00033	0.00025	0.00021	0.00015	0.00010	0.00007	0.00006	0.00004	0.00003	0.00003
OH	0.00535	0.00451	0.00403	0.00370	0.00325	0.00295	0.00256	0.00211	0.00179	0.00159	0.00134	0.00118	0.00107
O2	0.00239	0.00170	0.00136	0.00114	0.00088	0.00073	0.00055	0.00037	0.00027	0.00021	0.00015	0.00012	0.00010

CASE= 6 O/F= 29.3080 F/A= 0.03412 PERCENT FUEL= 3.2995 PHI= 0.5000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2108.0	2112.8	2115.2	2116.6	2118.4	2119.6	2121.0	2122.5	2123.6	2124.2	2125.0	2125.5	2125.9
T, DEG F	3334.7	3343.4	3347.6	3350.2	3353.5	3355.5	3358.1	3360.9	3362.7	3363.9	3365.3	3366.2	3366.9
RHO, G/CC	8.3614-5	1.6691-4	2.5012-4	3.3330-4	4.9959-4	6.6582-4	9.9816-4	1.6626-3	2.4928-3	3.3229-3	4.9828-3	6.6424-3	8.3019-3
M, MOL WT	28.927	28.937	28.942	28.945	28.948	28.951	28.954	28.957	28.959	28.960	28.962	28.963	28.964
CP, CAL/(G*IK)	0.3794	0.3692	0.3644	0.3614	0.3577	0.3554	0.3526	0.3496	0.3476	0.3464	0.3449	0.3439	0.3433
GAMMA (S)	1.2314	1.2367	1.2393	1.2410	1.2431	1.2445	1.2461	1.2479	1.2492	1.2499	1.2509	1.2514	1.2519
SON VEL,M/SEC	863.8	866.5	867.8	868.6	869.7	870.4	871.2	872.1	872.7	873.1	873.5	873.8	874.0

MOLE FRACTIONS

AR	0.00900	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00902
CO	0.00095	0.00070	0.00058	0.00051	0.00042	0.00037	0.00030	0.00024	0.00020	0.00017	0.00014	0.00012	0.00011
CO2	0.06785	0.06812	0.06825	0.06833	0.06842	0.06848	0.06855	0.06863	0.06867	0.06870	0.06874	0.06876	0.06877
H	0.00006	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00018	0.00013	0.00011	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002
H2O	0.06375	0.06402	0.06415	0.06424	0.06436	0.06443	0.06453	0.06464	0.06471	0.06476	0.06483	0.06487	0.06490
NO	0.00713	0.00722	0.00726	0.00728	0.00732	0.00734	0.00737	0.00739	0.00741	0.00742	0.00744	0.00745	0.00746
NO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004	0.00005
N2	0.75057	0.75079	0.75050	0.75096	0.75104	0.75109	0.75116	0.75122	0.75127	0.75130	0.75133	0.75135	0.75137
O	0.00064	0.00047	0.00039	0.00034	0.00028	0.00025	0.00020	0.00016	0.00013	0.00011	0.00009	0.00008	0.00007
OH	0.00270	0.00232	0.00212	0.00199	0.00181	0.00170	0.00154	0.00137	0.00124	0.00116	0.00105	0.00098	0.00093
O2	0.09717	0.09718	0.09719	0.09720	0.09722	0.09723	0.09724	0.09726	0.09727	0.09728	0.09729	0.09730	0.09730

CASE= 6 O/F= 24.4233 F/A= 0.04094 PERCENT FUEL= 3.9334 PHI= 0.6000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2249.3	2260.6	2266.2	2269.8	2274.4	2277.3	2280.9	2284.8	2287.5	2289.1	2291.2	2292.5	2293.4
T, DEG F	3589.1	3609.3	3619.5	3625.9	3634.2	3639.4	3645.9	3653.0	3657.7	3660.8	3664.5	3666.8	3668.5
RHO, G/CC	7.8171-5	1.5569-4	2.3306-4	3.1034-4	4.6473-4	6.1898-4	9.2724-4	1.5432-3	2.3126-3	3.0815-3	4.6188-3	6.1556-3	7.6919-3
M, MOL WT	28.856	28.881	28.893	28.900	28.910	28.916	28.924	28.933	28.938	28.942	28.946	28.949	28.951
CP, CAL/(G*IK)	0.4459	0.4234	0.4123	0.4053	0.3966	0.3911	0.3842	0.3770	0.3721	0.3691	0.3654	0.3631	0.3615
GAMMA (S)	1.2033	1.2113	1.2156	1.2185	1.2222	1.2246	1.2278	1.2313	1.2337	1.2352	1.2372	1.2384	1.2392
SON VEL,M/SEC	883.1	887.9	890.4	892.0	894.1	895.5	897.2	899.1	900.5	901.3	902.3	903.0	903.5

MOLE FRACTIONS

AR	0.00892	0.00893	0.00893	0.00894	0.00894	0.00894	0.00894	0.00895	0.00895	0.00895	0.00895	0.00895	0.00895
CO	0.00334	0.00257	0.00219	0.00175	0.00164	0.00145	0.00122	0.00097	0.00081	0.00071	0.00059	0.00051	0.00046
CO2	0.07842	0.07925	0.07967	0.07993	0.08026	0.08047	0.08072	0.08100	0.08118	0.08129	0.08142	0.08150	0.08156
H	0.00025	0.00017	0.00013	0.00011	0.00008	0.00007	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001
H02	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002
H2	0.00059	0.00045	0.00038	0.00034	0.00028	0.00025	0.00021	0.00017	0.00014	0.00012	0.00010	0.00009	0.00008
H2O	0.07450	0.07504	0.07532	0.07550	0.07575	0.07590	0.07611	0.07634	0.07650	0.07661	0.07675	0.07683	0.07690
NO	0.00867	0.00888	0.00898	0.00905	0.00913	0.00918	0.00925	0.00933	0.00938	0.00941	0.00945	0.00948	0.00950
NO2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004
N2	0.74304	0.74357	0.74383	0.74399	0.74420	0.74434	0.74450	0.74468	0.74480	0.74487	0.74497	0.74502	0.74507
O	0.00142	0.00108	0.00091	0.00080	0.00067	0.00059	0.00049	0.00039	0.00033	0.00028	0.00024	0.00021	0.00018
OH	0.00491	0.00432	0.00399	0.00377	0.00347	0.00327	0.00300	0.00268	0.00245	0.00230	0.00209	0.00196	0.00186
O2	0.07594	0.07575	0.07566	0.07561	0.07555	0.07551	0.07547	0.07543	0.07541	0.07540	0.07539	0.07538	0.07538



CASE= 7 O/F= 12.7426 F/A= 0.07848 PERCENT FUEL= 7.2766 PHI= 1.1500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2572.5	2611.8	2634.0	2649.2	2670.0	2684.2	2703.4	2726.1	2742.7	2753.8	2768.3	2777.8	2784.7
T, DEG F	4170.8	4241.6	4281.4	4308.9	4346.3	4371.9	4406.4	4447.2	4477.2	4497.2	4523.3	4540.4	4552.8
RHO, G/CC	6.5303-5	1.2303-4	1.9224-4	2.5514-4	3.8032-4	5.0495-4	7.5313-4	1.2469-3	1.8612-3	2.4737-3	3.6950-3	4.9132-3	6.1294-3
M, MOL WT	27.569	27.653	27.639	27.731	27.775	27.805	27.845	27.892	27.926	27.949	27.979	27.998	28.012
CP, CAL/(G*IK)	0.8360	0.7695	0.7331	0.7082	0.6747	0.6518	0.6210	0.5845	0.5573	0.5391	0.5150	0.4991	0.4874
GAMMA (S)	1.1452	1.1516	1.1555	1.1584	1.1626	1.1657	1.1704	1.1765	1.1815	1.1853	1.1906	1.1945	1.1975
SON VEL./M/SEC	942.6	951.0	955.8	959.2	964.0	967.3	972.0	977.8	982.3	985.4	989.7	992.7	994.9

MOLE FRACTIONS

AR	0.00823	0.00825	0.00827	0.00828	0.00829	0.00830	0.00831	0.00832	0.00833	0.00834	0.00835	0.00836	0.00837
CO	0.06583	0.06373	0.06247	0.06158	0.06032	0.05944	0.05822	0.05674	0.05563	0.05488	0.05389	0.05324	0.05277
CO2	0.07842	0.08096	0.08246	0.08352	0.08501	0.08604	0.08747	0.08920	0.09049	0.09136	0.09250	0.09325	0.09380
H	0.00593	0.00478	0.00419	0.00381	0.00331	0.00299	0.00258	0.00213	0.00182	0.00162	0.00138	0.00122	0.00111
H2	0.01515	0.01427	0.01377	0.01343	0.01256	0.01264	0.01221	0.01170	0.01133	0.01109	0.01078	0.01058	0.01043
H2O	0.11402	0.11635	0.11766	0.11856	0.11979	0.12063	0.12176	0.12310	0.12408	0.12474	0.12559	0.12616	0.12657
NO	0.00494	0.00482	0.00472	0.00462	0.00447	0.00434	0.00413	0.00383	0.00357	0.00338	0.00309	0.00289	0.00273
N2	0.68673	0.68887	0.69009	0.69093	0.69210	0.69291	0.69402	0.69534	0.69633	0.69700	0.69788	0.69847	0.69890
O	0.00257	0.00199	0.00169	0.00150	0.00125	0.00110	0.00090	0.00069	0.00055	0.00046	0.00036	0.00030	0.00025
OH	0.01026	0.00934	0.00878	0.00837	0.00778	0.00736	0.00677	0.00602	0.00544	0.00504	0.00449	0.00411	0.00383
O2	0.00792	0.00663	0.00590	0.00540	0.00472	0.00426	0.00364	0.00293	0.00242	0.00210	0.00168	0.00143	0.00125

CASE= 7 O/F= 12.2117 F/A= 0.08189 PERCENT FUEL= 7.5691 PHI= 1.2000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2570.9	2608.5	2629.4	2643.6	2662.8	2675.7	2692.9	2712.7	2726.8	2736.0	2747.7	2755.2	2760.5
T, DEG F	4167.8	4235.6	4273.2	4298.9	4333.4	4356.6	4387.5	4423.1	4448.6	4465.1	4486.2	4499.7	4509.3
RHO, G/CC	6.4959-5	1.2841-4	1.9139-4	2.5409-4	3.7893-4	5.0329-4	7.5108-4	1.2445-3	1.8590-3	2.4720-3	3.6953-3	4.9164-3	6.1360-3
M, MOL WT	27.407	27.486	27.530	27.559	27.599	27.626	27.661	27.702	27.731	27.749	27.773	27.788	27.799
CP, CAL/(G*IK)	0.7994	0.7295	0.6913	0.6654	0.6306	0.6072	0.5760	0.5399	0.5139	0.4969	0.4752	0.4613	0.4514
GAMMA (S)	1.1493	1.1567	1.1613	1.1648	1.1699	1.1737	1.1792	1.1865	1.1924	1.1966	1.2025	1.2066	1.2097
SON VEL./M/SEC	946.8	955.3	960.3	963.8	968.7	972.2	977.0	982.8	987.3	990.4	994.6	997.3	999.4

MOLE FRACTIONS

AR	0.00815	0.00818	0.00819	0.00820	0.00821	0.00822	0.00823	0.00824	0.00825	0.00826	0.00826	0.00827	0.00827
CO	0.07416	0.07242	0.07141	0.07070	0.06971	0.06903	0.06811	0.06703	0.06625	0.06574	0.06509	0.06467	0.06438
CO2	0.07500	0.07716	0.07841	0.07929	0.08049	0.08131	0.08243	0.08373	0.08466	0.08528	0.08606	0.08656	0.08691
H	0.00645	0.00520	0.00455	0.00413	0.00359	0.00324	0.00279	0.00229	0.00195	0.00174	0.00147	0.00130	0.00118
H2	0.01815	0.01731	0.01685	0.01653	0.01610	0.01581	0.01543	0.01500	0.01469	0.01450	0.01425	0.01410	0.01399
H2O	0.11585	0.11820	0.11952	0.12041	0.12162	0.12244	0.12353	0.12479	0.12570	0.12629	0.12705	0.12754	0.12789
NO	0.00413	0.00394	0.00380	0.00368	0.00348	0.00334	0.00311	0.00280	0.00255	0.00236	0.00211	0.00193	0.00179
N2	0.68091	0.68297	0.68413	0.68493	0.68602	0.68676	0.68776	0.68892	0.68977	0.69033	0.69105	0.69151	0.69184
O	0.00214	0.00162	0.00135	0.00118	0.00096	0.00083	0.00066	0.00049	0.00037	0.00031	0.00023	0.00019	0.00016
OH	0.00944	0.00847	0.00788	0.00745	0.00685	0.00641	0.00581	0.00506	0.00450	0.00411	0.00359	0.00325	0.00300
O2	0.00562	0.00452	0.00391	0.00350	0.00296	0.00261	0.00215	0.00164	0.00130	0.00109	0.00084	0.00069	0.00058

CASE=	1	0/F=	10.4671	F/A=	0.09554	PERCENT FUEL=	8.7206	PHI=	1.4000										
P, ATM		0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000					
P, PSIA		7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8					
T, DEG K		2034.7	2036.1	2036.8	2037.1	2037.6	2037.9	2038.2	2038.5	2038.7	2038.9	2039.0	2039.1	2039.2					
T, DEG F		3202.8	3205.3	3206.5	3207.2	3208.0	3208.5	3209.0	3209.6	3210.0	3210.2	3210.5	3210.7	3210.8					
RHO, G/CC		8.0604-5	1.6111-4	2.4161-4	3.2209-4	4.8305-4	6.4399-4	9.6586-4	1.6096-3	2.4141-3	3.2187-3	4.8277-3	6.4367-3	8.0457-3					
M, MOL WT		26.915	26.918	26.920	26.921	26.922	26.922	26.923	26.924	26.924	26.924	26.925	26.925	26.925					
CP, CAL/(G)(K)		0.3654	0.3617	0.3600	0.3591	0.3579	0.3572	0.3563	0.3555	0.3550	0.3547	0.3543	0.3541	0.3539					
GAMMA (S)		1.2566	1.2589	1.2599	1.2606	1.2613	1.2617	1.2623	1.2628	1.2632	1.2634	1.2636	1.2637	1.2638					
SON VEL, M/SEC		888.7	889.8	890.3	890.6	890.9	891.1	891.4	891.6	891.8	891.9	892.0	892.0	892.1					

MOLE FRACTIONS

AR	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791					
CO	0.10230	0.10234	0.10235	0.10237	0.10238	0.10239	0.10239	0.10240	0.10241	0.10241	0.10241	0.10242	0.10242	0.10242					
CO2	0.06642	0.06640	0.06639	0.06639	0.06638	0.06638	0.06637	0.06637	0.06636	0.06636	0.06636	0.06636	0.06636	0.06636					
H	0.00057	0.00041	0.00034	0.00029	0.00024	0.00021	0.00017	0.00013	0.00011	0.00009	0.00008	0.00007	0.00007	0.00006					
H2	0.03970	0.03972	0.03973	0.03973	0.03974	0.03974	0.03975	0.03975	0.03976	0.03976	0.03976	0.03976	0.03976	0.03976					
H2O	0.12052	0.12063	0.12068	0.12071	0.12074	0.12076	0.12079	0.12081	0.12083	0.12084	0.12085	0.12085	0.12085	0.12086					
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001					
NO	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000					
N2	0.66235	0.66243	0.66247	0.66249	0.66252	0.66253	0.66255	0.66257	0.66258	0.66259	0.66260	0.66260	0.66260	0.66261					
OH	0.00019	0.00014	0.00011	0.00010	0.00008	0.00007	0.00006	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002					

CASE=	1	0/F=	9.1588	F/A=	0.10919	PERCENT FUEL=	9.8437	PHI=	1.6000										
P, ATM		0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000					
P, PSIA		7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8					
T, DEG K		1884.3	1884.9	1885.1	1885.2	1885.4	1885.5	1885.6	1885.7	1885.8	1885.8	1885.9	1885.9	1886.0					
T, DEG F		2932.1	2933.0	2933.4	2933.7	2934.0	2934.2	2934.4	2934.6	2934.7	2934.8	2934.9	2935.0	2935.0					
RHO, G/CC		8.4183-5	1.6833-4	2.5247-4	3.3660-4	5.0486-4	6.7312-4	1.0096-3	1.6826-3	2.5239-3	3.3651-3	5.0475-3	6.7299-3	8.4123-3					
M, MOL WT		26.033	26.034	26.035	26.035	26.036	26.036	26.036	26.036	26.036	26.037	26.037	26.037	26.037					
CP, CAL/(G)(K)		0.3614	0.3599	0.3593	0.3589	0.3584	0.3581	0.3578	0.3575	0.3573	0.3572	0.3570	0.3569	0.3569					
GAMMA (S)		1.2692	1.2702	1.2706	1.2708	1.2712	1.2713	1.2716	1.2718	1.2719	1.2720	1.2721	1.2722	1.2722					
SON VEL, M/SEC		874.0	874.4	874.6	874.7	874.8	874.9	875.0	875.1	875.2	875.2	875.3	875.3	875.3					

MOLE FRACTIONS

AR	0.00755	0.00755	0.00755	0.00756	0.00756	0.00756	0.00756	0.00756	0.00756	0.00756	0.00756	0.00756	0.00756	0.00756					
CO	0.13424	0.13436	0.13437	0.13437	0.13438	0.13439	0.13439	0.13440	0.13440	0.13440	0.13440	0.13440	0.13440	0.13440					
CO2	0.04984	0.04982	0.04982	0.04981	0.04981	0.04980	0.04980	0.04980	0.04980	0.04980	0.04980	0.04980	0.04980	0.04980					
H	0.00026	0.00019	0.00015	0.00013	0.00011	0.00009	0.00008	0.00006	0.00005	0.00004	0.00003	0.00003	0.00003	0.00003					
H2	0.06925	0.06927	0.06928	0.06929	0.06929	0.06929	0.06930	0.06930	0.06930	0.06930	0.06930	0.06930	0.06930	0.06930					
H2O	0.10595	0.10598	0.10599	0.10600	0.10601	0.10602	0.10602	0.10603	0.10603	0.10604	0.10604	0.10604	0.10604	0.10604					
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002					
N2	0.63278	0.63280	0.63282	0.63282	0.63283	0.63284	0.63284	0.63284	0.63285	0.63285	0.63286	0.63286	0.63286	0.63286					
OH	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000					

CASE= 3 O/F= 20.9343 F/A= 0.04777 PERCENT FUEL= 4.5591 PHI= 0.7000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2082.2	2087.4	2089.9	2091.4	2093.4	2094.6	2096.1	2097.8	2098.8	2099.5	2100.4	2100.9	2101.3
T, DEG F	3288.3	3297.6	3302.1	3304.9	3308.4	3310.6	3313.4	3316.3	3318.2	3319.4	3321.0	3321.9	3322.6
RHO, G/CC	8.4651-5	1.6395-4	2.5316-4	3.3734-4	5.0560-4	6.7380-4	1.0101-3	1.6824-3	2.5224-3	3.3623-3	5.0418-3	6.7210-3	8.3999-3
M, MOL WT	28.927	28.938	28.943	28.946	28.950	28.953	28.956	28.960	28.962	28.963	28.965	28.966	28.967
CP, CAL/(G)(K)	0.3893	0.3775	0.3719	0.3685	0.3642	0.3616	0.3583	0.3549	0.3527	0.3513	0.3496	0.3485	0.3478
GAMMA (S)	1.2254	1.2312	1.2341	1.2359	1.2383	1.2398	1.2416	1.2436	1.2449	1.2458	1.2468	1.2475	1.2479
SON VEL,M/SEC	856.4	859.3	860.7	861.7	862.8	863.6	864.5	865.4	866.1	866.5	867.0	867.3	867.6

MOLE FRACTIONS

AR	0.00889	0.00889	0.00889	0.00889	0.00889	0.00889	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890
CO	0.00139	0.00103	0.00086	0.00075	0.00063	0.00055	0.00045	0.00036	0.00029	0.00026	0.00021	0.00018	0.00016
CO2	0.09355	0.09395	0.09413	0.09425	0.09439	0.09448	0.09458	0.09469	0.09476	0.09480	0.09486	0.09489	0.09491
H	0.00006	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00027	0.00020	0.00017	0.00015	0.00012	0.00011	0.00009	0.00007	0.00006	0.00005	0.00004	0.00004	0.00003
H2O	0.08869	0.08898	0.08913	0.08922	0.08934	0.08942	0.08952	0.08963	0.08971	0.08976	0.08983	0.08987	0.08990
NO	0.00511	0.00517	0.00520	0.00522	0.00525	0.00526	0.00528	0.00530	0.00532	0.00533	0.00534	0.00534	0.00535
NO2	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003
N2	0.74177	0.74202	0.74214	0.74221	0.74230	0.74236	0.74243	0.74251	0.74256	0.74259	0.74263	0.74265	0.74267
O	0.00041	0.00030	0.00025	0.00022	0.00018	0.00016	0.00013	0.00010	0.00008	0.00007	0.00006	0.00005	0.00005
OH	0.00249	0.00214	0.00196	0.00184	0.00167	0.00157	0.00143	0.00127	0.00115	0.00107	0.00097	0.00091	0.00086
O2	0.05737	0.05727	0.05723	0.05721	0.05719	0.05717	0.05716	0.05715	0.05714	0.05714	0.05714	0.05714	0.05714

CASE= 3 O/F= 18.3175 F/A= 0.05459 PERCENT FUEL= 5.1767 PHI= 0.8000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2215.9	2228.3	2234.6	2238.6	2243.7	2247.0	2251.1	2255.6	2258.6	2260.5	2262.8	2264.3	2265.3
T, DEG F	3529.0	3551.3	3562.6	3569.8	3579.0	3584.9	3592.3	3600.3	3605.8	3609.2	3613.4	3616.0	3617.9
RHO, G/CC	7.9319-5	1.5790-4	2.3630-4	3.1460-4	4.7100-4	6.2724-4	9.3943-4	1.5631-3	2.3421-3	3.1206-3	4.6769-3	6.2325-3	7.7876-3
M, MOL WT	28.846	28.873	28.886	28.895	28.906	28.913	28.922	28.931	28.938	28.942	28.947	28.950	28.952
CP, CAL/(G)(K)	0.4676	0.4417	0.4288	0.4205	0.4100	0.4034	0.3951	0.3862	0.3802	0.3762	0.3720	0.3691	0.3671
GAMMA (S)	1.1953	1.2037	1.2083	1.2115	1.2156	1.2184	1.2219	1.2260	1.2288	1.2306	1.2329	1.2344	1.2354
SON VEL,M/SEC	873.8	878.9	881.6	883.4	885.7	887.3	889.3	891.5	893.0	894.0	895.2	895.9	896.5

MOLE FRACTIONS

AR	0.00880	0.00881	0.00882	0.00882	0.00882	0.00882	0.00883	0.00883	0.00883	0.00883	0.00883	0.00884	0.00884
CO	0.00492	0.00385	0.00330	0.00276	0.00251	0.00223	0.00189	0.00151	0.00126	0.00111	0.00092	0.00081	0.00073
CO2	0.10254	0.10371	0.10430	0.10469	0.10517	0.10547	0.10586	0.10627	0.10654	0.10671	0.10691	0.10704	0.10713
H	0.00026	0.00017	0.00013	0.00011	0.00009	0.00007	0.00006	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001
H02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00090	0.00069	0.00055	0.00053	0.00045	0.00040	0.00033	0.00027	0.00022	0.00019	0.00016	0.00014	0.00013
H2O	0.09905	0.09964	0.09995	0.10015	0.10041	0.10058	0.10079	0.10104	0.10121	0.10132	0.10146	0.10155	0.10161
NO	0.00569	0.00581	0.00588	0.00592	0.00597	0.00600	0.00605	0.00609	0.00613	0.00615	0.00617	0.00619	0.00620
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
N2	0.73459	0.73522	0.73553	0.73573	0.73599	0.73615	0.73635	0.73657	0.73672	0.73682	0.73693	0.73700	0.73705
O	0.00082	0.00062	0.00053	0.00047	0.00039	0.00035	0.00029	0.00023	0.00019	0.00017	0.00014	0.00012	0.00011
OH	0.00418	0.00369	0.00342	0.00323	0.00298	0.00281	0.00258	0.00231	0.00211	0.00198	0.00181	0.00169	0.00160
O2	0.03823	0.03777	0.03754	0.03740	0.03722	0.03710	0.03697	0.03683	0.03674	0.03669	0.03662	0.03659	0.03656



CASE= 6 O/F= 20.9343 F/A= 0.04777 PERCENT FUEL= 4.5591 PHI= 0.7000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2360.2	2380.1	2390.6	2397.5	2406.5	2412.4	2419.9	2428.3	2434.1	2437.8	2442.4	2445.4	2447.5
T, DEG F	3788.6	3824.6	3843.4	3855.9	3872.0	3882.6	3896.1	3911.2	3921.6	3928.3	3936.6	3941.9	3945.7
RHO, G/CC	7.4176-5	1.4733-4	2.2020-4	2.9291-4	4.3803-4	5.8288-4	8.7209-4	1.4494-3	2.1699-3	2.8896-3	4.3276-3	5.7645-3	7.2006-3
M, MOL WT	28.731	28.775	28.798	28.813	28.833	28.845	28.862	28.880	28.893	28.901	28.911	28.917	28.922
CP, CAL/(G)(K)	0.5439	0.5069	0.4878	0.4753	0.4592	0.4488	0.4355	0.4209	0.4110	0.4046	0.3967	0.3918	0.3883
GAMMA (S)	1.1775	1.1860	1.1909	1.1944	1.1991	1.2023	1.2056	1.2119	1.2156	1.2181	1.2214	1.2235	1.2250
SON VEL, M/SEC	896.8	903.1	906.6	909.0	912.2	914.3	917.2	920.4	922.8	924.3	926.2	927.5	928.4

MOLE FRACTIONS

AR	0.00883	0.00884	0.00885	0.00885	0.00886	0.00886	0.00887	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.00844	0.00689	0.00606	0.00551	0.00479	0.00432	0.00371	0.00305	0.00259	0.00230	0.00194	0.00171	0.00155
CO2	0.08586	0.08755	0.08846	0.08906	0.08984	0.09035	0.09101	0.09174	0.09224	0.09256	0.09295	0.09320	0.09337
H	0.00070	0.00049	0.00039	0.00033	0.00026	0.00022	0.00017	0.00013	0.00010	0.00008	0.00006	0.00005	0.00004
H2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
H2	0.00144	0.00116	0.00101	0.00091	0.00078	0.00070	0.00060	0.00049	0.00041	0.00037	0.00031	0.00027	0.00025
H2O	0.08418	0.08507	0.08554	0.08586	0.08628	0.08655	0.08692	0.08734	0.08764	0.08784	0.08809	0.08826	0.08838
NO	0.00937	0.00969	0.00986	0.00998	0.01012	0.01022	0.01035	0.01049	0.01059	0.01065	0.01073	0.01078	0.01082
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00003
N2	0.73460	0.73557	0.73667	0.73640	0.73683	0.73711	0.73747	0.73787	0.73814	0.73832	0.73854	0.73867	0.73877
O	0.00234	0.00184	0.00158	0.00142	0.00121	0.00108	0.00092	0.00074	0.00062	0.00055	0.00046	0.00040	0.00036
OH	0.00730	0.00659	0.00618	0.00590	0.00550	0.00522	0.00484	0.00439	0.00405	0.00382	0.00350	0.00329	0.00314
O2	0.05693	0.05631	0.05599	0.05577	0.05550	0.05533	0.05511	0.05487	0.05471	0.05461	0.05450	0.05443	0.05438

CASE= 6 O/F= 18.3175 F/A= 0.05459 PERCENT FUEL= 5.1767 PHI= 0.8000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2441.9	2470.3	2485.9	2496.5	2510.6	2520.1	2532.7	2547.2	2557.7	2564.6	2573.5	2579.3	2583.4
T, DEG F	3935.8	3986.9	4014.9	4033.9	4059.4	4076.5	4099.2	4125.3	4144.2	4156.6	4172.6	4183.0	4190.5
RHO, G/CC	7.1243-5	1.4116-4	2.1066-4	2.7992-4	4.1796-4	5.5559-4	8.3004-4	1.3770-3	2.0587-3	2.7391-3	4.0972-3	5.4531-3	6.8075-3
M, MOL WT	28.551	28.613	28.648	28.671	28.702	28.723	28.751	28.783	28.806	28.821	28.840	28.853	28.862
CP, CAL/(G)(K)	0.6589	0.6113	0.5857	0.5685	0.5458	0.5306	0.5106	0.4877	0.4712	0.4605	0.4467	0.4377	0.4313
GAMMA (S)	1.1590	1.1662	1.1705	1.1736	1.1781	1.1813	1.1858	1.1915	1.1959	1.1990	1.2032	1.2060	1.2082
SON VEL, M/SEC	907.8	914.9	919.0	921.8	925.6	928.3	932.0	936.3	939.6	941.8	944.8	946.8	948.2

MOLE FRACTIONS

AR	0.00871	0.00873	0.00874	0.00875	0.00876	0.00877	0.00877	0.00878	0.00879	0.00880	0.00880	0.00881	0.00881
CO	0.01667	0.01436	0.01305	0.01215	0.01092	0.01009	0.00896	0.00765	0.00670	0.00607	0.00525	0.00472	0.00431
CO2	0.08969	0.09223	0.09367	0.09466	0.09600	0.09691	0.09814	0.09957	0.10061	0.10130	0.10219	0.10276	0.10311
H	0.00146	0.00108	0.00089	0.00078	0.00064	0.00055	0.00044	0.00034	0.00027	0.00023	0.00018	0.00015	0.00011
H2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002
H2	0.00289	0.00242	0.00217	0.00200	0.00177	0.00162	0.00142	0.00120	0.00104	0.00094	0.00080	0.00072	0.00066
H2O	0.09285	0.09410	0.09479	0.09525	0.09588	0.09630	0.09687	0.09753	0.09801	0.09833	0.09875	0.09903	0.09923
NO	0.00920	0.00956	0.00976	0.00989	0.01006	0.01018	0.01033	0.01051	0.01064	0.01072	0.01083	0.01090	0.01095
NO2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
N2	0.72530	0.72671	0.72749	0.72802	0.72873	0.72920	0.72983	0.73056	0.73108	0.73143	0.73187	0.73216	0.73237
O	0.00307	0.00248	0.00217	0.00197	0.00171	0.00154	0.00133	0.00110	0.00093	0.00083	0.00071	0.00063	0.00057
OH	0.00930	0.00857	0.00814	0.00782	0.00738	0.00707	0.00664	0.00610	0.00569	0.00540	0.00501	0.00474	0.00454
O2	0.04084	0.03974	0.03912	0.03870	0.03813	0.03775	0.03723	0.03664	0.03621	0.03594	0.03558	0.03535	0.03519

CASE= 7 O/F= 10.4671 F/A= 0.09554 PERCENT FUEL= 8.7206 PHI= 1.4000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2519.1	2544.1	2556.8	2565.0	2575.4	2581.9	2590.1	2598.8	2604.5	2608.0	2612.3	2614.9	2616.7
T, DEG F	4074.8	4119.7	4142.6	4157.3	4176.0	4187.8	4202.5	4218.1	4228.4	4234.8	4242.5	4247.2	4250.4
RHO, G/CC	6.4569-5	1.2812-4	1.9140-4	2.5455-4	3.8059-4	5.0642-4	7.5770-4	1.2594-3	1.8858-3	2.5117-3	3.7626-3	5.0128-3	6.2625-3
M, MOL WT	26.694	26.746	26.772	26.789	26.810	26.823	26.840	26.857	26.869	26.876	26.885	26.890	26.894
CP, CAL/(G*IK)	0.5944	0.5381	0.5102	0.4927	0.4708	0.4572	0.4405	0.4232	0.4120	0.4052	0.3970	0.3921	0.3888
GAMMA (S)	1.1808	1.1927	1.1996	1.2044	1.2109	1.2153	1.2211	1.2277	1.2323	1.2352	1.2389	1.2412	1.2428
SON VEL, M/SEC	962.6	971.2	976.0	979.2	983.4	986.2	989.8	993.8	996.6	998.3	1000.4	1001.8	1002.7

MOLE FRACTIONS

AR	0.00784	0.00786	0.00787	0.00787	0.00788	0.00788	0.00789	0.00789	0.00789	0.00790	0.00790	0.00790	0.00790
CO	0.10872	0.10847	0.10835	0.10827	0.10817	0.10811	0.10804	0.10797	0.10792	0.10790	0.10787	0.10785	0.10784
CO2	0.05861	0.05918	0.05947	0.05966	0.05989	0.06003	0.06021	0.06039	0.06050	0.06057	0.06066	0.06071	0.06074
H	0.00722	0.00567	0.00487	0.00436	0.00371	0.00330	0.00279	0.00223	0.00187	0.00164	0.00136	0.00119	0.00107
H2	0.03535	0.03509	0.03496	0.03489	0.03473	0.03474	0.03467	0.03461	0.03457	0.03455	0.03453	0.03452	0.03451
H2O	0.11772	0.11952	0.12045	0.12106	0.12183	0.12232	0.12293	0.12359	0.12402	0.12429	0.12462	0.12482	0.12496
NO	0.00152	0.00129	0.00116	0.00106	0.00094	0.00085	0.00073	0.00060	0.00051	0.00046	0.00038	0.00034	0.00031
N2	0.65617	0.65755	0.65826	0.65872	0.65930	0.65967	0.66014	0.66064	0.66097	0.66118	0.66143	0.66158	0.66168
O	0.00069	0.00045	0.00034	0.00028	0.00020	0.00016	0.00012	0.00008	0.00005	0.00004	0.00003	0.00002	0.00002
OH	0.00521	0.00430	0.00379	0.00345	0.00300	0.00270	0.00231	0.00189	0.00159	0.00141	0.00118	0.00104	0.00094
O2	0.00094	0.00062	0.00048	0.00039	0.00029	0.00024	0.00017	0.00011	0.00008	0.00006	0.00004	0.00003	0.00003

CASE= 7 O/F= 9.1588 F/A= 0.10919 PERCENT FUEL= 9.8437 PHI= 1.6000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2411.1	2424.6	2431.2	2435.2	2440.2	2443.3	2447.1	2451.0	2453.6	2455.1	2456.9	2458.1	2458.8
T, DEG F	3880.2	3904.6	3916.4	3923.7	3932.7	3938.3	3945.1	3952.1	3956.7	3959.5	3962.8	3964.8	3966.2
RHO, G/CC	6.5518-5	1.3044-4	1.9524-4	2.5997-4	3.8931-4	5.1855-4	7.7686-4	1.2931-3	1.9380-3	2.5827-3	3.8718-3	5.1605-3	6.4490-3
M, MOL WT	25.925	25.953	25.966	25.975	25.985	25.991	25.999	26.007	26.012	26.016	26.019	26.022	26.023
CP, CAL/(G*IK)	0.4725	0.4440	0.4306	0.4223	0.4123	0.4062	0.3989	0.3913	0.3865	0.3836	0.3801	0.3780	0.3765
GAMMA (S)	1.2175	1.2276	1.2328	1.2362	1.2405	1.2433	1.2468	1.2505	1.2529	1.2544	1.2563	1.2574	1.2582
SON VEL, M/SEC	970.3	976.5	979.6	981.7	984.2	985.8	987.8	989.9	991.3	992.1	993.1	993.8	994.2

MOLE FRACTIONS

AR	0.00752	0.00753	0.00753	0.00754	0.00754	0.00754	0.00754	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755
CO	0.14053	0.14077	0.14088	0.14096	0.14105	0.14110	0.14117	0.14125	0.14129	0.14132	0.14136	0.14138	0.14139
CO2	0.04288	0.04283	0.04281	0.04280	0.04278	0.04277	0.04276	0.04274	0.04273	0.04273	0.04272	0.04271	0.04271
H	0.00583	0.00440	0.00371	0.00337	0.00274	0.00241	0.00200	0.00158	0.00130	0.00114	0.00094	0.00082	0.00073
H2	0.06110	0.06135	0.06148	0.06156	0.06166	0.06172	0.06180	0.06189	0.06194	0.06197	0.06201	0.06204	0.06205
H2O	0.10961	0.11048	0.11091	0.11118	0.11150	0.11171	0.11195	0.11221	0.11238	0.11248	0.11260	0.11267	0.11272
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001
NO	0.00039	0.00030	0.00026	0.00023	0.00020	0.00017	0.00014	0.00012	0.00010	0.00008	0.00007	0.00006	0.00005
N2	0.62994	0.63067	0.63102	0.63124	0.63150	0.63167	0.63187	0.63209	0.63222	0.63231	0.63241	0.63247	0.63251
O	0.00012	0.00007	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.00199	0.00153	0.00131	0.00116	0.00098	0.00086	0.00072	0.00057	0.00047	0.00042	0.00034	0.00030	0.00027
O2	0.00009	0.00006	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	1	O/F=	8.1411	F/A=	0.12283	PERCENT FUEL=	10.9396	PHI=	1.8000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	1742.2	1742.4	1742.5	1742.5	1742.6	1742.6	1742.6	1742.7	1742.7	1742.8	1742.8	1742.8	1742.8						
T, DEG F	2676.3	2676.6	2676.7	2676.8	2676.9	2677.0	2677.1	2677.2	2677.2	2677.2	2677.3	2677.4	2677.4						
RHO, G/CC	8.8218-5	1.7642-4	2.6462-4	3.5282-4	5.2921-4	7.0560-4	1.0584-3	1.7639-3	2.6459-3	3.5278-3	5.2917-3	7.0555-3	8.8194-3						
M, MOL WT	25.223	25.224	25.224	25.224	25.224	25.224	25.224	25.224	25.225	25.225	25.225	25.225	25.225						
CP, CAL/(G)(K)	0.3616	0.3610	0.3607	0.3606	0.3604	0.3603	0.3602	0.3600	0.3600	0.3599	0.3599	0.3599	0.3599						
GAMMA (S)	1.2791	1.2796	1.2797	1.2799	1.2800	1.2801	1.2802	1.2802	1.2803	1.2803	1.2804	1.2804	1.2804						
SON VEL./M/SEC	857.1	857.3	857.3	857.4	857.4	857.5	857.5	857.6	857.6	857.6	857.6	857.6	857.6						

MOLE FRACTIONS

AR	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723						
CO	0.15924	0.15925	0.15925	0.15926	0.15926	0.15926	0.15926	0.15926	0.15926	0.15926	0.15926	0.15926	0.15926						
CO2	0.03904	0.03903	0.03903	0.03903	0.03903	0.03903	0.03903	0.03902	0.03903	0.03903	0.03903	0.03903	0.03903						
H	0.00010	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001						
H2	0.10067	0.10067	0.10068	0.10068	0.10068	0.10068	0.10068	0.10068	0.10068	0.10068	0.10068	0.10068	0.10068						
H2O	0.08809	0.08810	0.08810	0.08811	0.08811	0.08811	0.08811	0.08811	0.08811	0.08811	0.08811	0.08811	0.08811						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00003	0.00003	0.00004						
N2	0.60564	0.60564	0.60565	0.60565	0.60565	0.60566	0.60566	0.60566	0.60566	0.60566	0.60567	0.60567	0.60567						

CASE=	1	O/F=	7.3270	F/A=	0.13648	PERCENT FUEL=	12.0091	PHI=	2.0000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	1607.5	1607.6	1607.6	1607.6	1607.7	1607.7	1607.7	1607.7	1607.7	1607.8	1607.8	1607.9	1608.0						
T, DEG F	2433.9	2434.0	2434.0	2434.1	2434.1	2434.1	2434.1	2434.2	2434.2	2434.3	2434.4	2434.5	2434.6						
RHO, G/CC	9.2785-5	1.8556-4	2.7834-4	3.7112-4	5.5668-4	7.4223-4	1.1133-3	1.8555-3	2.7833-3	3.7111-3	5.5665-3	7.4219-3	9.2773-3						
M, MOL WT	24.478	24.479	24.479	24.479	24.479	24.479	24.479	24.479	24.479	24.480	24.480	24.481	24.482						
CP, CAL/(G)(K)	0.3629	0.3627	0.3626	0.3626	0.3625	0.3625	0.3625	0.3624	0.3625	0.3625	0.3626	0.3626	0.3630						
GAMMA (S)	1.2883	1.2885	1.2885	1.2886	1.2886	1.2887	1.2887	1.2887	1.2887	1.2887	1.2887	1.2887	1.2886						
SON VEL./M/SEC	838.7	838.8	838.8	838.8	838.8	838.9	838.9	838.9	838.9	838.9	838.9	838.9	838.9						

MOLE FRACTIONS

AR	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693						
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00002						
CO	0.17984	0.17984	0.17985	0.17985	0.17985	0.17985	0.17985	0.17985	0.17985	0.17985	0.17985	0.17984	0.17983						
CO2	0.03127	0.03137	0.03137	0.03137	0.03137	0.03137	0.03137	0.03137	0.03137	0.03137	0.03137	0.03138	0.03139						
H	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000						
H2	0.13170	0.13171	0.13171	0.13171	0.13170	0.13170	0.13170	0.13169	0.13168	0.13166	0.13164	0.13160	0.13157						
H2O	0.06943	0.06943	0.06943	0.06913	0.06943	0.06943	0.06943	0.06943	0.06943	0.06943	0.06943	0.06944	0.06944						
NH3	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00003	0.00003	0.00005	0.00007	0.00009						
N2	0.58070	0.58070	0.58070	0.58070	0.58070	0.58070	0.58070	0.58070	0.58071	0.58071	0.58072	0.58072	0.58073						

CASE= 3 O/F= 17.2400 F/A= 0.05800 PERCENT FUEL= 5.4825 PHI= 0.8500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2269.3	2286.2	2295.1	2300.8	2308.4	2313.2	2319.5	2326.4	2331.1	2334.1	2337.9	2340.3	2342.0
T, DEG F	3625.1	3655.5	3671.4	3681.8	3695.3	3704.1	3715.4	3727.8	3736.3	3741.7	3748.5	3752.8	3755.9
RHO, G/CC	7.7276-5	1.5360-4	2.2967-4	3.0959-4	4.5716-4	6.0848-4	9.1069-4	1.5141-3	2.2673-3	3.0199-3	4.5238-3	6.0267-3	7.5288-3
M, MOL WT	28.779	28.816	28.835	28.848	28.864	28.875	28.888	28.903	28.914	28.920	28.928	28.934	28.937
CP, CAL/(G)(K)	0.5217	0.4887	0.4715	0.4603	0.4459	0.4365	0.4245	0.4114	0.4024	0.3967	0.3896	0.3851	0.3820
GAMMA (S)	1.1811	1.1895	1.1944	1.1977	1.2024	1.2056	1.2099	1.2149	1.2186	1.2210	1.2242	1.2262	1.2276
SON VEL./M/SEC	880.0	885.8	889.0	891.2	894.1	896.1	898.7	901.7	903.8	905.2	907.0	908.1	908.9

MOLE FRACTIONS

AR	0.00876	0.00877	0.00877	0.00878	0.00878	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.00814	0.00660	0.00579	0.00535	0.00455	0.00409	0.00351	0.00287	0.00243	0.00216	0.00181	0.00160	0.00145
CO2	0.10539	0.10707	0.10796	0.10655	0.10931	0.10981	0.11045	0.11115	0.11163	0.11193	0.11230	0.11254	0.11270
H	0.00044	0.00031	0.00024	0.00021	0.00016	0.00014	0.00011	0.00008	0.00006	0.00005	0.00004	0.00003	0.00003
HO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00147	0.00117	0.00102	0.00092	0.00079	0.00071	0.00060	0.00049	0.00041	0.00036	0.00030	0.00027	0.00024
H2O	0.10379	0.10456	0.10497	0.10524	0.10559	0.10582	0.10612	0.10646	0.10671	0.10696	0.10706	0.10719	0.10728
NO	0.00563	0.00576	0.00583	0.00588	0.00593	0.00597	0.00602	0.00608	0.00611	0.00614	0.00617	0.00619	0.00620
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002
N2	0.73055	0.73142	0.73158	0.73218	0.73256	0.73281	0.73313	0.73349	0.73373	0.73388	0.73407	0.73419	0.73428
O	0.00101	0.00078	0.00066	0.00059	0.00050	0.00045	0.00038	0.00030	0.00025	0.00022	0.00018	0.00016	0.00015
OH	0.00495	0.00442	0.00413	0.00392	0.00364	0.00344	0.00318	0.00287	0.00253	0.00248	0.00227	0.00213	0.00202
O2	0.02987	0.02913	0.02875	0.02849	0.02817	0.02796	0.02770	0.02742	0.02723	0.02711	0.02697	0.02688	0.02682

CASE= 3 O/F= 16.2822 F/A= 0.06142 PERCENT FUEL= 5.7863 PHI= 0.9000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2312.9	2334.2	2345.7	2353.4	2363.6	2370.3	2379.1	2389.1	2396.2	2400.8	2406.7	2410.4	2413.1
T, DEG F	3703.6	3741.9	3762.6	3776.4	3794.7	3806.8	3822.2	3840.8	3853.5	3861.8	3872.3	3879.0	3883.9
RHO, G/CC	7.5592-5	1.5005-4	2.2415-4	2.9808-4	4.4554-4	5.9267-4	8.8629-4	1.4721-3	2.2028-3	2.9324-3	4.3898-3	5.8457-3	7.3004-3
M, MOL WT	28.693	28.740	28.765	28.782	28.804	28.818	28.838	28.859	28.875	28.885	28.895	28.906	28.911
CP, CAL/(G)(K)	0.5803	0.5423	0.5221	0.5086	0.4907	0.4789	0.4635	0.4459	0.4335	0.4254	0.4151	0.4085	0.4038
GAMMA (S)	1.1693	1.1769	1.1815	1.1847	1.1893	1.1925	1.1970	1.2026	1.2068	1.2096	1.2135	1.2161	1.2180
SON VEL./M/SEC	885.2	891.5	895.0	897.5	900.8	903.1	906.2	909.8	912.5	914.3	916.7	918.2	919.4

MOLE FRACTIONS

AR	0.00870	0.00872	0.00872	0.00873	0.00873	0.00874	0.00874	0.00875	0.00876	0.00876	0.00876	0.00877	0.00877
CO	0.01254	0.01055	0.00946	0.00872	0.00773	0.00707	0.00620	0.00520	0.00450	0.00404	0.00346	0.00308	0.00282
CO2	0.10691	0.10908	0.11028	0.11109	0.11217	0.11289	0.11385	0.11493	0.11570	0.11620	0.11684	0.11724	0.11754
H	0.00069	0.00050	0.00040	0.00035	0.00028	0.00024	0.00019	0.00014	0.00011	0.00009	0.00007	0.00006	0.00005
HO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00227	0.00187	0.00165	0.00151	0.00133	0.00120	0.00105	0.00087	0.00075	0.00067	0.00057	0.00050	0.00046
H2O	0.10822	0.10917	0.10969	0.11003	0.11049	0.11080	0.11120	0.11165	0.11198	0.11220	0.11247	0.11265	0.11278
NO	0.00533	0.00544	0.00550	0.00554	0.00558	0.00561	0.00565	0.00569	0.00571	0.00573	0.00575	0.00577	0.00578
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.72616	0.72728	0.72789	0.72830	0.72883	0.72919	0.72966	0.73019	0.73057	0.73081	0.73113	0.73132	0.73147
O	0.00113	0.00088	0.00076	0.00068	0.00058	0.00052	0.00044	0.00035	0.00030	0.00026	0.00022	0.00019	0.00017
OH	0.00554	0.00500	0.00468	0.00447	0.00417	0.00396	0.00367	0.00333	0.00308	0.00290	0.00267	0.00251	0.00239
O2	0.02251	0.02150	0.02096	0.02059	0.02010	0.01977	0.01935	0.01887	0.01854	0.01832	0.01805	0.01788	0.01776



CASE=	4	O/F=	8.1411	F/A=	0.12283	PERCENT FUEL=	10.9396	PHI=	1.8000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2071.3	2073.4	2074.4	2075.0	2075.7	2076.2	2076.7	2077.2	2077.5	2077.7	2077.9	2078.1	2078.2						
T, DEG F	3268.6	3272.5	3274.3	3275.3	3276.6	3277.4	3278.3	3279.2	3279.8	3280.2	3280.6	3280.9	3281.0						
RHO, G/CC	7.4159-5	1.4819-4	2.2220-4	2.9619-4	4.4416-4	5.9212-4	8.8799-4	1.4797-3	2.2192-3	2.9588-3	4.4377-3	5.9167-3	7.3956-3						
M, MOL WT	25.208	25.213	25.215	25.216	25.218	25.219	25.220	25.221	25.222	25.222	25.223	25.223	25.223						
CP, CAL/(G)(K)	0.3834	0.3782	0.3758	0.3744	0.3726	0.3716	0.3704	0.3692	0.3684	0.3679	0.3674	0.3671	0.3668						
GAMMA (S)	1.2640	1.2671	1.2658	1.2694	1.2704	1.2711	1.2718	1.2726	1.2731	1.2734	1.2737	1.2739	1.2741						
SON VEL, M/SEC	929.2	930.8	931.5	931.9	932.4	932.8	933.1	933.5	933.7	933.9	934.1	934.2	934.2						

MOLE FRACTIONS

AR	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723						
CO	0.16449	0.16457	0.16460	0.16462	0.16465	0.16466	0.16468	0.16469	0.16471	0.16471	0.16472	0.16472	0.16473						
CO2	0.03367	0.03363	0.03361	0.03360	0.03359	0.03358	0.03357	0.03356	0.03356	0.03356	0.03355	0.03355	0.03355						
H	0.00113	0.00081	0.00066	0.00058	0.00047	0.00041	0.00034	0.00026	0.00021	0.00019	0.00015	0.00013	0.00012						
H2	0.09483	0.09493	0.09498	0.09501	0.09505	0.09507	0.09509	0.09512	0.09513	0.09514	0.09514	0.09515	0.09515						
H2O	0.09324	0.09335	0.09339	0.09342	0.09345	0.09347	0.09350	0.09352	0.09354	0.09354	0.09355	0.09356	0.09356						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00002						
NO	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
N2	0.60528	0.60539	0.60544	0.60547	0.60550	0.60552	0.60555	0.60558	0.60559	0.60560	0.60561	0.60562	0.60563						
OH	0.00013	0.00009	0.00038	0.00007	0.00005	0.00005	0.00004	0.00003	0.00002	0.00002	0.00002	0.00002	0.00001						

CASE=	4	O/F=	7.3270	F/A=	0.13648	PERCENT FUEL=	12.0091	PHI=	2.0000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	1934.0	1934.9	1935.3	1935.6	1935.9	1936.1	1936.3	1936.5	1936.7	1936.7	1936.9	1936.9	1937.0						
T, DEG F	3021.5	3023.2	3023.9	3024.4	3024.9	3025.2	3025.6	3026.0	3026.3	3026.4	3026.6	3026.8	3026.9						
RHO, G/CC	7.7104-5	1.5415-4	2.3118-4	3.0820-4	4.6224-4	6.1627-4	9.2432-4	1.5404-3	2.3105-3	3.0805-3	4.6206-3	6.1606-3	7.7006-3						
M, MOL WT	24.472	24.474	24.475	24.476	24.476	24.477	24.477	24.478	24.478	24.478	24.479	24.479	24.479						
CP, CAL/(G)(K)	0.3769	0.3743	0.3732	0.3725	0.3717	0.3712	0.3706	0.3700	0.3697	0.3695	0.3692	0.3691	0.3690						
GAMMA (S)	1.2771	1.2788	1.2795	1.2800	1.2805	1.2809	1.2813	1.2817	1.2819	1.2820	1.2822	1.2823	1.2824						
SON VEL, M/SEC	916.0	916.8	917.2	917.4	917.7	917.8	918.0	918.2	918.3	918.4	918.4	918.5	918.5						

MOLE FRACTIONS

AR	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693						
CO	0.18548	0.18551	0.18552	0.18553	0.18554	0.18555	0.18556	0.18557	0.18557	0.18557	0.18558	0.18558	0.18558						
CO2	0.02568	0.02567	0.02566	0.02565	0.02565	0.02564	0.02564	0.02564	0.02564	0.02564	0.02564	0.02564	0.02564						
H	0.00051	0.00036	0.00030	0.00026	0.00021	0.00018	0.00015	0.00012	0.00009	0.00008	0.00007	0.00006	0.00005						
H2	0.12577	0.12583	0.12585	0.12537	0.12589	0.12590	0.12591	0.12592	0.12592	0.12592	0.12592	0.12591	0.12590						
H2O	0.07506	0.07509	0.07511	0.07512	0.07513	0.07513	0.07514	0.07515	0.07515	0.07515	0.07516	0.07516	0.07516						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00003	0.00004						
N2	0.58055	0.58059	0.58061	0.58062	0.58064	0.58065	0.58066	0.58067	0.58068	0.58068	0.58069	0.58069	0.58069						
OH	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000						

CASE= 6 O/F= 17.2400 F/A= 0.05800 PERCENT FUEL= 5.4825 PHI= 0.8500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2473.3	2505.2	2523.0	2535.2	2551.7	2563.0	2578.1	2595.8	2608.9	2617.6	2629.1	2636.6	2642.2
T, DEG F	3992.3	4049.7	4081.7	4103.7	4133.4	4153.6	4180.8	4212.8	4236.3	4252.0	4272.6	4286.2	4296.2
RHO, G/CC	7.0073-5	1.3370-4	2.0687-4	2.7476-4	4.0999-4	5.4472-4	8.1324-4	1.3479-3	2.0138-3	2.6779-3	4.0029-3	5.3249-3	6.6450-3
M, MOL WT	28.443	28.513	28.552	28.579	28.615	28.640	28.673	28.712	28.741	28.760	28.785	28.802	28.814
CP, CAL/(G)(K)	0.7149	0.6642	0.6367	0.6181	0.5933	0.5766	0.5543	0.5282	0.5092	0.4966	0.4800	0.4690	0.4610
GAMMA (S)	1.1525	1.1590	1.1629	1.1657	1.1698	1.1727	1.1769	1.1823	1.1866	1.1896	1.1939	1.1968	1.1991
SON VEL./M/SEC	912.8	920.1	924.3	927.3	931.3	934.1	938.0	942.7	946.3	948.8	952.2	954.4	956.1

MOLE FRACTIONS

AR	0.00865	0.00867	0.00869	0.00869	0.00871	0.00871	0.00872	0.00873	0.00874	0.00875	0.00876	0.00876	0.00877
CO	0.02187	0.01929	0.01780	0.01775	0.01531	0.01430	0.01293	0.01128	0.01005	0.00922	0.00812	0.00739	0.00686
CO2	0.09033	0.09318	0.09483	0.09598	0.09757	0.09868	0.10018	0.10198	0.10333	0.10423	0.10543	0.10622	0.10681
H	0.00195	0.00147	0.00124	0.00109	0.00090	0.00079	0.00065	0.00050	0.00040	0.00035	0.00028	0.00023	0.00021
H2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
H2	0.00387	0.00331	0.00300	0.00279	0.00251	0.00232	0.00207	0.00177	0.00156	0.00142	0.00124	0.00112	0.00103
H2O	0.09683	0.09826	0.09905	0.09959	0.10032	0.10082	0.10149	0.10229	0.10287	0.10326	0.10378	0.10413	0.10438
NO	0.00884	0.00918	0.00936	0.00949	0.00965	0.00975	0.00989	0.01005	0.01017	0.01024	0.01033	0.01040	0.01044
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
N2	0.72037	0.72199	0.72269	0.72351	0.72436	0.72493	0.72571	0.72662	0.72729	0.72774	0.72834	0.72873	0.72951
O	0.00329	0.00267	0.00235	0.00214	0.00187	0.00169	0.00147	0.00122	0.00104	0.00093	0.00080	0.00071	0.00065
OH	0.01004	0.00931	0.00887	0.00856	0.00811	0.00779	0.00734	0.00679	0.00635	0.00605	0.00564	0.00535	0.00513
O2	0.03395	0.03265	0.03191	0.03139	0.03068	0.03019	0.02953	0.02874	0.02816	0.02777	0.02726	0.02693	0.02668

CASE= 6 O/F= 16.2822 F/A= 0.06142 PERCENT FUEL= 5.7863 PHI= 0.9000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2499.2	2534.0	2553.6	2567.2	2585.7	2598.4	2615.7	2636.4	2652.0	2662.4	2676.4	2685.8	2692.8
T, DEG F	4038.8	4101.5	4136.8	4161.2	4194.5	4217.4	4248.6	4285.9	4313.8	4332.7	4357.9	4374.8	4387.3
RHO, G/CC	6.9060-5	1.3659-4	2.0362-4	2.7034-4	4.0317-4	5.3546-4	7.9892-4	1.3232-3	1.9755-3	2.6257-3	3.9221-3	5.2150-3	6.5053-3
M, MOL WT	28.325	28.401	28.444	28.474	28.514	28.542	28.580	28.625	28.659	28.682	28.713	28.733	28.748
CP, CAL/(G)(K)	0.7649	0.7123	0.6838	0.6645	0.6385	0.6210	0.5974	0.5696	0.5491	0.5353	0.5169	0.5046	0.4955
GAMMA (S)	1.1478	1.1536	1.1572	1.1597	1.1633	1.1660	1.1698	1.1746	1.1785	1.1813	1.1853	1.1881	1.1903
SON VEL./M/SEC	917.6	925.1	929.4	932.4	936.5	939.4	943.5	948.4	952.2	954.9	958.5	960.9	962.8

MOLE FRACTIONS

AR	0.00859	0.00861	0.00863	0.00863	0.00865	0.00866	0.00867	0.00868	0.00869	0.00870	0.00871	0.00871	0.00872
CO	0.02772	0.02497	0.02334	0.02219	0.02058	0.01945	0.01788	0.01595	0.01447	0.01346	0.01209	0.01116	0.01046
CO2	0.09019	0.09326	0.09506	0.09634	0.09812	0.09937	0.10110	0.10321	0.10483	0.10594	0.10744	0.10846	0.10921
H	0.00250	0.00192	0.00163	0.00145	0.00122	0.00108	0.00090	0.00070	0.00058	0.00050	0.00041	0.00035	0.00031
H2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
H2	0.00505	0.00440	0.00404	0.00379	0.00345	0.00322	0.00291	0.00255	0.00228	0.00210	0.00186	0.00170	0.00158
H2O	0.10057	0.10217	0.10307	0.10368	0.10452	0.10510	0.10587	0.10680	0.10749	0.10795	0.10857	0.10899	0.10930
NO	0.00835	0.00864	0.00879	0.00889	0.00901	0.00910	0.00920	0.00931	0.00938	0.00943	0.00948	0.00951	0.00953
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.71529	0.71708	0.71810	0.71880	0.71977	0.72043	0.72134	0.72244	0.72326	0.72382	0.72457	0.72507	0.72545
O	0.00338	0.00276	0.00243	0.00222	0.00194	0.00176	0.00153	0.00127	0.00109	0.00098	0.00084	0.00075	0.00068
OH	0.01056	0.00983	0.00939	0.00907	0.00862	0.00829	0.00784	0.00727	0.00682	0.00651	0.00608	0.00578	0.00556
O2	0.02780	0.02636	0.02552	0.02493	0.02411	0.02354	0.02276	0.02180	0.02108	0.02059	0.01994	0.01949	0.01916

CASE=	7	O/F=	8.1411	F/A=	0.12283	PERCENT FUEL=	10.9396	PHI=	1.8000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2282.0	2289.3	2292.7	2294.8	2297.4	2298.9	2300.8	2302.7	2304.0	2304.7	2305.6	2306.1	2306.5						
T, DEG F	3647.9	3661.0	3667.2	3671.0	3675.6	3678.4	3681.7	3685.2	3687.4	3688.8	3690.4	3691.3	3692.0						
RHO, G/CC	6.7203-5	1.3406-4	2.0084-4	2.6759-4	4.0102-4	5.3440-4	8.0106-4	1.3342-3	2.0004-3	2.6666-3	3.9986-3	5.3305-3	6.6622-3						
M, MOL WT	25.168	25.183	25.190	25.194	25.199	25.203	25.206	25.210	25.213	25.214	25.216	25.218	25.218						
CP, CAL/(G/IK)	0.4250	0.4096	0.4024	0.3981	0.3928	0.3897	0.3858	0.3819	0.3794	0.3780	0.3762	0.3751	0.3744						
GAMMA (S)	1.2428	1.2499	1.2534	1.2556	1.2583	1.2600	1.2621	1.2642	1.2656	1.2665	1.2675	1.2681	1.2686						
SON VEL, M/SEC	967.9	972.0	973.9	975.1	976.6	977.6	978.7	979.8	980.6	981.1	981.6	981.9	982.2						

MOLE FRACTIONS

AR	0.00721	0.00722	0.00722	0.00722	0.00722	0.00722	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723						
CO	0.16647	0.16667	0.16677	0.16693	0.16690	0.16694	0.16699	0.16704	0.16708	0.16710	0.16712	0.16714	0.16715						
CO2	0.03137	0.03129	0.03125	0.03122	0.03119	0.03118	0.03115	0.03113	0.03112	0.03111	0.03110	0.03110	0.03109						
H	0.00375	0.00276	0.00229	0.00201	0.00166	0.00145	0.00120	0.00094	0.00077	0.00067	0.00055	0.00048	0.00043						
H2	0.09147	0.09180	0.09195	0.09205	0.09216	0.09224	0.09232	0.09241	0.09246	0.09250	0.09253	0.09255	0.09257						
H2O	0.09474	0.09509	0.09526	0.09536	0.09549	0.09556	0.09565	0.09575	0.09581	0.09584	0.09589	0.09591	0.09593						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001						
NO	0.00008	0.00006	0.00005	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001						
N2	0.60426	0.60463	0.60481	0.60491	0.60504	0.60512	0.60522	0.60532	0.60538	0.60542	0.60546	0.60549	0.60551						
O	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
OH	0.00062	0.00046	0.00039	0.00034	0.00028	0.00025	0.00020	0.00016	0.00013	0.00012	0.00009	0.00008	0.00007						
O2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						

CASE=	7	O/F=	7.3270	F/A=	0.13648	PERCENT FUEL=	12.0091	PHI=	2.0000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2149.3	2153.1	2154.8	2155.9	2157.2	2157.9	2158.9	2159.8	2160.4	2160.8	2161.2	2161.5	2161.6						
T, DEG F	3409.0	3415.9	3419.0	3420.9	3423.2	3424.6	3426.3	3428.0	3429.7	3429.7	3430.5	3430.9	3431.3						
RHO, G/CC	6.9320-5	1.3844-4	2.0752-4	2.7658-4	4.1467-4	5.5273-4	8.2880-4	1.3808-3	2.0708-3	2.7607-3	4.1404-3	5.5200-3	6.8995-3						
M, MOL WT	24.451	24.459	24.462	24.464	24.467	24.469	24.470	24.472	24.474	24.474	24.475	24.476	24.477						
CP, CAL/(G/IK)	0.4027	0.3940	0.3901	0.3877	0.3848	0.3831	0.3810	0.3789	0.3776	0.3768	0.3759	0.3753	0.3749						
GAMMA (S)	1.2614	1.2661	1.2684	1.2697	1.2714	1.2724	1.2737	1.2749	1.2758	1.2763	1.2768	1.2772	1.2774						
SON VEL, M/SEC	960.1	962.6	963.8	964.5	965.4	965.9	966.6	967.2	967.7	967.9	968.2	968.4	968.5						

MOLE FRACTIONS

AR	0.00692	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693						
CO	0.18730	0.18779	0.18784	0.18787	0.18791	0.18793	0.18796	0.18799	0.18800	0.18802	0.18803	0.18804	0.18804						
CO2	0.02330	0.02326	0.02323	0.02322	0.02320	0.02319	0.02318	0.02317	0.02316	0.02316	0.02316	0.02315	0.02315						
H	0.00207	0.00150	0.00124	0.00108	0.00089	0.00077	0.00063	0.00049	0.00040	0.00035	0.00029	0.00025	0.00022						
H2	0.12261	0.12285	0.12296	0.12303	0.12311	0.12315	0.12321	0.12327	0.12330	0.12332	0.12334	0.12335	0.12335						
H2O	0.07719	0.07732	0.07738	0.07742	0.07746	0.07749	0.07752	0.07755	0.07758	0.07759	0.07760	0.07761	0.07762						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003						
NO	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
N2	0.58004	0.58022	0.58031	0.58036	0.58042	0.58046	0.58050	0.58055	0.58057	0.58059	0.58061	0.58063	0.58064						
OH	0.00017	0.00013	0.00010	0.00009	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002						



CASE= 3		Q/F= 15.4253	F/A= 0.06483	PERCENT FUEL= 6.0882			PHI= 0.9500						
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2346.6	2371.6	2385.3	2394.7	2407.3	2415.8	2427.2	2440.5	2450.2	2456.7	2465.1	2470.7	2474.7
T, DEG F	3764.3	3809.1	3833.9	3850.7	3873.4	3888.7	3909.2	3933.2	3950.7	3962.3	3977.5	3987.5	3994.8
RHO, G/CC	7.4231-5	1.4718-4	2.1973-4	2.9203-4	4.3617-4	5.7988-4	8.6648-4	1.4377-3	2.1496-3	2.8599-3	4.2779-3	5.6934-3	7.1072-3
M, MOL WT	28.588	28.642	28.671	28.692	28.719	28.738	28.762	28.791	28.812	28.826	28.844	28.856	28.865
CP, CAL/(G*IK)	0.6339	0.5938	0.5722	0.5577	0.5383	0.5253	0.5080	0.4878	0.4731	0.4633	0.4504	0.4420	0.4357
GAMMA (S)	1.1608	1.1675	1.1715	1.1743	1.1784	1.1813	1.1854	1.1905	1.1946	1.1974	1.2014	1.2041	1.2062
SON VEL,M/SEC	890.1	896.5	900.2	902.7	906.2	908.6	912.0	916.0	919.0	921.1	923.9	925.9	927.3

MOLE FRACTIONS

AR	0.00864	0.00866	0.00867	0.00867	0.00868	0.00869	0.00869	0.00870	0.00871	0.00872	0.00872	0.00872	0.00873
CO	0.01816	0.01586	0.01455	0.01265	0.01241	0.01156	0.01041	0.00905	0.00805	0.00738	0.00649	0.00590	0.00548
CO2	0.10703	0.10958	0.11101	0.11201	0.11336	0.11429	0.11555	0.11703	0.11813	0.11886	0.11983	0.12047	0.12094
H	0.00100	0.00074	0.00061	0.00053	0.00044	0.00038	0.00031	0.00024	0.00019	0.00016	0.00013	0.00011	0.00009
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001
H2	0.00335	0.00285	0.00258	0.00239	0.00215	0.00198	0.00176	0.00151	0.00133	0.00121	0.00106	0.00096	0.00088
H2O	0.11231	0.11344	0.11406	0.11448	0.11505	0.11543	0.11593	0.11652	0.11695	0.11723	0.11760	0.11784	0.11802
NO	0.00483	0.00488	0.00490	0.00491	0.00492	0.00491	0.00491	0.00489	0.00487	0.00486	0.00484	0.00482	0.00480
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001
N2	0.72139	0.72274	0.72348	0.72399	0.72468	0.72515	0.72578	0.72651	0.72705	0.72741	0.72789	0.72820	0.72843
O	0.00116	0.00091	0.00078	0.00070	0.00060	0.00053	0.00045	0.00036	0.00030	0.00027	0.00022	0.00020	0.00018
OH	0.00587	0.00531	0.00499	0.00476	0.00445	0.00423	0.00394	0.00358	0.00331	0.00312	0.00288	0.00271	0.00258
O2	0.01625	0.01504	0.01436	0.01390	0.01327	0.01284	0.01227	0.01159	0.01110	0.01077	0.01034	0.01006	0.00986

CASE= 3		Q/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3881			PHI= 1.0000						
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2370.5	2397.6	2412.7	2423.1	2437.2	2446.8	2459.8	2475.3	2486.8	2494.6	2505.0	2512.0	2517.1
T, DEG F	3807.1	3855.9	3883.1	3901.8	3927.2	3944.5	3967.9	3995.8	4016.5	4030.5	4049.3	4061.8	4071.2
RHO, G/CC	7.3162-5	1.4497-4	2.1633-4	2.8744-4	4.2911-4	5.7031-4	8.5177-4	1.4124-3	2.1105-3	2.8069-3	4.1961-3	5.5821-3	6.9659-3
M, MOL WT	28.462	28.520	28.553	28.575	28.605	28.626	28.654	28.687	28.712	28.728	28.750	28.765	28.776
CP, CAL/(G*IK)	0.6688	0.6276	0.6055	0.5906	0.5708	0.5575	0.5398	0.5192	0.5041	0.4941	0.4808	0.4721	0.4656
GAMMA (S)	1.1565	1.1625	1.1662	1.1687	1.1724	1.1750	1.1787	1.1833	1.1869	1.1894	1.1929	1.1954	1.1973
SON VEL,M/SEC	894.9	901.4	905.2	907.7	911.3	913.8	917.2	921.4	924.5	926.7	929.6	931.6	933.1

MOLE FRACTIONS

AR	0.00858	0.00859	0.00860	0.00861	0.00862	0.00863	0.00863	0.00864	0.00865	0.00866	0.00866	0.00867	0.00867
CO	0.02502	0.02260	0.02121	0.02023	0.01889	0.01796	0.01668	0.01513	0.01396	0.01316	0.01208	0.01135	0.01080
CO2	0.10576	0.10844	0.10998	0.11105	0.11254	0.11357	0.11498	0.11668	0.11797	0.11884	0.12002	0.12082	0.12141
H	0.00134	0.00101	0.00085	0.00075	0.00063	0.00055	0.00046	0.00036	0.00030	0.00026	0.00021	0.00018	0.00016
H2	0.00476	0.00419	0.00387	0.00365	0.00336	0.00316	0.00290	0.00259	0.00236	0.00221	0.00200	0.00187	0.00177
H2O	0.11603	0.11732	0.11803	0.11851	0.11916	0.11960	0.12020	0.12089	0.12141	0.12175	0.12220	0.12251	0.12273
NO	0.00417	0.00413	0.00409	0.00406	0.00400	0.00395	0.00387	0.00375	0.00364	0.00357	0.00345	0.00336	0.00329
N2	0.71624	0.71773	0.71857	0.71915	0.71995	0.72049	0.72124	0.72213	0.72280	0.72326	0.72388	0.72430	0.72461
O	0.00110	0.00084	0.00072	0.00064	0.00054	0.00048	0.00040	0.00031	0.00026	0.00022	0.00018	0.00016	0.00014
OH	0.00590	0.00531	0.00497	0.00473	0.00440	0.00417	0.00385	0.00347	0.00318	0.00298	0.00271	0.00254	0.00240
O2	0.01111	0.00983	0.00910	0.00860	0.00791	0.00744	0.00680	0.00605	0.00548	0.00510	0.00459	0.00426	0.00401

C	1	0.00000	H	1	906699	0	0.000000	0	0.000000	0	0.000000	100	0.000000000	-5059.80	L	298.150	F	0	0.80700
AR	1	0.000000			0.000000		0.000000	00	0.000000		0.01285800			0.00	6	1000.000	0	0	0.00000
C	1	0.00000	O	2	0.000000	0	0.000000	00	0.000000		0.00045600			0.00	6	1000.000	0	0	0.00000
N	2	0.000000			0.000000		0.000000	00	0.000000		0.75525296			0.00	6	1000.000	0	0	0.00000
O	2	0.000000			0.000000		0.000000	00	0.000000		0.23143297			0.00	6	1000.000	0	0	0.00000

CASE=	5	O/F=146.5400	F/A=0.00682	PERCENT FUEL=	0.6778	PHI=	0.1000												
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	1238.9	1238.9	1238.9	1238.9	1238.9	1238.9	1238.9	1238.9	1238.9	1238.9	1238.9	1238.9	1238.9						
T, DEG F	1770.3	1770.3	1770.3	1770.3	1770.3	1770.3	1770.3	1770.3	1770.3	1770.3	1770.3	1770.3	1770.3						
RHO, G/CC	1.4247-4	2.8494-4	4.2740-4	5.6987-4	8.5481-4	1.1397-3	1.7096-3	2.8494-3	4.2741-3	5.6988-3	8.5482-3	1.1398-2	1.4247-2						
M, MOL WT	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966	28.966						
CP, CAL/(GIIK)	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865	0.2865						
GAMMA (S)	1.3149	1.3149	1.3149	1.3149	1.3149	1.3149	1.3149	1.3149	1.3149	1.3149	1.3149	1.3148	1.3148						
SON VEL,M/SEC	683.8	683.8	683.8	683.8	683.8	683.8	683.8	683.8	683.8	683.8	683.8	683.8	683.8						

MOLE FRACTIONS

AR	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926	0.00926						
CO2	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439	0.01439						
H2O	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343	0.01343						
NO	0.00027	0.00027	0.00027	0.00027	0.00027	0.00027	0.00027	0.00027	0.00027	0.00027	0.00027	0.00027	0.00027						
NO2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001						
N2	0.77551	0.77551	0.77551	0.77551	0.77551	0.77551	0.77551	0.77551	0.77551	0.77551	0.77551	0.77551	0.77551						
O2	0.18713	0.18713	0.18713	0.18713	0.18713	0.18713	0.18713	0.18713	0.18712	0.18712	0.18712	0.18712	0.18711						

CASE=	5	O/F=73.2700	F/A=0.01365	PERCENT FUEL=	1.3464	PHI=	0.2000												
P, ATM	0.5000	1.0000	1.5030	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	1461.4	1461.4	1461.4	1461.4	1461.4	1461.4	1461.4	1461.4	1461.5	1461.5	1461.5	1461.5	1461.5						
T, DEG F	2170.8	2170.8	2170.8	2170.8	2170.9	2170.9	2170.9	2170.9	2170.9	2170.9	2170.9	2170.9	2170.9						
RHO, G/CC	1.2078-4	2.4156-4	3.6234-4	4.8312-4	7.2468-4	9.6624-4	1.4493-3	2.4156-3	3.6234-3	4.8311-3	7.2467-3	9.6623-3	1.2078-2						
M, MOL WT	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968	28.968						
CP, CAL/(GIIK)	0.2997	0.2997	0.2997	0.2995	0.2995	0.2995	0.2995	0.2994	0.2994	0.2994	0.2994	0.2994	0.2994						
GAMMA (S)	1.2970	1.2970	1.2971	1.2971	1.2971	1.2972	1.2972	1.2972	1.2972	1.2972	1.2972	1.2972	1.2972						
SON VEL,M/SEC	737.6	737.6	737.6	737.6	737.6	737.6	737.6	737.7	737.7	737.7	737.7	737.7	737.7						

MOLE FRACTIONS

AR	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920	0.00920						
CO2	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829	0.02829						
H2O	0.02668	0.02667	0.02668	0.02668	0.02668	0.02668	0.02668	0.02668	0.02668	0.02668	0.02668	0.02668	0.02668						
NO	0.00096	0.00096	0.00096	0.00096	0.00096	0.00096	0.00096	0.00096	0.00096	0.00096	0.00096	0.00096	0.00096						
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001						
N2	0.76998	0.76999	0.76999	0.76999	0.76999	0.76999	0.76999	0.76999	0.76999	0.76999	0.76999	0.76999	0.76999						
O2	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001						
O2	0.16485	0.16486	0.16486	0.16486	0.16486	0.16486	0.16486	0.16485	0.16485	0.16485	0.16485	0.16485	0.16484						

CASE= 6 O/F= 15.4253 F/A= 0.06483 PERCENT FUEL= 6.0882 PHI= 0.9500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2520.0	2557.0	2578.0	2592.6	2612.7	2626.5	2645.6	2668.6	2686.1	2698.0	2714.2	2725.1	2733.4
T, DEG F	4076.3	4142.9	4180.7	4206.9	4243.1	4268.1	4302.3	4343.8	4375.2	4396.7	4425.8	4445.6	4460.4
RHO, G/CC	6.8183-5	1.3478-4	2.0084-4	2.6658-4	3.9741-4	5.2764-4	7.8691-4	1.3025-3	1.9436-3	2.5823-3	3.8551-3	5.1237-3	6.3894-3
M, MOL WT	28.198	28.278	28.324	28.356	28.400	28.430	28.471	28.521	28.559	28.585	28.620	28.644	28.662
CP, CAL/(G)(K)	0.8054	0.7516	0.7224	0.7026	0.6761	0.6582	0.6342	0.6059	0.5848	0.5707	0.5517	0.5390	0.5295
GAMMA (S)	1.1447	1.1500	1.1533	1.1556	1.1589	1.1613	1.1647	1.1691	1.1726	1.1751	1.1786	1.1812	1.1831
SON VEL, M/SEC	922.2	929.8	934.2	937.3	941.5	944.5	948.6	953.7	957.6	960.3	964.0	966.6	968.6

MOLE FRACTIONS

AR	0.00852	0.00855	0.00856	0.00857	0.00858	0.00859	0.00861	0.00862	0.00863	0.00864	0.00865	0.00866	0.00866
CO	0.03414	0.03132	0.02964	0.02943	0.02673	0.02552	0.02383	0.02172	0.02007	0.01893	0.01735	0.01627	0.01544
CO2	0.08935	0.09252	0.09441	0.09575	0.09764	0.09898	0.10086	0.10319	0.10500	0.10626	0.10799	0.10918	0.11008
H	0.00309	0.00241	0.00207	0.00185	0.00158	0.00140	0.00118	0.00095	0.00079	0.00069	0.00057	0.00049	0.00044
H02	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00643	0.00571	0.00530	0.00501	0.00463	0.00436	0.00400	0.00356	0.00324	0.00302	0.00273	0.00253	0.00238
H20	0.10406	0.10583	0.10683	0.10752	0.10846	0.10910	0.10998	0.11103	0.11182	0.11236	0.11308	0.11357	0.11393
NO	0.00773	0.00795	0.00806	0.00813	0.00820	0.00825	0.00829	0.00833	0.00833	0.00833	0.00831	0.00829	0.00826
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.71008	0.71201	0.71311	0.71388	0.71495	0.71569	0.71672	0.71796	0.71892	0.71958	0.72047	0.72109	0.72155
O	0.00336	0.00274	0.00241	0.00220	0.00192	0.00174	0.00151	0.00125	0.00107	0.00096	0.00082	0.00073	0.00066
OH	0.01085	0.01011	0.00966	0.00933	0.00887	0.00854	0.00807	0.00748	0.00702	0.00670	0.00626	0.00595	0.00572
O2	0.02238	0.02084	0.01995	0.01931	0.01843	0.01781	0.01695	0.01589	0.01508	0.01452	0.01376	0.01324	0.01285

CASE= 6 O/F= 14.6540 F/A= 0.06824 PERCENT FUEL= 6.3881 PHI= 1.0000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2536.0	2574.5	2596.4	2611.7	2632.7	2647.3	2667.4	2691.8	2710.5	2723.3	2740.7	2752.7	2761.6
T, DEG F	4105.2	4174.4	4213.8	4241.3	4279.2	4305.5	4341.6	4385.6	4419.2	4442.2	4473.6	4495.1	4511.2
RHO, G/CC	6.7426-5	1.3323-4	1.9850-4	2.6342-4	3.9260-4	5.2116-4	7.7704-4	1.2857-3	1.9180-3	2.5477-3	3.8023-3	5.0523-3	6.2990-3
M, MOL WT	28.063	28.146	28.193	28.226	28.272	28.303	28.347	28.399	28.439	28.467	28.504	28.529	28.549
CP, CAL/(G)(K)	0.8330	0.7776	0.7477	0.7275	0.7003	0.6821	0.6575	0.6287	0.6073	0.5930	0.5738	0.5609	0.5514
GAMMA (S)	1.1430	1.1481	1.1512	1.1534	1.1566	1.1589	1.1621	1.1662	1.1695	1.1719	1.1752	1.1775	1.1793
SON VEL, M/SEC	926.7	934.4	938.9	942.0	946.3	949.3	953.5	958.7	962.7	965.5	969.3	971.9	973.9

MOLE FRACTIONS

AR	0.00846	0.00848	0.00849	0.00850	0.00852	0.00853	0.00854	0.00856	0.00857	0.00858	0.00859	0.00860	0.00860
CO	0.04108	0.03830	0.03662	0.03512	0.03371	0.03250	0.03070	0.02862	0.02693	0.02574	0.02410	0.02295	0.02208
CO2	0.08786	0.09102	0.09292	0.09427	0.09619	0.09755	0.09947	0.10186	0.10374	0.10505	0.10687	0.10813	0.10909
H	0.00371	0.00293	0.00253	0.00228	0.00196	0.00175	0.00149	0.00121	0.00102	0.00090	0.00075	0.00066	0.00060
H02	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00806	0.00727	0.00682	0.00650	0.00607	0.00578	0.00537	0.00488	0.00452	0.00427	0.00393	0.00370	0.00353
H20	0.10729	0.10922	0.11031	0.11107	0.11210	0.11281	0.11378	0.11494	0.11582	0.11642	0.11722	0.11777	0.11818
NO	0.00703	0.00717	0.00722	0.00724	0.00726	0.00725	0.00723	0.00716	0.00709	0.00702	0.00690	0.00681	0.00673
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001
N2	0.70474	0.70677	0.70794	0.70876	0.70999	0.71069	0.71180	0.71316	0.71420	0.71493	0.71593	0.71662	0.71715
O	0.00322	0.00261	0.00229	0.00208	0.00181	0.00163	0.00140	0.00115	0.00098	0.00087	0.00073	0.00064	0.00058
OH	0.01090	0.01014	0.00967	0.00933	0.00885	0.00851	0.00802	0.00740	0.00692	0.00658	0.00612	0.00579	0.00554
O2	0.01764	0.01609	0.01518	0.01453	0.01363	0.01300	0.01212	0.01104	0.01020	0.00963	0.00884	0.00831	0.00790

CASE= 2 O/F= 48.8467 F/A= 0.02047 PERCENT FUEL= 2.0062 PHI= 0.3000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1167.3	1167.3	1167.3	1167.3	1167.3	1167.3	1167.3	1167.3	1167.3	1167.3	1167.3	1167.3	1167.3
T, DEG F	1641.5	1641.5	1641.5	1641.5	1641.5	1641.5	1641.5	1641.5	1641.5	1641.5	1641.5	1641.5	1641.5
RHO, G/CC	1.5122-4	3.0244-4	4.5366-4	6.0488-4	9.0732-4	1.2098-3	1.8146-3	3.0244-3	4.5366-3	6.0488-3	9.0732-3	1.2098-2	1.5122-2
M, MOL WT	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970
CP, CAL/(G)(K)	0.2898	0.2898	0.2898	0.2898	0.2898	0.2898	0.2898	0.2898	0.2898	0.2898	0.2898	0.2898	0.2898
GAMMA (S)	1.3100	1.3100	1.3100	1.3100	1.3100	1.3100	1.3100	1.3100	1.3100	1.3100	1.3100	1.3100	1.3100
SOUND VEL, M/SEC	662.5	662.5	662.5	662.5	662.5	662.5	662.5	662.5	662.5	662.5	662.5	662.5	662.5

MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201	0.04201
H2O	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977	0.03977
NO	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014	0.00014
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76530	0.76530	0.76530	0.76530	0.76530	0.76530	0.76530	0.76529	0.76529	0.76529	0.76529	0.76529	0.76529
O2	0.14365	0.14365	0.14365	0.14365	0.14365	0.14365	0.14365	0.14365	0.14365	0.14365	0.14365	0.14364	0.14364

CASE= 2 O/F= 36.6350 F/A= 0.02730 PERCENT FUEL= 2.6571 PHI= 0.4000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	1385.7	1385.7	1385.7	1385.7	1385.7	1385.7	1385.7	1385.7	1385.7	1385.7	1385.7	1385.7	1385.7
T, DEG F	2034.5	2034.5	2034.5	2034.6	2034.6	2034.6	2034.6	2034.6	2034.6	2034.6	2034.6	2034.6	2034.6
RHO, G/CC	1.2740-4	2.5479-4	3.8219-4	5.0958-4	7.6437-4	1.0192-3	1.5287-3	2.5479-3	3.8218-3	5.0958-3	7.6436-3	1.0192-2	1.2739-2
M, MOL WT	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971	28.971
CP, CAL/(G)(K)	0.3030	0.3029	0.3029	0.3029	0.3028	0.3028	0.3028	0.3028	0.3028	0.3028	0.3028	0.3028	0.3028
GAMMA (S)	1.2927	1.2928	1.2928	1.2928	1.2928	1.2929	1.2929	1.2929	1.2929	1.2929	1.2929	1.2929	1.2929
SOUND VEL, M/SEC	717.0	717.0	717.0	717.0	717.0	717.0	717.0	717.0	717.0	717.1	717.1	717.1	717.1

MOLE FRACTIONS

AR	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908	0.00908
CO2	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554	0.05554
H2O	0.05266	0.05266	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267	0.05267
NO	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055	0.00055
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76005	0.76005	0.76005	0.76005	0.76005	0.76005	0.76005	0.76005	0.76005	0.76005	0.76005	0.76005	0.76005
O2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.12210	0.12210	0.12210	0.12210	0.12210	0.12210	0.12210	0.12210	0.12210	0.12209	0.12209	0.12209	0.12209



CASE=	3	O/F=	13.9562	F/A=	0.07165	PERCENT FUEL=				6.6862	PHI=					1.0500
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000			
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8			
T, DEG K	2384.2	2411.6	2426.7	2437.0	2451.0	2460.4	2473.0	2487.7	2498.4	2505.4	2514.6	2520.5	2524.8			
T, DEG F	3831.9	3881.1	3908.4	3927.0	3952.0	3969.0	3991.7	4018.1	4037.4	4050.1	4066.6	4077.3	4085.0			
RHO, G/CC	7.2368-5	1.4339-4	2.1359-4	2.8432-4	4.2450-4	5.6423-4	8.4282-4	1.3979-3	2.0895-3	2.7796-3	4.1570-3	5.5319-3	6.9053-3			
M, MOL WT	28.316	28.375	28.407	28.429	28.458	28.478	28.505	28.536	28.558	28.573	28.592	28.604	28.613			
CP, CAL/(G*IK)	0.6717	0.6269	0.6026	0.5861	0.5638	0.5488	0.5285	0.5046	0.4869	0.4749	0.4590	0.4484	0.4406			
GAMMA (S)	1.1568	1.1634	1.1675	1.1704	1.1746	1.1777	1.1821	1.1877	1.1924	1.1957	1.2004	1.2037	1.2063			
SON VEL., M/SEC	899.9	906.7	910.6	913.3	917.1	919.7	923.4	927.9	931.3	933.7	936.9	939.1	940.8			

MOLE FRACTIONS

AR	0.00850	0.00852	0.00853	0.00854	0.00855	0.00855	0.00856	0.00857	0.00858	0.00858	0.00859	0.00859	0.00859		
CO	0.03306	0.03079	0.02949	0.02859	0.02736	0.02652	0.02537	0.02402	0.02303	0.02238	0.02152	0.02097	0.02057		
CO2	0.10310	0.10565	0.10710	0.10611	0.10948	0.11042	0.11169	0.11319	0.11429	0.11502	0.11596	0.11658	0.11702		
H	0.00168	0.00129	0.00110	0.00098	0.00083	0.00073	0.00062	0.00049	0.00041	0.00036	0.00030	0.00026	0.00024		
H2	0.00659	0.00598	0.00565	0.00542	0.00512	0.00491	0.00465	0.00434	0.00412	0.00397	0.00379	0.00367	0.00358		
H2O	0.11931	0.12070	0.12147	0.12198	0.12268	0.12315	0.12377	0.12449	0.12501	0.12535	0.12580	0.12609	0.12629		
NO	0.00341	0.00328	0.00317	0.00309	0.00296	0.00286	0.00271	0.00249	0.00231	0.00218	0.00199	0.00185	0.00175		
N2	0.71067	0.71221	0.71307	0.71366	0.71447	0.71502	0.71577	0.71665	0.71730	0.71773	0.71830	0.71868	0.71896		
O	0.00094	0.00070	0.00059	0.00051	0.00042	0.00036	0.00029	0.00022	0.00017	0.00014	0.00011	0.00009	0.00008		
OH	0.00561	0.00497	0.00460	0.00434	0.00397	0.00372	0.00337	0.00296	0.00264	0.00243	0.00214	0.00195	0.00181		
O2	0.00711	0.00590	0.00523	0.00477	0.00416	0.00375	0.00320	0.00258	0.00214	0.00185	0.00149	0.00127	0.00111		

CASE=	3	O/F=	13.3218	F/A=	0.07506	PERCENT FUEL=				6.9824	PHI=					1.1000
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000			
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8			
T, DEG K	2387.6	2413.0	2426.6	2435.7	2447.6	2455.5	2465.6	2476.7	2484.3	2491.1	2495.0	2498.6	2501.0			
T, DEG F	3838.0	3883.6	3908.2	3924.6	3946.0	3961.1	3978.3	3998.4	4012.1	4020.7	4031.2	4037.7	4042.2			
RHO, G/CC	7.1844-5	1.4245-4	2.1269-4	2.8271-4	4.2237-4	5.6169-4	8.3970-4	1.3943-3	2.0862-3	2.7773-3	4.1578-3	5.5372-3	6.9158-3			
M, MOL WT	28.151	28.205	28.233	28.252	28.277	28.293	28.314	28.337	28.353	28.362	28.374	28.381	28.386			
CP, CAL/(G*IK)	0.6384	0.5880	0.5605	0.5419	0.5172	0.5006	0.4789	0.4543	0.4372	0.4263	0.4128	0.4044	0.3986			
GAMMA (S)	1.1625	1.1710	1.1764	1.1803	1.1860	1.1901	1.1961	1.2036	1.2094	1.2133	1.2186	1.2220	1.2245			
SON VEL., M/SEC	905.4	912.7	916.9	919.8	923.9	926.7	930.6	935.2	938.6	940.9	943.9	945.8	947.1			

MOLE FRACTIONS

AR	0.00843	0.00844	0.00845	0.00846	0.00847	0.00848	0.00848	0.00849	0.00849	0.00849	0.00850	0.00850	0.00850		
CO	0.04221	0.04034	0.03932	0.03862	0.03771	0.03710	0.03632	0.03546	0.03488	0.03451	0.03407	0.03381	0.03362		
CO2	0.09914	0.10127	0.10245	0.10323	0.10427	0.10496	0.10585	0.10682	0.10748	0.10790	0.10840	0.10870	0.10891		
H	0.00199	0.00154	0.00131	0.00117	0.00099	0.00088	0.00074	0.00059	0.00050	0.00044	0.00036	0.00032	0.00029		
H2	0.00894	0.00836	0.00805	0.00784	0.00758	0.00741	0.00719	0.00695	0.00680	0.00670	0.00659	0.00652	0.00647		
H2O	0.12204	0.12346	0.12422	0.12472	0.12539	0.12582	0.12639	0.12701	0.12744	0.12772	0.12805	0.12826	0.12841		
NO	0.00263	0.00241	0.00227	0.00215	0.00199	0.00187	0.00169	0.00147	0.00129	0.00118	0.00102	0.00092	0.00084		
N2	0.70466	0.70611	0.70690	0.70743	0.70814	0.70861	0.70922	0.70990	0.71038	0.71068	0.71105	0.71129	0.71145		
O	0.00074	0.00052	0.00042	0.00036	0.00028	0.00023	0.00018	0.00012	0.00009	0.00007	0.00005	0.00004	0.00003		
OH	0.00503	0.00434	0.00394	0.00366	0.00327	0.00301	0.00266	0.00224	0.00194	0.00174	0.00148	0.00132	0.00120		
O2	0.00419	0.00321	0.00269	0.00235	0.00191	0.00164	0.00129	0.00094	0.00071	0.00058	0.00042	0.00034	0.00028		



	CASE= 6	O/F= 13.9562	F/A= 0.07165	PERCENT FUEL= 6.6862				PHI= 1.0500					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2547.5	2586.7	2609.0	2624.5	2645.8	2660.7	2681.0	2705.7	2724.4	2737.3	2754.7	2766.5	2775.4
T, DEG F	4125.8	4196.3	4236.4	4264.3	4302.8	4329.5	4366.1	4410.5	4444.3	4467.4	4498.7	4520.0	4536.0
RHO, G/CC	6.6781-5	1.3194-4	1.9655-4	2.6082-4	3.8871-4	5.1597-4	7.6927-4	1.2728-3	1.8987-3	2.5221-3	3.7642-3	5.0018-3	6.2363-3
M, MOL WT	27.920	28.004	28.052	28.085	28.131	28.162	28.206	28.258	28.298	28.325	28.362	28.387	28.405
CP, CAL/(G)(K)	0.8447	0.7870	0.7556	0.7344	0.7060	0.6867	0.6608	0.6302	0.6074	0.5920	0.5713	0.5573	0.5469
GAMMA (S)	1.1427	1.1479	1.1511	1.1534	1.1567	1.1590	1.1624	1.1668	1.1703	1.1728	1.1764	1.1790	1.1810
SON VEL./M/SEC	931.1	938.9	943.5	946.6	951.1	954.2	958.5	963.8	967.9	970.7	974.7	977.4	979.5

MOLE FRACTIONS

AR	0.00839	0.00841	0.00843	0.00844	0.00845	0.00846	0.00847	0.00849	0.00850	0.00851	0.00852	0.00853	0.00853
CO	0.00488	0.04584	0.04425	0.04711	0.04148	0.04032	0.03869	0.03665	0.03505	0.03393	0.03239	0.03133	0.03053
CO2	0.08577	0.08882	0.09064	0.09194	0.09379	0.09510	0.09694	0.09923	0.10102	0.10227	0.10399	0.10517	0.10606
H	0.00433	0.00345	0.00300	0.00271	0.00234	0.00211	0.00181	0.00148	0.00126	0.00112	0.00094	0.00083	0.00076
H02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00997	0.00912	0.00864	0.00831	0.00785	0.00753	0.00710	0.00658	0.00619	0.00593	0.00557	0.00533	0.00516
H2O	0.11024	0.11231	0.11348	0.11429	0.11540	0.11616	0.11720	0.11845	0.11939	0.12003	0.12089	0.12147	0.12190
NO	0.00626	0.00631	0.00630	0.00628	0.00622	0.00617	0.00607	0.00590	0.00574	0.00561	0.00540	0.00524	0.00510
N2	0.69927	0.70136	0.70257	0.70342	0.70460	0.70542	0.70656	0.70796	0.70904	0.70979	0.71082	0.71153	0.71206
O	0.00299	0.00239	0.00268	0.00188	0.00162	0.00145	0.00123	0.00099	0.00083	0.00072	0.00059	0.00052	0.00046
OH	0.01071	0.00991	0.00942	0.00907	0.00856	0.00819	0.00767	0.00702	0.00651	0.00615	0.00565	0.00530	0.00504
O2	0.01358	0.01206	0.01118	0.01056	0.00970	0.00909	0.00826	0.00724	0.00647	0.00594	0.00523	0.00475	0.00440

	CASE= 6	O/F= 13.3218	F/A= 0.07506	PERCENT FUEL= 6.9824				PHI= 1.1000					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2554.5	2593.5	2615.6	2630.9	2651.9	2666.3	2686.0	2709.7	2727.3	2739.3	2755.2	2765.8	2773.7
T, DEG F	4138.4	4208.6	4248.4	4275.9	4313.7	4339.7	4375.2	4417.7	4449.5	4471.0	4499.7	4518.8	4532.9
RHO, G/CC	6.6240-5	1.3088-4	1.9499-4	2.5877-4	3.8570-4	5.1203-4	7.6355-4	1.2637-3	1.8858-3	2.5056-3	3.7411-3	4.9728-3	6.2019-3
M, MOL WT	27.770	27.853	27.900	27.932	27.977	28.007	28.049	28.098	28.135	28.160	28.193	28.215	28.231
CP, CAL/(G)(K)	0.8387	0.7774	0.7439	0.7212	0.6905	0.6696	0.6414	0.6077	0.5825	0.5654	0.5423	0.5268	0.5151
GAMMA (S)	1.1439	1.1496	1.1531	1.1556	1.1593	1.1620	1.1659	1.1711	1.1754	1.1785	1.1830	1.1863	1.1890
SON VEL./M/SEC	935.3	943.4	948.0	951.3	955.9	959.1	963.5	969.0	973.3	976.3	980.4	983.3	985.5

MOLE FRACTIONS

AR	0.00831	0.00834	0.00835	0.00836	0.00838	0.00839	0.00840	0.00841	0.00842	0.00843	0.00844	0.00845	0.00845
CO	0.05630	0.05390	0.05246	0.05142	0.04997	0.04894	0.04749	0.04572	0.04435	0.04341	0.04215	0.04129	0.04066
CO2	0.08313	0.08596	0.08763	0.08833	0.09051	0.09169	0.09334	0.09537	0.09692	0.09798	0.09941	0.10038	0.10109
H	0.00493	0.00395	0.00345	0.00313	0.00271	0.00245	0.00211	0.00173	0.00148	0.00132	0.00112	0.00099	0.00090
H2	0.01219	0.01132	0.01083	0.01049	0.01002	0.00970	0.00927	0.00875	0.00837	0.00811	0.00777	0.00755	0.00739
H2O	0.11287	0.11505	0.11628	0.11713	0.11908	0.12016	0.12145	0.12241	0.12305	0.12391	0.12448	0.12490	0.12518
NO	0.00546	0.00541	0.00534	0.00527	0.00516	0.00506	0.00489	0.00464	0.00441	0.00423	0.00396	0.00376	0.00360
N2	0.69369	0.69579	0.69700	0.69785	0.69902	0.69983	0.70096	0.70233	0.70337	0.70408	0.70504	0.70569	0.70618
O	0.00267	0.00210	0.00181	0.00161	0.00137	0.00121	0.00101	0.00079	0.00064	0.00055	0.00044	0.00037	0.00032
OH	0.01030	0.00944	0.00892	0.00854	0.00800	0.00761	0.00706	0.00636	0.00582	0.00544	0.00491	0.00455	0.00428
O2	0.01016	0.00874	0.00793	0.00737	0.00659	0.00605	0.00532	0.00445	0.00382	0.00339	0.00284	0.00248	0.00222



CASE= 3		O/F= 12.7426	F/A= 0.07848	PERCENT FUEL= 7.2766				PHI= 1.1500					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2380.5	2402.0	2413.1	2420.2	2429.2	2434.9	2442.0	2449.4	2454.3	2457.2	2460.7	2462.8	2464.3
T, DEG F	3825.1	3863.9	3883.8	3896.6	3912.9	3923.1	3935.9	3949.2	3958.0	3963.3	3969.6	3973.4	3976.0
RHO, G/C	7.158E-5	1.421E-4	2.123E-4	2.824E-4	4.224E-4	5.621E-4	8.412E-4	1.398E-3	2.094E-3	2.789E-3	4.179E-3	5.569E-3	6.957E-3
M, MOL WT	27.366	28.011	28.034	28.049	28.067	28.079	28.094	28.109	28.118	28.124	28.131	28.136	28.138
CP, CAL/(G)(K)	0.5808	0.5295	0.5029	0.4856	0.4635	0.4495	0.4321	0.4139	0.4021	0.3949	0.3865	0.3781	0.3711
GAMMA (S)	1.1736	1.1845	1.1911	1.1958	1.2025	1.2070	1.2132	1.2203	1.2253	1.2285	1.2325	1.2349	1.2366
SON VEL, M/SEC	911.3	919.0	923.3	926.2	930.2	932.9	936.4	940.3	943.0	944.7	946.8	948.0	948.9

MOLE FRACTIONS

AR	0.00835	0.00836	0.00837	0.00837	0.00838	0.00838	0.00838	0.00839	0.00839	0.00839	0.00840	0.00840	0.00840
CO	0.05230	0.05099	0.05031	0.04987	0.04932	0.04898	0.04856	0.04812	0.04784	0.04768	0.04748	0.04737	0.04729
CO2	0.09403	0.09558	0.09637	0.09669	0.09753	0.09794	0.09844	0.09895	0.09928	0.09948	0.09971	0.09985	0.09994
H	0.00222	0.00171	0.00145	0.00129	0.00109	0.00096	0.00081	0.00064	0.00053	0.00047	0.00039	0.00034	0.00030
H2	0.01192	0.01143	0.01119	0.01103	0.01084	0.01072	0.01058	0.01043	0.01034	0.01028	0.01022	0.01018	0.01016
H2O	0.12409	0.12542	0.12611	0.12655	0.12712	0.12748	0.12793	0.12841	0.12873	0.12892	0.12916	0.12930	0.12940
NO	0.00189	0.00165	0.00150	0.00139	0.00123	0.00113	0.00098	0.00082	0.00070	0.00062	0.00052	0.00046	0.00042
N2	0.69817	0.69942	0.70007	0.70049	0.70103	0.70137	0.70181	0.70227	0.70257	0.70276	0.70298	0.70312	0.70321
O	0.00052	0.00035	0.00027	0.00022	0.00016	0.00013	0.00010	0.00006	0.00005	0.00004	0.00002	0.00002	0.00002
OH	0.00424	0.00353	0.00313	0.00286	0.00249	0.00225	0.00193	0.00158	0.00134	0.00118	0.00099	0.00087	0.00079
O2	0.00226	0.00158	0.00125	0.00104	0.00080	0.00065	0.00048	0.00032	0.00023	0.00018	0.00013	0.00010	0.00008

CASE= 3		O/F= 12.2117	F/A= 0.08189	PERCENT FUEL= 7.5691				PHI= 1.2000					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2363.6	2380.5	2388.8	2394.0	2400.4	2404.3	2409.1	2414.0	2417.2	2419.0	2421.3	2422.5	2423.5
T, DEG F	3794.7	3825.3	3840.2	3849.5	3861.0	3868.1	3876.7	3885.5	3891.2	3894.6	3898.6	3901.0	3902.7
RHO, G/C	7.157E-5	1.423E-4	2.128E-4	2.833E-4	4.240E-4	5.646E-4	8.455E-4	1.406E-3	2.108E-3	2.808E-3	4.210E-3	5.611E-3	7.011E-3
M, MOL WT	27.765	27.800	27.817	27.829	27.841	27.849	27.858	27.868	27.875	27.878	27.883	27.886	27.887
CP, CAL/(G)(K)	0.5203	0.4761	0.4547	0.4413	0.4251	0.4151	0.4033	0.3913	0.3837	0.3792	0.3740	0.3709	0.3688
GAMMA (S)	1.1882	1.2004	1.2072	1.2118	1.2180	1.2220	1.2274	1.2326	1.2362	1.2385	1.2412	1.2429	1.2440
SON VEL, M/SEC	917.1	924.5	928.4	931.0	934.4	936.6	939.3	942.2	944.1	945.3	946.7	947.5	948.1

MOLE FRACTIONS

AR	0.00826	0.00827	0.00828	0.00828	0.00828	0.00829	0.00829	0.00829	0.00829	0.00829	0.00830	0.00830	0.00830
CO	0.06301	0.06224	0.06187	0.06164	0.06137	0.06120	0.06101	0.06081	0.06069	0.06062	0.06054	0.06049	0.06046
CO2	0.08809	0.08905	0.08951	0.08980	0.09015	0.09035	0.09060	0.09085	0.09101	0.09110	0.09120	0.09127	0.09131
H	0.00234	0.00178	0.00150	0.00133	0.00112	0.00098	0.00082	0.00065	0.00053	0.00047	0.00038	0.00034	0.00030
H2	0.01561	0.01526	0.01510	0.01500	0.01488	0.01481	0.01473	0.01465	0.01460	0.01457	0.01453	0.01451	0.01450
H2O	0.12533	0.12647	0.12704	0.12740	0.12785	0.12813	0.12847	0.12882	0.12905	0.12919	0.12935	0.12945	0.12952
NO	0.00128	0.00106	0.00093	0.00085	0.00073	0.00066	0.00056	0.00045	0.00038	0.00034	0.00028	0.00024	0.00022
N2	0.69125	0.69223	0.69272	0.69303	0.69342	0.69365	0.69394	0.69424	0.69444	0.69456	0.69470	0.69478	0.69484
O	0.00033	0.00021	0.00015	0.00012	0.00009	0.00007	0.00005	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001
OH	0.00337	0.00270	0.00234	0.00211	0.00180	0.00161	0.00136	0.00109	0.00091	0.00080	0.00066	0.00058	0.00052
O2	0.00112	0.00072	0.00054	0.00043	0.00032	0.00025	0.00018	0.00011	0.00008	0.00006	0.00004	0.00003	0.00003

CASE= 5 O/F= 29.3080 F/A= 0.03412 PERCENT FUEL= 3.2995 PHI= 0.5000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2036.3	2039.4	2041.0	2041.9	2043.1	2043.8	2044.7	2045.7	2046.4	2046.8	2047.3	2047.7	2047.9
T, DEG F	3205.6	3211.3	3214.0	3215.7	3217.8	3219.2	3220.8	3222.6	3223.8	3224.5	3225.5	3226.1	3226.5
RHO, G/CC	8.6609-5	1.7299-4	2.5932-4	3.4562-4	5.1818-4	6.9069-4	1.0356-3	1.7253-3	2.5873-3	3.4491-3	5.1726-3	6.8959-3	8.6190-3
M, MOL WT	28.943	28.950	28.953	28.955	28.957	28.959	28.961	28.963	28.964	28.965	28.966	28.967	28.967
CP, CAL/(G*IK)	0.3623	0.3554	0.3522	0.3502	0.3477	0.3462	0.3443	0.3423	0.3410	0.3402	0.3392	0.3385	0.3381
GAMMA (S)	1.2409	1.2449	1.2469	1.2482	1.2497	1.2507	1.2519	1.2532	1.2541	1.2546	1.2553	1.2557	1.2560
SON VEL, M/SEC	852.0	853.9	854.9	855.5	856.2	856.7	857.3	857.9	858.3	858.6	858.9	859.1	859.2

MOLE FRACTIONS

AR	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00901	0.00902	0.00902	0.00902	0.00902
CO	0.00054	0.00039	0.00033	0.00029	0.00024	0.00020	0.00017	0.00013	0.00011	0.00009	0.00008	0.00007	0.00006
CO2	0.06829	0.06845	0.06853	0.06857	0.06863	0.06866	0.06870	0.06875	0.06877	0.06879	0.06881	0.06882	0.06883
H	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00011	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001
H2O	0.06424	0.06443	0.06453	0.06459	0.06467	0.06473	0.06479	0.06487	0.06492	0.06496	0.06500	0.06503	0.06505
N0	0.00597	0.00602	0.00605	0.00606	0.00608	0.00609	0.00611	0.00612	0.00614	0.00614	0.00615	0.00616	0.00616
N2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004
N2	0.75159	0.75173	0.75160	0.75184	0.75189	0.75192	0.75196	0.75201	0.75204	0.75205	0.75208	0.75209	0.75210
O	0.00039	0.00028	0.00023	0.00020	0.00017	0.00014	0.00012	0.00009	0.00008	0.00007	0.00005	0.00005	0.00004
OH	0.00196	0.00167	0.00152	0.00142	0.00130	0.00121	0.00110	0.00097	0.00098	0.00082	0.00075	0.00069	0.00066
O2	0.09787	0.09790	0.09792	0.09793	0.09794	0.09795	0.09797	0.09799	0.09800	0.09800	0.09801	0.09802	0.09802

CASE= 5 O/F= 24.4233 F/A= 0.04094 PERCENT FUEL= 3.9334 PHI= 0.6000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2188.1	2196.4	2200.5	2203.1	2206.3	2208.4	2210.9	2213.7	2215.5	2216.7	2218.1	2219.0	2219.7
T, DEG F	3478.8	3493.8	3501.1	3505.8	3511.7	3515.3	3520.0	3524.9	3528.2	3530.3	3532.9	3534.6	3535.7
RHO, G/CC	8.0456-5	1.6040-4	2.4023-4	3.1999-4	4.7939-4	6.3869-4	9.5710-4	1.5935-3	2.3886-3	3.1834-3	4.7725-3	6.3611-3	7.9495-3
M, MOL WT	28.891	28.909	28.918	28.923	28.930	28.934	28.940	28.946	28.950	28.952	28.955	28.957	28.958
CP, CAL/(G*IK)	0.4170	0.3997	0.3914	0.3862	0.3797	0.3756	0.3706	0.3654	0.3619	0.3597	0.3570	0.3554	0.3542
GAMMA (S)	1.2138	1.2209	1.2247	1.2271	1.2302	1.2322	1.2348	1.2376	1.2395	1.2407	1.2422	1.2431	1.2438
SON VEL, M/SEC	874.2	878.2	880.2	881.6	883.2	884.3	885.6	887.1	888.1	888.7	889.5	890.0	890.3

MOLE FRACTIONS

AR	0.00893	0.00894	0.00894	0.00894	0.00895	0.00895	0.00895	0.00895	0.00895	0.00895	0.00895	0.00895	0.00895
CO	0.00223	0.00169	0.00142	0.00126	0.00105	0.00093	0.00077	0.00061	0.00050	0.00044	0.00036	0.00032	0.00029
CO2	0.07962	0.08022	0.08051	0.08069	0.08091	0.08105	0.08122	0.08140	0.08151	0.08158	0.08167	0.08172	0.08176
H	0.00015	0.00010	0.00007	0.00006	0.00005	0.00004	0.00003	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00041	0.00030	0.00026	0.00023	0.00019	0.00017	0.00014	0.00011	0.00009	0.00008	0.00006	0.00006	0.00005
H2O	0.07534	0.07576	0.07598	0.07612	0.07631	0.07643	0.07658	0.07676	0.07688	0.07696	0.07706	0.07713	0.07718
N0	0.00760	0.00775	0.00782	0.00786	0.00792	0.00795	0.00800	0.00805	0.00808	0.00810	0.00813	0.00814	0.00816
N2	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003	0.00003	0.00004	0.00004
N2	0.74448	0.74486	0.74505	0.74517	0.74532	0.74542	0.74553	0.74566	0.74574	0.74579	0.74586	0.74590	0.74592
O	0.00097	0.00073	0.00061	0.00053	0.00045	0.00039	0.00032	0.00026	0.00021	0.00018	0.00015	0.00013	0.00012
OH	0.00387	0.00338	0.00311	0.00292	0.00268	0.00252	0.00230	0.00205	0.00187	0.00175	0.00159	0.00148	0.00141
O2	0.07639	0.07627	0.07623	0.07620	0.07617	0.07615	0.07614	0.07612	0.07612	0.07612	0.07611	0.07611	0.07611

CASE=	6	O/F=	12.7426	F/A=	0.07848	PERCENT FUEL=	7.2766	PHI=	1.1500										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2556.9	2594.9	2616.2	2630.8	2650.7	2664.2	2682.4	2703.7	2719.3	2729.6	2743.0	2751.7	2758.0						
T, DEG F	4142.7	4211.1	4249.4	4275.7	4311.5	4335.8	4368.6	4407.0	4435.1	4453.6	4477.7	4493.3	4504.6						
RHO, G/CC	6.5803-5	1.3006-4	1.9381-4	2.5726-4	3.8357-4	5.0935-4	7.5988-4	1.2585-3	1.8790-3	2.4978-3	3.7321-3	4.9635-3	6.1930-3						
M, MOL WT	27.612	27.692	27.737	27.768	27.810	27.838	27.876	27.920	27.952	27.973	28.001	28.018	28.031						
CP, CAL/(G)(K)	0.8148	0.7494	0.7135	0.6891	0.6561	0.6336	0.6034	0.5676	0.5412	0.5236	0.5004	0.4852	0.4741						
GAMMA (S)	1.1467	1.1532	1.1573	1.1603	1.1647	1.1680	1.1728	1.1792	1.1845	1.1884	1.1939	1.1979	1.2009						
SON VEL, M/SEC	939.6	947.9	952.7	956.0	960.7	964.1	968.7	974.4	978.8	981.9	986.1	989.0	991.2						

MOLE FRACTIONS

AR	0.00824	0.00826	0.00828	0.00829	0.00830	0.00831	0.00832	0.00833	0.00834	0.00835	0.00836	0.00836	0.00837						
CO	0.06448	0.06240	0.06117	0.06030	0.05908	0.05823	0.05706	0.05566	0.05462	0.05392	0.05301	0.05242	0.05199						
CO2	0.07999	0.08249	0.08396	0.08499	0.08643	0.08743	0.08879	0.09043	0.09164	0.09244	0.09350	0.09418	0.09468						
H	0.00549	0.00441	0.00386	0.00350	0.00304	0.00274	0.00236	0.00194	0.00165	0.00147	0.00125	0.00111	0.00101						
H2	0.01478	0.01393	0.01345	0.01312	0.01267	0.01236	0.01195	0.01148	0.01113	0.01091	0.01062	0.01044	0.01031						
H2O	0.11512	0.11737	0.11863	0.11950	0.12067	0.12147	0.12255	0.12381	0.12474	0.12535	0.12614	0.12666	0.12704						
NO	0.00464	0.00450	0.00438	0.00428	0.00412	0.00398	0.00377	0.00347	0.00321	0.00302	0.00275	0.00255	0.00240						
N2	0.68795	0.69002	0.69120	0.69202	0.69315	0.69392	0.69497	0.69623	0.69716	0.69778	0.69860	0.69914	0.69954						
O	0.00230	0.00176	0.00149	0.00132	0.00109	0.00095	0.00077	0.00058	0.00046	0.00039	0.00030	0.00024	0.00021						
OH	0.00966	0.00875	0.00839	0.00779	0.00721	0.00680	0.00623	0.00551	0.00495	0.00456	0.00404	0.00369	0.00343						
O2	0.00735	0.00609	0.00538	0.00490	0.00425	0.00381	0.00323	0.00256	0.00209	0.00180	0.00143	0.00120	0.00104						

CASE=	6	O/F=	12.2117	F/A=	0.08189	PERCENT FUEL=	7.5691	PHI=	1.2000										
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000						
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8						
T, DEG K	2554.6	2590.6	2610.5	2624.0	2642.1	2654.2	2670.2	2688.5	2701.5	2739.8	2720.3	2727.0	2731.8						
T, DEG F	4138.5	4203.5	4239.3	4263.6	4296.1	4317.9	4346.7	4379.6	4402.9	4417.9	4436.9	4448.9	4457.4						
RHO, G/CC	6.5470-5	1.2947-4	1.9302-4	2.5629-4	3.8233-4	5.0791-4	7.5820-4	1.2568-3	1.8779-3	2.4977-3	3.7349-3	4.9700-3	6.2039-3						
M, MOL WT	27.447	27.523	27.565	27.593	27.630	27.655	27.688	27.726	27.752	27.769	27.790	27.804	27.813						
CP, CAL/(G)(K)	0.7751	0.7065	0.6691	0.6438	0.6098	0.5871	0.5569	0.5224	0.4977	0.4818	0.4616	0.4488	0.4398						
GAMMA (S)	1.1512	1.1590	1.1639	1.1675	1.1729	1.1768	1.1826	1.1901	1.1962	1.2004	1.2064	1.2104	1.2134						
SON VEL, M/SEC	943.8	952.4	957.3	960.8	965.7	969.1	973.8	979.5	983.9	986.9	990.9	993.5	995.4						

MOLE FRACTIONS

AR	0.00817	0.00819	0.00820	0.00821	0.00822	0.00823	0.00824	0.00825	0.00826	0.00826	0.00827	0.00827	0.00827						
CO	0.07297	0.07128	0.07030	0.06962	0.06868	0.06804	0.06718	0.06619	0.06548	0.06503	0.06445	0.06408	0.06383						
CO2	0.07640	0.07850	0.07971	0.08055	0.08169	0.08246	0.08350	0.08470	0.08555	0.08610	0.08679	0.08723	0.08754						
H	0.00597	0.00479	0.00418	0.00379	0.00328	0.00296	0.00254	0.00208	0.00177	0.00157	0.00133	0.00117	0.00106						
H2	0.01781	0.01701	0.01656	0.01626	0.01586	0.01559	0.01524	0.01484	0.01457	0.01439	0.01417	0.01404	0.01395						
H2O	0.11694	0.11921	0.12046	0.12131	0.12246	0.12323	0.12426	0.12543	0.12627	0.12681	0.12750	0.12794	0.12825						
NO	0.00384	0.00363	0.00348	0.00335	0.00316	0.00301	0.00278	0.00248	0.00224	0.00207	0.00183	0.00166	0.00154						
N2	0.68206	0.68405	0.68517	0.68593	0.68696	0.68766	0.68859	0.68968	0.69046	0.69096	0.69161	0.69203	0.69233						
O	0.00189	0.00141	0.00117	0.00101	0.00082	0.00070	0.00055	0.00040	0.00031	0.00025	0.00019	0.00015	0.00013						
OH	0.00883	0.00787	0.00728	0.00686	0.00627	0.00585	0.00527	0.00456	0.00403	0.00366	0.00319	0.00287	0.00264						
O2	0.00511	0.00405	0.00348	0.00309	0.00259	0.00226	0.00184	0.00138	0.00108	0.00090	0.00068	0.00055	0.00047						

CASE= 2		O/F= 20.9343	F/A= 0.04777	PERCENT FUEL= 4.5591				PHI= 0.7000							
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000		
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8		
T, DEG K	1955.9	1958.2	1955.3	1960.0	1960.8	1961.4	1962.0	1962.7	1963.2	1963.5	1963.9	1964.1	1964.3		
T, DEG F	3061.0	3065.1	3067.1	3068.3	3069.8	3070.8	3071.9	3073.2	3074.1	3074.6	3075.3	3075.7	3076.0		
RHO, G/CC	9.0204-5	1.8323-4	2.7021-4	3.6017-4	5.4006-4	7.1991-4	1.0795-3	1.7987-3	2.6975-3	3.5962-3	5.3934-3	7.1905-3	8.9875-3		
M, MOL WT	28.955	28.960	28.962	28.963	28.965	28.966	28.967	28.969	28.970	28.971	28.971	28.972	28.972		
CP, CAL/(G)(K)	0.3583	0.3527	0.3501	0.3485	0.3465	0.3453	0.3438	0.3423	0.3412	0.3406	0.3398	0.3393	0.3389		
GAMMA (S)	1.2424	1.2458	1.2474	1.2484	1.2497	1.2505	1.2515	1.2525	1.2532	1.2537	1.2542	1.2545	1.2548		
SON VEL, M/SEC	835.3	836.9	837.6	838.1	838.7	839.1	839.5	840.0	840.3	840.5	840.8	840.9	841.0		

MOLE FRACTIONS

AR	0.00889	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890	0.00890
CO	0.00050	0.00036	0.00030	0.00026	0.00021	0.00019	0.00015	0.00012	0.00010	0.00008	0.00007	0.00006	0.00005
CO2	0.09454	0.09469	0.09476	0.09480	0.09485	0.09488	0.09492	0.09496	0.09498	0.09500	0.09502	0.09503	0.09504
H	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00011	0.00008	0.00006	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001
H2O	0.08953	0.08968	0.08975	0.08980	0.08986	0.08990	0.08995	0.09001	0.09005	0.09007	0.09010	0.09012	0.09014
NO	0.00367	0.00369	0.00371	0.00371	0.00372	0.00373	0.00373	0.00374	0.00375	0.00375	0.00375	0.00376	0.00376
NO2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00002
N2	0.74321	0.74332	0.74337	0.74341	0.74345	0.74347	0.74350	0.74353	0.74355	0.74357	0.74358	0.74359	0.74360
O	0.00016	0.00012	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002
OH	0.00137	0.00116	0.00106	0.00099	0.00090	0.00084	0.00076	0.00067	0.00061	0.00057	0.00051	0.00048	0.00045
O2	0.05801	0.05799	0.05799	0.05799	0.05799	0.05799	0.05799	0.05799	0.05800	0.05800	0.05800	0.05800	0.05800

CASE= 2		O/F= 18.3175	F/A= 0.05459	PERCENT FUEL= 5.1767				PHI= 0.8000							
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000		
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	233.9	440.9	587.8	734.8		
T, DEG K	2109.3	2116.3	2119.8	2121.9	2124.7	2126.4	2128.5	2130.7	2132.2	2133.2	2134.3	2135.1	2135.6		
T, DEG F	3337.0	3349.7	3355.9	3359.8	3364.7	3367.7	3371.6	3375.6	3378.3	3380.0	3382.1	3383.4	3384.3		
RHO, G/CC	8.3515-5	1.6656-4	2.4950-4	3.3237-4	4.9802-4	6.6358-4	9.9454-4	1.6561-3	2.4826-3	3.3090-3	4.9612-3	6.6130-3	8.2646-3		
M, MOL WT	28.905	28.925	28.932	28.937	28.942	28.946	28.950	28.955	28.958	28.960	28.963	28.964	28.965		
CP, CAL/(G)(K)	0.4117	0.3956	0.3878	0.3830	0.3769	0.3732	0.3686	0.3637	0.3605	0.3585	0.3561	0.3546	0.3536		
GAMMA (S)	1.2149	1.2219	1.2255	1.2278	1.2309	1.2328	1.2352	1.2379	1.2396	1.2408	1.2422	1.2430	1.2436		
SON VEL, M/SEC	858.5	862.2	864.0	865.2	866.8	867.7	868.9	870.3	871.2	871.7	872.4	872.8	873.1		

MOLE FRACTIONS

AR	0.00882	0.00883	0.00883	0.00883	0.00883	0.00883	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884	0.00884
CO	0.00237	0.00178	0.00150	0.00132	0.00111	0.00097	0.00081	0.00064	0.00053	0.00046	0.00038	0.00033	0.00030
CO2	0.10533	0.10597	0.10628	0.10617	0.10671	0.10686	0.10704	0.10723	0.10735	0.10743	0.10752	0.10757	0.10761
H	0.00010	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001
H2O	0.00046	0.00034	0.00029	0.00025	0.00021	0.00018	0.00015	0.00012	0.00010	0.00009	0.00007	0.00006	0.00006
H2O	0.10055	0.10091	0.10110	0.10122	0.10137	0.10147	0.10159	0.10173	0.10183	0.10189	0.10197	0.10202	0.10206
NO	0.00443	0.00450	0.00453	0.00455	0.00457	0.00459	0.00461	0.00463	0.00465	0.00466	0.00467	0.00468	0.00468
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
N2	0.73685	0.73720	0.73737	0.73748	0.73761	0.73770	0.73780	0.73791	0.73798	0.73803	0.73809	0.73812	0.73814
O	0.00041	0.00030	0.00025	0.00022	0.00018	0.00016	0.00013	0.00010	0.00009	0.00007	0.00006	0.00005	0.00005
OH	0.00269	0.00234	0.00214	0.00201	0.00184	0.00173	0.00158	0.00140	0.00127	0.00115	0.00108	0.00101	0.00096
O2	0.03800	0.03777	0.03766	0.03759	0.03752	0.03747	0.03742	0.03737	0.03734	0.03732	0.03730	0.03729	0.03728



	CASE= 3	O/F= 10.4671	F/A= 0.09554	PERCENT FUEL= 8.7206				PHI= 1.4000					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2239.3	2244.9	2247.5	2249.1	2251.0	2252.1	2253.4	2254.8	2255.7	2256.2	2256.8	2257.2	2257.5
T, DEG F	3571.1	3581.2	3585.8	3588.6	3592.0	3594.0	3595.5	3596.5	3599.0	3601.5	3602.6	3603.3	3603.7
RHO, G/CC	7.3151-5	1.4600-4	2.1879-4	2.9156-4	4.3704-4	5.8247-4	8.7328-4	1.4547-3	2.1814-3	2.9080-3	4.3610-3	5.8139-3	7.2667-3
M, MOL WT	26.883	26.895	26.900	26.904	26.908	26.910	26.913	26.916	26.918	26.919	26.920	26.921	26.922
CP, CAL/(G)(K)	0.4029	0.3893	0.3832	0.3796	0.3752	0.3726	0.3695	0.3664	0.3645	0.3633	0.3619	0.3611	0.3605
GAMMA (S)	1.2362	1.2429	1.2460	1.2480	1.2503	1.2518	1.2535	1.2553	1.2565	1.2572	1.2580	1.2585	1.2589
SON VEL, M/SEC	925.3	928.7	930.4	931.4	932.6	933.3	934.2	935.1	935.7	936.0	936.4	936.7	936.8

MOLE FRACTIONS

AR	0.00790	0.00790	0.00790	0.00790	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791	0.00791
CO	0.10463	0.10469	0.10472	0.10474	0.10477	0.10478	0.10480	0.10482	0.10483	0.10484	0.10485	0.10485	0.10486
CO2	0.06389	0.06390	0.06390	0.06390	0.06390	0.06390	0.06390	0.06390	0.06390	0.06390	0.06390	0.06390	0.06390
H	0.00190	0.00139	0.00115	0.00100	0.00083	0.00072	0.00059	0.00046	0.00038	0.00033	0.00027	0.00023	0.00021
H2	0.03719	0.03722	0.03723	0.03724	0.03725	0.03726	0.03727	0.03728	0.03728	0.03729	0.03729	0.03730	0.03730
H2O	0.12180	0.12222	0.12242	0.12254	0.12268	0.12277	0.12287	0.12298	0.12305	0.12309	0.12313	0.12316	0.12318
NO	0.00019	0.00014	0.00012	0.00011	0.00009	0.00008	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002
N2	0.66148	0.66180	0.66194	0.66203	0.66214	0.66220	0.66228	0.66236	0.66241	0.66244	0.66249	0.66249	0.66251
O	0.00003	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00094	0.00069	0.00058	0.00051	0.00042	0.00037	0.00030	0.00024	0.00019	0.00017	0.00014	0.00012	0.00011
O2	0.00004	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

	CASE= 3	O/F= 9.1588	F/A= 0.10919	PERCENT FUEL= 9.8437				PHI= 1.6000					
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2093.0	2095.3	2096.3	2097.0	2097.7	2098.2	2098.7	2099.2	2099.6	2099.8	2100.0	2100.2	2100.3
T, DEG F	3307.7	3311.9	3313.7	3314.8	3316.2	3317.0	3317.9	3318.9	3319.5	3319.5	3320.3	3320.6	3320.8
RHO, G/CC	7.5750-5	1.5136-4	2.2695-4	3.0253-4	4.5366-4	6.0478-4	9.0698-4	1.5113-3	2.2667-3	3.0220-3	4.5325-3	6.0430-3	7.5535-3
M, MOL WT	26.020	26.025	26.027	26.028	26.030	26.031	26.032	26.033	26.034	26.034	26.035	26.035	26.036
CP, CAL/(G)(K)	0.3789	0.3734	0.3709	0.3694	0.3676	0.3666	0.3653	0.3640	0.3632	0.3627	0.3622	0.3618	0.3616
GAMMA (S)	1.2577	1.2609	1.2624	1.2633	1.2644	1.2651	1.2658	1.2666	1.2671	1.2674	1.2678	1.2680	1.2682
SON VEL, M/SEC	917.2	918.7	919.5	919.9	920.4	920.8	921.1	921.5	921.8	921.9	922.1	922.2	922.3

MOLE FRACTIONS

AR	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755
CO	0.13744	0.13752	0.13755	0.13757	0.13760	0.13761	0.13763	0.13765	0.13766	0.13767	0.13767	0.13768	0.13768
CO2	0.04663	0.04659	0.04657	0.04656	0.04655	0.04654	0.04653	0.04652	0.04652	0.04651	0.04651	0.04651	0.04651
H	0.00108	0.00077	0.00063	0.00055	0.00045	0.00039	0.00032	0.00025	0.00020	0.00018	0.00015	0.00013	0.00011
H2	0.06576	0.06583	0.06586	0.06588	0.06591	0.06592	0.06594	0.06596	0.06597	0.06597	0.06598	0.06598	0.06598
H2O	0.10886	0.10900	0.10906	0.10910	0.10915	0.10917	0.10921	0.10924	0.10926	0.10927	0.10929	0.10929	0.10930
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001
NO	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
N2	0.63244	0.63256	0.63262	0.63265	0.63269	0.63271	0.63274	0.63277	0.63279	0.63280	0.63281	0.63282	0.63283
OH	0.00021	0.00015	0.00013	0.00011	0.00009	0.00008	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002

CASE= 5 O/F= 20.9343 F/A= 0.04777 PERCENT FUEL= 4.5591 PHI= 0.7000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2310.2	2326.6	2335.1	2340.6	2347.7	2352.3	2358.1	2364.5	2368.9	2371.7	2375.2	2377.4	2378.9
T, DEG F	3698.6	3728.2	3743.5	3753.4	3766.2	3774.4	3785.0	3796.5	3804.4	3809.4	3815.6	3819.6	3822.4
RHO, G/C	7.5930-5	1.5097-4	2.2578-4	3.0046-4	4.4957-4	5.9846-4	8.9586-4	1.4898-3	2.2313-3	2.9721-3	4.4528-3	5.9326-3	7.4118-3
M, MOL WT	28.787	28.823	28.842	28.854	28.869	28.879	28.892	28.906	28.915	28.921	28.929	28.933	28.937
CP, CAL/(G)(K)	0.5051	0.4733	0.4572	0.4467	0.4334	0.4249	0.4142	0.4026	0.3947	0.3898	0.3836	0.3798	0.3771
GAMMA (S)	1.1860	1.1946	1.1994	1.2028	1.2073	1.2103	1.2144	1.2190	1.2223	1.2245	1.2273	1.2290	1.2303
SON VEL, M/SEC	889.6	895.4	898.6	900.7	903.5	905.4	907.8	910.5	912.5	913.7	915.3	916.3	917.0

MOLE FRACTIONS

AR	0.00884	0.00885	0.00886	0.00886	0.00887	0.00887	0.00888	0.00888	0.00888	0.00888	0.00889	0.00889	0.00889
CO	0.00639	0.00511	0.00444	0.00400	0.00344	0.00308	0.00262	0.00212	0.00179	0.00158	0.00132	0.00116	0.00105
CO2	0.08809	0.08949	0.09022	0.09070	0.09131	0.09171	0.09220	0.09275	0.09311	0.09334	0.09363	0.09380	0.09392
H	0.00048	0.00033	0.00026	0.00022	0.00017	0.00014	0.00011	0.00008	0.00006	0.00005	0.00004	0.00003	0.00003
H02	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
H2	0.00111	0.00087	0.00075	0.00067	0.00058	0.00051	0.00044	0.00035	0.00029	0.00026	0.00022	0.00019	0.00017
H20	0.08538	0.08613	0.08653	0.08679	0.08714	0.08736	0.08766	0.08800	0.08824	0.08840	0.08860	0.08873	0.08882
NO	0.00848	0.00874	0.00887	0.00895	0.00907	0.00914	0.00923	0.00934	0.00941	0.00946	0.00952	0.00955	0.00958
NO2	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002	0.00003	0.00003
N2	0.73649	0.73729	0.73770	0.73796	0.73830	0.73852	0.73880	0.73910	0.73931	0.73944	0.73960	0.73970	0.73977
O	0.00176	0.00137	0.00117	0.00104	0.00088	0.00078	0.00066	0.00053	0.00044	0.00039	0.00032	0.00028	0.00026
OH	0.00614	0.00549	0.00512	0.00487	0.00451	0.00427	0.00394	0.00355	0.00326	0.00307	0.00281	0.00264	0.00251
O2	0.05682	0.05633	0.05608	0.05592	0.05572	0.05559	0.05543	0.05527	0.05517	0.05510	0.05503	0.05498	0.05495

CASE= 5 O/F= 18.3175 F/A= 0.05459 PERCENT FUEL= 5.1767 PHI= 0.8000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2401.1	2426.4	2440.0	2449.2	2461.4	2469.6	2480.2	2492.4	2501.0	2506.7	2513.9	2518.5	2521.8
T, DEG F	3862.3	3907.8	3932.4	3948.9	3970.9	3985.5	4004.7	4026.6	4042.2	4052.3	4065.2	4073.6	4079.5
RHO, G/C	7.2641-5	1.4405-4	2.1509-4	2.8591-4	4.2713-4	5.6799-4	8.4900-4	1.4094-3	2.1082-3	2.8058-3	4.1990-3	5.9903-3	8.9804-3
M, MOL WT	28.624	28.680	28.710	28.728	28.757	28.775	28.798	28.825	28.844	28.856	28.872	28.882	28.889
CP, CAL/(G)(K)	0.6180	0.5739	0.5505	0.5348	0.5142	0.5006	0.4828	0.4626	0.4484	0.4392	0.4274	0.4199	0.4145
GAMMA (S)	1.1643	1.1719	1.1765	1.1798	1.1845	1.1878	1.1924	1.1980	1.2024	1.2053	1.2093	1.2120	1.2140
SON VEL, M/SEC	901.1	907.9	911.8	914.5	918.1	920.6	924.0	928.1	931.0	933.0	935.7	937.4	938.7

MOLE FRACTIONS

AR	0.00874	0.00875	0.00876	0.00877	0.00878	0.00878	0.00879	0.00880	0.00880	0.00881	0.00881	0.00881	0.00882
CO	0.01381	0.01170	0.01053	0.00973	0.00865	0.00793	0.00697	0.00587	0.00509	0.00458	0.00392	0.00350	0.00320
CO2	0.09282	0.09514	0.09642	0.09730	0.09847	0.09926	0.10031	0.10151	0.10236	0.10292	0.10363	0.10409	0.10442
H	0.00110	0.00080	0.00065	0.00056	0.00046	0.00039	0.00031	0.00023	0.00018	0.00015	0.00012	0.00010	0.00009
H02	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
H2	0.00240	0.00198	0.00176	0.00161	0.00142	0.00129	0.00112	0.00093	0.00080	0.00072	0.00061	0.00054	0.00050
H20	0.09436	0.09548	0.09608	0.09649	0.09704	0.09741	0.09789	0.09846	0.09887	0.09914	0.09949	0.09972	0.09989
NO	0.00847	0.00877	0.00894	0.00905	0.00919	0.00929	0.00941	0.00956	0.00966	0.00973	0.00981	0.00987	0.00991
NO2	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002	0.00002
N2	0.72754	0.72881	0.72949	0.72995	0.73057	0.73097	0.73151	0.73212	0.73255	0.73283	0.73319	0.73342	0.73358
O	0.00246	0.00196	0.00171	0.00154	0.00133	0.00120	0.00102	0.00084	0.00071	0.00063	0.00053	0.00047	0.00043
OH	0.00815	0.00745	0.00704	0.00675	0.00634	0.00606	0.00566	0.00518	0.00480	0.00455	0.00420	0.00397	0.00379
O2	0.04014	0.03914	0.03860	0.03823	0.03773	0.03741	0.03698	0.03649	0.03614	0.03592	0.03565	0.03547	0.03535

CASE=	6	O/F=	10.4671	F/A=	0.09554	PERCENT FUEL=	8.7206	PHI=	1.4000											
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000							
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8							
T, DEG K	2497.4	2520.1	2531.6	2538.9	2548.1	2553.8	2561.0	2568.5	2573.5	2576.5	2580.2	2582.4	2584.0							
T, DEG F	4035.5	4076.5	4097.1	4110.2	4126.8	4137.2	4150.1	4163.6	4172.6	4178.0	4184.6	4188.6	4191.4							
RHO, G/CC	6.5198-5	1.2344-4	1.9346-4	2.5735-4	3.8490-4	5.1226-4	7.6666-4	1.2747-3	1.9092-3	2.5431-3	3.8103-3	5.0769-3	6.3431-3							
M, MOL WT	26.721	26.768	26.792	26.807	26.825	26.837	26.852	26.867	26.877	26.883	26.891	26.895	26.899							
CP, CAL/(G*IK)	0.5690	0.5172	0.4919	0.4760	0.4564	0.4443	0.4295	0.4144	0.4046	0.3987	0.3916	0.3873	0.3844							
GAMMA (S)	1.1856	1.1976	1.2044	1.2092	1.2155	1.2197	1.2252	1.2313	1.2355	1.2381	1.2414	1.2435	1.2449							
SON VEL, M/SEC	959.8	968.2	972.8	975.8	979.8	982.3	985.7	989.3	991.8	993.3	995.2	996.3	997.2							

**MOLE FRACTIONS**

AR	0.00785	0.00786	0.00787	0.00788	0.00788	0.00788	0.00789	0.00789	0.00790	0.00790	0.00790	0.00790	0.00790								
CO	0.10824	0.10804	0.10794	0.10788	0.10781	0.10777	0.10772	0.10767	0.10764	0.10762	0.10760	0.10759	0.10758								
CO2	0.05926	0.05976	0.06000	0.06015	0.06034	0.06046	0.06060	0.06075	0.06084	0.06090	0.06096	0.06100	0.06103								
H	0.00657	0.00512	0.00438	0.00391	0.00332	0.00294	0.00247	0.00198	0.00165	0.00144	0.00120	0.00105	0.00094								
H2	0.03536	0.03514	0.03504	0.03498	0.03491	0.03487	0.03482	0.03478	0.03475	0.03473	0.03472	0.03471	0.03470								
H2O	0.11848	0.12013	0.12097	0.12151	0.12220	0.12263	0.12318	0.12375	0.12413	0.12436	0.12464	0.12482	0.12493								
NO	0.00133	0.00111	0.00099	0.00090	0.00079	0.00071	0.00061	0.00050	0.00042	0.00037	0.00031	0.00028	0.00025								
N2	0.65693	0.65819	0.65883	0.65924	0.65976	0.66009	0.66050	0.66093	0.66122	0.66140	0.66161	0.66174	0.66183								
O	0.00056	0.00036	0.00027	0.00022	0.00016	0.00013	0.00009	0.00006	0.00004	0.00003	0.00002	0.00002	0.00001								
OH	0.00465	0.00379	0.00352	0.00301	0.00260	0.00233	0.00199	0.00161	0.00135	0.00119	0.00100	0.00087	0.00079								
O2	0.00077	0.00050	0.00038	0.00031	0.00023	0.00018	0.00013	0.00009	0.00006	0.00005	0.00003	0.00002	0.00002								

CASE=	6	O/F=	9.1588	F/A=	0.10919	PERCENT FUEL=	9.8437	PHI=	1.6000											
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000							
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8							
T, DEG K	2384.2	2396.1	2401.8	2405.3	2409.6	2412.3	2415.5	2418.9	2421.0	2422.3	2423.9	2424.8	2425.2							
T, DEG F	3831.8	3853.3	3863.5	3869.8	3877.6	3882.4	3888.3	3894.3	3898.1	3900.5	3903.3	3905.0	3906.2							
RHO, G/CC	6.6295-5	1.3206-4	1.9771-4	2.6330-4	3.9437-4	5.2536-4	7.8718-4	1.3105-3	1.9644-3	2.6180-3	3.9250-3	5.2316-3	6.5381-3							
M, MOL WT	25.940	25.964	25.976	25.984	25.993	25.998	26.005	26.012	26.016	26.019	26.022	26.024	26.026							
CP, CAL/(G*IK)	0.4584	0.4332	0.4214	0.4142	0.4054	0.4001	0.3937	0.3872	0.3830	0.3805	0.3775	0.3757	0.3744							
GAMMA (S)	1.2222	1.2317	1.2366	1.2397	1.2437	1.2462	1.2493	1.2526	1.2548	1.2561	1.2577	1.2587	1.2594							
SON VEL, M/SEC	966.4	972.1	975.0	976.8	979.1	980.5	982.3	984.1	985.3	986.1	987.0	987.5	987.9							

**MOLE FRACTIONS**

AR	0.00753	0.00753	0.00754	0.00754	0.00754	0.00754	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755	0.00755								
CO	0.14031	0.14054	0.14065	0.14072	0.14080	0.14085	0.14092	0.14098	0.14103	0.14105	0.14108	0.14110	0.14112								
CO2	0.04320	0.04315	0.04312	0.04310	0.04308	0.04307	0.04305	0.04304	0.04302	0.04302	0.04301	0.04301	0.04300								
H	0.00514	0.00386	0.00324	0.00235	0.00238	0.00209	0.00173	0.00136	0.00113	0.00098	0.00081	0.00070	0.00063								
H2	0.06148	0.06172	0.06184	0.06191	0.06201	0.06206	0.06214	0.06221	0.06226	0.06229	0.06232	0.06234	0.06236								
H2O	0.10982	0.11059	0.11096	0.11119	0.11147	0.11164	0.11185	0.11207	0.11221	0.11230	0.11240	0.11246	0.11250								
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001								
NO	0.00032	0.00025	0.00021	0.00019	0.00016	0.00014	0.00012	0.00009	0.00008	0.00007	0.00005	0.00005	0.00004								
N2	0.63035	0.63098	0.63129	0.63148	0.63171	0.63185	0.63203	0.63221	0.63232	0.63239	0.63248	0.63253	0.63257								
O	0.00009	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000								
OH	0.00169	0.00129	0.00109	0.00097	0.00081	0.00072	0.00060	0.00047	0.00039	0.00034	0.00028	0.00025	0.00022								
O2	0.00007	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000								

CASE=	2	O/F=	17.2400	F/A=	0.05800	PERCENT FUEL=	5.4825	PHI=	0.8500				
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2173.7	2184.7	2190.2	2193.8	2198.3	2201.1	2204.7	2208.6	2211.2	2212.8	2214.8	2216.1	2216.9
T, DEG F	3453.0	3472.8	3482.7	3489.1	3497.2	3502.3	3508.8	3515.7	3520.4	3523.3	3526.9	3529.2	3530.8
RHO, G/CC	8.0913-5	1.6114-4	2.4120-4	3.2117-4	4.8093-4	6.4055-4	9.5952-4	1.5969-3	2.3929-3	3.1886-3	4.7793-3	6.3694-3	7.9591-3
M, MOL WT	28.864	28.888	28.900	28.908	28.917	28.924	28.931	28.940	28.945	28.949	28.953	28.956	28.957
CP, CAL/(G)(K)	0.4555	0.4317	0.4198	0.4122	0.4027	0.3966	0.3891	0.3810	0.3757	0.3723	0.3682	0.3657	0.3639
GAMMA (S)	1.1987	1.2070	1.2115	1.2145	1.2185	1.2211	1.2246	1.2284	1.2311	1.2328	1.2349	1.2362	1.2372
SON VEL./M/SEC	866.4	871.2	873.7	875.4	877.6	879.0	880.8	882.9	884.3	885.1	886.2	886.9	887.4

MOLE FRACTIONS

AR	0.00878	0.00879	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00881	0.00881	0.00881	0.00881	0.00881
CO	0.00450	0.00350	0.00300	0.00268	0.00227	0.00261	0.00169	0.00136	0.00113	0.00099	0.00082	0.00072	0.00065
CO2	0.10936	0.11045	0.11101	0.11136	0.11180	0.11208	0.11243	0.11280	0.11305	0.11320	0.11339	0.11350	0.11358
H	6.00020	0.00013	0.00010	0.00008	0.00007	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001
H2	0.00084	0.00065	0.00055	0.00049	0.00041	0.00037	0.00031	0.00025	0.00020	0.00018	0.00015	0.00013	0.00012
H2O	0.10564	0.10616	0.10643	0.10661	0.10684	0.10698	0.10717	0.10738	0.10753	0.10762	0.10774	0.10781	0.10787
N	0.00450	0.00458	0.00462	0.00464	0.00468	0.00470	0.00472	0.00475	0.00477	0.00479	0.00480	0.00481	0.00482
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.73329	0.73385	0.73413	0.73432	0.73455	0.73469	0.73487	0.73507	0.73520	0.73528	0.73538	0.73544	0.73549
O	0.00055	0.00041	0.00035	0.00031	0.00026	0.00023	0.00019	0.00015	0.00012	0.00011	0.00009	0.00008	0.00007
OH	0.00339	0.00298	0.00275	0.00260	0.00239	0.00225	0.00206	0.00184	0.00158	0.00157	0.00143	0.00134	0.00127
O2	0.02895	0.02849	0.02826	0.02812	0.02794	0.02783	0.02770	0.02756	0.02747	0.02742	0.02736	0.02732	0.02730

CASE=	2	O/F=	16.2822	F/A=	0.06142	PERCENT FUEL=	5.7863	PHI=	0.9000				
P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2227.7	2243.2	2251.9	2256.7	2263.6	2268.0	2273.8	2280.1	2284.4	2287.2	2290.6	2292.8	2294.3
T, DEG F	3550.1	3578.1	3592.7	3603.3	3614.7	3622.8	3633.1	3644.4	3652.2	3657.2	3663.4	3667.3	3670.0
RHO, G/CC	7.8773-5	1.5664-4	2.3425-4	3.1172-4	4.6640-4	6.2085-4	9.2932-4	1.5453-3	2.3143-3	3.0827-3	4.8182-3	6.1528-3	7.6868-3
M, MOL WT	29.799	28.932	28.850	28.861	28.876	28.886	28.898	28.912	28.921	28.927	28.935	28.939	28.943
CP, CAL/(G)(K)	0.5102	0.4795	0.4635	0.4530	0.4395	0.4307	0.4194	0.4070	0.3984	0.3930	0.3863	0.3820	0.3791
GAMMA (S)	1.1834	1.1916	1.1964	1.1997	1.2043	1.2074	1.2117	1.2166	1.2202	1.2226	1.2257	1.2276	1.2291
SON VEL./M/SEC	872.4	878.0	881.1	883.1	885.9	887.8	890.3	893.2	895.2	896.5	898.2	899.3	900.0

MOLE FRACTIONS

AR	0.00873	0.00874	0.00875	0.00875	0.00876	0.00876	0.00876	0.00877	0.00877	0.00877	0.00877	0.00877	0.00878
CO	0.00787	0.00637	0.00559	0.00537	0.00439	0.00395	0.00339	0.00277	0.00235	0.00208	0.00175	0.00154	0.00140
CO2	0.11202	0.11365	0.11451	0.11508	0.11581	0.11627	0.11691	0.11758	0.11805	0.11830	0.11830	0.11893	0.11908
H	0.00035	0.00024	0.00019	0.00016	0.00013	0.00011	0.00008	0.00006	0.00005	0.00004	0.00003	0.00002	0.00002
H2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001
H2	0.06146	0.06116	0.06101	0.00091	0.00078	0.00070	0.00060	0.00048	0.00041	0.00036	0.00030	0.00027	0.00024
H2O	0.11049	0.11111	0.11148	0.11172	0.11204	0.11225	0.11252	0.11283	0.11304	0.11318	0.11335	0.11347	0.11355
N	0.00430	0.00437	0.00441	0.00443	0.00446	0.00448	0.00450	0.00452	0.00454	0.00455	0.00457	0.00458	0.00458
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.72935	0.73017	0.73060	0.73088	0.73124	0.73148	0.73178	0.73211	0.73234	0.73249	0.73267	0.73278	0.73286
O	0.00065	0.00050	0.00042	0.00038	0.00032	0.00028	0.00024	0.00019	0.00016	0.00014	0.00011	0.00010	0.00009
OH	0.00398	0.00353	0.00328	0.00311	0.00288	0.00272	0.00251	0.00225	0.00207	0.00194	0.00177	0.00166	0.00158
O2	0.02090	0.02015	0.01976	0.01951	0.01918	0.01897	0.01871	0.01842	0.01822	0.01810	0.01795	0.01786	0.01780



CASE= 5 O/F= 17.2400 F/A= 0.05800 PERCENT FUEL= 5.4825 PHI= 0.8500

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2436.0	2465.0	2481.1	2492.0	2506.7	2516.7	2530.0	2545.4	2556.6	2564.1	2573.7	2580.0	2584.6
T, DEG F	3925.0	3977.4	4006.3	4026.0	4052.4	4070.3	4094.2	4122.0	4142.2	4155.6	4173.0	4184.3	4192.6
RHO, G/CC	7.1347-5	1.4133-4	2.1088-4	2.8017-4	4.1826-4	5.5590-4	8.3032-4	1.3771-3	2.0583-3	2.7380-3	4.0946-3	5.4488-3	6.8012-3
M, MOL WT	28.523	28.587	28.622	28.646	28.678	28.700	28.729	28.763	28.788	28.804	28.825	28.839	28.849
CP, CAL/(G)(K)	0.6756	0.6279	0.6021	0.5848	0.5616	0.5461	0.5255	0.5017	0.4845	0.4731	0.4583	0.4486	0.4416
GAMMA (S)	1.1566	1.1634	1.1676	1.1706	1.1749	1.1779	1.1823	1.1879	1.1923	1.1953	1.1996	1.2025	1.2047
SON VEL, M/SEC	906.2	913.3	917.3	920.2	924.0	926.7	930.4	934.9	938.3	940.6	943.7	945.8	947.3

MOLE FRACTIONS

AR	0.00868	0.00870	0.00871	0.00871	0.00872	0.00873	0.00874	0.00875	0.00876	0.00876	0.00877	0.00877	0.00878
CO	0.01875	0.01631	0.01492	0.01296	0.01263	0.01173	0.01050	0.00905	0.00798	0.00727	0.00634	0.00573	0.00529
CO2	0.09377	0.09645	0.09798	0.09904	0.10049	0.10149	0.10283	0.10441	0.10558	0.10635	0.10737	0.10803	0.10851
H	0.00152	0.00113	0.00094	0.00082	0.00068	0.00059	0.00048	0.00036	0.00029	0.00025	0.00020	0.00016	0.00014
H02	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
H2	0.00331	0.00280	0.00252	0.00233	0.00208	0.00191	0.00169	0.00143	0.00125	0.00113	0.00098	0.00088	0.00081
H2O	0.09847	0.09977	0.10048	0.10097	0.10162	0.10207	0.10266	0.10335	0.10386	0.10420	0.10464	0.10494	0.10515
NO	0.00817	0.00845	0.00861	0.00871	0.00885	0.00894	0.00906	0.00919	0.00928	0.00934	0.00942	0.00947	0.00951
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00002	0.00002
N2	0.72274	0.72422	0.72564	0.72560	0.72636	0.72687	0.72755	0.72835	0.72893	0.72931	0.72981	0.73014	0.73037
O	0.00268	0.00216	0.00189	0.00171	0.00149	0.00134	0.00116	0.00095	0.00081	0.00073	0.00062	0.00055	0.00050
OH	0.00890	0.00821	0.00779	0.00749	0.00707	0.00678	0.00637	0.00586	0.00546	0.00519	0.00482	0.00456	0.00437
O2	0.03301	0.03179	0.03110	0.03063	0.02999	0.02955	0.02896	0.02827	0.02777	0.02744	0.02702	0.02674	0.02654

CASE= 5 O/F= 16.2822 F/A= 0.06142 PERCENT FUEL= 5.7863 PHI= 0.9000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2464.5	2496.8	2514.8	2527.3	2544.2	2555.7	2571.4	2589.9	2603.7	2613.0	2625.3	2633.4	2639.4
T, DEG F	3976.4	4034.5	4067.0	4089.4	4119.8	4140.6	4168.8	4202.2	4227.0	4243.6	4265.8	4280.4	4291.3
RHO, G/CC	7.0240-5	1.3901-4	2.0730-4	2.7531-4	4.1075-4	5.4567-4	8.1449-4	1.3497-3	2.0159-3	2.6802-3	4.0053-3	5.3271-3	6.6468-3
M, MOL WT	28.409	28.480	28.519	28.546	28.583	28.609	28.643	28.684	28.714	28.734	28.761	28.778	28.792
CP, CAL/(G)(K)	0.7282	0.6784	0.6513	0.6330	0.6085	0.5919	0.5697	0.5437	0.5244	0.5116	0.4945	0.4832	0.4749
GAMMA (S)	1.1509	1.1570	1.1607	1.1633	1.1700	1.1739	1.1790	1.1831	1.1860	1.1901	1.1930	1.1952	1.1952
SON VEL, M/SEC	911.1	918.3	922.5	925.4	929.4	932.2	936.1	940.8	944.4	946.9	950.4	952.7	954.5

MOLE FRACTIONS

AR	0.00861	0.00864	0.00865	0.00866	0.00867	0.00868	0.00869	0.00870	0.00871	0.00871	0.00872	0.00873	0.00873
CO	0.02443	0.02177	0.02022	0.01913	0.01761	0.01655	0.01509	0.01332	0.01198	0.01108	0.00986	0.00904	0.00843
CO2	0.09383	0.09678	0.09850	0.09971	0.10138	0.10254	0.10414	0.10608	0.10754	0.10854	0.10987	0.11076	0.11142
H	0.00201	0.00152	0.00129	0.00114	0.00095	0.00083	0.00069	0.00053	0.00044	0.00037	0.00030	0.00026	0.00023
H02	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00442	0.00382	0.00348	0.00326	0.00295	0.00274	0.00246	0.00213	0.00189	0.00173	0.00152	0.00139	0.00129
H2O	0.10233	0.10381	0.10463	0.10519	0.10595	0.10647	0.10716	0.10799	0.10860	0.10910	0.10956	0.10992	0.11019
NO	0.00770	0.00795	0.00808	0.00816	0.00826	0.00833	0.00842	0.00851	0.00857	0.00860	0.00865	0.00867	0.00869
NO2	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.71775	0.71942	0.72036	0.72101	0.72190	0.72251	0.72333	0.72432	0.72505	0.72555	0.72620	0.72664	0.72697
O	0.00279	0.00225	0.00198	0.00180	0.00157	0.00142	0.00123	0.00101	0.00087	0.00078	0.00066	0.00059	0.00053
OH	0.00944	0.00874	0.00832	0.00802	0.00759	0.00729	0.00687	0.00634	0.00593	0.00555	0.00526	0.00499	0.00479
O2	0.02667	0.02529	0.02449	0.02394	0.02317	0.02264	0.02191	0.02105	0.02040	0.01996	0.01937	0.01899	0.01870

CASE= 6 O/F= 8.1411 F/A= 0.12283 PERCENT FUEL= 10.9396 PHI= 1.8000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2252.6	2258.9	2261.8	2263.6	2265.7	2267.1	2268.6	2270.3	2271.3	2271.9	2272.7	2273.1	2273.4
T, DEG F	3595.0	3606.3	3611.5	3614.8	3618.6	3621.0	3623.9	3626.8	3628.6	3629.7	3631.1	3631.9	3632.4
RHO, G/CC	6.8102-5	1.3590-4	2.0363-4	2.7133-4	4.0668-4	5.4198-4	8.1252-4	1.3534-3	2.0294-3	2.7052-3	4.0568-3	5.4082-3	6.7595-3
M, MOL WT	25.176	25.189	25.195	25.193	25.203	25.206	25.209	25.213	25.215	25.216	25.218	25.219	25.219
CP, CAL/(G)(K)	0.4168	0.4034	0.3972	0.3934	0.3889	0.3861	0.3828	0.3795	0.3774	0.3761	0.3746	0.3736	0.3730
GAMMA (S)	1.2465	1.2529	1.2561	1.2581	1.2605	1.2620	1.2638	1.2657	1.2669	1.2677	1.2686	1.2691	1.2695
SON VEL./M/SEC	963.0	966.5	968.3	969.3	970.6	971.4	972.4	973.4	974.1	974.5	975.0	975.2	975.4

MOLE FRACTIONS

AR	0.00722	0.00722	0.00722	0.00722	0.00722	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723	0.00723
CO	0.16625	0.16643	0.16651	0.16656	0.16663	0.16666	0.16671	0.16676	0.16678	0.16680	0.16682	0.16684	0.16684
CO2	0.03166	0.03158	0.03154	0.03152	0.03150	0.03148	0.03146	0.03144	0.03143	0.03142	0.03141	0.03141	0.03140
H	0.00321	0.00235	0.00195	0.00171	0.00141	0.00123	0.00101	0.00079	0.00065	0.00057	0.00046	0.00040	0.00036
H2	0.09196	0.09225	0.09238	0.09246	0.09250	0.09262	0.09270	0.09277	0.09282	0.09285	0.09288	0.09289	0.09290
H2O	0.09464	0.09494	0.09508	0.09517	0.09527	0.09534	0.09541	0.09549	0.09554	0.09557	0.09561	0.09563	0.09564
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002
NO	0.00007	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.60448	0.60480	0.60494	0.60503	0.60514	0.60521	0.60529	0.60537	0.60543	0.60546	0.60550	0.60552	0.60553
O	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00051	0.00038	0.00031	0.00028	0.00023	0.00020	0.00016	0.00013	0.00011	0.00009	0.00008	0.00007	0.00006
O2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE= 6 O/F= 7.3270 F/A= 0.13648 PERCENT FUEL= 12.0041 PHI= 2.0000

P, ATM	0.5000	1.0000	1.5000	2.0000	3.0000	4.0000	6.0000	10.000	15.000	20.000	30.000	40.000	50.000
P, PSIA	7.3	14.7	22.0	29.4	44.1	58.8	88.2	147.0	220.4	293.9	440.9	587.8	734.8
T, DEG K	2118.8	2121.9	2123.4	2124.3	2125.3	2126.0	2126.7	2127.5	2128.0	2128.3	2128.7	2128.9	2129.0
T, DEG F	3354.1	3359.8	3362.4	3364.0	3365.9	3367.0	3368.4	3369.8	3370.7	3371.2	3371.9	3372.3	3372.5
RHO, G/CC	7.0333-5	1.4049-4	2.1062-4	2.8073-4	4.2092-4	5.6109-4	8.4138-4	1.4019-3	2.1024-3	2.8029-3	4.2038-3	5.6046-3	7.0054-3
M, MOL WT	24.456	24.462	24.465	24.467	24.469	24.470	24.472	24.474	24.475	24.475	24.476	24.477	24.477
CP, CAL/(G)(K)	0.3975	0.3901	0.3867	0.3823	0.3808	0.3791	0.3773	0.3762	0.3755	0.3747	0.3742	0.3739	0.3739
GAMMA (S)	1.2642	1.2684	1.2704	1.2716	1.2730	1.2739	1.2750	1.2761	1.2768	1.2772	1.2777	1.2780	1.2782
SON VEL./M/SEC	954.3	956.5	957.5	958.1	958.8	959.3	959.8	960.4	960.7	960.9	961.2	961.4	961.5

MOLE FRACTIONS

AR	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693	0.00693
CO	0.18742	0.18752	0.18756	0.18759	0.18762	0.18764	0.18767	0.18771	0.18771	0.18771	0.18773	0.18773	0.18774
CO2	0.02360	0.02355	0.02353	0.02352	0.02351	0.02350	0.02349	0.02348	0.02347	0.02347	0.02346	0.02346	0.02346
H	0.00172	0.00124	0.00103	0.00089	0.00075	0.00064	0.00052	0.00041	0.00033	0.00029	0.00024	0.00021	0.00018
H2	0.12307	0.12327	0.12336	0.12342	0.12348	0.12352	0.12357	0.12361	0.12364	0.12366	0.12367	0.12368	0.12368
H2O	0.07696	0.07707	0.07712	0.07715	0.07719	0.07721	0.07724	0.07726	0.07728	0.07729	0.07730	0.07731	0.07731
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001	0.00002	0.00002	0.00003
NO	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.58015	0.58031	0.58038	0.58042	0.58047	0.58050	0.58054	0.58057	0.58060	0.58061	0.58063	0.58064	0.58065
OH	0.00014	0.00010	0.00008	0.00007	0.00006	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00002	0.00001

AR	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.01285800	0.00	G	0.000	0	0.000000
C	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.00045600	0.00	G	0.000	0	0.000000
N	2.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.75525296	0.00	G	0.000	0	0.000000
O	2.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.23143297	0.00	G	0.000	0	0.000000

CASE=	0	O/F=	0.0000	F/A=	0.00000	PERCENT FUEL=	0.0000	PHI=	0.0000											
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0							
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3							
RHO, G/CC	6.2028-5	6.4658-5	6.7398-5	7.0280-5	7.3338-5	7.6615-5	8.0154-5	8.4006-5	8.8226-5	9.2881-5	9.8046-5	1.0382-4	1.1031-4							
M, MOL WT	28.503	28.650	28.758	28.835	28.886	28.919	28.940	28.952	28.958	28.962	28.963	28.964	28.964							
CP, CAL/(G*IN)	0.5935	0.5257	0.4696	0.4249	0.3906	0.3648	0.3459	0.3321	0.3220	0.3143	0.3082	0.3030	0.2984							
GAMMA (S)	1.1796	1.1905	1.2031	1.2165	1.2301	1.2430	1.2545	1.2644	1.2729	1.2802	1.2868	1.2928	1.2987							
SON VEL, M/SEC	981.6	965.8	951.0	936.5	921.8	906.6	890.4	873.2	855.0	835.7	815.4	794.3	772.3							

MOLE FRACTIONS

AR	0.00917	0.00922	0.00926	0.00928	0.00930	0.00931	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00010	0.00007	0.00005	0.00003	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00020	0.00022	0.00025	0.00027	0.00028	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03404	0.03028	0.02649	0.02277	0.01923	0.01594	0.01295	0.01029	0.00798	0.00601	0.00438	0.00308	0.00207							
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.75142	0.75728	0.76269	0.76600	0.76916	0.77170	0.77375	0.77540	0.77673	0.77781	0.77867	0.77934	0.77985							
O	0.03178	0.02162	0.01418	0.00894	0.00541	0.00312	0.00171	0.00088	0.00043	0.00019	0.00008	0.00003	0.00001							
O2	0.17328	0.18129	0.18768	0.19270	0.19660	0.19962	0.20197	0.20380	0.20523	0.20636	0.20724	0.20792	0.20844							

CASE=	0	O/F=	0.0000	F/A=	0.00000	PERCENT FUEL=	0.0000	PHI=	0.0000											
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000							
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3							
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0							
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3							
RHO, G/CC	1.1766-4	1.2606-4	1.3576-4	1.4707-4	1.6045-4	1.7649-4	1.9610-4	2.2061-4	2.5213-4	2.9415-4	3.5298-4	4.4122-4	5.8830-4							
M, MOL WT	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964							
CP, CAL/(G*IN)	0.2940	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402							
GAMMA (S)	1.3044	1.3102	1.3161	1.3223	1.3287	1.3357	1.3440	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999							
SON VEL, M/SEC	749.4	725.6	700.8	674.9	647.7	619.2	589.3	557.5	523.6	486.8	446.1	400.3	347.2							

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO2	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000							
N2	0.78023	0.78050	0.78068	0.78078	0.78084	0.78087	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089							
O2	0.20882	0.20909	0.20927	0.20938	0.20944	0.20947	0.20948	0.20948	0.20949	0.20949	0.20949	0.20949	0.20949							



CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901	PHI= 0.1465													
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0					
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3					
RHO, G/CC	2.3534-4	2.5215-4	2.7155-4	2.9418-4	3.2092-4	3.5301-4	3.9223-4	4.4126-4	5.0430-4	5.8835-4	7.0602-4	8.8253-4	1.1767-3					
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967
CP, CAL/(G)(K)	0.2995	0.2950	0.2907	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2422					
GAMMA (S)	1.2972	1.3030	1.3089	1.3151	1.3215	1.3285	1.3369	1.3466	1.3574	1.3688	1.3799	1.3893	1.3952					
SON VEL, M/SEC	747.3	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	346.6					

MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962
NO	0.00126	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
O4	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17642	0.17667	0.17683	0.17693	0.17699	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901	PHI= 0.1465													
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0					
T, DEG F	4560.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3					
RHO, G/CC	1.8627-4	1.9406-4	2.0221-4	2.1082-4	2.1998-4	2.2981-4	2.4043-4	2.5209-4	2.6467-4	2.7864-4	2.9415-4	3.1147-4	3.3094-4					
M, MOL WT	28.531	28.662	28.761	28.832	28.881	28.914	28.936	28.949	28.957	28.962	28.964	28.966	28.966					
CP, CAL/(G)(K)	0.5735	0.5173	0.4689	0.4290	0.3974	0.3729	0.3544	0.3405	0.3299	0.3216	0.3149	0.3092	0.3041					
GAMMA (S)	1.1807	1.1901	1.2010	1.2129	1.2251	1.2367	1.2474	1.2569	1.2653	1.2727	1.2794	1.2856	1.2915					
SON VEL, M/SEC	981.5	965.4	950.1	935.1	920.0	904.4	888.0	870.7	852.4	833.2	813.0	792.0	770.1					

MOLE FRACTIONS

AR	0.00909	0.00913	0.00917	0.00919	0.00920	0.00921	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00493	0.00345	0.00228	0.00142	0.00084	0.00047	0.00024	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.01564	0.01721	0.01845	0.01936	0.01998	0.02038	0.02062	0.02075	0.02082	0.02086	0.02087	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H	0.00161	0.00095	0.00054	0.00029	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00059	0.00043	0.00030	0.00020	0.00013	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01287	0.01434	0.01560	0.01644	0.01747	0.01812	0.01861	0.01896	0.01921	0.01938	0.01949	0.01955	0.01959					
NO	0.03162	0.02793	0.02432	0.02085	0.01758	0.01456	0.01183	0.00940	0.00729	0.00549	0.00401	0.00281	0.00189					
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001					
N2	0.74578	0.75113	0.75556	0.75919	0.76214	0.76453	0.76647	0.76804	0.76932	0.77034	0.77115	0.77179	0.77227					
O	0.01711	0.01156	0.00755	0.00475	0.00287	0.00165	0.00091	0.00047	0.00023	0.00010	0.00004	0.00002	0.00000					
O4	0.01012	0.00832	0.00662	0.00509	0.00378	0.00272	0.00188	0.00124	0.00079	0.00047	0.00027	0.00014	0.00007					
O2	0.15061	0.15550	0.15959	0.16300	0.16584	0.16819	0.17014	0.17174	0.17304	0.17409	0.17492	0.17557	0.17606					

## ADD H2O(L)

CASE=	0	0/F=	50.0000	F/A=	0.02000	PERCENT FUEL=				1.9608	PHI=				0.2931	
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0	0.0	0.0
RHO, G/C	4.7072-4	5.0434-4	5.4314-4	5.8840-4	6.4190-4	7.0609-4	7.8454-4	8.8261-4	1.0087-3	1.1768-3	1.4122-3	1.7652-3	2.4064-3	2.4064-3	2.4064-3	2.4064-3
M, MOL WT	28.969	28.969	28.970	28.970	28.970	28.970	28.969	28.969	28.969	28.969	28.970	28.970	28.970	28.970	28.970	28.970
CP, CAL/(G)(K)	0.3045	0.3000	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2419	0.2364	0.2309	0.2254
GAMMA (S)	1.2909	1.2965	1.3023	1.3083	1.3147	1.3218	1.3302	1.3399	1.3508	1.3623	1.3737	1.3837	1.3928	1.4019	1.4109	1.4199
SON VEL, M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	353.1	307.6	262.1	216.6

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.03885	0.03886	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572
O	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14488	0.14503	0.14512	0.14517	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

CASE=	0	0/F=	50.0000	F/A=	0.02000	PERCENT FUEL=				1.9608	PHI=				0.2931	
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	1400.0	1300.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	2060.3	1880.3
RHO, G/C	3.7286-4	3.8835-4	4.0459-4	4.2176-4	4.4005-4	4.5968-4	4.8091-4	5.0404-4	5.2938-4	5.5733-4	5.8835-4	6.2299-4	6.6154-4	7.0404-4	7.5044-4	8.0104-4
M, MOL WT	28.556	28.680	28.773	28.840	28.887	28.919	28.939	28.952	28.960	28.964	28.967	28.968	28.969	28.969	28.969	28.969
CP, CAL/(G)(K)	0.5688	0.5148	0.4682	0.4298	0.3993	0.3758	0.3581	0.3447	0.3344	0.3264	0.3198	0.3142	0.3091	0.3044	0.3000	0.2964
GAMMA (S)	1.1799	1.1891	1.1998	1.2113	1.2229	1.2339	1.2440	1.2528	1.2607	1.2676	1.2733	1.2798	1.2854	1.2911	1.2969	1.3028
SON VEL, M/SEC	980.8	964.7	949.4	934.3	919.1	903.3	886.7	869.2	850.8	831.5	811.3	790.2	768.3	746.4	724.5	702.6

## MOLE FRACTIONS

AR	0.00901	0.00905	0.00908	0.00910	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00795	0.00549	0.00359	0.00222	0.00130	0.00072	0.00037	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.03252	0.03516	0.03719	0.03866	0.03964	0.04027	0.04065	0.04086	0.04097	0.04102	0.04105	0.04106	0.04106	0.04106	0.04106	0.04106
H	0.00154	0.00090	0.00050	0.00026	0.00013	0.00006	0.00003	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2O	0.00108	0.00076	0.00051	0.00033	0.00020	0.00012	0.00007	0.00003	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.03023	0.00326	0.00393	0.00356	0.00330	0.003709	0.003768	0.003810	0.003839	0.003858	0.003871	0.003878	0.003883	0.003885	0.003886	0.003887
NO	0.02870	0.02527	0.02195	0.01879	0.01583	0.01311	0.01065	0.00846	0.00656	0.00495	0.00361	0.00254	0.00170	0.00100	0.00050	0.00020
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.74042	0.74542	0.74954	0.75290	0.75561	0.75780	0.75958	0.76101	0.76217	0.76310	0.76383	0.76441	0.76485	0.76519	0.76546	0.76567
O	0.01102	0.00742	0.00484	0.00304	0.00183	0.00106	0.00058	0.00030	0.00014	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
O2	0.01245	0.01000	0.00781	0.00593	0.00436	0.00311	0.00213	0.00141	0.00089	0.00053	0.00030	0.00016	0.00008	0.00004	0.00002	0.00001
O2	0.12503	0.12823	0.13103	0.13348	0.13563	0.13751	0.13912	0.14048	0.14162	0.14255	0.14330	0.14388	0.14433	0.14468	0.14494	0.14511

ADD H2O(L)

	CASE= 0	O/F= 33.3333	F/A= 0.03000	PERCENT FUEL= 2.9126				PHI= 0.4396					
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	9.4152-4	1.0088-3	1.0864-3	1.1769-3	1.2839-3	1.4123-3	1.5692-3	1.76F4-3	2.0176-3	2.3538-3	2.8246-3	3.5307-3	4.9528-3
M, MOL WT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.481
CP, CAL/(G)(K)	0.3093	0.3048	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.4400
GAMMA (S)	1.2851	1.2905	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.2324
SON VEL, M/SEC	743.8	720.0	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	317.6

MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.04950
H2O	0.05772	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.00824
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11351	0.11371	0.11364	0.11392	0.11397	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

	CASE= 0	O/F= 33.3333	F/A= 0.03000	PERCENT FUEL= 2.9126				PHI= 0.4396					
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3
RHO, G/CC	7.4669-4	7.7743-4	8.0973-4	8.4392-4	8.8039-4	9.1958-4	9.6200-4	1.0082-3	1.0589-3	1.1148-3	1.1768-3	1.2461-3	1.3240-3
M, MOL WT	28.593	28.707	28.792	28.854	28.897	28.925	28.944	28.956	28.963	28.967	28.970	28.971	28.972
CP, CAL/(G)(K)	0.5568	0.5062	0.4625	0.4266	0.3982	0.3764	0.3599	0.3475	0.3380	0.3304	0.3242	0.3188	0.3139
GAMMA (S)	1.1807	1.1898	1.2002	1.2113	1.2223	1.2325	1.2417	1.2499	1.2570	1.2633	1.2691	1.2745	1.2798
SON VEL, M/SEC	980.5	964.6	949.3	934.1	918.7	902.7	885.9	868.1	849.5	830.0	809.7	788.6	766.6

MOLE FRACTIONS

AR	0.00894	0.00897	0.00900	0.00902	0.00903	0.00904	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.00977	0.00668	0.00433	0.00266	0.00155	0.00086	0.00044	0.00022	0.00010	0.00004	0.00002	0.00001	0.00000
CO2	0.05029	0.05362	0.05615	0.05794	0.05915	0.05990	0.06035	0.06061	0.06074	0.06081	0.06084	0.06085	0.06085
H	0.00123	0.00071	0.00039	0.00021	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00138	0.00096	0.00064	0.00041	0.00025	0.00014	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000
H2O	0.04871	0.05091	0.05269	0.05409	0.05516	0.05597	0.05656	0.05698	0.05727	0.05746	0.05758	0.05766	0.05770
NO	0.02546	0.02234	0.01936	0.01655	0.01394	0.01154	0.00937	0.00745	0.00578	0.00436	0.00318	0.00224	0.00150
NO2	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001
N2	0.73568	0.74023	0.74395	0.74697	0.74944	0.75135	0.75292	0.75419	0.75521	0.75603	0.75669	0.75719	0.75758
O	0.00694	0.00466	0.00303	0.00190	0.00115	0.00066	0.00036	0.00019	0.00009	0.00004	0.00002	0.00001	0.00000
OH	0.01253	0.00995	0.00770	0.00581	0.00425	0.00302	0.00207	0.00136	0.00086	0.00052	0.00029	0.00015	0.00008
O2	0.09902	0.10092	0.10272	0.10441	0.10600	0.10745	0.10875	0.10989	0.11086	0.11166	0.11232	0.11283	0.11322

ADD H2O(L)

	CASE= 0	O/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/C	2.3540-3	2.5222-3	2.7162-3	2.9425-3	3.2100-3	3.5310-3	3.9234-3	4.4138-3	5.0443-3	5.8850-3	7.0620-3	8.8276-3	1.2698-2
M, MOL WT	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	31.257
CP, CAL/(G)(K)	0.3139	0.3094	0.3049	0.3002	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.3418
GAMMA (S)	1.2797	1.2848	1.2902	1.2961	1.3024	1.3095	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.2595
SON VEL, M/SEC	742.2	718.4	693.8	668.1	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	317.0

MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.00321
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75071	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08297	0.08314	0.08325	0.08332	0.08336	0.08338	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

	CASE= 0	O/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/C	1.8711-3	1.9468-3	2.0267-3	2.1115-3	2.2022-3	2.2998-3	2.4056-3	2.5210-3	2.6476-3	2.7873-3	2.9423-3	3.1155-3	3.3103-3
M, MOL WT	28.660	28.755	28.826	28.877	28.913	28.936	28.952	28.961	28.967	28.971	28.972	28.974	28.974
CP, CAL/(G)(K)	0.5282	0.4843	0.4467	0.4160	0.3918	0.3733	0.3593	0.3486	0.3404	0.3337	0.3280	0.3230	0.3183
GAMMA (S)	1.1951	1.1941	1.2040	1.2143	1.2241	1.2331	1.2411	1.2481	1.2543	1.2598	1.2649	1.2699	1.2747
SON VEL, M/SEC	981.1	965.5	950.2	934.9	919.1	902.7	885.5	867.4	848.5	828.8	808.3	787.1	765.0

MOLE FRACTIONS

AR	0.00887	0.00890	0.00892	0.00894	0.00895	0.00896	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897
CO	0.00995	0.00672	0.00432	0.00264	0.00153	0.00084	0.00044	0.00021	0.00010	0.00004	0.00001	0.00000	0.00000
CO2	0.06945	0.07295	0.07554	0.07736	0.07857	0.07933	0.07977	0.08002	0.08016	0.08022	0.08025	0.08027	0.08027
H	0.00079	0.00046	0.00025	0.00013	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00142	0.00097	0.00064	0.00041	0.00025	0.00014	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000
H2O	0.06813	0.07016	0.07178	0.07304	0.07400	0.07471	0.07523	0.07559	0.07585	0.07601	0.07612	0.07618	0.07622
NO	0.02178	0.01904	0.01646	0.01405	0.01183	0.00979	0.00796	0.00633	0.00491	0.00371	0.00271	0.00190	0.00128
NO2	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001
N2	0.73205	0.73590	0.73903	0.74156	0.74359	0.74522	0.74654	0.74760	0.74846	0.74916	0.74971	0.75014	0.75047
O	0.00376	0.00252	0.00163	0.00102	0.00062	0.00036	0.00020	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000
OH	0.01092	0.00859	0.00660	0.00495	0.00361	0.00256	0.00175	0.00115	0.00073	0.00044	0.00025	0.00013	0.00006
O2	0.07281	0.07374	0.07476	0.07585	0.07695	0.07803	0.07904	0.07995	0.08074	0.08141	0.08196	0.08239	0.08272

## ADD H2O(L)

	CASE= 0	O/F= 20.0000	F/A= 0.05000	PERCENT FUEL= 4.7619				PHI= 0.7327					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	4.7084-3	5.0447-3	5.4328-3	5.8855-3	6.4206-3	7.0626-3	7.8474-3	8.8283-3	1.0090-2	1.1771-2	1.4125-2	1.7657-2	2.5952-2
M, MOL HT	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	31.943
CP, CAL/(G)(K)	0.3183	0.3139	0.3094	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2547	0.3154
GAMMA (S)	1.2747	1.2796	1.2848	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.3684	1.2623
SON VEL,M/SEC	740.7	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	396.3	314.0

## MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00998	0.00888	0.00888	0.00898	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.09284
H2O	0.09440	0.09441	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.00157
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74370	0.74383	0.74392	0.74397	0.74400	0.74402	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05301	0.05315	0.05324	0.05330	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

	CASE= 0	O/F= 20.0000	F/A= 0.05000	PERCENT FUEL= 4.7619				PHI= 0.7327					
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	3.7453-3	3.8961-3	4.0554-3	4.2246-3	4.4056-3	4.6006-3	4.8121-3	5.0427-3	5.2958-3	5.5751-3	5.8852-3	6.2316-3	6.6212-3
M, MOL HT	28.684	28.773	28.840	28.888	28.921	28.943	28.957	28.965	28.970	28.973	28.975	28.976	28.977
CP, CAL/(G)(K)	0.5202	0.4788	0.4430	0.4138	0.3909	0.3735	0.3604	0.3506	0.3430	0.3369	0.3317	0.3270	0.3226
GAMMA (S)	1.1860	1.1949	1.2046	1.2144	1.2238	1.2323	1.2397	1.2460	1.2515	1.2565	1.2611	1.2656	1.2701
SON VEL,M/SEC	981.1	965.5	950.2	934.8	918.9	902.3	884.9	866.7	847.6	827.7	807.1	785.7	763.6

## MOLE FRACTIONS

AR	0.00879	0.00882	0.00884	0.00886	0.00887	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.01100	0.00743	0.00477	0.00292	0.00169	0.00093	0.00048	0.00023	0.00010	0.00004	0.00002	0.00001	0.00000
CO2	0.08731	0.09120	0.09408	0.09610	0.09744	0.09828	0.09877	0.09905	0.09920	0.09927	0.09930	0.09931	0.09932
H	0.00059	0.00034	0.00019	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00160	0.00109	0.00072	0.00045	0.00027	0.00016	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000
H2O	0.08690	0.08884	0.09037	0.09154	0.09241	0.09306	0.09352	0.09385	0.09407	0.09421	0.09430	0.09436	0.09439
NO	0.01746	0.01518	0.01307	0.01114	0.00936	0.00775	0.00630	0.00502	0.00390	0.00294	0.00215	0.00151	0.00102
NO2	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001
N2	0.72775	0.73120	0.73397	0.73616	0.73789	0.73926	0.74035	0.74121	0.74191	0.74246	0.74290	0.74325	0.74351
O	0.00214	0.00142	0.00092	0.00058	0.00035	0.00020	0.00011	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000
OH	0.00930	0.00727	0.00556	0.00416	0.00303	0.00214	0.00146	0.00096	0.00061	0.00036	0.00021	0.00011	0.00005
O2	0.04708	0.04716	0.04746	0.04796	0.04860	0.04930	0.05000	0.05067	0.05127	0.05179	0.05222	0.05256	0.05282

## ADD H2O(L)

	CASE= 0	O/F= 16.6667	F/A= 0.06000	PERCENT FUEL= 5.6604				PHI= 0.8792						
P, ATM	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	9.4176-3	1.0090-2	1.0866-2	1.1772-2	1.2842-2	1.4126-2	1.5696-2	1.7658-2	2.0181-2	2.3544-2	2.8253-2	3.7447-2	5.2995-2	
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979
CP, CAL/(G)(K)	0.3224	0.3182	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2561	0.2485	0.2409
GAMMA (S)	1.2702	1.2747	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.2027	1.2564	
SON VEL, M/SEC	739.3	715.6	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	360.8	310.0	

## MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73685	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02380	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

	CASE= 0	O/F= 16.6667	F/A= 0.06000	PERCENT FUEL= 5.6604				PHI= 0.8792						
P, ATM	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	6.2369-3	6.4896-3	6.7564-3	7.0396-3	7.3423-3	7.6679-3	8.0207-3	8.4053-3	8.8272-3	9.2927-3	9.8095-3	1.0387-2	1.1036-2	
M, MOL WT	28.660	28.756	28.829	28.883	28.919	28.943	28.959	28.968	28.973	28.976	28.978	28.979	28.979	28.979
CP, CAL/(G)(K)	0.5323	0.4913	0.4542	0.4225	0.3971	0.3777	0.3636	0.3533	0.3457	0.3399	0.3350	0.3307	0.3266	0.3226
GAMMA (S)	1.1832	1.1914	1.2008	1.2109	1.2208	1.2297	1.2374	1.2437	1.2490	1.2536	1.2578	1.2618	1.2659	1.2700
SON VEL, M/SEC	980.4	964.4	948.9	933.5	917.8	901.4	884.1	865.8	846.7	826.7	806.0	784.5	762.3	

## MOLE FRACTIONS

AR	0.00870	0.00873	0.00875	0.00877	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.01422	0.00983	0.00644	0.00399	0.00234	0.00129	0.00067	0.00032	0.00014	0.00006	0.00002	0.00001	0.00000	0.00000
CO2	0.10249	0.10728	0.11096	0.11363	0.11543	0.11658	0.11726	0.11765	0.11785	0.11794	0.11799	0.11801	0.11801	0.11801
H	0.00053	0.00031	0.00017	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00212	0.00148	0.00099	0.00063	0.00038	0.00022	0.00012	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000
H2O	0.10484	0.10683	0.10838	0.10955	0.11041	0.11103	0.11146	0.11175	0.11195	0.11207	0.11215	0.11219	0.11222	0.11227
NO	0.01224	0.01041	0.00881	0.00742	0.00619	0.00511	0.00415	0.00331	0.00257	0.00195	0.00142	0.00100	0.00066	0.00039
NO2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.72281	0.72617	0.72884	0.73089	0.73244	0.73360	0.73447	0.73512	0.73562	0.73601	0.73631	0.73655	0.73672	0.73679
O	0.00117	0.00076	0.00048	0.00030	0.00018	0.00010	0.00006	0.00003	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000
OH	0.00754	0.00582	0.00441	0.00327	0.00237	0.00167	0.00114	0.00075	0.00048	0.00029	0.00016	0.00009	0.00004	0.00002
O2	0.02330	0.02235	0.02173	0.02143	0.02140	0.02157	0.02185	0.02219	0.02254	0.02285	0.02313	0.02335	0.02352	0.02359



ADD C(1)  
ADD H2O(1)

	CASE= 0	0/F= 12.5000	F/A= 0.08000	PERCENT FUEL= 7.4074				PHI= 1.1723					
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	3.4178-4	3.6620-4	3.9437-4	4.2273-4	4.6607-4	5.1268-4	5.6968-4	6.4228-4	7.4461-4	8.7884-4	1.0588-3	1.3245-3	2.0222-3
M, MOL WT	28.046	28.046	28.046	28.046	28.046	28.046	28.048	28.109	28.513	28.846	28.961	28.982	33.188
CP, CAL/(G*IK)	0.3338	0.3313	0.3289	0.3266	0.3245	0.3227	0.3224	0.3848	0.4329	0.3385	0.2864	0.2683	0.7419
GAMMA (S)	1.2695	1.2720	1.2746	1.2771	1.2794	1.2815	1.2828	1.2535	1.2384	1.2805	1.3215	1.3439	1.1612
SON VEL, M/SEC	751.4	726.6	700.9	674.0	645.9	616.4	585.0	544.6	502.8	470.6	435.5	392.7	295.4

MOLE FRACTIONS

AR	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00838	0.00850	0.00857	0.00852	0.00844	0.00836
C(1)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00351	0.01284	0.02232
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00110	0.00831	0.01244	0.00968	0.00516	0.00003
CO	0.04458	0.04259	0.04013	0.03708	0.03328	0.02858	0.02282	0.01506	0.00419	0.00039	0.00001	0.00000	0.00000
CO2	0.10480	0.10679	0.10925	0.11230	0.11609	0.12080	0.12654	0.13354	0.13937	0.13676	0.12974	0.12343	0.11704
H2	0.02015	0.02214	0.02460	0.02765	0.03144	0.03614	0.04178	0.04534	0.02829	0.00911	0.00155	0.00010	0.00000
H2O(1)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12258
H2O	0.12200	0.12001	0.11755	0.11450	0.11071	0.10600	0.10030	0.09487	0.09952	0.11164	0.12397	0.13319	0.01953
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00004	0.00006	0.00005	0.00002	0.00001	0.00000
H2	0.70012	0.70012	0.70012	0.70012	0.70012	0.70012	0.70016	0.70167	0.71176	0.71754	0.71367	0.70734	0.70015

	CASE= 0	0/F= 12.5000	F/A= 0.08000	PERCENT FUEL= 7.4074				PHI= 1.1723					
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	2.3758-4	2.4866-4	2.6005-4	2.7177-4	2.8393-4	2.9675-4	3.1049-4	3.2540-4	3.4173-4	3.5975-4	3.7975-4	4.0210-4	4.2723-4
M, MOL WT	27.793	27.546	27.740	27.875	27.958	28.003	28.025	28.036	28.042	28.044	28.045	28.045	28.046
CP, CAL/(G*IK)	0.8527	0.7471	0.6393	0.5380	0.4572	0.4044	0.3747	0.3589	0.3503	0.3451	0.3416	0.3388	0.3363
GAMMA (S)	1.1488	1.1556	1.1670	1.1841	1.2053	1.2252	1.2399	1.2493	1.2551	1.2590	1.2619	1.2645	1.2670
SON VEL, M/SEC	989.9	970.5	953.6	939.7	927.5	914.7	899.6	882.1	862.7	842.1	820.6	798.3	775.2

MOLE FRACTIONS

AR	0.00813	0.00821	0.00827	0.00831	0.00833	0.00835	0.00835	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836
CO	0.07682	0.06919	0.06272	0.05793	0.05488	0.05310	0.05201	0.05120	0.05044	0.04962	0.04868	0.04756	0.04621
CO2	0.06855	0.07753	0.08503	0.09073	0.09403	0.09605	0.09726	0.09812	0.09891	0.09974	0.10070	0.10182	0.10316
H	0.00770	0.00500	0.00320	0.00202	0.00126	0.00077	0.00045	0.00026	0.00014	0.00007	0.00003	0.00001	0.00001
H2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.01793	0.01569	0.01405	0.01307	0.01270	0.01276	0.01311	0.01364	0.01431	0.01510	0.01605	0.01717	0.01852
H2O	0.10976	0.11656	0.12167	0.12515	0.12719	0.12815	0.12839	0.12818	0.12769	0.12698	0.12608	0.12497	0.12363
NO	0.00734	0.00519	0.00338	0.00199	0.00105	0.00050	0.00022	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000
N2	0.67765	0.68505	0.69081	0.69487	0.69739	0.69879	0.69950	0.69984	0.70000	0.70007	0.70010	0.70011	0.70011
O	0.00361	0.00195	0.00095	0.00041	0.00015	0.00005	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01357	0.00974	0.00655	0.00410	0.00237	0.00127	0.00063	0.00029	0.00012	0.00005	0.00002	0.00001	0.00000
O2	0.00893	0.00589	0.00337	0.00162	0.00064	0.00022	0.00006	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000



ADD C(S)  
ADD H2O(L)

CASE= 0 0/F= 11.1111 F/A= 0.09000 PERCENT FUEL= 8.2569 PHI= 1.3189  
P. ATM 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000  
P. PSIA 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1  
T. DEG K 1500.0 1400.0 1300.0 1200.0 1100.0 1000.0 900.0 700.0 600.0 500.0 400.0 300.0  
T. DEG F 2240.3 2060.3 1880.3 1700.3 1520.3 1340.3 1160.3 980.3 800.3 620.3 440.3 260.3 80.3  
RHO, G/CC 6.6566-4 7.1321-4 7.6808-4 8.3208-4 9.0774-4 9.9862-4 1.1121-3 1.2760-3 1.4930-3 1.7595-3 2.1181-3 2.6492-3 4.1753-3  
M. MOL WT 27.311 27.311 27.311 27.311 27.312 27.314 27.377 27.921 28.586 28.876 28.968 28.985 34.261  
CP, CAL/(G\*IK) 0.3404 0.3385 0.3369 0.3356 0.3351 0.3383 0.4120 0.5989 0.4369 0.3299 0.2874 0.2717 0.5216  
GAMMA (S) 1.2719 1.2738 1.2755 1.2768 1.2775 1.2759 1.2438 1.1973 1.2340 1.2842 1.3186 1.3380 1.1767  
SON VEL, M/SEC 762.1 736.8 710.5 683.0 654.1 623.2 583.1 534.1 501.2 471.0 435.0 391.8 292.7

MOLE FRACTIONS

AR 0.00806 0.00806 0.00806 0.00606 0.00806 0.00807 0.00808 0.00824 0.00832 0.00832 0.00826 0.00817 0.00806  
C(S) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.01472 0.02451 0.03445 0.04539 0.05777  
CH4 0.00000 0.00000 0.00000 0.00000 0.00000 0.00005 0.00117 0.01111 0.01559 0.01567 0.01205 0.00655 0.00001  
CO 0.07611 0.07308 0.06942 0.06492 0.05937 0.05243 0.04236 0.02044 0.00326 0.00026 0.00001 0.00000 0.00000  
CO2 0.08601 0.08903 0.09270 0.09719 0.10274 0.10965 0.11897 0.13418 0.13361 0.12676 0.11952 0.11230 0.10434  
H2 0.03946 0.04248 0.04615 0.05064 0.05617 0.06291 0.06872 0.05312 0.02399 0.00715 0.00121 0.00008 0.00000  
H2O(L) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.14508  
H2O 0.11484 0.11182 0.10815 0.10365 0.09811 0.09127 0.08353 0.08226 0.10382 0.12057 0.13268 0.14312 0.00921  
NH3 0.00000 0.00000 0.00000 0.00001 0.00001 0.00002 0.00005 0.00009 0.00009 0.00007 0.00003 0.00001 0.00000  
N2 0.67552 0.67552 0.67552 0.67552 0.67553 0.67559 0.67711 0.69055 0.69660 0.69670 0.69180 0.68438 0.67553

CASE= 0 0/F= 11.1111 F/A= 0.09000 PERCENT FUEL= 8.2569 PHI= 1.3189  
P. ATM 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000 4.0000  
P. PSIA 58.8 58.8 58.8 58.8 58.8 58.8 58.8 58.8 58.8 58.8 58.8 58.8 58.8  
T. DEG K 2800.0 2700.0 2600.0 2500.0 2400.0 2300.0 2200.0 2100.0 2000.0 1900.0 1800.0 1700.0 1600.0  
T. DEG F 4580.3 4400.3 4220.3 4040.3 3860.3 3680.3 3500.3 3320.3 3140.3 2960.3 2780.3 2600.3 2420.3  
RHO, G/CC 4.6931-4 4.8914-4 5.0963-4 5.3109-4 5.5389-4 5.7837-4 6.0489-4 6.3383-4 6.6559-4 7.0066-4 7.3961-4 7.8313-4 8.3208-4  
M. MOL WT 26.957 27.093 27.182 27.237 27.270 27.289 27.299 27.305 27.308 27.310 27.311 27.311 27.311  
CP, CAL/(G\*IK) 0.6543 0.6590 0.6481 0.64319 0.63986 0.63781 0.63656 0.63579 0.63529 0.63494 0.63467 0.63444 0.63423  
GAMMA (S) 1.1718 1.1866 1.2039 1.2207 1.2346 1.2449 1.2521 1.2571 1.2607 1.2635 1.2658 1.2679 1.2699  
SON VEL, M/SEC 1006.0 991.6 978.5 965.2 950.5 934.0 915.9 896.6 876.2 854.9 832.9 810.1 786.5

MOLE FRACTIONS

AR 0.00796 0.00800 0.00803 0.00804 0.00805 0.00806 0.00806 0.00806 0.00806 0.00806 0.00806 0.00806 0.00806  
CO 0.09761 0.09431 0.09200 0.09042 0.08928 0.08832 0.08740 0.08640 0.08528 0.08399 0.08248 0.08071 0.07861  
CO2 0.06240 0.06651 0.06935 0.07125 0.07259 0.07366 0.07465 0.07568 0.07681 0.07811 0.07962 0.08140 0.08350  
H 0.00667 0.00456 0.00307 0.00202 0.00129 0.00079 0.00047 0.00026 0.00014 0.00007 0.00003 0.00001 0.00001  
H2 0.02689 0.02608 0.02585 0.02607 0.02657 0.02727 0.02812 0.02911 0.03024 0.03155 0.03307 0.03485 0.03695  
H2O 0.11787 0.12191 0.12444 0.12578 0.12628 0.12620 0.12573 0.12496 0.12394 0.12270 0.12121 0.11944 0.11735  
NO 0.00368 0.00228 0.00131 0.00070 0.00035 0.00016 0.00007 0.00003 0.00001 0.00000 0.00000 0.00000 0.00000  
N2 0.66492 0.66898 0.67168 0.67335 0.67434 0.67489 0.67520 0.67536 0.67545 0.67549 0.67551 0.67552 0.67552  
O 0.00129 0.00061 0.00026 0.00010 0.00004 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
OH 0.00841 0.00559 0.00349 0.00206 0.00115 0.00061 0.00030 0.00014 0.00006 0.00002 0.00001 0.00000 0.00000  
O2 0.00229 0.00117 0.00052 0.00021 0.00007 0.00002 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000





CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901	PHI= 0.1465										
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	3.5301-4	3.7823-4	4.0732-4	4.4126-4	4.8138-4	5.2952-4	5.8835-4	6.6190-4	7.5645-4	8.8253-4	1.0590-3	1.3238-3	1.7651-3		
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967
CP, CAL/(G)(K)	0.2994	0.2950	0.2907	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2422		
GAMMA (S)	1.2973	1.3031	1.3090	1.3151	1.3215	1.3285	1.3365	1.3466	1.3574	1.3688	1.3799	1.3893	1.3952		
SON VEL, M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	346.6		

MCLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O	0.01961	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17642	0.17667	0.17683	0.17693	0.17699	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901	PHI= 0.1465										
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	2.4880-4	2.5906-4	2.6984-4	2.8124-4	2.9340-4	3.0647-4	3.2061-4	3.3602-4	3.5290-4	3.7153-4	3.9220-4	4.1529-4	4.4126-4		
M, MOL WT	28.582	28.698	28.795	28.847	28.891	28.920	28.939	28.951	28.958	28.962	28.965	28.966	28.967		
CP, CAL/(G)(K)	0.5476	0.4971	0.4539	0.4183	0.3901	0.3682	0.3515	0.3387	0.3289	0.3210	0.3146	0.3090	0.3040		
GAMMA (S)	1.1851	1.1945	1.2053	1.2167	1.2282	1.2391	1.2491	1.2581	1.2660	1.2731	1.2796	1.2857	1.2916		
SON VEL, M/SEC	982.5	966.6	951.4	936.3	921.0	905.2	888.6	871.1	852.6	833.3	813.1	792.1	770.2		

MCLE FRACTIONS

AR	0.00911	0.00915	0.00917	0.00919	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00440	0.00306	0.00200	0.00124	0.00073	0.00040	0.00021	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.01620	0.01763	0.01875	0.01955	0.02010	0.02044	0.02065	0.02077	0.02083	0.02086	0.02087	0.02088	0.02088	0.02088	0.02088
H	0.00122	0.00078	0.00044	0.00023	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H02	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00053	0.00038	0.00027	0.00018	0.00011	0.00006	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01336	0.01473	0.01590	0.01636	0.01763	0.01823	0.01868	0.01901	0.01924	0.01940	0.01950	0.01956	0.01959		
NO	0.03176	0.02802	0.02437	0.02088	0.01760	0.01457	0.01183	0.00940	0.00729	0.00549	0.00401	0.00281	0.00189		
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001		
N2	0.74707	0.75203	0.75618	0.75959	0.76239	0.76469	0.76656	0.76809	0.76934	0.77035	0.77116	0.77179	0.77227		
O	0.01487	0.01004	0.00655	0.00412	0.00248	0.00143	0.00078	0.00040	0.00020	0.00009	0.00004	0.00001	0.00000		
OH	0.00961	0.00786	0.00622	0.00477	0.00354	0.00254	0.00175	0.00116	0.00073	0.00044	0.00025	0.00013	0.00006		
O2	0.15173	0.15628	0.16102	0.16336	0.16607	0.16834	0.17023	0.17179	0.17307	0.17410	0.17493	0.17557	0.17606		

ADD H2O(L)

CASE=	0	D/F=	50.0000	F/A=	0.02000	PERCENT FUEL=	1.9608	PHI=	0.2931	3.0000	3.0000	3.0000	3.0000	3.0000
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	7.0608-4	7.5652-4	8.1471-4	8.8261-4	9.6284-4	1.0591-3	1.1768-3	1.3239-3	1.5130-3	1.7652-3	2.1183-3	2.6478-3	3.6307-3	
M, MOL WT	28.969	28.969	28.970	28.970	28.970	28.970	28.970	28.969	28.969	28.970	28.970	28.970	28.970	29.793
CP, CAL/(G)(K)	0.3044	0.2999	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.4956	
GAMMA (SI)	1.2909	1.2965	1.3023	1.3083	1.3147	1.3218	1.3302	1.3399	1.3508	1.3623	1.3737	1.3837	1.2255	
SON VEL,M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	320.3	

MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.02763
H2	0.03885	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.01123
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14488	0.14503	0.14512	0.14517	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

CASE=	0	D/F=	50.0000	F/A=	0.02000	PERCENT FUEL=	1.9608	PHI=	0.2931	4.0000	4.0000	4.0000	4.0000	4.0000
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	4.9797-4	5.1840-4	5.3988-4	5.6263-4	5.8691-4	6.1302-4	6.4129-4	6.7209-4	7.0587-4	7.4312-4	7.8447-4	8.3066-4	8.8259-4	
M, MOL WT	28.603	28.713	28.795	28.855	28.896	28.924	28.942	28.954	28.961	28.965	28.967	28.968	28.969	
CP, CAL/(G)(K)	0.5445	0.4958	0.4540	0.4197	0.3924	0.3714	0.3553	0.3430	0.3334	0.3258	0.3195	0.3140	0.3090	
GAMMA (SI)	1.1841	1.1933	1.2038	1.2148	1.2258	1.2362	1.2456	1.2539	1.2613	1.2680	1.2741	1.2799	1.2855	
SON VEL,M/SEC	981.7	965.9	950.6	935.5	920.1	904.0	887.2	869.6	851.0	831.6	811.3	790.2	768.3	

MOLE FRACTIONS

AR	0.00903	0.00906	0.00909	0.00911	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00707	0.00484	0.00315	0.00194	0.00113	0.00062	0.00032	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000
CO2	0.03347	0.03586	0.03767	0.03896	0.03993	0.04037	0.04070	0.04088	0.04098	0.04103	0.04105	0.04106	0.04106	0.04106
H	0.00126	0.00073	0.00040	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00095	0.00067	0.00045	0.00029	0.00018	0.00010	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.03092	0.03275	0.03432	0.03554	0.03650	0.03723	0.03776	0.03815	0.03842	0.03860	0.03872	0.03879	0.03883	0.03883
NO	0.00278	0.00232	0.00198	0.00180	0.001584	0.001312	0.001065	0.000847	0.000656	0.000495	0.000361	0.000254	0.000170	0.000100
NO2	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001
N2	0.74162	0.74627	0.75011	0.75327	0.75585	0.75795	0.75966	0.76105	0.76219	0.76311	0.76384	0.76441	0.76485	
O	0.00956	0.00644	0.00419	0.00263	0.00159	0.00092	0.00050	0.00026	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000
OH	0.01173	0.00939	0.00731	0.00554	0.00407	0.00290	0.00199	0.00131	0.00083	0.00050	0.00028	0.00015	0.00007	
O2	0.12555	0.12860	0.13129	0.13367	0.13576	0.13759	0.13917	0.14052	0.14164	0.14256	0.14330	0.14389	0.14433	

ADD H2O(L)

CASE=	0	O/F=	33.3333	F/A=	0.03000	PERCENT FUEL=			2.9126	PHI=			0.4396
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	1.4123-3	1.5132-3	1.6296-3	1.7654-3	1.9259-3	2.1184-3	2.3538-3	2.6480-3	3.0263-3	3.5307-3	4.2369-3	5.2961-3	7.4509-3
M, MOL WT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.570
CP, CAL/(G)(K)	0.3092	0.3047	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.3813
GAMMA (S)	1.2851	1.2905	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.2521
SON VEL, M/SEC	743.8	720.1	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	319.6

MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.05227
H2	0.05772	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.00547
NO	0.00095	0.00095	0.00095	0.00095	0.00095	0.00095	0.00095	0.00095	0.00095	0.00095	0.00095	0.00095	0.00095
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11351	0.11371	0.11364	0.11392	0.11397	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

CASE= 0

O/F=	33.3333	F/A=	0.03000	PERCENT FUEL=			2.9126	PHI=			0.4396		
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.2476-3	1.2980-3	1.3512-3	1.4076-3	1.4680-3	1.5331-3	1.6036-3	1.6805-3	1.7649-3	1.8580-3	1.9614-3	2.0768-3	2.2067-3
M, MOL WT	28.665	28.758	28.827	28.876	28.911	28.934	28.949	28.959	28.964	28.968	28.970	28.971	28.972
CP, CAL/(G)(K)	0.5188	0.4764	0.4404	0.4109	0.3875	0.3695	0.3556	0.3449	0.3365	0.3296	0.3237	0.3185	0.3137
GAMMA (S)	1.1879	1.1969	1.2069	1.2170	1.2269	1.2360	1.2442	1.2515	1.2580	1.2639	1.2695	1.2747	1.2799
SON VEL, M/SEC	982.2	966.6	951.3	936.0	920.2	903.8	886.7	868.7	849.8	830.2	809.8	788.6	766.6

MOLE FRACTIONS

AR	0.00896	0.00899	0.00901	0.00902	0.00903	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.00727	0.00531	0.00341	0.00208	0.00121	0.00067	0.00034	0.00017	0.00008	0.00003	0.00001	0.00000	0.00000
CO2	0.05234	0.05510	0.05714	0.05857	0.05952	0.06011	0.06046	0.06066	0.06077	0.06082	0.06084	0.06085	0.06086
H	0.00085	0.00049	0.00027	0.00014	0.00007	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00110	0.00075	0.00050	0.00032	0.00019	0.00011	0.00006	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000
H2O	0.05000	0.05188	0.05339	0.05459	0.05551	0.05620	0.05671	0.05707	0.05733	0.05750	0.05760	0.05767	0.05771
NO	0.02552	0.02237	0.01938	0.01656	0.01395	0.01154	0.00938	0.00745	0.00578	0.00436	0.00318	0.00224	0.00150
NO2	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001
N2	0.73755	0.74154	0.74484	0.74754	0.74975	0.75156	0.75304	0.75426	0.75525	0.75605	0.75669	0.75720	0.75758
O	0.00538	0.00361	0.00235	0.00147	0.00089	0.00051	0.00028	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000
OH	0.01118	0.00884	0.00683	0.00513	0.00375	0.00266	0.00182	0.00120	0.00076	0.00045	0.00026	0.00014	0.00007
O2	0.09919	0.10106	0.10283	0.10452	0.10609	0.10752	0.10880	0.10992	0.11088	0.11168	0.11232	0.11283	0.11322

ADD H2O(L)

CASE=	0	0/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.600
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	3.5310-3	3.7832-3	4.0743-3	4.4138-3	4.8150-3	5.2965-3	5.8850-3	6.6207-3	7.5665-3	8.8276-3	1.0593-2	1.3241-2	1.9068-2
M, MOL WT	28.974	28.974	28.975	28.975	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	31.294
CP, CAL/(G)(K)	0.3138	0.3094	0.3049	0.3002	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.3192
GAMMA (S)	1.2797	1.2848	1.2902	1.2961	1.3024	1.3094	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.2710
SON VEL, M/SEC	742.2	718.4	693.8	668.1	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	318.3

MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.07411
H2	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.00214
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75071	0.75087	0.75099	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08296	0.08314	0.08325	0.08332	0.08336	0.08337	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

CASE=	0	0/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	2.4978-3	2.5980-3	2.7038-3	2.8164-3	2.9369-3	3.0668-3	3.2078-3	3.3615-3	3.5302-3	3.7164-3	3.9231-3	4.1540-3	4.4137-3
M, MOL WT	28.695	28.780	28.843	28.888	28.919	28.940	28.954	28.963	28.968	28.971	28.973	28.974	28.974
CP, CAL/(G)(K)	0.5093	0.4695	0.4357	0.4082	0.3866	0.3699	0.3572	0.3474	0.3396	0.3333	0.3278	0.3229	0.3183
GAMMA (S)	1.1890	1.1979	1.2075	1.2172	1.2264	1.2348	1.2423	1.2489	1.2547	1.2601	1.2651	1.2700	1.2748
SON VEL, M/SEC	982.2	966.6	951.3	935.9	919.9	903.3	885.9	867.7	848.7	828.9	808.4	787.1	765.1

MOLE FRACTIONS

AR	0.00888	0.00891	0.00893	0.00894	0.00895	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897	0.00897
CO	0.00879	0.00589	0.00377	0.00230	0.00133	0.00073	0.00038	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000
CO2	0.07071	0.07384	0.07614	0.07774	0.07879	0.07945	0.07984	0.08006	0.08017	0.08023	0.08026	0.08027	0.08027
H	0.00064	0.00037	0.00020	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00125	0.00085	0.00056	0.00035	0.00021	0.00012	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000
H2O	0.06883	0.07068	0.07215	0.07330	0.07418	0.07483	0.07531	0.07564	0.07588	0.07603	0.07613	0.07619	0.07622
NO	0.02177	0.01903	0.01646	0.01405	0.01183	0.00979	0.00796	0.00633	0.00491	0.00371	0.00271	0.00190	0.00128
NO2	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001
N2	0.73297	0.73654	0.73946	0.74184	0.74376	0.74532	0.74660	0.74763	0.74848	0.74916	0.74971	0.75014	0.75047
O	0.00325	0.00218	0.00141	0.00089	0.00053	0.00031	0.00017	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000
OH	0.01020	0.00802	0.00616	0.00462	0.00337	0.00238	0.00163	0.00107	0.00068	0.00041	0.00023	0.00012	0.00006
O2	0.07264	0.07363	0.07470	0.07582	0.07695	0.07804	0.07905	0.07996	0.08075	0.08141	0.08196	0.08239	0.08272





ADD H2O(L)

	CASE= 0		0/F= 16.6667		F/A= 0.06000		PERCENT FUEL= 5.6604		PHI= 0.8792					
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	1.1772-2	1.2613-2	1.3583-2	1.4715-2	1.6053-2	1.7658-2	1.9620-2	2.2073-2	2.5226-2	2.9430-2	3.5316-2	4.7393-2	6.6256-2	
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	31.111	32.620	
CP, CAL/(G*IK)	0.3224	0.3182	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2507	0.2332	
GAMMA (S)	1.2702	1.2747	1.2798	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.2068	1.2581	
SON VEL, M/SEC	739.3	715.6	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	359.2	310.2	

MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00990	0.00880	0.00880	0.00890	0.00880	0.00680	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11802	0.11802	0.11662	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.06852	0.11162
H2O	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.04372	0.00062
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73685	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02360	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

	CASE= 0		0/F= 14.6540		F/A= 0.06824		PERCENT FUEL= 6.3882		PHI= 1.0000					
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	
RHO, G/CC	5.8946-5	6.2077-5	6.5305-5	6.8643-5	7.2110-5	7.5734-5	7.9556-5	8.3626-5	8.8007-5	9.2773-5	9.8013-5	1.0383-4	1.1035-4	
M, MOL WT	27.087	27.507	27.865	28.163	28.402	28.587	28.724	28.821	28.886	28.928	28.953	28.968	28.975	
CP, CAL/(G*IK)	1.1349	1.0162	0.9025	0.7951	0.6961	0.6079	0.5328	0.4718	0.4246	0.3897	0.3650	0.3480	0.3365	
GAMMA (S)	1.1341	1.1359	1.1396	1.1453	1.1535	1.1644	1.1778	1.1931	1.2091	1.2244	1.2379	1.2490	1.2577	
SON VEL, M/SEC	987.3	962.8	940.2	919.4	900.2	882.6	866.1	850.2	834.3	817.7	799.9	780.7	759.9	

MOLE FRACTIONS

AR	0.00816	0.00829	0.00840	0.00849	0.00856	0.00861	0.00865	0.00868	0.00870	0.00872	0.00872	0.00873	0.00873
CO	0.06964	0.05909	0.04803	0.03730	0.02760	0.01943	0.01298	0.00821	0.00489	0.00273	0.00142	0.00068	0.00030
CO2	0.05481	0.06730	0.08000	0.09210	0.10290	0.11192	0.11900	0.12422	0.12783	0.13018	0.13161	0.13242	0.13284
H	0.01438	0.00893	0.00530	0.00301	0.00162	0.00083	0.00040	0.00018	0.00007	0.00003	0.00001	0.00000	0.00000
H2O	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.01563	0.01250	0.00966	0.00724	0.00526	0.00371	0.00253	0.00166	0.00105	0.00063	0.00036	0.00019	0.00009
H2O	0.08440	0.09443	0.10281	0.10954	0.11475	0.11865	0.12146	0.12342	0.12473	0.12557	0.12608	0.12638	0.12654
NO	0.01294	0.01059	0.00835	0.00633	0.00462	0.00322	0.00215	0.00137	0.00082	0.00047	0.00025	0.00012	0.00005
N2	0.67714	0.68893	0.69910	0.70761	0.71450	0.71987	0.72386	0.72670	0.72862	0.72986	0.73061	0.73103	0.73125
O	0.01273	0.00792	0.00467	0.00259	0.00135	0.00065	0.00029	0.00012	0.00005	0.00002	0.00000	0.00000	0.00000
OH	0.02235	0.01768	0.01336	0.00964	0.00665	0.00437	0.00273	0.00161	0.00090	0.00047	0.00023	0.00010	0.00004
O2	0.02780	0.02435	0.02032	0.01615	0.01219	0.00875	0.00595	0.00383	0.00233	0.00133	0.00071	0.00035	0.00016

ADD H2O(L)  
ADD C(S)

	CASE= 0	O/F= 14.2857	F/A= 0.07000	PERCENT FUEL= 6.5421				PHI= 1.0258					
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	2.3428-4	2.5101-4	2.7032-4	2.9284-4	3.1947-4	3.5141-4	3.9046-4	4.3927-4	5.0205-4	5.8678-4	7.0592-4	8.8293-4	1.3057-3
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.837	28.890	28.963	28.980
CP, CAL/(G)(K)	0.3262	0.3226	0.3188	0.3146	0.3101	0.3052	0.2994	0.2925	0.2864	0.3011	0.2760	0.2604	0.9838
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2917	1.2990	1.3082	1.3181	1.3103	1.3362	1.3580	1.1527
SON VEL, M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.6	549.3	515.9	475.7	437.9	394.8	299.1

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00869	0.00871	0.00872	0.00868
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00002	0.00092	0.00219	0.00250	0.00006
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00321	0.00208	0.00105	0.00024	0.00001	0.00000	0.00000
CO2	0.12840	0.12876	0.12921	0.12978	0.13050	0.13140	0.13247	0.13360	0.13461	0.13477	0.13477	0.13386	0.13073
H2	0.00278	0.00313	0.00359	0.00415	0.00488	0.00578	0.00684	0.00797	0.00889	0.00611	0.00130	0.00010	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12111	0.12014	0.12134	0.12395	0.12462	0.03110
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00006	0.00001	0.00002	0.00001	0.00001	0.00000
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72660	0.72792	0.72975	0.73020	0.72666

CASE= 0 O/F= 14.2857 F/A= 0.07000 PERCENT FUEL= 6.5421 PHI= 1.0258

P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.7992-4	1.8868-4	1.9778-4	2.0726-4	2.1718-4	2.2764-4	2.3874-4	2.5060-4	2.6341-4	2.7738-4	2.9283-4	3.1007-4	3.2945-4
M, MOL WT	27.559	27.869	28.130	28.345	28.514	28.642	28.732	28.789	28.819	28.831	28.834	28.835	28.836
CP, CAL/(G)(K)	0.9257	0.8371	0.7511	0.6693	0.5936	0.5254	0.4650	0.4122	0.3712	0.3482	0.3302	0.3332	0.3296
GAMMA (S)	1.1427	1.1460	1.1511	1.1585	1.1682	1.1807	1.1962	1.2151	1.2350	1.2492	1.2567	1.2610	1.2644
SON VEL, M/SEC	982.5	960.8	940.5	921.7	904.2	887.9	872.7	858.4	844.2	827.3	807.6	786.2	763.8

MOLE FRACTIONS

AR	0.00829	0.00838	0.00846	0.00853	0.00858	0.00862	0.00864	0.00866	0.00867	0.00867	0.00867	0.00867	0.00867
CO	0.05994	0.04987	0.04014	0.03130	0.02377	0.01776	0.01334	0.01047	0.00896	0.00831	0.00801	0.00779	0.00756
CO2	0.06973	0.08125	0.09222	0.10236	0.11039	0.11700	0.12184	0.12498	0.12664	0.12734	0.12766	0.12788	0.12812
H	0.00739	0.00457	0.00272	0.00156	0.00086	0.00046	0.00023	0.00012	0.00006	0.00003	0.00001	0.00001	0.00000
H02	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.01238	0.00983	0.00765	0.00586	0.00444	0.00337	0.00262	0.00216	0.00197	0.00198	0.00210	0.00227	0.00250
H2O	0.09880	0.10616	0.11218	0.11694	0.12057	0.12324	0.12509	0.12624	0.12681	0.12699	0.12694	0.12680	0.12658
N0	0.01114	0.00880	0.00668	0.00484	0.00333	0.00213	0.00124	0.00062	0.00026	0.00009	0.00002	0.00001	0.00000
N2	0.68883	0.69780	0.70545	0.71177	0.71680	0.72062	0.72334	0.72509	0.72601	0.72639	0.72652	0.72655	0.72656
O	0.00627	0.00378	0.00215	0.00114	0.00056	0.00025	0.00010	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.01697	0.01294	0.00946	0.00661	0.00439	0.00275	0.00159	0.00084	0.00039	0.00015	0.00005	0.00002	0.00000
O2	0.02025	0.01661	0.01289	0.00938	0.00631	0.00381	0.00197	0.00079	0.00023	0.00005	0.00001	0.00000	0.00000

ADD C(S)  
ADD H2O(L)

CASE= 0 O/F= 12.5000 F/A= 0.08000 PERCENT FUEL= 7.4074 PHI= 1.1723

P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
I, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0
RHO, G/CC	4.5571-4	4.8826-4	5.2582-4	5.6964-4	6.2143-4	6.8358-4	7.5961-4	8.5737-4	9.9457-4	1.1725-3	1.4119-3	1.7660-3	2.7123-3	4.4166-3
M, MOL WT	28.046	28.046	28.046	28.046	28.046	28.046	28.049	28.141	28.564	28.864	28.964	28.983	33.385	44.010
CP, CAL/(G)(K)	0.3338	0.3313	0.3289	0.3266	0.3245	0.3227	0.3241	0.4075	0.4211	0.3313	0.2847	0.2681	0.6284	1.1701
GAMMA (S)	1.2695	1.2720	1.2746	1.2771	1.2794	1.2814	1.2819	1.2449	1.2425	1.2849	1.3231	1.3442	1.1701	0.7012
SON VEL, M/SEC	751.4	726.6	700.9	674.0	645.9	616.3	584.8	542.4	503.2	471.3	435.8	392.7	295.7	0.0

MOLE FRACTIONS

AR	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00839	0.00851	0.00857	0.00852	0.00844	0.00836	0.00836
C1(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00371	0.01288	0.02233	0.03234	0.04235
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00168	0.00920	0.01265	0.00971	0.00516	0.00001	0.00000
CO	0.04458	0.04259	0.04013	0.03708	0.03328	0.02857	0.02278	0.01445	0.00369	0.00034	0.00001	0.00000	0.00000	0.00000
CO2	0.10480	0.10679	0.10925	0.11230	0.11609	0.12080	0.12656	0.13375	0.13924	0.13647	0.12968	0.12343	0.11703	0.11073
H2	0.02015	0.02214	0.02460	0.02765	0.03144	0.03614	0.04172	0.04372	0.02532	0.00795	0.00134	0.00009	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12757	0.24566
H2O	0.12200	0.12001	0.11755	0.11450	0.11071	0.10600	0.10032	0.09549	0.10095	0.11243	0.12412	0.13320	0.14156	0.15000
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002	0.00005	0.00006	0.00005	0.00003	0.00001	0.00000	0.00000
N2	0.70012	0.70012	0.70012	0.70012	0.70012	0.70012	0.70019	0.70247	0.71302	0.71783	0.71371	0.70734	0.70014	0.69286

CASE= 0 O/F= 12.5000 F/A= 0.08000 PERCENT FUEL= 7.4074 PHI= 1.1723

P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
I, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	3.5804-4	3.7425-4	3.9094-4	4.0817-4	4.2617-4	4.4526-4	4.6580-4	4.8813-4	5.1261-4	5.3963-4	5.6963-4	6.0314-4	6.4084-4	6.8284-4
M, MOL WT	27.421	27.639	27.802	27.911	27.976	28.012	28.029	28.038	28.042	28.044	28.045	28.046	28.046	28.046
CP, CAL/(G)(K)	0.7867	0.6884	0.5897	0.5011	0.4344	0.3926	0.3691	0.3563	0.3491	0.3447	0.3414	0.3387	0.3362	0.3340
GAMMA (S)	1.1537	1.1619	1.1749	1.1930	1.2132	1.2307	1.2430	1.2508	1.2558	1.2593	1.2621	1.2646	1.2670	1.2690
SON VEL, M/SEC	989.7	971.5	955.8	942.6	930.2	916.6	900.6	882.6	863.0	842.2	820.7	798.3	775.2	752.0

MOLE FRACTIONS

AR	0.00817	0.00824	0.00829	0.00832	0.00834	0.00835	0.00835	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836
CO	0.07343	0.06646	0.06082	0.05683	0.05435	0.05289	0.05194	0.05118	0.05044	0.04962	0.04868	0.04756	0.04621	0.04475
CO2	0.07262	0.08075	0.08726	0.09133	0.09465	0.09631	0.09735	0.09816	0.09892	0.09975	0.10070	0.10182	0.10317	0.10475
H	0.00607	0.00397	0.00256	0.00163	0.00102	0.00063	0.00037	0.00021	0.00011	0.00006	0.00003	0.00001	0.00000	0.00000
H02	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.01671	0.01479	0.01347	0.01275	0.01255	0.01271	0.01310	0.01364	0.01431	0.01510	0.01605	0.01717	0.01852	0.02000
H2O	0.11331	0.11913	0.12340	0.12619	0.12776	0.12844	0.12853	0.12825	0.12772	0.12699	0.12608	0.12497	0.12363	0.12200
N0	0.00666	0.00461	0.00292	0.00168	0.00087	0.00041	0.00018	0.00007	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
N2	0.68119	0.68766	0.69257	0.69592	0.69795	0.69906	0.69962	0.69989	0.70002	0.70008	0.70010	0.70011	0.70011	0.70011
O	0.00267	0.00141	0.00067	0.00028	0.00010	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01185	0.00837	0.00554	0.00342	0.00196	0.00104	0.00052	0.00024	0.00010	0.00004	0.00001	0.00000	0.00000	0.00000
O2	0.00731	0.00462	0.00251	0.00115	0.00044	0.00015	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000





CASE=	0	0/F=	0.0000	F/A=	0.00000	PERCENT FUEL=	0.0000	PHI=	0.0000								
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0				
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3				
RHO, G/CC	1.8732-4	1.9486-4	2.0280-4	2.1124-4	2.2027-4	2.3000-4	2.4055-4	2.5207-4	2.6470-4	2.7865-4	2.9414-4	3.1145-4	3.3092-4				
M, MOL WT	28.632	28.781	28.845	28.889	28.919	28.938	28.950	28.957	28.961	28.963	28.964	28.964	28.964				
CP, CAL/(G)(K)	0.4919	0.4493	0.4146	0.3869	0.3654	0.3489	0.3363	0.3267	0.3191	0.3129	0.3076	0.3028	0.2983				
GAMMA (S)	1.1986	1.2092	1.2203	1.2314	1.2420	1.2518	1.2605	1.2682	1.2751	1.2814	1.2874	1.2931	1.2987				
SON VEL, M/SEC	986.2	971.2	956.3	941.3	925.7	909.5	892.4	874.5	855.7	836.0	815.6	794.4	772.3				

MOLE FRACTIONS

AR	0.00924	0.00926	0.00928	0.00930	0.00931	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00007	0.00005	0.00003	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00023	0.00025	0.00027	0.00028	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03487	0.03078	0.02676	0.02292	0.01930	0.01598	0.01297	0.01030	0.00798	0.00601	0.00438	0.00308	0.00207				
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001				
N2	0.75611	0.76054	0.76427	0.76740	0.77001	0.77219	0.77402	0.77554	0.77680	0.77784	0.77868	0.77934	0.77985				
O	0.01874	0.01266	0.00826	0.00519	0.00313	0.00180	0.00099	0.00051	0.00025	0.00011	0.00004	0.00002	0.00001				
O2	0.18072	0.18644	0.19110	0.19488	0.19793	0.20035	0.20239	0.20401	0.20533	0.20640	0.20726	0.20793	0.20844				

CASE=	0	0/F=	0.0000	F/A=	0.00000	PERCENT FUEL=	0.0000	PHI=	0.0000								
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0				
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3				
RHO, G/CC	3.5298-4	3.7819-4	4.0728-4	4.4123-4	4.8134-4	5.2947-4	5.8830-4	6.6184-4	7.5638-4	8.8245-4	1.0589-3	1.3237-3	1.7649-3				
M, MOL WT	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964				
CP, CAL/(G)(K)	0.2940	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402				
GAMMA (S)	1.3044	1.3102	1.3161	1.3223	1.3287	1.3357	1.3440	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999				
SON VEL, M/SEC	749.4	725.6	700.8	674.9	647.7	619.2	589.3	557.5	523.6	486.8	446.1	400.3	347.2				

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO2	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030				
NO	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000				
NO2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000				
N2	0.78023	0.78050	0.78067	0.78078	0.78084	0.78087	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089				
O2	0.20882	0.20909	0.20927	0.20938	0.20944	0.20947	0.20948	0.20948	0.20949	0.20949	0.20949	0.20949	0.20949				

ADD H2O(L)

CASE= 0 O/F=100.0000 F/A= 0.01000 PERCENT FUEL= 0.9901 PHI= 0.1465

P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	4.7068-4	5.0430-4	5.4309-4	5.8835-4	6.4184-4	7.0602-4	7.8447-4	8.8253-4	1.0086-3	1.1767-3	1.4120-3	1.7651-3	2.3589-3	
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	29.035
CP, CAL/(G*IK)	0.2994	0.2950	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2399	0.2353
GAMMA (S)	1.2973	1.3031	1.3090	1.3151	1.3215	1.3285	1.3369	1.3466	1.3574	1.3688	1.3799	1.3893	1.4000	1.4100
SON VEL, M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	322.3	

MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00233
H2O	0.01961	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01729
ND	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17642	0.17667	0.17663	0.17693	0.17699	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE= 0 O/F=100.0000 F/A= 0.01000 PERCENT FUEL= 0.9901 PHI= 0.1465

P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	
RHO, G/CC	3.7401-4	3.8918-4	4.0517-4	4.2214-4	4.4029-4	4.5982-4	4.8098-4	5.0406-4	5.2938-4	5.5731-4	5.8831-4	6.2294-4	6.6189-4	
M, MOL WT	28.644	28.742	28.814	28.866	28.903	28.927	28.943	28.953	28.959	28.963	28.965	28.966	28.967	
CP, CAL/(G*IK)	0.5159	0.4725	0.4356	0.4054	0.3813	0.3625	0.3479	0.3366	0.3276	0.3204	0.3142	0.3088	0.3039	
GAMMA (S)	1.1912	1.2005	1.2109	1.2216	1.2322	1.2422	1.2513	1.2595	1.2669	1.2737	1.2799	1.2859	1.2916	
SON VEL, M/SEC	983.9	968.3	953.1	937.9	922.3	906.2	889.3	871.5	852.9	833.5	813.2	792.1	770.2	

MOLE FRACTIONS

AR	0.00913	0.00916	0.00918	0.00920	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00374	0.00256	0.00167	0.00103	0.00060	0.00033	0.00017	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000
CO2	0.01691	0.01816	0.01911	0.01978	0.02024	0.02052	0.02069	0.02079	0.02084	0.02086	0.02087	0.02088	0.02088	0.02088
H	0.00100	0.00059	0.00033	0.00017	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00045	0.00032	0.00022	0.00015	0.00009	0.00005	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01399	0.01523	0.01628	0.01714	0.01783	0.01837	0.01877	0.01907	0.01928	0.01942	0.01951	0.01956	0.01959	
NO	0.03193	0.02813	0.02443	0.02091	0.01761	0.01458	0.01184	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189	
NO2	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	
N2	0.74863	0.75313	0.75692	0.76008	0.76270	0.76487	0.76667	0.76815	0.76937	0.77037	0.77117	0.77179	0.77227	
O	0.01219	0.00822	0.00536	0.00337	0.00233	0.00117	0.00064	0.00033	0.00016	0.00007	0.00003	0.00001	0.00000	
OH	0.00891	0.00723	0.00570	0.00435	0.00322	0.00230	0.00159	0.00105	0.00066	0.00040	0.00023	0.00012	0.00006	
O2	0.15307	0.15723	0.16077	0.16379	0.16635	0.16852	0.17033	0.17185	0.17310	0.17412	0.17493	0.17557	0.17606	

ADD H2O(L)

	0	0/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931					
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	9.4144-4	1.0087-3	1.0863-3	1.1768-3	1.2838-3	1.4122-3	1.5691-3	1.7652-3	2.0174-3	2.3536-3	2.8243-3	3.5304-3	4.8551-3
M, MOL WT	28.969	28.969	28.970	28.970	28.970	28.970	28.970	28.969	28.969	28.970	28.970	28.970	29.880
CP, CAL/(G*IK)	0.3044	0.2999	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.4350
GAMMA (S)	1.2910	1.2966	1.3023	1.3083	1.3147	1.3218	1.3302	1.3399	1.3508	1.3623	1.3737	1.3837	1.2420
SON VEL, M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	322.0

MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03047
H2O	0.03885	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.00840
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14488	0.14563	0.14512	0.14517	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

	0	0/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931					
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	86.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	7.4845-4	7.7868-4	8.1058-4	8.4446-4	8.8071-4	9.1975-4	9.6206-4	1.0082-3	1.0588-3	1.1147-3	1.1767-3	1.2460-3	1.3239-3
M, MOL WT	28.660	28.753	28.823	28.872	28.907	28.931	28.946	28.956	28.962	28.965	28.967	28.969	28.969
CP, CAL/(G*IK)	0.5145	0.4725	0.4367	0.4074	0.3841	0.3659	0.3519	0.3409	0.3322	0.3252	0.3191	0.3138	0.3090
GAMMA (S)	1.1899	1.1991	1.2091	1.2194	1.2295	1.2390	1.2476	1.2553	1.2622	1.2685	1.2744	1.2800	1.2855
SON VEL, M/SEC	983.1	967.6	952.3	937.0	921.3	905.0	887.9	870.0	851.3	831.8	811.4	790.3	768.3

MOLE FRACTIONS

AR	0.00904	0.00907	0.00910	0.00911	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00597	0.00404	0.00261	0.00160	0.00093	0.00051	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000
CO2	0.03466	0.03672	0.03825	0.03933	0.04005	0.04050	0.04077	0.04092	0.04099	0.04103	0.04105	0.04106	0.04106
H	0.00094	0.00054	0.00030	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00003	0.00002	0.00002	0.00032	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00080	0.00056	0.00037	0.00024	0.00015	0.00009	0.00005	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000
H2O(L)	0.03179	0.03345	0.03481	0.03590	0.03675	0.03740	0.03788	0.03822	0.03847	0.03863	0.03873	0.03880	0.03883
NO	0.02889	0.02538	0.02201	0.01883	0.01585	0.01312	0.01066	0.00847	0.00657	0.00495	0.00361	0.00254	0.00170
NO2	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001
N2	0.74309	0.74730	0.75081	0.75372	0.75613	0.75812	0.75976	0.76111	0.76222	0.76312	0.76385	0.76442	0.76485
O	0.00783	0.00526	0.00343	0.00215	0.00130	0.00075	0.00041	0.00021	0.00010	0.00005	0.00002	0.00001	0.00000
OH	0.01076	0.00858	0.00666	0.00503	0.00369	0.00262	0.00180	0.00119	0.00075	0.00045	0.00025	0.00013	0.00007
O2	0.12618	0.12905	0.13161	0.13389	0.13592	0.13770	0.13924	0.14056	0.14166	0.14258	0.14331	0.14389	0.14433



ADD H2O(L)

CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=				2.9126	PHI=					0.4396	
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0				
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3				
RHO, G/CC	2.3538-3	2.5220-3	2.7159-3	2.9423-3	3.2098-3	3.5307-3	3.9230-3	4.4134-3	5.0439-3	5.8845-3	7.0614-3	8.8268-3	1.2447-2				
M, MOL WT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.641	
CP, CAL/(G*IK)	0.3092	0.3047	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.3349				
GAMMA (S)	1.2851	1.2905	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.2733				
SON VEL,M/SEC	743.8	720.1	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	322.0				

MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.05446	
H2	0.05772	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.00328	
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
NO2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
O2	0.11351	0.11371	0.11364	0.11392	0.11396	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	

CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=				2.9126	PHI=					0.4396	
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0				
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3				
RHO, G/CC	1.8745-3	1.9493-3	2.0283-3	2.1125-3	2.2027-3	2.3001-3	2.4057-3	2.5209-3	2.6475-3	2.7871-3	2.9421-3	3.1153-3	3.3100-3				
M, MOL WT	28.713	28.791	28.849	28.891	28.920	28.939	28.952	28.960	28.965	28.969	28.970	28.971	28.972				
CP, CAL/(G*IK)	0.4934	0.4568	0.4259	0.4006	0.3806	0.3650	0.3528	0.3432	0.3355	0.3290	0.3234	0.3184	0.3137				
GAMMA (S)	1.1934	1.2022	1.2116	1.2210	1.2301	1.2384	1.2459	1.2526	1.2587	1.2644	1.2697	1.2749	1.2800				
SON VEL,M/SEC	983.7	968.2	952.8	937.3	921.3	904.6	887.2	869.0	850.1	830.4	809.9	788.7	766.6				

MOLE FRACTIONS

AR	0.00897	0.00900	0.00902	0.00903	0.00904	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.00659	0.00441	0.00281	0.00171	0.00099	0.00054	0.00028	0.00014	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.05372	0.05607	0.05778	0.05897	0.05976	0.06024	0.06053	0.06070	0.06078	0.06082	0.06084	0.06085	0.06086				
H	0.00063	0.00036	0.00020	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000				
H2	0.00004	0.00003	0.00003	0.00032	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000				
H2	0.00091	0.00062	0.00041	0.00026	0.00016	0.00009	0.00005	0.00003	0.00001	0.00001	0.00001	0.00000	0.00000				
H2O	0.05088	0.05254	0.05387	0.05493	0.05574	0.05636	0.05682	0.05714	0.05737	0.05752	0.05762	0.05768	0.05771				
NO	0.02555	0.02240	0.01940	0.01657	0.01395	0.01155	0.00938	0.00746	0.00578	0.00436	0.00318	0.00224	0.00150				
NO2	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002				
N2	0.73877	0.74239	0.74541	0.74791	0.74998	0.75170	0.75312	0.75430	0.75527	0.75607	0.75670	0.75720	0.75758				
O	0.00439	0.00295	0.00192	0.00120	0.00073	0.00042	0.00023	0.00012	0.00006	0.00003	0.00001	0.00000	0.00000				
OH	0.01019	0.00804	0.00620	0.00465	0.00340	0.00241	0.00165	0.00109	0.00068	0.00041	0.00023	0.00012	0.00006				
O2	0.09930	0.10115	0.10292	0.10459	0.10615	0.10757	0.10884	0.10995	0.11089	0.11168	0.11232	0.11283	0.11322				

ADD H2O(L)

CASE=	0	O/F=	25.0000	F/A=	0.04000	PERCENT FUEL=	3.8462	PHI=	0.5862					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	4.7080-3	5.0443-3	5.4324-3	5.8851-3	6.4201-3	7.0621-3	7.8467-3	8.8276-3	1.0089-2	1.1770-2	1.4124-2	1.7655-2	2.5439-2	
M, MOL WT	28.974	28.975	28.975	28.975	28.975	28.974	28.974	28.974	28.974	28.974	28.974	28.974	31.312	
CP, CAL/(G)(K)	0.3138	0.3094	0.3049	0.3002	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.3079	
GAMMA (S)	1.2797	1.2848	1.2902	1.2961	1.3024	1.3094	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.2774	
SON VEL,M/SEC	742.2	718.4	693.8	668.1	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	319.0	

MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.07465
H2O	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.00160
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75071	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08296	0.08313	0.08325	0.08332	0.08335	0.08337	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

CASE=	0	O/F=	25.0000	F/A=	0.04000	PERCENT FUEL=	3.8462	PHI=	0.5862					
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4850.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	
RHO, G/CC	3.7524-3	3.9011-3	4.0586-3	4.2265-3	4.4066-3	4.6010-3	4.8121-3	5.0425-3	5.2955-3	5.5747-3	5.8847-3	6.2311-3	6.6206-3	
M, MOL WT	28.738	28.810	28.863	28.901	28.928	28.945	28.957	28.964	28.969	28.971	28.973	28.974	28.974	
CP, CAL/(G)(K)	0.4858	0.4514	0.4224	0.3988	0.3803	0.3658	0.3546	0.3458	0.3387	0.3328	0.3275	0.3227	0.3182	
GAMMA (S)	1.1943	1.2030	1.2120	1.2209	1.2293	1.2370	1.2438	1.2499	1.2554	1.2605	1.2653	1.2701	1.2748	
SON VEL,M/SEC	983.6	968.2	952.8	937.1	920.9	904.0	886.4	868.0	848.9	829.0	808.5	787.1	765.1	

MOLE FRACTIONS

AR	0.00889	0.00892	0.00893	0.00894	0.00895	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO	0.00724	0.00489	0.00311	0.00189	0.00109	0.00060	0.00031	0.00015	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000
CO2	0.07227	0.07493	0.07686	0.07818	0.07905	0.07956	0.07992	0.08010	0.08019	0.08024	0.08026	0.08027	0.08027	0.08027
H	0.00048	0.00027	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00103	0.00070	0.00046	0.00029	0.00018	0.00010	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.06970	0.07133	0.07262	0.07363	0.07440	0.07498	0.07540	0.07571	0.07591	0.07605	0.07614	0.07619	0.07622	
NO	0.02175	0.01903	0.01646	0.01406	0.01183	0.00980	0.00796	0.00633	0.00491	0.00371	0.00271	0.00190	0.00128	
NO2	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	
N2	0.73409	0.73732	0.73998	0.74217	0.74397	0.74545	0.74667	0.74767	0.74850	0.74918	0.74972	0.75014	0.75047	
O	0.00265	0.00178	0.00115	0.00072	0.00044	0.00025	0.00014	0.00007	0.00003	0.00002	0.00001	0.00000	0.00000	
OH	0.00927	0.00728	0.00558	0.00418	0.00305	0.00216	0.00147	0.00097	0.00061	0.00037	0.00021	0.00011	0.00005	
O2	0.07242	0.07349	0.07463	0.07580	0.07695	0.07805	0.07907	0.07997	0.08076	0.08142	0.08196	0.08239	0.08272	

ADD H2O(L)

CASE=	0	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL=				4.7619	PHI=				0.7327
P, ATM	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	9.4168-3	1.0089-2	1.0866-2	1.1771-2	1.2841-2	1.4125-2	1.5695-2	1.7657-2	2.0179-2	2.3542-2	2.8251-2	3.6707-2	5.1948-2		
M, MOL WT	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	30.121	31.970	
CP, CAL/(G*IK)	0.3183	0.3139	0.3034	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2557	0.2988		
GAMMA (S)	1.2747	1.2796	1.2848	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.2084	1.2715		
SON VEL,M/SEC	740.7	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	365.3	315.0		

MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00988	0.00888	0.00888	0.00888	0.00888	0.00888	0.00688	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03798	0.09363
H2O	0.09440	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.05644	0.00079
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74370	0.74383	0.74392	0.74397	0.74400	0.74402	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05301	0.05315	0.05324	0.05329	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

CASE=	0	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL=				4.7619	PHI=				0.7327
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	6.2542-3	6.5024-3	6.7651-3	7.0451-3	7.3453-3	7.6694-3	8.0211-3	8.4051-3	8.8267-3	9.2920-3	9.8088-3	1.0386-2	1.1035-2		
M, MOL WT	28.739	28.812	28.866	28.905	28.931	28.949	28.960	28.967	28.972	28.974	28.976	28.976	28.977		
CP, CAL/(G*IK)	0.4902	0.4551	0.4254	0.4014	0.3825	0.3681	0.3571	0.3487	0.3419	0.3363	0.3314	0.3269	0.3225		
GAMMA (S)	1.1927	1.2013	1.2103	1.2193	1.2276	1.2350	1.2415	1.2472	1.2523	1.2569	1.2613	1.2657	1.2701		
SON VEL,M/SEC	982.9	967.5	952.1	936.4	920.2	903.2	885.5	867.0	847.8	827.8	807.1	785.7	763.6		

MOLE FRACTIONS

AR	0.00881	0.00883	0.00885	0.00886	0.00887	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.00822	0.00589	0.00375	0.00228	0.00132	0.00072	0.00037	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000
CO2	0.08969	0.09267	0.09519	0.09680	0.09785	0.09851	0.09889	0.09911	0.09922	0.09928	0.09931	0.09932	0.09932	0.09932
H	0.00041	0.00023	0.00013	0.00007	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00004	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00126	0.00086	0.00056	0.00035	0.00021	0.00012	0.00007	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.08805	0.08969	0.09097	0.09195	0.09270	0.09325	0.09364	0.09392	0.09411	0.09424	0.09432	0.09436	0.09439	0.09439
NO	0.01736	0.01512	0.01304	0.01112	0.00936	0.00775	0.00630	0.00502	0.00390	0.00294	0.00215	0.00151	0.00102	
NO2	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	
N2	0.72923	0.73223	0.73466	0.73660	0.73816	0.73942	0.74044	0.74126	0.74193	0.74248	0.74291	0.74325	0.74351	
O	0.00165	0.00110	0.00071	0.00045	0.00027	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.00821	0.00641	0.00490	0.00366	0.00267	0.00189	0.00129	0.00085	0.00054	0.00032	0.00018	0.00010	0.00005	
O2	0.04644	0.04671	0.04719	0.04781	0.04852	0.04927	0.04999	0.05067	0.05127	0.05179	0.05222	0.05256	0.05282	

ADD H2O(L)

CASE=	0	O/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882				PHI= 1.0000					
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/C	1.1772-4	1.2613-4	1.3584-4	1.4716-4	1.6054-4	1.7659-4	1.9621-4	2.2074-4	2.5227-4	2.9432-4	3.5318-4	4.4148-4	6.2730-4
M, MOL WT	28.979	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	30.884
CP, CAL/(G*IK)	0.3285	0.3224	0.3173	0.3123	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	1.7616
GAMMA (S)	1.2646	1.2704	1.2758	1.2813	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.1374
SON VEL, M/SEC	737.7	714.3	689.8	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	303.1

MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00011	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13303	0.13312	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.06163
H2O	0.12662	0.12666	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.06505
NO	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73136	0.73140	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
OH	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	0	O/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882				PHI= 1.0000					
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/C	1.1942-4	1.2541-4	1.3161-4	1.3806-4	1.4480-4	1.5189-4	1.5940-4	1.6744-4	1.7613-4	1.8562-4	1.9606-4	2.0768-4	2.2070-4
M, MOL WT	27.438	27.785	28.079	28.322	28.516	28.665	28.775	28.853	28.939	28.959	28.959	28.970	28.976
CP, CAL/(G*IK)	0.9926	0.8952	0.8010	0.7117	0.6295	0.5569	0.4955	0.4458	0.4075	0.3791	0.3588	0.3446	0.3348
GAMMA (S)	1.1394	1.1421	1.1466	1.1533	1.1623	1.1736	1.1870	1.2015	1.2162	1.2299	1.2417	1.2513	1.2590
SON VEL, M/SEC	983.2	960.6	939.6	920.0	901.8	884.8	868.6	852.7	836.5	819.4	801.1	781.3	760.3

MOLE FRACTIONS

AR	0.00827	0.00837	0.00846	0.00853	0.00859	0.00864	0.00867	0.00869	0.00871	0.00872	0.00873	0.00873	0.00873
CO	0.06165	0.05122	0.04085	0.03120	0.02278	0.01587	0.01052	0.00661	0.00393	0.00219	0.00114	0.00054	0.00024
CO2	0.06442	0.07645	0.08817	0.09893	0.10824	0.11584	0.12170	0.12596	0.12888	0.13078	0.13192	0.13257	0.13290
H	0.00926	0.00571	0.00337	0.00131	0.00013	0.00052	0.00025	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01295	0.01020	0.00781	0.00582	0.00422	0.00297	0.00202	0.00133	0.00084	0.00050	0.00029	0.00015	0.00008
H2O	0.09281	0.10099	0.10773	0.11310	0.11723	0.12032	0.12254	0.12409	0.12513	0.12580	0.12620	0.12644	0.12657
NO	0.01223	0.00986	0.00768	0.00577	0.00417	0.00289	0.00192	0.00122	0.00073	0.00041	0.00022	0.00011	0.00005
N2	0.68637	0.69630	0.70482	0.71192	0.71761	0.72202	0.72528	0.72759	0.72916	0.73016	0.73076	0.73111	0.73129
O	0.00845	0.00519	0.00302	0.00166	0.00086	0.00041	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000
OH	0.01910	0.01480	0.01101	0.00785	0.00536	0.00350	0.00218	0.00128	0.00071	0.00037	0.00018	0.00008	0.00003
O2	0.02449	0.02090	0.01707	0.01331	0.00990	0.00702	0.00474	0.00303	0.00184	0.00105	0.00056	0.00027	0.00012

ADD H2O(L)  
ADD C(S)

CASE= 0    O/F= 14.2857    F/A= 0.07000    PERCENT FUEL= 6.5421    PHI= 1.0258  
P, ATM    1.5000    1.5000    1.5000    1.5000    1.5000    1.5000    1.5000    1.5000    1.5000    1.5000    1.5000    1.5000    1.5000  
P, PSIA    22.0    22.0    22.0    22.0    22.0    22.0    22.0    22.0    22.0    22.0    22.0    22.0    22.0  
T, DEG K    1500.0    1400.0    1300.0    1200.0    1100.0    1000.0    900.0    800.0    700.0    600.0    500.0    400.0    300.0  
T, DEG F    2240.3    2060.3    1880.3    1700.3    1520.3    1340.3    1160.3    980.3    800.3    620.3    440.3    260.3    80.3  
RHO, G/CC    3.5141-4    3.7651-4    4.0548-4    4.3927-4    4.7920-4    5.2712-4    5.8569-4    6.5890-4    7.5311-4    8.8056-4    1.0590-3    1.3244-3    1.9822-3  
M, MOL WT    28.836    28.836    28.836    28.836    28.836    28.836    28.836    28.836    28.839    28.902    28.966    28.980    32.530  
CP, CAL/(G)(K)    0.3262    0.3226    0.3188    0.3146    0.3101    0.3052    0.2994    0.2926    0.2883    0.2995    0.2743    0.2602    0.7427  
GAMMA (S)    1.2679    1.2716    1.2758    1.2804    1.2857    1.2917    1.2990    1.3082    1.3164    1.3115    1.3380    1.3583    1.1654  
SON VEL,M/SEC    740.5    716.5    691.5    665.6    638.6    610.3    580.6    549.3    515.4    475.8    438.2    394.8    298.9

MOLE FRACTIONS

AR    0.00867    0.00867    0.00867    0.00867    0.00867    0.00867    0.00867    0.00867    0.00867    0.00868    0.00869    0.00871    0.00872    0.00867  
C(S)    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00497  
CH4    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00005    0.00114    0.00225    0.00250    0.00003  
CO    0.00727    0.00692    0.00647    0.00590    0.00517    0.00427    0.00321    0.00207    0.00104    0.00021    0.00001    0.00000    0.00000    0.00000  
CO2    0.12840    0.12876    0.12921    0.12978    0.13050    0.13140    0.13247    0.13360    0.13460    0.13464    0.13403    0.13385    0.13069    0.13069  
H2    0.00278    0.00313    0.00358    0.00415    0.00488    0.00578    0.00684    0.00797    0.00879    0.00527    0.00107    0.00008    0.00000    0.00000  
H2O(L)    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.10855  
H2O    0.12630    0.12595    0.12550    0.12493    0.12420    0.12330    0.12224    0.12111    0.12019    0.12180    0.12407    0.12463    0.02048  
NH3    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00001    0.00002    0.00001    0.00001    0.00000  
N2    0.72657    0.72657    0.72657    0.72657    0.72657    0.72657    0.72657    0.72657    0.72654    0.72823    0.72984    0.73021    0.72661

CASE= 0    O/F= 14.2857    F/A= 0.07000    PERCENT FUEL= 6.5421    PHI= 1.0258  
P, ATM    2.0000    2.0000    2.0000    2.0000    2.0000    2.0000    2.0000    2.0000    2.0000    2.0000    2.0000    2.0000    2.0000  
P, PSIA    29.4    29.4    29.4    29.4    29.4    29.4    29.4    29.4    29.4    29.4    29.4    29.4    29.4  
T, DEG K    2800.0    2700.0    2600.0    2500.0    2400.0    2300.0    2200.0    2100.0    2000.0    1900.0    1800.0    1700.0    1600.0  
T, DEG F    4580.3    4400.3    4220.3    4040.3    3860.3    3680.3    3500.3    3320.3    3140.3    2960.3    2780.3    2600.3    2420.3  
RHO, G/CC    2.4087-4    2.5237-4    2.6433-4    2.7682-4    2.8993-4    3.0377-4    3.1847-4    3.3422-4    3.5124-4    3.6985-4    3.9044-4    4.1342-4    4.3927-4  
M, MOL WT    27.671    27.956    28.197    28.394    28.549    28.665    28.746    28.797    28.822    28.831    28.835    28.836    28.836  
CP, CAL/(G)(K)    0.8808    0.7986    0.7185    0.6424    0.5720    0.5085    0.4520    0.4028    0.3661    0.3464    0.3377    0.3331    0.3295  
GAMMA (S)    1.1452    1.1488    1.1543    1.1620    1.1721    1.1848    1.2004    1.2191    1.2378    1.2504    1.2570    1.2611    1.2645  
SON VEL,M/SEC    981.6    960.5    940.7    922.3    905.1    889.0    874.0    859.8    845.1    827.7    807.7    786.2    763.8

MOLE FRACTIONS

AR    0.00832    0.00841    0.00848    0.00854    0.00859    0.00862    0.00865    0.00865    0.00866    0.00867    0.00867    0.00867    0.00867    0.00867  
CO    0.05671    0.04691    0.03759    0.02925    0.02222    0.01669    0.01268    0.01013    0.00883    0.00828    0.00800    0.00779    0.00756  
CO2    0.07348    0.08643    0.09508    0.10435    0.11210    0.11819    0.12258    0.12536    0.12678    0.12738    0.12767    0.12789    0.12812  
H    0.00615    0.00380    0.00226    0.00130    0.00072    0.00038    0.00020    0.00010    0.00005    0.00002    0.00001    0.00000    0.00000  
H2    0.00001    0.00001    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000  
H2O    0.01142    0.00905    0.00704    0.00540    0.00411    0.00315    0.00248    0.00208    0.00194    0.00197    0.00210    0.00227    0.00250  
H2O    0.10151    0.10824    0.11372    0.11804    0.12134    0.12374    0.12539    0.12640    0.12688    0.12701    0.12695    0.12680    0.12658  
N2    0.01077    0.00845    0.00638    0.00459    0.00313    0.00198    0.00113    0.00056    0.00023    0.00008    0.00002    0.00001    0.00000  
O    0.69183    0.70018    0.70729    0.71314    0.71777    0.72127    0.72374    0.72530    0.72610    0.72642    0.72652    0.72656    0.72657  
OH    0.00524    0.00314    0.00177    0.00094    0.00046    0.00020    0.00008    0.00002    0.00001    0.00000    0.00000    0.00000    0.00000  
O2    0.01573    0.01191    0.00866    0.00602    0.00398    0.00247    0.00142    0.00074    0.00034    0.00013    0.00005    0.00001    0.00000  
O2    0.01884    0.01528    0.01172    0.00843    0.00558    0.00331    0.00165    0.00064    0.00018    0.00003    0.00001    0.00000    0.00000

ADD C(S)  
ADD H2O(L)

	CASE= 0	O/F= 12.5000	F/A= 0.08000	PERCENT FUEL= 7.4074				PHI= 1.1723								
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	300.0	300.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	80.3	80.3	80.3
RHO, G/CC	6.8357-4	7.3240-4	7.8873-4	8.5446-4	9.3214-4	1.0254-3	1.1396-3	1.2888-3	1.4952-3	1.7600-3	2.1181-3	2.6490-3	4.0925-3	4.0925-3	4.0925-3	4.0925-3
M, MOL WT	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046
CP, CAL/(G*IK)	0.3338	0.3313	0.3289	0.3266	0.3245	0.3229	0.3285	0.4349	0.4040	0.3226	0.2827	0.2679	0.5180	0.5180	0.5180	0.5180
GAMMA (S)	1.2695	1.2720	1.2746	1.2771	1.2794	1.2813	1.2794	1.2358	1.2490	1.2906	1.3251	1.3444	1.1828	1.1828	1.1828	1.1828
SON VEL, M/SEC	751.4	726.6	700.9	674.0	645.9	616.3	584.2	539.9	503.9	472.1	436.1	392.8	296.4	296.4	296.4	296.4

MOLE FRACTIONS

AR	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00941	0.00853	0.00857	0.00852	0.00844	0.00836
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00375	0.01294	0.02233	0.03235
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00012	0.00276	0.01035	0.01290	0.00974	0.00516
CO	0.04458	0.04259	0.04013	0.03708	0.03328	0.02857	0.02269	0.01331	0.00307	0.00028	0.00001	0.00000	0.00000
CO2	0.10480	0.10679	0.10925	0.11230	0.11609	0.12081	0.12661	0.13414	0.13906	0.13611	0.12960	0.12342	0.11702
H2	0.02015	0.02214	0.02469	0.02765	0.03144	0.03613	0.04155	0.04665	0.05219	0.00656	0.00110	0.00007	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.13249
H2O	0.12200	0.12001	0.11755	0.11450	0.11070	0.10600	0.10036	0.09668	0.10280	0.11339	0.12430	0.13321	0.00965
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00003	0.00006	0.00008	0.00006	0.00003	0.00001	0.00000
N2	0.70012	0.70012	0.70012	0.70012	0.70012	0.70012	0.70028	0.70399	0.71452	0.71819	0.71376	0.70734	0.70013

	CASE= 0	O/F= 12.5000	F/A= 0.08000	PERCENT FUEL= 7.4074				PHI= 1.1723							
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000		
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8		
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	4.7878-4	5.0003-4	5.2193-4	5.4464-4	5.6845-4	5.9379-4	6.2112-4	6.5087-4	6.8350-4	7.1951-4	7.5951-4	8.0419-4	8.5446-4		
M, MOL WT	27.501	27.696	27.838	27.932	27.987	28.017	28.032	28.039	28.043	28.044	28.045	28.046	28.046		
CP, CAL/(G*IK)	0.7438	0.6504	0.5584	0.4789	0.4213	0.3858	0.3659	0.3549	0.3485	0.3444	0.3413	0.3387	0.3362		
GAMMA (S)	1.1576	1.1668	1.1807	1.1991	1.2182	1.2340	1.2448	1.2517	1.2563	1.2595	1.2622	1.2646	1.2670		
SON VEL, M/SEC	989.9	972.5	957.5	944.6	932.0	917.7	901.3	882.9	863.1	842.3	820.7	798.3	775.2		

MOLE FRACTIONS

AR	0.00820	0.00825	0.00830	0.00832	0.00834	0.00835	0.00835	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836
CO	0.07120	0.06473	0.05967	0.05619	0.05406	0.05277	0.05190	0.05117	0.05043	0.04962	0.04868	0.04756	0.04621
CO2	0.07528	0.08278	0.08860	0.09228	0.09501	0.09645	0.09740	0.09817	0.09893	0.09975	0.10070	0.10182	0.10317
H	0.00513	0.00337	0.00219	0.00140	0.00088	0.00054	0.00032	0.00018	0.00010	0.00005	0.00002	0.00001	0.00000
H2	0.01593	0.01424	0.01312	0.01257	0.01247	0.01268	0.01309	0.01364	0.01431	0.01511	0.01605	0.01717	0.01852
H2O	0.11553	0.12071	0.12443	0.12681	0.12809	0.12860	0.12861	0.12828	0.12773	0.12700	0.12608	0.12497	0.12363
NO	0.00618	0.00420	0.00262	0.00148	0.00076	0.00036	0.00015	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000
N2	0.68343	0.68928	0.69363	0.69654	0.69827	0.69921	0.69959	0.69992	0.70003	0.70008	0.70010	0.70011	0.70011
O	0.00214	0.00111	0.00052	0.00022	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01072	0.00749	0.00490	0.00300	0.00170	0.00091	0.00045	0.00021	0.00009	0.00003	0.00001	0.00000	0.00000
O2	0.00627	0.00384	0.00202	0.00090	0.00034	0.00011	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000









ADD H2O ILI

CASE= 0		O/F=100.0000		F/A= 0.01000		PERCENT FUEL= 0.9901		PHI= 0.1465							
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	7.0602-4	7.5645-4	8.1464-4	8.8253-4	9.6276-4	1.0590-3	1.1767-3	1.3238-3	1.5129-3	1.7651-3	2.1181-3	2.6476-3	3.5592-3		
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	29.205	
CP, CAL/(G*IK)	0.2994	0.2950	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2418		
GAMMA (S)	1.2974	1.3031	1.3090	1.3151	1.3215	1.3285	1.3369	1.3466	1.3574	1.3688	1.3799	1.3893	1.2338		
SON VEL, M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	324.6		

MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O ILI	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00817	
H2O	0.01961	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01146	
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17642	0.17666	0.17653	0.17693	0.17699	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE= 0		O/F=100.0000		F/A= 0.01000		PERCENT FUEL= 0.9901		PHI= 0.1465							
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3		
RHO, G/CC	4.9934-4	5.1938-4	5.4056-4	5.6308-4	5.8719-4	6.1318-4	6.4137-4	6.7212-4	7.0586-4	7.4309-4	7.8442-4	8.3059-4	8.8252-4		
M, MOL WT	28.682	28.768	28.832	28.878	28.910	28.932	28.946	28.955	28.960	28.963	28.965	28.966	28.967		
CP, CAL/(G*IK)	0.4963	0.4575	0.4246	0.3976	0.3760	0.3590	0.3457	0.3353	0.3269	0.3199	0.3140	0.3087	0.3039		
GAMMA (S)	1.1954	1.2046	1.2145	1.2247	1.2347	1.2441	1.2526	1.2604	1.2675	1.2740	1.2801	1.2860	1.2917		
SON VEL, M/SEC	985.0	969.5	954.3	938.9	923.2	906.8	889.7	871.8	853.1	833.6	813.3	792.2	770.2		

MOLE FRACTIONS

AR	0.00914	0.00917	0.00919	0.00920	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00321	0.00225	0.00146	0.00089	0.00052	0.00029	0.00015	0.00007	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.01736	0.01848	0.01933	0.01992	0.02032	0.02057	0.02072	0.02080	0.02084	0.02087	0.02088	0.02088	0.02088	0.02088	0.02088
H	0.00081	0.00048	0.00027	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00001	0.00031	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00040	0.00029	0.00020	0.00013	0.00008	0.00005	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01440	0.01555	0.01653	0.01733	0.01796	0.01846	0.01884	0.01911	0.01930	0.01943	0.01952	0.01957	0.01960	0.01960	0.01960
NO	0.03204	0.02819	0.02447	0.02093	0.01763	0.01459	0.01184	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189		
NO2	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001		
N2	0.74958	0.75380	0.75737	0.76037	0.76288	0.76498	0.76673	0.76819	0.76939	0.77038	0.77117	0.77179	0.77227		
O	0.01059	0.00713	0.00464	0.00292	0.00176	0.00101	0.00055	0.00029	0.00014	0.00006	0.00003	0.00001	0.00000		
OH	0.00842	0.00681	0.00534	0.00407	0.00301	0.00215	0.00148	0.00098	0.00062	0.00037	0.00021	0.00011	0.00005		
O2	0.15389	0.15780	0.16117	0.16406	0.16652	0.16862	0.17040	0.17189	0.17312	0.17413	0.17494	0.17557	0.17606		

## ADD H2O(L)

CASE=	0	O/F=	50.0000	F/A=	0.02000	PERCENT FUEL=	1.9608	PHI=	0.2931							
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0			
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3			
RHO, G/CC	1.4122-3	1.5130-3	1.6294-3	1.7652-3	1.9257-3	2.1183-3	2.3536-3	2.6478-3	3.0261-3	3.5304-3	4.2365-3	5.2956-3	7.3039-3			
M, MOL WT	28.969	28.970	28.970	28.970	28.970	28.970	28.970	28.969	28.969	28.970	28.970	28.970	29.967			
CP, CAL/(G)(K)	0.3044	0.2999	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.3752			
GAMMA (S)	1.2910	1.2966	1.3023	1.3083	1.3147	1.3218	1.3301	1.3399	1.3508	1.3623	1.3737	1.3837	1.2642			
SON VEL, M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	324.4			

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03328
H2O	0.03885	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.00558
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14488	0.14503	0.14512	0.14517	0.14519	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

CASE=	0	O/F=	50.0000	F/A=	0.02000	PERCENT FUEL=	1.9608	PHI=	0.2931							
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3			
RHO, G/CC	1.2500-3	1.2997-3	1.3523-3	1.4083-3	1.4684-3	1.5333-3	1.6037-3	1.6805-3	1.7648-3	1.8579-3	1.9612-3	2.0767-3	2.2065-3			
M, MOL WT	28.720	28.795	28.851	28.891	28.919	28.938	28.950	28.958	28.963	28.966	28.968	28.969	28.969			
CP, CAL/(G)(K)	0.4830	0.4483	0.4189	0.3948	0.3756	0.3604	0.3483	0.3388	0.3310	0.3244	0.3187	0.3136	0.3089			
GAMMA (S)	1.1969	1.2058	1.2151	1.2245	1.2336	1.2420	1.2497	1.2567	1.2631	1.2691	1.2747	1.2802	1.2856			
SON VEL, M/SEC	985.0	969.6	954.2	938.6	922.6	906.0	888.6	870.5	851.6	831.9	811.5	790.3	768.4			

## MOLE FRACTIONS

AR	0.00906	0.00909	0.00910	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00478	0.00320	0.00205	0.00125	0.00072	0.00040	0.00021	0.00010	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.03593	0.03761	0.03885	0.03970	0.04027	0.04062	0.04083	0.04095	0.04101	0.04104	0.04105	0.04106	0.04106	0.04106	0.04106	0.04106
H	0.00055	0.00037	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
HO2	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00063	0.00044	0.00029	0.00019	0.00011	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.03275	0.03418	0.03535	0.03628	0.03702	0.03758	0.03800	0.03830	0.03852	0.03866	0.03875	0.03881	0.03884	0.03884	0.03884	0.03884
NO	0.02899	0.02545	0.02205	0.01885	0.01587	0.01313	0.01066	0.00847	0.00657	0.00495	0.00361	0.00254	0.00170			
NO2	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
N2	0.74461	0.74836	0.75153	0.75419	0.75642	0.75829	0.75986	0.76117	0.76225	0.76314	0.76386	0.76442	0.76485			
O	0.00608	0.00409	0.00266	0.00167	0.00101	0.00058	0.00032	0.00016	0.00008	0.00004	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.00962	0.00764	0.00591	0.00446	0.00326	0.00232	0.00159	0.00105	0.00066	0.00040	0.00022	0.00012	0.00006			
O2	0.12682	0.12951	0.13195	0.13414	0.13609	0.13781	0.13932	0.14060	0.14169	0.14259	0.14332	0.14389	0.14433			

ADD H2O(L)

CASE=	0	O/F=	33.3333	F/A=	0.03000	PERCENT FUEL=				2.9126	PHI=				0.4396	
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	-80.3	-260.3	-440.3
RHO, G/CC	3.5307-3	3.7829-3	4.0739-3	4.4134-3	4.8146-3	5.2961-3	5.8845-3	6.6201-3	7.5658-3	8.8268-3	1.0592-2	1.3240-2	1.8692-2	3.0676	5.0000	7.5000
M, MDL WT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.676
CP, CAL/(G*IK)	0.3091	0.3047	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.2451	0.2409	0.2372	0.2338
GAMMA (S)	1.2852	1.2905	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.3884	1.3978	1.4068	1.4154
SON VEL, M/SEC	743.8	720.1	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	353.4	309.0	264.6	220.4

MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.05556
H2O	0.05773	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.00218
N0	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11350	0.11370	0.11364	0.11392	0.11396	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

CASE=	0	O/F=	33.3333	F/A=	0.03000	PERCENT FUEL=				2.9126	PHI=				0.4396	
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	1400.0	1300.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	2060.3	1880.3
RHO, G/CC	2.5019-3	2.6008-3	2.7057-3	2.8175-3	2.9375-3	3.0671-3	3.2078-3	3.3614-3	3.5300-3	3.7162-3	3.9228-3	4.1537-3	4.4134-3	4.7034-3	5.0150-3	5.3500-3
M, MDL WT	28.742	28.811	28.863	28.900	28.925	28.943	28.954	28.962	28.966	28.969	28.971	28.971	28.972	28.972	28.972	28.972
CP, CAL/(G*IK)	0.4777	0.4447	0.4170	0.3944	0.3764	0.3622	0.3511	0.3421	0.3348	0.3287	0.3232	0.3183	0.3136	0.3091	0.3047	0.3003
GAMMA (S)	1.1971	1.2057	1.2147	1.2236	1.2320	1.2398	1.2469	1.2533	1.2591	1.2646	1.2698	1.2750	1.2800	1.2852	1.2905	1.2961
SON VEL, M/SEC	984.7	969.3	953.8	938.1	921.9	905.1	887.5	869.2	850.2	830.4	809.9	788.7	766.7	745.5	724.3	703.1

MOLE FRACTIONS

AR	0.00898	0.00900	0.00902	0.00903	0.00904	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.00520	0.00386	0.00245	0.00149	0.00086	0.00047	0.00024	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.05458	0.05666	0.05817	0.05922	0.05990	0.06032	0.06058	0.06072	0.06079	0.06083	0.06085	0.06085	0.06085	0.06085	0.06085	0.06085
H	0.00051	0.00029	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H02	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00080	0.00054	0.00036	0.00023	0.00014	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.05144	0.05295	0.05418	0.05515	0.05590	0.05646	0.05688	0.05719	0.05740	0.05754	0.05763	0.05768	0.05771	0.05772	0.05772	0.05772
N0	0.02557	0.02241	0.01941	0.01658	0.01396	0.01155	0.00938	0.00746	0.00578	0.00436	0.00318	0.00224	0.00150	0.00096	0.00057	0.00031
NO2	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002
N2	0.73952	0.74291	0.74576	0.74814	0.75013	0.75179	0.75317	0.75433	0.75529	0.75607	0.75670	0.75720	0.75758	0.75787	0.75813	0.75835
O	0.00381	0.00255	0.00166	0.00104	0.00063	0.00036	0.00020	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00954	0.00752	0.00578	0.00434	0.00317	0.00224	0.00154	0.00101	0.00064	0.00038	0.00022	0.00011	0.00006	0.00004	0.00003	0.00002
O2	0.09937	0.10121	0.10297	0.10464	0.10619	0.10760	0.10886	0.10996	0.11090	0.11169	0.11233	0.11283	0.11322	0.11354	0.11382	0.11406

ADD H2O(L)

CASE=	0	0/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	7.0621-3	7.5665-3	8.1485-3	8.8276-3	9.6301-3	1.0593-2	1.1770-2	1.3241-2	1.5133-2	1.7655-2	2.1186-2	2.6483-2	3.8181-2
M, MOL WT	28.974	28.975	28.975	28.975	28.975	28.974	28.974	28.974	28.974	28.974	28.974	28.974	31.330
CP, CAL/(G*IK)	0.3138	0.3094	0.3049	0.3002	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.2967
GAMMA (S)	1.2797	1.2848	1.2902	1.2961	1.3024	1.3094	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.2844
SON VEL, M/SEC	742.2	718.4	693.8	668.0	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	319.8

MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.07518
H2O	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.00107
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75071	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08296	0.08313	0.08324	0.08331	0.08335	0.08337	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

CASE=	0	0/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P, ATM	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3
RHO, G/CC	5.0078-3	5.2048-3	5.4138-3	5.6369-3	5.8765-3	6.1354-3	6.4165-3	6.7236-3	7.0608-3	7.4330-3	7.8464-3	8.3081-3	8.8275-3
M, MOL WT	28.765	28.828	28.875	28.909	28.933	28.948	28.959	28.965	28.969	28.972	28.973	28.974	28.974
CP, CAL/(G*IK)	0.4713	0.4402	0.4142	0.3931	0.3764	0.3633	0.3531	0.3449	0.3382	0.3324	0.3274	0.3227	0.3182
GAMMA (S)	1.1979	1.2063	1.2149	1.2223	1.2312	1.2383	1.2447	1.2505	1.2557	1.2607	1.2654	1.2701	1.2749
SON VEL, M/SEC	984.6	969.2	953.7	937.9	921.5	904.4	886.7	868.2	849.0	829.1	808.5	787.2	765.1

MOLE FRACTIONS

AR	0.00890	0.00892	0.00894	0.00895	0.00895	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO	0.00645	0.00427	0.00271	0.00164	0.00095	0.00052	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000
CO2	0.07324	0.07560	0.07729	0.07845	0.07921	0.07968	0.07996	0.08012	0.08020	0.08024	0.08026	0.08027	0.08027	
H	0.00039	0.00022	0.00012	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
H02	0.00004	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	
H2	0.00090	0.00061	0.00040	0.00025	0.00015	0.00009	0.00005	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	
H2O	0.07025	0.07173	0.07291	0.07384	0.07455	0.07508	0.07547	0.07575	0.07594	0.07607	0.07615	0.07620	0.07623	
NO	0.02174	0.01902	0.01646	0.01406	0.01183	0.00980	0.00796	0.00633	0.00491	0.00371	0.00271	0.00190	0.00128	
NO2	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	
N2	0.73478	0.73780	0.74030	0.74238	0.74410	0.74552	0.74671	0.74770	0.74851	0.74918	0.74972	0.75014	0.75047	
O	0.00230	0.00154	0.00100	0.00063	0.00038	0.00022	0.00012	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	
OH	0.00866	0.00679	0.00521	0.00390	0.00284	0.00201	0.00137	0.00090	0.00057	0.00034	0.00019	0.00010	0.00005	
O2	0.07229	0.07341	0.07459	0.07578	0.07695	0.07806	0.07907	0.07998	0.08076	0.08142	0.08196	0.08239	0.08272	

## ADD H2O(L)

CASE=	0	0/F=	20.0000	F/A=	0.05000	PERCENT FUEL=			4.7619	PHI=			0.7327
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	1.1771-2	1.2612-2	1.3582-2	1.4714-2	1.6051-2	1.7657-2	1.9618-2	2.2071-2	2.5224-2	2.9428-2	3.5313-2	4.6456-2	6.4946-2
M, MOL WT	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	30.496	31.976
CP, CAL/(G)(K)	0.3182	0.3139	0.3094	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.7308	0.2955
GAMMA (S)	1.2747	1.2796	1.2848	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.2133	1.2735
SON VEL, M/SEC	740.7	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	363.8	315.2

## MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00958	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.04982	0.09379
H2O	0.09441	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.04459	0.00063
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74370	0.74383	0.74392	0.74397	0.74400	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05301	0.05315	0.05324	0.05329	0.05332	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

CASE=	0	0/F=	16.6667	F/A=	0.06000	PERCENT FUEL=			5.6604	PHI=			0.8792
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	290.3	2780.3	2600.3	2420.3
RHO, G/CC	5.9443-5	6.2565-5	6.5778-5	6.9094-5	7.2528-5	7.6104-5	7.9863-5	8.3862-5	8.8172-5	9.2878-5	9.8072-5	1.0386-4	1.1036-4
M, MOL WT	27.315	27.723	28.067	28.348	28.567	28.726	28.835	28.902	28.941	28.961	28.971	28.976	28.978
CP, CAL/(G)(K)	1.0985	0.9817	0.8674	0.7568	0.6527	0.5594	0.4819	0.4237	0.3841	0.3593	0.3442	0.3348	0.3283
GAMMA (S)	1.1352	1.1374	1.1417	1.1486	1.1590	1.1732	1.1908	1.2098	1.2273	1.2412	1.2513	1.2587	1.2645
SON VEL, M/SEC	983.6	959.7	937.7	917.7	899.8	883.7	869.1	854.9	839.7	822.8	804.0	783.6	761.9

## MOLE FRACTIONS

AR	0.00829	0.00842	0.00852	0.00861	0.00867	0.00872	0.00876	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880
CO	0.05749	0.04704	0.03633	0.02624	0.01757	0.01079	0.00604	0.00307	0.00142	0.00059	0.00022	0.00007	0.00002
CO2	0.05375	0.06586	0.07797	0.08920	0.09877	0.10619	0.11138	0.11463	0.11644	0.11735	0.11776	0.11793	0.11799
H	0.01253	0.00765	0.00443	0.00243	0.00125	0.00060	0.00027	0.00011	0.00004	0.00001	0.00000	0.00000	0.00000
H02	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.01187	0.00916	0.00675	0.00473	0.00313	0.00195	0.00113	0.00060	0.00030	0.00013	0.00006	0.00002	0.00001
H2O	0.07610	0.08508	0.09254	0.09849	0.10301	0.10631	0.10859	0.11009	0.11102	0.11158	0.11190	0.11207	0.11216
NO	0.01548	0.01310	0.01083	0.00878	0.00700	0.00553	0.00434	0.00338	0.00260	0.00195	0.00142	0.00100	0.00067
N2	0.68700	0.69856	0.70846	0.71663	0.72307	0.72787	0.73122	0.73341	0.73479	0.73563	0.73615	0.73648	0.73669
O	0.01512	0.00974	0.00601	0.00356	0.00203	0.00111	0.00059	0.00030	0.00014	0.00006	0.00003	0.00001	0.00000
OH	0.02313	0.01860	0.01439	0.01073	0.00773	0.00540	0.00366	0.00239	0.00150	0.00090	0.00051	0.00027	0.00013
O2	0.03922	0.03678	0.03375	0.03060	0.02774	0.02551	0.02403	0.02324	0.02297	0.02300	0.02316	0.02335	0.02352

## ADD H2O(L)

	CASE= 0	O/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882				PHI= 1.0000					
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	2.3544-4	2.5227-4	2.7168-4	2.9432-4	3.2108-4	3.5318-4	3.9243-4	4.4148-4	5.0455-4	5.9864-4	7.0637-4	8.8296-4	1.3013-3
M, MOL WT	28.979	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981
CP, CAL/(G)(K)	0.3277	0.3221	0.3172	0.3123	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	0.2590
GAMMA (S)	1.2652	1.2706	1.2759	1.2814	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.1538
SON VEL, M/SEC	737.9	714.4	689.8	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	299.7

## MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13306	0.13313	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.09532
H2O	0.12663	0.12666	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.03136
NO	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73137	0.73141	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
OH	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

	CASE= 0	O/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882				PHI= 1.0000					
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.8027-4	1.8905-4	1.9816-4	2.0767-4	2.1763-4	2.2813-4	2.3931-4	2.5130-4	2.6428-4	2.7847-4	2.9412-4	3.1153-4	3.3106-4
M, MOL WT	27.613	27.922	28.185	28.401	28.572	28.704	28.801	28.869	28.915	28.944	28.962	28.972	28.977
CP, CAL/(G)(K)	0.9229	0.8355	0.7507	0.6703	0.5966	0.5318	0.4772	0.4332	0.3991	0.3739	0.3557	0.3430	0.3340
GAMMA (S)	1.1427	1.1460	1.1510	1.1581	1.1675	1.1789	1.1921	1.2061	1.2199	1.2326	1.2435	1.2524	1.2596
SON VEL, M/SEC	981.6	959.9	939.6	920.7	903.0	886.2	870.1	854.1	837.6	820.2	801.6	781.7	760.4

## MOLE FRACTIONS

AR	0.00822	0.00841	0.00849	0.00856	0.00861	0.00865	0.00868	0.00870	0.00871	0.00872	0.00873	0.00873	0.00873
CO	0.05697	0.04680	0.03696	0.02800	0.02031	0.01407	0.00929	0.00583	0.00345	0.00192	0.00100	0.00048	0.00021
CO2	0.06990	0.08149	0.09254	0.10249	0.11097	0.11781	0.12304	0.12682	0.12940	0.13107	0.13207	0.13264	0.13293
H	0.00713	0.00438	0.00259	0.00116	0.00079	0.00040	0.00019	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01152	0.00903	0.00689	0.00512	0.00371	0.00261	0.00177	0.00117	0.00073	0.00044	0.00025	0.00013	0.00007
H2O	0.09697	0.10420	0.11012	0.11482	0.11843	0.12112	0.12307	0.12442	0.12532	0.12591	0.12626	0.12647	0.12658
NO	0.01177	0.00942	0.00729	0.00545	0.00392	0.00271	0.00180	0.00113	0.00068	0.00039	0.00020	0.00010	0.00005
N2	0.69101	0.70000	0.70769	0.71406	0.71915	0.72308	0.72598	0.72803	0.72942	0.73030	0.73084	0.73114	0.73130
O	0.00661	0.00404	0.00234	0.00128	0.00066	0.00032	0.00014	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000
OH	0.01727	0.01325	0.00978	0.00694	0.00472	0.00307	0.00191	0.00112	0.00062	0.00032	0.00016	0.00007	0.00003
O2	0.02251	0.01896	0.01531	0.01183	0.00873	0.00616	0.00414	0.00264	0.00160	0.00091	0.00048	0.00024	0.00011

ADD H2O(L)  
ADD C(S)

CASE=	0	0/F=	14.2857	F/A=	0.07000	PERCENT FUEL=	6.5421	PHI=	1.0258									
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0					
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3					
RHO, G/CC	4.6855-4	5.0202-4	5.4064-4	5.8569-4	6.3893-4	7.0283-4	7.8092-4	8.7854-4	1.0042-3	1.1744-3	1.4121-3	1.7659-3	2.6586-3					
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.841	28.911	28.968	28.981	32.724					
CP, CAL/(G)(K)	0.3262	0.3226	0.3188	0.3146	0.3101	0.3052	0.2994	0.2926	0.2905	0.2978	0.2733	0.2601	0.6270					
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2917	1.2990	1.3082	1.3146	1.3128	1.3391	1.3585	1.1751					
SON VEL, M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.6	549.3	515.1	475.9	438.4	394.8	299.3					

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00868	0.00870	0.00871	0.00872	0.00867					
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00500					
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00009	0.00129	0.00228	0.00250	0.00001					
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00321	0.00207	0.00103	0.00018	0.00001	0.00000	0.00000					
CO2	0.12840	0.12876	0.12921	0.12978	0.13050	0.13140	0.13247	0.13360	0.13459	0.13456	0.13401	0.13385	0.13067					
H2	0.00278	0.00313	0.00359	0.00415	0.00488	0.00578	0.00684	0.00797	0.00866	0.00471	0.00093	0.00007	0.00000					
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.11378					
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12111	0.12025	0.12210	0.12415	0.12464	0.01527					
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002	0.00002	0.00001	0.00000					
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72670	0.72844	0.72989	0.73021	0.72659					

CASE=	0	0/F=	14.2857	F/A=	0.07000	PERCENT FUEL=	6.5421	PHI=	1.0258									
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000					
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1					
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0					
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3					
RHO, G/CC	3.6316-4	3.8006-4	3.9769-4	4.1615-4	4.3556-4	4.5611-4	4.7800-4	5.0148-4	5.2692-4	5.5480-4	5.8567-4	6.2014-4	6.5890-4					
M, MOL WT	27.813	28.068	28.282	28.456	28.593	28.694	28.763	28.805	28.825	28.832	28.835	28.836	28.836					
CP, CAL/(G)(K)	0.8239	0.7494	0.6769	0.6080	0.5444	0.4869	0.4354	0.3912	0.3602	0.3443	0.3371	0.3329	0.3295					
GAMMA (S)	1.1489	1.1530	1.1590	1.1671	1.1775	1.1904	1.2062	1.2245	1.2413	1.2518	1.2575	1.2612	1.2645					
SON VEL, M/SEC	980.6	960.3	941.2	923.3	906.5	890.7	875.8	861.5	846.2	828.2	807.9	786.3	763.8					

MOLE FRACTIONS

AR	0.00837	0.00844	0.00851	0.00856	0.00860	0.00863	0.00865	0.00866	0.00867	0.00867	0.00867	0.00867	0.00867					
CO	0.05228	0.04292	0.03422	0.02658	0.02024	0.01533	0.01186	0.00973	0.00869	0.00824	0.00800	0.00779	0.00756					
CO2	0.07859	0.08914	0.09885	0.10732	0.11429	0.11968	0.12348	0.12580	0.12694	0.12742	0.12768	0.12789	0.12812					
H	0.00474	0.00293	0.00174	0.00100	0.00056	0.00030	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000					
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
H2	0.01018	0.00805	0.00627	0.00483	0.00370	0.00287	0.00231	0.00200	0.00191	0.00196	0.00209	0.00227	0.00250					
H2O	0.10492	0.11085	0.11565	0.11942	0.12229	0.12436	0.12577	0.12660	0.12696	0.12704	0.12696	0.12680	0.12658					
N0	0.01023	0.00796	0.00596	0.00425	0.00286	0.00179	0.00100	0.00048	0.00019	0.00006	0.00002	0.00000	0.00000					
N2	0.9568	0.70324	0.70964	0.71488	0.71901	0.72209	0.72424	0.72555	0.72620	0.72645	0.72653	0.72656	0.72657					
O	0.00405	0.00241	0.00135	0.00071	0.00034	0.00015	0.00006	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000					
OH	0.01406	0.01056	0.00762	0.00526	0.00345	0.00212	0.00121	0.00062	0.00028	0.00011	0.00004	0.00001	0.00000					
O2	0.01690	0.01349	0.01019	0.00720	0.00466	0.00268	0.00128	0.00047	0.00012	0.00002	0.00000	0.00000	0.00000					



ADD C(S)  
ADD H2O(L)

	CASE=	0	O/F=	12.5000	F/A=	0.08000	PERCENT FUEL= 7.4074				PHI= 1.1723			
P, ATM		4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA		58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG F		1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG C		2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC		9.1143-4	9.7653-4	1.0516-3	1.1393-3	1.2429-3	1.3672-3	1.5197-3	1.7216-3	1.9965-3	2.3478-3	2.8244-3	3.5321-3	5.4727-3
M, MOL WT		28.046	28.046	28.046	28.046	28.046	28.046	28.058	28.254	28.669	28.898	28.970	28.983	33.680
CP, CAL/(G)(K)		0.3338	0.3313	0.3289	0.3266	0.3245	0.3231	0.3342	0.4471	0.3921	0.3172	0.2815	0.2678	0.4639
GAMMA (S)		1.2695	1.2721	1.2746	1.2771	1.2794	1.2812	1.2763	1.2322	1.2538	1.2943	1.3263	1.3446	1.1915
SON VEL, M/SEC		751.4	726.6	700.9	674.0	645.9	616.3	583.4	538.6	504.5	472.7	436.3	392.8	297.1

MOLE FRACTIONS

AR	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00842	0.00854	0.00858	0.00852	0.00844	0.00836
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00409	0.01297	0.02234	0.03236
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00020	0.00368	0.01108	0.01305	0.00976	0.00516	0.00000
CO	0.04458	0.04259	0.04013	0.03708	0.03328	0.02856	0.02257	0.01235	0.00269	0.00024	0.00001	0.00000	0.00000	0.00000
CO2	0.10480	0.10679	0.10925	0.11230	0.11610	0.12081	0.12667	0.13446	0.13893	0.13590	0.12956	0.12342	0.11702	0.11102
H2	0.02015	0.02214	0.02460	0.02765	0.03144	0.03612	0.04133	0.03802	0.01904	0.00571	0.00095	0.00006	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.13493
H2O	0.12200	0.12001	0.11755	0.11450	0.11070	0.10600	0.10043	0.09771	0.10399	0.11397	0.12441	0.13322	0.00722	0.00000
NH3	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00003	0.00008	0.00008	0.00006	0.00003	0.00001	0.00000	0.00000
N2	0.70012	0.70012	0.70012	0.70012	0.70012	0.70013	0.70040	0.70529	0.71564	0.71840	0.71379	0.70735	0.70012	0.70012

	CASE=	0	O/F=	12.5000	F/A=	0.08000	PERCENT FUEL= 7.4074				PHI= 1.1723			
P, ATM		6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA		88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	38.2	88.2	88.2	88.2
T, DEG F		2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1800.0	1700.0	1600.0	1600.0
T, DEG C		4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2420.3	2420.3
RHO, G/CC		7.2074-4	7.5189-4	7.8410-4	8.1766-4	8.5305-4	8.9087-4	9.3176-4	9.7634-4	1.0253-3	1.0793-3	1.1393-3	1.2063-3	1.2817-3
M, MOL WT		27.599	27.764	27.881	27.956	27.999	28.022	28.034	28.040	28.043	28.045	28.045	28.046	28.046
CP, CAL/(G)(K)		0.6883	0.6018	0.5198	0.4526	0.4062	0.3782	0.3622	0.3532	0.3477	0.3440	0.3412	0.3386	0.3362
GAMMA (S)		1.1634	1.1740	1.1891	1.2072	1.2245	1.2379	1.2469	1.2528	1.2568	1.2598	1.2623	1.2647	1.2670
SON VEL, M/SEC		990.6	974.3	960.2	947.4	934.2	919.1	902.0	883.2	863.3	842.4	820.7	798.4	775.2

MOLE FRACTIONS

AR	0.00823	0.00827	0.00831	0.00833	0.00834	0.00835	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836
CO	0.06831	0.06260	0.05832	0.05547	0.05373	0.05264	0.05185	0.05115	0.05043	0.04962	0.04868	0.04756	0.04621	0.04621
CO2	0.07869	0.08528	0.09018	0.09313	0.09540	0.09661	0.09747	0.09820	0.09893	0.09975	0.10070	0.10182	0.10317	0.10317
H	0.00406	0.00269	0.00176	0.00113	0.00072	0.00044	0.00026	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000
H2	0.01497	0.01358	0.01272	0.01236	0.01238	0.01264	0.01308	0.01364	0.01431	0.01511	0.01605	0.01717	0.01852	0.01852
H2O	0.11826	0.12262	0.12566	0.12753	0.12848	0.12880	0.12870	0.12833	0.12775	0.12700	0.12608	0.12497	0.12363	0.12363
NO	0.00550	0.00366	0.00223	0.00124	0.00063	0.00029	0.00013	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
N2	0.68622	0.69125	0.69489	0.69726	0.69864	0.69939	0.69977	0.69996	0.70005	0.70009	0.70010	0.70011	0.70011	0.70011
O	0.00155	0.00079	0.00036	0.00015	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00024	0.00636	0.00411	0.00248	0.00140	0.00074	0.00037	0.00017	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000
O2	0.00496	0.00290	0.00146	0.00063	0.00023	0.00007	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

ADD C(S)  
ADD H2O(L)

CASE= 0 O/F= 11.1111 F/A= 0.09000 PERCENT FUEL= 8.2569 PHI= 1.3189  
P, ATM 10.000 10.000 10.000 10.000 10.000 10.000 10.000 10.000 10.000 10.000 10.000 10.000 10.000 10.000  
P, PSIA 147.0 147.0 147.0 147.0 147.0 147.0 147.0 147.0 147.0 147.0 147.0 147.0 147.0 147.0  
T, DEG K 1500.0 1400.0 1300.0 1200.0 1100.0 1000.0 900.0 800.0 700.0 600.0 500.0 400.0 300.0  
T, DEG F 2240.3 2060.3 1880.3 1700.3 1520.3 1340.3 1160.3 980.3 800.3 620.3 440.3 260.3 80.3  
RHO, G/CC 2.2189-3 2.3774-3 2.5603-3 2.7737-3 3.0261-3 3.3320-3 3.7435-3 4.3151-3 5.0060-3 5.8750-3 7.0625-3 8.8309-3 1.4032-2  
M, MOL WT 27.311 27.311 27.311 27.312 27.314 27.342 27.646 28.327 28.754 28.925 28.976 28.985 34.542  
CP, CAL/(G)(K) 0.3403 0.3385 0.3369 0.3358 0.3370 0.3670 0.5562 0.5364 0.3768 0.3098 0.2828 0.2712 0.3749  
GAMMA (S) 1.2719 1.2738 1.2755 1.2767 1.2766 1.2626 1.2077 1.2059 1.2572 1.2977 1.3230 1.3386 1.2039  
SON VEL,M/SEC 762.1 736.8 710.5 682.9 653.8 619.6 571.7 532.1 504.4 473.1 435.7 391.9 294.8

MOLE FRACTIONS

AR 0.00806 0.00806 0.00806 0.00666 0.00807 0.00807 0.00816 0.00832 0.00835 0.00833 0.00826 0.00817 0.00806  
C(S) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00488 0.01636 0.02474 0.03456 0.04540 0.05778  
CH4 0.00000 0.00000 0.00000 0.00000 0.00004 0.00052 0.00606 0.01599 0.01774 0.01630 0.01213 0.00656 0.00000  
CO 0.07610 0.07308 0.06941 0.06491 0.05930 0.05165 0.03521 0.01154 0.00178 0.00014 0.00000 0.00000 0.00000  
CO2 0.08601 0.08903 0.09270 0.09721 0.10279 0.11012 0.12283 0.13492 0.13201 0.12603 0.11936 0.11229 0.10433  
H2 0.03946 0.04248 0.04614 0.05062 0.05608 0.06185 0.05732 0.03380 0.01401 0.00399 0.00066 0.00004 0.00000  
H2O(L) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.15156  
H2O 0.11484 0.11182 0.10815 0.10365 0.09811 0.09147 0.08654 0.09325 0.11010 0.12262 0.13306 0.14315 0.00274  
NH3 0.00000 0.00001 0.00001 0.00002 0.00004 0.00007 0.00014 0.00016 0.00013 0.00009 0.00005 0.00002 0.00000  
N2 0.67552 0.67552 0.67552 0.67553 0.67558 0.67624 0.68374 0.69715 0.69952 0.69756 0.69192 0.68438 0.67552

CASE= 0 O/F= 11.1111 F/A= 0.09000 PERCENT FUEL= 8.2569 PHI= 1.3189  
P, ATM 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000 15.000  
P, PSIA 220.4 220.4 220.4 220.4 220.4 220.4 220.4 220.4 220.4 220.4 220.4 220.4 220.4  
T, DEG K 2800.0 2700.0 2600.0 2500.0 2400.0 2300.0 2200.0 2100.0 2000.0 1900.0 1800.0 1700.0 1600.0  
T, DEG F 4580.3 4400.3 4220.3 4040.3 3860.3 3680.3 3500.3 3320.3 3140.3 2960.3 2780.3 2600.3 2420.3  
RHO, G/CC 1.7719-3 1.8420-3 1.9158-3 1.9943-3 2.0786-3 2.1697-3 2.2688-3 2.3771-3 2.4961-3 2.6276-3 2.7736-3 2.9367-3 3.1203-3  
M, MOL WT 27.41 27.207 27.249 27.275 27.291 27.300 27.305 27.308 27.310 27.310 27.311 27.311 27.311  
CP, CAL/(G)(K) 0.5061 0.4542 0.4172 0.3924 0.3762 0.3659 0.3591 0.3545 0.3512 0.3486 0.3464 0.3443 0.3423  
GAMMA (S) 1.1992 1.2134 1.2266 1.2375 1.2457 1.2517 1.2560 1.2593 1.2618 1.2640 1.2661 1.2680 1.2700  
SON VEL,M/SEC 1014.2 1000.6 986.5 971.1 954.4 936.4 917.3 897.3 876.5 855.1 832.9 810.1 786.5

MOLE FRACTIONS

AR 0.00801 0.00803 0.00805 0.00805 0.00806 0.00806 0.00806 0.00806 0.00806 0.00806 0.00806 0.00806 0.00806  
CO 0.09414 0.09230 0.09099 0.08998 0.08911 0.08827 0.08739 0.08641 0.08529 0.08400 0.08249 0.08071 0.07861  
CO2 0.06696 0.06919 0.07075 0.07172 0.07288 0.07377 0.07469 0.07569 0.07681 0.07811 0.07962 0.08140 0.08350  
H 0.00335 0.00232 0.00157 0.00104 0.00067 0.00041 0.00024 0.00014 0.00007 0.00004 0.00002 0.00001 0.00000  
H2 0.02541 0.02530 0.02552 0.02596 0.02656 0.02729 0.02815 0.02913 0.03025 0.03156 0.03307 0.03485 0.03695  
H2O 0.12391 0.12574 0.12672 0.12708 0.12699 0.12658 0.12592 0.12505 0.12399 0.12271 0.12122 0.11944 0.11735  
NO 0.00212 0.00126 0.00070 0.00037 0.00018 0.00008 0.00004 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000  
N2 0.67025 0.67231 0.67363 0.67444 0.67493 0.67520 0.67536 0.67544 0.67548 0.67551 0.67552 0.67552 0.67552  
O 0.00038 0.00017 0.00007 0.00003 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
OH 0.00047 0.00302 0.00185 0.00108 0.00060 0.00031 0.00015 0.00007 0.00003 0.00001 0.00000 0.00000 0.00000  
O2 0.00076 0.00035 0.00015 0.00006 0.00002 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000



CASE=	0	0/F=	0.0000	F/A=	0.00000	PERCENT FUEL=	0.0000	PHI=	0.0000										
P, ATH	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3						
RHO, G/CC	3.7566-4	3.9043-4	4.0609-4	4.2280-4	4.4074-4	4.6012-4	4.8117-4	5.0417-4	5.2943-4	5.5732-4	5.8829-4	6.2291-4	6.6184-4						
M, MOL WT	28.771	28.834	28.880	28.911	28.933	28.946	28.955	28.959	28.962	28.964	28.964	28.964	28.964						
CP, CAL/(G)IK	0.4495	0.4179	0.3921	0.3715	0.3552	0.3425	0.3325	0.3245	0.3179	0.3123	0.3073	0.3027	0.2982						
GAMMA (S)	1.2095	1.2191	1.2289	1.2384	1.2473	1.2556	1.2630	1.2698	1.2760	1.2819	1.2876	1.2932	1.2988						
SON VEL, M/SEC	989.3	974.2	959.1	943.6	927.5	910.8	893.3	875.0	855.9	836.2	815.7	794.4	772.3						

MOLE FRACTIONS

AR	0.00926	0.00928	0.00930	0.00931	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00005	0.00003	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00025	0.00026	0.00028	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03521	0.03098	0.02688	0.02298	0.01933	0.01599	0.01297	0.01030	0.00798	0.00601	0.00438	0.00308	0.00207						
NO2	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002						
N2	0.75804	0.76187	0.76515	0.76796	0.77035	0.77239	0.77413	0.77560	0.77683	0.77785	0.77868	0.77935	0.77986						
O	0.01336	0.00900	0.00586	0.00368	0.00222	0.00128	0.00070	0.00036	0.00017	0.00008	0.00003	0.00001	0.00000						
O2	0.18379	0.18854	0.19248	0.19575	0.19845	0.20070	0.20256	0.20410	0.20537	0.20642	0.20726	0.20793	0.20844						

CASE=	0	0/F=	0.0000	F/A=	0.00000	PERCENT FUEL=	0.0000	PHI=	0.0000										
P, ATH	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0						
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3						
RHO, G/CC	7.0596-4	7.5639-4	8.1457-4	8.8245-4	9.6267-4	1.0589-3	1.1766-3	1.3237-3	1.5128-3	1.7649-3	2.1179-3	2.6474-3	3.5298-3						
M, MOL WT	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964						
CP, CAL/(G)IK	0.2940	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402						
GAMMA (S)	1.3044	1.3102	1.3161	1.3223	1.3287	1.3357	1.3440	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999						
SON VEL, M/SEC	749.4	725.6	700.8	674.9	647.7	619.2	589.3	557.5	523.6	486.8	446.1	400.3	347.2						

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
CO2	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
NO	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
NO2	0.78023	0.78050	0.78067	0.78078	0.78084	0.78087	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089						
O2	0.20882	0.20909	0.20926	0.20937	0.20944	0.20947	0.20948	0.20948	0.20949	0.20949	0.20949	0.20949	0.20949						

ADD H2O(L)

CASE= 0 O/F=100.0000 F/A= 0.01000 PERCENT FUEL= 0.9901 PHI= 0.1465

P, ATH	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	9.4136-4	1.0086-3	1.0862-3	1.1767-3	1.2837-3	1.4120-3	1.5688-3	1.7651-3	2.0172-3	2.3534-3	2.8241-3	3.5301-3	4.7598-3
M, MOL HT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967
CP, CAL/(G)(K)	0.2993	0.2949	0.2906	0.2863	0.2820	0.2774	0.2733	0.2666	0.2606	0.2546	0.2492	0.2448	0.2400
GAMMA (S)	1.2974	1.3031	1.3090	1.3151	1.3215	1.3285	1.3369	1.3466	1.3574	1.3688	1.3799	1.3893	1.3951
SON VEL, M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	351.5

MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01105
H2O	0.01961	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.00857
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17641	0.17666	0.17663	0.17693	0.17699	0.17701	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE= 0 O/F=100.0000 F/A= 0.01000 PERCENT FUEL= 0.9901 PHI= 0.1465

P, ATH	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3
RHO, G/CC	7.5020-4	7.7994-4	8.1144-4	8.4503-4	8.8106-4	9.1994-4	9.6216-4	1.0082-3	1.0588-3	1.1147-3	1.1766-3	1.2459-3	1.3238-3
M, MOL HT	28.727	28.800	28.853	28.892	28.919	28.937	28.949	28.956	28.961	28.964	28.965	28.966	28.967
CP, CAL/(G)(K)	0.4725	0.4399	0.4112	0.3881	0.3696	0.3548	0.3431	0.3337	0.3259	0.3194	0.3137	0.3086	0.3038
GAMMA (S)	1.2011	1.2099	1.2193	1.2287	1.2378	1.2464	1.2543	1.2615	1.2682	1.2744	1.2804	1.2861	1.2918
SON VEL, M/SEC	986.6	971.1	955.8	940.2	924.2	907.6	890.2	872.2	853.3	833.7	813.4	792.2	770.2

MOLE FRACTIONS

AR	0.00915	0.00918	0.00919	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00279	0.00188	0.00120	0.00074	0.00043	0.00024	0.00012	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000
CO2	0.01792	0.01889	0.01960	0.02009	0.02042	0.02062	0.02075	0.02082	0.02085	0.02087	0.02088	0.02088	0.02088
H	0.00611	0.00036	0.00020	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00034	0.00024	0.00016	0.00011	0.00006	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
NO	0.01493	0.01597	0.01684	0.01756	0.01813	0.01858	0.01891	0.01916	0.01933	0.01945	0.01953	0.01957	0.01960
NO2	0.03217	0.02827	0.02451	0.02096	0.01764	0.01459	0.01184	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189
NO2	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002
O	0.75073	0.75461	0.75792	0.76073	0.76310	0.76511	0.76681	0.76823	0.76942	0.77039	0.77118	0.77180	0.77227
O2	0.00867	0.00583	0.00380	0.00238	0.00144	0.00083	0.00045	0.00023	0.00011	0.00005	0.00002	0.00001	0.00000
OH	0.00776	0.00624	0.00488	0.00370	0.00273	0.00195	0.00134	0.00088	0.00056	0.00034	0.00019	0.00010	0.00005
O2	0.15487	0.15849	0.16165	0.16438	0.16674	0.16876	0.17048	0.17193	0.17314	0.17414	0.17494	0.17558	0.17606

## ADD H20(L)

CASE=	0	0/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931								
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0	0.0	0.0
RHO, G/CC	2.3536E-3	2.5217E-3	2.7157E-3	2.9420E-3	3.2095E-3	3.5304E-3	3.9227E-3	4.4130E-3	5.0435E-3	5.8840E-3	7.0609E-3	8.8261E-3	1.2202E-2	0.0	0.0	0.0
M, MOL WT	28.969	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.969	28.970	28.970	28.970	28.970	28.970	30.037	0.0
CP, CAL/(G)(K)	0.3043	0.2999	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2428	0.2378	0.2328	0.2278
GAMMA (S)	1.2911	1.2966	1.3023	1.3083	1.3147	1.3218	1.3301	1.3399	1.3508	1.3623	1.3747	1.3887	1.4041	1.4208	1.4388	1.4581
SON VEL./M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	447.0	409.6	372.1	334.7	297.1	260.0

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H20(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03552
H2	0.03885	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03334
HO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14487	0.14502	0.14512	0.14517	0.14519	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

CASE= 0 0/F= 50.0000 F/A= 0.02000 PERCENT FUEL= 1.9608 PHI= 0.2931

P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	1400.0	1300.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	2060.3	1880.3
RHO, G/CC	1.8776E-3	1.9514E-3	2.0297E-3	2.1134E-3	2.2032E-3	2.3003E-3	2.4057E-3	2.5209E-3	2.6473E-3	2.7869E-3	2.9419E-3	3.1150E-3	3.3098E-3	3.5262E-3	3.7643E-3	4.0243E-3
M, MOL WT	28.759	28.822	28.869	28.903	28.926	28.942	28.953	28.960	28.964	28.967	28.968	28.969	28.969	28.969	28.969	28.969
CP, CAL/(G)(K)	0.4623	0.4324	0.4073	0.3867	0.3700	0.3567	0.3460	0.3374	0.3302	0.3240	0.3185	0.3135	0.3088	0.3043	0.3000	0.2960
GAMMA (S)	1.2022	1.2106	1.2194	1.2280	1.2363	1.2440	1.2511	1.2576	1.2637	1.2695	1.2750	1.2803	1.2854	1.2904	1.2954	1.3004
SON VEL./M/SEC	986.5	971.0	955.6	939.8	923.5	906.6	889.1	870.8	851.8	832.1	811.6	790.4	768.4	746.4	724.4	702.4

## MOLE FRACTIONS

AR	0.00908	0.00909	0.00911	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00399	0.00265	0.00169	0.00102	0.00059	0.00032	0.00017	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.03678	0.03820	0.03923	0.03994	0.04041	0.04070	0.04087	0.04097	0.04102	0.04104	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H	0.00048	0.00028	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
HO2	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00053	0.00036	0.00024	0.00015	0.00009	0.00005	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.03340	0.03467	0.03572	0.03655	0.03721	0.03771	0.03809	0.03836	0.03855	0.03868	0.03876	0.03881	0.03884	0.03884	0.03884	0.03884
NO	0.02906	0.02549	0.02208	0.01886	0.01587	0.01313	0.01066	0.00847	0.00657	0.00495	0.00361	0.00254	0.00170	0.00100	0.00040	0.00000
NO2	0.00005	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002	0.00002
N2	0.74560	0.74905	0.75199	0.75449	0.75661	0.75841	0.75993	0.76121	0.76227	0.76315	0.76386	0.76442	0.76485	0.76518	0.76542	0.76558
O	0.00497	0.00334	0.00217	0.00136	0.00082	0.00047	0.00026	0.00013	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00879	0.00696	0.00537	0.00404	0.00296	0.00210	0.00144	0.00095	0.00060	0.00035	0.00020	0.00011	0.00005	0.00002	0.00001	0.00001
O2	0.12724	0.12982	0.13217	0.13430	0.13620	0.13789	0.13936	0.14063	0.14171	0.14260	0.14332	0.14389	0.14433	0.14466	0.14490	0.14505

## ADD H2O(L)

CASE=	0	O/F= 33.3333	F/A= 0.03000	PERCENT FUEL= 2.9126				PHI= 0.4396					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	4.7076-3	5.0439-3	5.4319-3	5.8846-3	6.4195-3	7.0615-3	7.8461-3	8.8268-3	1.0088-2	1.1769-2	1.4123-2	1.7654-2	2.4937-2
M, MOL WT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.694
CP, CAL/(G)(K)	0.3091	0.3047	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.3003
GAMMA (S)	1.2852	1.2905	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.2941
SON VEL./M/SEC	743.8	720.1	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	324.3

## MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.05610
H2O	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.00164
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11350	0.11370	0.11363	0.11392	0.11396	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

CASE=	0	O/F= 33.3333	F/A= 0.03000	PERCENT FUEL= 2.9126				PHI= 0.4396					
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	3.7575-3	3.9046-3	4.0609-3	4.2279-3	4.4073-3	4.6013-3	4.8121-3	5.0423-3	5.2952-3	5.5743-3	5.8843-3	6.2306-3	6.6201-3
M, MOL WT	28.778	28.836	28.879	28.910	28.932	28.947	28.957	28.963	28.967	28.969	28.971	28.972	28.972
CP, CAL/(G)(K)	0.4584	0.4300	0.4063	0.3869	0.3713	0.3589	0.3489	0.3408	0.3341	0.3282	0.3230	0.3181	0.3136
GAMMA (S)	1.2021	1.2103	1.2187	1.2268	1.2345	1.2417	1.2482	1.2541	1.2597	1.2649	1.2700	1.2751	1.2801
SON VEL./M/SEC	986.2	970.7	955.1	939.2	922.7	905.7	887.9	869.5	850.4	830.5	810.0	788.7	766.7

## MOLE FRACTIONS

AR	0.00899	0.00901	0.00902	0.00903	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.00482	0.00319	0.00202	0.00122	0.00070	0.00039	0.00020	0.00010	0.00004	0.00002	0.00001	0.00000	0.00000
CO2	0.05563	0.05738	0.05864	0.05951	0.06007	0.06042	0.06063	0.06074	0.06080	0.06083	0.06085	0.06085	0.06085
H	0.00038	0.00022	0.00012	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00004	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2	0.00066	0.00045	0.00029	0.00019	0.00011	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.05214	0.05348	0.05456	0.05542	0.05609	0.05660	0.05697	0.05724	0.05743	0.05756	0.05764	0.05769	0.05771
NO	0.02560	0.02243	0.01942	0.01659	0.01396	0.01155	0.00938	0.00746	0.00578	0.00436	0.00318	0.00224	0.00150
NO2	0.00006	0.00006	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002
N2	0.74043	0.74354	0.74618	0.74841	0.75030	0.75189	0.75324	0.75437	0.75531	0.75608	0.75671	0.75720	0.75758
O	0.00311	0.00209	0.00136	0.00085	0.00051	0.00030	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000
OH	0.00868	0.00683	0.00525	0.00393	0.00287	0.00203	0.00139	0.00091	0.00058	0.00035	0.00020	0.00010	0.00005
O2	0.09946	0.10129	0.10305	0.10471	0.10624	0.10764	0.10889	0.10998	0.11091	0.11169	0.11233	0.11283	0.11322

## ADD H2O(L)

	CASE=	0	O/F=	25.0000	F/A=	0.04000	PERCENT FUEL=	3.8462	PHI=	0.5862								
P, ATM		40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA		587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K		1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0				
T, DEG F		2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3				
RHO, G/CC		9.4161-3	1.0089-2	1.0865-2	1.1770-2	1.2840-2	1.4124-2	1.5693-2	1.7655-2	2.0177-2	2.3540-2	2.8248-2	3.5983-2	5.0923-2				
M, MOL WT		28.975	28.975	28.975	28.975	28.975	28.975	28.974	28.974	28.974	28.974	28.974	29.526	31.339				
CP, CAL/(G)(K)		0.3138	0.3094	0.3049	0.3002	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2584	0.2911				
GAMMA (S)		1.2798	1.2848	1.2902	1.2960	1.3024	1.3094	1.3179	1.3276	1.3385	1.3503	1.3622	1.3743	1.2882				
SON VEL, M/SEC		742.2	718.5	693.8	668.0	641.2	613.0	583.4	552.1	518.5	482.2	442.1	369.8	320.2				

## MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01868	0.07545				
H2O	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.05757	0.00080				
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000				
NO2	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000				
N2	0.75071	0.75087	0.75098	0.75105	0.75109	0.75111	0.75111	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112				
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000				
O2	0.08296	0.08313	0.08324	0.08331	0.08335	0.08337	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339				

	CASE=	0	O/F=	25.0000	F/A=	0.04000	PERCENT FUEL=	3.8462	PHI=	0.5862								
P, ATM		50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA		734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K		2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0				
T, DEG F		4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3				
RHO, G/CC		6.2637-3	6.5089-3	6.7693-3	7.0475-3	7.3466-3	7.6698-3	8.0210-3	8.4047-3	8.8261-3	9.2914-3	9.8080-3	1.0385-2	1.1034-2				
M, MOL WT		28.783	28.841	28.884	28.915	28.936	28.950	28.960	28.966	28.970	28.972	28.973	28.974	28.974				
CP, CAL/(G)(K)		0.4610	0.4324	0.4085	0.3891	0.3737	0.3616	0.3520	0.3442	0.3378	0.3322	0.3272	0.3226	0.3181				
GAMMA (S)		1.2906	1.2088	1.2170	1.2250	1.2324	1.2392	1.2453	1.2509	1.2560	1.2608	1.2655	1.2702	1.2749				
SON VEL, M/SEC		985.4	970.0	954.4	938.4	921.9	904.7	886.9	868.3	849.1	829.2	808.5	787.2	765.1				

## MOLE FRACTIONS

AR	0.00891	0.00893	0.00894	0.00895	0.00896	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO	0.00583	0.00385	0.00243	0.00147	0.00085	0.00046	0.00024	0.00012	0.00005	0.00002	0.00000	0.00001	0.00000	0.00000				
CO2	0.07392	0.07066	0.07759	0.07864	0.07932	0.07974	0.07999	0.08013	0.08021	0.08024	0.08026	0.08027	0.08027	0.08027				
H	0.00033	0.00019	0.00010	0.00005	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000				
H02	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000				
H2	0.00081	0.00055	0.00036	0.00023	0.00014	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000				
H2O	0.07065	0.07202	0.07312	0.07399	0.07465	0.07515	0.07551	0.07578	0.07596	0.07608	0.07616	0.07620	0.07623	0.07623				
NO	0.02174	0.01902	0.01646	0.01406	0.01183	0.00980	0.00796	0.00633	0.00491	0.00371	0.00271	0.00190	0.00128					
NO2	0.00005	0.00005	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003	0.00002	0.00002				
N2	0.73526	0.73813	0.74052	0.74252	0.74418	0.74558	0.74674	0.74772	0.74852	0.74919	0.74972	0.75015	0.75047					
O	0.00205	0.00138	0.00089	0.00056	0.00034	0.00020	0.00011	0.00005	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000				
OH	0.00021	0.00064	0.00093	0.00069	0.00069	0.00069	0.00069	0.00069	0.00069	0.00069	0.00069	0.00069	0.00069	0.00069				
O2	0.07220	0.07336	0.07457	0.07578	0.07696	0.07807	0.07908	0.07998	0.08076	0.08142	0.08196	0.08239	0.08272					



ADD H2O(L)

CASE= 0 O/F= 16.6667 F/A= 0.06000 PERCENT FUEL= 5.6604 PHI= 0.8792

P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/C	1.1772-4	1.2613-4	1.3583-4	1.4715-4	1.6053-4	1.7658-4	1.9620-4	2.2073-4	2.5226-4	2.9430-4	3.5316-4	4.4145-4	6.1706-4		
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	30.380	
CP, CAL/(G)(K)	0.3231	0.3184	0.3138	0.3090	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	1.7794		
GAMMA (S)	1.2696	1.2745	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.390		
SON VEL,M/SEC	739.2	715.5	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	305.8		

MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.11801	0.11801	0.11801	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.04611
H2O	0.11221	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.06613
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73684	0.73693	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02360	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

CASE= 0 O/F= 16.6667 F/A= 0.06000 PERCENT FUEL= 5.6604 PHI= 0.8792

P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3		
RHO, G/C	1.2037-4	1.2634-4	1.3251-4	1.3891-4	1.4557-4	1.5255-4	1.5993-4	1.6784-4	1.7640-4	1.8579-4	1.9616-4	2.0772-4	2.2072-4		
M, MOL WT	27.657	27.991	28.270	28.495	28.667	28.790	28.872	28.922	28.950	28.965	28.973	28.976	28.978		
CP, CAL/(G)(K)	0.9602	0.8625	0.7659	0.6723	0.5850	0.5087	0.4472	0.4024	0.3723	0.3534	0.3415	0.3336	0.3278		
GAMMA (S)	1.1408	1.1440	1.1495	1.1578	1.1694	1.1843	1.2015	1.2186	1.2333	1.2448	1.2532	1.2596	1.2649		
SON VEL,M/SEC	979.9	957.9	937.6	919.0	902.2	886.9	872.5	857.7	841.7	823.9	804.6	783.9	762.0		

MOLE FRACTIONS

AR	0.00840	0.00850	0.00858	0.00865	0.00870	0.00874	0.00877	0.00878	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.04947	0.03929	0.02944	0.02064	0.01343	0.00804	0.00441	0.00221	0.00101	0.00042	0.00016	0.00005	0.00002		
CO2	0.06316	0.07470	0.08568	0.09540	0.10332	0.10921	0.11317	0.11557	0.11689	0.11754	0.11783	0.11795	0.11800		
H	0.00795	0.00480	0.00275	0.00150	0.00076	0.00036	0.00016	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000		
H02	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000		
H2	0.00954	0.00721	0.00521	0.00359	0.00234	0.00143	0.00081	0.00043	0.00021	0.00010	0.00004	0.00001	0.00000		
H2O	0.08358	0.09088	0.09685	0.10154	0.10508	0.10764	0.10940	0.11055	0.11127	0.11171	0.11196	0.11210	0.11218		
NO	0.01505	0.01264	0.01042	0.00846	0.00679	0.00541	0.00428	0.00335	0.00259	0.00195	0.00142	0.00100	0.00067		
N2	0.69591	0.70560	0.71383	0.72053	0.72574	0.72956	0.73220	0.73393	0.73504	0.73574	0.73620	0.73650	0.73670		
O	0.01032	0.00651	0.00408	0.00242	0.00139	0.00077	0.00041	0.00021	0.00010	0.00004	0.00002	0.00001	0.00000		
OH	0.02003	0.01584	0.01212	0.00898	0.00646	0.00452	0.00306	0.00201	0.00126	0.00076	0.00043	0.00023	0.00011		
O2	0.03657	0.03391	0.03102	0.02828	0.02598	0.02432	0.02333	0.02288	0.02281	0.02294	0.02314	0.02335	0.02352		

## ADD H2O(L)

CASE=	0	0/F=	14.6540	F/A=	0.06824	PERCENT FUEL=				6.3882	PHI=				1.0000
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	3.5316-4	3.7840-4	4.0752-4	4.4148-4	4.8161-4	5.2978-4	5.8864-4	6.6222-4	7.5682-4	8.8296-4	1.0596-3	1.3244-3	1.9753-3		
M, MOL WT	28.979	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	32.418	
CP, CAL/(G*IK)	0.3274	0.3220	0.3171	0.3123	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	0.2590	0.7396	
GAMMA (S)	1.2655	1.2708	1.2759	1.2814	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.1664		
SON VEL, M/SEC	738.0	714.4	689.8	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	299.6		

## MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13307	0.13313	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.12664	0.12666	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668
NO	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73138	0.73141	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
O	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
02	0.00004	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	0	0/F=	14.6540	F/A=	0.06824	PERCENT FUEL=				6.3882	PHI=				1.0000
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	2.4134-4	2.5286-4	2.6485-4	2.7737-4	2.9053-4	3.0444-4	3.1925-4	3.3518-4	3.5245-4	3.7134-4	3.9219-4	4.1539-4	4.4142-4		
M, MOL WT	27.725	28.010	28.252	28.451	28.608	28.728	28.817	28.879	28.921	28.947	28.963	28.973	28.977		
CP, CAL/(G*IK)	0.8786	0.7973	0.7184	0.6438	0.5756	0.5158	0.4656	0.4251	0.3938	0.3706	0.3538	0.3420	0.3335		
GAMMA (S)	1.1452	1.1488	1.1542	1.1616	1.1711	1.1826	1.1956	1.2091	1.2224	1.2345	1.2448	1.2532	1.2600		
SON VEL, M/SEC	980.6	959.5	939.7	921.2	903.8	887.3	871.1	855.0	838.4	820.8	802.0	781.9	760.6		

## MOLE FRACTIONS

AR	0.00835	0.00844	0.00851	0.00857	0.00862	0.00866	0.00868	0.00870	0.00871	0.00872	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.05370	0.04379	0.03436	0.02589	0.01870	0.01291	0.00851	0.00532	0.00315	0.00175	0.00091	0.00043	0.00019		
CO2	0.07368	0.08491	0.09545	0.10483	0.11275	0.11908	0.12390	0.12737	0.12973	0.13125	0.13217	0.13269	0.13295		
H	0.00592	0.00363	0.00214	0.00121	0.00065	0.00033	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000		
H02	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000		
H2	0.01058	0.00826	0.00629	0.00467	0.00338	0.00238	0.00162	0.00106	0.00067	0.00040	0.00023	0.00012	0.00006		
H2O	0.09962	0.10624	0.11163	0.11591	0.11919	0.12163	0.12340	0.12462	0.12545	0.12598	0.12630	0.12649	0.12659		
NO	0.01142	0.00910	0.00701	0.00522	0.00375	0.00259	0.00171	0.00108	0.00065	0.00037	0.00019	0.00010	0.00004		
N2	0.69400	0.70238	0.70953	0.71543	0.72014	0.72376	0.72643	0.72831	0.72958	0.73040	0.73089	0.73117	0.73131		
O	0.00555	0.00337	0.00195	0.00106	0.00054	0.00028	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000		
0	0.01603	0.01223	0.00899	0.00635	0.00431	0.00280	0.00173	0.00102	0.00057	0.00029	0.00014	0.00006	0.00003		
02	0.02112	0.01764	0.01413	0.01085	0.00798	0.00560	0.00375	0.00239	0.00144	0.00082	0.00044	0.00021	0.00010		

ADD H2O(L)  
ADD C(S)

CASE=	0	0/F=	14.2857	F/A=	0.07000	PERCENT FUEL=				6.5421	PHI= 1.0258						
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	400.0	300.0	300.0	300.0	
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	40.3	80.3	80.3	80.3	
RHO, G/CC	7.0283-4	7.5303-4	8.1095-4	8.7853-4	9.5840-4	1.0542-3	1.1714-3	1.3178-3	1.5066-3	1.7623-3	2.1183-3	2.6488-3	3.4011-3	4.0114-3	4.0114-3	4.0114-3	
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	
CP, CAL/(G)IK	0.3262	0.3226	0.3188	0.3146	0.3101	0.3052	0.2994	0.2927	0.2949	0.2951	0.2920	0.2599	0.5144	0.5144	0.5144	0.5144	
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2917	1.2990	1.3081	1.3112	1.3150	1.3404	1.3587	1.1892	1.1892	1.1892	1.1892	
SON VEL, M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.6	549.3	514.3	476.3	438.6	394.9	300.2	300.2	300.2	300.2	

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00321	0.00207	0.00099	0.00015	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.12840	0.12876	0.12921	0.12978	0.13050	0.13140	0.13247	0.13360	0.13457	0.13445	0.13398	0.13385	0.13066	0.13066	0.13066	0.13066
H2	0.00278	0.00313	0.00353	0.00415	0.00488	0.00578	0.00684	0.00796	0.00937	0.01098	0.01274	0.01464	0.01664	0.01874	0.02094	0.02314
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12111	0.12040	0.12249	0.12424	0.12464	0.10112	0.10112	0.10112	0.10112
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657

CASE=	0	0/F=	14.2857	F/A=	0.07000	PERCENT FUEL=				6.5421	PHI= 1.0258						
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1600.0	1600.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2420.3	2420.3	2420.3	
RHO, G/CC	4.8580-4	5.0804-4	5.3127-4	5.5563-4	5.8131-4	6.0852-4	6.3756-4	6.6876-4	7.0260-4	7.3974-4	7.8089-4	8.2685-4	8.7853-4	9.3614-4	9.9375-4	1.0542-3	
M, MOL WT	27.904	28.139	28.336	28.496	28.620	28.712	28.774	28.810	28.827	28.833	28.835	28.836	28.836	28.836	28.836	28.836	
CP, CAL/(G)IK	0.7874	0.7178	0.6501	0.5859	0.5266	0.4729	0.4248	0.3841	0.3568	0.3432	0.3368	0.3328	0.3295	0.3295	0.3295	0.3295	
GAMMA (S)	1.1516	1.1560	1.1623	1.1707	1.1813	1.1944	1.2102	1.2280	1.2434	1.2526	1.2577	1.2613	1.2645	1.2645	1.2645	1.2645	
SON VEL, M/SEC	980.2	960.3	941.7	924.1	907.5	891.9	877.1	862.7	846.9	828.4	807.9	786.3	763.8	763.8	763.8	763.8	

MOLE FRACTIONS

AR	0.00839	0.00846	0.00852	0.00857	0.00861	0.00864	0.00866	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867
CO	0.04924	0.04024	0.03200	0.02484	0.01897	0.01448	0.01136	0.00950	0.00861	0.00822	0.00799	0.00779	0.00756	0.00756	0.00756	0.00756
CO2	0.08205	0.09216	0.10133	0.10924	0.11569	0.12061	0.12403	0.12605	0.12702	0.12744	0.12768	0.12789	0.12812	0.12812	0.12812	0.12812
H	0.00394	0.00243	0.00145	0.00083	0.00046	0.00025	0.00013	0.00007	0.00004	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H02	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00937	0.00741	0.00578	0.00446	0.00345	0.00270	0.00220	0.00195	0.00189	0.00196	0.00209	0.00227	0.00250	0.00250	0.00250	0.00250
H2O	0.10709	0.11250	0.11687	0.12029	0.12288	0.12475	0.12600	0.12671	0.12701	0.12705	0.12705	0.12705	0.12705	0.12705	0.12705	0.12705
NO	0.00984	0.00761	0.00586	0.00401	0.00268	0.00165	0.00091	0.00042	0.00016	0.00005	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.69817	0.70521	0.71115	0.71599	0.71979	0.72261	0.72455	0.72570	0.72626	0.72647	0.72654	0.72656	0.72657	0.72657	0.72657	0.72657
O	0.00337	0.00199	0.00111	0.00058	0.00028	0.00012	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01295	0.00967	0.00694	0.00477	0.00311	0.00190	0.00107	0.00054	0.00024	0.00010	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
O2	0.01558	0.01230	0.00919	0.00640	0.00408	0.00249	0.00106	0.00037	0.00009	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

ADD C1S1  
ADD H2O(L1)

CASE=	0	0/F=	12.5000	F/A=	0.08000	PERCENT FUEL=				7.4074	PHI=				1.1723	
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0			
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3			
RHO, G/CC	1.3671-3	1.4648-3	1.5775-3	1.7089-3	1.8643-3	2.0508-3	2.2806-3	2.5898-3	3.0001-3	3.5235-3	4.2370-3	5.2981-3	8.2330-3			
M, MOL WT	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.721	28.913	28.973	28.983	33.778			
CP, CAL/(G)(K)	0.3338	0.3313	0.3289	0.3266	0.3246	0.3238	0.3481	0.4527	0.3763	0.3107	0.2800	0.2676	0.4106			
GAMMA (S)	1.2695	1.2721	1.2746	1.2771	1.2793	1.2809	1.2692	1.2308	1.2607	1.2989	1.3277	1.3447	1.2024			
SON VEL, M/SEC	751.4	726.6	700.9	674.0	645.9	616.2	581.7	537.5	505.4	473.4	436.5	392.8	298.0			

MOLE FRACTIONS

AR	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00837	0.00844	0.00856	0.00858	0.00852	0.00844	0.00836			
C1S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00426	0.01301	0.02234	0.03236			
C14	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00002	0.00043	0.00511	0.01199	0.01323	0.00979	0.00516	0.00000		
C0	0.04458	0.04259	0.04013	0.03708	0.03328	0.02854	0.02225	0.01088	0.00222	0.00020	0.00001	0.00000	0.00000			
CO2	0.10480	0.10679	0.10925	0.11230	0.11610	0.12083	0.12684	0.13493	0.13876	0.13565	0.12951	0.12342	0.11701			
H2	0.02015	0.02214	0.02460	0.02765	0.03143	0.03609	0.04076	0.03394	0.01598	0.00470	0.00078	0.00005	0.00000			
H2O(L1)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.13735			
H2O	0.12200	0.12001	0.11755	0.11450	0.11070	0.10600	0.10059	0.09932	0.10548	0.11466	0.12453	0.13322	0.00480			
NH3	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002	0.00005	0.00010	0.00010	0.00007	0.00004	0.00001	0.00000			
N2	0.70012	0.70012	0.70012	0.70012	0.70012	0.70014	0.70072	0.70729	0.71692	0.71866	0.71383	0.70735	0.70012			

CASE=	0	0/F=	12.5000	F/A=	0.08000	PERCENT FUEL=				7.4074	PHI=				1.1723	
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F	4880.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3			
RHO, G/CC	1.2057-3	1.2563-3	1.3088-3	1.3639-3	1.4223-3	1.4851-3	1.5531-3	1.6273-3	1.7088-3	1.7988-3	1.8988-3	2.0105-3	2.1362-3			
M, MOL WT	27.701	27.833	27.923	27.979	28.011	28.028	28.037	28.042	28.044	28.045	28.045	28.046	28.046			
CP, CAL/(G)(K)	0.6260	0.5488	0.4798	0.4268	0.3919	0.3709	0.3587	0.3515	0.3470	0.3437	0.3410	0.3386	0.3362			
GAMMA (S)	1.1714	1.1836	1.1993	1.2163	1.2310	1.2418	1.2490	1.2539	1.2573	1.2600	1.2624	1.2647	1.2671			
SON VEL, M/SEC	992.2	977.0	963.6	950.6	936.4	920.5	902.7	883.6	863.4	842.5	820.8	798.4	775.2			

MOLE FRACTIONS

AR	0.00826	0.00829	0.00832	0.00834	0.00835	0.00835	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836			
CO	0.06515	0.06039	0.05699	0.05479	0.05343	0.05252	0.05181	0.05114	0.05043	0.04962	0.04868	0.04755	0.04621			
CO2	0.08240	0.08785	0.09173	0.09423	0.09576	0.09676	0.09752	0.09822	0.09894	0.09975	0.10070	0.10182	0.10317			
H	0.00304	0.00203	0.00134	0.00087	0.00055	0.00034	0.00020	0.00011	0.00006	0.00003	0.00001	0.00001	0.00000			
H2	0.01396	0.01292	0.01234	0.01217	0.01230	0.01261	0.01307	0.01363	0.01431	0.01511	0.01605	0.01717	0.01852			
H2O	0.12113	0.12457	0.12688	0.12823	0.12885	0.12899	0.12879	0.12837	0.12777	0.12701	0.12609	0.12497	0.12363			
NO	0.00469	0.00303	0.00180	0.00098	0.00049	0.00023	0.00010	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000			
N2	0.68918	0.69329	0.69615	0.69796	0.69900	0.69956	0.69985	0.70000	0.70006	0.70009	0.70011	0.70011	0.70012			
O	0.00102	0.00051	0.00023	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000			
OH	0.00759	0.00513	0.00326	0.00195	0.00109	0.00058	0.00028	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000			
O2	0.00359	0.00199	0.00095	0.00039	0.00014	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000			







## ADD H20(L)

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL=	0.9901	PHI= 0.1465								
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	1.4120-3	1.5129-3	1.6293-3	1.7651-3	1.9255-3	2.1181-3	2.3534-3	2.6476-3	3.0258-3	3.5301-3	4.2361-3	5.2952-3	7.1599-3	
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	29.376
CP, CAL/(G)(K)	0.2993	0.2949	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2390	0.2336
GAMMA (S)	1.2974	1.3031	1.3090	1.3151	1.3215	1.3285	1.3369	1.3466	1.3574	1.3688	1.3799	1.3893	1.2771	
SON VEL, M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	329.3	

## MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H20(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01393
H2O	0.01961	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.00570
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17641	0.17666	0.17663	0.17693	0.17699	0.17701	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL=	0.9901	PHI= 0.1465								
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	1.2524-3	1.3014-3	1.3534-3	1.4091-3	1.4689-3	1.5335-3	1.6038-3	1.6805-3	1.7648-3	1.8578-3	1.9611-3	2.0765-3	2.2063-3	
M, MOL WT	28.774	28.832	28.875	28.906	28.928	28.942	28.952	28.958	28.962	28.965	28.966	28.967	28.967	28.967
CP, CAL/(G)(K)	0.4477	0.4204	0.3975	0.3785	0.3630	0.3505	0.3404	0.3320	0.3250	0.3189	0.3134	0.3084	0.3037	0.2990
GAMMA (S)	1.2077	1.2160	1.2245	1.2330	1.2412	1.2489	1.2560	1.2627	1.2689	1.2749	1.2806	1.2862	1.2918	1.2974
SON VEL, M/SEC	988.5	973.0	957.5	941.6	925.3	908.4	890.8	872.5	853.6	833.9	813.4	792.2	770.2	

## MOLE FRACTIONS

AR	0.00917	0.00919	0.00920	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00222	0.00148	0.00094	0.00057	0.00033	0.00018	0.00009	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.01852	0.01930	0.01987	0.02026	0.02052	0.02068	0.02078	0.02083	0.02086	0.02087	0.02088	0.02088	0.02088	0.02088
H	0.00042	0.00025	0.00014	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00027	0.00019	0.00013	0.00008	0.00005	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01551	0.01642	0.01719	0.01781	0.01832	0.01871	0.01900	0.01922	0.01937	0.01947	0.01954	0.01958	0.01960	0.01960
NO	0.03230	0.02835	0.02456	0.02098	0.01765	0.01460	0.01185	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189	0.00129
NO2	0.00005	0.00005	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00002	0.00002	0.00002
N2	0.75192	0.75544	0.75847	0.76109	0.76333	0.76525	0.76689	0.76828	0.76944	0.77040	0.77118	0.77180	0.77227	0.77261
O	0.00674	0.00453	0.00295	0.00185	0.00111	0.00064	0.00035	0.00018	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000
OH	0.00697	0.00557	0.00434	0.00329	0.00242	0.00172	0.00118	0.00078	0.00049	0.00030	0.00017	0.00009	0.00004	0.00002
O2	0.15588	0.15921	0.16214	0.16471	0.16695	0.16889	0.17056	0.17198	0.17317	0.17415	0.17495	0.17557	0.17606	0.17646



## ADD H2O(L)

CASE=	0	O/F=	50.0000	F/A=	0.02000	PERCENT FUEL=	1.9608	PHI=	0.2931							
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0	0.0	0.0
RHO, G/CC	3.5304-3	3.7826-3	4.0736-3	4.4130-3	4.8142-3	5.2956-3	5.8840-3	6.6195-3	7.5652-3	8.8261-3	1.0591-2	1.3239-2	1.8323-2	2.8039-2	4.5085-2	7.2053-2
M, MOL WT	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970
CP, CAL/(G)(K)	0.3043	0.2959	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2403	0.2328	0.2243	0.2148
GAMMA (S)	1.2911	1.2966	1.3023	1.3083	1.3147	1.3218	1.3301	1.3399	1.3508	1.3623	1.3737	1.3837	1.3937	1.4037	1.4137	1.4237
SON VEL, M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	328.8	228.8	128.8	28.8

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.03886	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14487	0.14502	0.14511	0.14517	0.14519	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

CASE=	0	O/F=	50.0000	F/A=	0.02000	PERCENT FUEL=	1.9608	PHI=	0.2931							
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	1400.0	1300.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	2060.3	1880.3
RHO, G/CC	2.5055-3	2.6033-3	2.7073-3	2.8185-3	2.9381-3	3.0673-3	3.2078-3	3.3613-3	3.5298-3	3.7159-3	3.9225-3	4.1534-3	4.4130-3	4.7039-3	5.0213-3	5.3713-3
M, MOL WT	28.783	28.839	28.880	28.910	28.931	28.945	28.955	28.961	28.965	28.967	28.968	28.969	28.969	28.969	28.969	28.969
CP, CAL/(G)(K)	0.4495	0.4228	0.4002	0.3817	0.3666	0.3545	0.3446	0.3365	0.3296	0.3237	0.3183	0.3134	0.3087	0.3043	0.3000	0.2959
GAMMA (S)	1.2057	1.2138	1.2221	1.2302	1.2380	1.2453	1.2520	1.2582	1.2641	1.2697	1.2751	1.2804	1.2857	1.2910	1.2963	1.3016
SON VEL, M/SEC	987.5	972.0	956.4	940.5	924.1	907.0	889.3	871.0	851.9	832.1	811.6	790.4	768.4	746.4	724.4	702.4

## MOLE FRACTIONS

AR	0.00908	0.00910	0.00911	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00350	0.00232	0.00147	0.00089	0.00051	0.00028	0.00015	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.03730	0.03856	0.03947	0.04009	0.04049	0.04075	0.04090	0.04098	0.04102	0.04105	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H	0.00039	0.00022	0.00012	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2O	0.00382	0.03499	0.03595	0.03673	0.03733	0.03780	0.03814	0.03840	0.03857	0.03869	0.03877	0.03882	0.03884	0.03884	0.03884	0.03884
H2	0.00046	0.00032	0.00021	0.00013	0.00008	0.00005	0.00003	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
NO	0.02910	0.02551	0.02209	0.01887	0.01588	0.01314	0.01066	0.00847	0.00657	0.00495	0.00361	0.00254	0.00170	0.00100	0.00050	0.00020
NO2	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004
N2	0.74620	0.74947	0.75227	0.75467	0.75673	0.75848	0.75997	0.76123	0.76229	0.76316	0.76386	0.76442	0.76485	0.76519	0.76546	0.76566
O	0.00431	0.00289	0.00188	0.00118	0.00071	0.00041	0.00022	0.00012	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00823	0.00650	0.00502	0.00377	0.00276	0.00195	0.00134	0.00088	0.00056	0.00033	0.00019	0.00010	0.00005	0.00003	0.00002	0.00001
O2	0.12750	0.13001	0.13231	0.13440	0.13627	0.13794	0.13939	0.14065	0.14171	0.14260	0.14332	0.14389	0.14432	0.14466	0.14496	0.14521

ADD H2O(L)

CASE= 0 O/F= 33.3333 F/A= 0.03000 PERCENT FUEL= 2.9126 PHI= 0.4396

P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.3	0.3
RHO, G/CC	7.0615-3	7.5659-3	8.1479-3	8.8269-3	9.6293-3	1.0592-2	1.1769-2	1.3240-2	1.5132-2	1.7654-2	2.1184-2	2.6480-2	3.7428-2	5.1428-2	7.0615-2
M, MOL WT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.712
CP, CAL/(G*IK)	0.3091	0.3047	0.3002	0.2957	0.2910	0.2865	0.2820	0.2774	0.2727	0.2681	0.2635	0.2589	0.2543	0.2497	0.2888
GAMMA (S)	1.2852	1.2905	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.3884	1.3984	1.3022
SON VEL,M/SEC	743.8	720.1	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	355.2	315.2	325.2

MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.05665
H2O	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.00109
N0	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N02	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11350	0.11370	0.11363	0.11391	0.11396	0.11398	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

CASE= 0 O/F= 33.3333 F/A= 0.03000 PERCENT FUEL= 2.9126 PHI= 0.4396

P, ATM	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	1400.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	2060.3
RHO, G/CC	5.0138-3	5.2089-3	5.4164-3	5.6384-3	5.8773-3	6.1356-3	6.4165-3	6.7233-3	7.0604-3	7.4325-3	7.8458-3	8.3075-3	8.8268-3	9.4128-3	1.0075-2
M, MOL WT	28.799	28.851	28.889	28.917	28.936	28.950	28.958	28.964	28.968	28.970	28.971	28.972	28.972	28.972	30.712
CP, CAL/(G*IK)	0.4465	0.4210	0.3997	0.3823	0.3682	0.3568	0.3476	0.3400	0.3336	0.3279	0.3228	0.3181	0.3135	0.3090	0.2888
GAMMA (S)	1.2055	1.2133	1.2212	1.2289	1.2361	1.2428	1.2489	1.2547	1.2600	1.2652	1.2702	1.2751	1.2801	1.2852	1.3022
SON VEL,M/SEC	987.2	971.6	955.9	939.9	923.3	906.1	888.2	869.7	850.5	830.6	810.0	788.7	766.7	745.2	725.2

MOLE FRACTIONS

AR	0.00900	0.00902	0.00903	0.00904	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.00422	0.00278	0.00176	0.00106	0.00061	0.00033	0.00017	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.05627	0.05782	0.05893	0.05968	0.06017	0.06048	0.06066	0.06076	0.06081	0.06084	0.06085	0.06085	0.06085	0.06085	0.06085
H	0.00031	0.00018	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H02	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00058	0.00039	0.00026	0.00016	0.00010	0.00006	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.02529	0.05381	0.05481	0.05560	0.05621	0.05668	0.05703	0.05728	0.05745	0.05757	0.05764	0.05769	0.05772	0.05772	0.05772
N0	0.02562	0.02244	0.01943	0.01659	0.01396	0.01156	0.00938	0.00746	0.00578	0.00436	0.00318	0.00224	0.00150	0.00100	0.00075
N02	0.00007	0.00007	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003	0.00003	0.00003
N2	0.74098	0.74393	0.74644	0.74858	0.75040	0.75196	0.75327	0.75439	0.75532	0.75609	0.75671	0.75721	0.75758	0.75784	0.75784
O	0.00269	0.00181	0.00117	0.00074	0.00044	0.00026	0.00014	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.00811	0.00637	0.00489	0.00367	0.00267	0.00189	0.00129	0.00085	0.00054	0.00032	0.00018	0.00010	0.00005	0.00003	0.00003
O2	0.09951	0.10134	0.10310	0.10475	0.10628	0.10767	0.10891	0.10999	0.11092	0.11169	0.11233	0.11283	0.11321	0.11352	0.11352

## ADD H2O(L)

CASE= 0 O/F= 25.0000 F/A= 0.04000 PERCENT FUEL= 3.8462 PHI= 0.5862

P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	1.1770-2	1.2611-2	1.3581-2	1.4713-2	1.6050-2	1.7655-2	1.9617-2	2.2069-2	2.5222-2	2.9425-2	3.5310-2	4.5539-2	6.3664-2	
M, MOL WT	28.975	28.975	28.975	28.975	28.975	28.975	28.974	28.974	28.974	28.974	28.974	29.894	31.344	
CP, CAL/(G*DK)	0.3138	0.3094	0.3009	0.3002	0.2954	0.2902	0.2879	0.2779	0.2712	0.2644	0.2580	0.7310	0.2877	
GAMMA (S)	1.2798	1.2848	1.2902	1.2960	1.3024	1.3094	1.3179	1.3276	1.3385	1.3503	1.3622	1.2199	1.2905	
SON VEL./M/SEC	742.2	718.5	693.8	668.0	641.2	613.0	583.4	552.1	518.5	482.2	442.1	368.4	320.5	

## MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03076	0.07561	
H2O	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.04549	0.00064	
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75071	0.75087	0.75099	0.75105	0.75109	0.75111	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08296	0.08313	0.08324	0.08331	0.08335	0.08337	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

CASE= 0 O/F= 20.0000 F/A= 0.05000 PERCENT FUEL= 4.7619 PHI= 0.7327

P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1000.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	400.0
RHO, G/CC	5.9952-5	6.3023-5	6.6176-5	6.9419-5	7.2772-5	7.6269-5	7.9961-5	8.3911-5	8.8192-5	9.2882-5	9.8068-5	1.0385-4	1.1035-4	
M, MOL WT	27.549	27.926	28.237	28.482	28.663	28.789	28.870	28.919	28.947	28.962	28.970	28.974	28.975	
CP, CAL/(G*DK)	1.0343	0.9169	0.8009	0.6901	0.5900	0.5067	0.4433	0.3988	0.3695	0.3507	0.3386	0.3303	0.3241	
GAMMA (S)	1.1780	1.1413	1.1471	1.1562	1.1691	1.1854	1.2034	1.2207	1.2356	1.2472	1.2561	1.2630	1.2688	
SON VEL./M/SEC	980.7	957.8	937.1	918.6	902.2	887.4	873.2	858.5	842.5	824.8	805.5	785.0	763.2	

## MOLE FRACTIONS

AR	0.00844	0.00856	0.00866	0.00873	0.00879	0.00882	0.00885	0.00886	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.04465	0.03529	0.02609	0.01791	0.01135	0.00663	0.00356	0.00176	0.00080	0.00033	0.00012	0.00004	0.00001	
CO2	0.04978	0.06043	0.07070	0.07972	0.08689	0.09205	0.09539	0.09736	0.09842	0.09894	0.09917	0.09927	0.09931	
H	0.01056	0.00636	0.00363	0.00195	0.00098	0.00046	0.00020	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00843	0.00634	0.00452	0.00305	0.00194	0.00116	0.00065	0.00034	0.00017	0.00008	0.00003	0.00001	0.00000	0.00000
H2O	0.06443	0.07200	0.07824	0.08314	0.08682	0.08946	0.09129	0.09251	0.09329	0.09378	0.09407	0.09424	0.09433	
N	0.01861	0.01615	0.01377	0.01156	0.00959	0.00785	0.00634	0.00503	0.00390	0.00294	0.00215	0.00151	0.00102	
N2	0.69805	0.70897	0.71814	0.72553	0.73117	0.73527	0.73811	0.74003	0.74131	0.74218	0.74277	0.74319	0.74348	
O	0.01803	0.01191	0.00759	0.00467	0.00276	0.00157	0.00086	0.00044	0.00021	0.00010	0.00004	0.00001	0.00000	
OH	0.02324	0.01893	0.01486	0.01128	0.00828	0.00589	0.00404	0.00267	0.00169	0.00101	0.00057	0.00030	0.00015	
O2	0.05576	0.05505	0.05380	0.05247	0.05141	0.05083	0.05070	0.05091	0.05131	0.05176	0.05218	0.05253	0.05281	

## ADD H2OIL1

	CASE= 0		O/F= 16.6667		F/A= 0.06000		PERCENT FUEL= 5.6604				PHI= 0.8792				
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
F, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	2.3544-4	2.5226-4	2.7166-4	2.9430-4	3.2106-4	3.5316-4	3.9240-4	4.4145-4	5.0452-4	5.8860-4	7.0632-4	8.8290-4	1.2801-3		
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	31.512		
CP, CAL/(G)(K)	0.3229	0.3184	0.3138	0.3090	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	0.9820		
GAMMA (S)	1.2697	1.2746	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.1564		
SON VEL,M/SEC	739.2	715.5	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	302.5		

## MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00990	0.00880	0.00880	0.00890	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11801	0.11802	0.11662	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.11221	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73684	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02381	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

	CASE= 0		O/F= 16.6667		F/A= 0.06000		PERCENT FUEL= 5.6604				PHI= 0.8792				
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
F, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	1.8166-4	1.9040-4	1.9946-4	2.0888-4	2.1871-4	2.2906-4	2.4004-4	2.5184-4	2.6465-4	2.7870-4	2.9425-4	3.1159-4	3.3108-4		
M, MOL WT	27.826	28.123	28.370	28.566	28.715	28.820	28.889	28.931	28.955	28.967	28.974	28.977	28.978		
CP, CAL/(G)(K)	0.8920	0.8032	0.7152	0.6301	0.5517	0.4842	0.4309	0.3926	0.3670	0.3507	0.3402	0.3331	0.3276		
GAMMA (S)	1.1444	1.1482	1.1544	1.1635	1.1757	1.1907	1.2072	1.2230	1.2363	1.2465	1.2541	1.2600	1.2651		
SON VEL,M/SEC	978.5	957.4	937.9	920.1	903.9	888.9	874.3	859.1	842.6	824.5	804.8	784.0	762.1		

## MOLE FRACTIONS

AR	0.00845	0.00854	0.00861	0.00867	0.00872	0.00875	0.00877	0.00878	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.04482	0.03501	0.02580	0.01779	0.01139	0.00673	0.00365	0.00182	0.00083	0.00034	0.00013	0.00004	0.00001	0.00001	0.00001
CO2	0.06850	0.07952	0.08974	0.09855	0.10555	0.11064	0.11600	0.12109	0.12600	0.13176	0.13786	0.14361	0.14906	0.15436	0.15951
H	0.00606	0.00364	0.00208	0.00112	0.00057	0.00027	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00832	0.00622	0.00445	0.00334	0.00196	0.00119	0.00067	0.00035	0.00017	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000
H2O	0.08727	0.09370	0.09892	0.10300	0.10606	0.10827	0.10978	0.11077	0.11139	0.11177	0.11199	0.11212	0.11218		
NO	0.01476	0.01237	0.01019	0.00829	0.00668	0.00535	0.00425	0.00334	0.00258	0.00195	0.00142	0.00100	0.00067		
N2	0.70035	0.70909	0.71646	0.72242	0.72701	0.73035	0.73265	0.73417	0.73516	0.73580	0.73622	0.73651	0.73671		
O	0.00824	0.00527	0.00325	0.00194	0.00112	0.00062	0.00033	0.00017	0.00008	0.00004	0.00002	0.00001	0.00000		
OH	0.01829	0.01436	0.01093	0.00809	0.00582	0.00407	0.00276	0.00181	0.00114	0.00069	0.00039	0.00021	0.00010		
O2	0.03493	0.03228	0.02956	0.02709	0.02512	0.02376	0.02301	0.02272	0.02274	0.02291	0.02314	0.02335	0.02352		

ADD H2O(L)

CASE=	0	0/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882				PHI= 1.0000					
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	4.7089-4	5.0454-4	5.4336-4	5.8864-4	6.4215-4	7.0637-4	7.8485-4	8.8296-4	1.0091-3	1.1773-3	1.4127-3	1.7659-3	2.6494-3
M, MOL WT	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	32.610
CP, CAL/(G)(K)	0.3271	0.3219	0.3171	0.3123	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	0.6250
GAMMA (S)	1.2657	1.2709	1.2760	1.2814	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.1763
SON VEL, M/SEC	738.0	714.5	689.8	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	300.0

MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00007	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13308	0.13313	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.11128
H2O	0.12664	0.12666	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668
NO	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73138	0.73141	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
OH	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	0	0/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882				PHI= 1.0000					
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	3.6386-4	3.8080-4	3.9847-4	4.1699-4	4.3648-4	4.5715-4	4.7922-4	5.0299-4	5.2881-4	5.5709-4	5.8833-4	6.2310-4	6.6214-4
M, MOL WT	27.867	28.122	28.338	28.514	28.653	28.759	28.837	28.891	28.928	28.952	28.966	28.974	28.978
CP, CAL/(G)(K)	0.8222	0.7487	0.6773	0.6100	0.5489	0.4955	0.4509	0.4149	0.3872	0.3665	0.3514	0.3407	0.3328
GAMMA (S)	1.1489	1.1529	1.1587	1.1665	1.1762	1.1877	1.2003	1.2132	1.2256	1.2368	1.2463	1.2541	1.2605
SON VEL, M/SEC	979.7	959.3	940.2	922.2	905.1	888.7	872.5	856.3	839.4	821.5	802.5	782.2	760.7

MOLE FRACTIONS

AR	0.00840	0.00847	0.00854	0.00859	0.00863	0.00867	0.00869	0.00871	0.00872	0.00872	0.00873	0.00873	0.00873
CO	0.04920	0.03974	0.03093	0.02314	0.01662	0.01143	0.00751	0.00469	0.00277	0.00154	0.00080	0.00038	0.00017
CO2	0.07884	0.08947	0.09928	0.10787	0.11503	0.12071	0.12499	0.12806	0.13014	0.13148	0.13229	0.13274	0.13298
H	0.00455	0.00278	0.00164	0.00072	0.00050	0.00025	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00937	0.00729	0.00554	0.00411	0.00297	0.00209	0.00142	0.00093	0.00059	0.00035	0.00020	0.00011	0.00005
H2O	0.10297	0.10880	0.11353	0.11727	0.12014	0.12227	0.12381	0.12488	0.12560	0.12606	0.12635	0.12651	0.12660
NO	0.01092	0.00864	0.00663	0.00491	0.00352	0.00242	0.00160	0.00101	0.00060	0.00034	0.00018	0.00009	0.00004
N2	0.69785	0.70544	0.71188	0.71718	0.72139	0.72462	0.72699	0.72866	0.72979	0.73051	0.73095	0.73120	0.73133
O	0.00432	0.00261	0.00150	0.00081	0.00042	0.00020	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.01438	0.01089	0.00795	0.00560	0.00378	0.00245	0.00152	0.00089	0.00049	0.00026	0.00012	0.00005	0.00002
O2	0.01920	0.01585	0.01258	0.00959	0.00700	0.00490	0.00327	0.00208	0.00125	0.00071	0.00038	0.00019	0.00008

ADD H2O(L)  
ADD (S)

CASE= 0 O/F= 14.2857 F/A= 0.07000 PERCENT FUEL= 6.5421 PHI= 1.0258

P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	9.3710-4	1.0040-3	1.0813-3	1.1714-3	1.2779-3	1.4057-3	1.5618-3	1.7571-3	2.0091-3	2.3503-3	2.8246-3	3.5318-3	5.3643-3	
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.851	28.929	28.972	28.981	33.013	
CP, CAL/(G)(K)	0.3262	0.3226	0.3188	0.3146	0.3101	0.3052	0.2994	0.2929	0.2983	0.2931	0.2713	0.2598	0.4593	
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2916	1.2990	1.3060	1.3085	1.3166	1.3413	1.3588	1.1989	
SON VEL, M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.6	549.3	513.8	476.5	438.7	394.9	301.0	

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00870	0.00872	0.00872	0.00867	
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00502	
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00025	0.00160	0.00235	0.00251	0.00000
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00321	0.00207	0.00095	0.00014	0.00001	0.00000	0.00000	0.00000
CO2	0.12840	0.12876	0.12921	0.12978	0.13050	0.13140	0.13247	0.13360	0.13454	0.13438	0.13396	0.13385	0.13066	
H2	0.00278	0.00313	0.00358	0.00415	0.00488	0.00578	0.00684	0.00795	0.00805	0.00352	0.00066	0.00005	0.00000	
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12151
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12111	0.12056	0.12274	0.12430	0.12465	0.00757	
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002	0.00003	0.00002	0.00001	0.00000	
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72658	0.72694	0.72889	0.72999	0.73022	0.72657	

CASE= 0 O/F= 14.2857 F/A= 0.07000 PERCENT FUEL= 6.5421 PHI= 1.0258

P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	7.3172-4	7.6451-4	7.9883-4	8.3490-4	8.7301-4	9.1349-4	9.5675-4	1.0033-3	1.0540-3	1.1096-3	1.1712-3	1.2403-3	1.3178-3	
M, MOL WT	28.020	28.230	28.405	28.546	28.654	28.734	28.786	28.816	28.829	28.834	28.835	28.836	28.836	
CP, CAL/(G)(K)	0.7407	0.6774	0.6158	0.5576	0.5039	0.4550	0.4112	0.3754	0.3529	0.3419	0.3364	0.3327	0.3294	
GAMMA (S)	1.1555	1.1604	1.1671	1.1758	1.1867	1.1999	1.2156	1.2325	1.2458	1.2535	1.2580	1.2614	1.2645	
SON VEL, M/SEC	979.8	960.6	942.5	925.3	909.0	893.6	878.9	864.2	847.7	828.7	808.0	786.3	763.8	

MOLE FRACTIONS

AR	0.00843	0.00849	0.00854	0.00859	0.00862	0.00864	0.00866	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867
CO	0.04514	0.03669	0.02909	0.02260	0.01736	0.01342	0.01075	0.00924	0.00852	0.00820	0.00799	0.00779	0.00756	0.00756
CO2	0.08670	0.09613	0.10455	0.11171	0.11747	0.12178	0.12469	0.12635	0.12712	0.12747	0.12769	0.12789	0.12812	0.12812
H	0.00303	0.00187	0.00112	0.00065	0.00036	0.00020	0.00010	0.00005	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000
H02	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00834	0.00660	0.00516	0.00401	0.00312	0.00249	0.00208	0.00189	0.00187	0.00195	0.00209	0.00227	0.00250	0.00250
H2O	0.10982	0.11457	0.11839	0.12138	0.12362	0.12523	0.12628	0.12685	0.12706	0.12707	0.12697	0.12680	0.12658	0.12658
N0	0.00928	0.00712	0.00525	0.00369	0.00243	0.00147	0.00079	0.00036	0.00014	0.00004	0.00001	0.00000	0.00000	0.00000
N2	0.70137	0.70773	0.71308	0.71741	0.72078	0.72326	0.72493	0.72588	0.72632	0.72649	0.72649	0.72654	0.72656	0.72657
O	0.00259	0.00152	0.00084	0.00043	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01150	0.00852	0.00608	0.00415	0.00268	0.00163	0.00090	0.00045	0.00020	0.00008	0.00003	0.00001	0.00000	0.00000
O2	0.01379	0.01073	0.00789	0.00539	0.00335	0.00218	0.00139	0.00079	0.00046	0.00026	0.00011	0.00000	0.00000	0.00000











ADD H20(L)

CASE= 0 O/F=100.0000 F/A= 0.01000 PERCENT FUEL= 0.9901 PHI= 0.1465

P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	2.3534-3	2.5215-3	2.7155-3	2.9418-3	3.2092-3	3.5301-3	3.9223-3	4.4126-3	5.0430-3	5.8835-3	7.0602-3	8.8253-3	1.1961-2	
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	29.444	
CP, CAL/(G)(K)	0.2993	0.2949	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2306	
GAMMA (S)	1.2974	1.3031	1.3090	1.3150	1.3215	1.3285	1.3368	1.3466	1.3574	1.3698	1.3799	1.3893	1.3048	
SON VEL, M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	332.5	

MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01621
H2O	0.01961	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.00341
NO	0.00312	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17641	0.17666	0.17662	0.17693	0.17698	0.17701	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE= 0 O/F=100.0000 F/A= 0.01000 PERCENT FUEL= 0.9901 PHI= 0.1465

P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	1.8800-3	1.9535-3	2.0312-3	2.1143-3	2.2038-3	2.3006-3	2.4058-3	2.5209-3	2.6472-3	2.7867-3	2.9417-3	3.1148-3	3.3095-3	
M, MOL WT	28.805	28.854	28.889	28.915	28.934	28.946	28.954	28.960	28.963	28.965	28.966	28.967	28.967	
CP, CAL/(G)(K)	0.4316	0.4083	0.3886	0.3722	0.3588	0.3477	0.3386	0.3309	0.3243	0.3185	0.3132	0.3083	0.3037	
GAMMA (S)	1.2125	1.2202	1.2282	1.2360	1.2434	1.2505	1.2572	1.2635	1.2694	1.2752	1.2808	1.2863	1.2919	
SON VEL, M/SEC	989.9	974.4	958.7	942.6	926.0	908.9	891.2	872.8	853.7	834.0	813.5	792.3	770.3	

MOLE FRACTIONS

AR	0.00918	0.00920	0.00921	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00125	0.00123	0.00078	0.00047	0.00027	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.01892	0.01957	0.02005	0.02037	0.02059	0.02072	0.02080	0.02084	0.02086	0.02087	0.02088	0.02088	0.02088	0.02088
H	0.00032	0.00018	0.00010	0.00005	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00023	0.00016	0.00011	0.00007	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.01592	0.01674	0.01743	0.01799	0.01845	0.01880	0.01906	0.01926	0.01939	0.01949	0.01955	0.01958	0.01960	0.01960
NO	0.03238	0.02840	0.02459	0.02100	0.01765	0.01461	0.01185	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189	
NO2	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003	
N2	0.75268	0.75597	0.75884	0.76133	0.76348	0.76534	0.76694	0.76831	0.76946	0.77041	0.77119	0.77180	0.77227	
O	0.00551	0.00370	0.00241	0.00151	0.00091	0.00052	0.00029	0.00015	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000
OH	0.00639	0.00509	0.00395	0.00299	0.00219	0.00156	0.00107	0.00071	0.00045	0.00027	0.00015	0.00008	0.00004	
O2	0.15653	0.15967	0.16246	0.16493	0.16710	0.16898	0.17061	0.17201	0.17318	0.17416	0.17495	0.17557	0.17605	

## ADD H2O(L)

CASE=	0	0/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931						
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	80.3
RHO, G/CC	4.7072-3	5.0435-3	5.4314-3	5.8841-3	6.4190-3	7.0609-3	7.8454-3	8.8261-3	1.0087-2	1.1768-2	1.4122-2	1.7652-2	2.4446-2	2.4446-2
M, MOL WT	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	30.089
CP, CAL/(G*IK)	0.3043	0.2999	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2926	0.2926
GAMMA (S)	1.2911	1.2966	1.3023	1.3083	1.3147	1.3218	1.3301	1.3399	1.3508	1.3623	1.3737	1.3837	1.3124	1.3124
SON VEL, M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	329.8	329.8

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03720
H2O	0.03886	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.00167
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.6572
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14464	0.14487	0.14562	0.14511	0.14517	0.14519	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

CASE=	0	0/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931						
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2420.3
RHO, G/CC	3.7620-3	3.9077-3	4.0629-3	4.2291-3	4.4080-3	4.6016-3	4.8121-3	5.0422-3	5.2949-3	5.5740-3	5.8839-3	6.2301-3	6.6196-3	6.6196-3
M, MOL WT	28.812	28.859	28.894	28.919	28.936	28.949	28.957	28.962	28.965	28.967	28.969	28.969	28.970	28.970
CP, CAL/(G*IK)	0.4340	0.4110	0.3917	0.3757	0.3625	0.3518	0.3429	0.3354	0.3290	0.3233	0.3181	0.3133	0.3087	0.3087
GAMMA (S)	1.2103	1.2179	1.2255	1.2330	1.2401	1.2468	1.2531	1.2590	1.2646	1.2700	1.2753	1.2805	1.2858	1.2858
SON VEL, M/SEC	988.9	973.3	957.6	941.4	924.8	907.5	889.7	871.2	852.0	832.2	811.7	790.4	768.4	768.4

## MOLE FRACTIONS

AR	0.00909	0.00911	0.00912	0.00913	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00290	0.00191	0.00121	0.00073	0.00042	0.00023	0.00012	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.03794	0.03900	0.03975	0.04026	0.04060	0.04080	0.04093	0.04100	0.04103	0.04105	0.04106	0.04106	0.04106	0.04106
H	0.00029	0.00017	0.00009	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00004	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2	0.00038	0.00026	0.00017	0.00011	0.00007	0.00004	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.03435	0.03540	0.03626	0.03694	0.03749	0.03790	0.03822	0.03844	0.03860	0.03871	0.03878	0.03882	0.03884	0.03884
NO	0.02915	0.02555	0.02211	0.01889	0.01589	0.01314	0.01066	0.00847	0.00657	0.00495	0.00361	0.00254	0.00170	0.00170
NO2	0.00008	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004	0.00003	0.00003	0.00003
N2	0.74693	0.74998	0.75261	0.75490	0.75687	0.75857	0.76002	0.76126	0.76230	0.76317	0.76387	0.76442	0.76485	0.76485
O	0.00352	0.00237	0.00154	0.00096	0.00058	0.00033	0.00018	0.00009	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000
OH	0.00750	0.00591	0.00455	0.00342	0.00250	0.00177	0.00121	0.00080	0.00050	0.00030	0.00017	0.00009	0.00004	0.00004
O2	0.12782	0.13025	0.13249	0.13452	0.13636	0.13799	0.13943	0.14067	0.14172	0.14260	0.14332	0.14388	0.14432	0.14432

ADD H2O(L)

CASE=		O/F=	33.3333	F/A=	0.03000	PERCENT FUEL=					2.9126	PHI=					0.4396
P, ATM		40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA		587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K		1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0			
T, DEG F		2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3			
RHO, G/CC	9.	4.153-3	1.0088-2	1.0864-2	1.1769-2	1.2839-2	1.4123-2	1.5692-2	1.7654-2	2.0176-2	2.3538-2	2.8246-2	3.5307-2	4.9918-2			
M, MOL WT		28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.721		
CP, CAL/(G*IK)		0.3091	0.3047	0.3002	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.2831			
GAMMA (S)		1.2852	1.2905	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.3066			
SON VEL, M/SEC		743.8	720.1	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	325.7			

MOLE FRACTIONS

AR		0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2		0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.05692			
H2O		0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.00082
NO		0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2		0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2		0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH		0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2		0.11350	0.11370	0.11363	0.11391	0.11396	0.11398	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

CASE=		O/F=	33.3333	F/A=	0.03000	PERCENT FUEL=					2.9126	PHI=					0.4396
P, ATM		50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA		734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8			
T, DEG K		2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F		4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3			
RHO, G/CC	6.	2.706-3	6.5135-3	6.7722-3	7.0492-3	7.3474-3	7.6700-3	8.0209-3	8.4044-3	8.8256-3	9.2907-3	9.8073-3	1.0384-2	1.1034-2			
M, MOL WT		28.814	28.862	28.897	28.922	28.939	28.951	28.959	28.965	28.968	28.970	28.971	28.972	28.972			
CP, CAL/(G*IK)		0.4382	0.4148	0.3952	0.3791	0.3660	0.3554	0.3467	0.3395	0.3333	0.3277	0.3227	0.3180	0.3135			
GAMMA (S)		1.2080	1.2155	1.2231	1.2303	1.2372	1.2436	1.2495	1.2550	1.2603	1.2653	1.2702	1.2752	1.2801			
SON VEL, M/SEC		987.9	972.3	956.5	940.3	923.6	906.3	888.4	869.8	850.6	830.6	810.1	788.7	766.7			

MOLE FRACTIONS

AR		0.00900	0.00902	0.00903	0.00904	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO		0.00321	0.00250	0.00158	0.00095	0.00055	0.00030	0.00015	0.00007	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
CO2		0.05672	0.05812	0.05912	0.05980	0.06024	0.06051	0.06068	0.06077	0.06081	0.06084	0.06085	0.06085	0.06086	0.06086	0.06086	0.06086
H		0.00026	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2		0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2		0.00052	0.00035	0.00023	0.00014	0.00009	0.00005	0.00003	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O		0.05290	0.05405	0.05498	0.05572	0.05630	0.05674	0.05707	0.05730	0.05747	0.05758	0.05765	0.05769	0.05772	0.05772	0.05772	0.05772
NO		0.02563	0.02245	0.01943	0.01660	0.01397	0.01156	0.00938	0.00746	0.00578	0.00436	0.00318	0.00224	0.00150			
NO2		0.00008	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004	0.00003	0.00003			
N2		0.74137	0.74420	0.74662	0.74870	0.75048	0.75200	0.75330	0.75440	0.75533	0.75609	0.75721	0.75721	0.75758			
O		0.00241	0.00162	0.00105	0.00066	0.00040	0.00023	0.00013	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000			
OH		0.00770	0.00604	0.00464	0.00347	0.00253	0.00179	0.00122	0.00081	0.00051	0.00030	0.00017	0.00009	0.00004			
O2		0.09956	0.10138	0.10313	0.10478	0.10630	0.10769	0.10892	0.11000	0.11092	0.11169	0.11232	0.11283	0.11321			

## ADD H2O(L)

CASE=	0	0/F=	20.0000	F/A=	0.05000	PERCENT FUEL=				4.7619	PHI=				0.7327	
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0			
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3			
RHO, G/CC	1.1771-4	1.2612-4	1.3582-4	1.4714-4	1.6051-4	1.7657-4	1.9618-4	2.2071-4	2.5224-4	2.9428-4	3.5313-4	4.4142-4	6.0486-4			
M, MOL WT	28.976	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977
CP, CAL/(G*IK)	0.3189	0.3141	0.3095	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2547	1.8015			
GAMMA (S)	1.2741	1.2793	1.2847	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.3684	1.1409			
SON VEL,M/SEC	740.5	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	396.3	309.1			

## MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00998	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.02696
H2O	0.09438	0.09440	0.09441	0.09441	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.06745
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74369	0.74383	0.74392	0.74392	0.74400	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05301	0.05315	0.05324	0.05330	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

CASE=	0	0/F=	20.0000	F/A=	0.05000	PERCENT FUEL=				4.7619	PHI=				0.7327	
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3			
RHO, G/CC	1.2128-4	1.2715-4	1.3319-4	1.3944-4	1.4595-4	1.5279-4	1.6007-4	1.6791-4	1.7643-4	1.8579-4	1.9615-4	2.0771-4	2.2070-4			
M, MOL WT	27.866	28.169	28.415	28.605	28.743	28.837	28.897	28.933	28.954	28.965	28.971	28.974	28.976			
CP, CAL/(G*IK)	0.8998	0.8003	0.7024	0.6106	0.5302	0.4653	0.4171	0.3835	0.3612	0.3465	0.3365	0.3294	0.3237			
GAMMA (S)	1.1444	1.1490	1.1563	1.1669	1.1807	1.1966	1.2130	1.2279	1.2403	1.2500	1.2576	1.2638	1.2692			
SON VEL,M/SEC	977.8	956.9	937.9	920.8	905.4	890.8	876.3	860.8	844.0	825.7	806.0	785.2	763.3			

## MOLE FRACTIONS

AR	0.00854	0.00864	0.00871	0.00877	0.00881	0.00884	0.00886	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.03737	0.02853	0.02041	0.01359	0.00840	0.00481	0.00256	0.00126	0.00057	0.00024	0.00009	0.00003	0.00001	0.00000	0.00000	0.00001
CO2	0.05815	0.06802	0.07699	0.08446	0.09012	0.09403	0.09649	0.09792	0.09868	0.09905	0.09922	0.09928	0.09931			
H	0.00662	0.00394	0.00222	0.00119	0.00059	0.00028	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00662	0.00486	0.00339	0.00235	0.00141	0.00083	0.00047	0.00024	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.07069	0.07680	0.08174	0.08558	0.08845	0.09050	0.09193	0.09288	0.09350	0.09390	0.09413	0.09427	0.09435			
NO	0.01848	0.01596	0.01360	0.01144	0.00951	0.00782	0.00632	0.00502	0.00390	0.00294	0.00215	0.00151	0.00102			
NO2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.70627	0.71531	0.72281	0.72876	0.73327	0.73653	0.73882	0.74040	0.74149	0.74226	0.74281	0.74321	0.74349			
O	0.01258	0.00829	0.00528	0.00326	0.00194	0.00111	0.00060	0.00031	0.00015	0.00007	0.00003	0.00001	0.00000			
OH	0.02034	0.01631	0.01268	0.00956	0.00700	0.00497	0.00341	0.00225	0.00142	0.00085	0.00048	0.00026	0.00012			
O2	0.05433	0.05333	0.05215	0.05113	0.05049	0.05028	0.05043	0.05080	0.05128	0.05176	0.05219	0.05254	0.05281			

## ADD H2O(L)

CASE=	0	0/F=	16.6667	F/A=	0.06000	PERCENT FUEL=				5.6604	PHI=				0.8792	
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0			
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3			
RHO, G/CC	3.5316-4	3.7838-4	4.0749-4	4.4145-4	4.8158-4	5.2974-4	5.8860-4	6.6218-4	7.5677-4	8.8290-4	1.0595-3	1.3244-3	1.9431-3			
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	31.889		
CP, CAL/(G*IK)	0.3229	0.3183	0.3138	0.3090	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	0.2505	0.2435		
GAMMA (S)	1.2698	1.2746	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.3761	1.3889		
SON VEL, M/SEC	739.2	715.5	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	302.5			

## MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11801	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.11221	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73684	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02381	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

CASE=	0	0/F=	16.6667	F/A=	0.06000	PERCENT FUEL=				5.6604	PHI=				0.8792	
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F	4850.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3			
RHO, G/CC	2.4316-4	2.5462-4	2.6653-4	2.7894-4	2.9192-4	3.0561-4	3.2017-4	3.3585-4	3.5290-4	3.7131-4	3.9234-4	4.1545-4	4.4144-4			
M, MOL WT	27.934	28.206	28.432	28.611	28.745	28.839	28.900	28.937	28.958	28.969	28.974	28.977	28.978			
CP, CAL/(G*IK)	0.8482	0.7651	0.6825	0.6031	0.5306	0.4690	0.4209	0.3866	0.3638	0.3490	0.3394	0.3327	0.3274			
GAMMA (S)	1.1470	1.1513	1.1580	1.1675	1.1801	1.1951	1.2110	1.2258	1.2381	1.2475	1.2546	1.2603	1.2652			
SON VEL, M/SEC	977.7	957.3	938.3	921.0	905.1	890.2	875.5	860.0	843.2	824.8	805.0	784.1	762.1			

## MOLE FRACTIONS

AR	0.00848	0.00856	0.00863	0.00869	0.00873	0.00876	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.04159	0.03211	0.02339	0.01595	0.01011	0.00592	0.00319	0.00158	0.00072	0.00030	0.00011	0.00004	0.00001			
CO2	0.07216	0.08276	0.09240	0.10057	0.10696	0.11153	0.11456	0.11626	0.11721	0.11768	0.11788	0.11797	0.11800			
H	0.00499	0.00299	0.00170	0.00092	0.00046	0.00022	0.00010	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000			
H2O	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000			
H2	0.00953	0.00559	0.00397	0.00259	0.00172	0.00104	0.00059	0.00031	0.00015	0.00007	0.00003	0.00001	0.00000			
H2O	0.08961	0.09548	0.10022	0.10391	0.10667	0.10866	0.11001	0.11090	0.11147	0.11181	0.11201	0.11213	0.11219			
NO	0.01454	0.01217	0.01003	0.00818	0.00661	0.00531	0.00424	0.00334	0.00258	0.00195	0.00142	0.00100	0.00067			
N2	0.70320	0.71133	0.71814	0.72361	0.72780	0.73083	0.73293	0.73432	0.73523	0.73583	0.73623	0.73651	0.73671			
O	0.00701	0.00448	0.00277	0.00165	0.00096	0.00053	0.00029	0.00015	0.00007	0.00003	0.00001	0.00000	0.00000			
OH	0.01710	0.01337	0.01015	0.00750	0.00540	0.00378	0.00257	0.00169	0.00106	0.00064	0.00036	0.00019	0.00009			
O2	0.03376	0.03116	0.02858	0.02632	0.02457	0.02342	0.02281	0.02263	0.02270	0.02290	0.02313	0.02335	0.02352			

## ADD H2O(L)

CASE=	0	0/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882			PHI= 1.0000							
P, ATH	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	7.0633-4	7.5681-4	8.1503-4	8.8296-4	9.6323-4	1.0596-3	1.1773-3	1.3244-3	1.5136-3	1.7659-3	2.1191-3	2.6489-3	3.9974-3	
M, MOL WT	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	32.802
CP, CAL/(G)(K)	0.3268	0.3218	0.3171	0.3122	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	0.2530	
GAMMA (S)	1.2659	1.2710	1.2760	1.2814	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.1905	
SON VEL, M/SEC	738.1	714.5	689.9	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	300.9	

## MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13309	0.13314	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.11647
H2O	0.12665	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.01021
NO	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73139	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
OH	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	0	0/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882			PHI= 1.0000							
P, ATH	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	
RHO, G/CC	4.8674-4	5.0903-4	5.3232-4	5.5677-4	5.8256-4	6.0994-4	6.3924-4	6.7084-4	7.0519-4	7.4285-4	7.8447-4	8.3082-4	8.8287-4	
M, MOL WT	27.958	28.194	28.392	28.554	28.682	28.779	28.850	28.899	28.933	28.954	28.967	28.974	28.978	
CP, CAL/(G)(K)	0.7861	0.7175	0.6509	0.5884	0.5319	0.4827	0.4415	0.4085	0.3830	0.3638	0.3499	0.3398	0.3324	
GAMMA (S)	1.1515	1.1559	1.1620	1.1700	1.1798	1.1911	1.2034	1.2159	1.2277	1.2383	1.2473	1.2547	1.2608	
SON VEL, M/SEC	979.2	959.3	940.6	922.9	906.0	889.7	873.5	857.1	840.0	822.0	802.8	782.4	760.8	

## MOLE FRACTIONS

AR	0.00842	0.00850	0.00855	0.00860	0.00864	0.00867	0.00869	0.00871	0.00872	0.00872	0.00873	0.00873	0.00873	0.00873
CO	0.04612	0.03702	0.02865	0.02135	0.01528	0.01048	0.00687	0.00428	0.00253	0.00141	0.00073	0.00035	0.00015	0.00005
CO2	0.08234	0.09253	0.10180	0.10985	0.11651	0.12175	0.12569	0.12850	0.13041	0.13163	0.13237	0.13278	0.13299	
H	0.00377	0.00231	0.00136	0.00076	0.00041	0.00021	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00858	0.00666	0.00506	0.00375	0.00271	0.00190	0.00129	0.00085	0.00054	0.00032	0.00018	0.00010	0.00005	0.00002
H2O	0.10510	0.11042	0.11473	0.11813	0.12073	0.12267	0.12407	0.12505	0.12570	0.12612	0.12638	0.12653	0.12661	
NO	0.01056	0.00832	0.00636	0.00470	0.00336	0.00231	0.00152	0.00096	0.00057	0.00033	0.00017	0.00008	0.00004	0.00002
N2	0.70033	0.70741	0.71339	0.71830	0.72219	0.72517	0.72735	0.72889	0.72993	0.73059	0.73099	0.73122	0.73133	
O	0.00361	0.00217	0.00124	0.00067	0.00034	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01328	0.01001	0.00729	0.00511	0.00345	0.00223	0.00138	0.00081	0.00045	0.00023	0.00011	0.00005	0.00002	
O2	0.01788	0.01466	0.01156	0.00877	0.00638	0.00445	0.00296	0.00188	0.00113	0.00064	0.00034	0.00017	0.00008	



ADD H2O(L)  
ADD C(S)

	CASE= 0	O/F= 14.2857	F/A= 0.07000	PERCENT FUEL= 6.5421				PHI= 1.0258					
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	1.4057-3	1.5061-3	1.6219-3	1.7571-3	1.9168-3	2.1085-3	2.3428-3	2.6357-3	3.0147-3	3.5265-3	4.2371-3	5.2977-3	8.0699-3
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.861	28.937	28.974	28.981	33.109
CP, CAL/(G)(K)	0.3261	0.3226	0.3188	0.3146	0.3101	0.3052	0.2994	0.2933	0.3026	0.2904	0.2704	0.2557	0.4049
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2916	1.2990	1.3077	1.3053	1.3185	1.3423	1.3589	1.2112
SON VEL,M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.6	549.2	513.0	476.8	438.8	394.9	302.1

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00868	0.00870	0.00872	0.00872	0.00867
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00502
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00042	0.00174	0.00238	0.00251	0.00000
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00321	0.00206	0.00088	0.00011	0.00000	0.00000	0.00000
CO2	0.12840	0.12876	0.12921	0.12978	0.13050	0.13141	0.13247	0.13361	0.13450	0.13430	0.13394	0.13385	0.13065
H2	0.00278	0.00313	0.00358	0.00415	0.00488	0.00578	0.00684	0.00793	0.00745	0.00294	0.00054	0.00004	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12405
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12112	0.12085	0.12305	0.12436	0.12465	0.00503
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00003	0.00003	0.00002	0.00001	0.00000
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72659	0.72719	0.72911	0.73003	0.73022	0.72657

	CASE= 0	O/F= 14.2857	F/A= 0.07000	PERCENT FUEL= 6.5421				PHI= 1.0258					
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.2251-3	1.2787-3	1.3349-3	1.3941-3	1.4569-3	1.5237-3	1.5953-3	1.6725-3	1.7568-3	1.8494-3	1.9523-3	2.0671-3	2.1963-3
M, MOL WT	28.148	28.329	28.479	28.600	28.691	28.757	28.799	28.821	28.831	28.834	28.835	28.836	28.836
CP, CAL/(G)(K)	0.6888	0.6324	0.5778	0.5263	0.4787	0.4351	0.3964	0.3666	0.3493	0.3407	0.3360	0.3326	0.3294
GAMMA (S)	1.1606	1.1661	1.1732	1.1822	1.1933	1.2066	1.2221	1.2373	1.2481	1.2543	1.2583	1.2614	1.2646
SON VEL,M/SEC	979.8	961.3	943.7	927.0	911.0	895.8	881.0	865.8	848.5	829.0	808.1	786.3	763.8

MOLE FRACTIONS

AR	0.00847	0.00852	0.00857	0.00860	0.00863	0.00865	0.00866	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867
CO	0.04032	0.03261	0.02581	0.02012	0.01560	0.01230	0.01015	0.00898	0.00844	0.00817	0.00798	0.00778	0.00755
CO2	0.09212	0.10068	0.10818	0.11475	0.11939	0.12301	0.12535	0.12662	0.12721	0.12749	0.12769	0.12789	0.12812
H	0.00218	0.00135	0.00081	0.00047	0.00026	0.00014	0.00008	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000
H02	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00720	0.00571	0.00448	0.00352	0.00278	0.00226	0.00196	0.00184	0.00185	0.00195	0.00209	0.00227	0.00250
H2O	0.11279	0.11681	0.12004	0.12254	0.12441	0.12573	0.12656	0.12698	0.12712	0.12709	0.12698	0.12681	0.12658
N0	0.00857	0.00652	0.00475	0.00329	0.00213	0.00125	0.00065	0.00028	0.00011	0.00003	0.00001	0.00000	0.00000
N2	0.70494	0.71054	0.71521	0.71897	0.72186	0.72395	0.72531	0.72605	0.72638	0.72651	0.72655	0.72656	0.72657
O	0.00185	0.00107	0.00059	0.00030	0.00014	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00984	0.00724	0.00512	0.00346	0.00222	0.00132	0.00072	0.00035	0.00015	0.00006	0.00002	0.00001	0.00000
O2	0.01171	0.00895	0.00643	0.00429	0.00257	0.00132	0.00054	0.00017	0.00004	0.00001	0.00000	0.00000	0.00000

ADD (S)  
ADD H2O(L)

CASE=	0	O/F=	12.5000	F/A=	0.08000	PERCENT FUEL=	7.4074	PHI=	1.1723										
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0	0.0	0.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0	0.0	0.0	0.0	0.0	0.0
RHO, G/CC	3.4179-3	3.6620-3	3.9437-3	4.2724-3	4.6609-3	5.1281-3	5.7179-3	6.5160-3	7.5238-3	8.8167-3	1.0594-2	1.3245-2	2.0654-2						
M, MOL WT	28.046	28.046	28.046	28.046	28.046	28.053	28.152	28.516	28.811	28.939	28.977	28.983	33.896						
CP, CAL/(G)(K)	0.3338	0.3313	0.3289	0.3267	0.3250	0.3295	0.4066	0.4310	0.3467	0.2998	0.2777	0.2674	0.3475						
GAMMA (S)	1.2695	1.2721	1.2746	1.2771	1.2792	1.2778	1.2452	1.2376	1.2754	1.3072	1.3301	1.3450	1.2202						
SON VEL./M/SEC	751.4	726.6	700.9	674.0	645.9	615.4	575.3	537.3	507.6	474.7	436.8	392.9	299.6						

MOLE FRACTIONS

AR	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00839	0.00850	0.00859	0.00859	0.00852	0.00844	0.00836						
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00453	0.01307	0.02234	0.03236					
CH4	0.00000	0.00000	0.00000	0.00000	0.00001	0.00011	0.00183	0.00832	0.01358	0.01354	0.00983	0.00517	0.00000						
CO	0.04458	0.04258	0.04012	0.03707	0.03326	0.02838	0.02027	0.00767	0.00143	0.00012	0.00000	0.00000	0.00000						
CO2	0.10480	0.10679	0.10925	0.11231	0.11612	0.12093	0.12784	0.13589	0.13844	0.13524	0.12942	0.12341	0.11701						
H2	0.02015	0.02214	0.02460	0.02764	0.03141	0.03586	0.03722	0.02465	0.01056	0.00300	0.00049	0.00003	0.00000						
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.14024						
H2O	0.12200	0.12000	0.11755	0.11449	0.11070	0.10603	0.10164	0.10303	0.10812	0.11580	0.12474	0.13324	0.00191						
NH3	0.00000	0.00000	0.00001	0.00001	0.00002	0.00005	0.00011	0.00015	0.00013	0.00009	0.00004	0.00001	0.00000						
N2	0.70012	0.70012	0.70012	0.70012	0.70013	0.70028	0.70270	0.71179	0.71915	0.71909	0.71389	0.70735	0.70012						

CASE=	0	O/F=	12.5000	F/A=	0.08000	PERCENT FUEL=	7.4074	PHI=	1.1723										
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3						
RHO, G/CC	2.4206-3	2.5187-3	2.6214-3	2.7299-3	2.8458-3	2.9708-3	3.1065-3	3.2548-3	3.4177-3	3.5977-3	3.7976-3	4.0210-3	4.2723-3						
M, MOL WT	27.807	27.901	27.963	28.001	28.022	28.034	28.040	28.043	28.044	28.045	28.046	28.046	28.046						
CP, CAL/(G)(K)	0.5545	0.4911	0.4391	0.4021	0.3783	0.3639	0.3553	0.3499	0.3462	0.3434	0.3409	0.3385	0.3362						
GAMMA (S)	1.1834	1.1968	1.2121	1.2264	1.2377	1.2457	1.2511	1.2549	1.2578	1.2602	1.2625	1.2647	1.2671						
SON VEL./M/SEC	995.3	981.3	968.0	954.1	938.8	921.8	903.4	883.9	863.6	842.5	820.8	798.4	775.3						

MOLE FRACTIONS

AR	0.00829	0.00832	0.00833	0.00834	0.00835	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836						
CO	0.06172	0.05815	0.05573	0.05417	0.05315	0.05241	0.05177	0.05112	0.05042	0.04962	0.04868	0.04755	0.04621						
CO2	0.08639	0.09045	0.09321	0.09477	0.09610	0.09690	0.09758	0.09824	0.09895	0.09975	0.01070	0.10182	0.10317						
H	0.00207	0.00140	0.00093	0.00061	0.00039	0.00024	0.00014	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000						
H2	0.01293	0.01227	0.01199	0.01201	0.01223	0.01259	0.01306	0.01363	0.01431	0.01511	0.01605	0.01717	0.01852						
H2O	0.12412	0.12656	0.12809	0.12891	0.12922	0.12918	0.12889	0.12841	0.12779	0.12702	0.12609	0.12497	0.12363						
N0	0.00368	0.00230	0.00132	0.00071	0.00035	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000						
N2	0.69233	0.69537	0.69740	0.69864	0.69935	0.69973	0.69993	0.70003	0.70008	0.70010	0.70011	0.70011	0.70012						
O	0.00057	0.00027	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
OH	0.00571	0.00378	0.00236	0.00139	0.00078	0.00041	0.00020	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000						
O2	0.00220	0.00114	0.00051	0.00020	0.00007	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						



ADD C1S1  
ADD H2O(L1)

	CASE= 0	O/F= 10.0000	F/A= 0.10000	PERCENT FUEL= 9.0909				PHI= 1.4654					
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	1.0817-2	1.1590-2	1.2483-2	1.3532-2	1.4839-2	1.6660-2	1.9062-2	2.1821-2	2.5133-2	2.9409-2	3.5322-2	4.1271-2	4.71781-2
M, MOL WT	26.627	26.628	26.632	26.650	26.788	27.341	28.155	28.649	28.873	28.959	28.984	33.657	35.341
CP, CAL/(G)(K)	0.3460	0.3449	0.3457	0.3605	0.4684	0.6462	0.5944	0.4209	0.3373	0.3002	0.2835	0.2653	0.3332
GAMMA (S)	1.2751	1.2765	1.2770	1.2712	1.2359	1.1983	1.1954	1.2364	1.2755	1.3028	1.3202	1.1804	1.2081
SON VEL, M/SEC	772.8	747.0	719.9	689.9	649.6	603.6	563.7	535.8	507.0	473.7	435.2	341.5	292.0

MOLE FRACTIONS

AR	0.00779	0.00779	0.00779	0.00780	0.00784	0.00800	0.00812	0.00815	0.00815	0.00810	0.00802	0.00780	0.00779
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01406	0.02733	0.03559	0.04373	0.05426	0.08049	0.08148
CH4	0.00000	0.00001	0.00005	0.00037	0.00291	0.01325	0.02110	0.02312	0.02277	0.01984	0.01470	0.00053	0.00000
CO	0.10312	0.09955	0.09518	0.08941	0.07883	0.05448	0.02082	0.00494	0.00076	0.00006	0.00000	0.00000	0.00000
CO2	0.07087	0.07443	0.07878	0.08436	0.09331	0.11092	0.12541	0.12668	0.12283	0.11709	0.11015	0.09314	0.09251
H2	0.05978	0.06329	0.06745	0.07197	0.07311	0.05930	0.03603	0.01797	0.00703	0.00195	0.00032	0.00001	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12756	0.16510
H2O	0.10579	0.10225	0.09757	0.09283	0.08733	0.08374	0.09392	0.10865	0.12028	0.13037	0.14067	0.03717	0.00052
NH3	0.00004	0.00006	0.00009	0.00015	0.00026	0.00035	0.00035	0.00031	0.00024	0.00016	0.00008	0.00000	0.00000
N2	0.65261	0.65262	0.65268	0.65311	0.65643	0.66995	0.68019	0.68283	0.68235	0.67851	0.67179	0.65329	0.65260

	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000				PHI= 0.0000					
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.2560-3	1.3041-3	1.3555-3	1.4105-3	1.4699-3	1.5342-3	1.6042-3	1.6807-3	1.7648-3	1.8578-3	1.9610-3	2.0764-3	2.2061-3
M, MOL WT	28.858	28.893	28.918	28.936	28.947	28.955	28.959	28.962	28.964	28.964	28.965	28.965	28.965
CP, CAL/(G*IK)	0.4018	0.3830	0.3674	0.3546	0.3441	0.3355	0.3283	0.3221	0.3167	0.3117	0.3070	0.3026	0.2982
GAMMA (S)	1.2247	1.2323	1.2397	1.2468	1.2536	1.2599	1.2658	1.2715	1.2770	1.2824	1.2878	1.2933	1.2988
SON VEL, M/SEC	994.0	978.5	962.7	946.4	929.6	912.2	894.2	875.5	856.3	836.3	815.7	794.4	772.3

MOLE FRACTIONS

AR	0.00929	0.00930	0.00931	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00003	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00027	0.00028	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03558	0.03120	0.02700	0.02304	0.01937	0.01601	0.01298	0.01030	0.00798	0.00601	0.00438	0.00308	0.00207	
NO2	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003	0.00003	0.00002	
H2	0.76020	0.76334	0.76612	0.76857	0.77073	0.77261	0.77425	0.77566	0.77686	0.77786	0.77869	0.77935	0.77985	
O	0.00739	0.00496	0.00322	0.00202	0.00122	0.00070	0.00038	0.00020	0.00010	0.00004	0.00002	0.00001	0.00000	
O2	0.18718	0.19084	0.19399	0.19670	0.19902	0.20102	0.20272	0.20418	0.20540	0.20642	0.20725	0.20792	0.20843	

	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000				PHI= 0.0000					
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	2.3532-3	2.5213-3	2.7152-3	2.9415-3	3.2089-3	3.5298-3	3.9220-3	4.4122-3	5.0426-3	5.8830-3	7.0596-3	8.8245-3	1.1766-2
M, MOL WT	28.965	28.965	28.965	28.965	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964
CP, CAL/(G*IK)	0.2939	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402
GAMMA (S)	1.3044	1.3102	1.3161	1.3223	1.3287	1.3357	1.3440	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999
SON VEL, M/SEC	749.4	725.6	700.8	674.9	647.7	619.2	589.2	557.5	523.6	486.8	446.1	400.3	347.2

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO2	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
NO2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
H2	0.78023	0.78050	0.78067	0.78078	0.78084	0.78087	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089	
O2	0.20881	0.20908	0.20926	0.20937	0.20943	0.20946	0.20948	0.20948	0.20949	0.20949	0.20949	0.20949	0.20949	

## ADD H2O(L)

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901				PHI= 0.1465					
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	3.5301-3	3.7823-3	4.0732-3	4.4127-3	4.8138-3	5.2952-3	5.8835-3	6.6190-3	7.5645-3	8.8253-3	1.0590-2	1.3238-2	1.7962-2
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	29.479
CP, CAL/(G)(K)	0.2992	0.2949	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2366
GAMMA (SI)	1.2974	1.3031	1.3090	1.3150	1.3215	1.3285	1.3368	1.3466	1.3574	1.3688	1.3799	1.3893	1.3225
SON VEL,M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	334.5

## MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01735
H2O	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.00227
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77318	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17641	0.17666	0.17662	0.17693	0.17698	0.17701	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901				PHI= 0.1465					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	2.5090-3	2.6058-3	2.7090-3	2.8196-3	2.9388-3	3.0677-3	3.2080-3	3.3613-3	3.5297-3	3.7157-3	3.9223-3	4.1531-3	4.4127-3
M, MOL WT	28.824	28.866	28.898	28.921	28.937	28.948	28.956	28.961	28.963	28.965	28.966	28.967	28.967
CP, CAL/(G)(K)	0.4217	0.4009	0.3832	0.3684	0.3562	0.3460	0.3375	0.3302	0.3239	0.3183	0.3131	0.3083	0.3037
GAMMA (SI)	1.2156	1.2230	1.2305	1.2378	1.2449	1.2516	1.2579	1.2639	1.2697	1.2754	1.2809	1.2864	1.2919
SON VEL,M/SEC	990.9	975.2	959.4	943.2	926.5	909.3	891.4	872.9	853.8	834.0	813.5	792.3	770.3

## MOLE FRACTIONS

AR	0.00919	0.00920	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00162	0.00107	0.00068	0.00041	0.00024	0.00013	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.01916	0.01974	0.02016	0.02044	0.02062	0.02074	0.02081	0.02084	0.02086	0.02087	0.02088	0.02088	0.02088
H	0.00026	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00020	0.00014	0.00009	0.00006	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01618	0.01695	0.01759	0.01811	0.01853	0.01885	0.01910	0.01928	0.01941	0.01950	0.01955	0.01959	0.01961
NO	0.03243	0.02843	0.02461	0.02101	0.01767	0.01461	0.01185	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189
NO2	0.00008	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004	0.00003	0.00003
N2	0.75315	0.75630	0.75906	0.76147	0.76357	0.76540	0.76698	0.76833	0.76947	0.77041	0.77119	0.77180	0.77227
O	0.00478	0.00321	0.00209	0.00131	0.00079	0.00045	0.00025	0.00013	0.00006	0.00003	0.00001	0.00000	0.00000
OH	0.00600	0.00477	0.00369	0.00279	0.00204	0.00145	0.00100	0.00066	0.00041	0.00025	0.00014	0.00007	0.00004
O2	0.15693	0.15996	0.16266	0.16506	0.16718	0.16904	0.17064	0.17202	0.17319	0.17416	0.17495	0.17557	0.17605

## ADD H2O(L)

CASE=	0	0/F=	50.0000	F/A=	0.02000	PERCENT FUEL=		1.9608	PHI=	0.2931						
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	400.0	300.0	300.0	
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	260.3	80.3		
RHO, G/CC	7.0609-3	7.5653-3	8.1472-3	8.8261-3	9.6285-3	1.0591-2	1.1768-2	1.3239-2	1.5130-2	1.7652-2	2.1183-2	2.6478-2	3.6689-2			
M, MOL WT	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	30.106	
CP, CAL/(G*IK)	0.3042	0.2999	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2409			
GAMMA (S)	1.2911	1.2966	1.3023	1.3083	1.3147	1.3217	1.3276	1.3399	1.3508	1.3623	1.3737	1.3837	1.3919			
SON VEL, M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	330.9			

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.03886	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14464	0.14487	0.14562	0.14511	0.14516	0.14519	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

CASE=	0	0/F=	50.0000	F/A=	0.02000	PERCENT FUEL=		1.9608	PHI=	0.2931						
P, ATM	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	290.3	2780.3	2600.3	2420.3			
RHO, G/CC	5.0190-3	5.2125-3	5.4187-3	5.6398-3	5.8780-3	6.1359-3	6.4164-3	6.7231-3	7.0600-3	7.4320-3	7.8452-3	8.3068-3	8.8261-3			
M, MOL WT	28.829	28.871	28.902	28.924	28.940	28.951	28.958	28.963	28.966	28.968	28.969	28.969	28.970			
CP, CAL/(G*IK)	0.4245	0.4039	0.3865	0.3720	0.3600	0.3501	0.3418	0.3348	0.3286	0.3231	0.3180	0.3132	0.3087			
GAMMA (S)	1.2133	1.2205	1.2277	1.2347	1.2414	1.2478	1.2537	1.2594	1.2649	1.2701	1.2754	1.2806	1.2858			
SON VEL, M/SEC	989.8	974.2	958.3	942.0	925.2	907.9	889.9	871.3	852.1	832.3	811.7	790.4	768.4			

## MOLE FRACTIONS

AR	0.00910	0.00911	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00254	0.00167	0.00105	0.00063	0.00036	0.00020	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.03833	0.03926	0.03992	0.04037	0.04066	0.04084	0.04094	0.04100	0.04104	0.04105	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H	0.00024	0.00013	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00033	0.00023	0.00015	0.00009	0.00006	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.03469	0.03566	0.03645	0.03709	0.03759	0.03797	0.03826	0.03847	0.03862	0.03872	0.03878	0.03882	0.03885			
NO	0.02918	0.02557	0.02213	0.01889	0.01589	0.01314	0.01067	0.00847	0.00657	0.00495	0.00361	0.00254	0.00170			
NO2	0.00009	0.00008	0.00008	0.00008	0.00007	0.00007	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004	0.00003			
N2	0.74738	0.75029	0.75282	0.75503	0.75696	0.75862	0.76005	0.76128	0.76231	0.76317	0.76387	0.76443	0.76485			
O	0.00305	0.00205	0.00133	0.00084	0.00050	0.00029	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00702	0.00553	0.00425	0.00319	0.00233	0.00165	0.00113	0.00074	0.00047	0.00028	0.00016	0.00008	0.00004			
O2	0.12801	0.13040	0.13259	0.13460	0.13641	0.13803	0.13945	0.14068	0.14173	0.14260	0.14332	0.14388	0.14432			

## ADD H20(1)

	CASE= 0	O/F= 33.3333	F/A= 0.03000	PERCENT FUEL= 2.9126				PHI= 0.4396						
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	1.1769-2	1.2610-2	1.3580-2	1.4711-2	1.6049-2	1.7654-2	1.9615-2	2.2067-2	2.5219-2	2.9423-2	3.5307-2	4.4640-2	6.2408-2	
M, MOL HT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	29.304	30.726	
CP, CAL/(G)(K)	0.3091	0.3047	0.3002	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2311	0.2797	
GAMMA (S)	1.2852	1.2905	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.2268	1.3093	
SON VEL, M/SEC	743.8	720.1	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	373.1	326.0	

## MOL FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06066	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H20(1)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01134	0.05709
H2O	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.04640	0.00065
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.75826	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11350	0.11370	0.11363	0.11391	0.11396	0.11398	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

	CASE= 0	O/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862						
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	290.3	2780.3	2600.3	2420.3	
RHO, G/CC	6.0386-5	6.3388-5	6.6465-5	6.9632-5	7.2915-5	7.6355-5	8.0007-5	8.3931-5	8.8197-5	9.2880-5	9.8063-5	1.0384-4	1.1034-4	
M, MOL HT	27.749	28.088	26.360	28.569	28.719	28.821	28.886	28.926	28.949	28.961	28.968	28.971	28.973	
CP, CAL/(G)(K)	0.9591	0.8443	0.7330	0.6303	0.5421	0.4720	0.4203	0.3843	0.3602	0.3443	0.3334	0.3256	0.3196	
GAMMA (S)	1.1421	1.1465	1.1539	1.1647	1.1789	1.1954	1.2126	1.2284	1.2417	1.2524	1.2608	1.2677	1.2737	
SON VEL, M/SEC	978.9	957.3	937.8	920.5	905.0	890.6	876.3	861.1	844.6	826.5	807.1	786.4	764.7	

## MOL FRACTIONS

AR	0.00859	0.00869	0.00878	0.00884	0.00889	0.00892	0.00894	0.00895	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897
CO	0.03355	0.02582	0.01855	0.01237	0.00765	0.00438	0.00233	0.00114	0.00052	0.00021	0.00008	0.00003	0.00001	
CO2	0.04333	0.05199	0.06002	0.06678	0.07192	0.07547	0.07770	0.07900	0.07968	0.08002	0.08017	0.08024	0.08026	
H	0.00878	0.00525	0.00298	0.00159	0.00080	0.00037	0.00016	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	
H02	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
H2	0.00583	0.00433	0.00304	0.00202	0.00127	0.00075	0.00042	0.00022	0.00011	0.00005	0.00002	0.00001	0.00000	
H20	0.05161	0.05777	0.06283	0.06680	0.06979	0.07197	0.07349	0.07453	0.07522	0.07566	0.07593	0.07608	0.07617	
NO	0.02172	0.01911	0.01654	0.01410	0.01184	0.00979	0.00795	0.00632	0.00491	0.00370	0.00270	0.00190	0.00128	
NO2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
N2	0.70848	0.71857	0.72693	0.73355	0.73858	0.74225	0.74486	0.74670	0.74800	0.74893	0.74960	0.75009	0.75045	
O	0.02088	0.01400	0.00906	0.00566	0.00340	0.00195	0.00107	0.00055	0.00027	0.00012	0.00005	0.00002	0.00001	
OH	0.02239	0.01838	0.01455	0.01113	0.00823	0.00588	0.00405	0.00268	0.00169	0.00102	0.00058	0.00031	0.00015	
O2	0.07483	0.07606	0.07671	0.07714	0.07762	0.07826	0.07902	0.07983	0.08062	0.08131	0.08190	0.08236	0.08271	



## ADD H2O(L)

CASE=	0	0/F=	20.0000	F/A=	0.05000	PERCENT FUEL= 4.7619				PHI= 0.7327			
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO	2.3542E-4	2.5224E-4	2.7164E-4	2.9429E-4	3.2103E-4	3.5313E-4	3.9237E-4	4.4141E-4	5.0448E-4	5.8955E-4	7.0627E-4	8.8283E-4	1.2548E-3
M, MOL WT	28.976	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	30.889
CP, CAL/(G)(K)	0.3187	0.3141	0.3094	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2547	0.9880
GAMMA (S)	1.2743	1.2794	1.2847	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.3684	1.1596
SON VEL, M/SEC	740.6	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	396.3	306.0

## MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00998	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.09439	0.09440	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.03252
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74369	0.74363	0.74352	0.74397	0.74400	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05301	0.05315	0.05324	0.05330	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

CASE=	0	0/F=	20.0000	F/A=	0.05000	PERCENT FUEL= 4.7619				PHI= 0.7327			
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO	1.8294E-4	1.9151E-4	2.0038E-4	2.0959E-4	2.1921E-4	2.2937E-4	2.4021E-4	2.5192E-4	2.6467E-4	2.7839E-4	2.9423E-4	3.1156E-4	3.3105E-4
M, MOL WT	28.021	28.287	28.501	28.663	28.790	28.859	28.910	28.940	28.957	28.967	28.972	28.975	28.976
CP, CAL/(G)(K)	0.8330	0.7423	0.6538	0.5720	0.5018	0.4461	0.4051	0.3766	0.3574	0.3445	0.3356	0.3289	0.3235
GAMMA (S)	1.1485	1.1539	1.1621	1.1733	1.1873	1.2027	1.2179	1.2314	1.2425	1.2513	1.2583	1.2641	1.2693
SON VEL, M/SEC	975.8	956.9	938.8	922.4	907.3	892.7	877.8	862.0	844.7	826.1	806.2	785.3	763.4

## MOLE FRACTIONS

AR	0.00889	0.00867	0.00874	0.00879	0.00882	0.00885	0.00886	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.03325	0.02491	0.01750	0.01147	0.00701	0.00398	0.00210	0.00103	0.00047	0.00019	0.00007	0.00002	0.00001
CO2	0.06280	0.07205	0.08019	0.08677	0.09164	0.09494	0.09639	0.09817	0.09879	0.09910	0.09923	0.09929	0.09931
H	0.05001	0.00296	0.00166	0.00088	0.00044	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000
H2	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00569	0.00412	0.00285	0.00137	0.00117	0.00069	0.00038	0.00020	0.00010	0.00004	0.00002	0.00001	0.00000
H2O	0.07375	0.07911	0.08342	0.08674	0.08922	0.09099	0.09223	0.09306	0.09361	0.09395	0.09416	0.09429	0.09435
NO	0.01836	0.01585	0.01350	0.01138	0.00948	0.00780	0.00632	0.00502	0.00390	0.00294	0.00215	0.00151	0.00102
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.71030	0.71839	0.72504	0.73028	0.73424	0.73711	0.73914	0.74057	0.74158	0.74230	0.74283	0.74321	0.74349
O	0.01018	0.00670	0.00428	0.00264	0.00157	0.00090	0.00049	0.00025	0.00012	0.00006	0.00002	0.00001	0.00000
OH	0.01869	0.01489	0.01152	0.00867	0.00634	0.00449	0.00308	0.00203	0.00128	0.00077	0.00044	0.00023	0.00011
O2	0.05335	0.05233	0.05128	0.05048	0.05006	0.05004	0.05031	0.05076	0.05127	0.05176	0.05219	0.05254	0.05282

## ADD H2O(L)

CASE=	0	0/F= 16.6667	F/A= 0.06000	PERCENT FUEL= 5.6604				PHI= 0.8792						
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	4.7088-4	5.0451-4	5.4332-4	5.8860-4	6.4211-4	7.0632-4	7.8480-4	8.8290-4	1.0090-3	1.1772-3	1.4126-3	1.7658-3	2.6061-3	
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	32.077
CP, CAL/(G*1K)	0.3228	0.3183	0.3137	0.3090	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	0.2505	0.6240
GAMMA IS1	1.2699	1.2746	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.3805	
SON VEL, M/SEC	739.3	715.5	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	303.0	

## MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11801	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.09558
H2O	0.11222	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.01566
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73684	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
O2	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.02365	0.02374	0.02381	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

CASE=	0	0/F= 16.6667	F/A= 0.06000	PERCENT FUEL= 5.6604				PHI= 0.8792						
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2420.3
RHO, G/CC	3.6652-4	3.8337-4	4.0091-4	4.1922-4	4.3844-4	4.5877-4	4.8047-4	5.0389-4	5.2941-4	5.5715-4	5.8852-4	6.2318-4	6.6216-4	6.6216-4
M, MOL WT	28.070	28.312	28.511	28.666	28.781	28.86	28.912	28.943	28.961	28.970	28.975	28.977	28.978	28.978
CP, CAL/(G*1K)	0.7923	0.7161	0.6406	0.5687	0.5041	0.4500	0.4086	0.3794	0.3598	0.3471	0.3385	0.3323	0.3273	0.3273
GAMMA IS1	1.1509	1.1559	1.1633	1.1734	1.1862	1.2009	1.2159	1.2294	1.2404	1.2488	1.2553	1.2606	1.2653	1.2653
SON VEL, M/SEC	977.0	957.4	939.2	922.4	906.9	892.0	877.1	861.2	843.9	825.2	805.2	784.1	762.1	

## MOLE FRACTIONS

AR	0.00852	0.00860	0.00866	0.00870	0.00874	0.00876	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.03720	0.02827	0.02026	0.01361	0.00850	0.00492	0.00263	0.00130	0.00059	0.00024	0.00009	0.00003	0.00001	0.00001
CO2	0.07711	0.08703	0.09584	0.10313	0.10871	0.11261	0.11511	0.11657	0.11735	0.11774	0.11791	0.11798	0.11800	0.11800
H	0.00379	0.00226	0.00129	0.00069	0.00035	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00651	0.00478	0.00337	0.00226	0.00144	0.00086	0.00048	0.00025	0.00012	0.00006	0.00002	0.00001	0.00000	0.00000
H2O	0.09256	0.09770	0.10184	0.10504	0.10743	0.10914	0.11030	0.11107	0.11156	0.11185	0.11204	0.11214	0.11219	0.11219
NO	0.01422	0.01189	0.00982	0.00803	0.00653	0.00527	0.00422	0.00333	0.00258	0.00195	0.00142	0.00100	0.00067	0.00050
NO2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.70684	0.71415	0.72024	0.72509	0.72877	0.73143	0.73326	0.73449	0.73531	0.73587	0.73625	0.73652	0.73671	0.73671
O	0.00559	0.00357	0.00221	0.00132	0.00077	0.00043	0.00023	0.00012	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000
O2	0.01551	0.01207	0.00915	0.00675	0.00486	0.00334	0.00232	0.00152	0.00096	0.00058	0.00033	0.00017	0.00008	0.00008
OH	0.03214	0.02965	0.02732	0.02535	0.02390	0.02300	0.02259	0.02252	0.02266	0.02289	0.02313	0.02335	0.02352	0.02352

## ADD H2O(L)

CASE=	0	0/F=	14.6540	F/A=	0.06824	PERCENT FUEL=			6.3882	PHI=			1.0000	
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0
RHO, G/CC	9.4178-4	1.0091-3	1.0867-3	1.1773-3	1.2843-3	1.4127-3	1.5697-3	1.7659-3	2.0182-3	2.3546-3	2.8255-3	3.5318-3	5.3455-3	8.3289-3
M, MOL WT	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981
CP, CAL/(G*1K)	0.3266	0.3217	0.3170	0.3122	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	0.2550	0.2500
GAMMA (S)	1.2661	1.2710	1.2760	1.2814	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.3700	1.2003
SON VEL./M/SEC	738.2	714.5	689.9	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	301.7	0.0

## MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13310	0.13314	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.12655	0.12657	0.12658	0.12658	0.12658	0.12658	0.12658	0.12658	0.12658	0.12658	0.12658	0.12658	0.12658	0.12658
ND	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73139	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
OH	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	0	0/F=	14.6540	F/A=	0.06824	PERCENT FUEL=			6.3882	PHI=			1.0000	
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	7.3315-4	7.6601-4	8.0043-4	8.3664-4	8.7494-4	9.1569-4	9.5939-4	1.0066-3	1.0580-3	1.1144-3	1.1768-3	1.2463-3	1.3243-3	1.4127-3
M, MOL WT	28.074	28.285	28.462	28.605	28.718	28.803	28.866	28.909	28.939	28.957	28.969	28.975	28.978	28.978
CP, CAL/(G*1K)	0.7399	0.6775	0.6172	0.5609	0.5102	0.4663	0.4297	0.4004	0.3776	0.3605	0.3480	0.3388	0.3319	0.3261
GAMMA (S)	1.1554	1.1602	1.1667	1.1749	1.1848	1.1959	1.2077	1.2194	1.2305	1.2403	1.2486	1.2554	1.2612	1.2661
SON VEL./M/SEC	978.8	959.6	941.3	924.0	907.3	891.0	874.8	858.2	840.9	822.6	803.1	782.6	760.9	740.0

## MOLE FRACTIONS

AR	0.00846	0.00852	0.00858	0.00862	0.00865	0.00868	0.00870	0.00871	0.00872	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.01195	0.03340	0.02567	0.01902	0.01355	0.00926	0.00606	0.00377	0.00222	0.00124	0.00064	0.00031	0.00013	0.00003
CO2	0.08704	0.09656	0.10510	0.11241	0.11840	0.12308	0.12657	0.12906	0.13074	0.13182	0.13246	0.13283	0.13301	0.13301
H2	0.00289	0.00177	0.00104	0.00079	0.00031	0.00016	0.00008	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.00501	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00757	0.00587	0.00445	0.00329	0.00238	0.00167	0.00114	0.00075	0.00047	0.00028	0.00016	0.00009	0.00004	0.00002
ND	0.10777	0.11245	0.11623	0.11920	0.12148	0.12318	0.12440	0.12525	0.12582	0.12619	0.12641	0.12655	0.12662	0.12662
N2	0.01004	0.00787	0.00599	0.00441	0.00314	0.00215	0.00142	0.00089	0.00053	0.00030	0.00016	0.00008	0.00004	0.00002
O	0.70353	0.70993	0.71533	0.71973	0.72321	0.72586	0.72781	0.72918	0.73009	0.73068	0.73104	0.73124	0.73125	0.73125
O2	0.00280	0.00168	0.00096	0.00052	0.00026	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01184	0.00887	0.00643	0.00449	0.00302	0.00195	0.00120	0.00071	0.00039	0.00020	0.00010	0.00004	0.00002	0.00001
O2	0.01610	0.01307	0.01023	0.00771	0.00558	0.00388	0.00258	0.00163	0.00098	0.00056	0.00030	0.00014	0.00006	0.00003

ADD H2O(L)  
ADD C(S)

CASE= 0 O/F= 14.2857 F/A= 0.07000 PERCENT FUEL= 6.5421 PHI= 1.0258

P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	2.3428E-3	2.5101E-3	2.7032E-3	2.9284E-3	3.1947E-3	3.5141E-3	3.9046E-3	4.3530E-3	5.0272E-3	5.8794E-3	7.0623E-3	8.6296E-3	1.3481E-2
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.876	28.947	28.976	28.981	33.186
CP, CAL/(G)(K)	0.3261	0.3226	0.3188	0.3146	0.3101	0.3052	0.2994	0.2945	0.3054	0.2873	0.2694	0.2596	0.3618
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2916	1.2990	1.3068	1.3032	1.3217	1.3433	1.3591	1.2239
SON VEL, M/SEC	740.5	715.5	691.5	665.6	638.6	610.3	580.6	549.0	512.5	477.3	439.0	394.9	303.3

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00869	0.00871	0.00872	0.00872	0.00867
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00502
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00003	0.00068	0.00190	0.00241	0.00251	0.00000
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00321	0.00205	0.00076	0.00009	0.00000	0.00000	0.00000
CO2	0.12840	0.12876	0.12921	0.12978	0.13050	0.13141	0.13247	0.13361	0.13442	0.13421	0.13392	0.13385	0.13065
H2	0.00278	0.00313	0.00355	0.00415	0.00488	0.00578	0.00683	0.00787	0.00952	0.00233	0.00042	0.00003	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12607
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12114	0.12132	0.12338	0.12443	0.12466	0.00301
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002	0.00004	0.00004	0.00002	0.00001	0.00000
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72651	0.72756	0.72934	0.73007	0.73022	0.72657

CASE= 0 O/F= 14.2857 F/A= 0.07000 PERCENT FUEL= 6.5421 PHI= 1.0258

P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.8434E-3	1.9226E-3	2.0059E-3	2.0939E-3	2.1872E-3	2.2868E-3	2.3936E-3	2.5091E-3	2.6352E-3	2.7742E-3	2.9284E-3	3.1007E-3	3.2945E-3
M, MOL WT	28.936	28.937	28.931	28.936	28.716	28.772	28.807	28.824	28.832	28.834	28.836	28.836	28.836
CP, CAL/(G)(K)	0.6524	0.6009	0.5512	0.5044	0.4610	0.4211	0.3844	0.3612	0.3471	0.3400	0.3358	0.3325	0.3294
GAMMA (S)	1.1648	1.1706	1.1781	1.1873	1.1985	1.2118	1.2268	1.2404	1.2495	1.2549	1.2584	1.2615	1.2646
SON VEL, M/SEC	980.0	962.0	944.8	928.3	912.6	897.5	882.6	866.8	848.9	829.2	808.2	786.4	763.8

MOLE FRACTIONS

AR	0.00849	0.00854	0.00858	0.00861	0.00864	0.00865	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867
CO	0.03678	0.02967	0.02350	0.01839	0.01441	0.01156	0.00977	0.00884	0.00840	0.00816	0.00798	0.00778	0.00755
CO2	0.09607	0.10394	0.11074	0.11635	0.12070	0.12381	0.12575	0.12679	0.12726	0.12751	0.12770	0.12789	0.12812
H	0.01668	0.00104	0.00063	0.00040	0.00021	0.00011	0.00005	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00641	0.00509	0.00402	0.00318	0.00255	0.00212	0.00188	0.00181	0.00184	0.00194	0.00209	0.00227	0.00250
H2O	0.11481	0.11833	0.12115	0.12333	0.12494	0.12606	0.12674	0.12706	0.12715	0.12710	0.12698	0.12681	0.12658
NO	0.00801	0.00604	0.00437	0.00299	0.00190	0.00110	0.00055	0.00024	0.00009	0.00003	0.00001	0.00000	0.00000
N2	0.70744	0.71250	0.71669	0.72004	0.72260	0.72441	0.72566	0.72642	0.72642	0.72652	0.72655	0.72656	0.72657
O	0.00141	0.00081	0.00044	0.00022	0.00010	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00867	0.00634	0.00445	0.00299	0.00190	0.00112	0.00060	0.00029	0.00013	0.00005	0.00002	0.00001	0.00000
O2	0.01020	0.00768	0.00542	0.00353	0.00205	0.00101	0.00039	0.00011	0.00003	0.00000	0.00000	0.00000	0.00000





	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000				PHI= 0.0000								
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3			
RHO, G/CC	1.8853-3	1.9571-3	2.0338-3	2.1162-3	2.2051-3	2.3015-3	2.4064-3	2.5211-3	2.6473-3	2.7867-3	2.9415-3	3.1146-3	3.3092-3			
M, MOL WT	28.878	28.906	28.927	28.941	28.951	28.957	28.961	28.963	28.964	28.964	28.965	28.965	28.965			
CP, CAL/(G)(K)	0.3911	0.3751	0.3618	0.3508	0.3416	0.3339	0.3274	0.3216	0.3164	0.3116	0.3070	0.3025	0.2982			
GAMMA (S)	1.2287	1.2356	1.2424	1.2488	1.2550	1.2609	1.2665	1.2719	1.2772	1.2825	1.2879	1.2933	1.2988			
SON VEL, M/SEC	995.3	979.6	963.5	947.1	930.1	912.5	894.4	875.7	856.3	836.4	815.7	794.4	772.3			

MOLE FRACTIONS

AR	0.00929	0.00930	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00002	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00027	0.00028	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03567	0.03124	0.02703	0.02306	0.01937	0.01601	0.01298	0.01030	0.00798	0.00601	0.00438	0.00308	0.00207			
NO2	0.00008	0.00008	0.00007	0.00007	0.00007	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004	0.00004	0.00003			
N2	0.76068	0.76367	0.76634	0.76871	0.77081	0.77266	0.77427	0.77567	0.77686	0.77787	0.77869	0.77935	0.77985			
O	0.00604	0.00405	0.00263	0.00165	0.00099	0.00057	0.00031	0.00016	0.00008	0.00003	0.00001	0.00001	0.00000			
O2	0.18794	0.19135	0.19432	0.19690	0.19914	0.20108	0.20276	0.20419	0.20540	0.20642	0.20725	0.20791	0.20842			

	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000				PHI= 0.0000								
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0			
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3			
RHO, G/CC	3.5298-3	3.7820-3	4.0729-3	4.4123-3	4.8134-3	5.2947-3	5.8830-3	6.6184-3	7.5638-3	8.8245-3	1.0589-2	1.3237-2	1.7649-2			
M, MOL WT	28.965	28.965	28.965	28.965	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964			
CP, CAL/(G)(K)	0.2939	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402			
GAMMA (S)	1.3044	1.3102	1.3161	1.3223	1.3287	1.3357	1.3440	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999			
SON VEL, M/SEC	749.4	725.6	700.8	674.9	647.7	619.2	589.2	557.5	523.6	486.8	446.1	400.3	347.2			

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO2	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000			
NO2	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000			
N2	0.78023	0.78050	0.78067	0.78078	0.78084	0.78087	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089			
O2	0.20881	0.20908	0.20926	0.20937	0.20943	0.20946	0.20948	0.20948	0.20949	0.20949	0.20949	0.20949	0.20949			

ADD H2O(L)

	CASE= 0	O/F=100,0000	F/A= 0.01000	PERCENT FUEL= 0.9901				PHI= 0.1465					
P, ATM	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	4.7069-3	5.0431-3	5.4310-3	5.8836-3	6.4184-3	7.0602-3	7.8447-3	8.8253-3	1.0086-2	1.1767-2	1.4120-2	1.7651-2	2.3964-2
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	29.496
CP, CAL/(G)(K)	0.2992	0.2949	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2847
GAMMA (S)	1.2975	1.3031	1.3090	1.3150	1.3215	1.3285	1.3368	1.3465	1.3574	1.3688	1.3799	1.3893	1.3327
SON VEL,M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	335.7

MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01792
H2O	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01792
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77318	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17640	0.17665	0.17662	0.17692	0.17698	0.17701	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

	CASE= 0	O/F=100,0000	F/A= 0.01000	PERCENT FUEL= 0.9901				PHI= 0.1465					
P, ATM	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	2800.0	0.2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3
RHO, G/CC	3.7665-3	3.9109-3	4.0650-3	4.2305-3	4.4088-3	4.6020-3	4.8122-3	5.0421-3	5.2947-3	5.5736-3	5.8834-3	6.2296-3	6.6190-3
M, MOL WT	28.846	28.882	28.909	28.928	28.942	28.951	28.958	28.962	28.964	28.966	28.967	28.967	28.967
CP, CAL/(G)(K)	0.4098	0.3919	0.3767	0.3638	0.3530	0.3439	0.3361	0.3294	0.3234	0.3180	0.3129	0.3082	0.3036
GAMMA (S)	1.2196	1.2265	1.2333	1.2401	1.2466	1.2528	1.2588	1.2645	1.2701	1.2756	1.2810	1.2865	1.2919
SON VEL,M/SEC	952.1	976.4	960.3	944.0	927.1	909.7	891.7	873.1	853.9	834.1	813.5	792.3	770.3

MOLE FRACTIONS

AR	0.00919	0.00920	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00174	0.00088	0.00056	0.00034	0.00019	0.00011	0.00005	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.01945	0.01994	0.02028	0.02052	0.02067	0.02076	0.02082	0.02085	0.02087	0.02088	0.02088	0.02088	0.02088
H	0.00019	0.00011	0.00006	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00017	0.00011	0.00008	0.00005	0.00003	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01652	0.01721	0.01779	0.01826	0.01864	0.01893	0.01915	0.01931	0.01943	0.01951	0.01956	0.01959	0.01961
NO	0.03249	0.02847	0.02463	0.02102	0.01767	0.01461	0.01185	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189
NO2	0.00009	0.00009	0.00009	0.00008	0.00008	0.00007	0.00007	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004
N2	0.75371	0.75669	0.75932	0.76164	0.76368	0.76547	0.76702	0.76835	0.76948	0.77042	0.77119	0.77180	0.77227
O	0.00391	0.00262	0.00171	0.00107	0.00064	0.00037	0.00020	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000
OH	0.00548	0.00434	0.00336	0.00253	0.00185	0.00131	0.00090	0.00059	0.00037	0.00022	0.00013	0.00007	0.00003
O2	0.15741	0.16030	0.16290	0.16522	0.16728	0.16910	0.17068	0.17204	0.17320	0.17416	0.17494	0.17557	0.17605



## ADD H20(L)

	CASE= 0	O/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931					
P, ATM	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHD, G/CC	9.4145-3	1.0087-2	1.0863-2	1.1768-2	1.2838-2	1.4122-2	1.5691-2	1.7652-2	2.0174-2	2.3536-2	2.8243-2	3.5304-2	4.8933-2
M, MOL HT	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	30.115
CP, CAL/(G)(K)	0.3042	0.2999	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2750
GAMMA (S)	1.2911	1.2966	1.3023	1.3083	1.3147	1.3217	1.3301	1.3399	1.3508	1.3623	1.3737	1.3837	1.3271
SON VEL, M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	331.5

## MOL FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H20(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03803
H2	0.03886	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03883
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14464	0.14486	0.14562	0.14511	0.14516	0.14519	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

	CASE= 0	O/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931					
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3
RHD, G/CC	6.2765-3	6.5175-3	6.7748-3	7.0507-3	7.3482-3	7.6703-3	8.0208-3	8.4040-3	8.8251-3	9.2901-3	9.8066-3	1.0384-2	1.1033-2
M, MOL HT	28.842	28.880	28.908	28.928	28.943	28.952	28.959	28.964	28.966	28.968	28.969	28.970	28.970
CP, CAL/(G)(K)	0.4179	0.3989	0.3828	0.3694	0.3583	0.3490	0.3411	0.3343	0.3283	0.3229	0.3179	0.3132	0.3086
GAMMA (S)	1.2155	1.2224	1.2293	1.2360	1.2424	1.2485	1.2542	1.2597	1.2651	1.2703	1.2754	1.2806	1.2858
SON VEL, M/SEC	990.5	974.8	958.8	942.4	925.5	908.1	890.1	871.4	852.2	832.3	811.7	790.5	768.4

## MOL FRACTIONS

AR	0.00910	0.00911	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00228	0.00150	0.00094	0.00057	0.00033	0.00018	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000
CO2	0.03860	0.03944	0.04004	0.04044	0.04070	0.04086	0.04096	0.04101	0.04104	0.04105	0.04106	0.04106	0.04106
H	0.00020	0.00011	0.00006	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00005	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2	0.00030	0.00020	0.00013	0.00009	0.00005	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H20	0.03494	0.03584	0.03659	0.03719	0.03766	0.03802	0.03830	0.03849	0.03863	0.03873	0.03879	0.03883	0.03885
NO	0.00290	0.00258	0.00213	0.00180	0.00159	0.00134	0.00107	0.00087	0.00067	0.00049	0.00036	0.00025	0.00017
NO2	0.00010	0.00009	0.00009	0.00009	0.00008	0.00008	0.00007	0.00007	0.00006	0.00006	0.00005	0.00004	0.00004
N2	0.74769	0.75050	0.75297	0.75513	0.75702	0.75866	0.76007	0.76129	0.76232	0.76317	0.76387	0.76443	0.76485
O	0.00273	0.00183	0.00119	0.00075	0.00045	0.00026	0.00014	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000
OH	0.00666	0.00524	0.00403	0.00302	0.00220	0.00156	0.00107	0.00070	0.00044	0.00027	0.00015	0.00008	0.00004
O2	0.12815	0.13050	0.13267	0.13465	0.13645	0.13805	0.13946	0.14069	0.14173	0.14260	0.14331	0.14388	0.14431

## ADD H2O(1)

	CASE= 0	O/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862							
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	1.1770E-4	1.2611E-4	1.3581E-4	1.4713E-4	1.6050E-4	1.7655E-4	1.9617E-4	2.2069E-4	2.5222E-4	2.9425E-4	3.5310E-4	4.4138E-4	5.9292E-4		
M, MOL WT	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	29.192	
CP, CAL/(G*IK)	0.3144	0.3096	0.3050	0.3003	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	1.8240		
GAMMA (S)	1.2792	1.2846	1.2902	1.2960	1.3024	1.3095	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.1429		
SON VEL,M/SEC	742.0	718.4	693.7	668.0	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	312.5		

## MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(1)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00745
H2O	0.07622	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.06981
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75070	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08296	0.08314	0.08325	0.08332	0.08336	0.08338	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

	CASE= 0	O/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862							
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	1.2202E-4	1.2775E-4	1.3365E-4	1.3977E-4	1.4616E-4	1.5292E-4	1.6014E-4	1.6793E-4	1.7643E-4	1.8578E-4	1.9613E-4	2.0769E-4	2.2068E-4		
M, MOL WT	28.035	28.303	28.514	28.672	28.785	28.860	28.908	28.938	28.955	28.964	28.969	28.972	28.973		
CP, CAL/(G*IK)	0.8312	0.7348	0.6430	0.5606	0.4919	0.4385	0.3995	0.3722	0.3536	0.3408	0.3317	0.3248	0.3192		
GAMMA (S)	1.1495	1.1554	1.1642	1.1761	1.1905	1.2060	1.2211	1.2346	1.2457	1.2548	1.2621	1.2684	1.2740		
SON VEL,M/SEC	977.0	957.3	939.5	923.4	908.4	893.9	879.0	863.1	845.8	827.3	807.5	786.6	764.8		

## MOLE FRACTIONS

AR	0.00896	0.00876	0.00882	0.00887	0.00891	0.00893	0.00895	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897	0.00897
CO	0.02748	0.02043	0.01421	0.00923	0.00559	0.00315	0.00166	0.00081	0.00037	0.00015	0.00006	0.00002	0.00001		
CO2	0.05019	0.05798	0.06479	0.07021	0.07416	0.07680	0.07843	0.07936	0.07985	0.08009	0.08020	0.08025	0.08026		
H	0.00547	0.00323	0.00181	0.00096	0.00048	0.00022	0.00010	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00452	0.00327	0.00225	0.00117	0.00092	0.00054	0.00030	0.00016	0.00008	0.00003	0.00001	0.00001	0.00001	0.00000	0.00000
H2O	0.05665	0.06162	0.06563	0.06876	0.07110	0.07281	0.07402	0.07485	0.07540	0.07576	0.07598	0.07611	0.07619		
NO	0.02183	0.01913	0.01652	0.01408	0.01183	0.00979	0.00795	0.00632	0.00491	0.00370	0.00270	0.00190	0.00128		
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.71585	0.72413	0.73091	0.73624	0.74028	0.74326	0.74543	0.74700	0.74815	0.74900	0.74963	0.75011	0.75045		
O	0.01477	0.00987	0.00639	0.00399	0.00240	0.00138	0.00076	0.00039	0.00019	0.00008	0.00003	0.00001	0.00000		
OH	0.01972	0.01594	0.01249	0.00948	0.00698	0.00497	0.00342	0.00226	0.00143	0.00086	0.00049	0.00026	0.00013		
O2	0.07481	0.07561	0.07616	0.07669	0.07734	0.07813	0.07899	0.07985	0.08065	0.08134	0.08191	0.08237	0.08271		



## ADD H2OIL

CASE=	0	0/F=	16.6667	F/A=	0.06000	PERCENT FUEL=			5.6604	PHI=			0.8792	
P, ATH	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	7.0631-4	7.5677-4	8.1498-4	8.8290-4	9.6316-4	1.0595-3	1.1772-3	1.3244-3	1.5135-3	1.7658-3	2.1190-3	2.6487-3	3.9321-3	
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	32.266
CP, CAL/(G*IK)	0.3227	0.3183	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	0.2510	
GAMMA (S)	1.2699	1.2746	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.3760	
SON VEL, M/SEC	739.3	715.5	690.9	665.2	639.4	610.4	580.9	549.7	516.6	480.2	440.4	395.6	304.1	

## MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11801	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2OIL	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.10186
H2O	0.11222	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.01038
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73684	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00004	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02381	0.02384	0.02386	0.02387	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

CASE=	0	0/F=	16.6667	F/A=	0.06000	PERCENT FUEL=			5.6604	PHI=			0.8792	
P, ATH	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	4.9021-4	5.1237-4	5.3547-4	5.5963-4	5.8504-4	6.1198-4	6.4080-4	6.7195-4	7.0592-4	7.4329-4	7.8470-4	8.3092-4	8.8288-4	
M, MOL WT	28.158	28.379	28.560	28.701	28.804	28.875	28.920	28.947	28.963	28.971	28.975	28.978	28.978	28.978
CP, CAL/(G*IK)	0.7562	0.6845	0.6137	0.5468	0.4873	0.4363	0.4011	0.3750	0.3575	0.3459	0.3380	0.3321	0.3272	
GAMMA (S)	1.1539	1.1593	1.1671	1.1776	1.1905	1.2049	1.2191	1.2317	1.2418	1.2496	1.2557	1.2608	1.2654	
SON VEL, M/SEC	976.7	957.6	939.9	923.5	908.1	893.3	878.1	861.9	844.4	825.4	805.3	784.2	762.2	

## MOLE FRACTIONS

AR	0.00855	0.00862	0.00867	0.00871	0.00875	0.00877	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.03421	0.02571	0.01824	0.01212	0.00750	0.00431	0.00229	0.00113	0.00051	0.00021	0.00008	0.00003	0.00001	
CO2	0.08045	0.08986	0.09807	0.10476	0.10980	0.11328	0.11548	0.11676	0.11744	0.11777	0.11792	0.11798	0.11800	
H	0.00311	0.00185	0.00104	0.00056	0.00028	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	
H2O	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
H2	0.00585	0.00428	0.00299	0.00200	0.00126	0.00075	0.00042	0.00022	0.00011	0.00005	0.00002	0.00001	0.00000	
N2	0.09442	0.09910	0.10285	0.10575	0.10790	0.10943	0.11048	0.11118	0.11162	0.11189	0.11205	0.11215	0.11220	
NO	0.01399	0.01171	0.00968	0.00794	0.00647	0.00524	0.00420	0.00333	0.00258	0.00195	0.00142	0.00100	0.00067	
NO2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
O	0.70917	0.71596	0.72157	0.72601	0.72937	0.73179	0.73346	0.73460	0.73536	0.73589	0.73626	0.73652	0.73671	
O2	0.00475	0.00304	0.00188	0.00113	0.00065	0.00037	0.00020	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	
OH	0.01445	0.01121	0.00849	0.00627	0.00451	0.00317	0.00216	0.00142	0.00089	0.00054	0.00030	0.00016	0.00008	
O2	0.03101	0.02865	0.02649	0.02473	0.02348	0.02275	0.02245	0.02246	0.02263	0.02288	0.02313	0.02335	0.02352	

ADD H2O(L)

CASE=	0	0/F=	14.6540	F/A=	0.06824	PERCENT FUEL=	6.3882	PHI=	1.0000										
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0						
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3						
RHO, G/CC	1.4127-3	1.5136-3	1.6301-3	1.7659-3	1.9265-3	2.1191-3	2.3546-3	2.6489-3	3.0273-3	3.5318-3	4.2382-3	5.2978-3	8.0416-3						
M, MOL WT	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981
CP, CAL/(G*1K)	0.3264	0.3216	0.3170	0.3122	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	0.2536						
GAMMA (S)	1.2663	1.2711	1.2761	1.2814	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.2129						
SON VEL, M/SEC	738.2	714.5	689.9	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	302.8						

MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13310	0.13314	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.12665	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668
NO	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73140	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
OH	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	0	0/F=	14.6540	F/A=	0.06824	PERCENT FUEL=	6.3882	PHI=	1.0000										
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3						
RHO, G/CC	1.2275-3	1.2812-3	1.3376-3	1.3971-3	1.4602-3	1.5276-3	1.6000-3	1.6783-3	1.7637-3	1.8576-3	1.9614-3	2.0772-3	2.2072-3						
M, MOL WT	28.203	28.385	28.538	28.661	28.757	28.830	28.883	28.920	28.945	28.961	28.971	28.976	28.979						
CP, CAL/(G*1K)	0.6885	0.6331	0.5800	0.5306	0.4865	0.4485	0.4169	0.3915	0.3718	0.3569	0.3459	0.3376	0.3313						
GAMMA (S)	1.1605	1.1657	1.1726	1.1810	1.1907	1.2015	1.2126	1.2235	1.2336	1.2424	1.2500	1.2563	1.2616						
SON VEL, M/SEC	978.7	960.2	942.5	925.5	909.0	892.7	876.3	859.5	841.8	823.2	803.6	782.8	761.0						

MOLE FRACTIONS

AR	0.00850	0.00855	0.00860	0.00864	0.00866	0.00869	0.00870	0.00871	0.00872	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.03704	0.02922	0.02229	0.01641	0.01164	0.00792	0.00517	0.00321	0.00189	0.00105	0.00054	0.00026	0.00011						
CO2	0.09254	0.10120	0.10893	0.11528	0.12049	0.12454	0.12754	0.12967	0.13110	0.13202	0.13257	0.13288	0.13304						
H	0.00207	0.00126	0.00074	0.00042	0.00022	0.00011	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000						
H2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
H2O	0.00646	0.00499	0.00378	0.00280	0.00202	0.00142	0.00097	0.00063	0.00040	0.00024	0.00014	0.00007	0.00004						
H2O	0.11068	0.11465	0.11795	0.12037	0.12229	0.12372	0.12475	0.12547	0.12595	0.12626	0.12646	0.12657	0.12663						
NO	0.00939	0.00732	0.00554	0.00407	0.00289	0.00197	0.00130	0.00082	0.00049	0.00028	0.00015	0.00007	0.00003						
N2	0.70709	0.71274	0.71747	0.72131	0.72433	0.72663	0.72831	0.72949	0.73028	0.73079	0.73109	0.73127	0.73136						
O	0.00202	0.00120	0.00068	0.00037	0.00019	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000						
OH	0.01020	0.00759	0.00547	0.00381	0.00256	0.00165	0.00101	0.00059	0.00033	0.00017	0.00008	0.00004	0.00001						
O2	0.01400	0.01125	0.00873	0.00653	0.00470	0.00325	0.00216	0.00136	0.00082	0.00045	0.00025	0.00012	0.00005						





ADD C1S1  
ADD H2O(L)

CASE=	0	0/F=	11.1111	F/A=	0.09000	PERCENT FUEL=	8.2569	PHI=	1.3189										
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0	0.0	0.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	-80.3	-160.3	-240.3	-320.3	-400.3	-480.3
RHO, G/CC	1.1095-2	1.1887-2	1.2802-2	1.3872-2	1.5155-2	1.6638-2	1.9098-2	2.1835-2	2.5139-2	2.9410-2	3.5320-2	5.0258-2	7.0355-2						
M, MOL WT	27.312	27.312	27.313	27.318	27.359	27.633	28.208	28.667	28.875	28.959	28.982	32.992	34.638						
CP, CAL/(G1IK1)	0.3404	0.3386	0.3375	0.3399	0.3751	0.5222	0.5289	0.4134	0.3314	0.2957	0.2797	0.7635	0.3259						
GAMMA (S)	1.2719	1.2738	1.2753	1.2750	1.2605	1.2174	1.2115	1.2398	1.2805	1.3084	1.3260	1.1862	1.2191						
SON VEL, M/SEC	762.1	736.8	710.4	682.4	649.1	605.2	566.9	536.4	508.0	474.7	436.1	345.8	296.3						

MOL FRACTIONS

AR	0.00806	0.00807	0.00807	0.00807	0.00808	0.00816	0.00833	0.00839	0.00838	0.00834	0.00826	0.00807	0.00806						
C1S1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00927	0.01739	0.02521	0.03462	0.05680	0.05778						
CH4	0.00000	0.00000	0.00001	0.00008	0.00078	0.00576	0.01626	0.01982	0.01941	0.01674	0.01219	0.00052	0.00000						
CO	0.07609	0.07306	0.06937	0.06472	0.05794	0.04303	0.02039	0.00514	0.00079	0.00006	0.00000	0.00000	0.00000						
CO2	0.08602	0.08905	0.09274	0.09735	0.10367	0.11524	0.13079	0.13435	0.13085	0.12555	0.11927	0.10496	0.10433						
H2	0.03944	0.04245	0.04609	0.05040	0.05444	0.05046	0.03346	0.01679	0.00655	0.00181	0.00030	0.00001	0.00000						
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
H2O	0.11483	0.11180	0.10813	0.10363	0.09831	0.09373	0.09291	0.10360	0.11463	0.12400	0.13330	0.03889	0.00055						
NH3	0.00002	0.00003	0.00005	0.00009	0.00017	0.00028	0.00031	0.00028	0.00021	0.00014	0.00007	0.00000	0.00000						
N2	0.67553	0.67553	0.67555	0.67565	0.67661	0.68335	0.69755	0.70235	0.70179	0.69816	0.69200	0.67622	0.67552						

CASE=	0	0/F=	10.0000	F/A=	0.10000	PERCENT FUEL=	9.0909	PHI=	1.4654										
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000						
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3						
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3						
RHO, G/CC	5.6101-5	5.8865-5	6.1627-5	6.4426-5	6.7321-5	7.0378-5	7.3655-5	7.7209-5	8.1095-5	8.5378-5	9.0129-5	9.5435-5	1.0140-4						
M, MOL WT	25.780	26.084	26.296	26.433	26.516	26.565	26.593	26.609	26.618	26.622	26.625	26.626	26.626						
CP, CAL/(G1IK1)	1.0272	0.8386	0.6754	0.5533	0.4725	0.4229	0.3931	0.3752	0.3644	0.3577	0.3533	0.3503	0.3479						
GAMMA (S)	1.1444	1.1547	1.1709	1.1913	1.2122	1.2302	1.2440	1.2537	1.2604	1.2651	1.2685	1.2711	1.2732						
SON VEL, M/SEC	1016.6	996.9	981.1	967.9	955.1	941.1	925.0	907.0	887.4	866.4	844.4	821.1	797.6						

MOL FRACTIONS

AR	0.00754	0.00763	0.00769	0.00773	0.00776	0.00777	0.00778	0.00779	0.00779	0.00779	0.00779	0.00779	0.00779						
CO	0.12796	0.12450	0.12178	0.11988	0.11855	0.11748	0.11645	0.11531	0.11400	0.11248	0.11068	0.10858	0.10609						
CO2	0.04049	0.04594	0.05005	0.05234	0.05471	0.05610	0.05732	0.05856	0.05993	0.06148	0.06329	0.06540	0.06789						
H	0.02423	0.01659	0.01114	0.00732	0.00467	0.00288	0.00170	0.00095	0.00050	0.00025	0.00011	0.00005	0.00002						
H2	0.04438	0.04313	0.04265	0.04290	0.04366	0.04471	0.04593	0.04726	0.04873	0.05036	0.05221	0.05435	0.05685						
H2O	0.09629	0.10550	0.11189	0.11577	0.11776	0.11847	0.11833	0.11764	0.11653	0.11509	0.11334	0.11125	0.10876						
N0	0.00502	0.00330	0.00198	0.00108	0.00054	0.00025	0.00011	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000						
N2	0.62933	0.63764	0.64351	0.64731	0.64962	0.65097	0.65173	0.65215	0.65238	0.65250	0.65255	0.65258	0.65259						
O	0.00512	0.00257	0.00115	0.00046	0.00017	0.00005	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
OH	0.01513	0.01063	0.00692	0.00419	0.00237	0.00126	0.00062	0.00029	0.00012	0.00005	0.00002	0.00001	0.00000						
O2	0.00449	0.00256	0.00124	0.00051	0.00019	0.00006	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						



	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000				PHI= 0.0000					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	2.5148-3	2.6102-3	2.7122-3	2.8219-3	2.9403-3	3.0687-3	3.2086-3	3.3616-3	3.5298-3	3.7156-3	3.9221-3	4.1528-3	4.4123-3
M, MOL WT	28.889	28.915	28.932	28.945	28.953	28.958	28.961	28.963	28.964	28.965	28.965	28.965	28.965
CP, CAL/(G)(K)	0.3846	0.3704	0.3585	0.3485	0.3401	0.3330	0.3268	0.3213	0.3162	0.3115	0.3069	0.3025	0.2982
GAMMA (S)	1.2312	1.2377	1.2440	1.2501	1.2559	1.2615	1.2669	1.2721	1.2773	1.2826	1.2879	1.2933	1.2988
SON VEL, M/SEC	996.1	980.3	964.1	947.5	930.4	912.7	894.5	875.7	856.4	836.4	815.7	794.4	772.3

MOLE FRACTIONS

AR	0.00930	0.00931	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00028	0.00029	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03572	0.03127	0.02704	0.02706	0.01938	0.01601	0.01298	0.01030	0.00798	0.00601	0.00438	0.00308	0.00207
NO2	0.00009	0.00009	0.00008	0.00008	0.00008	0.00007	0.00007	0.00006	0.00006	0.00005	0.00005	0.00004	0.00004
N2	0.76097	0.76387	0.76647	0.76879	0.77086	0.77268	0.77429	0.77568	0.77687	0.77787	0.77869	0.77935	0.77985
O	0.00524	0.00351	0.00228	0.00143	0.00086	0.00049	0.00027	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000
O2	0.18839	0.19165	0.19451	0.19702	0.19921	0.20112	0.20277	0.20419	0.20540	0.20642	0.20725	0.20791	0.20842

	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000				PHI= 0.0000					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	4.7065-3	5.0426-3	5.4305-3	5.8830-3	6.4178-3	7.0596-3	7.8440-3	8.8245-3	1.0085-2	1.1766-2	1.4119-2	1.7649-2	2.3532-2
M, MOL WT	28.965	28.965	28.965	28.965	28.965	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964
CP, CAL/(G)(K)	0.2939	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402
GAMMA (S)	1.3044	1.3102	1.3161	1.3222	1.3287	1.3356	1.3440	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999
SON VEL, M/SEC	749.4	725.6	700.8	674.9	647.7	613.2	589.2	557.5	523.6	486.8	446.1	400.3	347.2

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO2	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.78023	0.78050	0.78067	0.78078	0.78084	0.78087	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089
O2	0.20880	0.20907	0.20925	0.20936	0.20943	0.20946	0.20948	0.20948	0.20949	0.20949	0.20949	0.20949	0.20949

## ADD H2O(L)

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901					PHI= 0.1465						
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	400.0	300.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	260.3	80.3	80.3
RHO, G/CC	7.0603-3	7.5646-3	8.1465-3	8.8253-3	9.6276-3	1.0590-2	1.1767-2	1.3238-2	1.5129-2	1.7651-2	2.1181-2	2.6476-2	3.5966-2	3.5966-2	3.5966-2
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	29.513
CP, CAL/(G*IK)	0.2992	0.2949	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2448	0.2448	0.2727
GAMMA (S)	1.2975	1.3031	1.3089	1.3150	1.3215	1.3285	1.3368	1.3465	1.3574	1.3688	1.3799	1.3893	1.3893	1.3439	1.3439
SON VEL./M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	399.4	337.0	337.0

## MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01849
H2	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.00113
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77318	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17640	0.17665	0.17662	0.17692	0.17698	0.17701	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE=	0	0/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901					PHI= 0.1465						
P, ATM	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1600.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2420.3	
RHO, G/CC	5.0244-3	5.2162-3	5.4213-3	5.6415-3	5.8790-3	6.1364-3	6.4166-3	6.7229-3	7.0597-3	7.4316-3	7.8446-3	8.3062-3	8.8254-3	8.8254-3	
M, MOL WT	28.860	28.892	28.915	28.933	28.945	28.953	28.959	28.962	28.965	28.966	28.967	28.967	28.967	28.967	
CP, CAL/(G*IK)	0.4026	0.3865	0.3727	0.3610	0.3511	0.3426	0.3353	0.3289	0.3231	0.3178	0.3128	0.3081	0.3036	0.3036	
GAMMA (S)	1.2222	1.2287	1.2352	1.2415	1.2477	1.2536	1.2593	1.2649	1.2703	1.2757	1.2811	1.2865	1.2919	1.2919	
SON VEL./M/SEC	992.9	977.1	960.9	944.4	927.4	909.9	891.9	873.2	854.0	834.1	813.6	792.3	770.3	770.3	

## MOLE FRACTIONS

AR	0.00920	0.00921	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00117	0.00077	0.00048	0.00029	0.00017	0.00009	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.01963	0.02006	0.02036	0.02057	0.02070	0.02078	0.02083	0.02086	0.02087	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H	0.00016	0.00009	0.00005	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00015	0.00010	0.00007	0.00004	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.01674	0.01738	0.01792	0.01835	0.01871	0.01898	0.01918	0.01934	0.01944	0.01952	0.01956	0.01959	0.01961	0.01961	
NO	0.00353	0.02849	0.02464	0.02103	0.01768	0.01461	0.01185	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189	0.00189	
NO2	0.00011	0.00010	0.00010	0.00010	0.00009	0.00009	0.00008	0.00007	0.00007	0.00006	0.00005	0.00005	0.00004	0.00004	
N2	0.75406	0.75693	0.75948	0.76175	0.76375	0.76551	0.76704	0.76836	0.76949	0.77042	0.77119	0.77180	0.77227	0.77227	
O	0.00339	0.00227	0.00148	0.00093	0.00056	0.00032	0.00018	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	
OH	0.00514	0.00406	0.00314	0.00236	0.00173	0.00122	0.00084	0.00055	0.00035	0.00021	0.00012	0.00006	0.00003	0.00003	
O2	0.15770	0.16051	0.16304	0.16532	0.16734	0.16914	0.17070	0.17205	0.17320	0.17416	0.17494	0.17556	0.17604	0.17604	

## ADD H2O(L)

CASE=	0	0/F=	50.0000	F/A=	0.02000	PERCENT FUEL=	1.9608	PHI=	0.2931										
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0						
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3						
RHO, G/CC	1.1768-2	1.2609-2	1.3579-2	1.4710-2	1.6047-2	1.7652-2	1.9613-2	2.2065-2	2.5217-2	2.9420-2	3.5304-2	4.4130-2	6.1177-2						
M, MOL WT	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	28.970	30.120						
CP, CAL/(G)(K)	0.3042	0.2999	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2715						
GAMMA (S)	1.2911	1.2966	1.3023	1.3083	1.3147	1.3217	1.3301	1.3399	1.3507	1.3623	1.3737	1.3837	1.3303						
SON VEL,M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	331.9						

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.03886	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.00067
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76517	0.76539	0.76552	0.76562	0.76568	0.76570	0.76571	0.76571	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14463	0.14486	0.14561	0.14511	0.14516	0.14519	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=	2.9126	PHI=	0.4396										
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3						
RHO, G/CC	6.0775-5	6.3698-5	6.6698-5	6.9794-5	7.3019-5	7.6416-5	8.0038-5	8.3945-5	8.8200-5	9.2877-5	9.8056-5	1.0384-4	1.1033-4						
M, MOL WT	27.927	28.225	28.460	28.635	28.760	28.844	28.898	28.931	28.950	28.960	28.966	28.969	28.971						
CP, CAL/(G)(K)	0.8786	0.7709	0.6691	0.5787	0.5035	0.4451	0.4025	0.3725	0.3521	0.3380	0.3281	0.3207	0.3148						
GAMMA (S)	1.1475	1.1532	1.1619	1.1738	1.1885	1.2047	1.2208	1.2354	1.2477	1.2578	1.2660	1.2729	1.2790						
SON VEL,M/SEC	978.0	957.7	939.4	923.1	908.1	893.7	879.1	863.5	846.6	828.3	808.8	788.1	766.4						

## MOLE FRACTIONS

AR	0.00873	0.00882	0.00889	0.00895	0.00899	0.00901	0.00903	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.02381	0.01797	0.01265	0.00829	0.00505	0.00287	0.00151	0.00074	0.00034	0.00014	0.00005	0.00002	0.00001						
CO2	0.03485	0.04132	0.04713	0.05186	0.05536	0.05772	0.05919	0.06003	0.06047	0.06069	0.06079	0.06083	0.06085						
H	0.00708	0.00423	0.00239	0.00128	0.00064	0.00030	0.00013	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000						
H2O	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
H2	0.00379	0.00281	0.00197	0.00130	0.00082	0.00048	0.00027	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000						
H2O	0.00388	0.04286	0.04681	0.04994	0.05233	0.05409	0.05535	0.05623	0.05682	0.05720	0.05744	0.05759	0.05767						
NO	0.02479	0.02197	0.01915	0.01643	0.01387	0.01150	0.00935	0.00744	0.00577	0.00436	0.00318	0.00223	0.00150						
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000						
N2	0.71860	0.72780	0.73535	0.74132	0.74587	0.74925	0.75173	0.75354	0.75487	0.75587	0.75661	0.75716	0.75756						
O	0.02367	0.01600	0.01044	0.00656	0.00396	0.00228	0.00125	0.00065	0.00031	0.00014	0.00006	0.00002	0.00001						
OH	0.02047	0.01692	0.01348	0.01036	0.00770	0.00551	0.00380	0.00252	0.00159	0.00096	0.00054	0.00029	0.00014						
O2	0.09610	0.09928	0.10171	0.10369	0.10542	0.10697	0.10837	0.10961	0.11067	0.11155	0.11225	0.11280	0.11321						

## ADD H2O(L)

CASE=	0	D/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P, ATM	1.0009	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	2.3540-4	2.5221-4	2.7162-4	2.9425-4	3.2100-4	3.5310-4	3.9234-4	4.4138-4	5.0443-4	5.8850-4	7.0621-4	8.8276-4	1.2300-3
M, MOL WT	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	30.279
CP, CAL/(G)(K)	0.3142	0.3096	0.3049	0.3003	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.9941
GAMMA (S)	1.2794	1.2847	1.2902	1.2960	1.3024	1.3095	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.1628
SON VEL,M/SEC	742.1	718.4	693.8	668.0	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	309.5

## MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.04309
H2	0.07622	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.03317
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75070	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08296	0.08314	0.08325	0.08332	0.08336	0.08338	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

CASE=	0	D/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.8393-4	1.9231-4	2.0098-4	2.1000-4	2.1947-4	2.2952-4	2.4029-4	2.5194-4	2.6467-4	2.7838-4	2.9421-4	3.1154-4	3.3102-4
M, MOL WT	28.173	28.405	28.586	28.720	28.815	28.878	28.918	28.943	28.957	28.966	28.970	28.972	28.974
CP, CAL/(G)(K)	0.7679	0.6811	0.5995	0.5276	0.4686	0.4231	0.3900	0.3667	0.3505	0.3392	0.3309	0.3244	0.3190
GAMMA (S)	1.1542	1.1610	1.1705	1.1827	1.1968	1.2115	1.2254	1.2375	1.2476	1.2559	1.2627	1.2687	1.2742
SON VEL,M/SEC	976.6	957.9	940.8	925.2	910.4	895.7	880.4	864.0	846.4	827.6	807.7	786.7	764.9

## MOLE FRACTIONS

AR	0.00872	0.00879	0.00885	0.00889	0.00892	0.00894	0.00895	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897
CO	0.02414	0.01761	0.01205	0.00772	0.00463	0.00260	0.00136	0.00066	0.00030	0.00012	0.00005	0.00002	0.00000
CO2	0.05391	0.06109	0.06715	0.07185	0.07520	0.07741	0.07876	0.07952	0.07993	0.08012	0.08021	0.08025	0.08027
H	0.00413	0.00242	0.00135	0.00071	0.00035	0.00017	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
H2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00386	0.00276	0.00188	0.00122	0.00075	0.00044	0.00025	0.00013	0.00006	0.00003	0.00001	0.00000	0.00000
H2O	0.05912	0.06347	0.06697	0.06969	0.07173	0.07322	0.07428	0.07501	0.07549	0.07581	0.07601	0.07613	0.07619
NO	0.02185	0.01912	0.01651	0.01407	0.01183	0.00979	0.00795	0.00632	0.00491	0.00370	0.00270	0.00190	0.00128
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000
N2	0.71942	0.72678	0.73278	0.73748	0.74106	0.74372	0.74569	0.74714	0.74822	0.74904	0.74965	0.75011	0.75046
O	0.01204	0.00804	0.00520	0.00325	0.00196	0.00113	0.00062	0.00032	0.00015	0.00007	0.00003	0.00001	0.00000
OH	0.01819	0.01460	0.01138	0.00862	0.00633	0.00451	0.00309	0.00204	0.00129	0.00077	0.00044	0.00023	0.00011
O2	0.07460	0.07529	0.07585	0.07647	0.07722	0.07808	0.07898	0.07986	0.08066	0.08135	0.08192	0.08237	0.08272

ADD H2O(L)

CASE=	O	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL=				4.7619	PHI=				0.7327	
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0	0.0	0.0
RHO, G/CC	4.7084-4	5.0447-4	5.4328-4	5.8855-4	6.4206-4	7.0526-4	7.8474-4	8.8283-4	1.0090-3	1.1771-3	1.4125-3	1.7657-3	2.5546-3	0.0	0.0	0.0
M, MOL WT	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977
CP, CAL/(G)(K)	0.3186	0.3140	0.3094	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2547	0.2482	0.2417	0.2352	0.2287
GAMMA (S)	1.2744	1.2795	1.2848	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.3684	1.3807	1.3934	1.4061	1.4188
SON VEL,M/SEC	740.6	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	396.3	306.7	0.0	0.0	0.0

MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00988	0.00888	0.00888	0.00898	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09532	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.09439	0.09441	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74369	0.74383	0.74392	0.74397	0.74400	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05301	0.05315	0.05324	0.05330	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

MOLE FRACTIONS

CASE=	O	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL=				4.7619	PHI=				0.7327	
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	1400.0	1300.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	2060.3	1880.3
RHO, G/CC	3.6876-4	3.8527-4	4.0242-4	4.2033-4	4.3918-4	4.5921-4	4.8070-4	5.0399-4	5.2942-4	5.5713-4	5.8848-4	6.2314-4	6.6210-4	0.0	0.0	0.0
M, MOL WT	28.242	28.453	28.619	28.743	28.830	28.889	28.926	28.949	28.962	28.969	28.973	28.975	28.975	28.975	28.975	28.975
CP, CAL/(G)(K)	0.7351	0.6578	0.5839	0.5178	0.4627	0.4201	0.3890	0.3672	0.3523	0.3419	0.3342	0.3283	0.3232	0.3181	0.3130	0.3080
GAMMA (S)	1.1563	1.1630	1.1723	1.1842	1.1979	1.2119	1.2251	1.2364	1.2456	1.2531	1.2592	1.2646	1.2696	1.2746	1.2796	1.2846
SON VEL,M/SEC	976.3	957.9	941.0	925.4	910.5	895.7	880.2	863.5	845.7	826.6	806.5	785.4	763.5	0.0	0.0	0.0

MOLE FRACTIONS

AR	0.00866	0.00872	0.00877	0.00881	0.00884	0.00886	0.00887	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.02668	0.01940	0.01326	0.00850	0.00509	0.00286	0.00150	0.00073	0.00033	0.00014	0.00005	0.00002	0.00000	0.00000	0.00000	0.00000
CO2	0.07012	0.07813	0.08484	0.09002	0.09373	0.09616	0.09765	0.09850	0.09894	0.09916	0.09926	0.09930	0.09931	0.09931	0.09931	0.09931
H	0.00309	0.00181	0.00101	0.00053	0.00026	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00433	0.00308	0.00210	0.00136	0.00084	0.00049	0.00027	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.07811	0.08237	0.08576	0.08836	0.09029	0.09168	0.09265	0.09332	0.09375	0.09403	0.09421	0.09431	0.09436	0.09438	0.09439	0.09440
NO	0.00184	0.00156	0.00133	0.00112	0.00094	0.00078	0.00063	0.00050	0.00039	0.00029	0.00021	0.00015	0.00010	0.00007	0.00005	0.00003
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.71608	0.72273	0.72814	0.73237	0.73555	0.73788	0.73957	0.74080	0.74169	0.74236	0.74285	0.74322	0.74350	0.74370	0.74380	0.74380
O	0.00708	0.00467	0.00299	0.00185	0.00115	0.00064	0.00035	0.00018	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.01604	0.01267	0.00976	0.00732	0.00535	0.00379	0.00259	0.00171	0.00108	0.00065	0.00037	0.00019	0.00009	0.00005	0.00003	0.00002
O2	0.05164	0.05073	0.04999	0.04957	0.04950	0.04973	0.05017	0.05071	0.05126	0.05176	0.05220	0.05255	0.05282	0.05300	0.05300	0.05300

ADD H2O(L)

	CASE= 0	O/F= 16.6667	F/A= 0.06000	PERCENT FUEL= 5.6604				PHI= 0.8792					
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	9.4175-4	1.0090-3	1.0866-3	1.1772-3	1.2842-3	1.4126-3	1.5696-3	1.7658-3	2.0181-3	2.3544-3	2.8253-3	3.5316-3	5.2582-3
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	32.360
CP, CAL/(G)(K)	0.3227	0.3183	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	0.4542
GAMMA (S)	1.2700	1.2747	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.2067
SON VEL,M/SEC	739.3	715.5	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	305.0

MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00990	0.00880	0.00850	0.00890	0.00880	0.00680	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11801	0.11802	0.11662	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.10448
H2O	0.11222	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.00776
N0	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73685	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02375	0.02381	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

	CASE= 0	O/F= 16.6667	F/A= 0.06000	PERCENT FUEL= 5.6604				PHI= 0.8792					
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	7.3820-4	7.7085-4	8.0494-4	8.4069-4	8.7840-4	9.1850-4	9.6152-4	1.0081-3	1.0590-3	1.1100-3	1.1771-3	1.2464-3	1.3243-3
M, MOL WT	28.268	28.464	28.622	28.743	28.832	28.891	28.930	28.952	28.965	28.972	28.976	28.978	28.979
CP, CAL/(G)(K)	0.7097	0.6438	0.5792	0.5190	0.4664	0.4238	0.3920	0.3697	0.3546	0.3444	0.3373	0.3317	0.3270
GAMMA (S)	1.1582	1.1642	1.1726	1.1835	1.1963	1.2100	1.2232	1.2345	1.2435	1.2505	1.2562	1.2610	1.2655
SON VEL,M/SEC	976.6	958.2	941.1	925.1	909.9	894.9	879.4	862.8	844.9	825.7	805.5	784.3	762.2

MOLE FRACTIONS

AR	0.00858	0.00864	0.00869	0.00873	0.00875	0.00877	0.00878	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.03023	0.02238	0.01564	0.01025	0.00627	0.00357	0.00189	0.00092	0.00042	0.00017	0.00006	0.00002	0.00001
CO2	0.08489	0.09354	0.10092	0.10681	0.11114	0.11409	0.11593	0.11698	0.11754	0.11782	0.11794	0.11799	0.11801
H	0.00235	0.00139	0.00078	0.00042	0.00021	0.00010	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H02	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00502	0.00364	0.00253	0.00157	0.00105	0.00062	0.00034	0.00018	0.00009	0.00004	0.00002	0.00001	0.00000
H2O	0.09675	0.10085	0.10412	0.10662	0.10848	0.10980	0.11071	0.11131	0.11169	0.11193	0.11207	0.11216	0.11220
N0	0.01367	0.01145	0.00950	0.00782	0.00640	0.00521	0.00419	0.00332	0.00258	0.00195	0.00142	0.00110	0.00067
N02	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.71214	0.71823	0.72323	0.72716	0.73011	0.73223	0.73371	0.73473	0.73543	0.73592	0.73627	0.73653	0.73671
O	0.00378	0.00242	0.00151	0.00091	0.00053	0.00030	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000
OH	0.01305	0.01010	0.00764	0.00564	0.00407	0.00286	0.00195	0.00128	0.00081	0.00048	0.00027	0.00015	0.00007
O2	0.02949	0.02733	0.02544	0.02396	0.02297	0.02245	0.02229	0.02238	0.02260	0.02267	0.02313	0.02335	0.02352

## ADD H20ILI

	CASE= 0	0/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882			PHI= 1.0000								
P, ATM	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	2.3545-3	2.5227-3	2.7168-3	2.9432-3	3.2108-3	3.5318-3	3.9243-3	4.4148-3	5.0455-3	5.8864-3	7.0637-3	8.8296-3	1.3434-2		
M, MOL WT	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	33.070
CP, CAL/(G*IK)	0.3262	0.3215	0.3170	0.3122	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	0.2606		
GAMMA (S)	1.2665	1.2712	1.2761	1.2814	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.2258		
SON VEL, M/SEC	738.3	714.5	689.9	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	304.1		

## MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13311	0.13314	0.13315	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H20ILI	0.00000	0.00520	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12364
H20	0.12666	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.00304
NO	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73140	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
OH	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

	CASE= 0	0/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882			PHI= 1.0000								
P, ATM	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	1.8471-3	1.9265-3	2.0101-3	2.0985-3	2.1924-3	2.2928-3	2.4009-3	2.5181-3	2.6460-3	2.7866-3	2.9423-3	3.1158-3	3.3109-3		
M, MOL WT	28.292	28.455	28.590	28.699	28.784	28.848	28.895	28.928	28.950	28.964	28.972	28.977	28.979		
CP, CAL/(G*IK)	0.6526	0.6021	0.5540	0.5096	0.4701	0.4362	0.4081	0.3855	0.3679	0.3545	0.3444	0.3369	0.3309		
GAMMA (S)	1.1646	1.1702	1.1772	1.1857	1.1953	1.2057	1.2162	1.2264	1.2358	1.2439	1.2509	1.2568	1.2619		
SON VEL, M/SEC	978.9	960.8	943.5	926.7	910.3	894.0	877.4	860.4	842.5	823.7	803.9	783.0	761.1		

## MOLE FRACTIONS

AR	0.00852	0.00857	0.00861	0.00865	0.00867	0.00869	0.00871	0.00872	0.00872	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00344	0.02621	0.01989	0.01458	0.01030	0.00700	0.00455	0.00283	0.00166	0.00092	0.00048	0.00023	0.00010		
CO2	0.09656	0.10453	0.11148	0.11728	0.12195	0.12555	0.12821	0.13009	0.13135	0.13216	0.13264	0.13291	0.13305		
H	0.00158	0.00097	0.00057	0.00032	0.00017	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000		
H02	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000		
H2	0.00569	0.00439	0.00332	0.00246	0.00177	0.00125	0.00085	0.00056	0.00035	0.00021	0.00012	0.00006	0.00003		
H20	0.11267	0.11615	0.11895	0.12116	0.12284	0.12409	0.12499	0.12562	0.12604	0.12632	0.12648	0.12658	0.12663		
NO	0.00887	0.00689	0.00520	0.00381	0.00270	0.00184	0.00121	0.00076	0.00045	0.00026	0.00014	0.00007	0.00003		
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000		
N2	0.70960	0.71470	0.71896	0.72241	0.72511	0.72716	0.72865	0.72970	0.73041	0.73086	0.73113	0.73128	0.73136		
O	0.00156	0.00092	0.00052	0.00028	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000		
OH	0.00903	0.00670	0.00481	0.00334	0.00224	0.00144	0.00089	0.00052	0.00029	0.00015	0.00007	0.00003	0.00001		
O2	0.01247	0.00995	0.00767	0.00571	0.00410	0.00283	0.00187	0.00118	0.00071	0.00040	0.00021	0.00010	0.00005		

ADD H2O(L)  
ADD C(S)

	CASE= 0	O/F= 14.2857	F/A= 0.07000	PERCENT FUEL= 6.5421				PHI= 1.0258					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	4.6855-3	5.0202-3	5.4064-3	5.8569-3	6.3894-3	7.0283-3	7.8093-3	8.7873-3	1.0062-2	1.1763-2	1.4126-2	1.7807-2	2.7009-2
M, MOL HT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.842	28.898	28.956	28.977	29.224	33.244
CP, CAL/(G)(K)	0.3261	0.3226	0.3188	0.3146	0.3101	0.3052	0.2996	0.2986	0.3045	0.2837	0.2685	1.5548	0.3299
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2916	1.2989	1.3038	1.3039	1.3248	1.3443	1.1910	1.2357
SON VEL./M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.6	548.3	512.4	477.7	439.2	368.2	304.5

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00667	0.00867	0.00867	0.00867	0.00868	0.00869	0.00871	0.00872	0.00872	0.00867	0.00867
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00502
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00105	0.00207	0.00244	0.00252	0.00000	0.00000
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00320	0.00198	0.00060	0.00006	0.00000	0.00000	0.00000	0.00000
CO2	0.12840	0.12876	0.12921	0.12978	0.13051	0.13141	0.13248	0.13363	0.13432	0.13411	0.13390	0.13385	0.13065	0.13065
H2	0.00278	0.00313	0.00358	0.00415	0.00488	0.00577	0.00682	0.00763	0.00857	0.00969	0.01099	0.01244	0.01404	0.01580
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00831	0.12758
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12124	0.12200	0.12373	0.12449	0.11636	0.00150	0.00150
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00003	0.00006	0.00005	0.00003	0.00001	0.00000	0.00000
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72672	0.72811	0.72958	0.73012	0.73023	0.72657	0.72657

	CASE= 0	O/F= 14.2857	F/A= 0.07000	PERCENT FUEL= 6.5421				PHI= 1.0258						
P, AT	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, F-1A	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	410.9	440.9	440.9	440.9	440.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	
RHO, G/CC	3.7036-3	3.8586-3	4.0221-3	4.1953-3	4.3796-3	4.5767-3	4.7888-3	5.0189-3	5.2707-3	5.5485-3	5.8568-3	6.2014-3	6.5890-3	
M, MOL HT	28.364	28.496	28.604	28.688	28.750	28.792	28.817	28.828	28.833	28.835	28.836	28.836	28.836	
CP, CAL/(G)(K)	0.5985	0.5544	0.5120	0.4720	0.4348	0.4008	0.3729	0.3545	0.3445	0.3391	0.3355	0.3324	0.3294	
GAMMA (S)	1.1722	1.1785	1.1863	1.1958	1.2071	1.2202	1.2337	1.2444	1.2512	1.2555	1.2587	1.2616	1.2646	
SON VEL./M/SEC	980.9	963.5	946.9	930.8	915.3	900.2	884.9	868.2	849.5	829.4	808.2	786.4	763.8	

MOLE FRACTIONS

AR	0.00853	0.00857	0.00860	0.00863	0.00865	0.00866	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867
CO	0.03137	0.02527	0.02009	0.01591	0.01275	0.01058	0.00931	0.00866	0.00834	0.00815	0.00797	0.00778	0.00755	
CO2	0.10209	0.10881	0.11450	0.11937	0.12253	0.12489	0.12628	0.12698	0.12732	0.12753	0.12770	0.12789	0.12812	
H	0.00108	0.00067	0.00040	0.00024	0.00014	0.00008	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
H2O	0.00527	0.00422	0.00337	0.00271	0.00224	0.00193	0.00179	0.00177	0.00183	0.00194	0.00209	0.00227	0.00250	
H2O	0.11769	0.12050	0.12372	0.12443	0.12567	0.12650	0.12697	0.12716	0.12719	0.12711	0.12698	0.12681	0.12658	
NO	0.00708	0.00527	0.00374	0.00250	0.00155	0.00086	0.00041	0.00017	0.00006	0.00002	0.00001	0.00000	0.00000	
N2	0.71115	0.71538	0.71885	0.72159	0.72364	0.72504	0.72588	0.72629	0.72647	0.72653	0.72656	0.72657	0.72657	
O	0.00088	0.00050	0.00027	0.00013	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
OH	0.00693	0.00501	0.00349	0.00231	0.00144	0.00083	0.00044	0.00021	0.00009	0.00003	0.00001	0.00000	0.00000	
O2	0.00792	0.00580	0.00397	0.00247	0.00135	0.00061	0.00022	0.00006	0.00001	0.00000	0.00000	0.00000	0.00000	







	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000				PHI= 0.0000					
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	3.7740-3	3.9166-3	4.0692-3	4.2335-3	4.4109-3	4.6033-3	4.8130-3	5.0425-3	5.2947-3	5.5735-3	5.8831-3	6.2292-3	6.6185-3
M, MOL WT	28.904	28.924	28.939	28.949	28.955	28.960	28.962	28.964	28.965	28.965	28.965	28.965	28.965
CP, CAL/(G*IK)	0.3770	0.3649	0.3546	0.3459	0.3384	0.3319	0.3261	0.3209	0.3160	0.3114	0.3069	0.3025	0.2982
GAMMA (S)	1.2343	1.2402	1.2460	1.2515	1.2569	1.2622	1.2673	1.2724	1.2775	1.2826	1.2879	1.2933	1.2988
SON VEL, M/SEC	997.1	981.1	964.7	948.0	930.7	912.9	894.6	875.8	856.4	836.4	815.7	794.4	772.3

MOLE FRACTIONS

AR	0.00930	0.00931	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00028	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03577	0.03131	0.02706	0.02307	0.01938	0.01601	0.01298	0.01030	0.00798	0.00601	0.00438	0.00308	0.00207
NO2	0.00011	0.00011	0.00010	0.00010	0.00009	0.00009	0.00008	0.00008	0.00007	0.00006	0.00006	0.00005	0.00004
N2	0.76131	0.76410	0.76662	0.76889	0.77091	0.77272	0.77430	0.77569	0.77687	0.77787	0.77869	0.77935	0.77985
O	0.00428	0.00287	0.00186	0.00117	0.00070	0.00040	0.00022	0.00011	0.00006	0.00002	0.00001	0.00000	0.00000
O2	0.18891	0.19200	0.19474	0.19729	0.19929	0.20116	0.20279	0.20420	0.20540	0.20641	0.20724	0.20790	0.20841

	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000				PHI= 0.0000					
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	7.0597-3	7.5640-3	8.1458-3	8.8246-3	9.6268-3	1.0589-2	1.1766-2	1.3237-2	1.5128-2	1.7649-2	2.1179-2	2.6474-2	3.5298-2
M, MOL WT	28.965	28.965	28.965	28.965	28.965	28.964	28.964	28.964	28.964	28.964	28.964	28.964	28.964
CP, CAL/(G*IK)	0.2939	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402
GAMMA (S)	1.3044	1.3102	1.3161	1.3222	1.3287	1.3356	1.3440	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999
SON VEL, M/SEC	749.4	725.6	700.8	674.9	647.7	619.2	589.2	557.5	523.6	486.8	446.1	400.3	347.2

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO2	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.78023	0.78050	0.78067	0.78078	0.78084	0.78087	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089
O2	0.20880	0.20907	0.20925	0.20936	0.20943	0.20946	0.20948	0.20948	0.20949	0.20949	0.20949	0.20949	0.20949

## ADD H2O(L)

	CASE=	0	0/F=100,0000	F/A=	0,01000	PERCENT FUEL=	0,9901	PHI=	0,1465								
P, ATM		0	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000
P, PSIA			587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K			1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F			2240.3	2060.3	1890.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC		9	4.138E-2	1.008E-2	1.086E-2	1.176E-2	1.2837E-2	1.4121E-2	1.5689E-2	1.7651E-2	2.0172E-2	2.3534E-2	2.8241E-2	3.5301E-2	4.7969E-2		
M, MDL WT			28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	29.521	
CP, CAL/(G/1K)			0.2992	0.2949	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2668		
GAMMA (S)			1.2975	1.3031	1.3089	1.3150	1.3215	1.3285	1.3368	1.3465	1.3574	1.3688	1.3799	1.3893	1.3499		
SON VEL,M/SEC			747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	337.7		

## MOLE FRACTIONS

AR			0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2			0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O(L)			0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01877
H2O			0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.00085	
NO			0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
NO2			0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
N2			0.77262	0.77287	0.77303	0.77313	0.77318	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH			0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
O2			0.17640	0.17665	0.17661	0.17692	0.17698	0.17701	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

	CASE=	0	0/F=100,0000	F/A=	0,01000	PERCENT FUEL=	0,9901	PHI=	0,1465								
P, ATM			50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
P, PSIA			734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K			2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F			4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2950.3	2780.3	2600.3	2420.3		
RHO, G/CC		6	6.282E-3	6.521E-3	6.777E-3	7.052E-3	7.349E-3	7.670E-3	8.020E-3	8.403E-3	8.824E-3	9.289E-3	9.805E-3	1.038E-2	1.103E-2		
M, MDL WT			28.870	28.899	28.920	28.936	28.947	28.954	28.960	28.963	28.965	28.966	28.967	28.967	28.967		
CP, CAL/(G/1K)			0.3975	0.3827	0.3700	0.3591	0.3498	0.3417	0.3347	0.3285	0.3229	0.3177	0.3128	0.3081	0.3036		
GAMMA (S)			1.2340	1.2302	1.2364	1.2425	1.2484	1.2541	1.2597	1.2651	1.2705	1.2758	1.2812	1.2865	1.2920		
SON VEL,M/SEC			993.5	977.6	961.4	944.8	927.7	910.1	892.0	873.3	854.0	834.1	813.6	792.3	770.3		

## MOLE FRACTIONS

AR			0.00920	0.00921	0.00922	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO			0.00105	0.00069	0.00043	0.00026	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2			0.01976	0.02014	0.02042	0.02060	0.02072	0.02079	0.02083	0.02086	0.02087	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H			0.00013	0.00008	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
HO2			0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2			0.00013	0.00009	0.00006	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O			0.01690	0.01750	0.01801	0.01842	0.01876	0.01901	0.01921	0.01935	0.01945	0.01952	0.01957	0.01959	0.01961	0.01961	0.01961
NO			0.03256	0.02850	0.02465	0.02104	0.01768	0.01461	0.01185	0.00941	0.00729	0.00550	0.00401	0.00281	0.00189	0.00119	0.00069
NO2			0.00012	0.00012	0.00011	0.00011	0.00010	0.00010	0.00009	0.00008	0.00008	0.00007	0.00006	0.00005	0.00005	0.00005	0.00005
N2			0.75429	0.75709	0.75959	0.76182	0.76380	0.76554	0.76706	0.76837	0.76949	0.77043	0.77119	0.77180	0.77227		
O			0.00303	0.00203	0.00132	0.00083	0.00050	0.00029	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
OH			0.00488	0.00386	0.00298	0.00224	0.00164	0.00116	0.00079	0.00052	0.00033	0.00020	0.00011	0.00006	0.00003		
O2			0.15790	0.16065	0.16314	0.16538	0.16739	0.16916	0.17071	0.17206	0.17320	0.17415	0.17494	0.17556	0.17604		

CASE= 0 O/F= 33.3333 F/A= 0.03000 PERCENT FUEL= 2.9126 PHI= 0.4396

P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	1.1769-4	1.2610-4	1.3580-4	1.4711-4	1.6049-4	1.7654-4	1.9615-4	2.2067-4	2.5219-4	2.9423-4	3.5307-4	4.4134-4	5.8845-4		
M, MOL WT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972
CP, CAL/(G)(K)	0.3096	0.3049	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.2441		
GAMMA (S)	1.2847	1.2903	1.2960	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.3864		
SON VEL, M/SEC	743.7	720.0	695.3	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	345.5		

MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06085	0.06086	0.06086	0.06096	0.06096	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O	0.05771	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75814	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11351	0.11371	0.11384	0.11392	0.11397	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

CASE= 0 O/F= 33.3333 F/A= 0.03000 PERCENT FUEL= 2.9126 PHI= 0.4396

P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	1.2265-4	1.2824-4	1.3401-4	1.4001-4	1.4631-4	1.5300-4	1.6018-4	1.6743-4	1.7643-4	1.8577-4	1.9612-4	2.0767-4	2.2066-4		
M, MOL WT	28.180	28.411	28.590	28.722	28.814	28.876	28.916	28.940	28.955	28.963	28.967	28.970	28.971		
CP, CAL/(G)(K)	0.7609	0.6720	0.5903	0.5194	0.4619	0.4178	0.3856	0.3627	0.3466	0.3353	0.3266	0.3200	0.3144		
GAMMA (S)	1.1558	1.1630	1.1729	1.1854	1.1997	1.2145	1.2285	1.2408	1.2512	1.2599	1.2671	1.2735	1.2793		
SON VEL, M/SEC	977.2	958.6	941.7	926.2	911.5	896.8	881.5	865.2	847.7	829.0	809.1	788.3	766.4		

MOLE FRACTIONS

AR	0.00881	0.00888	0.00893	0.00898	0.00900	0.00902	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.01919	0.01399	0.00956	0.00612	0.00367	0.00206	0.00108	0.00053	0.00024	0.00010	0.00004	0.00001	0.00000		
CO2	0.04001	0.04569	0.05049	0.05421	0.05686	0.05860	0.05966	0.06026	0.06058	0.06074	0.06081	0.06084	0.06085		
H	0.00441	0.00260	0.00145	0.00077	0.00038	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000		
H2	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000		
H2O	0.00293	0.00212	0.00145	0.00095	0.00059	0.00035	0.00019	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000		
H2O	0.04195	0.34583	0.04899	0.05148	0.05337	0.05478	0.05579	0.05650	0.05698	0.05729	0.05749	0.05761	0.05768		
NO	0.02508	0.02213	0.01924	0.01618	0.01389	0.01151	0.00936	0.00744	0.00578	0.00436	0.00318	0.00223	0.00150		
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000		
N2	0.72508	0.73260	0.73872	0.74355	0.74727	0.75008	0.75220	0.75379	0.75500	0.75593	0.75664	0.75717	0.75757		
O	0.01686	0.01136	0.00739	0.00464	0.00280	0.00162	0.00089	0.00046	0.00022	0.00010	0.00004	0.00001	0.00000		
OH	0.01814	0.01474	0.01161	0.00885	0.00654	0.00467	0.00321	0.00212	0.00134	0.00081	0.00046	0.00024	0.00012		
O2	0.09752	0.10005	0.10213	0.10395	0.10561	0.10713	0.10850	0.10971	0.11074	0.11159	0.11228	0.11281	0.11321		

ADD H2O(L)

CASE=	0	0/F=	25.0000	F/A=	0.04000	PERCENT FUEL=			3.8462	PHI=					0.5862
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	3.5310-4	3.7832-4	4.0743-4	4.4138-4	4.8150-4	5.2965-4	5.8850-4	6.6207-4	7.5665-4	8.8276-4	1.0593-3	1.3241-3	1.8671-3		
M, MOL WT	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	30.641	
CP, CAL/(G)(K)	0.3141	0.3095	0.3049	0.3003	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.2428		
GAMMA (S)	1.2794	1.2847	1.2902	1.2960	1.3024	1.3095	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.3787		
SON VEL,M/SEC	742.1	718.4	693.8	668.0	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	309.8		

MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.05440
H2O	0.07623	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.02185
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75070	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08297	0.08314	0.08325	0.08332	0.08336	0.08338	0.08338	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

CASE=	0	0/F=	25.0000	F/A=	0.04000	PERCENT FUEL=			3.8462	PHI=					0.5862
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	2.4599-4	2.5699-4	2.6839-4	2.8029-4	2.9282-4	3.0614-4	3.2045-4	3.3566-4	3.5292-4	3.7138-4	3.9228-4	4.1539-4	4.4137-4		
M, MOL WT	28.269	28.468	28.630	28.749	28.833	28.889	28.925	28.946	28.959	28.966	28.970	28.973	28.974	30.641	
CP, CAL/(G)(K)	0.7276	0.6471	0.5723	0.5073	0.4543	0.4138	0.3843	0.3634	0.3487	0.3382	0.3304	0.3242	0.3189		
GAMMA (S)	1.1578	1.1651	1.1750	1.1873	1.2011	1.2151	1.2281	1.2394	1.2488	1.2566	1.2631	1.2689	1.2743		
SON VEL,M/SEC	976.6	958.5	941.9	926.5	911.7	896.8	881.3	864.6	846.8	827.8	807.8	786.8	764.9		

MOLE FRACTIONS

AR	0.00875	0.00881	0.00886	0.00890	0.00892	0.00894	0.00895	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897	0.00897
CO	0.02190	0.01578	0.01068	0.00679	0.00404	0.00226	0.00118	0.00058	0.00026	0.00011	0.00004	0.00001	0.00000	0.00000	0.00000
CO2	0.05639	0.06309	0.06864	0.07286	0.07584	0.07778	0.07895	0.07962	0.07997	0.08014	0.08022	0.08025	0.08027	0.08027	0.08027
H	0.00337	0.00197	0.00110	0.00058	0.00029	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
HO2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
H2	0.00343	0.00244	0.00165	0.00137	0.00066	0.00038	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.06067	0.06464	0.06781	0.07027	0.07212	0.07347	0.07444	0.07510	0.07555	0.07584	0.07603	0.07614	0.07620	0.07620	0.07620
NO	0.02186	0.01911	0.01650	0.01407	0.01183	0.00979	0.00795	0.00632	0.00491	0.00370	0.00270	0.00190	0.00128		
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.72165	0.72843	0.73393	0.73824	0.74153	0.74400	0.74585	0.74722	0.74827	0.74906	0.74966	0.75012	0.75046		
O	0.01041	0.00695	0.00450	0.00281	0.00169	0.00098	0.00053	0.00028	0.00013	0.00006	0.00002	0.00001	0.00000		
OH	0.01714	0.01370	0.01065	0.00805	0.00591	0.00420	0.00288	0.00190	0.00120	0.00072	0.00041	0.00022	0.00011		
O2	0.07439	0.07505	0.07565	0.07634	0.07715	0.07805	0.07898	0.07987	0.08067	0.08136	0.08193	0.08238	0.08272		

ADD H2O(L)

CASE=	0	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL= 4.7619				PHI= 0.7327				
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	7.0626-4	7.5671-4	8.1492-4	8.8283-4	9.6309-4	1.0594-3	1.1771-3	1.3242-3	1.5134-3	1.7657-3	2.1188-3	2.6485-3	3.8544-3	
M, MOL WT	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	31.628
CP, CAL/(G)(K)	0.3185	0.3140	0.3094	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2547	0.5066	
GAMMA (S)	1.2745	1.2795	1.2848	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.3684	1.2029	
SON VEL,M/SEC	740.6	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	396.3	308.0	

MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00988	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.09439	0.09441	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.01059
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74369	0.74383	0.74392	0.74397	0.74400	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05302	0.05315	0.05324	0.05330	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

CASE=	0	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL= 4.7619				PHI= 0.7327				
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	
RHO, G/CC	4.9302-4	5.1473-4	5.3732-4	5.6097-4	5.8592-4	6.1249-4	6.4106-4	6.7205-4	7.0594-4	7.4336-4	7.8464-4	8.3085-4	8.8281-4	
M, MOL WT	28.319	28.510	28.659	28.770	28.847	28.899	28.932	28.952	28.963	28.970	28.973	28.975	28.976	
CP, CAL/(G)(K)	0.6998	0.6275	0.5593	0.4990	0.4495	0.4114	0.3836	0.3641	0.3506	0.3410	0.3338	0.3281	0.3231	
GAMMA (S)	1.1597	1.1669	1.1766	1.1886	1.2019	1.2153	1.2276	1.2381	1.2467	1.2537	1.2596	1.2648	1.2697	
SON VEL,M/SEC	976.4	958.6	942.1	926.7	911.8	896.8	881.0	864.1	846.0	826.8	806.6	785.5	763.5	

MOLE FRACTIONS

AR	0.00868	0.00874	0.00879	0.00882	0.00884	0.00886	0.00887	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.02418	0.01738	0.01176	0.00747	0.00445	0.00249	0.00130	0.00063	0.00029	0.00012	0.00004	0.00001	0.00000	0.00000
CO2	0.07288	0.08034	0.08647	0.09114	0.09442	0.09657	0.09787	0.09860	0.09899	0.09918	0.09927	0.09930	0.09932	0.09932
H	0.00252	0.00147	0.00082	0.00043	0.00021	0.00010	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00385	0.00272	0.00184	0.00119	0.00073	0.00043	0.00024	0.00012	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000
H2O	0.07964	0.08351	0.08657	0.08892	0.09066	0.09192	0.09280	0.09341	0.09381	0.09406	0.09422	0.09432	0.09437	
NO	0.01804	0.01557	0.01331	0.01126	0.00942	0.00777	0.00631	0.00502	0.00390	0.00294	0.00215	0.00151	0.00102	
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000
N2	0.71811	0.72424	0.72920	0.73307	0.73599	0.73814	0.73972	0.74087	0.74173	0.74238	0.74286	0.74323	0.74350	
O	0.00609	0.00402	0.00257	0.00160	0.00096	0.00055	0.00030	0.00016	0.00008	0.00003	0.00001	0.00001	0.00000	
OH	0.01502	0.01184	0.00911	0.00683	0.00498	0.00353	0.00242	0.00159	0.00100	0.00060	0.00034	0.00018	0.00009	
O2	0.05094	0.05013	0.04953	0.04926	0.04931	0.04963	0.05013	0.05069	0.05126	0.05177	0.05220	0.05255	0.05282	

ADD H2O(L)

CASE=	O	O/F=	16.6667	F/A=	0.06000	PERCENT FUEL=			5.6604			PHI=			0.8792		
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0				
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3				
RHO, G/CC	1.4126-3	1.5135-3	1.6300-3	1.7658-3	1.9263-3	2.1190-3	2.3544-3	2.6487-3	3.0271-3	3.5316-3	4.2379-3	5.2974-3	7.5103-3				
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	32.454
CP, CAL/(G)(K)	0.3226	0.3182	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	0.2510	0.2453	0.2401	0.2354	0.2311
GAMMA (S)	1.2700	1.2747	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.3765	1.3902	1.4048	1.4205	1.4375
SON VEL,M/SEC	739.3	715.5	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	306.3				

MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11801	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.10708
H2O	0.11222	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.00516
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73685	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02375	0.02380	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

CASE=	O	O/F=	16.6667	F/A=	0.06000	PERCENT FUEL=			5.6604			PHI=			0.8792		
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0				
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3				
RHO, G/CC	1.2356-3	1.2889-3	1.3447-3	1.4033-3	1.4655-3	1.5317-3	1.6031-3	1.6805-3	1.7651-3	1.8534-3	1.9618-3	2.0773-3	2.2072-3				
M, MOL WT	28.389	28.555	28.688	28.789	28.860	28.909	28.939	28.958	28.968	28.974	28.977	28.978	28.979				
CP, CAL/(G)(K)	0.6577	0.5984	0.5412	0.4889	0.4442	0.4087	0.3825	0.3642	0.3517	0.3429	0.3365	0.3314	0.3269				
GAMMA (S)	1.1639	1.1706	1.1796	1.1907	1.2032	1.2159	1.2276	1.2374	1.2453	1.2515	1.2567	1.2613	1.2656				
SON VEL,M/SEC	977.0	959.3	942.8	927.2	912.1	896.9	880.9	863.8	845.5	826.1	805.6	784.4	762.2				

MOLE FRACTIONS

AR	0.00862	0.00867	0.00871	0.00874	0.00876	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.02561	0.01861	0.01278	0.00825	0.00498	0.00280	0.00147	0.00072	0.00032	0.00013	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.09000	0.09767	0.10405	0.10899	0.11255	0.11492	0.11638	0.11721	0.11765	0.11786	0.11795	0.11799	0.11801				
H	0.00165	0.00097	0.00054	0.00029	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
HO2	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00412	0.00295	0.00203	0.00133	0.00082	0.00048	0.00027	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.09927	0.10273	0.10546	0.10755	0.10910	0.11019	0.11094	0.11145	0.11177	0.11197	0.11210	0.11217	0.11220				
NO	0.01328	0.01115	0.00929	0.00769	0.00633	0.00517	0.00418	0.00331	0.00257	0.00195	0.00142	0.00100	0.00067				
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.71540	0.72070	0.72501	0.72837	0.73088	0.73268	0.73396	0.73486	0.73549	0.73595	0.73629	0.73653	0.73672				
O	0.00284	0.00182	0.00114	0.00069	0.00041	0.00023	0.00013	0.00007	0.00003	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01145	0.00885	0.00669	0.00494	0.00357	0.00251	0.00171	0.00113	0.00071	0.00043	0.00024	0.00013	0.00006				
O2	0.02772	0.02584	0.02428	0.02314	0.02244	0.02214	0.02213	0.02231	0.02258	0.02286	0.02313	0.02335	0.02352				



ADD H2O(L)

CASE= 0 O/F= 14.6540 F/A= 0.06824 PERCENT FUEL= 6.3882 PHI= 1.0000

P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2050.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	-80.3
RHO, G/CC	3.5317-3	3.7841-3	4.0752-3	4.4148-3	4.8161-3	5.2977-3	5.8864-3	6.6222-3	7.5682-3	8.8296-3	1.0595-2	1.3244-2	2.0174-2	3.1244-2
M, MOL WT	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	33.108
CP, CAL/(G)(K)	0.3260	0.3214	0.3169	0.3122	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2590	0.2532	0.2472
GAMMA (S)	1.2666	1.2713	1.2761	1.2814	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3600	1.3736	1.3880
SON VEL, M/SEC	738.3	714.6	689.9	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	395.1	304.9	200.0

MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13312	0.13314	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.12466
H2O	0.12666	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.20202
NO	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73140	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
O2	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE= 0 O/F= 14.6540 F/A= 0.06824 PERCENT FUEL= 6.3882 PHI= 1.0000

P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	2.4677-3	2.5727-3	2.6833-3	2.8003-3	2.9249-3	3.0583-3	3.2021-3	3.3580-3	3.5283-3	3.7157-3	3.9231-3	4.1545-3	4.4145-3	4.7000-3
M, MOL WT	28.349	28.499	28.623	28.723	28.801	28.860	28.903	28.932	28.952	28.965	28.973	28.977	28.979	28.981
CP, CAL/(G)(K)	0.6293	0.5822	0.5373	0.4962	0.4597	0.4284	0.4025	0.3816	0.3653	0.3529	0.3435	0.3364	0.3307	0.3260
GAMMA (S)	1.1776	1.1733	1.1805	1.1889	1.1984	1.2085	1.2186	1.2283	1.2372	1.2449	1.2515	1.2572	1.2621	1.2670
SON VEL, M/SEC	979.2	961.4	944.2	927.6	911.2	894.8	878.2	861.0	843.0	824.0	804.0	783.1	761.2	740.0

MOLE FRACTIONS

AR	0.00854	0.00859	0.00862	0.00865	0.00868	0.00870	0.00871	0.00872	0.00872	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.03104	0.02423	0.01832	0.01340	0.00945	0.00641	0.00416	0.00258	0.00152	0.00084	0.00044	0.00021	0.00009	0.00000
CO2	0.09921	0.10671	0.11319	0.11858	0.12289	0.12620	0.12863	0.13035	0.13151	0.13224	0.13268	0.13293	0.13306	0.13316
H	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00520	0.00401	0.00303	0.00224	0.00162	0.00114	0.00077	0.00051	0.00032	0.00019	0.00011	0.00006	0.00003	0.00000
H2O	0.11392	0.11710	0.11965	0.12165	0.12318	0.12432	0.12514	0.12572	0.12610	0.12635	0.12650	0.12659	0.12664	0.12666
NO	0.00852	0.00660	0.00497	0.00363	0.00257	0.00175	0.00115	0.00072	0.00043	0.00024	0.00013	0.00006	0.00003	0.00000
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.71122	0.71597	0.71992	0.72311	0.72561	0.72750	0.72887	0.72984	0.73049	0.73090	0.73115	0.73130	0.73137	0.73140
O	0.00129	0.00077	0.00043	0.00023	0.00012	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00827	0.00612	0.00439	0.00304	0.00203	0.00131	0.00080	0.00047	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000
O2	0.01146	0.00910	0.00699	0.00519	0.00371	0.00256	0.00169	0.00106	0.00064	0.00036	0.00019	0.00009	0.00004	0.00000

ADD H2O(L)  
ADD C(S)

CASE=	0	O/F= 14.2857	F/A= 0.07000	PERCENT FUEL= 6.5421	PHI= 1.0258									
P, ATH	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	7.0283-3	7.5303-3	8.1096-3	8.7854-3	9.5840-3	1.0542-2	1.1714-2	1.3184-2	1.5100-2	1.7647-2	2.1189-2	2.7961-2	4.0537-2	
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.848	28.911	28.961	28.978	30.592	33.263	
CP, CAL/(G*IK)	0.3261	0.3226	0.3188	0.3146	0.3102	0.3053	0.2999	0.3026	0.3026	0.2820	0.2681	1.1589	0.3193	
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2916	1.2987	1.3010	1.3053	1.3264	1.3448	1.1892	1.2402	
SON VEL, M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.5	547.7	512.6	478.0	439.2	359.6	305.0	

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00868	0.00870	0.00871	0.00872	0.00870	0.00867	
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00207	0.00502
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00018	0.00018	0.00126	0.00214	0.00245	0.00148	0.00000
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00319	0.00191	0.00051	0.00005	0.00000	0.00000	0.00000	0.00000
CO2	0.12840	0.12876	0.12921	0.12978	0.13051	0.13141	0.13248	0.13364	0.13426	0.13407	0.13389	0.13253	0.13065	
H2	0.00278	0.00313	0.00358	0.00415	0.00487	0.00577	0.00681	0.00733	0.00442	0.00139	0.00025	0.00001	0.00000	
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.05253	0.12808
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12136	0.12237	0.12388	0.12452	0.07395	0.00100	
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002	0.00005	0.00007	0.00006	0.00003	0.00001	0.00000	
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72658	0.72685	0.72841	0.72969	0.73014	0.72872	0.72657	

CASE=	0	O/F= 14.2857	F/A= 0.07000	PERCENT FUEL= 6.5421	PHI= 1.0258									
P, ATH	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	573.9	587.8	587.8	587.8	587.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	4.9461-3	5.1511-3	5.3677-3	5.5973-3	5.8418-3	6.1037-3	6.3857-3	6.6921-3	7.0277-3	7.3980-3	7.8091-3	8.2685-3	8.7853-3	
M, MOL WT	28.410	28.531	28.629	28.706	28.762	28.799	28.820	28.829	28.834	28.835	28.836	28.836	28.836	28.836
CP, CAL/(G*IK)	0.5789	0.5375	0.4977	0.4603	0.4252	0.3936	0.3684	0.3524	0.3437	0.3388	0.3354	0.3324	0.3294	0.3264
GAMMA (S)	1.1753	1.1817	1.1896	1.1992	1.2105	1.2234	1.2361	1.2457	1.2518	1.2557	1.2587	1.2616	1.2646	1.2676
SON VEL, M/SEC	981.3	964.3	947.8	931.8	916.4	901.3	885.7	868.6	849.7	829.4	808.3	786.4	763.8	

MOLE FRACTIONS

AR	0.00855	0.00858	0.00861	0.00864	0.00865	0.00866	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867
CO	0.02935	0.02365	0.01886	0.01503	0.01218	0.01027	0.00916	0.00861	0.00833	0.00814	0.00797	0.00778	0.00755	
CO2	0.10432	0.11059	0.11584	0.12033	0.12315	0.12524	0.12644	0.12704	0.12734	0.12753	0.12770	0.12789	0.12812	
H	0.00090	0.00056	0.00034	0.00020	0.00012	0.00007	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00487	0.00391	0.00314	0.00255	0.00213	0.00187	0.00176	0.00176	0.00183	0.00194	0.00209	0.00227	0.00250	
H2O	0.11870	0.12126	0.12327	0.12481	0.12592	0.12664	0.12704	0.12719	0.12720	0.12712	0.12699	0.12681	0.12658	
ND	0.00670	0.00495	0.00349	0.00231	0.00141	0.00077	0.00036	0.00015	0.00005	0.00002	0.00000	0.00000	0.00000	0.00000
O	0.71249	0.71641	0.71962	0.72214	0.72400	0.72525	0.72598	0.72633	0.72648	0.72654	0.72656	0.72657	0.72657	0.72657
O2	0.00072	0.00041	0.00022	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00630	0.00454	0.00314	0.00207	0.00128	0.00073	0.00038	0.00019	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000
O2	0.00709	0.00513	0.00345	0.00211	0.00112	0.00049	0.00017	0.00005	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000

ADD C(S)  
ADD H2O(1)

CASE=	0	0/F=	12.5000	F/A=	0.08000	PERCENT FUEL=	7.4074	PHI=	1.1723										
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0						
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3						
RHO, G/CC	1.1393-2	1.2207-2	1.3146-2	1.4242-2	1.5539-2	1.7125-2	1.9210-2	2.1863-2	2.5145-2	2.9410-2	3.5317-2	4.9265-2	6.8959-2						
M, MOL WT	28.046	28.046	28.046	28.047	28.052	28.104	28.374	28.704	28.887	28.960	28.980	32.340	33.951						
CP, CAL/(G)(K)	0.3338	0.3313	0.3290	0.3271	0.3289	0.3715	0.4436	0.3838	0.3203	0.2910	0.2758	0.7620	0.3184						
GAMMA (S)	1.2695	1.2720	1.2746	1.2769	1.2772	1.2586	1.2334	1.2549	1.2910	1.3143	1.3320	1.1921	1.2310						
SON VEL, M/SEC	751.4	726.6	700.9	674.0	645.3	610.2	570.3	539.3	510.0	475.8	437.1	350.1	300.7						

MOLE FRACTIONS

AR	0.00836	0.00836	0.00836	0.00836	0.00836	0.00838	0.00846	0.00855	0.00861	0.00859	0.00852	0.00837	0.00836						
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00474	0.01311	0.03138	0.03236						
CH4	0.00000	0.00000	0.00000	0.00001	0.00008	0.00096	0.00574	0.01162	0.01490	0.01378	0.00986	0.00051	0.00000						
CO	0.04457	0.04258	0.04011	0.03704	0.03310	0.02691	0.01479	0.00450	0.00079	0.00007	0.00000	0.00000	0.00000						
CO2	0.10480	0.10680	0.10927	0.11234	0.11623	0.12182	0.13059	0.13676	0.13816	0.13492	0.12936	0.11764	0.11701						
H2	0.02015	0.02214	0.02459	0.02761	0.03123	0.03388	0.02738	0.01493	0.00598	0.00166	0.00027	0.00001	0.00000						
H2O(1)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
H2O	0.12199	0.12000	0.11754	0.11448	0.11069	0.10641	0.10460	0.10697	0.11034	0.11668	0.12488	0.04074	0.00057						
NH3	0.00001	0.00001	0.00002	0.00004	0.00007	0.00015	0.00023	0.00023	0.00019	0.00012	0.00006	0.00000	0.00000						
N2	0.70012	0.70012	0.70012	0.70013	0.70024	0.70149	0.70820	0.71643	0.72102	0.71944	0.71393	0.70083	0.70012						

CASE=	0	0/F=	11.1111	F/A=	0.09000	PERCENT FUEL=	8.2569	PHI=	1.3189										
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000						
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3						
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3						
RHO, G/CC	5.7154-5	6.0082-5	6.3023-5	6.5985-5	6.9013-5	7.2176-5	7.5548-5	7.9196-5	8.3183-5	8.7575-5	9.2448-5	9.7889-5	1.0401-4						
M, MOL WT	26.363	26.623	26.891	27.073	27.182	27.244	27.277	27.294	27.303	27.307	27.310	27.310	27.311						
CP, CAL/(G)(K)	1.0989	0.9263	0.7568	0.6085	0.4994	0.4314	0.3928	0.3715	0.3596	0.3526	0.3402	0.3450	0.3426						
GAMMA (S)	1.1384	1.1449	1.1568	1.1754	1.1985	1.2205	1.2375	1.2490	1.2564	1.2613	1.2648	1.2675	1.2698						
SON VEL, M/SEC	1004.6	982.6	964.3	950.0	938.0	925.6	911.7	893.9	874.8	854.2	832.5	809.9	786.4						

MOLE FRACTIONS

AR	0.00776	0.00786	0.00794	0.00799	0.00803	0.00804	0.00805	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806						
CO	0.10853	0.10235	0.09692	0.09289	0.09028	0.08864	0.08746	0.08639	0.08526	0.08397	0.08247	0.08071	0.07861						
CO2	0.04737	0.05567	0.06270	0.06731	0.07106	0.07307	0.07445	0.07562	0.07681	0.07812	0.07963	0.08140	0.08350						
H	0.02069	0.01378	0.00901	0.00580	0.00366	0.00225	0.00133	0.00075	0.00040	0.00020	0.00009	0.00004	0.00001						
H2	0.03234	0.02975	0.02788	0.02638	0.02681	0.02726	0.02805	0.02904	0.03020	0.03152	0.03305	0.03484	0.03695						
H2O	0.09679	0.10727	0.11514	0.12039	0.12335	0.12469	0.12498	0.12460	0.12378	0.12263	0.12118	0.11943	0.11734						
NO	0.00701	0.00493	0.00316	0.00182	0.00095	0.00045	0.00019	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000						
N2	0.64610	0.65603	0.66356	0.66871	0.67187	0.67363	0.67458	0.67506	0.67531	0.67543	0.67548	0.67551	0.67552						
O	0.00706	0.00378	0.00181	0.00077	0.00029	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000						
OH	0.01782	0.01302	0.00881	0.00550	0.00317	0.00169	0.00084	0.00039	0.00017	0.00006	0.00002	0.00001	0.00000						
O2	0.00855	0.00555	0.00307	0.00141	0.00054	0.00018	0.00005	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000						

ADD C1(S)  
ADD H2O(L)

	CASE= 0	O/F= 10.0000	F/A= 0.10000	PERCENT FUEL= 9.0909				PHI= 1.4654					
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	2.1632-4	2.3178-4	2.4961-4	2.7041-4	2.9499-4	3.2451-4	3.6102-4	4.1568-4	4.9270-4	5.8468-4	7.0570-4	8.8311-4	1.3866-3
M, MOL WT	26.626	26.626	26.626	26.626	26.626	26.626	26.626	27.288	28.301	28.786	28.954	28.986	34.134
CP, CAL/IG11K1	0.3460	0.3444	0.3432	0.3425	0.3426	0.3453	0.3946	0.9153	0.5340	0.3695	0.2999	0.2763	0.9685
GAMMA (S)	1.2751	1.2767	1.2779	1.2786	1.2785	1.2767	1.2531	1.1568	1.2075	1.2613	1.3058	1.3309	1.1433
SON VEL,/M/SEC	772.8	747.1	720.2	692.2	662.7	631.4	593.0	531.0	498.3	467.5	433.0	390.8	289.1

MOLE FRACTIONS

AR	0.00779	0.00779	0.00779	0.00779	0.00779	0.00779	0.00780	0.00794	0.00803	0.00806	0.00802	0.00792	0.00779
C1(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00609	0.03074	0.04270	0.05394	0.06648	0.08136
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00002	0.00065	0.00927	0.01507	0.01745	0.01436	0.00812	0.00006
CO	0.10313	0.09959	0.09531	0.09009	0.08367	0.07571	0.06502	0.03531	0.00549	0.00044	0.00001	0.00000	0.00000
CO2	0.07085	0.07439	0.07868	0.08390	0.09032	0.09826	0.10854	0.12655	0.12794	0.11948	0.11067	0.10221	0.09258
H2	0.05982	0.06336	0.06764	0.07286	0.07927	0.08714	0.09551	0.08133	0.04052	0.01295	0.00226	0.00016	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.13848
H2O	0.10581	0.10226	0.09758	0.09276	0.08634	0.07843	0.06900	0.06875	0.09987	0.12350	0.13937	0.15191	0.02704
NH3	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00003	0.00006	0.00007	0.00005	0.00003	0.00001	0.00000
N2	0.65260	0.65260	0.65260	0.65260	0.65260	0.65263	0.65345	0.66470	0.67228	0.67538	0.67135	0.66319	0.65268

	CASE= 0	O/F= 10.0000	F/A= 0.10000	PERCENT FUEL= 9.0909				PHI= 1.4654					
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.7078-4	1.7827-4	1.8594-4	1.9391-4	2.0233-4	2.1135-4	2.2108-4	2.3169-4	2.4332-4	2.5615-4	2.7040-4	2.8631-4	3.0420-4
M, MOL WT	26.58	26.331	26.447	26.520	26.565	26.592	26.607	26.616	26.621	26.624	26.625	26.626	26.626
CP, CAL/IG11K1	0.7486	0.6244	0.5293	0.4636	0.4210	0.3941	0.3774	0.3668	0.3600	0.3555	0.3523	0.3498	0.3477
GAMMA (S)	1.1648	1.1797	1.1976	1.2155	1.2311	1.2433	1.2523	1.2587	1.2632	1.2666	1.2692	1.2714	1.2733
SON VEL,/M/SEC	1018.1	1002.9	989.4	976.1	961.7	945.6	927.9	908.7	888.3	866.9	844.6	821.5	797.6

MOLE FRACTIONS

AR	0.00765	0.00770	0.00774	0.00776	0.00777	0.00778	0.00779	0.00779	0.00779	0.00779	0.00779	0.00779	0.00779
CO	0.12490	0.12251	0.12078	0.11953	0.11850	0.11754	0.11651	0.11536	0.11403	0.11249	0.11069	0.10858	0.10609
CO2	0.04603	0.04954	0.05202	0.05376	0.05508	0.05622	0.05735	0.05856	0.05992	0.06148	0.06328	0.06540	0.06789
H	0.01373	0.00949	0.00642	0.00423	0.00271	0.00167	0.00098	0.00055	0.00029	0.00014	0.00007	0.00003	0.00001
H2	0.04277	0.04231	0.04246	0.04305	0.04391	0.04494	0.04609	0.04737	0.04879	0.05039	0.05223	0.05436	0.05686
H2O	0.10808	0.11341	0.11675	0.11856	0.11929	0.11927	0.11874	0.11784	0.11663	0.11514	0.11336	0.11125	0.10876
NO	0.00340	0.00210	0.00120	0.00064	0.00032	0.00015	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
N2	0.63942	0.64431	0.64759	0.64966	0.65093	0.65167	0.65210	0.65234	0.65247	0.65254	0.65257	0.65259	0.65259
O	0.00199	0.00094	0.00040	0.00016	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00999	0.00666	0.00418	0.00247	0.00138	0.00073	0.00036	0.00017	0.00007	0.00003	0.00001	0.00000	0.00000
O2	0.00203	0.00102	0.00045	0.00018	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000	PHI= 0.0000													
P, ATM	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0					
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.?	2420.3					
RHO, G/CC	5.0335-3	5.2231-3	5.4264-3	5.6451-3	5.8815-3	6.1380-3	6.4175-3	6.7234-3	7.0597-3	7.4313-3	7.8442-3	8.3056-3	8.8247-3					
M, MOL WT	28.912	28.930	28.943	28.951	28.957	28.961	28.963	28.964	28.965	28.965	28.965	28.965	28.965					
CP, CAL/(G)(K)	0.3724	0.3615	0.3522	0.3443	0.3373	0.3312	0.3258	0.3207	0.3159	0.3113	0.3069	0.3025	0.2982					
GAMMA (S)	1.2363	1.2418	1.2472	1.2524	1.2575	1.2626	1.2676	1.2725	1.2776	1.2827	1.2879	1.2933	1.2988					
SON VEL, M/SEC	997.7	981.6	965.1	948.3	930.9	913.1	894.7	875.9	856.4	836.4	815.8	794.4	772.3					

MOLE FRACTIONS

AR	0.00931	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00028	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03581	0.03133	0.02707	0.02208	0.01938	0.01601	0.01298	0.01030	0.00798	0.00601	0.00438	0.00308	0.00207					
NO2	0.00013	0.00013	0.00012	0.00011	0.00011	0.00010	0.00010	0.00009	0.00008	0.00007	0.00007	0.00006	0.00005					
N2	0.76152	0.76424	0.76671	0.76894	0.77095	0.77274	0.77431	0.77569	0.77687	0.77787	0.77869	0.77934	0.77985					
O	0.00371	0.00249	0.00162	0.00101	0.00061	0.00035	0.00019	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000					
O2	0.18923	0.19221	0.19487	0.19723	0.19933	0.20118	0.20279	0.20420	0.20539	0.20640	0.20723	0.20789	0.20841					

	CASE= 0	O/F= 0.0000	F/A= 0.00000	PERCENT FUEL= 0.0000	PHI= 0.0000													
P, ATM	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000	40.0000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8					
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0					
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3					
RHO, G/CC	9.4130-3	1.0085-2	1.0861-2	1.1766-2	1.2836-2	1.4119-2	1.5688-2	1.7649-2	2.0170-2	2.3532-2	2.8238-2	3.5298-2	4.7064-2					
M, MOL WT	28.965	28.965	28.965	28.965	28.965	28.965	28.964	28.964	28.964	28.964	28.964	28.964	28.964					
CP, CAL/(G)(K)	0.2939	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402					
GAMMA (S)	1.3044	1.3102	1.3161	1.3222	1.3287	1.3356	1.3439	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999					
SON VEL, M/SEC	749.4	725.6	700.8	674.9	647.7	619.2	589.2	557.5	523.6	486.8	446.1	400.3	347.2					

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO2	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
NO2	0.00004	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
N2	0.78023	0.78050	0.78067	0.78078	0.78084	0.78087	0.78088	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089					
O2	0.20879	0.20906	0.20925	0.20936	0.20942	0.20946	0.20947	0.20948	0.20948	0.20948	0.20949	0.20949	0.20949					

## ADD H2O(L)

CASE=	0	O/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901	PHI= 0.1465													
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0					
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3					
RHO, G/CC	1.1767-2	1.2608-2	1.3578-2	1.4709-2	1.6046-2	1.7651-2	1.9612-2	2.2063-2	2.5215-2	2.9418-2	3.5301-2	4.4126-2	5.9971-2					
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967
CP, CAL/(G*1K)	0.2992	0.2949	0.2906	0.2863	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2492	0.2448	0.2362					
GAMMA (S)	1.2959	1.3031	1.3089	1.3150	1.3215	1.3285	1.3368	1.3465	1.3574	1.2688	1.3799	1.3893	1.3537					
SON VEL,M/SEC	747.4	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	338.2					

## MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01894
H2O	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.00068
NO	0.00120	0.00072	0.00039	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00004	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77318	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17639	0.17664	0.17661	0.17692	0.17698	0.17701	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

CASE=	0	O/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608	PHI= 0.2931													
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0					
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3					
RHO, G/CC	6.1142-5	6.3980-5	6.6903-5	6.9934-5	7.3107-5	7.6468-5	8.0065-5	8.3956-5	8.8203-5	9.2874-5	9.8051-5	1.0383-4	1.1032-4					
M, MOL WT	28.096	28.350	28.547	28.693	28.795	28.864	28.908	28.935	28.951	28.960	28.965	28.967	28.968					
CP, CAL/(G*1K)	0.7944	0.6974	0.6085	0.5317	0.4694	0.4215	0.3864	0.3614	0.3439	0.3315	0.3225	0.3155	0.3097					
GAMMA (S)	1.1545	1.1614	1.1713	1.1839	1.1986	1.2142	1.2292	1.2427	1.2541	1.2637	1.2717	1.2786	1.2848					
SON VEL,M/SEC	978.1	959.0	941.8	926.1	911.4	896.9	881.9	866.0	848.7	830.3	810.6	789.9	768.1					

## MOLE FRACTIONS

AR	0.00887	0.00895	0.00901	0.00905	0.00909	0.00911	0.00912	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.01514	0.01124	0.00780	0.00505	0.00305	0.00172	0.00091	0.00044	0.00020	0.00008	0.00003	0.00001	0.00000					
CO2	0.02469	0.02894	0.03266	0.03562	0.03777	0.03919	0.04007	0.04057	0.04084	0.04097	0.04103	0.04105	0.04106					
H	0.00535	0.00321	0.00182	0.00097	0.00049	0.00023	0.00010	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000					
HO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
H2	0.00217	0.00162	0.00114	0.00076	0.00048	0.00028	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000					
H2O	0.02423	0.02762	0.03048	0.03279	0.03458	0.03593	0.03692	0.03762	0.03810	0.03842	0.03862	0.03874	0.03880					
NO	0.02782	0.02475	0.02164	0.01862	0.01574	0.01306	0.01062	0.00845	0.00656	0.00495	0.00361	0.00254	0.00170					
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000					
N2	0.72870	0.73697	0.74373	0.74909	0.75323	0.75638	0.75876	0.76056	0.76193	0.76298	0.76378	0.76438	0.76484					
O	0.02638	0.01791	0.01173	0.00739	0.00447	0.00258	0.00142	0.00073	0.00035	0.00016	0.00006	0.00002	0.00001					
OH	0.01724	0.01437	0.01153	0.00892	0.00665	0.00478	0.00330	0.00219	0.00139	0.00083	0.00047	0.00025	0.00012					
O2	0.11939	0.12440	0.12844	0.13173	0.13445	0.13671	0.13860	0.14016	0.14143	0.14245	0.14325	0.14386	0.14432					

## ADD H2O(L)

CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=	2.9126	PHI=	0.4396								
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0				
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3				
RHO, G/CC	2.3538-4	2.5219-4	2.7159-4	2.9423-4	3.2098-4	3.5307-4	3.9230-4	4.4134-4	5.0439-4	5.8845-4	7.0615-4	8.8268-4	1.2057-3				
M, MOL HT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972
CP, CAL/(G)(K)	0.3095	0.3049	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	1.0003				
GAMMA (S)	1.2849	1.2904	1.2960	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.1661				
SON VEL, M/SEC	743.7	720.0	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	313.0				

## MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.05771	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11351	0.11371	0.11384	0.11392	0.11397	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=	2.9126	PHI=	0.4396								
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0				
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3				
RHO, G/CC	1.8476-4	1.9295-4	2.0143-4	2.1030-4	2.1966-4	2.2962-4	2.4034-4	2.5196-4	2.6467-4	2.7877-4	2.9419-4	3.1151-4	3.3100-4				
M, MOL HT	28.301	28.498	28.650	28.761	28.839	28.891	28.924	28.945	28.957	28.964	28.968	28.970	28.971				
CP, CAL/(G)(K)	0.7033	0.6244	0.5529	0.4919	0.4428	0.4054	0.3779	0.3581	0.3440	0.3337	0.3259	0.3196	0.3143				
GAMMA (S)	1.1612	1.1690	1.1794	1.1919	1.2057	1.2194	1.2322	1.2434	1.2529	1.2609	1.2677	1.2738	1.2794				
SON VEL, M/SEC	977.3	959.6	943.4	928.1	913.4	898.4	882.8	866.1	848.2	829.3	809.3	788.3	766.5				

## MOLE FRACTIONS

AR	0.00884	0.00891	0.00895	0.00899	0.00901	0.00903	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.01670	0.01196	0.00805	0.00509	0.00303	0.00169	0.00088	0.00043	0.00019	0.00008	0.00003	0.00001	0.00000				
CO2	0.04275	0.04790	0.05213	0.05532	0.05755	0.05900	0.05987	0.06037	0.06063	0.06076	0.06082	0.06084	0.06085				
H	0.00332	0.00195	0.00108	0.00057	0.00028	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000				
H2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000				
H2	0.00250	0.00178	0.00121	0.00078	0.00048	0.00028	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000				
H2O	0.04385	0.04727	0.05004	0.05221	0.05388	0.05511	0.05600	0.05663	0.05706	0.05734	0.05752	0.05762	0.05768				
NO	0.02521	0.02219	0.01927	0.01650	0.01390	0.01152	0.00936	0.00745	0.00578	0.00436	0.00318	0.00223	0.00150				
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001				
N2	0.72816	0.73485	0.74028	0.74458	0.74791	0.75046	0.75241	0.75391	0.75507	0.75596	0.75665	0.75718	0.75757				
O	0.01380	0.00929	0.00604	0.00379	0.00229	0.00132	0.00072	0.00037	0.00018	0.00008	0.00003	0.00001	0.00000				
OH	0.01678	0.01354	0.01060	0.00806	0.00594	0.00423	0.00291	0.00192	0.00121	0.00073	0.00041	0.00022	0.00011				
O2	0.09806	0.10035	0.10231	0.10408	0.10571	0.10721	0.10857	0.10976	0.11077	0.11161	0.11229	0.11282	0.11322				

## ADD H20(1)

CASE= 0 O/F= 25.0000 F/A= 0.04000 PERCENT FUEL= 3.8462 PHI= 0.5862  
P. ATH 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000  
P. PSIA 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4  
T. DEG K 1500.0 1400.0 1300.0 1200.0 1100.0 1000.0 900.0 800.0 700.0 600.0 500.0 400.0 300.0 200.0  
T. DEG F 2240.3 2060.3 1880.3 1700.3 1520.3 1340.3 1160.3 980.3 800.3 620.3 440.3 260.3 80.3 0.0  
RHO G/CC 4.7080-4 5.0443-4 5.4323-4 5.8950-4 6.4200-4 7.0621-4 7.8467-4 8.8276-4 1.0089-3 1.1770-3 1.4124-3 1.7655-3 2.5042-3 3.0823  
M. MOL HT 28.974 28.974 28.974 28.974 28.974 28.974 28.974 28.974 28.974 28.974 28.974 28.974 28.974 28.974  
CP, CAL/(G)(K) 0.3141 0.3095 0.3049 0.3003 0.2954 0.2902 0.2843 0.2779 0.2712 0.2644 0.2580 0.2523 0.2465 0.2407  
GAMMA (S) 1.2795 1.2847 1.2902 1.2960 1.3024 1.3095 1.3179 1.3276 1.3386 1.3503 1.3622 1.3733 1.3843 1.3953  
SON VEL, M/SEC 742.1 718.4 693.8 668.1 641.2 613.0 583.4 552.1 518.5 482.2 442.1 397.0 310.5

## MOLE FRACTIONS

AR 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897 0.00897  
CO2 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027 0.08027  
H20(1) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
H2O 0.07623 0.07624 0.07625 0.07625 0.07625 0.07625 0.07625 0.07625 0.07625 0.07625 0.07625 0.07625 0.07625 0.07629  
NO 0.00081 0.00048 0.00027 0.00013 0.00006 0.00002 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
N2 0.75070 0.75087 0.75098 0.75105 0.75109 0.75111 0.75112 0.75112 0.75112 0.75112 0.75112 0.75112 0.75112 0.75112  
OH 0.00005 0.00002 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
O2 0.08297 0.08314 0.08325 0.08332 0.08336 0.08338 0.08338 0.08339 0.08339 0.08339 0.08339 0.08339 0.08339 0.08339

CASE= 0 O/F= 25.0000 F/A= 0.04000 PERCENT FUEL= 3.8462 PHI= 0.5862  
P. ATH 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000  
P. PSIA 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1  
T. DEG K 2800.0 2700.0 2600.0 2500.0 2400.0 2300.0 2200.0 2100.0 2000.0 1900.0 1800.0 1700.0 1600.0 1500.0  
T. DEG F 4580.3 4400.3 4220.3 4040.3 3860.3 3680.3 3500.3 3320.3 3140.3 2960.3 2780.3 2600.3 2420.3 2240.3  
RHO G/CC 3.7039-4 3.8653-4 4.0334-4 4.2095-4 4.3956-4 4.5942-4 4.8080-4 5.0401-4 5.2941-4 5.5710-4 5.8843-4 6.2309-4 6.6205-4 7.0540-4  
M. MOL HT 28.367 28.546 28.684 28.785 28.855 28.902 28.932 28.950 28.961 28.968 28.971 28.973 28.974 28.974  
CP, CAL/(G)(K) 0.6764 0.6044 0.5386 0.4823 0.4370 0.4025 0.3773 0.3593 0.3464 0.3370 0.3298 0.3239 0.3188 0.3137  
GAMMA (S) 1.1630 1.1710 1.1813 1.1935 1.2067 1.2197 1.2315 1.2417 1.2503 1.2574 1.2636 1.2692 1.2744 1.2791  
SON VEL, M/SEC 977.0 959.6 943.5 928.4 913.5 898.3 882.4 865.4 847.3 828.1 807.9 786.9 764.9

## MOLE FRACTIONS

AR 0.00878 0.00883 0.00888 0.00891 0.00893 0.00894 0.00895 0.00896 0.00896 0.00897 0.00897 0.00897 0.00897 0.00897  
CO 0.01895 0.01343 0.00897 0.00564 0.00334 0.00186 0.00097 0.00047 0.00021 0.00009 0.00003 0.00001 0.00000 0.00000  
CO2 0.05644 0.06565 0.07050 0.07411 0.07661 0.07822 0.07919 0.07974 0.08002 0.08017 0.08023 0.08025 0.08026 0.08027  
H 0.00253 0.00147 0.00082 0.00043 0.00021 0.00010 0.00004 0.00002 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000  
H2 0.00002 0.00002 0.00002 0.00001 0.00001 0.00001 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
H2 O 0.00290 0.00204 0.00137 0.00038 0.00054 0.00032 0.00017 0.00009 0.00004 0.00002 0.00001 0.00000 0.00000 0.00000  
H2O 0.06262 0.06609 0.06895 0.07100 0.07261 0.07379 0.07464 0.07523 0.07563 0.07589 0.07605 0.07615 0.07620 0.07620  
NO 0.02185 0.01910 0.01649 0.01406 0.01183 0.00979 0.00795 0.00633 0.00491 0.00370 0.00270 0.00190 0.00128 0.00080  
NO2 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001 0.00001  
N2 0.72443 0.73046 0.73533 0.73916 0.74211 0.74434 0.74604 0.74733 0.74832 0.74908 0.74967 0.75012 0.75046 0.75076  
O 0.00848 0.00567 0.00367 0.00230 0.00138 0.00080 0.00044 0.00023 0.00011 0.00005 0.00002 0.00001 0.00000 0.00000  
OH 0.01572 0.01251 0.00969 0.00731 0.00536 0.00380 0.00261 0.00172 0.00109 0.00065 0.00037 0.00020 0.00010 0.00005  
O2 0.07407 0.07472 0.07540 0.07618 0.07708 0.07803 0.07899 0.07989 0.08069 0.08137 0.08194 0.08238 0.08272 0.08297





## ADD H2O(L)

CASE=	0	0/F= 16.6667	F/A= 0.06000	PERCENT FUEL= 5.6604				PHI= 0.8792					
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	2.3544-3	2.5226-3	2.7166-3	2.9430-3	3.2106-3	3.5316-3	3.9240-3	4.4145-3	5.0452-3	5.8860-3	7.0632-3	8.8290-3	1.3214-2
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	32.530
CP, CAL/(G)(K)	0.3226	0.3182	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	0.3552
GAMMA ISI	1.2700	1.2747	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.2349
SON VEL, M/SEC	739.3	715.6	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	307.7

## MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00990	0.00880	0.00860	0.00890	0.00880	0.00680	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11801	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.10915
H2O	0.11222	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.00309
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73685	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02380	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

CASE=	0	0/F= 16.6667	F/A= 0.06000	PERCENT FUEL= 5.6604				PHI= 0.8792					
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.8588-3	1.9375-3	2.0201-3	2.1072-3	2.1996-3	2.2985-3	2.4051-3	2.5210-3	2.6478-3	2.7876-3	2.9428-3	3.1160-3	3.3108-3
M, MOL WT	28.471	28.617	28.732	28.818	28.879	28.920	28.945	28.961	28.970	28.974	28.977	28.978	28.979
CP, CAL/(G)(K)	0.6210	0.5666	0.5149	0.4684	0.4293	0.3988	0.3764	0.3607	0.3497	0.3420	0.3361	0.3312	0.3268
GAMMA ISI	1.1686	1.1759	1.1852	1.1962	1.2083	1.2201	1.2306	1.2394	1.2465	1.2522	1.2570	1.2614	1.2657
SON VEL, M/SEC	977.5	960.4	944.3	928.9	913.7	898.2	881.9	864.4	845.9	826.3	805.8	784.4	762.3

## MOLE FRACTIONS

AR	0.00865	0.00869	0.00872	0.00875	0.00877	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.02228	0.01598	0.01083	0.00690	0.00413	0.00231	0.00121	0.00059	0.00026	0.00011	0.00004	0.00001	0.00000
CO2	0.09367	0.10056	0.10618	0.11046	0.11348	0.11546	0.11667	0.11735	0.11771	0.11789	0.11797	0.11800	0.11801
H	0.00124	0.00073	0.00041	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00350	0.00249	0.00170	0.00110	0.00068	0.00040	0.00022	0.00011	0.00006	0.00002	0.00001	0.00000	0.00000
H2O	0.10098	0.10359	0.10637	0.10817	0.10951	0.11045	0.11110	0.11154	0.11182	0.11200	0.11211	0.11217	0.11221
NO	0.01299	0.01094	0.00915	0.00761	0.00629	0.00515	0.00417	0.00331	0.00257	0.00195	0.00142	0.00100	0.00067
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
N2	0.71765	0.72239	0.72621	0.72917	0.73138	0.73298	0.73412	0.73494	0.73553	0.73597	0.73629	0.73654	0.73672
O	0.00227	0.00146	0.00092	0.00056	0.00033	0.00019	0.00010	0.00005	0.00003	0.00001	0.00000	0.00000	0.00000
OH	0.01032	0.00796	0.00602	0.00445	0.00322	0.00227	0.00155	0.00102	0.00064	0.00039	0.00022	0.00012	0.00006
O2	0.02643	0.02479	0.02349	0.02259	0.02210	0.02195	0.02204	0.02227	0.02256	0.02286	0.02313	0.02335	0.02352

ADD H20(L)  
ADD C(S)

CASE=	0	O/F=	14.6540	F/A=	0.06824	PERCENT FUEL=			6.3882	PHI= 1.0000					
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0	
RHO, G/CC	4.7090-3	5.0454-3	5.4336-3	5.8864-3	6.4215-3	7.0637-3	7.8485-3	8.8296-3	1.0091-2	1.1773-2	1.4127-2	1.7848-2	2.2691-2	2.8914-2	
M, MOL HT	28.980	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	29.291	33.127	
CP, CAL/(G*IK)	0.3259	0.3214	0.3169	0.3122	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2581	0.2508	0.2436	
GAMMA (S)	1.2667	1.2713	1.2761	1.2815	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.3607	1.3744	1.3888	
SON VEL./M/SEC	738.3	714.6	689.9	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	397.7	353.3	305.3	

MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13312	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01059	0.12516
H2O	0.12666	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.11609	0.00152
NO	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73141	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
O2	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	0	O/F=	14.6540	F/A=	0.06824	PERCENT FUEL=			6.3882	PHI= 1.0000					
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	
RHO, G/CC	3.7111-3	3.8666-3	4.0309-3	4.2050-3	4.3907-3	4.5898-3	4.8047-3	5.0380-3	5.2931-3	5.5739-3	5.8849-3	6.2319-3	6.6218-3	7.0520-3	
M, MOL HT	28.422	28.555	28.666	28.754	28.823	28.875	28.912	28.938	28.956	28.967	28.974	28.978	28.980	28.980	
CP, CAL/(G*IK)	0.5394	0.5566	0.5161	0.4791	0.4464	0.4185	0.3954	0.3768	0.3622	0.3510	0.3424	0.3358	0.3304	0.3264	
GAMMA (S)	1.1718	1.1778	1.1850	1.1934	1.2026	1.2122	1.2217	1.2308	1.2390	1.2462	1.2523	1.2576	1.2624	1.2668	
SON VEL./M/SEC	979.7	962.2	945.3	928.8	912.4	896.0	879.2	861.7	843.5	824.4	804.3	783.2	761.2	738.3	

MOLE FRACTIONS

AR	0.00856	0.00860	0.00864	0.00868	0.00868	0.00870	0.00871	0.00872	0.00872	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.02789	0.02166	0.01631	0.01188	0.00835	0.00565	0.00367	0.00227	0.00134	0.00074	0.00038	0.00018	0.00008	0.00000
CO2	0.10270	0.10954	0.11540	0.12024	0.12408	0.12702	0.12917	0.13069	0.13171	0.13235	0.13274	0.13296	0.13307	0.13307
H	0.00100	0.00061	0.00036	0.00020	0.00011	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00457	0.00353	0.00267	0.00197	0.00142	0.00100	0.00068	0.00045	0.00028	0.00017	0.00010	0.00005	0.00003	0.00000
H2O	0.11550	0.11829	0.12053	0.12228	0.12362	0.12462	0.12533	0.12583	0.12617	0.12639	0.12652	0.12660	0.12664	0.12664
NO	0.00802	0.00619	0.00465	0.00339	0.00239	0.00163	0.00107	0.00067	0.00040	0.00023	0.00012	0.00006	0.00003	0.00000
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.71330	0.71759	0.72114	0.72401	0.72624	0.72793	0.72915	0.73002	0.73059	0.73096	0.73118	0.73131	0.73138	0.73138
O	0.00099	0.00059	0.00033	0.00018	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00730	0.00538	0.00385	0.00266	0.00178	0.00114	0.00070	0.00041	0.00023	0.00012	0.00006	0.00003	0.00001	0.00000
O2	0.01014	0.00800	0.00612	0.00452	0.00323	0.00222	0.00146	0.00092	0.00055	0.00031	0.00017	0.00008	0.00004	0.00000

ADD H2O(L)  
ADD C(S)

CASE=	0	0/F=	14.2857	F/A=	0.07000	PERCENT FUEL=	6.5421	PHI=	1.0258											
P, ATM	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0	0.0	0.0	0.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RHO, G/CC	9.3710-3	1.0040-2	1.0813-2	1.1714-2	1.2779-2	1.4057-2	1.5619-2	1.7582-2	2.0138-2	2.3531-2	2.8252-2	3.8132-2	5.4065-2							
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.919	28.962	28.979	31.290	33.273							
CP, CAL/(G*IK)	0.3261	0.3226	0.3188	0.3146	0.3102	0.3053	0.3002	0.3057	0.3009	0.2810	0.2678	0.8998	0.3140							
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2916	1.2985	1.2989	1.3065	1.3273	1.3451	1.1939	1.2425							
SON VEL,M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.5	547.2	512.8	478.1	439.3	356.2	305.2							

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00868	0.00870	0.00871	0.00872	0.00869	0.00867						
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00343	0.00502						
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00028	0.00139	0.00219	0.00246	0.00080	0.00000						
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00427	0.00319	0.00183	0.00045	0.00005	0.00000	0.00000	0.00000	0.00000						
CO2	0.12840	0.12876	0.12921	0.12978	0.13051	0.13141	0.13249	0.13366	0.13422	0.13455	0.13489	0.13389	0.13167	0.13065						
H2	0.00278	0.00313	0.00358	0.00415	0.00487	0.00577	0.00679	0.00703	0.00393	0.00121	0.00021	0.00001	0.00000	0.00000						
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00352	0.12833						
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12224	0.12148	0.12262	0.12398	0.12454	0.05415	0.00075	0.00000						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002	0.00006	0.00008	0.00006	0.00003	0.00000	0.00000						
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72659	0.72698	0.72861	0.72976	0.73015	0.72773	0.72657						

CASE=	0	0/F=	14.2857	F/A=	0.07000	PERCENT FUEL=	6.5421	PHI=	1.0258											
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3						
RHO, G/CC	6.1898-3	6.4446-3	6.7139-3	6.9997-3	7.3043-3	7.6307-3	7.9827-3	8.3654-3	8.7847-3	9.2475-3	9.7614-3	1.0336-2	1.0982-2							
M, MOL WT	28.443	28.556	28.648	28.719	28.770	28.803	28.822	28.830	28.834	28.835	28.836	28.836	28.836	28.836						
CP, CAL/(G*IK)	0.5646	0.5252	0.4874	0.4517	0.4183	0.3885	0.3654	0.3510	0.3432	0.3386	0.3353	0.3324	0.3294	0.3264						
GAMMA (S)	1.1776	1.1842	1.1922	1.2018	1.2131	1.2257	1.2377	1.2466	1.2521	1.2558	1.2588	1.2616	1.2646	1.2676						
SON VEL,M/SEC	981.8	964.9	948.5	932.7	917.3	902.1	886.3	868.9	849.8	829.5	808.3	786.4	763.8							

MOLE FRACTIONS

AR	0.00856	0.00859	0.00862	0.00864	0.00865	0.00866	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867						
CO	0.02788	0.02249	0.01798	0.01441	0.01178	0.01005	0.00907	0.00858	0.00832	0.00814	0.00797	0.00778	0.00758	0.00738						
CO2	0.10595	0.11188	0.11681	0.12077	0.12358	0.12547	0.12654	0.12707	0.12735	0.12753	0.12770	0.12789	0.12812	0.12836						
H	0.00078	0.00049	0.00029	0.00017	0.00010	0.00006	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000						
H2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
H2O	0.00458	0.00369	0.00298	0.00244	0.00206	0.00183	0.00174	0.00175	0.00183	0.00194	0.00212	0.00229	0.00246	0.00263						
NO	0.11943	0.12179	0.12366	0.12508	0.12609	0.12674	0.12709	0.12721	0.12721	0.12721	0.12721	0.12721	0.12721	0.12721						
N2	0.00641	0.00472	0.00330	0.00217	0.00131	0.00070	0.00033	0.00013	0.00005	0.00002	0.00000	0.00000	0.00000	0.00000						
O	0.71346	0.71716	0.72018	0.72253	0.72425	0.72539	0.72600	0.72636	0.72654	0.72654	0.72654	0.72654	0.72654	0.72654						
OH	0.00061	0.00035	0.00018	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
O2	0.00584	0.00420	0.00289	0.00190	0.00117	0.00066	0.00034	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000						
O2	0.00648	0.00465	0.00309	0.00186	0.00097	0.00041	0.00014	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000						

ADD C151  
ADD H20IL1

CASE=	0	O/F= 11.1111	F/A= 0.09000	PERCENT FUEL= 8.2569				PHI= 1.3189					
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	1.1094-4	1.1887-4	1.2801-4	1.3868-4	1.5129-4	1.6642-4	1.8492-4	2.0871-4	2.4507-4	2.9179-4	3.5271-4	4.4151-4	6.5478-4
M, MOL WT	27.311	27.311	27.311	27.311	27.311	27.311	27.311	27.402	28.153	28.732	28.942	28.983	32.237
CP, CAL/(G11K1)	0.3404	0.3385	0.3369	0.3356	0.3349	0.3350	0.3383	0.4534	0.5858	0.3868	0.3016	0.2732	1.7549
GAMMA (S)	1.2719	1.2738	1.2755	1.2768	1.2776	1.2775	1.2756	1.2284	1.1964	1.2545	1.3061	1.3363	1.7549
SON VEL, M/SEC	762.1	736.8	710.5	683.0	654.1	623.6	591.2	546.1	497.3	466.7	433.1	391.6	296.0

MOLE FRACTIONS

AR	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806	0.00807	0.00809	0.00824	0.00829	0.00825	0.00817	0.00807
C151	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00910	0.02310	0.03412	0.04535	0.05727
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00004	0.00166	0.01070	0.01385	0.01177	0.00654	0.00027
CO	0.07611	0.07309	0.06942	0.06492	0.05938	0.05252	0.04403	0.03186	0.00814	0.00065	0.00002	0.00000	0.00000
CO2	0.08601	0.08903	0.09270	0.09719	0.10274	0.10959	0.11806	0.12914	0.13765	0.12901	0.12003	0.11234	0.10466
H2	0.03946	0.04248	0.04615	0.05064	0.05619	0.06304	0.07138	0.07743	0.04883	0.01648	0.00292	0.00020	0.00000
H2OIL1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.09508
H2O	0.11484	0.11182	0.10815	0.10366	0.09811	0.09125	0.08284	0.07404	0.08731	0.11435	0.13144	0.14303	0.05876
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00003	0.00004	0.00004	0.00002	0.00001	0.00000
N2	0.67552	0.67552	0.67552	0.67552	0.67552	0.67552	0.67558	0.67776	0.68999	0.69424	0.69143	0.68436	0.67589

CASE=	0	O/F= 11.1111	F/A= 0.09000	PERCENT FUEL= 8.2569				PHI= 1.3189					
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.1564-4	1.2113-4	1.2668-4	1.3235-4	1.3824-4	1.4446-4	1.5115-4	1.5842-4	1.6638-4	1.7516-4	1.8490-4	1.9578-4	2.0802-4
M, MOL WT	26.569	26.837	27.028	27.151	27.224	27.265	27.287	27.299	27.305	27.308	27.310	27.311	27.311
CP, CAL/(G11K1)	0.9182	0.7708	0.6343	0.5252	0.4510	0.4059	0.3801	0.3652	0.3565	0.3512	0.3475	0.3448	0.3425
GAMMA (S)	1.1474	1.1570	1.1723	1.1924	1.2135	1.2312	1.2440	1.2526	1.2584	1.2623	1.2652	1.2677	1.2699
SON VEL, M/SEC	1002.7	983.8	968.3	955.5	943.1	929.3	913.2	895.1	875.4	854.5	832.7	810.0	786.5

MOLE FRACTIONS

AR	0.00785	0.00792	0.00798	0.00802	0.00804	0.00805	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806
CO	0.10424	0.09886	0.09459	0.09155	0.08977	0.08847	0.08742	0.08639	0.08527	0.08398	0.08248	0.08071	0.07861
CO2	0.05346	0.06044	0.06584	0.06921	0.07183	0.07336	0.07455	0.07565	0.07681	0.07812	0.07953	0.08140	0.08350
H	0.01411	0.00946	0.00625	0.00407	0.00258	0.00159	0.00094	0.00053	0.00028	0.00014	0.00006	0.00003	0.00001
H2	0.03009	0.02808	0.02687	0.02646	0.02666	0.02725	0.02808	0.02907	0.03022	0.03154	0.03306	0.03484	0.03695
H2O	0.10582	0.11379	0.11941	0.12290	0.12472	0.12539	0.12532	0.12476	0.12385	0.12266	0.12119	0.11944	0.11734
NO	0.00586	0.00394	0.00241	0.00134	0.00068	0.00032	0.00014	0.00005	0.00001	0.00001	0.00000	0.00000	0.00000
N2	0.65423	0.66183	0.66731	0.67089	0.67303	0.67422	0.67486	0.67520	0.67537	0.67545	0.67549	0.67551	0.67552
O	0.00415	0.00213	0.00097	0.00040	0.00014	0.00005	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01428	0.01005	0.00658	0.00400	0.00227	0.00120	0.00060	0.00028	0.00012	0.00005	0.00002	0.00000	0.00000
O2	0.00590	0.00351	0.00177	0.00076	0.00028	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000



CASE=	0	O/F=	0.0000	F/A=	0.00000	PERCENT FUEL=	0.0000	PHI=	0.0000										
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3						
RHO, G/CC	6.2931-3	6.5298-3	6.7836-3	7.0568-3	7.3522-3	7.6727-3	8.0220-3	8.4043-3	8.8247-3	9.2892-3	9.8053-3	1.0382-2	1.1031-2						
M, MOL WT	28.918	28.934	28.945	28.953	28.958	28.961	28.963	28.964	28.965	28.965	28.965	28.965	28.965						
CP, CAL/(G)K	0.3692	0.3592	0.3506	0.3432	0.3366	0.3308	0.3255	0.3205	0.3158	0.3113	0.3069	0.3025	0.2982						
GAMMA (S)	1.2376	1.2428	1.2480	1.2530	1.2580	1.2629	1.2677	1.2726	1.2776	1.2827	1.2879	1.2933	1.2988						
SON VEL.,M/SEC	998.2	982.0	965.4	948.5	931.0	913.2	894.8	875.9	856.4	836.4	815.7	794.4	772.3						

MOLE FRACTIONS

AR	0.00931	0.00931	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.00029	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.03583	0.03134	0.02708	0.02308	0.01939	0.01601	0.01298	0.01030	0.00798	0.00601	0.00438	0.00308	0.00207						
NO2	0.00015	0.00014	0.00013	0.00013	0.00012	0.00011	0.00011	0.00010	0.00009	0.00008	0.00007	0.00006	0.00006						
N2	0.76166	0.76433	0.76677	0.76898	0.77097	0.77275	0.77432	0.77569	0.77687	0.77787	0.77869	0.77934	0.77985						
O	0.00332	0.00223	0.00144	0.00090	0.00054	0.00031	0.00017	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000						
O2	0.18944	0.19235	0.19496	0.19728	0.19936	0.20119	0.20280	0.20419	0.20539	0.20640	0.20722	0.20789	0.20840						

CASE=	0	O/F=	0.0000	F/A=	0.00000	PERCENT FUEL=	0.0000	PHI=	0.0000										
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0						
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3						
RHO, G/CC	1.1766-2	1.2607-2	1.3576-2	1.4708-2	1.6045-2	1.7649-2	1.9610-2	2.2061-2	2.5213-2	2.9415-2	3.5298-2	4.4122-2	5.8830-2						
M, MOL WT	28.965	28.965	28.965	28.965	28.965	28.965	28.964	28.964	28.964	28.964	28.964	28.964	28.964						
CP, CAL/(G)K	0.2939	0.2898	0.2856	0.2815	0.2773	0.2730	0.2681	0.2626	0.2569	0.2512	0.2461	0.2422	0.2402						
GAMMA (S)	1.3044	1.3101	1.3161	1.3222	1.3287	1.3356	1.3439	1.3536	1.3644	1.3757	1.3865	1.3952	1.3999						
SON VEL.,M/SEC	749.4	725.6	700.8	674.9	647.7	619.2	589.2	557.5	523.6	486.8	446.1	400.3	347.2						

MOLE FRACTIONS

AR	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932	0.00932
CO2	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
NO	0.00131	0.00078	0.00043	0.00021	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
NO2	0.00005	0.00004	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000						
N2	0.78023	0.78050	0.78067	0.78078	0.78084	0.78087	0.78088	0.78089	0.78089	0.78089	0.78089	0.78089	0.78089						
O2	0.20879	0.20906	0.20924	0.20936	0.20942	0.20946	0.20947	0.20948	0.20948	0.20949	0.20949	0.20949	0.20949						

	CASE= 0	O/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931							
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	1.1768-4	1.2609-4	1.3579-4	1.4710-4	1.6047-4	1.7652-4	1.9613-4	2.2065-4	2.5217-4	2.9420-4	3.5304-4	4.4130-4	5.8840-4		
M, MOL WT	28.969	28.969	28.969	28.969	28.969	28.969	28.969	28.969	28.969	28.969	28.970	28.970	28.970		
CP, CAL/(G)(K)	0.3047	0.3001	0.2956	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2442		
GAMMA (S)	1.2907	1.2964	1.3022	1.3083	1.3147	1.3218	1.3302	1.3399	1.3508	1.3623	1.3737	1.3837	1.3907		
SON VEL,M/SEC	745.4	721.7	697.0	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	346.0		

MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O	0.03884	0.03886	0.03886	0.03867	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76516	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14488	0.14503	0.14512	0.14517	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

	CASE= 0	O/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931							
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	1.2323-4	1.2867-4	1.3432-4	1.4022-4	1.4644-4	1.5308-4	1.6021-4	1.6796-4	1.7643-4	1.8576-4	1.9611-4	2.0766-4	2.2065-4		
M, MOL WT	28.314	28.508	28.656	28.764	28.840	28.890	28.923	28.943	28.955	28.962	28.966	28.968	28.969		
CP, CAL/(G)(K)	0.6899	0.6116	0.5418	0.4827	0.4355	0.3994	0.3727	0.3534	0.3394	0.3291	0.3212	0.3149	0.3095		
GAMMA (S)	1.1638	1.1721	1.1827	1.1954	1.2092	1.2231	1.2360	1.2474	1.2572	1.2655	1.2727	1.2791	1.2851		
SON VEL,M/SEC	978.2	960.7	944.6	929.4	914.7	899.8	884.1	867.5	849.7	830.8	810.9	790.0	768.2		

MOLE FRACTIONS

AR	0.00893	0.00900	0.00904	0.00908	0.00910	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.01204	0.00866	0.00584	0.00370	0.00220	0.00123	0.00064	0.00031	0.00014	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000
CO2	0.02810	0.03175	0.03477	0.03707	0.03867	0.03972	0.04035	0.04071	0.04090	0.04099	0.04104	0.04105	0.04106		
H	0.00334	0.00197	0.00111	0.00059	0.00029	0.00014	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
HO2	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00168	0.00122	0.00084	0.00055	0.00034	0.00020	0.00011	0.00006	0.00003	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000
H2O	0.02694	0.02974	0.03206	0.03322	0.03537	0.03646	0.03726	0.03783	0.03823	0.03849	0.03866	0.03876	0.03881		
NO	0.02826	0.02500	0.02179	0.01870	0.01578	0.01308	0.01064	0.00846	0.00656	0.00495	0.00361	0.00254	0.00170		
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.73425	0.74100	0.74652	0.75093	0.75438	0.75707	0.75915	0.76078	0.76204	0.76303	0.76380	0.76440	0.76484		
O	0.01887	0.01276	0.00833	0.00524	0.00317	0.00183	0.00100	0.00052	0.00025	0.00011	0.00005	0.00002	0.00001		
OH	0.01538	0.01259	0.00997	0.00764	0.00566	0.00405	0.00279	0.00185	0.00117	0.00070	0.00040	0.00021	0.00010		
O2	0.12219	0.12628	0.12969	0.13256	0.13500	0.13708	0.13884	0.14031	0.14152	0.14250	0.14327	0.14387	0.14432		



## ADD H20(L)

	CASE= 0	O/F= 33.3333	F/A= 0.03000	PERCENT FUEL= 2.9126				PHI= 0.4396						
P, ATH	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	3.5307-4	3.7829-4	4.0739-4	4.4134-4	4.8146-4	5.2961-4	5.8845-4	6.6201-4	7.5658-4	8.8268-4	1.0592-3	1.3240-3	1.8302-3	
M, MOL HT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.037
CP, CAL/(G)(K)	0.3094	0.3048	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.2439	
GAMMA (S)	1.2849	1.2904	1.2960	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.1832	
SON VEL, M/SEC	743.7	720.0	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	313.5	

## MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H20(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.03545
H2O	0.05772	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.02229
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11351	0.11371	0.11384	0.11392	0.11397	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

	CASE= 0	O/F= 33.3333	F/A= 0.03000	PERCENT FUEL= 2.9126				PHI= 0.4396						
P, ATH	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3
RHO, G/CC	2.4700-4	2.5774-4	2.6892-4	2.8064-4	2.9303-4	3.0626-4	3.2050-4	3.3598-4	3.5291-4	3.7136-4	3.9225-4	4.1536-4	4.4133-4	
M, MOL HT	28.375	28.552	28.687	28.785	28.854	28.900	28.929	28.948	28.959	28.965	28.968	28.970	28.971	
CP, CAL/(G)(K)	0.6669	0.6594	0.6529	0.6475	0.6432	0.6397	0.6372	0.6354	0.6342	0.6329	0.6325	0.6319	0.6312	
GAMMA (S)	1.1651	1.1734	1.1840	1.1964	1.2096	1.2226	1.2346	1.2450	1.2539	1.2615	1.2680	1.2740	1.2795	
SON VEL, M/SEC	977.7	960.5	944.6	929.5	914.6	899.5	883.5	866.6	848.5	829.5	809.4	788.4	766.5	

## MOLE FRACTIONS

AR	0.00887	0.00892	0.00896	0.00900	0.00902	0.00903	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.01505	0.01066	0.00711	0.00446	0.00264	0.00147	0.00077	0.00037	0.00017	0.00007	0.00003	0.00001	0.00000	0.00000
CO2	0.04456	0.04932	0.05315	0.05600	0.05797	0.05924	0.06000	0.06043	0.06066	0.06077	0.06082	0.06084	0.06085	0.06085
H	0.00271	0.00158	0.00088	0.00046	0.00023	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00222	0.00157	0.00106	0.00059	0.00042	0.00025	0.00014	0.00007	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000
H2O	0.04505	0.04817	0.05070	0.05268	0.05419	0.05532	0.05614	0.05671	0.05711	0.05737	0.05753	0.05763	0.05769	0.05769
NO	0.02528	0.02223	0.01930	0.01651	0.01391	0.01152	0.00937	0.00745	0.00578	0.00436	0.00318	0.00224	0.00150	0.00100
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.73008	0.73623	0.74123	0.74520	0.74830	0.75069	0.75254	0.75398	0.75510	0.75598	0.75666	0.75718	0.75757	0.75757
O	0.01197	0.00805	0.00524	0.00329	0.00198	0.00114	0.00063	0.00032	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000
OH	0.01584	0.01273	0.00994	0.00754	0.00554	0.00395	0.00271	0.00179	0.00113	0.00068	0.00038	0.00020	0.00010	0.00000
O2	0.09835	0.10051	0.10241	0.10415	0.10577	0.10727	0.10861	0.10979	0.11079	0.11162	0.11230	0.11282	0.11322	0.11322

ADD H20IL1

	CASE=	O/F=	25.0000	F/A=	0.04000	PERCENT FUEL=	3.8462	PHI=	0.5862									
P, ATM	0	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA		44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K		1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0	0.0
T, DEG F		2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	0.0	0.0	0.0	0.0
RHO, G/CC	7.0620-4	7.5665-4	8.1485-4	8.8276-4	9.6301-4	1.0593-3	1.1770-3	1.3241-3	1.5133-3	1.7655-3	2.1186-3	2.6483-3	3.3778-3	4.3100-3	5.4800-3	6.9300-3	8.6900-3	1.1000-2
M, MOL HT		28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974
CP, CAL/(G1/K1)		0.3140	0.3095	0.3049	0.3002	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.2466	0.2409	0.2352	0.2295	0.2238
GAMMA (S)		1.2795	1.2848	1.2902	1.2956	1.3024	1.3095	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.3844	1.3955	1.4066	1.4177	1.4288
SON VEL,M/SEC		742.1	718.4	693.8	668.1	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	352.0	307.0	262.0	217.0	172.0

MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2OIL1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.06546
H2O	0.07623	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.01080
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75070	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08297	0.08314	0.08325	0.08332	0.08336	0.08338	0.08338	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

	CASE=	O/F=	25.0000	F/A=	0.04000	PERCENT FUEL=	3.8462	PHI=	0.5862										
P, ATM	0	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA		58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K		2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	1400.0	1300.0	1200.0	
T, DEG F		4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	2060.3	1880.3	1700.3	
RHO, G/CC	4.9501-4	5.1625-4	5.3841-4	5.6169-4	5.8635-4	6.1272-4	6.4116-4	6.7207-4	7.0592-4	7.4321-4	7.8459-4	8.3079-4	8.8274-4	9.4081-4	1.0000-3	1.0707-3	1.1414-3	1.2121-3	
M, MOL HT		28.433	28.594	28.717	28.806	28.869	28.910	28.936	28.953	28.963	28.968	28.971	28.973	28.974	28.974	28.974	28.974	28.974	
CP, CAL/(G1/K1)		0.6439	0.5775	0.5176	0.4669	0.4264	0.3957	0.3731	0.3568	0.3450	0.3362	0.3294	0.3237	0.3187	0.3140	0.3093	0.3046	0.2999	
GAMMA (S)		1.1668	1.1752	1.1857	1.1977	1.2104	1.2226	1.2337	1.2432	1.2512	1.2580	1.2639	1.2693	1.2745	1.2797	1.2849	1.2901	1.2953	
SON VEL,M/SEC		977.4	960.5	944.8	929.7	914.7	899.3	883.1	865.9	847.6	828.3	808.0	786.9	765.0	743.0	721.0	699.0	677.0	

MOLE FRACTIONS

AR	0.00880	0.00885	0.00889	0.00892	0.00893	0.00895	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO	0.01702	0.01194	0.00791	0.00494	0.00291	0.00161	0.00084	0.00041	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.06175	0.06728	0.07165	0.07487	0.07707	0.07848	0.07933	0.07980	0.08006	0.08018	0.08024	0.08026	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H	0.00206	0.00120	0.00066	0.00035	0.00017	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00257	0.00179	0.00120	0.00077	0.00047	0.00027	0.00015	0.00008	0.00004	0.00002	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.06384	0.06700	0.06951	0.07145	0.07292	0.07399	0.07477	0.07531	0.07567	0.07591	0.07606	0.07616	0.07621	0.07621	0.07621	0.07621	0.07621	0.07621
NO	0.02184	0.01908	0.01648	0.01406	0.01183	0.00979	0.00795	0.00633	0.00491	0.00370	0.00271	0.00190	0.00128	0.00080	0.00050	0.00030	0.00020	0.00010
N2O	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.72616	0.73171	0.73619	0.73972	0.74245	0.74455	0.74615	0.74739	0.74835	0.74910	0.74968	0.75013	0.75046	0.75070	0.75085	0.75098	0.75110	0.75110
O	0.00733	0.00490	0.00317	0.00199	0.00120	0.00069	0.00038	0.00020	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01476	0.01171	0.00906	0.00682	0.00499	0.00354	0.00243	0.00160	0.00101	0.00061	0.00034	0.00018	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000
O2	0.07383	0.07451	0.07525	0.07609	0.07704	0.07802	0.07899	0.07990	0.08070	0.08138	0.08194	0.08238	0.08272	0.08297	0.08312	0.08318	0.08322	0.08325

## ADD H2O(L)

CASE=		0	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL=	4.7619	PHI=	0.7327					
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0		
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3		
RHO, G/CC	1.4125-3	1.5134-3	1.6298-3	1.7657-3	1.9262-3	2.1188-3	2.3542-3	2.6485-3	3.0269-3	3.5313-3	4.2376-3	5.2970-3	7.7539-3		
M, MOL HT	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	31.813	
CP, CAL/(G)(K)	0.3184	0.3140	0.3094	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2547	0.2482		
GAMMA (S)	1.2746	1.2795	1.2848	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.3684	1.2304		
SON VEL, M/SEC	740.7	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	396.3	310.6		

## MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00998	0.00888	0.00888	0.00898	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00915
H2O	0.09440	0.09441	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.00526
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74370	0.74383	0.74392	0.74397	0.74400	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05302	0.05315	0.05324	0.05330	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

CASE=		0	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL=	4.7619	PHI=	0.7327					
P, ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0		
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3		
RHO, G/CC	1.2412-3	1.2934-3	1.3480-3	1.4057-3	1.4669-3	1.5325-3	1.6034-3	1.6806-3	1.7651-3	1.8533-3	1.9617-3	2.0772-3	2.2070-3		
M, MOL HT	28.519	28.656	28.760	28.836	28.889	28.924	28.946	28.959	28.967	28.972	28.974	28.976	28.976		
CP, CAL/(G)(K)	0.6046	0.5474	0.4955	0.4516	0.4165	0.3900	0.3705	0.3565	0.3464	0.3387	0.3327	0.3275	0.3228		
GAMMA (S)	1.1714	1.1798	1.1901	1.2016	1.2134	1.2244	1.2342	1.2425	1.2494	1.2552	1.2604	1.2652	1.2699		
SON VEL, M/SEC	977.9	961.4	945.8	930.7	915.5	899.7	883.1	865.5	846.9	827.3	806.9	785.6	763.5		

## MOLE FRACTIONS

AR	0.00874	0.00878	0.00882	0.00884	0.00886	0.00887	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.01724	0.01199	0.00789	0.00491	0.00288	0.00159	0.00083	0.00040	0.00018	0.00007	0.00003	0.00001	0.00000		
CO2	0.08051	0.08623	0.09069	0.09393	0.09614	0.09755	0.09839	0.09886	0.09911	0.09923	0.09929	0.09931	0.09932		
H	0.00131	0.00076	0.00042	0.00022	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00261	0.00181	0.00121	0.00077	0.00047	0.00027	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.08359	0.08642	0.08864	0.09034	0.09161	0.09254	0.09319	0.09364	0.09394	0.09414	0.09426	0.09434	0.09438		
NO	0.01775	0.01536	0.01318	0.01119	0.00939	0.00776	0.00630	0.00502	0.00390	0.00294	0.00215	0.00151	0.00102		
N2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
NO2	0.72338	0.72809	0.73187	0.73481	0.73706	0.73877	0.74007	0.74106	0.74183	0.74242	0.74288	0.74324	0.74350		
O	0.00378	0.00250	0.00161	0.00100	0.00060	0.00035	0.00019	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
OH	0.01212	0.00950	0.00728	0.00545	0.00397	0.00281	0.00192	0.00127	0.00080	0.00048	0.00027	0.00014	0.00007		
O2	0.04893	0.04852	0.04837	0.04850	0.04888	0.04942	0.05004	0.05067	0.05126	0.05178	0.05221	0.05256	0.05282		

## ADD H20(L)

CASE=	0	D/F=	16.6667	F/A=	0.06000	PERCENT FUEL=	5.6604	PHI=	0.8792								
P, ATH	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0	0.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	-80.3	-260.3	-440.3	-620.3
RHO, G/CC	3.5316-3	3.7839-3	4.0745-3	4.4145-3	4.8158-3	5.2974-3	5.8860-3	6.6218-3	7.5677-3	8.8290-3	1.0595-2	1.3244-2	1.9845-2	3.2568	5.6335	10.2717	20.0000
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979
CP, CAL/(G)(K)	0.3225	0.3182	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2571	0.2511	0.2455	0.2403	0.2354	0.2309
GAMMA (S)	1.2701	1.2747	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.3736	1.3807	1.3849	1.3864	1.3856
SON VEL, M/SEC	739.3	715.6	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	348.8	300.0	250.0	200.0	150.0

## MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.11223	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224
N0	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73685	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02380	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

CASE=	0	D/F=	16.6667	F/A=	0.06000	PERCENT FUEL=	5.6604	PHI=	0.8792								
P, ATH	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	1500.0	1400.0	1300.0	1200.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	2240.3	2060.3	1880.3	1700.3
RHO, G/CC	2.4829-3	2.5868-3	2.6960-3	2.8114-3	2.9340-3	3.0654-3	3.2072-3	3.3615-3	3.5306-3	3.719-3	3.9237-3	4.1547-3	4.4144-3	4.7000	5.0000	5.3000	5.6000
M, MOL WT	28.524	28.556	28.760	28.817	28.891	28.927	28.949	28.963	28.971	28.975	28.976	28.977	28.979	28.979	28.979	28.979	28.979
CP, CAL/(G)(K)	0.5972	0.5462	0.4981	0.4555	0.4201	0.3927	0.3727	0.3585	0.3486	0.3414	0.3358	0.3311	0.3267	0.3226	0.3189	0.3155	0.3123
GAMMA (S)	1.1720	1.1796	1.1891	1.2000	1.2116	1.2227	1.2325	1.2407	1.2472	1.2526	1.2573	1.2615	1.2658	1.2701	1.2738	1.2770	1.2798
SON VEL, M/SEC	979.0	961.3	945.4	930.1	914.8	899.1	882.5	864.8	846.1	826.4	805.8	784.4	762.3	740.0	717.5	695.0	672.5

## MOLE FRACTIONS

AR	0.00866	0.00870	0.00873	0.00876	0.00877	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.02011	0.01429	0.00960	0.00607	0.00361	0.00201	0.00105	0.00051	0.00023	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.09605	0.10241	0.10752	0.11136	0.11405	0.11579	0.11685	0.11744	0.11775	0.11790	0.11797	0.11800	0.11801	0.11801	0.11801	0.11801	0.11801
H	0.00102	0.00059	0.00033	0.00017	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H02	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00312	0.00220	0.00149	0.00077	0.00059	0.00035	0.00019	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.10206	0.10479	0.10693	0.10856	0.10976	0.11061	0.11120	0.11160	0.11186	0.11202	0.11212	0.11218	0.11221	0.11221	0.11221	0.11221	0.11221
N0	0.01280	0.01080	0.00905	0.00755	0.00626	0.00514	0.00416	0.00331	0.00257	0.00195	0.00142	0.00100	0.00067	0.00040	0.00025	0.00015	0.00009
N02	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.71908	0.72345	0.72695	0.72966	0.73169	0.73316	0.73422	0.73499	0.73556	0.73598	0.73630	0.73654	0.73672	0.73683	0.73688	0.73690	0.73691
O	0.00193	0.00125	0.00078	0.00048	0.00029	0.00016	0.00009	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00957	0.00739	0.00559	0.00414	0.00299	0.00211	0.00144	0.00095	0.00060	0.00036	0.00020	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000
O2	0.02559	0.02411	0.02299	0.02226	0.02189	0.02183	0.02198	0.02225	0.02255	0.02286	0.02313	0.02335	0.02352	0.02365	0.02372	0.02376	0.02378

ADD H2O(L)
ADD C(S)

Table with 13 columns: Case=, O/F=, F/A=, 0.06824, PERCENT FUEL=, 6.3882, PHI=, 1.0000, and 10 numerical columns. Rows include P, ATM; P, PSIA; T, DEG K; T, DEG F; RHO, G/CC; M, MOL WT; CP, CAL/(G\*1K); GAMMA (S); SON VEL, M/SEC.

MOLE FRACTIONS

Table with 13 columns: AR, CO, CO2, H2, H2O(L), H2O, NO, N2, O2. Each row contains 13 numerical values representing mole fractions.

Table with 13 columns: Case=, O/F=, F/A=, 0.06824, PERCENT FUEL=, 6.3882, PHI=, 1.0000, and 10 numerical columns. Rows include P, ATM; P, PSIA; T, DEG K; T, DEG F; RHO, G/CC; M, MOL WT; CP, CAL/(G\*1K); GAMMA (S); SON VEL, M/SEC.

MOLE FRACTIONS

Table with 13 columns: AR, CO, CO2, H, HO2, H2, NO, NO2, O, OH, O2. Each row contains 13 numerical values representing mole fractions.

ADD H2O(LI)  
ADD C(S)

CASE=	0	O/F=	14.2857	F/A=	0.07000	PERCENT FUEL=	6.5421	PHI=	1.0258										
P, ATM	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0						
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3						
RHO, G/CC	1.1714-2	1.2550-2	1.3516-2	1.4642-2	1.5973-2	1.7571-2	1.9524-2	2.1981-2	2.5178-2	2.9416-2	3.5316-2	4.8293-2	6.7593-2						
M, MOL WT	28.836	28.836	28.836	28.836	28.836	28.836	28.836	28.859	28.924	28.966	28.979	31.702	33.279						
CP, CAL/(GIIK)	0.3261	0.3226	0.3188	0.3146	0.3102	0.3053	0.3006	0.2995	0.2803	0.2676	0.2676	0.7606	0.3108						
GAMMA (S)	1.2679	1.2716	1.2758	1.2804	1.2857	1.2916	1.2983	1.2974	1.3076	1.3280	1.3453	1.1981	1.2440						
SON VEL,M/SEC	740.5	716.5	691.5	665.6	638.6	610.3	580.4	546.8	512.9	478.2	439.3	354.5	305.4						

MOLE FRACTIONS

AR	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00867	0.00868	0.00870	0.00871	0.00872	0.00868	0.00867						
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00403	0.00502				
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00002	0.00037	0.00149	0.00222	0.00246	0.00050	0.00000						
CO	0.00727	0.00692	0.00647	0.00590	0.00517	0.00426	0.00318	0.00175	0.00041	0.00004	0.00000	0.00000	0.00000						
CO2	0.12840	0.12876	0.12921	0.12978	0.13051	0.13141	0.13249	0.13367	0.13419	0.13403	0.13389	0.13129	0.13065						
H2	0.00278	0.00313	0.00359	0.00415	0.00487	0.00577	0.00677	0.00674	0.00358	0.00109	0.00019	0.00001	0.00000						
H2O(LI)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.08547	0.12848					
H2O	0.12630	0.12595	0.12550	0.12493	0.12420	0.12330	0.12225	0.12161	0.12279	0.12404	0.12455	0.04273	0.00060						
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00003	0.00007	0.00009	0.00006	0.00004	0.00000	0.00000						
N2	0.72657	0.72657	0.72657	0.72657	0.72657	0.72657	0.72660	0.72711	0.72875	0.72980	0.73016	0.72729	0.72657						

CASE=	0	O/F=	12.5000	F/A=	0.08000	PERCENT FUEL=	7.4074	PHI=	1.1723										
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000						
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3						
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3						
RHO, G/CC	5.8070-5	6.1135-5	6.4261-5	6.7446-5	7.0696-5	7.4043-5	7.7555-5	8.1320-5	8.5420-5	8.9932-5	9.4935-5	1.0052-4	1.0681-4						
M, MOL WT	26.684	27.089	27.420	27.672	27.845	27.948	28.001	28.026	28.037	28.042	28.044	28.046	28.046						
CP, CAL/(GIIK)	1.1422	1.0019	0.8607	0.7188	0.5843	0.4767	0.4092	0.3740	0.3567	0.3478	0.3427	0.3393	0.3364						
GAMMA (S)	1.1349	1.1381	1.1443	1.1555	1.1738	1.1987	1.2230	1.2405	1.2510	1.2572	1.2612	1.2642	1.2669						
SON VEL,M/SEC	995.1	971.1	949.8	931.6	917.2	905.6	893.8	879.1	861.4	841.6	820.4	798.2	775.2						

MOLE FRACTIONS

AR	0.00795	0.00807	0.00817	0.00825	0.00830	0.00833	0.00835	0.00835	0.00836	0.00836	0.00836	0.00836	0.00836						
CO	0.08961	0.08070	0.07183	0.06402	0.05817	0.05452	0.05251	0.05135	0.05048	0.04963	0.04867	0.04755	0.04621						
CO2	0.05251	0.06358	0.07422	0.08336	0.09014	0.09434	0.09652	0.09792	0.09885	0.09973	0.10069	0.10182	0.10316						
H	0.01751	0.01127	0.00706	0.00433	0.00262	0.00156	0.00091	0.00051	0.00027	0.00014	0.00006	0.00003	0.00001						
H02	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000						
H2	0.02318	0.01991	0.01710	0.01498	0.01368	0.01317	0.01324	0.01367	0.01431	0.01510	0.01604	0.01717	0.01852						
H2O	0.09318	0.10403	0.11284	0.11946	0.12392	0.12647	0.12760	0.12783	0.12754	0.12692	0.12605	0.12496	0.12363						
NO	0.00952	0.00723	0.00512	0.00330	0.00189	0.00095	0.00042	0.00017	0.00006	0.00002	0.00001	0.00000	0.00000						
N2	0.66137	0.67262	0.68193	0.68914	0.69417	0.69721	0.69879	0.69954	0.69987	0.70002	0.70008	0.70010	0.70011						
O	0.00948	0.00548	0.00289	0.00136	0.00056	0.00020	0.00006	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000						
OH	0.02026	0.01543	0.01102	0.00731	0.00445	0.00247	0.00125	0.00058	0.00025	0.00010	0.00003	0.00001	0.00000						
O2	0.01541	0.01165	0.00782	0.00449	0.00211	0.00079	0.00024	0.00006	0.00001	0.00000	0.00000	0.00000	0.00000						



ADD C1S1  
ADD H2O(L)

CASE= 0 O/F= 10.0000 F/A= 0.10000 PERCENT FUEL= 9.0909 PHI= 1.4654  
P. ATM 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000 2.0000  
P. PSIA 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4 29.4  
T. DEG K 1500.0 1400.0 1300.0 1200.0 1100.0 1000.0 900.0 800.0 700.0 600.0 500.0 400.0 300.0  
T. DEG F 2240.3 2060.3 1880.3 1700.3 1520.3 1340.3 1160.3 980.3 800.3 620.3 440.3 260.3 80.3  
RHO, G/CC 4.3255-4 4.6355-4 4.9421-4 5.4082-4 5.8999-4 6.4912-4 7.2432-4 8.4255-4 9.9139-4 1.1716-3 1.4119-3 1.7663-3 2.8233-3  
M. MOL WT 26.626 26.626 26.626 26.627 26.627 26.632 26.746 27.655 28.473 28.842 28.964 28.987 34.751  
CP, CAL/(G)(K) 0.3459 0.3444 0.3432 0.3425 0.3429 0.3503 0.4896 0.7754 0.4765 0.3474 0.2944 0.2757 0.6313  
GAMMA (S) 1.2751 1.2767 1.2779 1.2786 1.2784 1.2742 1.2236 1.1700 1.2217 1.2726 1.3105 1.3316 1.1605  
SON VEL,M/SEC 772.8 747.1 720.2 692.2 662.7 630.7 585.1 530.5 499.7 469.2 433.7 390.9 288.6

MOLE FRACTIONS

AR 0.00779 0.00779 0.00779 0.00779 0.00779 0.00779 0.00783 0.00798 0.00806 0.00808 0.00802 0.00792 0.00779  
C1(S) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.01355 0.03253 0.04313 0.05405 0.06649 0.08145  
CH4 0.00000 0.00000 0.00000 0.00000 0.00000 0.00010 0.00223 0.01223 0.01723 0.01822 0.01448 0.00812 0.00002  
CO 0.10313 0.09959 0.09531 0.09008 0.08366 0.07559 0.06269 0.02497 0.00395 0.00031 0.00001 0.00000 0.00000  
CO2 0.07085 0.07439 0.07868 0.08290 0.09032 0.09833 0.10986 0.12750 0.00395 0.01268 0.011049 0.010220 0.09253  
H2 0.05982 0.06336 0.06764 0.07286 0.07926 0.08697 0.09205 0.06582 0.03061 0.00935 0.00160 0.00011 0.00000  
H2O(L) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.15232  
H2O 0.10581 0.10226 0.09758 0.09276 0.08634 0.07846 0.06981 0.07928 0.10614 0.12578 0.13982 0.15195 0.01328  
NH3 0.00000 0.00000 0.00000 0.00001 0.00001 0.00002 0.00006 0.00008 0.00009 0.00007 0.00004 0.00001 0.00000  
N2 0.65260 0.65260 0.65260 0.65260 0.65261 0.65273 0.65550 0.66858 0.67510 0.67639 0.67150 0.66320 0.65262

CASE= 0 O/F= 10.0000 F/A= 0.10000 PERCENT FUEL= 9.0909 PHI= 1.4654  
P. ATM 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000 3.0000  
P. PSIA 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1 44.1  
T. DEG K 2800.0 2700.0 2600.0 2500.0 2400.0 2300.0 2200.0 2100.0 2000.0 1900.0 1800.0 1700.0 1600.0  
T. DEG F 4580.3 4400.3 4220.3 4040.3 3860.3 3680.3 3500.3 3320.3 3140.3 2960.3 2780.3 2600.3 2420.3  
RHO, G/CC 3.4349-4 3.5781-4 3.7267-4 3.8830-4 4.0495-4 4.2286-4 4.4226-4 4.6343-4 4.8667-4 5.1232-4 5.4080-4 5.7262-4 6.0841-4  
M. MOL WT 26.307 26.425 26.503 26.552 26.602 26.613 26.619 26.623 26.625 26.626 26.626 26.626 26.626  
CP, CAL/(G)(K) 0.6292 0.5400 0.4750 0.4307 0.4018 0.3832 0.3712 0.3635 0.3583 0.3546 0.3519 0.3496 0.3477  
GAMMA (S) 1.1801 1.1958 1.2123 1.2273 1.2396 1.2489 1.2557 1.2607 1.2643 1.2672 1.2695 1.2715 1.2734  
SON VEL,M/SEC 1021.9 1007.9 994.4 980.2 964.6 947.5 929.0 909.3 888.7 867.1 844.7 821.6 797.6

MOLE FRACTIONS

AR 0.00770 0.00773 0.00775 0.00777 0.00778 0.00778 0.00779 0.00779 0.00779 0.00779 0.00779 0.00779 0.00779  
CO 0.12361 0.12181 0.12048 0.11944 0.11851 0.11757 0.11654 0.11538 0.11405 0.11250 0.11070 0.10858 0.10609  
CO2 0.04828 0.05086 0.05269 0.05436 0.05520 0.05626 0.05735 0.05855 0.05991 0.06147 0.06328 0.06540 0.06789  
H 0.00964 0.00669 0.00454 0.00300 0.00192 0.00118 0.00069 0.00039 0.00021 0.00010 0.00005 0.00002 0.00001  
H2 0.04217 0.04210 0.04248 0.04316 0.04403 0.04504 0.04616 0.04741 0.04881 0.05040 0.05223 0.05436 0.05686  
H2O 0.11293 0.11650 0.11861 0.11963 0.11988 0.11959 0.11891 0.11792 0.11666 0.11515 0.11336 0.11125 0.10877  
NO 0.00256 0.00153 0.00086 0.00045 0.00022 0.00010 0.00004 0.00002 0.00001 0.00000 0.00000 0.00000 0.00000  
N2 0.64348 0.64689 0.64914 0.65056 0.65143 0.65195 0.65225 0.65242 0.65251 0.65256 0.65258 0.65259 0.65260  
O 0.00105 0.00048 0.00020 0.00008 0.00003 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
OH 0.00743 0.00485 0.00300 0.00176 0.00098 0.00052 0.00026 0.00012 0.00005 0.00002 0.00001 0.00000 0.00000  
O2 0.00114 0.00055 0.00023 0.00009 0.00003 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000



C	1.000000	H	1.966699	0.000000	0.000000	0.000000	100.00000000	-5059.80	L	298.150	F	0.80700
AR	1.000000		0.000000	0.000000	0.000000	0.000000	0.01285800	0.00	G	0.000	0	0.00000
C	1.000000	O	2.000000	0.000000	0.000000	0.000000	0.00045600	0.00	G	0.000	0	0.00000
N	2.000000		0.000000	0.000000	0.000000	0.000000	0.75525296	0.00	G	0.000	0	0.00000
O	2.000000		0.000000	0.000000	0.000000	0.000000	0.23143297	0.00	G	0.000	0	0.00000

CASE= 0 O/F=100.0000 F/A= 0.01000 PERCENT FUEL= 0.9901 PHI= 0.1465

P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	
RHO, G/CC	6.1517-5	6.4264-5	6.7106-5	7.0071-5	7.3196-5	7.6521-5	8.0095-5	8.3971-5	8.8208-5	9.2873-5	9.8046-5	1.0382-4	1.1031-4	
M, MOL WT	28.268	28.476	28.634	28.749	28.830	28.884	28.918	28.939	28.952	28.959	28.963	28.965	28.966	
CP, CAL/(G)(K)	0.7036	0.6209	0.5473	0.4854	0.4359	0.3980	0.3700	0.3497	0.3351	0.3244	0.3163	0.3099	0.3044	
GAMMA (S)	1.1640	1.1723	1.1832	1.1962	1.2105	1.2250	1.2398	1.2510	1.2615	1.2704	1.2781	1.2849	1.2912	
SON VEL, M/SEC	979.1	961.4	945.1	930.0	915.3	900.6	885.2	868.8	851.2	832.5	812.7	791.8	770.1	

MOLE FRACTIONS

AR	0.00901	0.00907	0.00913	0.00916	0.00919	0.00920	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
C0	0.00729	0.00535	0.00367	0.00236	0.00141	0.00079	0.00042	0.00020	0.00009	0.00004	0.00001	0.00000	0.00000	0.00000
C02	0.01309	0.01518	0.01697	0.01837	0.01937	0.02003	0.02043	0.02065	0.02078	0.02084	0.02086	0.02088	0.02088	0.02088
H	0.00338	0.00206	0.00118	0.00064	0.00032	0.00015	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H02	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00086	0.00066	0.00048	0.00033	0.00021	0.00013	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.01051	0.01251	0.01419	0.01559	0.01673	0.01760	0.01826	0.01874	0.01907	0.01930	0.01944	0.01953	0.01958	
N0	0.03085	0.02747	0.02405	0.02070	0.01750	0.01452	0.01181	0.00939	0.00729	0.00549	0.00401	0.00281	0.00189	
N02	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000
N2	0.73915	0.74637	0.75230	0.75706	0.76081	0.76374	0.76602	0.76780	0.76919	0.77027	0.77112	0.77177	0.77226	
O	0.02904	0.01975	0.01296	0.00818	0.00495	0.00286	0.00157	0.00081	0.00039	0.00017	0.00007	0.00003	0.00001	
OH	0.01197	0.01016	0.00827	0.00647	0.00486	0.00352	0.00244	0.00163	0.00103	0.00062	0.00035	0.00019	0.00009	
O2	0.14472	0.15138	0.15678	0.16113	0.16463	0.16744	0.16969	0.17148	0.17290	0.17401	0.17489	0.17555	0.17605	

## ADD H20(L)

	CASE= 0	O/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931									
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0				
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3				
RHO, G/CC	2.3536-4	2.5217-4	2.7157-4	2.9420-4	3.2095-4	3.5304-4	3.9227-4	4.4130-4	5.0435-4	5.8840-4	7.0609-4	8.8261-4	1.1820-3				
M, MOL WT	28.969	28.969	28.969	28.970	28.970	28.969	28.969	28.969	28.969	28.970	28.970	28.970	28.970	28.970	28.970	28.970	29.096
CP, CAL/(G)(K)	0.3046	0.3000	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	1.0066				
GAMMA (S)	1.2908	1.2965	1.3023	1.3083	1.3147	1.3218	1.3302	1.3399	1.3508	1.3623	1.3737	1.3837	1.1695				
SON VEL./M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	316.6				

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00436
H2O	0.03884	0.03886	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03451
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76516	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14488	0.14503	0.14512	0.14517	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

	CASE= 0	O/F= 50.0000	F/A= 0.02000	PERCENT FUEL= 1.9608				PHI= 0.2931									
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0				
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3				
RHO, G/CC	1.8552-4	1.9350-4	2.0182-4	2.1056-4	2.1982-4	2.2971-4	2.4038-4	2.5197-4	2.6467-4	2.7835-4	2.9417-4	3.1149-4	3.3097-4				
M, MOL WT	28.416	28.581	28.706	28.797	28.860	28.902	28.930	28.947	28.957	28.963	28.966	28.968	28.969				
CP, CAL/(G)(K)	0.6394	0.5710	0.5106	0.4602	0.4200	0.3893	0.3664	0.3497	0.3373	0.3279	0.3206	0.3146	0.3093				
GAMMA (S)	1.1697	1.1784	1.1893	1.2017	1.2147	1.2275	1.2393	1.2497	1.2586	1.2664	1.2732	1.2794	1.2852				
SON VEL./M/SEC	978.9	962.1	946.4	931.3	916.5	901.2	885.2	868.2	850.2	831.1	811.1	790.1	768.2				

## MOLE FRACTIONS

AR	0.00897	0.00902	0.00906	0.00909	0.00911	0.00912	0.00913	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.01040	0.00736	0.00490	0.00308	0.00182	0.00101	0.00053	0.00026	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00001	0.00000	0.00000
CO2	0.02988	0.03316	0.03579	0.03774	0.03909	0.03996	0.04048	0.04077	0.04093	0.04101	0.04104	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H	0.00252	0.00148	0.00083	0.00044	0.00022	0.00010	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00144	0.00103	0.00070	0.00046	0.00028	0.00017	0.00009	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.02829	0.03077	0.03283	0.03447	0.03575	0.03672	0.03743	0.03794	0.03829	0.03853	0.03868	0.03877	0.03882				
NO	0.02845	0.02512	0.02186	0.01874	0.01580	0.01309	0.01064	0.00846	0.00656	0.00495	0.00361	0.00254	0.00170				
NO2	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
O	0.73685	0.74288	0.74781	0.75177	0.75491	0.75738	0.75933	0.76088	0.76210	0.76306	0.76382	0.76440	0.76484				
O	0.01549	0.01045	0.00682	0.00429	0.00259	0.00149	0.00082	0.00042	0.00020	0.00009	0.00004	0.00001	0.00000				
OH	0.01427	0.01155	0.00912	0.00696	0.00514	0.00367	0.00253	0.00167	0.00106	0.00064	0.00036	0.00019	0.00009				
O2	0.12342	0.12712	0.13025	0.13295	0.13527	0.13726	0.13895	0.14038	0.14156	0.14252	0.14328	0.14388	0.14433				

## ADD H2O(L)

	CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=			2.9126	PHI=			0.4396
P, ATM		2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA		29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K		1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F		2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	4.	7076-4	5.0439-4	5.4319-4	5.8845-4	6.4195-4	7.0615-4	7.8461-4	8.8268-4	1.0088-3	1.1769-3	1.4123-3	1.7654-3	2.4548-3
M, MOL WT		28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.214
CP, CAL/(G*IK)		0.3094	0.3048	0.3003	0.2957	0.2910	0.2866	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.6202
GAMMA (S)		1.2850	1.2904	1.2960	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.1969
SON VEL./M/SEC		743.7	720.0	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	314.3

## MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.04112
H2	0.05772	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.01662
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11351	0.11371	0.11364	0.11392	0.11397	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

	CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=			2.9126	PHI=			0.4396
P, ATM		3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA		44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K		2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F		4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	3.	7170-4	3.8750-4	4.0401-4	4.2139-4	4.3982-4	4.5956-4	4.8086-4	5.0402-4	5.2940-4	5.5736-4	5.8839-4	6.2304-4	6.6200-4
M, MOL WT		28.467	28.618	28.732	28.815	28.872	28.911	28.936	28.951	28.960	28.966	28.969	28.971	28.971
CP, CAL/(G*IK)		0.6213	0.5576	0.5014	0.4544	0.4171	0.3887	0.3675	0.3520	0.3406	0.3318	0.3249	0.3192	0.3140
GAMMA (S)		1.1708	1.1795	1.1902	1.2023	1.2147	1.2267	1.2376	1.2470	1.2552	1.2622	1.2685	1.2742	1.2797
SON VEL./M/SEC		978.5	961.9	946.3	931.3	916.3	900.8	884.5	867.2	849.0	829.7	809.5	788.5	766.5

## MOLE FRACTIONS

AR	0.00890	0.00894	0.00898	0.00900	0.00902	0.00903	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.01291	0.00901	0.00594	0.00370	0.00217	0.00120	0.00063	0.00030	0.00014	0.00006	0.00002	0.00001	0.00000	0.00000
CO2	0.04689	0.05111	0.05441	0.05683	0.05847	0.05952	0.06015	0.06051	0.06070	0.06079	0.06083	0.06085	0.06085	0.06085
H	0.00203	0.00118	0.00065	0.00034	0.00017	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00187	0.00131	0.00088	0.00057	0.00035	0.00020	0.00011	0.00006	0.00003	0.00001	0.00001	0.00001	0.00000	0.00000
H2O	0.04656	0.04930	0.05152	0.05326	0.05459	0.05558	0.05631	0.05682	0.05717	0.05741	0.05755	0.05764	0.05769	0.05769
NO	0.02536	0.02228	0.01932	0.01653	0.01392	0.01153	0.00937	0.00745	0.00578	0.00436	0.00318	0.00224	0.00150	0.00100
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.73244	0.73792	0.74239	0.74596	0.74877	0.75097	0.75270	0.75407	0.75515	0.75600	0.75667	0.75719	0.75758	0.75758
O	0.00979	0.00658	0.00428	0.00269	0.00162	0.00093	0.00051	0.00026	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000
OH	0.01456	0.01164	0.00905	0.00685	0.00503	0.00357	0.00245	0.00162	0.00102	0.00061	0.00035	0.00018	0.00009	0.00000
O2	0.09866	0.10069	0.10254	0.10426	0.10586	0.10734	0.10867	0.10983	0.11082	0.11164	0.11230	0.11282	0.11322	0.11322

## ADD H20(L)

	CASE= 0	O/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862										
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0					
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3					
RHO, G/CC	9.4160-4	1.0089-3	1.0865-3	1.1770-3	1.2840-3	1.4124-3	1.5693-3	1.7655-3	2.0177-3	2.3540-3	2.8248-3	3.5310-3	5.0525-3					
M, MOL WT	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	31.094
CP, CAL/(G*IK)	0.3140	0.3095	0.3049	0.3002	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.4448					
GAMMA (SI)	1.2796	1.2848	1.2902	1.2961	1.3024	1.3095	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.2234					
SON VEL./SEC	742.1	718.4	693.8	668.1	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	313.3					

## MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H20(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.06818					
H2O	0.07623	0.07624	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.00807					
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
N2	0.75070	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
O2	0.08297	0.08314	0.08325	0.08332	0.08336	0.08338	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339					

	CASE= 0	O/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862										
P, ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P, PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0					
T, DEG F	4800.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3					
RHO, G/CC	7.4466-4	7.7597-4	8.0874-4	8.4330-4	8.8003-4	9.1940-4	9.6193-4	1.0082-3	1.0589-3	1.1149-3	1.1769-3	1.2462-3	1.3241-3					
M, MOL WT	28.515	28.653	28.757	28.833	28.885	28.920	28.942	28.956	28.964	28.969	28.972	28.973	28.974	28.974	28.974	28.974	28.974	31.094
CP, CAL/(G*IK)	0.6028	0.5439	0.4917	0.4481	0.4136	0.3874	0.3680	0.3538	0.3433	0.3353	0.3289	0.3234	0.3185					
GAMMA (SI)	1.1724	1.1811	1.1917	1.2033	1.2152	1.2264	1.2363	1.2449	1.2523	1.2586	1.2643	1.2695	1.2746					
SON VEL./SEC	978.3	962.0	946.5	931.4	916.2	900.5	884.0	866.4	847.9	828.5	808.1	787.0	765.0					

## MOLE FRACTIONS

AR	0.00883	0.00887	0.00840	0.00892	0.00894	0.00895	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO	0.01454	0.01006	0.00659	0.00408	0.00239	0.00132	0.00069	0.00033	0.00015	0.00006	0.00002	0.00001	0.00000					
CO2	0.06446	0.06932	0.07308	0.07580	0.07763	0.07880	0.07950	0.07989	0.08009	0.08020	0.08024	0.08026	0.08027					
H	0.00154	0.00089	0.00049	0.00026	0.00013	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000					
H2O	0.00003	0.00002	0.00002	0.00031	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000					
H2	0.00215	0.00149	0.00099	0.00063	0.00039	0.00022	0.00012	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000					
H2O	0.06537	0.06813	0.07032	0.07202	0.07330	0.07425	0.07493	0.07541	0.07573	0.07595	0.07608	0.07616	0.07621					
NO	0.02182	0.01907	0.01647	0.01406	0.01183	0.00979	0.00795	0.00633	0.00491	0.00370	0.00271	0.00190	0.00128					
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001					
N2	0.72830	0.73324	0.73724	0.74040	0.74287	0.74480	0.74629	0.74747	0.74839	0.74912	0.74969	0.75013	0.75046					
O	0.00597	0.00399	0.00259	0.00162	0.00098	0.00056	0.00031	0.00016	0.00008	0.00003	0.00001	0.00001	0.00000					
OH	0.01348	0.01066	0.00823	0.00619	0.00452	0.00321	0.00220	0.00145	0.00091	0.00055	0.00031	0.00016	0.00008					
O2	0.07349	0.07423	0.07506	0.07599	0.07699	0.07802	0.07901	0.07991	0.08071	0.08139	0.08195	0.08239	0.08272					

## ADD H20IL1

CASE=	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL=	4.7619	PHI=	0.7327								
P, ATH	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
P, PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0			
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3			
RHO, G/CC	2.3542-3	2.5224-3	2.7164-3	2.9428-3	3.2103-3	3.5313-3	3.9237-3	4.4141-3	5.0447-3	5.8855-3	7.0627-3	8.8283-3	1.2953-2			
M, MOL WT	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	31.887			
CP, CAL/(G)(K)	0.3184	0.3139	0.3094	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2547	0.3486			
GAMMA (S)	1.2746	1.2795	1.2848	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.3684	1.2467			
SON VEL,M/SEC	740.7	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	396.3	312.3			

## MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.09127
H2	0.09440	0.09441	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.00315
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74370	0.74383	0.74392	0.74397	0.74400	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05302	0.05315	0.05324	0.05330	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

CASE=	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL=	4.7619	PHI=	0.7327								
P, ATM	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3			
RHO, G/CC	1.8664-3	1.9435-3	2.0244-3	2.1101-3	2.2014-3	2.2994-3	2.4055-3	2.5211-3	2.6477-3	2.7875-3	2.9425-3	3.1158-3	3.3106-3			
M, MOL WT	28.588	28.705	28.794	28.858	28.902	28.932	28.950	28.962	28.969	28.973	28.975	28.976	28.976			
CP, CAL/(G)(K)	0.5700	0.5189	0.4735	0.4356	0.4056	0.3829	0.3662	0.3540	0.3449	0.3380	0.3323	0.3273	0.3228			
GAMMA (S)	1.1768	1.1855	1.1957	1.2067	1.2176	1.2277	1.2365	1.2439	1.2503	1.2557	1.2607	1.2654	1.2700			
SON VEL,M/SEC	978.9	962.9	947.5	932.3	916.9	900.8	883.9	866.0	847.2	827.5	806.9	785.6	763.6			

## MOLE FRACTIONS

AR	0.00876	0.00880	0.00883	0.00885	0.00886	0.00887	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.01468	0.01009	0.00657	0.00406	0.00237	0.00131	0.00068	0.00033	0.00015	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.09831	0.08830	0.09212	0.09486	0.09670	0.09786	0.09855	0.09894	0.09915	0.09925	0.09929	0.09931	0.09932			
H	0.00098	0.00057	0.00031	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00218	0.00151	0.00100	0.00063	0.00039	0.00022	0.00012	0.00006	0.00003	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.08496	0.08743	0.08936	0.09084	0.09195	0.09275	0.09333	0.09373	0.09399	0.09417	0.09428	0.09435	0.09438			
NO	0.01763	0.01528	0.01313	0.01117	0.00938	0.00776	0.00630	0.00502	0.00390	0.00294	0.00215	0.00151	0.00102			
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.72521	0.72940	0.73276	0.73539	0.73742	0.73898	0.74019	0.74113	0.74186	0.74244	0.74289	0.74324	0.74351			
O	0.00306	0.00203	0.00131	0.00082	0.00049	0.00028	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01099	0.00861	0.00660	0.00493	0.00359	0.00254	0.00174	0.00115	0.00072	0.00043	0.00025	0.00013	0.00006			
O2	0.04818	0.04794	0.04798	0.04827	0.04875	0.04936	0.05002	0.05067	0.05126	0.05178	0.05221	0.05256	0.05282			

## ADD H20(L)

	CASE=	O/F=	16.6667	F/A=	0.06000	PERCENT FUEL=	5.6604	PHI=	0.8792										
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0						
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3						
RHO, G/CC	4.7088-3	5.0451-3	5.4332-3	5.8860-3	6.4211-3	7.0632-3	7.8480-3	8.8290-3	1.0090-2	1.1772-2	1.4126-2	1.7658-2	2.6475-2						
M, MOL WT	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979						
CP, CAL/(G)(K)	0.3225	0.3182	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2775	0.2706	0.2635	0.2571	0.3227						
GAMMA (S)	1.2701	1.2747	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3637	1.2484						
SON VEL,M/SEC	739.3	715.6	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	395.6	309.1						

## MOLE FRACTIONS

AR	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2	0.11801	0.11802	0.11802	0.11862	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224
NO	0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73685	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.02365	0.02374	0.02380	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

	CASE=	O/F=	16.6667	F/A=	0.06000	PERCENT FUEL=	5.6604	PHI=	0.8792										
P, ATM	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0						
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3						
RHO, G/CC	3.7329-3	3.8868-3	4.0488-3	4.2204-3	4.4032-3	4.5994-3	4.8116-3	5.0427-3	5.2961-3	5.5735-3	5.8856-3	6.2321-3	6.6217-3						
M, MOL WT	28.589	28.704	28.794	28.859	28.905	28.935	28.954	28.965	28.972	28.975	28.977	28.978	28.979						
CP, CAL/(G)(K)	0.5665	0.5200	0.4770	0.4395	0.4088	0.3854	0.3682	0.3560	0.3472	0.3406	0.3354	0.3309	0.3266						
GAMMA (S)	1.1769	1.1849	1.1944	1.2051	1.2160	1.2261	1.2349	1.2422	1.2481	1.2531	1.2575	1.2617	1.2658						
SON VEL,M/SEC	979.0	962.6	947.0	931.6	916.2	900.2	883.3	865.3	846.4	826.6	805.9	784.5	762.3						

## MOLE FRACTIONS

AR	0.00868	0.00872	0.00874	0.00876	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO	0.01732	0.01215	0.00807	0.00505	0.00298	0.00165	0.00086	0.00042	0.00019	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.09911	0.10475	0.10919	0.11247	0.11473	0.11618	0.11705	0.11754	0.11780	0.11792	0.11798	0.11800	0.11801						
H	0.00076	0.00044	0.00025	0.00013	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00263	0.00185	0.00124	0.00030	0.00049	0.00028	0.00016	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.10340	0.10577	0.10763	0.10904	0.11008	0.11081	0.11133	0.11167	0.11190	0.11204	0.11213	0.11219	0.11219						
NO	0.01254	0.01061	0.00894	0.00749	0.00623	0.00512	0.00416	0.00331	0.00257	0.00195	0.00142	0.00100	0.00067						
NO2	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.72087	0.72477	0.72787	0.73027	0.73206	0.73338	0.73434	0.73506	0.73559	0.73600	0.73631	0.73654	0.73672						
O	0.00154	0.00100	0.00063	0.00039	0.00023	0.00013	0.00007	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00861	0.00665	0.00503	0.00373	0.00270	0.00190	0.00130	0.00086	0.00054	0.00032	0.00018	0.00010	0.00005						
O2	0.02450	0.02327	0.02238	0.02185	0.02165	0.02170	0.02192	0.02222	0.02255	0.02286	0.02313	0.02335	0.02352						

ADD H2O(L)  
ADD C(S)

CASE=	0	0/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882				PHI= 1.0000					
P, ATM	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000
P, PSIA	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	9.4180E-3	1.0091E-2	1.0867E-2	1.1773E-2	1.2843E-2	1.4127E-2	1.5697E-2	1.7659E-2	2.0182E-2	2.3546E-2	2.8255E-2	3.8069E-2	5.3875E-2
M, MOL WT	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	28.981	31.238	33.156
CP, CAL/(G)(K)	0.3256	0.3213	0.3169	0.3122	0.3071	0.3015	0.2951	0.2880	0.2806	0.2731	0.2658	0.2510	0.2127
GAMMA (S)	1.2669	1.2714	1.2762	1.2815	1.2875	1.2944	1.3027	1.3124	1.3234	1.3353	1.3477	1.1981	1.2449
SON VEL,M/SEC	738.4	714.6	689.9	664.2	637.4	609.4	580.0	548.8	515.5	479.4	439.7	357.1	306.0

MOLE FRACTIONS

AR	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.13313	0.13315	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316	0.13316
H2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.07225	0.12592
H2O	0.12666	0.12667	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.12668	0.05443	0.00076
NO	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.73141	0.73142	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143	0.73143
O2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

CASE=	0	0/F= 14.6540	F/A= 0.06824	PERCENT FUEL= 6.3882				PHI= 1.0000					
P, ATM	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
P, PSIA	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8	734.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	6.2025E-3	6.4583E-3	6.7289E-3	7.0165E-3	7.3238E-3	7.6539E-3	8.0107E-3	8.3986E-3	8.8231E-3	9.2905E-3	9.8085E-3	1.0387E-2	1.1036E-2
M, MOL WT	28.502	28.617	28.712	28.788	28.846	28.891	28.923	28.945	28.960	28.969	28.975	28.978	28.980
CP, CAL/(G)(K)	0.5461	0.5282	0.4926	0.4603	0.4319	0.4077	0.3876	0.3715	0.3587	0.3488	0.3411	0.3351	0.3301
GAMMA (S)	1.1771	1.1833	1.1905	1.1987	1.2075	1.2165	1.2253	1.2336	1.2410	1.2475	1.2532	1.2581	1.2626
SON VEL,M/SEC	980.5	963.4	946.8	930.3	913.9	897.3	880.3	862.6	844.2	824.8	804.5	783.4	761.3

MOLE FRACTIONS

AR	0.00859	0.00862	0.00865	0.00867	0.00869	0.00870	0.00871	0.00872	0.00873	0.00873	0.00873	0.00873	0.00873
CO	0.02430	0.01876	0.01406	0.01020	0.00715	0.00483	0.00313	0.00194	0.00114	0.00063	0.00033	0.00016	0.00007
CO2	0.10665	0.11273	0.11787	0.12207	0.12539	0.12791	0.12976	0.13105	0.13192	0.13247	0.13280	0.13299	0.13309
H	0.00072	0.00044	0.00026	0.00014	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00389	0.00300	0.00227	0.00168	0.00121	0.00085	0.00058	0.00038	0.00024	0.00014	0.00008	0.00004	0.00002
H2O	0.11722	0.11958	0.12147	0.12296	0.12409	0.12493	0.12554	0.12596	0.12625	0.12643	0.12655	0.12661	0.12665
NO	0.00742	0.00571	0.00427	0.00311	0.00219	0.00149	0.00098	0.00061	0.00037	0.00021	0.00011	0.00005	0.00002
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.71562	0.71939	0.72250	0.72500	0.72694	0.72840	0.72946	0.73021	0.73071	0.73102	0.73122	0.73133	0.73138
O	0.00071	0.00042	0.00023	0.00013	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.00622	0.00457	0.00326	0.00225	0.00150	0.00096	0.00059	0.00034	0.00019	0.00010	0.00005	0.00002	0.00001
O2	0.00864	0.00678	0.00515	0.00379	0.00270	0.00185	0.00122	0.00076	0.00046	0.00026	0.00014	0.00007	0.00003

ADD C1S1  
ADD H2O(L)

CASE=	0	0/F=	12.5000	F/A=	0.08000	PERCENT FUEL=	7.4074	PHI=	1.1723									
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0					
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3					
RHO, G/CC	1.1393-4	1.2207-4	1.3146-4	1.4241-4	1.5536-4	1.7089-4	1.8988-4	2.1369-4	2.4634-4	2.9202-4	3.5274-4	4.4148-4	6.4182-4					
M, MOL WT	28.046	28.046	28.046	28.046	28.046	28.046	28.046	28.055	28.300	28.755	28.945	28.981	31.599					
CP, CAL/(G)(K)	0.3338	0.3313	0.3289	0.3266	0.3245	0.3226	0.3205	0.3289	0.4557	0.3749	0.2956	0.2692	1.7738					
GAMMA (S)	1.2695	1.2720	1.2746	1.2771	1.2794	1.2815	1.2840	1.2809	1.2306	1.2610	1.3130	1.3428	1.1342					
SON VEL,M/SEC	751.3	726.6	700.9	674.0	645.9	616.4	585.3	551.1	503.1	467.7	434.3	392.5	299.2					

MOLE FRACTIONS

AR	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836	0.00843	0.00855	0.00852	0.00844	0.00836				
C1S1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00239	0.01259	0.02230	0.03185				
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00016	0.00452	0.01139	0.00952	0.00515	0.00026				
CO	0.04458	0.04259	0.04013	0.03708	0.03329	0.02858	0.02286	0.01608	0.00644	0.00068	0.00002	0.00000	0.00000	0.00000				
CO2	0.10480	0.10679	0.10925	0.11229	0.11609	0.12079	0.12651	0.13318	0.13977	0.13831	0.13010	0.12346	0.11734					
H2	0.02015	0.02214	0.02460	0.02765	0.03144	0.03615	0.04185	0.04802	0.04077	0.01511	0.00266	0.00018	0.00000					
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00014					
H2O	0.12200	0.12001	0.11755	0.11450	0.11071	0.10600	0.10029	0.09384	0.09359	0.10745	0.12313	0.13312	0.06156					
NH3	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00003	0.00003	0.00002	0.00001	0.00000					
N2	0.70011	0.70012	0.70012	0.70012	0.70012	0.70012	0.70012	0.70012	0.70644	0.71608	0.71345	0.70733	0.70049					

CASE=	0	0/F=	12.5000	F/A=	0.08000	PERCENT FUEL=	7.4074	PHI=	1.1723									
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0					
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3					
RHO, G/CC	1.1762-4	1.2344-4	1.2939-4	1.3547-4	1.4174-4	1.4826-4	1.5519-4	1.6268-4	1.7086-4	1.7987-4	1.8987-4	2.0105-4	2.1361-4					
M, MOL WT	27.025	27.348	27.604	27.792	27.913	27.981	28.016	28.032	28.040	28.043	28.045	28.045	28.046					
CP, CAL/(G)(K)	0.9831	0.8627	0.7396	0.6175	0.5100	0.4331	0.3882	0.3648	0.3528	0.3462	0.3421	0.3390	0.3363					
GAMMA (S)	1.1413	1.1461	1.1548	1.1692	1.1900	1.2135	1.2329	1.2457	1.2534	1.2582	1.2616	1.2644	1.2670					
SON VEL,M/SEC	991.5	970.0	951.0	935.1	922.3	910.7	897.2	880.9	862.2	841.9	820.5	798.3	775.2					

MOLE FRACTIONS

AR	0.00805	0.00815	0.00823	0.00828	0.00832	0.00834	0.00835	0.00835	0.00836	0.00836	0.00836	0.00836	0.00836	0.00836				
CO	0.08309	0.07458	0.06677	0.06049	0.05618	0.05364	0.05220	0.05126	0.05046	0.04962	0.04868	0.04755	0.04621					
CO2	0.06086	0.07108	0.08025	0.08723	0.09249	0.09539	0.09702	0.09804	0.09889	0.09974	0.10069	0.10182	0.10316					
H	0.01161	0.00749	0.00473	0.00294	0.00181	0.00109	0.00064	0.00036	0.00019	0.00010	0.00005	0.00002	0.00001					
H02	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
H2	0.02038	0.01758	0.01536	0.01385	0.01307	0.01291	0.01316	0.01365	0.01431	0.01510	0.01605	0.01717	0.01852					
H2O	0.10239	0.11109	0.11789	0.12278	0.12586	0.12747	0.12807	0.12804	0.12763	0.12695	0.12607	0.12497	0.12363					
NO	0.00848	0.00622	0.00422	0.00260	0.00142	0.00069	0.00030	0.00012	0.00004	0.00001	0.00000	0.00000	0.00000					
N2	0.67039	0.67958	0.68698	0.69247	0.69609	0.69816	0.69922	0.69972	0.69994	0.70005	0.70009	0.70011	0.70011					
O	0.00532	0.00331	0.00168	0.00076	0.00030	0.00010	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000					
OH	0.01679	0.01240	0.00859	0.00553	0.00327	0.00178	0.00089	0.00041	0.00018	0.00007	0.00002	0.00001	0.00000					
O2	0.01204	0.00852	0.00529	0.00277	0.00119	0.00042	0.00012	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000					



ADD C1S1  
ADD H2O(L)

CASE=	0	0/F=	11.1111	F/A=	0.09000	PERCENT FUEL=	8.2569	PHI=	1.3189									
P, ATM	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0					
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3					
RHO, G/CC	3.3283-4	3.5661-4	3.8404-4	4.1604-4	4.5386-4	4.9927-4	5.5510-4	6.3239-4	7.4288-4	8.7846-4	1.0588-3	1.3246-3	2.0632-3					
M, MOL WT	27.311	27.311	27.311	27.311	27.311	27.312	27.330	27.676	28.447	28.833	28.961	28.984	33.859					
CP, CAL/(G)(K)	0.3404	0.3385	0.3369	0.3356	0.3349	0.3358	0.3596	0.5939	0.4853	0.3473	0.2915	0.2721	0.7412					
GAMMA (S)	1.2719	1.2738	1.2755	1.2768	1.2776	1.2772	1.2649	1.1980	1.2195	1.2740	1.3148	1.3375	1.1571					
SON VEL,M/SEC	762.1	736.8	710.5	683.0	654.1	623.5	588.5	536.6	499.5	469.5	434.4	391.8	292.0					

MOLE FRACTIONS

AR	0.00806	0.00806	0.00806	0.00806	0.00806	0.00807	0.00807	0.00817	0.00829	0.00831	0.00826	0.00817	0.00807					
C1S1	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01314	0.02411	0.03436	0.04538	0.05773					
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00033	0.00664	0.01392	0.01511	0.01197	0.00655	0.00003					
CO	0.07611	0.07309	0.06942	0.06492	0.05937	0.05250	0.04360	0.02573	0.00464	0.00038	0.00001	0.00000	0.00000					
CO2	0.08601	0.08903	0.09270	0.09719	0.10274	0.10961	0.11830	0.13190	0.13493	0.12742	0.11966	0.11231	0.10436					
H2	0.03946	0.04248	0.04615	0.05064	0.05618	0.06301	0.07069	0.06471	0.03208	0.00994	0.00170	0.00012	0.00000					
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
H2O	0.11484	0.11182	0.10815	0.10365	0.09811	0.09126	0.08302	0.07827	0.09858	0.11873	0.13232	0.14309	0.1864					
NH3	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00003	0.00006	0.00007	0.00005	0.00003	0.00001	0.00000					
N2	0.67552	0.67552	0.67552	0.67552	0.67552	0.67554	0.67597	0.68451	0.69434	0.69595	0.69170	0.68437	0.67556					

CASE=	0	0/F=	11.1111	F/A=	0.09000	PERCENT FUEL=	8.2569	PHI=	1.3189									
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000					
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4					
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0					
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3					
RHO, G/CC	2.3324-4	2.4363-4	2.5424-4	2.6521-4	2.7676-4	2.8908-4	3.0239-4	3.1688-4	3.3278-4	3.5033-4	3.6980-4	3.9156-4	4.1604-4					
M, MOL WT	26.795	26.988	27.120	27.203	27.252	27.279	27.294	27.303	27.307	27.309	27.310	27.311	27.311					
CP, CAL/(G)(K)	0.7711	0.6494	0.5456	0.4691	0.4193	0.3892	0.3715	0.3609	0.3544	0.3501	0.3471	0.3446	0.3424					
GAMMA (S)	1.1586	1.1712	1.1885	1.2079	1.2255	1.2392	1.2488	1.2553	1.2597	1.2630	1.2656	1.2678	1.2699					
SON VEL,M/SEC	1003.3	987.0	973.3	960.7	947.3	932.0	914.8	896.0	875.9	854.7	832.8	810.0	786.5					

MOLE FRACTIONS

AR	0.00791	0.00797	0.00801	0.00803	0.00805	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806					
CO	0.10053	0.09619	0.09302	0.09089	0.08946	0.08838	0.08740	0.08640	0.08528	0.08399	0.08248	0.08071	0.07861					
CO2	0.05851	0.06401	0.06796	0.07078	0.07230	0.07354	0.07461	0.07567	0.07681	0.07811	0.07963	0.08140	0.08350					
H	0.00967	0.00655	0.00437	0.00286	0.00182	0.00112	0.00066	0.00037	0.00020	0.00010	0.00005	0.00002	0.00001					
H2	0.02825	0.02687	0.02623	0.02620	0.02660	0.02726	0.02810	0.02909	0.03023	0.03154	0.03307	0.03485	0.03695					
H2O	0.11275	0.11855	0.12239	0.12461	0.12565	0.12587	0.12556	0.12488	0.12391	0.12268	0.12120	0.11944	0.11735					
NO	0.00473	0.00304	0.00179	0.00097	0.00049	0.00023	0.00010	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000					
N2	0.66039	0.66602	0.66991	0.67236	0.67381	0.67462	0.67506	0.67530	0.67542	0.67547	0.67550	0.67551	0.67552					
O	0.00235	0.00116	0.00051	0.00020	0.00007	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					
OH	0.01111	0.00757	0.00483	0.00288	0.00162	0.00085	0.00042	0.00020	0.00008	0.00003	0.00001	0.00000	0.00000					
O2	0.00380	0.00208	0.00098	0.00040	0.00014	0.00005	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000					



	CASE= 0	O/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901				PHI= 0.1465					
P, ATM	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
P, PSIA	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	1.1767-4	1.2607-4	1.3577-4	1.4709-4	1.6046-4	1.7651-4	1.9612-4	2.2063-4	2.5215-4	2.9418-4	3.5301-4	4.4126-4	5.8835-4
M, MOL WT	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967	28.967
CP, CAL/(G*IK)	0.2996	0.2950	0.2907	0.2864	0.2820	0.2774	0.2723	0.2666	0.2606	0.2546	0.2482	0.2422	0.2362
GAMMA (S)	1.2971	1.3030	1.3089	1.3151	1.3215	1.3285	1.3369	1.3466	1.3574	1.3698	1.3799	1.3893	1.3952
SON VEL, M/SEC	747.3	723.6	698.9	673.0	645.9	617.5	587.7	556.1	522.2	485.5	445.0	399.4	346.6

MOLE FRACTIONS

AR	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923	0.00923
CO2	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088	0.02088
H2O	0.01960	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962	0.01962
NO	0.00120	0.00072	0.00033	0.00020	0.00009	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.77262	0.77287	0.77303	0.77313	0.77319	0.77321	0.77322	0.77323	0.77323	0.77323	0.77323	0.77323	0.77323
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.17642	0.17667	0.17683	0.17693	0.17699	0.17702	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703	0.17703

	CASE= 0	O/F=100.0000	F/A= 0.01000	PERCENT FUEL= 0.9901				PHI= 0.1465					
P, ATM	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
P, PSIA	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.2382-4	1.2911-4	1.3462-4	1.4042-4	1.4657-4	1.5315-4	1.6025-4	1.6798-4	1.7644-4	1.8576-4	1.9610-4	2.0764-4	2.2063-4
M, MOL WT	28.448	28.604	28.721	28.806	28.865	28.905	28.930	28.946	28.956	28.961	28.964	28.966	28.966
CP, CAL/(G*IK)	0.6154	0.5503	0.4936	0.4467	0.4094	0.3808	0.3593	0.3434	0.3315	0.3225	0.3153	0.3094	0.3042
GAMMA (S)	1.1745	1.1836	1.1947	1.2072	1.2202	1.2329	1.2446	1.2550	1.2641	1.2720	1.2790	1.2854	1.2914
SON VEL, M/SEC	980.4	963.8	948.3	933.3	918.4	903.1	887.1	870.1	852.0	833.0	812.9	792.0	770.1

MOLE FRACTIONS

AR	0.00907	0.00912	0.00915	0.00918	0.00920	0.00921	0.00922	0.00922	0.00923	0.00923	0.00923	0.00923	0.00923
CO	0.00574	0.00408	0.00273	0.00172	0.00102	0.00057	0.00030	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000
CO2	0.01477	0.01654	0.01797	0.01905	0.01979	0.02027	0.02056	0.02072	0.02081	0.02085	0.02087	0.02088	0.02088
H	0.00213	0.00128	0.00072	0.00039	0.00019	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00069	0.00051	0.00036	0.00024	0.00015	0.00009	0.00005	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000
H2O	0.01210	0.01373	0.01513	0.01629	0.01723	0.01795	0.01849	0.01889	0.01916	0.01935	0.01947	0.01954	0.01959
NO	0.03138	0.02779	0.02423	0.02030	0.01756	0.01455	0.01182	0.00940	0.00729	0.00549	0.00401	0.00281	0.00189
NO2	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.74368	0.74963	0.75454	0.75853	0.76173	0.76429	0.76633	0.76797	0.76927	0.77032	0.77114	0.77178	0.77227
O	0.02082	0.01410	0.00922	0.00580	0.00351	0.00202	0.00111	0.00057	0.00028	0.00012	0.00005	0.00002	0.00001
OH	0.00003	0.00899	0.00720	0.00557	0.00416	0.00299	0.00207	0.00137	0.00087	0.00052	0.00030	0.00016	0.00008
O2	0.14877	0.15421	0.15871	0.16241	0.16546	0.16795	0.16999	0.17165	0.17299	0.17406	0.17491	0.17556	0.17606

## ADD H2O(L)

	CASE=	0	0/F=	50.0000	F/A=	0.02000	PERCENT FUEL=			1.9608	PHI=					0.2931
P, ATM	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000	1,5000
P, PSIA	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0			
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3			
RHO, G/CC	3.5304-4	3.7826-4	4.0736-4	4.4130-4	4.8142-4	5.2956-4	5.8840-4	6.6195-4	7.5652-4	8.8261-4	1.0591-3	1.3239-3	1.7942-3			
M, MOL WT	28.969	28.969	28.969	28.970	28.970	28.970	28.969	28.969	28.969	28.970	28.970	28.970	28.970			
CP, CAL/(G*IK)	0.3045	0.3000	0.2955	0.2911	0.2865	0.2818	0.2764	0.2704	0.2642	0.2579	0.2522	0.2474	0.2451			
GAMMA (S)	1.2909	1.2965	1.3023	1.3083	1.3147	1.3218	1.3302	1.3399	1.3508	1.3633	1.3737	1.3837	1.1878			
SON VEL,M/SEC	745.5	721.8	697.1	671.3	644.3	615.9	586.2	554.7	520.9	484.3	444.0	398.6	317.2			

## MOLE FRACTIONS

AR	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO2	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106	0.04106
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.03885	0.03886	0.03886	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887	0.03887
NO	0.00108	0.00065	0.00036	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.76516	0.76539	0.76554	0.76563	0.76568	0.76570	0.76571	0.76571	0.76571	0.76571	0.76572	0.76572	0.76572	0.76572	0.76572	0.76572
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.14465	0.14488	0.14563	0.14512	0.14517	0.14520	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521	0.14521

	CASE=	0	0/F=	50.0000	F/A=	0.02000	PERCENT FUEL=			1.9608	PHI=					0.2931
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0			
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3			
RHO, G/CC	2.4790-4	2.5841-4	2.6938-4	2.8094-4	2.9321-4	3.0636-4	3.2055-4	3.3599-4	3.5290-4	3.7155-4	3.9223-4	4.1532-4	4.4129-4			
M, MOL WT	28.479	28.626	28.736	28.816	28.872	28.910	28.934	28.949	28.958	28.963	28.966	28.968	28.969			
CP, CAL/(G*IK)	0.6079	0.5458	0.4915	0.4464	0.4106	0.3832	0.3627	0.3474	0.3360	0.3272	0.3202	0.3144	0.3092			
GAMMA (S)	1.1739	1.1829	1.1937	1.2058	1.2183	1.2304	1.2414	1.2511	1.2595	1.2669	1.2735	1.2795	1.2853			
SON VEL,M/SEC	979.6	963.1	947.6	932.6	917.6	902.1	885.9	868.7	850.5	831.3	811.2	790.1	768.3			

## MOLE FRACTIONS

AR	0.00899	0.00903	0.00907	0.00909	0.00911	0.00912	0.00913	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914	0.00914
CO	0.00923	0.00653	0.00431	0.00269	0.00158	0.00088	0.00046	0.00022	0.00010	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000
CO2	0.03104	0.03405	0.03642	0.03816	0.03934	0.04010	0.04056	0.04081	0.04095	0.04101	0.04104	0.04106	0.04106	0.04106	0.04106	0.04106
H	0.00206	0.00120	0.00067	0.00035	0.00018	0.00008	0.00004	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00128	0.00091	0.00062	0.00040	0.00025	0.00015	0.00008	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.02914	0.03143	0.03331	0.03482	0.03599	0.03688	0.03754	0.03801	0.03834	0.03855	0.03869	0.03878	0.03882			
NO	0.02856	0.02519	0.02190	0.01876	0.01581	0.01310	0.01064	0.00846	0.00656	0.00495	0.00361	0.00254	0.00170			
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N2	0.73846	0.74402	0.74859	0.75228	0.75523	0.75757	0.75944	0.76094	0.76213	0.76308	0.76383	0.76441	0.76484			
O	0.01345	0.00907	0.00591	0.00372	0.00224	0.00129	0.00071	0.00037	0.00018	0.00008	0.00003	0.00001	0.00000			
OH	0.01350	0.01091	0.00856	0.00651	0.00480	0.00343	0.00236	0.00156	0.00098	0.00059	0.00034	0.00018	0.00009			
O2	0.12415	0.12762	0.13060	0.13319	0.13543	0.13737	0.13903	0.14042	0.14159	0.14253	0.14329	0.14388	0.14433			

## ADD H20(L)

CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=			2.9126	PHI=					0.4396		
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	400.0	300.0			
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3				
RHO, G/CC	7.0614-4	7.5658-4	8.1478-4	8.8268-4	9.6293-4	1.0592-3	1.1769-3	1.3240-3	1.5132-3	1.7654-3	2.1184-3	2.6480-3	3.7038-3				
M, MOL WT	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	28.972	30.392				
CP, CAL/(G)(K)	0.3093	0.3048	0.3003	0.2957	0.2910	0.2860	0.2804	0.2742	0.2677	0.2612	0.2551	0.2499	0.2493				
GAMMA (S)	1.2850	1.2904	1.2961	1.3020	1.3084	1.3154	1.3238	1.3336	1.3445	1.3561	1.3678	1.3784	1.4973				
SON VEL, M/SEC	743.8	720.0	695.4	669.6	642.7	614.4	584.7	553.3	519.7	483.2	443.0	397.8	316.1				

## MOLE FRACTIONS

AR	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO2	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086	0.06086
H20(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.04673
H2O	0.05772	0.05773	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.05774	0.01101
NO	0.00095	0.00057	0.00031	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75786	0.75806	0.75819	0.75827	0.75831	0.75833	0.75834	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835	0.75835
OH	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.11351	0.11371	0.11364	0.11392	0.11397	0.11399	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400	0.11400

CASE=	0	0/F=	33.3333	F/A=	0.03000	PERCENT FUEL=			2.9126	PHI=					0.4396		
P, ATM	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
P, PSIA	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0				
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3				
RHO, G/CC	4.9658-4	5.1740-4	5.3920-4	5.6219-4	5.8665-4	6.1288-4	6.4123-4	6.7208-4	7.0589-4	7.4317-4	7.8453-4	8.3072-4	8.8266-4				
M, MOL WT	28.524	28.658	28.759	28.832	28.883	28.917	28.939	28.953	28.962	28.966	28.969	28.971	28.971				
CP, CAL/(G)(K)	0.5926	0.5346	0.4839	0.4418	0.4086	0.3831	0.3641	0.3500	0.3394	0.3312	0.3246	0.3190	0.3140				
GAMMA (S)	1.1749	1.1839	1.1945	1.2062	1.2180	1.2293	1.2394	1.2483	1.2560	1.2627	1.2688	1.2744	1.2797				
SON VEL, M/SEC	979.2	963.0	947.6	932.5	917.3	901.6	885.1	867.6	849.2	829.8	809.6	788.5	766.6				

## MOLE FRACTIONS

AR	0.00891	0.00896	0.00899	0.00901	0.00903	0.00904	0.00904	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905	0.00905
CO	0.01153	0.00797	0.00521	0.00323	0.00189	0.00105	0.00054	0.00026	0.00012	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
CO2	0.04839	0.05223	0.05520	0.05733	0.05878	0.05970	0.06025	0.06055	0.06072	0.06080	0.06083	0.06085	0.06085				
H	0.00165	0.00096	0.00053	0.00028	0.00014	0.00006	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00165	0.00115	0.00077	0.00049	0.00030	0.00018	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.04751	0.05002	0.05204	0.05362	0.05484	0.05575	0.05642	0.05689	0.05722	0.05743	0.05757	0.05765	0.05770				
NO	0.02541	0.02231	0.01934	0.01654	0.01393	0.01153	0.00937	0.00745	0.00578	0.00436	0.00318	0.00224	0.00150				
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
N	0.73390	0.73896	0.74310	0.74641	0.74905	0.75114	0.75280	0.75412	0.75518	0.75602	0.75668	0.75719	0.75758				
O	0.00849	0.00570	0.00371	0.00233	0.00140	0.00081	0.00044	0.00023	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
OH	0.01369	0.01091	0.00847	0.00640	0.00469	0.00333	0.00229	0.00151	0.00095	0.00057	0.00032	0.00017	0.00008				
O2	0.09883	0.10080	0.10262	0.10432	0.10592	0.10739	0.10870	0.10985	0.11083	0.11165	0.11231	0.11283	0.11322				

## ADD H2O(L)

CASE=	0	0/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862					
P. ATM	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
P. PSIA	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
T. DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0
T. DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3
RHO, G/CC	1.4124-3	1.5133-3	1.6297-3	1.7655-3	1.9260-3	2.1186-3	2.3540-3	2.6483-3	3.0266-3	3.5310-3	4.2372-3	5.2965-3	7.6008-3
M. MOL WT	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	28.974	31.185
CP, CAL/(G)(K)	0.3139	0.3094	0.3049	0.3002	0.2954	0.2902	0.2843	0.2779	0.2712	0.2644	0.2580	0.2523	0.2473
GAMMA (S)	1.2796	1.2848	1.2902	1.2961	1.3024	1.3095	1.3179	1.3276	1.3386	1.3503	1.3622	1.3733	1.3879
SON VEL,M/SEC	742.2	718.4	693.8	668.1	641.2	613.0	583.4	552.1	518.5	482.2	442.1	397.0	315.0

## MOLE FRACTIONS

AR	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897	0.00897
CO2	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027	0.08027
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.07089
H2O	0.07623	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.07625	0.00537
NO	0.00081	0.00048	0.00027	0.00013	0.00006	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.75070	0.75087	0.75098	0.75105	0.75109	0.75111	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112	0.75112
OH	0.00004	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.08297	0.08314	0.08325	0.08332	0.08336	0.08338	0.08338	0.08339	0.08339	0.08339	0.08339	0.08339	0.08339

CASE=	0	0/F= 25.0000	F/A= 0.04000	PERCENT FUEL= 3.8462				PHI= 0.5862			
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P. ATM	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000
P. PSIA	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0	147.0
T. DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0
T. DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3
RHO, G/CC	1.2449-3	1.2961-3	1.3499-3	1.4068-3	1.4676-3	1.5329-3	1.6035-3	1.6805-3	1.7650-3	1.8581-3	1.9615-3	2.0770-3	2.2069-3
M. MOL WT	28.602	28.715	28.799	28.860	28.902	28.930	28.948	28.959	28.966	28.970	28.972	28.973	28.974
CP, CAL/(G)(K)	0.5583	0.5081	0.4645	0.4286	0.4004	0.3788	0.3627	0.3507	0.3415	0.3343	0.3284	0.3232	0.3184
GAMMA (S)	1.1795	1.1885	1.1988	1.2097	1.2204	1.2304	1.2392	1.2468	1.2535	1.2593	1.2647	1.2697	1.2747
SON VEL,M/SEC	979.8	963.9	948.6	933.4	918.0	901.8	884.9	867.0	848.3	828.7	808.3	787.0	765.0

## MOLE FRACTIONS

AR	0.00885	0.00889	0.00891	0.00893	0.00894	0.00895	0.00896	0.00896	0.00896	0.00897	0.00897	0.00897	0.00897
CO	0.01121	0.00895	0.00522	0.00321	0.00187	0.00103	0.00053	0.00026	0.00012	0.00005	0.00002	0.00001	0.00000
CO2	0.06743	0.07150	0.07457	0.07675	0.07820	0.07912	0.07967	0.07997	0.08013	0.08021	0.08025	0.08026	0.08027
H	0.00106	0.00061	0.00034	0.00018	0.00009	0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
HO2	0.00003	0.00003	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00171	0.00118	0.00078	0.00050	0.00030	0.00017	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000
H2O	0.06702	0.06934	0.07119	0.07263	0.07371	0.07452	0.07511	0.07552	0.07580	0.07599	0.07610	0.07618	0.07622
NO	0.02180	0.01905	0.01647	0.01405	0.01183	0.00979	0.00796	0.00633	0.00491	0.00371	0.00271	0.00190	0.00128
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001
N2	0.73056	0.73485	0.73833	0.74110	0.74331	0.74505	0.74644	0.74755	0.74843	0.74914	0.74970	0.75014	0.75046
O	0.00462	0.00309	0.00200	0.00125	0.00076	0.00044	0.00024	0.00012	0.00006	0.00003	0.00001	0.00000	0.00000
OH	0.01199	0.00946	0.00728	0.00547	0.00399	0.00283	0.00194	0.00128	0.00080	0.00048	0.00027	0.00014	0.00007
O2	0.07309	0.07393	0.07487	0.07590	0.07696	0.07802	0.07902	0.07993	0.08073	0.08140	0.08195	0.08239	0.08272

ADD H20:L1

CASE=	0	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL= 4.7619				PHI= 0.7327				
P, ATM	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000	15.000
P, PSIA	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4	220.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3	
RHO, G/CC	3.5313-3	3.7836-3	4.0746-3	4.4142-3	4.8154-3	5.2970-3	5.8855-3	6.6212-3	7.5671-3	8.8283-3	1.0594-2	1.3242-2	1.9452-2	
M, MOL WT	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	28.977	31.924
CP, CAL/(G*IK)	0.3183	0.3139	0.3094	0.3047	0.2997	0.2943	0.2882	0.2816	0.2746	0.2675	0.2608	0.2547	0.3264	
GAMMA (S)	1.2746	1.2795	1.2848	1.2905	1.2968	1.3038	1.3122	1.3220	1.3329	1.3447	1.3568	1.3684	1.2567	
SON VEL,M/SEC	740.7	716.9	692.3	666.6	639.8	611.6	582.1	550.9	517.4	481.2	441.2	396.3	313.4	

MOLE FRACTIONS

AR	0.00888	0.00888	0.00888	0.00958	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO2	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932	0.09932
H20(L1)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.09232
H2O	0.09440	0.09441	0.09441	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.09442	0.00210
NO	0.00065	0.00039	0.00021	0.00011	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
NO2	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2	0.74370	0.74383	0.74392	0.74397	0.74400	0.74402	0.74402	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403	0.74403
OH	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2	0.05302	0.05315	0.05324	0.05330	0.05333	0.05334	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335	0.05335

CASE=	0	O/F=	20.0000	F/A=	0.05000	PERCENT FUEL= 4.7619				PHI= 0.7327				
P, ATM	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000	20.000
P, PSIA	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9	293.9
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0	
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3	
RHO, G/CC	2.4922-3	2.5940-3	2.7012-3	2.8148-3	2.9360-3	3.0664-3	3.2077-3	3.3616-3	3.5304-3	3.7167-3	3.9234-3	4.1544-3	4.4141-3	
M, MOL WT	28.631	28.736	28.815	28.872	28.911	28.937	28.953	28.963	28.969	28.973	28.975	28.976	28.977	
CP, CAL/(G*IK)	0.5480	0.5010	0.4598	0.4258	0.3989	0.3786	0.3636	0.3525	0.3441	0.3375	0.3320	0.3272	0.3227	
GAMMA (S)	1.1806	1.1895	1.1995	1.2101	1.2204	1.2297	1.2379	1.2449	1.2508	1.2561	1.2609	1.2655	1.2700	
SON VEL,M/SEC	979.8	964.0	948.6	933.4	917.8	901.5	884.3	866.3	847.3	827.6	807.0	785.7	763.6	

MOLE FRACTIONS

AR	0.00878	0.00881	0.00883	0.00885	0.00886	0.00887	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888	0.00888
CO	0.01305	0.00890	0.00576	0.00354	0.00206	0.00113	0.00059	0.00028	0.00013	0.00005	0.00002	0.00001	0.00000	0.00000
CO2	0.08509	0.08960	0.09301	0.09542	0.09704	0.09805	0.09855	0.09899	0.09917	0.09926	0.09930	0.09931	0.09932	0.09932
H	0.00080	0.00046	0.00025	0.00013	0.00006	0.00003	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O	0.00003	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2	0.00192	0.00132	0.00087	0.00055	0.00033	0.00019	0.00011	0.00005	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000
H2O	0.08583	0.08806	0.08981	0.09115	0.09215	0.09289	0.09341	0.09378	0.09403	0.09419	0.09429	0.09435	0.09438	
NO	0.01756	0.01524	0.01310	0.01115	0.00937	0.00775	0.00630	0.00502	0.00390	0.00294	0.00215	0.00151	0.00102	
NO2	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	
N2	0.72635	0.73021	0.73330	0.73574	0.73763	0.73911	0.74026	0.74116	0.74188	0.74245	0.74290	0.74324	0.74351	
O	0.00264	0.00175	0.00113	0.00071	0.00043	0.00025	0.00013	0.00007	0.00003	0.00002	0.00001	0.00000	0.00000	
OH	0.01026	0.00803	0.00615	0.00460	0.00335	0.00237	0.00162	0.00107	0.00067	0.00040	0.00023	0.00012	0.00006	
O2	0.04769	0.04759	0.04774	0.04813	0.04868	0.04933	0.05001	0.05067	0.05127	0.05178	0.05221	0.05256	0.05282	

ADD H2O(L)

	CASE=	0	0/F=	16.6667	F/A=	0.06000	PERCENT FUEL=	5.6604	PHI=	0.8792											
P, ATM		30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000	30.000
P, PSIA		440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9	440.9
T, DEG K		1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0	200.0	100.0	0.0	0.0	0.0	0.0	0.0
T, DEG F		2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3							
RHO, G/CC		7.0632-3	7.5677-3	8.1499-3	8.8290-3	9.6316-3	1.0595-2	1.1772-2	1.3244-2	1.5135-2	1.7658-2	2.1190-2	2.7502-2	3.9735-2							
M, MOL WT		28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979	28.979
CP, CAL/(G*IK)		0.3225	0.3182	0.3137	0.3089	0.3038	0.2983	0.2920	0.2851	0.2779	0.2706	0.2635	0.2563	0.2491							
GAMMA (SI)		1.2701	1.2747	1.2797	1.2853	1.2915	1.2985	1.3069	1.3166	1.3276	1.3394	1.3517	1.3649	1.3787							
SON VEL,M/SEC		739.3	715.6	690.9	665.2	638.4	610.4	580.9	549.7	516.4	480.2	440.4	363.9	309.7							

MOLE FRACTIONS

AR		0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO2		0.11801	0.11802	0.11802	0.11862	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802	0.11802
H2O(L)		0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
H2O		0.11223	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224	0.11224
NO		0.00043	0.00026	0.00014	0.00007	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
N2		0.73685	0.73694	0.73700	0.73703	0.73705	0.73706	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707	0.73707
OH		0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
O2		0.02365	0.02374	0.02380	0.02384	0.02386	0.02387	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388	0.02388

	CASE=	0	0/F=	16.6667	F/A=	0.06000	PERCENT FUEL=	5.6604	PHI=	0.8792											
P, ATM		40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
P, PSIA		587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8	587.8
T, DEG K		2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0							
T, DEG F		4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3							
RHO, G/CC		4.9844-3	5.1878-3	5.4024-3	5.6298-3	5.8726-3	6.1336-3	6.4161-3	6.7240-3	7.0616-3	7.4311-3	7.8476-3	8.3094-3	8.8289-3							
M, MOL WT		28.630	28.735	28.815	28.873	28.913	28.940	28.957	28.967	28.973	28.976	28.978	28.978	28.979							
CP, CAL/(G*IK)		0.5466	0.5033	0.4637	0.4295	0.4019	0.3808	0.3654	0.3544	0.3463	0.3402	0.3352	0.3308	0.3266							
GAMMA (SI)		1.1805	1.1886	1.1981	1.2084	1.2188	1.2282	1.2364	1.2431	1.2487	1.2534	1.2577	1.2618	1.2659							
SON VEL,M/SEC		979.7	963.6	948.1	932.7	917.1	900.9	883.7	865.6	846.6	826.6	805.9	784.5	762.3							

MOLE FRACTIONS

AR		0.00869	0.00873	0.00875	0.00877	0.00878	0.00879	0.00879	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880	0.00880
CO		0.01552	0.01079	0.00711	0.00443	0.00260	0.00144	0.00075	0.00036	0.00016	0.00007	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
CO2		0.10108	0.10623	0.11023	0.11315	0.11515	0.11642	0.11718	0.11760	0.11783	0.11793	0.11798	0.11800	0.11801							
H		0.00062	0.00036	0.00020	0.00010	0.00005	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
HQ2		0.00002	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000							
H2		0.00233	0.00163	0.00109	0.00070	0.00043	0.00025	0.00014	0.00007	0.00003	0.00002	0.00001	0.00000	0.00000							
H2O		0.10424	0.10639	0.10807	0.10934	0.11027	0.11094	0.11140	0.11172	0.11193	0.11206	0.11214	0.11219	0.11222							
NO		0.01237	0.01050	0.00887	0.00745	0.00620	0.00511	0.00415	0.00331	0.00257	0.00195	0.00142	0.00100	0.00067							
NO2		0.00002	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001							
N2		0.72201	0.72559	0.72844	0.73064	0.73229	0.73351	0.73441	0.73509	0.73561	0.73601	0.73631	0.73654	0.73672							
O		0.00132	0.00086	0.00054	0.00033	0.00020	0.00011	0.00006	0.00003	0.00002	0.00001	0.00000	0.00000	0.00000							
OH		0.00799	0.00617	0.00467	0.00346	0.00251	0.00177	0.00121	0.00080	0.00050	0.00030	0.00017	0.00009	0.00004							
O2		0.02380	0.02273	0.02200	0.02160	0.02150	0.02162	0.02188	0.02220	0.02254	0.02285	0.02313	0.02335	0.02352							



ADD H2O(L)  
ADD C(S)

CASE= 0 O/F= 14.6540 F/A= 0.06824 PERCENT FUEL= 6.3882 PHI= 1.0000  
P, ATM 50.000 50.000 50.000 50.000 50.000 50.000 50.000 50.000 50.000 50.000 50.000 50.000 50.000  
P, PSIA 734.8 734.8 734.8 734.8 734.8 734.8 734.8 734.8 734.8 734.8 734.8 734.8 734.8  
T, DEG K 1500.0 1400.0 1300.0 1200.0 1100.0 1000.0 900.0 800.0 700.0 600.0 500.0 400.0 300.0  
T, DEG F 2240.3 2060.3 1880.3 1700.3 1520.3 1340.3 1160.3 980.3 800.3 620.3 440.3 260.3 80.3  
RHO, G/CC 1.1773-2 1.2614-2 1.3584-2 1.4716-2 1.6054-2 1.7659-2 1.9621-2 2.2074-2 2.5227-2 2.9432-2 3.5318-2 4.8179-2 6.7356-2  
M, MOL HT 28.981 28.981 28.981 28.981 28.981 28.981 28.981 28.981 28.981 28.981 28.981 28.981 31.627  
CP, CAL/(G)(K) 0.3256 0.3213 0.3169 0.3122 0.3071 0.3015 0.2951 0.2880 0.2806 0.2731 0.2658 0.2586 0.3095  
GAMMA (S) 1.2670 1.2714 1.2762 1.2815 1.2875 1.2944 1.3027 1.3124 1.3234 1.3353 1.3477 1.3617 1.2464  
SON VEL,/M/SEC 738.4 714.6 689.9 664.2 637.4 609.4 580.0 548.8 515.5 479.4 439.7 355.5 306.2

MOLE FRACTIONS

AR 0.00873 0.00873 0.00873 0.00873 0.00873 0.00873 0.00873 0.00873 0.00873 0.00873 0.00873 0.00873 0.00873  
CO 0.00003 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
CO2 0.13313 0.13315 0.13316 0.13316 0.13316 0.13316 0.13316 0.13316 0.13316 0.13316 0.13316 0.13316 0.13316  
H2 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
H2O(L) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
H2O 0.12667 0.12667 0.12668 0.12668 0.12668 0.12668 0.12668 0.12668 0.12668 0.12668 0.12668 0.12668 0.04301  
NO 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
N2 0.73141 0.73142 0.73143 0.73143 0.73143 0.73143 0.73143 0.73143 0.73143 0.73143 0.73143 0.73143 0.73143  
O2 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000

CASE= 0 O/F= 14.2857 F/A= 0.07000 PERCENT FUEL= 6.5421 PHI= 1.0258  
P, ATM 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000 0.5000  
P, PSIA 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3  
T, DEG K 2800.0 2700.0 2600.0 2500.0 2400.0 2300.0 2200.0 2100.0 2000.0 1900.0 1800.0 1700.0 1600.0  
T, DEG F 4580.3 4400.3 4220.3 4040.3 3860.3 3680.3 3500.3 3320.3 3140.3 2960.3 2780.3 2600.3 2420.3  
RHO, G/CC 5.8828-5 6.1956-5 6.5190-5 6.8511-5 7.1968-5 7.5580-5 7.9383-5 8.3422-5 8.7751-5 9.2444-5 9.7605-5 1.0335-4 1.0982-4  
M, MOL HT 27.032 27.453 27.812 28.109 28.346 28.529 28.661 28.750 28.802 28.825 28.833 28.835 28.836  
CP, CAL/(G)(K) 1.1398 1.0197 0.9046 0.7958 0.6950 0.6043 0.5250 0.4565 0.3988 0.3594 0.3414 0.3340 0.3298  
GAMMA (S) 1.1340 1.1359 1.1396 1.1454 1.1538 1.1653 1.1800 1.1985 1.2209 1.2421 1.2544 1.2603 1.2643  
SON VEL,/M/SEC 988.2 963.8 941.1 920.3 901.3 883.8 867.8 853.1 839.6 825.0 806.9 786.0 763.7

MOLE FRACTIONS

AR 0.00813 0.00826 0.00837 0.00846 0.00853 0.00858 0.00862 0.00865 0.00866 0.00867 0.00867 0.00867 0.00867  
CO 0.07243 0.06198 0.05104 0.04042 0.03085 0.02285 0.01666 0.01232 0.00973 0.00853 0.00806 0.00780 0.00756  
CO2 0.05476 0.06719 0.07982 0.09184 0.10252 0.11138 0.11820 0.12296 0.12579 0.12710 0.12760 0.12787 0.12812  
H 0.01481 0.00924 0.00553 0.0036 0.00173 0.00091 0.00046 0.00022 0.00011 0.00005 0.00002 0.00001 0.00000  
H2 0.00001 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
H2 0.01658 0.01338 0.01048 0.00801 0.00601 0.00446 0.00333 0.00256 0.00215 0.00203 0.00211 0.00227 0.00250  
H2O 0.08597 0.09619 0.10472 0.11156 0.11684 0.12076 0.12354 0.12537 0.12641 0.12684 0.12690 0.12678 0.12658  
NO 0.01241 0.01006 0.00783 0.00582 0.00411 0.00272 0.00166 0.00090 0.00041 0.00015 0.00004 0.00001 0.00000  
N2 0.67492 0.68670 0.69685 0.70534 0.71218 0.71746 0.72134 0.72396 0.72552 0.72623 0.72647 0.72654 0.72656  
O 0.01223 0.00754 0.00438 0.00238 0.00120 0.00055 0.00023 0.00008 0.00002 0.00000 0.00000 0.00000 0.00000  
OH 0.02211 0.01740 0.01306 0.00933 0.00633 0.00405 0.00242 0.00132 0.00064 0.00026 0.00009 0.00003 0.00001  
O2 0.02564 0.02205 0.01792 0.01367 0.00969 0.00626 0.00356 0.00167 0.00057 0.00013 0.00002 0.00000 0.00000

ADD C(S)  
ADD H2O(L)

CASE= 0 O/F= 12.5000 F/A= 0.08000 PERCENT FUEL= 7.4074 PHI= 1.1723  
P, ATM 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000  
P, PSIA 14.7 14.7 14.7 14.7 14.7 14.7 14.7 14.7 14.7 14.7 14.7 14.7 14.7 14.7  
T, DEG K 1500.0 1400.0 1300.0 1200.0 1100.0 1000.0 900.0 800.0 700.0 600.0 500.0 400.0 300.0  
T, DEG F 2240.3 2060.3 1880.3 1700.3 1520.3 1340.3 1160.3 980.3 800.3 620.3 440.3 260.3 80.3  
RHO, G/CC 2.2786-4 2.4413-4 2.6291-4 2.8482-4 3.1071-4 3.4179-4 3.7977-4 4.2773-4 4.9508-4 5.8531-4 7.0576-4 8.8298-4 1.3321-3  
M, MOL HT 28.046 28.046 28.046 28.046 28.046 28.046 28.047 28.078 28.437 28.817 28.956 28.982 32.792  
CP, CAL/(G\*IK) 0.3338 0.3313 0.3289 0.3266 0.3245 0.3226 0.3213 0.3564 0.4470 0.3502 0.2893 0.2686 0.2785  
GAMMA (S) 1.2695 1.2720 1.2746 1.2771 1.2794 1.2815 1.2835 1.2662 1.2337 1.2738 1.3188 1.3436 1.1496  
SON VEL./M/SEC 751.3 726.6 700.9 674.0 645.9 616.4 585.2 547.7 502.5 469.6 435.1 392.7 295.7

MOLE FRACTIONS

AR 0.00836 0.00836 0.00836 0.00836 0.00836 0.00836 0.00836 0.00837 0.00848 0.00856 0.00852 0.00844 0.00836  
C(S) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00317 0.01276 0.02232 0.03225  
CH4 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00001 0.00057 0.00696 0.01210 0.00963 0.00516 0.00006  
CO 0.04458 0.04259 0.04013 0.03708 0.03328 0.02858 0.02284 0.01564 0.00497 0.00048 0.00001 0.00000 0.00000  
CO2 0.10480 0.10679 0.10925 0.11229 0.11609 0.12080 0.12652 0.13334 0.13954 0.13725 0.12985 0.12344 0.11709  
H2 0.02015 0.02214 0.02460 0.02765 0.03144 0.03614 0.04182 0.04686 0.03277 0.01101 0.00189 0.00013 0.00000  
H2O(L) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.11240  
H2O 0.12200 0.12001 0.11755 0.11450 0.11071 0.10600 0.10209 0.09428 0.09738 0.11032 0.12371 0.13317 0.02965  
NH3 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00001 0.00003 0.00005 0.00004 0.00002 0.00001 0.00000  
N2 0.70011 0.70012 0.70012 0.70012 0.70012 0.70012 0.70014 0.70091 0.70996 0.71707 0.71360 0.70734 0.70020

CASE= 0 O/F= 12.5000 F/A= 0.08000 PERCENT FUEL= 7.4074 PHI= 1.1723  
P, ATM 1.5000 1.5000 1.5000 1.5000 1.5000 1.5000 1.5000 1.5000 1.5000 1.5000 1.5000 1.5000 1.5000  
P, PSIA 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0 22.0  
T, DEG K 2800.0 2700.0 2600.0 2500.0 2400.0 2300.0 2200.0 2100.0 2000.0 1900.0 1800.0 1700.0 1600.0  
T, DEG F 4580.3 4400.3 4220.3 4040.3 3860.3 3680.3 3500.3 3320.3 3140.3 2960.3 2780.3 2600.3 2420.3  
RHO, G/CC 1.7751-4 1.8598-4 1.9468-4 2.0360-4 2.1282-4 2.2250-4 2.3284-4 2.4404-4 2.5629-4 2.6981-4 2.8481-4 3.0157-4 3.2042-4  
M, MOL HT 27.189 27.470 27.689 27.844 27.941 27.995 28.022 28.035 28.044 28.044 28.045 28.045 28.046  
CP, CAL/(G\*IK) 0.9038 0.7926 0.6785 0.5684 0.4768 0.4148 0.3796 0.3611 0.3512 0.3455 0.3418 0.3389 0.3363  
GAMMA (S) 1.1455 1.1515 1.1617 1.1778 1.1992 1.2207 1.2373 1.2479 1.2545 1.2587 1.2618 1.2645 1.2670  
SON VEL./M/SEC 990.4 970.1 952.4 937.7 925.4 913.2 898.7 881.6 862.5 842.1 820.6 798.3 775.2

MOLE FRACTIONS

AR 0.00810 0.00819 0.00825 0.00830 0.00833 0.00834 0.00835 0.00836 0.00836 0.00836 0.00836 0.00836 0.00836  
CO 0.07935 0.07132 0.06428 0.05888 0.05535 0.05329 0.05208 0.05122 0.05045 0.04962 0.04868 0.04755 0.04621  
CO2 0.06546 0.07499 0.08320 0.08912 0.09347 0.09581 0.09717 0.09810 0.09890 0.09974 0.10070 0.10182 0.10316  
H 0.00913 0.00591 0.00376 0.00236 0.00146 0.00089 0.00052 0.00030 0.00016 0.00008 0.00004 0.00002 0.00001  
HO2 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000  
H2 0.01890 0.01642 0.01454 0.01336 0.01283 0.01282 0.01313 0.01365 0.01431 0.01510 0.01605 0.01717 0.01852  
H2O 0.10691 0.11446 0.12024 0.12427 0.12670 0.12790 0.12827 0.12813 0.12767 0.12697 0.12607 0.12497 0.12363  
NO 0.00782 0.00562 0.00372 0.00223 0.00119 0.00057 0.00025 0.00010 0.00003 0.00001 0.00000 0.00000 0.00000  
N2 0.67483 0.68294 0.68935 0.69397 0.69691 0.69856 0.69939 0.69979 0.69998 0.70006 0.70009 0.70011 0.70011  
O 0.00445 0.00244 0.00121 0.00053 0.00020 0.00007 0.00002 0.00001 0.00000 0.00000 0.00000 0.00000 0.00000  
OH 0.01487 0.01080 0.00735 0.00465 0.00271 0.00146 0.00073 0.00034 0.00014 0.00006 0.00002 0.00001 0.00000  
O2 0.01018 0.00692 0.00409 0.00204 0.00083 0.00028 0.00008 0.00002 0.00000 0.00000 0.00000 0.00000 0.00000

ADD C(S)  
ADD H2O(L)

CASE=	0	0/F=	11.1111	F/A=	0.09000	PERCENT FUEL=	8.2569	PHI=	1.3189											
P, ATM	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000
P, PSIA	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
T, DEG K	1500.0	1400.0	1300.0	1200.0	1100.0	1000.0	900.0	800.0	700.0	600.0	500.0	400.0	300.0							
T, DEG F	2240.3	2060.3	1880.3	1700.3	1520.3	1340.3	1160.3	980.3	800.3	620.3	440.3	260.3	80.3							
RHO, G/CC	4.4378E-4	4.7547E-4	5.1205E-4	5.5472E-4	6.0515E-4	6.6570E-4	7.4049E-4	8.4632E-4	9.9265E-4	1.1721E-3	1.4119E-3	1.7661E-3	2.7672E-3							
M, MOL HT	27.311	27.311	27.311	27.311	27.311	27.311	27.343	27.775	28.509	28.853	28.964	28.985	34.060							
CP, CAL/(G)(K)	0.3404	0.3385	0.3369	0.3356	0.3350	0.3364	0.3757	0.6041	0.4639	0.3395	0.2896	0.2719	0.6299							
GAMMA (S)	1.2719	1.2738	1.2755	1.2768	1.2776	1.2768	1.2577	1.1964	1.2256	1.2785	1.3166	1.3378	1.1652							
SON VEL./M/SEC	762.1	736.8	710.5	683.0	654.1	623.4	586.7	535.3	500.2	470.2	434.7	391.8	292.1							

MOLE FRACTIONS

AR	0.00806	0.00806	0.00806	0.00806	0.00806	0.00807	0.00807	0.00820	0.00830	0.00831	0.00826	0.00817	0.00807							
C(S)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.01387	0.02429	0.03440	0.04538	0.05775						
CH4	0.00000	0.00000	0.00000	0.00000	0.00000	0.00002	0.00057	0.00846	0.01465	0.01536	0.01200	0.00655	0.00002							
CO	0.07611	0.07309	0.06942	0.06492	0.05937	0.05248	0.04325	0.02356	0.00401	0.00032	0.00001	0.00000	0.00000	0.00000						
CO2	0.08601	0.08903	0.09270	0.09719	0.10274	0.10962	0.11849	0.13285	0.13434	0.12712	0.11959	0.11231	0.10435							
H2	0.03946	0.04248	0.04615	0.05064	0.05618	0.06298	0.07013	0.06003	0.02850	0.00867	0.00147	0.00010	0.00000							
H2O(L)	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.14038						
H2O	0.11484	0.11182	0.10815	0.10365	0.09811	0.09126	0.08316	0.07987	0.10092	0.11956	0.13248	0.14311	0.10390							
NH3	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002	0.00004	0.00007	0.00008	0.00006	0.00003	0.00001	0.00000							
N2	0.67552	0.67552	0.67552	0.67552	0.67553	0.67556	0.67630	0.68696	0.69533	0.69629	0.69174	0.68438	0.67554							

CASE=	0	0/F=	11.1111	F/A=	0.09000	PERCENT FUEL=	8.2569	PHI=	1.3189											
P, ATM	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000							
P, PSIA	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1	44.1							
T, DEG K	2800.0	2700.0	2600.0	2500.0	2400.0	2300.0	2200.0	2100.0	2000.0	1900.0	1800.0	1700.0	1600.0							
T, DEG F	4580.3	4400.3	4220.3	4040.3	3860.3	3680.3	3500.3	3320.3	3140.3	2960.3	2780.3	2600.3	2420.3							
RHO, G/CC	3.5119E-4	3.6634E-4	3.8191E-4	3.9814E-4	4.1531E-4	4.3372E-4	4.5364E-4	4.7535E-4	4.9919E-4	5.2549E-4	5.5471E-4	5.8735E-4	6.2406E-4							
M, MOL HT	26.896	27.054	27.160	27.225	27.263	27.298	27.298	27.304	27.308	27.310	27.310	27.311	27.311							
CP, CAL/(G)(K)	0.6993	0.6931	0.5067	0.4455	0.4061	0.3822	0.3678	0.3590	0.3535	0.3497	0.3469	0.3445	0.3424							
GAMMA (S)	1.1661	1.1802	1.1977	1.2157	1.2311	1.2427	1.2508	1.2564	1.2603	1.2633	1.2657	1.2679	1.2699							
SON VEL./M/SEC	1004.7	989.6	976.4	963.4	949.3	933.3	915.5	896.3	876.1	854.8	832.8	810.0	786.5							

MOLE FRACTIONS

AR	0.00794	0.00799	0.00802	0.00804	0.00805	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806	0.00806							
CO	0.09873	0.09500	0.09236	0.09059	0.08935	0.08834	0.08740	0.08640	0.08528	0.08399	0.08248	0.08071	0.07861							
CO2	0.06092	0.06558	0.06885	0.07131	0.07248	0.07362	0.07463	0.07567	0.07681	0.07811	0.07962	0.08140	0.08350							
H	0.00777	0.00530	0.00355	0.00233	0.00149	0.00092	0.00054	0.00031	0.00016	0.00008	0.00004	0.00002	0.00001							
H2	0.02740	0.02637	0.02599	0.02611	0.02658	0.02727	0.02811	0.02910	0.03024	0.03155	0.03307	0.03485	0.03695							
H2O	0.11594	0.12066	0.12368	0.12535	0.12605	0.12608	0.12567	0.12493	0.12393	0.12269	0.12121	0.11944	0.11735							
NO	0.00410	0.00258	0.00149	0.00080	0.00040	0.00018	0.00008	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000							
N2	0.66321	0.66788	0.67103	0.67299	0.67414	0.67479	0.67515	0.67534	0.67544	0.67548	0.67551	0.67552	0.67552							
O	0.00156	0.00080	0.00035	0.00014	0.00005	0.00002	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000							
OH	0.00947	0.00635	0.00400	0.00237	0.00133	0.00070	0.00035	0.00016	0.00007	0.00003	0.00001	0.00000	0.00000							
O2	0.00285	0.00149	0.00068	0.00027	0.00010	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000							

