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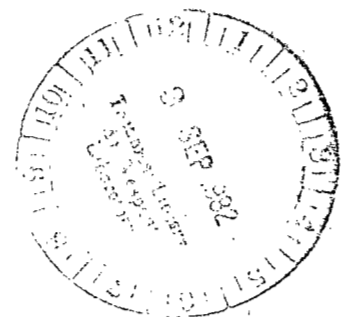
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Thermodynamic and Transport Combustion Properties of Hydrocarbons With Air

*II - Compositions Corresponding to
Kelvin Temperature Schedules in Part I*

Sanford Gordon

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Thermodynamic and Transport Combustion Properties of Hydrocarbons With Air

*II - Compositions Corresponding to
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Sanford Gordon
*Lewis Research Center
Cleveland, Ohio*

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National Aeronautics
and Space Administration

Scientific and Technical
Information Branch

Summary

Thermodynamic and transport combustion properties have been calculated for a wide range of conditions for the reaction of hydrocarbons with air. Three hydrogen-carbon atom ratios were selected to represent the range of aircraft fuels ($H/C = 1.7, 2.0, \text{ and } 2.1$). For each of these H/C ratios, combustion properties were calculated for the following conditions:

Equivalence ratio: 0, 0.25, 0.5, 0.75, 1.0, and 1.25

Water-dry air mass ratio: 0 and 0.03

Pressure, kPa: 1.01325, 10.1325, 101.325, 1013.25, and 5066.25 (or in atm: 0.01, 0.1, 1, 10, and 50)

Temperature, K: every 10 degrees from 200 to 900 K; every 50 degrees from 900 to 3000 K

Temperature, °R: every 20 degrees from 360° to 1600° R; every 100 degrees from 1600° to 5400° R

The properties presented are composition, density, molecular weight, enthalpy, entropy, specific heat at constant pressure, volume derivatives, isentropic exponent, velocity of sound, viscosity, thermal conductivity, and Prandtl number. Property tables are based on compositions that were calculated by assuming both (1) chemical equilibrium (for both homogeneous and heterogeneous phases) and (2) constant compositions for all temperatures. Properties in SI units are presented in part I (TP-1906) for the Kelvin temperature schedules, and the corresponding compositions are presented in this report. Properties in U.S. customary units are presented in part III (TP-1908) for the Rankine temperature schedules, and corresponding compositions are presented in part IV (TP-1909).

Introduction

This report contains the equilibrium compositions that correspond to the thermodynamic and transport combustion properties presented in part I (ref. 1). These compositions were determined by the method of reference 2. The sources and accuracy of the thermodynamic properties of the pure species on which the equilibrium calculations are based are discussed in part I and are not repeated herein.

As pointed out in part I, initially 55 gaseous species and 3 condensed species were considered in the calculations. Only 17 of these 55 gaseous species had equilibrium mole fractions greater than 0.000005 for any of the conditions in this report, and therefore these were the only ones retained in the final tables.

Tables

Each equilibrium composition table in this report is assigned the same number as its corresponding combustion property table in part I. As was explained in part I, the numbers for the combustion property tables consist of a numerical part and an alphabetical part, for example, table 10.3B. The five letters A through E are used to designate five types of tables that differ according to the several assumptions made concerning composition. The conditions covered by these tables are summarized as follows:

| Table | Type of composition | Equivalence ratio, ER | Temperature range, K |
|-------|------------------------------|-----------------------|----------------------|
| A | Constant | ≤ 1.0 | 200 to 3000 |
| B | Equilibrium (gas phase only) | ≤ 1.0 | 900 to 3000 |
| C | Equilibrium (multiphase) | ≤ 1.0 | 200 to 440 |
| D | Equilibrium (gas phase only) | 1.25 | 200 to 3000 |
| E | Equilibrium (multiphase) | 1.25 | 200 to 800 |

Inasmuch as compositions are assumed to be constant over the entire temperature range for table A, they are not presented in this report but rather are included in the table A combustion properties tables in part I.

The numerical part of the table numbers may consist of a whole number (table C) or a whole number plus one decimal place (tables B, D, and E). The whole number part for all tables depends on the type of air (dry or wet), the H/C ratio, and the equivalence ratio. These numbers are summarized as follows:

| Hydrogen-carbon ratio, H/C | Dry air | | | | | | Wet air | | | | | |
|----------------------------|--|------|-----|------|-----|------|---------|------|-----|------|-----|------|
| | Equivalence ratio, ER | | | | | | | | | | | |
| | 0 | 0.25 | 0.5 | 0.75 | 1.0 | 1.25 | 0 | 0.25 | 0.5 | 0.75 | 1.0 | 1.25 |
| | Whole number part of table numbers (tables B to E) | | | | | | | | | | | |
| Air only | 1 | --- | --- | --- | --- | --- | 17 | --- | --- | --- | --- | --- |
| 1.7 | --- | 2 | 3 | 4 | 5 | 6 | --- | 18 | 19 | 20 | 21 | 22 |
| 2.0 | --- | 7 | 8 | 9 | 10 | 11 | --- | 23 | 24 | 25 | 26 | 27 |
| 2.1 | --- | 12 | 13 | 14 | 15 | 16 | --- | 28 | 29 | 30 | 31 | 32 |

In tables B, D, and E the decimal place is used to designate pressure as follows:

| Pressure | | Decimal part of table numbers (tables B, D, and E) |
|----------|------|--|
| kPa | atm | |
| 1.01325 | 0.01 | 0.1 |
| 10.1325 | .1 | .2 |
| 101.325 | 1.0 | .3 |
| 1013.25 | 10 | .4 |
| 5066.25 | 50 | .5 |

A detailed summary of all table numbers is given in table I. As an example, all table numbers for the conditions of dry air, H/C=2.0, and ER=1 start with 10. Thus, for these conditions, the low-temperature equilibrium table is 10C. The high-temperature equilibrium tables for this condition are divided into five tables (10.1B, 10.2B, 10.3B, 10.4B, and 10.5B) according to whether the pressure is 0.01, 0.1, 1, 10, or 50 atm.

The mole fraction of a species j for a specified temperature in any composition table is defined as the number of moles of species j at that temperature divided by the number of moles of all species (including condensed) at that temperature. (See eq. (3), part I.) Mole fractions are given to five decimal places. Any species whose mole fraction is less than the rounded value of 0.00001 for all temperatures of a particular table is omitted from that table rather than appearing with all zeros.

Lewis Research Center
National Aeronautics and Space Administration
Cleveland, Ohio, November 27, 1981

References

1. Gordon, Sanford: Thermodynamic and Transport Combustion Properties of Hydrocarbons with Air. I—Properties in SI Units. NASA TP-1906, 1982.
2. Gordon, Sanford; and McBride, Bonnie J.: Computer Program for Calculation of Complex Chemical Equilibrium Compositions, Rocket Performance, Incident and Reflected Shocks, and Chapman-Jouguet Detonations. NASA SP-273, 1971. Interim Revision, 1976.

TABLE I. - COMPOSITION TABLE NUMBERS

(a) Dry air

| Hydrogen-carbon ratio, H/C | Equivalence ratio, ER | Equilibrium composition | | | | | Low temperatures, all pressures |
|----------------------------|-----------------------|-------------------------|---------|-------|--------|--------|---------------------------------|
| | | High temperatures | | | | | |
| | | P = 0.01 | P = 0.1 | P = 1 | P = 10 | P = 50 | |
| --- | Air only | 1.1B | 1.2B | 1.3B | 1.4B | 1.5B | --- |
| 1.7 | 0.25 | 2.1B | 2.2B | 2.3B | 2.4B | 2.5B | 2C |
| | .5 | 3.1B | 3.2B | 3.3B | 3.4B | 3.5B | 3C |
| | .75 | 4.1B | 4.2B | 4.3B | 4.4B | 4.5B | 4C |
| | 1.0 | 5.1B | 5.2B | 5.3B | 5.4B | 5.5B | 5C |
| | 1.25 (homogeneous) | 6.1D | 6.2D | 6.3D | 6.4D | 6.5D | --- |
| | 1.25 (heterogeneous) | 6.1E | 6.2E | 6.3E | 6.4E | 6.5E | --- |
| 2.0 | 0.25 | 7.1B | 7.2B | 7.3B | 7.4B | 7.5B | 7C |
| | .5 | 8.1B | 8.2B | 8.3B | 8.4B | 8.5B | 8C |
| | .75 | 9.1B | 9.2B | 9.3B | 9.4B | 9.5B | 9C |
| | 1.0 | 10.1B | 10.2B | 10.3B | 10.4B | 10.5B | 10C |
| | 1.25 (homogeneous) | 11.1D | 11.2D | 11.3D | 11.4D | 11.5D | --- |
| | 1.25 heterogeneous) | 11.1E | 11.2E | 11.3E | 11.4E | 11.5E | --- |
| 2.1 | 0.25 | 12.1B | 12.2B | 12.3B | 12.4B | 12.5B | 12C |
| | .5 | 13.1B | 13.2B | 13.3B | 13.4B | 13.5B | 13C |
| | .75 | 14.1B | 14.2B | 14.3B | 14.4B | 14.5B | 14C |
| | 1.0 | 15.1B | 15.2B | 15.3B | 15.4B | 15.5B | 15C |
| | 1.25 (homogeneous) | 16.1D | 16.2D | 16.3D | 16.4D | 16.5D | --- |
| | 1.25 (heterogeneous) | 16.1E | 16.2E | 16.3E | 16.4E | 16.5E | --- |

(b) Wet air (w/a = 0.03)

| | | | | | | | |
|-----|----------------------|-------|-------|-------|-------|-------|-----|
| --- | Air only | 17.1B | 17.2B | 17.3B | 17.4B | 17.5B | 17C |
| 1.7 | 0.25 | 18.1B | 18.2B | 18.3B | 18.4B | 18.5B | 18C |
| | .5 | 19.1B | 19.2B | 19.3B | 19.4B | 19.5B | 19C |
| | .75 | 20.1B | 20.2B | 20.3B | 20.4B | 20.5B | 20C |
| | 1.0 | 21.1B | 21.2B | 21.3B | 21.4B | 21.5B | 21C |
| | 1.25 (homogeneous) | 22.1D | 22.2D | 22.3D | 22.4D | 22.5D | --- |
| | 1.25 (heterogeneous) | 22.1E | 22.2E | 22.3E | 22.4E | 22.5E | --- |
| 2.0 | 0.25 | 23.1B | 23.2B | 23.3B | 23.4B | 23.5B | 23C |
| | .5 | 24.1B | 24.2B | 24.3B | 24.4B | 24.5B | 24C |
| | .75 | 25.1B | 25.2B | 25.3B | 25.4B | 25.5B | 25C |
| | 1.0 | 26.1B | 26.2B | 26.3B | 26.4B | 26.5B | 26C |
| | 1.25 (homogeneous) | 27.1D | 27.2D | 27.3D | 27.4D | 27.5D | --- |
| | 1.25 heterogeneous) | 27.1E | 27.2E | 27.3E | 27.4E | 27.5E | --- |
| 2.1 | 0.25 | 28.1B | 28.2B | 28.3B | 28.4B | 28.5B | 28C |
| | .5 | 29.1B | 29.2B | 29.3B | 29.4B | 29.5B | 29C |
| | .75 | 30.1B | 30.2B | 30.3B | 30.4B | 30.5B | 30C |
| | 1.0 | 31.1B | 31.2B | 31.3B | 31.4B | 31.5B | 31C |
| | 1.25 (homogeneous) | 32.1D | 32.2D | 32.3D | 32.4D | 32.5D | --- |
| | 1.25 (heterogeneous) | 32.1E | 32.2E | 32.3E | 32.4E | 32.5E | --- |

TABLE 1.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

DRY AIR ONLY; F/A = 0; EQUIV. RATIO = 0; CHEM. EQUIV. RATIO = 0.0015;

P = 1.01325 KPA (0.01 ATM)

| T K | AR | CO | CO2 | N | NO | N2 | O | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00937 | .00000 | .00032 | .00000 | .00001 | .78083 | .00000 | .20947 |
| 950 | .00936 | .00000 | .00032 | .00000 | .00002 | .78083 | .00000 | .20947 |
| 1000 | .00936 | .00000 | .00032 | .00000 | .00004 | .78082 | .00000 | .20946 |
| 1050 | .00937 | .00000 | .00032 | .00000 | .00006 | .78081 | .00000 | .20945 |
| 1100 | .00937 | .00000 | .00032 | .00000 | .00009 | .78079 | .00000 | .20943 |
| 1150 | .00937 | .00000 | .00032 | .00000 | .00014 | .78077 | .00000 | .20940 |
| 1200 | .00937 | .00000 | .00032 | .00000 | .00021 | .78073 | .00000 | .20937 |
| 1250 | .00937 | .00000 | .00032 | .00000 | .00031 | .78069 | .00000 | .20932 |
| 1300 | .00936 | .00000 | .00032 | .00000 | .00043 | .78062 | .00000 | .20926 |
| 1350 | .00936 | .00000 | .00032 | .00000 | .00059 | .78055 | .00000 | .20918 |
| 1400 | .00936 | .00000 | .00032 | .00000 | .00078 | .78045 | .00000 | .20908 |
| 1450 | .00936 | .00000 | .00032 | .00000 | .00102 | .78032 | .00001 | .20896 |
| 1500 | .00936 | .00000 | .00032 | .00000 | .00131 | .78018 | .00002 | .20881 |
| 1550 | .00936 | .00000 | .00032 | .00000 | .00166 | .78000 | .00004 | .20862 |
| 1600 | .00936 | .00000 | .00032 | .00000 | .00207 | .77978 | .00007 | .20840 |
| 1650 | .00936 | .00000 | .00032 | .00000 | .00254 | .77953 | .00012 | .20814 |
| 1700 | .00936 | .00000 | .00032 | .00000 | .00308 | .77922 | .00020 | .20781 |
| 1750 | .00936 | .00000 | .00032 | .00000 | .00369 | .77886 | .00034 | .20743 |
| 1800 | .00936 | .00000 | .00032 | .00000 | .00438 | .77843 | .00055 | .20695 |
| 1850 | .00936 | .00000 | .00032 | .00000 | .00515 | .77792 | .00087 | .20637 |
| 1900 | .00936 | .00000 | .00032 | .00000 | .00600 | .77731 | .00134 | .20566 |
| 1950 | .00936 | .00001 | .00031 | .00000 | .00693 | .77658 | .00203 | .20478 |
| 2000 | .00935 | .00001 | .00031 | .00000 | .00794 | .77569 | .00300 | .20369 |
| 2050 | .00934 | .00001 | .00030 | .00000 | .00903 | .77462 | .00435 | .20233 |
| 2100 | .00934 | .00002 | .00030 | .00000 | .01020 | .77332 | .00619 | .20064 |
| 2150 | .00932 | .00003 | .00029 | .00000 | .01143 | .77174 | .00865 | .19854 |
| 2200 | .00931 | .00004 | .00028 | .00000 | .01272 | .76982 | .01190 | .19593 |
| 2250 | .00929 | .00005 | .00027 | .00000 | .01406 | .76750 | .01610 | .19273 |
| 2300 | .00926 | .00007 | .00025 | .00000 | .01543 | .76472 | .02145 | .18881 |
| 2350 | .00923 | .00008 | .00023 | .00000 | .01681 | .76141 | .02815 | .18408 |
| 2400 | .00919 | .00010 | .00021 | .00000 | .01818 | .75749 | .03641 | .17841 |
| 2450 | .00915 | .00013 | .00019 | .00000 | .01950 | .75292 | .04641 | .17171 |
| 2500 | .00909 | .00015 | .00016 | .00000 | .02074 | .74764 | .05831 | .16390 |
| 2550 | .00903 | .00017 | .00014 | .00000 | .02187 | .74165 | .07219 | .15494 |
| 2600 | .00895 | .00019 | .00012 | .00001 | .02285 | .73495 | .08807 | .14486 |
| 2650 | .00887 | .00020 | .00010 | .00001 | .02364 | .72761 | .10583 | .13374 |
| 2700 | .00878 | .00022 | .00008 | .00001 | .02419 | .71975 | .12525 | .12172 |
| 2750 | .00868 | .00023 | .00006 | .00002 | .02449 | .71151 | .14593 | .10907 |
| 2800 | .00858 | .00024 | .00005 | .00003 | .02452 | .70312 | .16735 | .09610 |
| 2850 | .00848 | .00025 | .00004 | .00004 | .02427 | .69481 | .18892 | .08319 |
| 2900 | .00838 | .00026 | .00003 | .00006 | .02376 | .68684 | .20995 | .07073 |
| 2950 | .00829 | .00026 | .00002 | .00008 | .02301 | .67943 | .22983 | .05908 |
| 3000 | .00820 | .00026 | .00002 | .00011 | .02206 | .67277 | .24803 | .04855 |

TABLE 1.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

DRY AIR ONLY; F/A = 0; EQUIV. RATIO = 0; CHEM. EQUIV. RATIO = 0.0015;

P = 10.1325 KPA (0.10 ATM)

| T K | AR | CO | CO2 | N | NO | NO2 | N2 | O | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00937 | .00000 | .00032 | .00000 | .00001 | .00000 | .78083 | .00000 | .20947 |
| 950 | .00937 | .00000 | .00032 | .00000 | .00002 | .00000 | .78083 | .00000 | .20947 |
| 1000 | .00937 | .00000 | .00032 | .00000 | .00004 | .00000 | .78082 | .00000 | .20946 |
| 1050 | .00937 | .00000 | .00032 | .00000 | .00006 | .00000 | .78081 | .00000 | .20945 |
| 1100 | .00937 | .00000 | .00032 | .00000 | .00009 | .00000 | .78079 | .00000 | .20943 |
| 1150 | .00937 | .00000 | .00032 | .00000 | .00014 | .00000 | .78077 | .00000 | .20940 |
| 1200 | .00937 | .00000 | .00032 | .00000 | .00021 | .00000 | .78073 | .00000 | .20937 |
| 1250 | .00937 | .00000 | .00032 | .00000 | .00031 | .00000 | .78069 | .00000 | .20932 |
| 1300 | .00937 | .00000 | .00032 | .00000 | .00043 | .00000 | .78062 | .00000 | .20926 |
| 1350 | .00937 | .00000 | .00032 | .00000 | .00059 | .00000 | .78055 | .00000 | .20918 |
| 1400 | .00937 | .00000 | .00032 | .00000 | .00078 | .00000 | .78045 | .00000 | .20908 |
| 1450 | .00936 | .00000 | .00032 | .00000 | .00102 | .00000 | .78033 | .00000 | .20896 |
| 1500 | .00936 | .00000 | .00032 | .00000 | .00131 | .00000 | .78018 | .00001 | .20881 |
| 1550 | .00936 | .00000 | .00032 | .00000 | .00166 | .00000 | .78001 | .00001 | .20864 |
| 1600 | .00936 | .00000 | .00032 | .00000 | .00207 | .00000 | .77980 | .00002 | .20843 |
| 1650 | .00936 | .00000 | .00032 | .00000 | .00254 | .00000 | .77956 | .00004 | .20818 |
| 1700 | .00936 | .00000 | .00032 | .00000 | .00308 | .00000 | .77928 | .00006 | .20790 |
| 1750 | .00936 | .00000 | .00032 | .00000 | .00369 | .00000 | .77895 | .00011 | .20756 |
| 1800 | .00936 | .00000 | .00032 | .00000 | .00438 | .00000 | .77858 | .00017 | .20718 |
| 1850 | .00936 | .00000 | .00032 | .00000 | .00515 | .00000 | .77815 | .00028 | .20673 |
| 1900 | .00936 | .00000 | .00032 | .00000 | .00601 | .00000 | .77767 | .00043 | .20621 |
| 1950 | .00936 | .00000 | .00032 | .00000 | .00695 | .00000 | .77711 | .00064 | .20561 |
| 2000 | .00936 | .00000 | .00032 | .00000 | .00797 | .00000 | .77648 | .00095 | .20491 |
| 2050 | .00936 | .00000 | .00031 | .00000 | .00908 | .00000 | .77576 | .00138 | .20410 |
| 2100 | .00936 | .00001 | .00031 | .00000 | .01027 | .00000 | .77493 | .00197 | .20315 |
| 2150 | .00935 | .00001 | .00031 | .00000 | .01155 | .00000 | .77398 | .00276 | .20203 |
| 2200 | .00935 | .00001 | .00031 | .00000 | .01290 | .00000 | .77290 | .00381 | .20072 |
| 2250 | .00934 | .00002 | .00030 | .00000 | .01433 | .00000 | .77164 | .00518 | .19918 |
| 2300 | .00933 | .00002 | .00029 | .00000 | .01583 | .00000 | .77021 | .00693 | .19737 |
| 2350 | .00932 | .00003 | .00029 | .00000 | .01740 | .00001 | .76855 | .00917 | .19524 |
| 2400 | .00931 | .00004 | .00028 | .00000 | .01901 | .00001 | .76665 | .01197 | .19275 |
| 2450 | .00929 | .00005 | .00026 | .00000 | .02066 | .00001 | .76446 | .01543 | .18983 |
| 2500 | .00927 | .00007 | .00025 | .00000 | .02234 | .00001 | .76197 | .01967 | .18644 |
| 2550 | .00925 | .00008 | .00023 | .00000 | .02402 | .00001 | .75912 | .02478 | .18251 |
| 2600 | .00922 | .00010 | .00022 | .00000 | .02569 | .00001 | .75590 | .03087 | .17800 |
| 2650 | .00919 | .00012 | .00020 | .00000 | .02732 | .00001 | .75228 | .03805 | .17285 |
| 2700 | .00915 | .00013 | .00018 | .00000 | .02889 | .00001 | .74822 | .04639 | .16702 |
| 2750 | .00910 | .00015 | .00016 | .00001 | .03038 | .00001 | .74373 | .05598 | .16049 |
| 2800 | .00905 | .00017 | .00014 | .00001 | .03174 | .00001 | .73880 | .06683 | .15325 |
| 2850 | .00899 | .00019 | .00012 | .00001 | .03296 | .00001 | .73345 | .07896 | .14532 |
| 2900 | .00893 | .00020 | .00010 | .00002 | .03400 | .00000 | .72770 | .09231 | .13673 |
| 2950 | .00886 | .00021 | .00009 | .00003 | .03484 | .00000 | .72162 | .10679 | .12756 |
| 3000 | .00879 | .00022 | .00007 | .00004 | .03545 | .00000 | .71527 | .12224 | .11791 |

TABLE 1.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

DRY AIR ONLY; F/A = 0; EQUIV. RATIO = 0; CHEM. EQUIV. RATIO = 0.0015;

P = 101.325 KPA (1.00 ATM)

| T K | AR | CO | CO2 | N | NO | NO2 | N2 | O | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00937 | .00000 | .00032 | .00000 | .00001 | .00000 | .78083 | .00000 | .20947 |
| 950 | .00937 | .00000 | .00032 | .00000 | .00002 | .00000 | .78083 | .00000 | .20946 |
| 1000 | .00937 | .00000 | .00032 | .00000 | .00004 | .00000 | .78082 | .00000 | .20946 |
| 1050 | .00937 | .00000 | .00032 | .00000 | .00006 | .00000 | .78081 | .00000 | .20944 |
| 1100 | .00937 | .00000 | .00032 | .00000 | .00009 | .00000 | .78079 | .00000 | .20943 |
| 1150 | .00937 | .00000 | .00032 | .00000 | .00014 | .00000 | .78077 | .00000 | .20940 |
| 1200 | .00937 | .00000 | .00032 | .00000 | .00021 | .00000 | .78073 | .00000 | .20937 |
| 1250 | .00937 | .00000 | .00032 | .00000 | .00031 | .00000 | .78069 | .00000 | .20932 |
| 1300 | .00937 | .00000 | .00032 | .00000 | .00043 | .00000 | .78062 | .00000 | .20926 |
| 1350 | .00937 | .00000 | .00032 | .00000 | .00059 | .00001 | .78055 | .00000 | .20918 |
| 1400 | .00937 | .00000 | .00032 | .00000 | .00078 | .00001 | .78045 | .00000 | .20908 |
| 1450 | .00937 | .00000 | .00032 | .00000 | .00102 | .00001 | .78033 | .00000 | .20896 |
| 1500 | .00937 | .00000 | .00032 | .00000 | .00131 | .00001 | .78018 | .00000 | .20881 |
| 1550 | .00937 | .00000 | .00032 | .00000 | .00166 | .00001 | .78001 | .00000 | .20864 |
| 1600 | .00937 | .00000 | .00032 | .00000 | .00207 | .00001 | .77980 | .00001 | .20843 |
| 1650 | .00936 | .00000 | .00032 | .00000 | .00254 | .00001 | .77957 | .00001 | .20819 |
| 1700 | .00936 | .00000 | .00032 | .00000 | .00308 | .00001 | .77929 | .00002 | .20792 |
| 1750 | .00936 | .00000 | .00032 | .00000 | .00369 | .00001 | .77898 | .00003 | .20760 |
| 1800 | .00936 | .00000 | .00032 | .00000 | .00438 | .00001 | .77863 | .00006 | .20724 |
| 1850 | .00936 | .00000 | .00032 | .00000 | .00516 | .00001 | .77823 | .00009 | .20684 |
| 1900 | .00936 | .00000 | .00032 | .00000 | .00601 | .00001 | .77778 | .00013 | .20638 |
| 1950 | .00936 | .00000 | .00032 | .00000 | .00695 | .00001 | .77728 | .00020 | .20587 |
| 2000 | .00936 | .00000 | .00032 | .00000 | .00798 | .00001 | .77673 | .00030 | .20529 |
| 2050 | .00936 | .00000 | .00032 | .00000 | .00909 | .00001 | .77612 | .00044 | .20465 |
| 2100 | .00936 | .00000 | .00032 | .00000 | .01029 | .00001 | .77545 | .00062 | .20394 |
| 2150 | .00936 | .00000 | .00032 | .00000 | .01158 | .00001 | .77470 | .00088 | .20314 |
| 2200 | .00936 | .00000 | .00031 | .00000 | .01296 | .00001 | .77388 | .00121 | .20225 |
| 2250 | .00936 | .00001 | .00031 | .00000 | .01442 | .00002 | .77298 | .00164 | .20126 |
| 2300 | .00935 | .00001 | .00031 | .00000 | .01596 | .00002 | .77199 | .00221 | .20015 |
| 2350 | .00935 | .00001 | .00031 | .00000 | .01759 | .00002 | .77090 | .00293 | .19890 |
| 2400 | .00935 | .00001 | .00030 | .00000 | .01928 | .00002 | .76970 | .00383 | .19751 |
| 2450 | .00934 | .00002 | .00030 | .00000 | .02104 | .00002 | .76837 | .00496 | .19595 |
| 2500 | .00934 | .00002 | .00029 | .00000 | .02287 | .00002 | .76691 | .00635 | .19420 |
| 2550 | .00933 | .00003 | .00029 | .00000 | .02475 | .00002 | .76531 | .00804 | .19223 |
| 2600 | .00932 | .00004 | .00028 | .00000 | .02668 | .00002 | .76354 | .01009 | .19004 |
| 2650 | .00931 | .00005 | .00027 | .00000 | .02864 | .00002 | .76160 | .01253 | .18758 |
| 2700 | .00929 | .00006 | .00026 | .00000 | .03062 | .00002 | .75948 | .01543 | .18484 |
| 2750 | .00928 | .00007 | .00025 | .00000 | .03262 | .00002 | .75714 | .01884 | .18178 |
| 2800 | .00926 | .00008 | .00023 | .00000 | .03461 | .00002 | .75459 | .02280 | .17840 |
| 2850 | .00924 | .00010 | .00022 | .00000 | .03658 | .00002 | .75182 | .02737 | .17465 |
| 2900 | .00921 | .00011 | .00020 | .00001 | .03852 | .00002 | .74880 | .03260 | .17053 |
| 2950 | .00918 | .00013 | .00019 | .00001 | .04040 | .00002 | .74554 | .03852 | .16601 |
| 3000 | .00915 | .00014 | .00017 | .00001 | .04220 | .00002 | .74203 | .04518 | .16109 |

TABLE 1.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

DRY AIR ONLY; F/A = 0; EQUIV. RATIO = 0; CHEM. EQUIV. RATIO = 0.0015;

P = 1013.25 KPA (10.00 ATM)

| T K | AR | CO | CO2 | NO | NO2 | N2 | N2O | O | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00937 | .00000 | .00032 | .00001 | .00000 | .78083 | .00000 | .00000 | .20947 |
| 950 | .00937 | .00000 | .00032 | .00002 | .00000 | .78083 | .00000 | .00000 | .20946 |
| 1000 | .00937 | .00000 | .00032 | .00004 | .00001 | .78082 | .00000 | .00000 | .20945 |
| 1050 | .00937 | .00000 | .00032 | .00006 | .00001 | .78081 | .00000 | .00000 | .20944 |
| 1100 | .00937 | .00000 | .00032 | .00009 | .00001 | .78079 | .00000 | .00000 | .20942 |
| 1150 | .00937 | .00000 | .00032 | .00014 | .00001 | .78077 | .00000 | .00000 | .20940 |
| 1200 | .00937 | .00000 | .00032 | .00021 | .00001 | .78073 | .00000 | .00000 | .20936 |
| 1250 | .00937 | .00000 | .00032 | .00031 | .00001 | .78068 | .00000 | .00000 | .20931 |
| 1300 | .00937 | .00000 | .00032 | .00043 | .00001 | .78062 | .00000 | .00000 | .20925 |
| 1350 | .00937 | .00000 | .00032 | .00059 | .00002 | .78054 | .00000 | .00000 | .20917 |
| 1400 | .00937 | .00000 | .00032 | .00078 | .00002 | .78045 | .00000 | .00000 | .20907 |
| 1450 | .00937 | .00000 | .00032 | .00102 | .00002 | .78033 | .00000 | .00000 | .20895 |
| 1500 | .00937 | .00000 | .00032 | .00131 | .00002 | .78018 | .00000 | .00000 | .20880 |
| 1550 | .00937 | .00000 | .00032 | .00166 | .00002 | .78001 | .00000 | .00000 | .20862 |
| 1600 | .00937 | .00000 | .00032 | .00207 | .00002 | .77980 | .00000 | .00000 | .20842 |
| 1650 | .00937 | .00000 | .00032 | .00254 | .00003 | .77957 | .00000 | .00000 | .20818 |
| 1700 | .00937 | .00000 | .00032 | .00308 | .00003 | .77930 | .00000 | .00001 | .20791 |
| 1750 | .00937 | .00000 | .00032 | .00369 | .00003 | .77899 | .00000 | .00001 | .20760 |
| 1800 | .00937 | .00000 | .00032 | .00438 | .00003 | .77864 | .00000 | .00002 | .20724 |
| 1850 | .00937 | .00000 | .00032 | .00516 | .00003 | .77825 | .00000 | .00003 | .20685 |
| 1900 | .00936 | .00000 | .00032 | .00601 | .00004 | .77781 | .00000 | .00004 | .20641 |
| 1950 | .00936 | .00000 | .00032 | .00695 | .00004 | .77733 | .00000 | .00006 | .20593 |
| 2000 | .00936 | .00000 | .00032 | .00798 | .00004 | .77681 | .00000 | .00010 | .20539 |
| 2050 | .00936 | .00000 | .00032 | .00910 | .00004 | .77623 | .00000 | .00014 | .20481 |
| 2100 | .00936 | .00000 | .00032 | .01030 | .00004 | .77561 | .00000 | .00020 | .20417 |
| 2150 | .00936 | .00000 | .00032 | .01160 | .00005 | .77493 | .00000 | .00028 | .20347 |
| 2200 | .00936 | .00000 | .00032 | .01298 | .00005 | .77419 | .00000 | .00038 | .20271 |
| 2250 | .00936 | .00000 | .00032 | .01445 | .00005 | .77341 | .00000 | .00052 | .20189 |
| 2300 | .00936 | .00000 | .00032 | .01600 | .00005 | .77256 | .00000 | .00070 | .20101 |
| 2350 | .00936 | .00000 | .00032 | .01764 | .00005 | .77165 | .00000 | .00093 | .20005 |
| 2400 | .00936 | .00000 | .00031 | .01937 | .00005 | .77067 | .00000 | .00122 | .19901 |
| 2450 | .00936 | .00001 | .00031 | .02117 | .00006 | .76963 | .00000 | .00158 | .19789 |
| 2500 | .00936 | .00001 | .00031 | .02304 | .00006 | .76852 | .00000 | .00202 | .19668 |
| 2550 | .00935 | .00001 | .00031 | .02499 | .00006 | .76733 | .00000 | .00256 | .19538 |
| 2600 | .00935 | .00001 | .00031 | .02700 | .00006 | .76607 | .00000 | .00322 | .19398 |
| 2650 | .00935 | .00002 | .00030 | .02907 | .00006 | .76472 | .00000 | .00401 | .19246 |
| 2700 | .00934 | .00002 | .00030 | .03119 | .00006 | .76329 | .00000 | .00496 | .19083 |
| 2750 | .00934 | .00003 | .00029 | .03337 | .00006 | .76176 | .00001 | .00608 | .18907 |
| 2800 | .00933 | .00003 | .00029 | .03558 | .00006 | .76014 | .00001 | .00739 | .18717 |
| 2850 | .00932 | .00004 | .00028 | .03783 | .00006 | .75842 | .00001 | .00891 | .18513 |
| 2900 | .00932 | .00005 | .00027 | .04010 | .00007 | .75659 | .00001 | .01068 | .18293 |
| 2950 | .00931 | .00005 | .00026 | .04239 | .00007 | .75465 | .00001 | .01271 | .18056 |
| 3000 | .00929 | .00006 | .00025 | .04468 | .00007 | .75260 | .00001 | .01502 | .17802 |

TABLE 1.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

DRY AIR ONLY; F/A = 0; EQUIV. RATIO = 0; CHEM. EQUIV. RATIO = 0.0015;

P = 5066.25 KPA (50.00 ATM)

| T K | AR | CO | CO2 | NO | NO2 | N2 | N2O | O | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00937 | .00000 | .00032 | .00001 | .00001 | .78083 | .00000 | .00000 | .20946 |
| 950 | .00937 | .00000 | .00032 | .00002 | .00001 | .78083 | .00000 | .00000 | .20946 |
| 1000 | .00937 | .00000 | .00032 | .00004 | .00001 | .78082 | .00000 | .00000 | .20945 |
| 1050 | .00937 | .00000 | .00032 | .00006 | .00002 | .78081 | .00000 | .00000 | .20943 |
| 1100 | .00937 | .00000 | .00032 | .00009 | .00002 | .78079 | .00000 | .00000 | .20941 |
| 1150 | .00937 | .00000 | .00032 | .00014 | .00002 | .78077 | .00000 | .00000 | .20938 |
| 1200 | .00937 | .00000 | .00032 | .00021 | .00002 | .78073 | .00000 | .00000 | .20935 |
| 1250 | .00937 | .00000 | .00032 | .00031 | .00003 | .78068 | .00000 | .00000 | .20930 |
| 1300 | .00937 | .00000 | .00032 | .00043 | .00003 | .78062 | .00000 | .00000 | .20923 |
| 1350 | .00937 | .00000 | .00032 | .00059 | .00004 | .78054 | .00000 | .00000 | .20915 |
| 1400 | .00937 | .00000 | .00032 | .00078 | .00004 | .78044 | .00000 | .00000 | .20905 |
| 1450 | .00937 | .00000 | .00032 | .00102 | .00004 | .78032 | .00000 | .00000 | .20893 |
| 1500 | .00937 | .00000 | .00032 | .00131 | .00005 | .78018 | .00000 | .00000 | .20878 |
| 1550 | .00937 | .00000 | .00032 | .00166 | .00005 | .78000 | .00000 | .00000 | .20860 |
| 1600 | .00937 | .00000 | .00032 | .00207 | .00006 | .77980 | .00000 | .00000 | .20839 |
| 1650 | .00937 | .00000 | .00032 | .00254 | .00006 | .77956 | .00000 | .00000 | .20815 |
| 1700 | .00937 | .00000 | .00032 | .00308 | .00006 | .77929 | .00000 | .00000 | .20788 |
| 1750 | .00937 | .00000 | .00032 | .00369 | .00007 | .77898 | .00000 | .00000 | .20757 |
| 1800 | .00937 | .00000 | .00032 | .00438 | .00007 | .77864 | .00000 | .00001 | .20721 |
| 1850 | .00937 | .00000 | .00032 | .00516 | .00008 | .77825 | .00000 | .00001 | .20682 |
| 1900 | .00937 | .00000 | .00032 | .00601 | .00008 | .77782 | .00000 | .00002 | .20639 |
| 1950 | .00937 | .00000 | .00032 | .00695 | .00009 | .77734 | .00000 | .00003 | .20590 |
| 2000 | .00937 | .00000 | .00032 | .00798 | .00009 | .77682 | .00000 | .00004 | .20538 |
| 2050 | .00937 | .00000 | .00032 | .00910 | .00009 | .77626 | .00000 | .00006 | .20480 |
| 2100 | .00937 | .00000 | .00032 | .01030 | .00010 | .77564 | .00000 | .00009 | .20418 |
| 2150 | .00936 | .00000 | .00032 | .01160 | .00010 | .77498 | .00000 | .00012 | .20351 |
| 2200 | .00936 | .00000 | .00032 | .01298 | .00011 | .77427 | .00000 | .00017 | .20279 |
| 2250 | .00936 | .00000 | .00032 | .01445 | .00011 | .77351 | .00001 | .00023 | .20201 |
| 2300 | .00936 | .00000 | .00032 | .01601 | .00011 | .77270 | .00001 | .00031 | .20118 |
| 2350 | .00936 | .00000 | .00032 | .01766 | .00012 | .77183 | .00001 | .00042 | .20029 |
| 2400 | .00936 | .00000 | .00032 | .01939 | .00012 | .77092 | .00001 | .00054 | .19934 |
| 2450 | .00936 | .00000 | .00032 | .02119 | .00012 | .76995 | .00001 | .00071 | .19834 |
| 2500 | .00936 | .00000 | .00032 | .02308 | .00013 | .76893 | .00001 | .00090 | .19727 |
| 2550 | .00936 | .00000 | .00031 | .02504 | .00013 | .76785 | .00001 | .00115 | .19614 |
| 2600 | .00936 | .00001 | .00031 | .02708 | .00013 | .76672 | .00001 | .00144 | .19494 |
| 2650 | .00936 | .00001 | .00031 | .02917 | .00014 | .76552 | .00001 | .00180 | .19368 |
| 2700 | .00936 | .00001 | .00031 | .03134 | .00014 | .76428 | .00001 | .00223 | .19234 |
| 2750 | .00935 | .00001 | .00031 | .03356 | .00014 | .76297 | .00001 | .00273 | .19092 |
| 2800 | .00935 | .00001 | .00030 | .03583 | .00015 | .76160 | .00001 | .00332 | .18942 |
| 2850 | .00935 | .00002 | .00030 | .03815 | .00015 | .76017 | .00001 | .00401 | .18784 |
| 2900 | .00934 | .00002 | .00030 | .04051 | .00015 | .75867 | .00001 | .00482 | .18618 |
| 2950 | .00934 | .00003 | .00029 | .04291 | .00015 | .75711 | .00002 | .00574 | .18442 |
| 3000 | .00933 | .00003 | .00029 | .04533 | .00015 | .75548 | .00002 | .00680 | .18257 |

TABLE 2.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.017413; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00922 | .00000 | .03650 | .00000 | .00000 | .03076 | .00000 | .00001 | .76883 | .00000 | .00000 | .15469 |
| 950 | .00922 | .00000 | .03650 | .00000 | .00000 | .03076 | .00000 | .00002 | .76882 | .00000 | .00000 | .15468 |
| 1000 | .00922 | .00000 | .03650 | .00000 | .00000 | .03076 | .00000 | .00003 | .76882 | .00000 | .00000 | .15468 |
| 1050 | .00922 | .00000 | .03650 | .00000 | .00000 | .03076 | .00000 | .00005 | .76881 | .00000 | .00000 | .15467 |
| 1100 | .00922 | .00000 | .03650 | .00000 | .00000 | .03076 | .00000 | .00008 | .76879 | .00000 | .00000 | .15465 |
| 1150 | .00922 | .00000 | .03650 | .00000 | .00000 | .03076 | .00000 | .00012 | .76877 | .00000 | .00000 | .15463 |
| 1200 | .00922 | .00000 | .03650 | .00000 | .00000 | .03075 | .00000 | .00018 | .76874 | .00000 | .00001 | .15460 |
| 1250 | .00922 | .00000 | .03650 | .00000 | .00000 | .03075 | .00000 | .00026 | .76870 | .00000 | .00001 | .15456 |
| 1300 | .00922 | .00000 | .03650 | .00000 | .00000 | .03075 | .00000 | .00037 | .76866 | .00000 | .00002 | .15450 |
| 1350 | .00922 | .00000 | .03650 | .00000 | .00000 | .03074 | .00000 | .00050 | .76857 | .00000 | .00003 | .15443 |
| 1400 | .00922 | .00000 | .03650 | .00000 | .00000 | .03073 | .00000 | .00067 | .76849 | .00000 | .00005 | .15434 |
| 1450 | .00922 | .00000 | .03650 | .00000 | .00000 | .03071 | .00000 | .00087 | .76838 | .00001 | .00008 | .15423 |
| 1500 | .00922 | .00000 | .03649 | .00000 | .00000 | .03069 | .00000 | .00112 | .76824 | .00002 | .00013 | .15409 |
| 1550 | .00922 | .00001 | .03649 | .00000 | .00000 | .03065 | .00000 | .00141 | .76807 | .00003 | .00020 | .15391 |
| 1600 | .00922 | .00002 | .03648 | .00000 | .00001 | .03060 | .00000 | .00176 | .76786 | .00006 | .00029 | .15370 |
| 1650 | .00922 | .00003 | .03646 | .00000 | .00001 | .03053 | .00000 | .00216 | .76761 | .00010 | .00042 | .15345 |
| 1700 | .00922 | .00006 | .03643 | .00001 | .00002 | .03043 | .00000 | .00262 | .76731 | .00017 | .00060 | .15314 |
| 1750 | .00922 | .00011 | .03637 | .00001 | .00003 | .03030 | .00000 | .00314 | .76693 | .00029 | .00083 | .15277 |
| 1800 | .00921 | .00019 | .03629 | .00002 | .00004 | .03012 | .00000 | .00373 | .76647 | .00047 | .00113 | .15233 |
| 1850 | .00921 | .00031 | .03615 | .00004 | .00006 | .02989 | .00000 | .00438 | .76589 | .00075 | .00151 | .15180 |
| 1900 | .00921 | .00050 | .03595 | .00008 | .00010 | .02959 | .00000 | .00510 | .76518 | .00115 | .00198 | .15117 |
| 1950 | .00920 | .00078 | .03564 | .00014 | .00015 | .02920 | .00000 | .00589 | .76429 | .00174 | .00255 | .15041 |
| 2000 | .00919 | .00119 | .03520 | .00024 | .00021 | .02871 | .00000 | .00675 | .76317 | .00257 | .00325 | .14952 |
| 2050 | .00918 | .00176 | .03458 | .00039 | .00030 | .02809 | .00000 | .00767 | .76176 | .00373 | .00407 | .14845 |
| 2100 | .00917 | .00254 | .03374 | .00063 | .00042 | .02733 | .00000 | .00866 | .75999 | .00530 | .00503 | .14719 |
| 2150 | .00915 | .00358 | .03263 | .00100 | .00057 | .02638 | .00000 | .00970 | .75779 | .00741 | .00612 | .14568 |
| 2200 | .00912 | .00489 | .03121 | .00154 | .00076 | .02523 | .00000 | .01080 | .75505 | .01019 | .00733 | .14388 |
| 2250 | .00909 | .00651 | .02945 | .00231 | .00098 | .02386 | .00000 | .01193 | .75169 | .01380 | .00865 | .14173 |
| 2300 | .00905 | .00842 | .02738 | .00338 | .00123 | .02223 | .00000 | .01310 | .74762 | .01841 | .01004 | .13915 |
| 2350 | .00899 | .01059 | .02501 | .00482 | .00151 | .02036 | .00000 | .01427 | .74276 | .02420 | .01144 | .13603 |
| 2400 | .00893 | .01292 | .02244 | .00670 | .00180 | .01825 | .00000 | .01544 | .73708 | .03136 | .01279 | .13229 |
| 2450 | .00886 | .01533 | .01974 | .00908 | .00207 | .01595 | .00000 | .01657 | .73054 | .04005 | .01399 | .12781 |
| 2500 | .00878 | .01771 | .01704 | .01197 | .00229 | .01353 | .00000 | .01764 | .72316 | .05041 | .01495 | .12251 |
| 2550 | .00869 | .01996 | .01443 | .01534 | .00245 | .01108 | .00000 | .01861 | .71503 | .06255 | .01556 | .11630 |
| 2600 | .00859 | .02199 | .01200 | .01908 | .00250 | .00873 | .00001 | .01945 | .70627 | .07646 | .01575 | .10918 |
| 2650 | .00848 | .02375 | .00982 | .02304 | .00245 | .00659 | .00001 | .02012 | .69705 | .09205 | .01546 | .10117 |
| 2700 | .00837 | .02522 | .00791 | .02701 | .00229 | .00476 | .00001 | .02060 | .68760 | .10911 | .01473 | .09238 |
| 2750 | .00826 | .02640 | .00629 | .03079 | .00205 | .00330 | .00002 | .02086 | .67815 | .12729 | .01360 | .08299 |
| 2800 | .00815 | .02732 | .00494 | .03422 | .00177 | .00220 | .00003 | .02088 | .66894 | .14611 | .01221 | .07325 |
| 2850 | .00804 | .02800 | .00383 | .03719 | .00148 | .00141 | .00004 | .02066 | .66021 | .16500 | .01067 | .06346 |
| 2900 | .00794 | .02849 | .00295 | .03969 | .00121 | .00088 | .00006 | .02022 | .65213 | .18336 | .00912 | .05395 |
| 2950 | .00785 | .02883 | .00225 | .04173 | .00097 | .00054 | .00008 | .01957 | .64486 | .20065 | .00764 | .04503 |
| 3000 | .00777 | .02905 | .00171 | .04336 | .00076 | .00033 | .00011 | .01875 | .63849 | .21641 | .00630 | .03696 |

TABLE 2.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.017413; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 10.1325 KPA (0.10 ATM DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00001 | .76883 | .00000 | .00000 | .15469 |
| 950 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00002 | .76882 | .00000 | .00000 | .15468 |
| 1000 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00003 | .76882 | .00000 | .00000 | .15468 |
| 1050 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00005 | .76881 | .00000 | .00000 | .15467 |
| 1100 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00008 | .76879 | .00000 | .00000 | .15465 |
| 1150 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00012 | .76877 | .00000 | .00000 | .15463 |
| 1200 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00018 | .76874 | .00000 | .00000 | .15460 |
| 1250 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00000 | .00026 | .76870 | .00000 | .00001 | .15456 |
| 1300 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00000 | .00037 | .76865 | .00000 | .00001 | .15450 |
| 1350 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00000 | .00050 | .76858 | .00000 | .00002 | .15443 |
| 1400 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03074 | .00000 | .00067 | .76849 | .00000 | .00003 | .15435 |
| 1450 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03073 | .00000 | .00087 | .76838 | .00000 | .00005 | .15424 |
| 1500 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03072 | .00000 | .00112 | .76825 | .00001 | .00007 | .15411 |
| 1550 | .00922 | .00000 | .03649 | .00000 | .00000 | .00000 | .03070 | .00000 | .00141 | .76810 | .00001 | .00011 | .15395 |
| 1600 | .00922 | .00001 | .03649 | .00000 | .00000 | .00000 | .03067 | .00000 | .00176 | .76791 | .00002 | .00017 | .15375 |
| 1650 | .00922 | .00001 | .03649 | .00000 | .00000 | .00000 | .03063 | .00000 | .00216 | .76769 | .00003 | .00024 | .15353 |
| 1700 | .00922 | .00002 | .03647 | .00000 | .00000 | .00000 | .03058 | .00000 | .00262 | .76742 | .00005 | .00034 | .15326 |
| 1750 | .00922 | .00004 | .03646 | .00000 | .00000 | .00001 | .03051 | .00000 | .00315 | .76712 | .00009 | .00047 | .15295 |
| 1800 | .00922 | .00006 | .03643 | .00000 | .00000 | .00001 | .03041 | .00000 | .00373 | .76675 | .00015 | .00064 | .15258 |
| 1850 | .00922 | .00010 | .03639 | .00001 | .00000 | .00002 | .03029 | .00000 | .00439 | .76633 | .00024 | .00085 | .15216 |
| 1900 | .00922 | .00016 | .03632 | .00001 | .00000 | .00003 | .03014 | .00000 | .00511 | .76584 | .00037 | .00112 | .15168 |
| 1950 | .00921 | .00025 | .03622 | .00002 | .00000 | .00005 | .02994 | .00000 | .00591 | .76526 | .00055 | .00146 | .15112 |
| 2000 | .00921 | .00038 | .03607 | .00004 | .00000 | .00007 | .02970 | .00000 | .00678 | .76457 | .00082 | .00186 | .15049 |
| 2050 | .00921 | .00058 | .03587 | .00007 | .00000 | .00010 | .02940 | .00000 | .00772 | .76377 | .00118 | .00235 | .14976 |
| 2100 | .00920 | .00084 | .03558 | .00012 | .00000 | .00014 | .02903 | .00000 | .00873 | .76281 | .00169 | .00292 | .14894 |
| 2150 | .00919 | .00121 | .03518 | .00018 | .00000 | .00019 | .02858 | .00000 | .00980 | .76168 | .00236 | .00359 | .14800 |
| 2200 | .00918 | .00170 | .03466 | .00029 | .00000 | .00026 | .02805 | .00000 | .01095 | .76034 | .00326 | .00437 | .14694 |
| 2250 | .00917 | .00234 | .03397 | .00044 | .00000 | .00035 | .02740 | .00000 | .01216 | .75876 | .00443 | .00525 | .14573 |
| 2300 | .00916 | .00316 | .03309 | .00065 | .00000 | .00046 | .02664 | .00000 | .01342 | .75687 | .00593 | .00623 | .14437 |
| 2350 | .00914 | .00418 | .03200 | .00095 | .00000 | .00059 | .02576 | .00000 | .01474 | .75466 | .00784 | .00732 | .14281 |
| 2400 | .00912 | .00541 | .03067 | .00136 | .00000 | .00075 | .02473 | .00000 | .01611 | .75206 | .01024 | .00850 | .14105 |
| 2450 | .00909 | .00686 | .02912 | .00192 | .00000 | .00093 | .02355 | .00000 | .01750 | .74903 | .01321 | .00976 | .13904 |
| 2500 | .00906 | .00851 | .02734 | .00265 | .00000 | .00113 | .02221 | .00000 | .01892 | .74553 | .01684 | .01107 | .13673 |
| 2550 | .00902 | .01033 | .02536 | .00360 | .00000 | .00135 | .02072 | .00000 | .02035 | .74155 | .02124 | .01240 | .13409 |
| 2600 | .00897 | .01228 | .02323 | .00479 | .00001 | .00158 | .01909 | .00000 | .02177 | .73704 | .02649 | .01371 | .13105 |
| 2650 | .00892 | .01430 | .02100 | .00627 | .00001 | .00181 | .01733 | .00000 | .02315 | .73201 | .03269 | .01494 | .12757 |
| 2700 | .00886 | .01633 | .01874 | .00805 | .00001 | .00203 | .01547 | .00000 | .02449 | .72646 | .03991 | .01605 | .12360 |
| 2750 | .00879 | .01830 | .01651 | .01014 | .00001 | .00222 | .01355 | .00001 | .02575 | .72041 | .04822 | .01697 | .11910 |
| 2800 | .00872 | .02016 | .01437 | .01254 | .00001 | .00238 | .01163 | .00001 | .02692 | .71392 | .05765 | .01765 | .11405 |
| 2850 | .00865 | .02186 | .01237 | .01520 | .00001 | .00247 | .00975 | .00001 | .02795 | .70704 | .06821 | .01803 | .10844 |
| 2900 | .00857 | .02338 | .01053 | .01808 | .00001 | .00250 | .00798 | .00002 | .02884 | .69985 | .07985 | .01809 | .10230 |
| 2950 | .00848 | .02470 | .00888 | .02110 | .00000 | .00247 | .00637 | .00003 | .02956 | .69245 | .09249 | .01780 | .09568 |
| 3000 | .00840 | .02581 | .00742 | .02416 | .00000 | .00237 | .00496 | .00004 | .03008 | .68495 | .10598 | .01719 | .08864 |

TABLE 2.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.017413; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 101.325 KPA (1.00 A DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00001 | .00000 | .76883 | .00000 | .00000 | .15469 |
| 950 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00002 | .00000 | .76882 | .00000 | .00000 | .15468 |
| 1000 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00003 | .00000 | .76882 | .00000 | .00000 | .15467 |
| 1050 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00005 | .00000 | .76881 | .00000 | .00000 | .15466 |
| 1100 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00008 | .00000 | .76879 | .00000 | .00000 | .15465 |
| 1150 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00012 | .00000 | .76877 | .00000 | .00000 | .15463 |
| 1200 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00018 | .00000 | .76874 | .00000 | .00000 | .15460 |
| 1250 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00000 | .00026 | .00000 | .76870 | .00000 | .00000 | .15456 |
| 1300 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00000 | .00037 | .00000 | .76865 | .00000 | .00001 | .15450 |
| 1350 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00000 | .00050 | .00000 | .76858 | .00000 | .00001 | .15443 |
| 1400 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00000 | .00067 | .00000 | .76849 | .00000 | .00002 | .15435 |
| 1450 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03074 | .00000 | .00087 | .00000 | .76839 | .00000 | .00003 | .15424 |
| 1500 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03074 | .00000 | .00112 | .00000 | .76826 | .00000 | .00004 | .15411 |
| 1550 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03073 | .00000 | .00142 | .00001 | .76811 | .00000 | .00006 | .15396 |
| 1600 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03071 | .00000 | .00176 | .00001 | .76793 | .00001 | .00009 | .15378 |
| 1650 | .00922 | .00000 | .03649 | .00000 | .00000 | .00000 | .03069 | .00000 | .00216 | .00001 | .76772 | .00001 | .00013 | .15356 |
| 1700 | .00922 | .00001 | .03649 | .00000 | .00000 | .00000 | .03066 | .00000 | .00262 | .00001 | .76747 | .00002 | .00019 | .15331 |
| 1750 | .00922 | .00001 | .03648 | .00000 | .00000 | .00000 | .03062 | .00000 | .00315 | .00001 | .76719 | .00003 | .00026 | .15302 |
| 1800 | .00922 | .00002 | .03648 | .00000 | .00000 | .00000 | .03057 | .00000 | .00373 | .00001 | .76687 | .00005 | .00036 | .15269 |
| 1850 | .00922 | .00003 | .03646 | .00000 | .00000 | .00001 | .03050 | .00000 | .00439 | .00001 | .76650 | .00007 | .00048 | .15232 |
| 1900 | .00922 | .00005 | .03644 | .00000 | .00000 | .00001 | .03042 | .00000 | .00512 | .00001 | .76608 | .00012 | .00063 | .15190 |
| 1950 | .00922 | .00008 | .03641 | .00000 | .00000 | .00002 | .03032 | .00000 | .00592 | .00001 | .76561 | .00017 | .00082 | .15142 |
| 2000 | .00922 | .00012 | .03636 | .00001 | .00000 | .00002 | .03019 | .00000 | .00679 | .00001 | .76507 | .00026 | .00106 | .15089 |
| 2050 | .00922 | .00018 | .03629 | .00001 | .00000 | .00003 | .03003 | .00000 | .00773 | .00001 | .76447 | .00037 | .00133 | .15030 |
| 2100 | .00921 | .00027 | .03620 | .00002 | .00000 | .00005 | .02984 | .00000 | .00875 | .00001 | .76380 | .00053 | .00167 | .14965 |
| 2150 | .00921 | .00039 | .03607 | .00003 | .00000 | .00006 | .02961 | .00000 | .00984 | .00001 | .76303 | .00075 | .00206 | .14893 |
| 2200 | .00921 | .00055 | .03589 | .00005 | .00000 | .00009 | .02934 | .00000 | .01101 | .00001 | .76217 | .00103 | .00252 | .14813 |
| 2250 | .00920 | .00077 | .03565 | .00008 | .00001 | .00012 | .02902 | .00000 | .01224 | .00001 | .76120 | .00141 | .00304 | .14725 |
| 2300 | .00920 | .00106 | .03535 | .00012 | .00001 | .00015 | .02864 | .00000 | .01354 | .00001 | .76010 | .00189 | .00365 | .14629 |
| 2350 | .00919 | .00143 | .03495 | .00018 | .00001 | .00020 | .02820 | .00000 | .01491 | .00001 | .75885 | .00250 | .00433 | .14524 |
| 2400 | .00918 | .00190 | .03445 | .00026 | .00001 | .00026 | .02769 | .00000 | .01634 | .00001 | .75745 | .00327 | .00509 | .14410 |
| 2450 | .00917 | .00248 | .03382 | .00036 | .00001 | .00033 | .02711 | .00000 | .01782 | .00001 | .75586 | .00423 | .00593 | .14285 |
| 2500 | .00916 | .00320 | .03306 | .00051 | .00001 | .00042 | .02645 | .00000 | .01936 | .00001 | .75407 | .00542 | .00685 | .14148 |
| 2550 | .00915 | .00405 | .03215 | .00071 | .00001 | .00052 | .02570 | .00000 | .02094 | .00001 | .75205 | .00686 | .00785 | .14000 |
| 2600 | .00913 | .00506 | .03107 | .00096 | .00001 | .00063 | .02487 | .00000 | .02256 | .00001 | .74979 | .00861 | .00892 | .13838 |
| 2650 | .00911 | .00621 | .02984 | .00129 | .00001 | .00076 | .02394 | .00000 | .02421 | .00001 | .74726 | .01070 | .01005 | .13661 |
| 2700 | .00908 | .00751 | .02845 | .00171 | .00001 | .00091 | .02292 | .00000 | .02588 | .00001 | .74445 | .01317 | .01122 | .13467 |
| 2750 | .00906 | .00894 | .02691 | .00223 | .00001 | .00107 | .02180 | .00000 | .02756 | .00001 | .74134 | .01609 | .01243 | .13254 |
| 2800 | .00903 | .01048 | .02525 | .00287 | .00001 | .00125 | .02059 | .00000 | .02924 | .00001 | .73794 | .01948 | .01365 | .13020 |
| 2850 | .00899 | .01210 | .02349 | .00365 | .00002 | .00143 | .01930 | .00000 | .03090 | .00001 | .73422 | .02340 | .01486 | .12762 |
| 2900 | .00895 | .01377 | .02167 | .00459 | .00002 | .00161 | .01794 | .00001 | .03254 | .00001 | .73020 | .02789 | .01602 | .12479 |
| 2950 | .00891 | .01546 | .01981 | .00569 | .00002 | .00179 | .01652 | .00001 | .03412 | .00001 | .72588 | .03298 | .01712 | .12167 |
| 3000 | .00886 | .01712 | .01797 | .00697 | .00002 | .00197 | .01505 | .00001 | .03565 | .00001 | .72128 | .03871 | .01811 | .11826 |

TABLE 2.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.017413; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 1013.25 KPA (10.00 ATM DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00001 | .00000 | .76883 | .00000 | .00000 | .00000 | .15468 |
| 950 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00002 | .00000 | .76882 | .00000 | .00000 | .00000 | .15468 |
| 1000 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00003 | .00000 | .76882 | .00000 | .00000 | .00000 | .15467 |
| 1050 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00005 | .00001 | .76881 | .00000 | .00000 | .00000 | .15466 |
| 1100 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00008 | .00001 | .76879 | .00000 | .00000 | .00000 | .15465 |
| 1150 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00012 | .00001 | .76877 | .00000 | .00000 | .00000 | .15462 |
| 1200 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00018 | .00001 | .76874 | .00000 | .00000 | .00000 | .15459 |
| 1250 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00026 | .00001 | .76870 | .00000 | .00000 | .00000 | .15455 |
| 1300 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00037 | .00001 | .76865 | .00000 | .00000 | .00000 | .15450 |
| 1350 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00050 | .00001 | .76858 | .00000 | .00000 | .00001 | .15443 |
| 1400 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00067 | .00001 | .76849 | .00000 | .00000 | .00001 | .15434 |
| 1450 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00087 | .00001 | .76839 | .00000 | .00000 | .00001 | .15424 |
| 1500 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00112 | .00002 | .76827 | .00000 | .00000 | .00002 | .15411 |
| 1550 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03074 | .00142 | .00002 | .76811 | .00000 | .00000 | .00004 | .15396 |
| 1600 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03073 | .00176 | .00002 | .76794 | .00000 | .00000 | .00005 | .15378 |
| 1650 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03072 | .00216 | .00002 | .76773 | .00000 | .00000 | .00008 | .15357 |
| 1700 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03070 | .00262 | .00002 | .76749 | .00000 | .00001 | .00011 | .15333 |
| 1750 | .00922 | .00000 | .03649 | .00000 | .00000 | .00000 | .03068 | .00315 | .00002 | .76722 | .00000 | .00001 | .00015 | .15305 |
| 1800 | .00922 | .00001 | .03649 | .00000 | .00000 | .00000 | .03065 | .00374 | .00002 | .76691 | .00000 | .00001 | .00020 | .15274 |
| 1850 | .00922 | .00001 | .03649 | .00000 | .00000 | .00000 | .03062 | .00439 | .00003 | .76657 | .00000 | .00002 | .00027 | .15238 |
| 1900 | .00922 | .00002 | .03648 | .00000 | .00000 | .00000 | .03057 | .00512 | .00003 | .76618 | .00000 | .00004 | .00036 | .15199 |
| 1950 | .00922 | .00003 | .03647 | .00000 | .00000 | .00000 | .03051 | .00592 | .00003 | .76575 | .00000 | .00006 | .00047 | .15155 |
| 2000 | .00922 | .00004 | .03645 | .00000 | .00000 | .00001 | .03044 | .00679 | .00003 | .76527 | .00000 | .00008 | .00060 | .15106 |
| 2050 | .00922 | .00006 | .03643 | .00000 | .00000 | .00001 | .03036 | .00774 | .00003 | .76474 | .00000 | .00012 | .00075 | .15053 |
| 2100 | .00922 | .00009 | .03640 | .00000 | .00001 | .00001 | .03025 | .00876 | .00003 | .76416 | .00000 | .00017 | .00094 | .14995 |
| 2150 | .00922 | .00012 | .03636 | .00001 | .00001 | .00002 | .03013 | .00986 | .00003 | .76352 | .00000 | .00024 | .00117 | .14931 |
| 2200 | .00922 | .00018 | .03630 | .00001 | .00001 | .00003 | .02999 | .01103 | .00003 | .76283 | .00000 | .00033 | .00143 | .14862 |
| 2250 | .00921 | .00025 | .03622 | .00001 | .00001 | .00004 | .02981 | .01227 | .00004 | .76207 | .00000 | .00045 | .00174 | .14788 |
| 2300 | .00921 | .00034 | .03612 | .00002 | .00001 | .00005 | .02962 | .01359 | .00004 | .76124 | .00000 | .00060 | .00209 | .14707 |
| 2350 | .00921 | .00046 | .03599 | .00003 | .00001 | .00007 | .02939 | .01497 | .00004 | .76034 | .00000 | .00079 | .00249 | .14621 |
| 2400 | .00921 | .00062 | .03582 | .00005 | .00001 | .00009 | .02912 | .01642 | .00004 | .75935 | .00000 | .00104 | .00294 | .14529 |
| 2450 | .00920 | .00082 | .03560 | .00007 | .00002 | .00011 | .02882 | .01794 | .00004 | .75828 | .00000 | .00135 | .00345 | .14430 |
| 2500 | .00920 | .00107 | .03533 | .00009 | .00002 | .00014 | .02848 | .01952 | .00004 | .75711 | .00000 | .00172 | .00401 | .14325 |
| 2550 | .00919 | .00138 | .03500 | .00013 | .00002 | .00018 | .02809 | .02115 | .00004 | .75585 | .00000 | .00219 | .00463 | .14214 |
| 2600 | .00919 | .00176 | .03460 | .00018 | .00002 | .00022 | .02766 | .02284 | .00004 | .75447 | .00000 | .00275 | .00531 | .14096 |
| 2650 | .00918 | .00222 | .03411 | .00024 | .00002 | .00027 | .02718 | .02457 | .00004 | .75296 | .00000 | .00342 | .00605 | .13971 |
| 2700 | .00917 | .00276 | .03353 | .00032 | .00003 | .00033 | .02665 | .02636 | .00004 | .75133 | .00000 | .00422 | .00685 | .13839 |
| 2750 | .00916 | .00340 | .03286 | .00043 | .00003 | .00040 | .02607 | .02817 | .00005 | .74957 | .00000 | .00517 | .00771 | .13699 |
| 2800 | .00915 | .00413 | .03208 | .00056 | .00003 | .00048 | .02543 | .03003 | .00005 | .74765 | .00000 | .00628 | .00862 | .13552 |
| 2850 | .00913 | .00496 | .03119 | .00073 | .00003 | .00056 | .02474 | .03191 | .00005 | .74558 | .00000 | .00758 | .00957 | .13396 |
| 2900 | .00912 | .00590 | .03020 | .00093 | .00003 | .00066 | .02399 | .03381 | .00005 | .74335 | .00001 | .00908 | .01057 | .13232 |
| 2950 | .00910 | .00693 | .02910 | .00118 | .00004 | .00077 | .02318 | .03572 | .00005 | .74095 | .00001 | .01080 | .01161 | .13058 |
| 3000 | .00908 | .00805 | .02790 | .00148 | .00004 | .00089 | .02232 | .03763 | .00005 | .73838 | .00001 | .01277 | .01267 | .12874 |

TABLE 2.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.017413; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00001 | .00001 | .76883 | .00000 | .00000 | .00000 | .15468 |
| 950 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00002 | .00001 | .76882 | .00000 | .00000 | .00000 | .15468 |
| 1000 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00003 | .00001 | .76882 | .00000 | .00000 | .00000 | .15467 |
| 1050 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00005 | .00001 | .76881 | .00000 | .00000 | .00000 | .15466 |
| 1100 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00008 | .00001 | .76879 | .00000 | .00000 | .00000 | .15464 |
| 1150 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00012 | .00002 | .76877 | .00000 | .00000 | .00000 | .15461 |
| 1200 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00018 | .00002 | .76874 | .00000 | .00000 | .00000 | .15458 |
| 1250 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00026 | .00002 | .76870 | .00000 | .00000 | .00000 | .15454 |
| 1300 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00037 | .00002 | .76864 | .00000 | .00000 | .00000 | .15448 |
| 1350 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03076 | .00050 | .00003 | .76858 | .00000 | .00000 | .00000 | .15442 |
| 1400 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00067 | .00003 | .76849 | .00000 | .00000 | .00001 | .15433 |
| 1450 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00087 | .00003 | .76839 | .00000 | .00000 | .00001 | .15422 |
| 1500 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00112 | .00003 | .76826 | .00000 | .00000 | .00002 | .15409 |
| 1550 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03075 | .00141 | .00004 | .76812 | .00000 | .00000 | .00002 | .15394 |
| 1600 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03074 | .00176 | .00004 | .76794 | .00000 | .00000 | .00003 | .15376 |
| 1650 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03073 | .00216 | .00004 | .76773 | .00000 | .00000 | .00005 | .15355 |
| 1700 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03072 | .00262 | .00005 | .76750 | .00000 | .00000 | .00007 | .15331 |
| 1750 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03071 | .00315 | .00005 | .76723 | .00000 | .00000 | .00010 | .15304 |
| 1800 | .00922 | .00000 | .03650 | .00000 | .00000 | .00000 | .03069 | .00374 | .00005 | .76693 | .00000 | .00001 | .00014 | .15273 |
| 1850 | .00922 | .00000 | .03649 | .00000 | .00000 | .00000 | .03066 | .00439 | .00006 | .76659 | .00000 | .00001 | .00018 | .15238 |
| 1900 | .00922 | .00001 | .03649 | .00000 | .00000 | .00000 | .03063 | .00512 | .00006 | .76621 | .00000 | .00002 | .00024 | .15200 |
| 1950 | .00922 | .00001 | .03649 | .00000 | .00001 | .00000 | .03059 | .00592 | .00006 | .76579 | .00000 | .00002 | .00031 | .15157 |
| 2000 | .00922 | .00002 | .03648 | .00000 | .00001 | .00000 | .03055 | .00679 | .00007 | .76533 | .00000 | .00004 | .00040 | .15110 |
| 2050 | .00922 | .00003 | .03647 | .00000 | .00001 | .00000 | .03049 | .00774 | .00007 | .76482 | .00000 | .00005 | .00051 | .15059 |
| 2100 | .00922 | .00004 | .03645 | .00000 | .00001 | .00001 | .03042 | .00877 | .00007 | .76427 | .00000 | .00008 | .00063 | .15003 |
| 2150 | .00922 | .00006 | .03643 | .00000 | .00001 | .00001 | .03034 | .00986 | .00007 | .76367 | .00000 | .00011 | .00078 | .14942 |
| 2200 | .00922 | .00008 | .03641 | .00000 | .00001 | .00001 | .03025 | .01104 | .00008 | .76303 | .00000 | .00015 | .00096 | .14877 |
| 2250 | .00922 | .00011 | .03637 | .00000 | .00001 | .00002 | .03013 | .01228 | .00008 | .76233 | .00000 | .00020 | .00117 | .14807 |
| 2300 | .00922 | .00015 | .03633 | .00001 | .00002 | .00002 | .03000 | .01360 | .00008 | .76158 | .00000 | .00027 | .00141 | .14731 |
| 2350 | .00921 | .00021 | .03627 | .00001 | .00002 | .00003 | .02985 | .01499 | .00009 | .76077 | .00001 | .00036 | .00168 | .14651 |
| 2400 | .00921 | .00028 | .03619 | .00001 | .00002 | .00004 | .02968 | .01645 | .00009 | .75990 | .00001 | .00047 | .00199 | .14566 |
| 2450 | .00921 | .00037 | .03609 | .00002 | .00002 | .00005 | .02949 | .01798 | .00009 | .75898 | .00001 | .00060 | .00233 | .14476 |
| 2500 | .00921 | .00049 | .03596 | .00003 | .00003 | .00006 | .02926 | .01957 | .00009 | .75799 | .00001 | .00077 | .00272 | .14381 |
| 2550 | .00921 | .00063 | .03581 | .00004 | .00003 | .00008 | .02902 | .02122 | .00009 | .75693 | .00001 | .00098 | .00315 | .14280 |
| 2600 | .00920 | .00081 | .03562 | .00005 | .00003 | .00010 | .02874 | .02292 | .00010 | .75581 | .00001 | .00123 | .00363 | .14175 |
| 2650 | .00920 | .00103 | .03539 | .00007 | .00004 | .00013 | .02843 | .02468 | .00010 | .75461 | .00001 | .00153 | .00415 | .14064 |
| 2700 | .00919 | .00129 | .03511 | .00010 | .00004 | .00016 | .02809 | .02649 | .00010 | .75333 | .00001 | .00190 | .00471 | .13949 |
| 2750 | .00919 | .00160 | .03477 | .00013 | .00004 | .00019 | .02771 | .02835 | .00010 | .75196 | .00001 | .00232 | .00533 | .13828 |
| 2800 | .00918 | .00197 | .03438 | .00017 | .00005 | .00023 | .02730 | .03025 | .00010 | .75052 | .00001 | .00283 | .00599 | .13702 |
| 2850 | .00918 | .00240 | .03393 | .00023 | .00005 | .00027 | .02685 | .03219 | .00011 | .74897 | .00001 | .00341 | .00669 | .13572 |
| 2900 | .00917 | .00289 | .03340 | .00029 | .00005 | .00032 | .02637 | .03416 | .00011 | .74734 | .00001 | .00409 | .00744 | .13436 |
| 2950 | .00916 | .00346 | .03280 | .00037 | .00006 | .00038 | .02584 | .03615 | .00011 | .74560 | .00001 | .00488 | .00823 | .13295 |
| 3000 | .00915 | .00410 | .03212 | .00047 | .00006 | .00044 | .02528 | .03817 | .00011 | .74376 | .00001 | .00577 | .00906 | .13149 |

TABLE 2C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.017413; EQUIV.RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00922 | .03650 | .03060 | .00000 | .00015 | .76883 | .15469 |
| 220 | .00922 | .03650 | .02822 | .00000 | .00253 | .76883 | .15469 |
| 240 | .00922 | .03650 | .00406 | .00000 | .02669 | .76883 | .15469 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00922 | .03650 | .03074 | .00000 | .00002 | .76883 | .15469 |
| 220 | .00922 | .03650 | .03050 | .00000 | .00025 | .76883 | .15469 |
| 240 | .00922 | .03650 | .02815 | .00000 | .00260 | .76883 | .15469 |
| 260 | .00922 | .03650 | .01173 | .00000 | .01902 | .76883 | .15469 |
| 280 | .00922 | .03650 | .00000 | .00000 | .03076 | .76883 | .15469 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00922 | .03650 | .03076 | .00000 | .00000 | .76883 | .15469 |
| 220 | .00922 | .03650 | .03073 | .00000 | .00003 | .76883 | .15469 |
| 240 | .00922 | .03650 | .03050 | .00000 | .00026 | .76883 | .15469 |
| 260 | .00922 | .03650 | .02889 | .00000 | .00187 | .76883 | .15469 |
| 280 | .00922 | .03650 | .00000 | .02122 | .00954 | .76883 | .15469 |
| 298 | .00922 | .03650 | .00000 | .00000 | .03076 | .76883 | .15469 |
| 300 | .00922 | .03650 | .00000 | .00000 | .03076 | .76883 | .15469 |
| 320 | .00922 | .03650 | .00000 | .00000 | .03076 | .76883 | .15469 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00922 | .03650 | .03076 | .00000 | .00000 | .76883 | .15469 |
| 220 | .00922 | .03650 | .03075 | .00000 | .00000 | .76883 | .15469 |
| 240 | .00922 | .03650 | .03073 | .00000 | .00003 | .76883 | .15469 |
| 260 | .00922 | .03650 | .03057 | .00000 | .00019 | .76883 | .15469 |
| 280 | .00922 | .03650 | .00000 | .02981 | .00095 | .76883 | .15469 |
| 298 | .00922 | .03650 | .00000 | .02773 | .00303 | .76883 | .15469 |
| 300 | .00922 | .03650 | .00000 | .02738 | .00338 | .76883 | .15469 |
| 320 | .00922 | .03650 | .00000 | .02064 | .01012 | .76883 | .15469 |
| 340 | .00922 | .03650 | .00000 | .00432 | .02644 | .76883 | .15469 |
| 360 | .00922 | .03650 | .00000 | .00000 | .03076 | .76883 | .15469 |
| 380 | .00922 | .03650 | .00000 | .00000 | .03076 | .76883 | .15469 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00922 | .03650 | .03076 | .00000 | .00000 | .76883 | .15469 |
| 220 | .00922 | .03650 | .03076 | .00000 | .00000 | .76883 | .15469 |
| 240 | .00922 | .03650 | .03075 | .00000 | .00001 | .76883 | .15469 |
| 260 | .00922 | .03650 | .03072 | .00000 | .00004 | .76883 | .15469 |
| 280 | .00922 | .03650 | .00000 | .03057 | .00019 | .76883 | .15469 |
| 298 | .00922 | .03650 | .00000 | .03015 | .00060 | .76883 | .15469 |
| 300 | .00922 | .03650 | .00000 | .03008 | .00067 | .76883 | .15469 |
| 320 | .00922 | .03650 | .00000 | .02875 | .00201 | .76883 | .15469 |
| 340 | .00922 | .03650 | .00000 | .02558 | .00518 | .76883 | .15469 |
| 360 | .00922 | .03650 | .00000 | .01889 | .01186 | .76883 | .15469 |
| 380 | .00922 | .03650 | .00000 | .00603 | .02473 | .76883 | .15469 |
| 400 | .00922 | .03650 | .00000 | .00000 | .03076 | .76883 | .15469 |
| 420 | .00922 | .03650 | .00000 | .00000 | .03076 | .76883 | .15469 |

TABLE 3.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.034826; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00908 | .00000 | .07158 | .00000 | .00000 | .06058 | .00000 | .00001 | .75718 | .00000 | .00000 | .10156 |
| 950 | .00908 | .00000 | .07158 | .00000 | .00000 | .06058 | .00000 | .00001 | .75718 | .00000 | .00000 | .10156 |
| 1000 | .00908 | .00000 | .07158 | .00000 | .00000 | .06058 | .00000 | .00002 | .75718 | .00000 | .00000 | .10155 |
| 1050 | .00908 | .00000 | .07158 | .00000 | .00000 | .06058 | .00000 | .00004 | .75717 | .00000 | .00000 | .10154 |
| 1100 | .00908 | .00000 | .07158 | .00000 | .00000 | .06058 | .00000 | .00006 | .75715 | .00000 | .00000 | .10153 |
| 1150 | .00908 | .00000 | .07158 | .00000 | .00000 | .06058 | .00000 | .00010 | .75714 | .00000 | .00000 | .10151 |
| 1200 | .00908 | .00000 | .07158 | .00000 | .00000 | .06058 | .00000 | .00015 | .75711 | .00000 | .00001 | .10149 |
| 1250 | .00908 | .00000 | .07158 | .00000 | .00000 | .06058 | .00000 | .00021 | .75708 | .00000 | .00001 | .10146 |
| 1300 | .00908 | .00000 | .07158 | .00000 | .00000 | .06057 | .00000 | .00030 | .75704 | .00000 | .00002 | .10141 |
| 1350 | .00908 | .00000 | .07158 | .00000 | .00000 | .06056 | .00000 | .00040 | .75698 | .00000 | .00004 | .10135 |
| 1400 | .00908 | .00000 | .07158 | .00000 | .00000 | .06055 | .00000 | .00054 | .75690 | .00000 | .00006 | .10128 |
| 1450 | .00908 | .00001 | .07158 | .00000 | .00000 | .06053 | .00000 | .00070 | .75681 | .00001 | .00010 | .10118 |
| 1500 | .00908 | .00001 | .07157 | .00000 | .00000 | .06049 | .00000 | .00090 | .75670 | .00001 | .00016 | .10107 |
| 1550 | .00908 | .00002 | .07155 | .00000 | .00001 | .06045 | .00000 | .00114 | .75655 | .00002 | .00025 | .10093 |
| 1600 | .00908 | .00004 | .07153 | .00000 | .00001 | .06038 | .00000 | .00141 | .75637 | .00005 | .00037 | .10076 |
| 1650 | .00908 | .00008 | .07148 | .00000 | .00002 | .06028 | .00000 | .00174 | .75614 | .00008 | .00054 | .10055 |
| 1700 | .00908 | .00015 | .07140 | .00001 | .00004 | .06014 | .00000 | .00211 | .75586 | .00014 | .00076 | .10031 |
| 1750 | .00908 | .00027 | .07127 | .00002 | .00006 | .05995 | .00000 | .00252 | .75550 | .00024 | .00105 | .10004 |
| 1800 | .00907 | .00046 | .07107 | .00004 | .00010 | .05970 | .00000 | .00299 | .75504 | .00038 | .00143 | .09972 |
| 1850 | .00907 | .00075 | .07074 | .00007 | .00016 | .05936 | .00000 | .00352 | .75445 | .00060 | .00191 | .09937 |
| 1900 | .00906 | .00121 | .07024 | .00012 | .00024 | .05891 | .00000 | .00410 | .75369 | .00093 | .00251 | .09898 |
| 1950 | .00906 | .00188 | .06950 | .00022 | .00036 | .05832 | .00000 | .00473 | .75270 | .00141 | .00325 | .09857 |
| 2000 | .00904 | .00285 | .06844 | .00037 | .00053 | .05756 | .00000 | .00543 | .75141 | .00208 | .00414 | .09815 |
| 2050 | .00903 | .00420 | .06697 | .00062 | .00075 | .05657 | .00000 | .00618 | .74974 | .00302 | .00520 | .09771 |
| 2100 | .00901 | .00602 | .06498 | .00100 | .00105 | .05532 | .00000 | .00698 | .74760 | .00431 | .00645 | .09727 |
| 2150 | .00898 | .00839 | .06240 | .00158 | .00142 | .05376 | .00000 | .00784 | .74487 | .00604 | .00788 | .09683 |
| 2200 | .00895 | .01134 | .05917 | .00244 | .00189 | .05181 | .00000 | .00876 | .74146 | .00834 | .00950 | .09634 |
| 2250 | .00890 | .01487 | .05529 | .00366 | .00246 | .04944 | .00000 | .00972 | .73725 | .01135 | .01129 | .09577 |
| 2300 | .00885 | .01892 | .05081 | .00538 | .00312 | .04659 | .00000 | .01071 | .73217 | .01522 | .01321 | .09503 |
| 2350 | .00878 | .02335 | .04586 | .00770 | .00386 | .04326 | .00000 | .01173 | .72615 | .02012 | .01520 | .09399 |
| 2400 | .00870 | .02797 | .04062 | .01077 | .00464 | .03943 | .00000 | .01276 | .71916 | .02622 | .01719 | .09253 |
| 2450 | .00861 | .03259 | .03530 | .01470 | .00541 | .03516 | .00000 | .01376 | .71121 | .03370 | .01905 | .09050 |
| 2500 | .00851 | .03698 | .03011 | .01955 | .00612 | .03055 | .00000 | .01471 | .70234 | .04267 | .02067 | .08777 |
| 2550 | .00840 | .04100 | .02522 | .02534 | .00668 | .02575 | .00000 | .01559 | .69265 | .05323 | .02188 | .08424 |
| 2600 | .00828 | .04450 | .02078 | .03197 | .00702 | .02096 | .00001 | .01635 | .68232 | .06539 | .02257 | .07986 |
| 2650 | .00816 | .04744 | .01685 | .03923 | .00709 | .01640 | .00001 | .01696 | .67157 | .07906 | .02261 | .07463 |
| 2700 | .00803 | .04981 | .01347 | .04679 | .00686 | .01231 | .00001 | .01740 | .66069 | .09403 | .02198 | .06861 |
| 2750 | .00790 | .05165 | .01063 | .05427 | .00637 | .00885 | .00002 | .01764 | .65000 | .10998 | .02072 | .06196 |
| 2800 | .00778 | .05303 | .00829 | .06130 | .00568 | .00610 | .00003 | .01768 | .63982 | .12647 | .01893 | .05488 |
| 2850 | .00767 | .05402 | .00641 | .06760 | .00489 | .00404 | .00004 | .01750 | .63040 | .14298 | .01681 | .04765 |
| 2900 | .00756 | .05470 | .00490 | .07301 | .00408 | .00259 | .00006 | .01712 | .62193 | .15896 | .01454 | .04055 |
| 2950 | .00747 | .05515 | .00373 | .07748 | .00333 | .00162 | .00008 | .01656 | .61452 | .17393 | .01230 | .03384 |
| 3000 | .00739 | .05543 | .00282 | .08108 | .00267 | .00099 | .00011 | .01586 | .60820 | .18750 | .01021 | .02774 |

TABLE 3.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.034826; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00001 | .75718 | .00000 | .00000 | .10156 |
| 950 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00001 | .75718 | .00000 | .00000 | .10156 |
| 1000 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00002 | .75718 | .00000 | .00000 | .10155 |
| 1050 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00004 | .75717 | .00000 | .00000 | .10154 |
| 1100 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00006 | .75715 | .00000 | .00000 | .10153 |
| 1150 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00010 | .75714 | .00000 | .00000 | .10151 |
| 1200 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00015 | .75711 | .00000 | .00000 | .10149 |
| 1250 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00021 | .75708 | .00000 | .00001 | .10146 |
| 1300 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00030 | .75704 | .00000 | .00001 | .10141 |
| 1350 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06057 | .00000 | .00040 | .75698 | .00000 | .00002 | .10136 |
| 1400 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06056 | .00000 | .00054 | .75691 | .00000 | .00004 | .10129 |
| 1450 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06055 | .00000 | .00070 | .75682 | .00000 | .00006 | .10120 |
| 1500 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06053 | .00000 | .00090 | .75672 | .00000 | .00009 | .10109 |
| 1550 | .00908 | .00001 | .07157 | .00000 | .00000 | .00000 | .06051 | .00000 | .00114 | .75659 | .00001 | .00014 | .10096 |
| 1600 | .00908 | .00001 | .07156 | .00000 | .00000 | .00000 | .06047 | .00000 | .00142 | .75643 | .00001 | .00021 | .10080 |
| 1650 | .00908 | .00003 | .07155 | .00000 | .00000 | .00001 | .06042 | .00000 | .00174 | .75624 | .00003 | .00030 | .10061 |
| 1700 | .00908 | .00005 | .07152 | .00000 | .00000 | .00001 | .06035 | .00000 | .00211 | .75601 | .00004 | .00043 | .10040 |
| 1750 | .00908 | .00009 | .07148 | .00000 | .00000 | .00002 | .06025 | .00000 | .00253 | .75574 | .00007 | .00059 | .10014 |
| 1800 | .00908 | .00015 | .07141 | .00001 | .00000 | .00003 | .06012 | .00000 | .00300 | .75542 | .00012 | .00081 | .09986 |
| 1850 | .00908 | .00024 | .07131 | .00001 | .00000 | .00005 | .05995 | .00000 | .00352 | .75503 | .00019 | .00108 | .09953 |
| 1900 | .00907 | .00039 | .07114 | .00002 | .00000 | .00008 | .05974 | .00000 | .00410 | .75457 | .00030 | .00142 | .09917 |
| 1950 | .00907 | .00061 | .07090 | .00004 | .00000 | .00012 | .05946 | .00000 | .00474 | .75400 | .00045 | .00184 | .09877 |
| 2000 | .00907 | .00093 | .07055 | .00007 | .00000 | .00017 | .05911 | .00000 | .00544 | .75332 | .00066 | .00236 | .09834 |
| 2050 | .00906 | .00139 | .07004 | .00011 | .00000 | .00025 | .05866 | .00000 | .00619 | .75248 | .00096 | .00298 | .09787 |
| 2100 | .00905 | .00203 | .06934 | .00018 | .00000 | .00035 | .05811 | .00000 | .00700 | .75146 | .00136 | .00372 | .09739 |
| 2150 | .00904 | .00291 | .06839 | .00029 | .00000 | .00048 | .05742 | .00000 | .00787 | .75021 | .00191 | .00458 | .09688 |
| 2200 | .00903 | .00407 | .06713 | .00045 | .00000 | .00065 | .05658 | .00000 | .00880 | .74869 | .00264 | .00558 | .09637 |
| 2250 | .00902 | .00557 | .06550 | .00069 | .00000 | .00087 | .05556 | .00000 | .00978 | .74683 | .00359 | .00673 | .09585 |
| 2300 | .00900 | .00746 | .06344 | .00103 | .00000 | .00115 | .05433 | .00000 | .01082 | .74459 | .00482 | .00803 | .09533 |
| 2350 | .00897 | .00977 | .06093 | .00151 | .00000 | .00148 | .05286 | .00000 | .01191 | .74190 | .00639 | .00947 | .09480 |
| 2400 | .00894 | .01250 | .05795 | .00217 | .00000 | .00189 | .05113 | .00000 | .01305 | .73872 | .00837 | .01106 | .09422 |
| 2450 | .00890 | .01565 | .05451 | .00306 | .00000 | .00235 | .04911 | .00000 | .01422 | .73500 | .01084 | .01277 | .09358 |
| 2500 | .00886 | .01914 | .05067 | .00424 | .00000 | .00288 | .04678 | .00000 | .01543 | .73071 | .01388 | .01458 | .09281 |
| 2550 | .00881 | .02289 | .04651 | .00577 | .00001 | .00347 | .04415 | .00000 | .01666 | .72582 | .01758 | .01647 | .09186 |
| 2600 | .00875 | .02680 | .04215 | .00772 | .00001 | .00410 | .04120 | .00000 | .01790 | .72034 | .02203 | .01837 | .09064 |
| 2650 | .00868 | .03073 | .03770 | .01015 | .00001 | .00475 | .03797 | .00000 | .01911 | .71426 | .02732 | .02022 | .08909 |
| 2700 | .00861 | .03456 | .03330 | .01312 | .00001 | .00539 | .03449 | .00000 | .02030 | .70762 | .03351 | .02196 | .08713 |
| 2750 | .00853 | .03818 | .02905 | .01665 | .00001 | .00600 | .03082 | .00001 | .02142 | .70045 | .04067 | .02351 | .08471 |
| 2800 | .00844 | .04150 | .02506 | .02077 | .00001 | .00652 | .02704 | .00001 | .02246 | .69280 | .04883 | .02477 | .08180 |
| 2850 | .00835 | .04446 | .02138 | .02545 | .00001 | .00693 | .02324 | .00001 | .02339 | .68477 | .05798 | .02566 | .07837 |
| 2900 | .00826 | .04703 | .01807 | .03062 | .00001 | .00718 | .01953 | .00002 | .02419 | .67644 | .06811 | .02613 | .07443 |
| 2950 | .00816 | .04919 | .01513 | .03618 | .00001 | .00726 | .01603 | .00003 | .02483 | .66794 | .07912 | .02612 | .07002 |
| 3000 | .00806 | .05097 | .01257 | .04197 | .00001 | .00715 | .01283 | .00004 | .02531 | .65940 | .09089 | .02562 | .06519 |

TABLE 3.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.034826; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00001 | .00000 | .75718 | .00000 | .00000 | .10156 |
| 950 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00001 | .00000 | .75718 | .00000 | .00000 | .10156 |
| 1000 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00002 | .00000 | .75718 | .00000 | .00000 | .10155 |
| 1050 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00004 | .00000 | .75717 | .00000 | .00000 | .10154 |
| 1100 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00006 | .00000 | .75715 | .00000 | .00000 | .10153 |
| 1150 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00010 | .00000 | .75714 | .00000 | .00000 | .10151 |
| 1200 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00015 | .00000 | .75711 | .00000 | .00000 | .10149 |
| 1250 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00021 | .00000 | .75708 | .00000 | .00000 | .10146 |
| 1300 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00030 | .00000 | .75704 | .00000 | .00001 | .10141 |
| 1350 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00000 | .00040 | .00000 | .75698 | .00000 | .00001 | .10136 |
| 1400 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06057 | .00000 | .00054 | .00000 | .75691 | .00000 | .00002 | .10129 |
| 1450 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06057 | .00000 | .00070 | .00000 | .75683 | .00000 | .00003 | .10120 |
| 1500 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06056 | .00000 | .00090 | .00000 | .75673 | .00000 | .00005 | .10110 |
| 1550 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06054 | .00000 | .00114 | .00000 | .75660 | .00000 | .00008 | .10097 |
| 1600 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06052 | .00000 | .00142 | .00000 | .75645 | .00000 | .00012 | .10082 |
| 1650 | .00908 | .00001 | .07157 | .00000 | .00000 | .00000 | .06049 | .00000 | .00174 | .00000 | .75628 | .00001 | .00017 | .10065 |
| 1700 | .00908 | .00002 | .07156 | .00000 | .00000 | .00000 | .06045 | .00000 | .00211 | .00000 | .75608 | .00001 | .00024 | .10044 |
| 1750 | .00908 | .00003 | .07155 | .00000 | .00000 | .00001 | .06040 | .00000 | .00253 | .00000 | .75584 | .00002 | .00033 | .10021 |
| 1800 | .00908 | .00005 | .07153 | .00000 | .00000 | .00001 | .06033 | .00000 | .00300 | .00000 | .75556 | .00004 | .00045 | .09994 |
| 1850 | .00908 | .00008 | .07149 | .00000 | .00000 | .00002 | .06025 | .00000 | .00353 | .00001 | .75525 | .00006 | .00061 | .09964 |
| 1900 | .00908 | .00012 | .07144 | .00000 | .00000 | .00002 | .06013 | .00000 | .00411 | .00001 | .75489 | .00009 | .00080 | .09930 |
| 1950 | .00908 | .00019 | .07136 | .00001 | .00000 | .00004 | .05999 | .00000 | .00475 | .00001 | .75447 | .00014 | .00104 | .09892 |
| 2000 | .00908 | .00030 | .07124 | .00001 | .00000 | .00005 | .05982 | .00000 | .00545 | .00001 | .75399 | .00021 | .00134 | .09851 |
| 2050 | .00907 | .00045 | .07108 | .00002 | .00000 | .00008 | .05960 | .00000 | .00620 | .00001 | .75344 | .00030 | .00169 | .09806 |
| 2100 | .00907 | .00066 | .07085 | .00003 | .00000 | .00011 | .05933 | .00000 | .00702 | .00001 | .75281 | .00043 | .00211 | .09758 |
| 2150 | .00907 | .00095 | .07053 | .00005 | .00000 | .00016 | .05900 | .00000 | .00789 | .00001 | .75207 | .00060 | .00261 | .09706 |
| 2200 | .00906 | .00134 | .07009 | .00008 | .00000 | .00021 | .05860 | .00000 | .00882 | .00001 | .75122 | .00083 | .00320 | .09652 |
| 2250 | .00906 | .00187 | .06952 | .00013 | .00001 | .00029 | .05813 | .00000 | .00981 | .00001 | .75023 | .00114 | .00387 | .09595 |
| 2300 | .00905 | .00256 | .06877 | .00019 | .00001 | .00039 | .05756 | .00000 | .01085 | .00001 | .74908 | .00152 | .00465 | .09536 |
| 2350 | .00904 | .00344 | .06782 | .00028 | .00001 | .00051 | .05690 | .00000 | .01195 | .00001 | .74775 | .00202 | .00552 | .09476 |
| 2400 | .00903 | .00455 | .06662 | .00040 | .00001 | .00065 | .05611 | .00000 | .01311 | .00001 | .74620 | .00265 | .00651 | .09416 |
| 2450 | .00901 | .00591 | .06514 | .00058 | .00001 | .00084 | .05520 | .00000 | .01431 | .00001 | .74441 | .00343 | .00761 | .09354 |
| 2500 | .00900 | .00756 | .06335 | .00081 | .00001 | .00105 | .05414 | .00000 | .01557 | .00001 | .74235 | .00439 | .00883 | .09293 |
| 2550 | .00898 | .00951 | .06125 | .00112 | .00001 | .00131 | .05293 | .00000 | .01687 | .00001 | .73999 | .00557 | .01015 | .09231 |
| 2600 | .00895 | .01176 | .05881 | .00153 | .00001 | .00161 | .05155 | .00000 | .01821 | .00001 | .73731 | .00701 | .01158 | .09167 |
| 2650 | .00892 | .01429 | .05605 | .00206 | .00001 | .00196 | .04998 | .00000 | .01959 | .00001 | .73429 | .00873 | .01312 | .09099 |
| 2700 | .00889 | .01709 | .05300 | .00273 | .00001 | .00234 | .04824 | .00000 | .02099 | .00001 | .73091 | .01078 | .01473 | .09026 |
| 2750 | .00886 | .02010 | .04970 | .00358 | .00001 | .00277 | .04630 | .00000 | .02242 | .00001 | .72717 | .01321 | .01642 | .08943 |
| 2800 | .00882 | .02327 | .04622 | .00463 | .00002 | .00324 | .04417 | .00000 | .02386 | .00001 | .72307 | .01606 | .01815 | .08848 |
| 2850 | .00877 | .02653 | .04260 | .00591 | .00002 | .00374 | .04186 | .00000 | .02530 | .00001 | .71862 | .01936 | .01990 | .08737 |
| 2900 | .00872 | .02981 | .03894 | .00746 | .00002 | .00426 | .03937 | .00001 | .02672 | .00001 | .71383 | .02316 | .02163 | .08607 |
| 2950 | .00867 | .03303 | .03530 | .00929 | .00002 | .00479 | .03673 | .00001 | .02811 | .00001 | .70871 | .02749 | .02331 | .08453 |
| 3000 | .00861 | .03614 | .03174 | .01144 | .00002 | .00531 | .03397 | .00001 | .02945 | .00001 | .70330 | .03238 | .02488 | .08274 |

TABLE 3.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.034826; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00001 | .00000 | .75718 | .00000 | .00000 | .10156 |
| 950 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00001 | .00000 | .75718 | .00000 | .00000 | .10156 |
| 1000 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00002 | .00000 | .75718 | .00000 | .00000 | .10155 |
| 1050 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00004 | .00000 | .75717 | .00000 | .00000 | .10154 |
| 1100 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00006 | .00000 | .75715 | .00000 | .00000 | .10153 |
| 1150 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00010 | .00000 | .75714 | .00000 | .00000 | .10151 |
| 1200 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00015 | .00001 | .75711 | .00000 | .00000 | .10149 |
| 1250 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00021 | .00001 | .75708 | .00000 | .00000 | .10145 |
| 1300 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00030 | .00001 | .75704 | .00000 | .00000 | .10141 |
| 1350 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00040 | .00001 | .75698 | .00000 | .00001 | .10135 |
| 1400 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00054 | .00001 | .75692 | .00000 | .00001 | .10129 |
| 1450 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06057 | .00070 | .00001 | .75683 | .00000 | .00002 | .10120 |
| 1500 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06057 | .00090 | .00001 | .75673 | .00000 | .00003 | .10110 |
| 1550 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06056 | .00114 | .00001 | .75661 | .00000 | .00004 | .10097 |
| 1600 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06055 | .00142 | .00001 | .75646 | .00000 | .00007 | .10083 |
| 1650 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06053 | .00174 | .00001 | .75630 | .00000 | .00010 | .10066 |
| 1700 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06051 | .00211 | .00001 | .75610 | .00000 | .00014 | .10046 |
| 1750 | .00908 | .00001 | .07157 | .00000 | .00000 | .00000 | .06048 | .00253 | .00001 | .75588 | .00001 | .00019 | .10024 |
| 1800 | .00908 | .00001 | .07156 | .00000 | .00000 | .00000 | .06045 | .00300 | .00002 | .75563 | .00001 | .00026 | .09998 |
| 1850 | .00908 | .00002 | .07155 | .00000 | .00000 | .00001 | .06040 | .00353 | .00002 | .75534 | .00002 | .00034 | .09969 |
| 1900 | .00908 | .00004 | .07153 | .00000 | .00000 | .00001 | .06034 | .00411 | .00002 | .75502 | .00003 | .00045 | .09937 |
| 1950 | .00908 | .00006 | .07151 | .00000 | .00000 | .00001 | .06026 | .00475 | .00002 | .75465 | .00004 | .00059 | .09902 |
| 2000 | .00908 | .00009 | .07147 | .00000 | .00000 | .00002 | .06017 | .00545 | .00002 | .75425 | .00007 | .00075 | .09863 |
| 2050 | .00908 | .00014 | .07142 | .00000 | .00001 | .00003 | .06005 | .00621 | .00002 | .75380 | .00010 | .00095 | .09820 |
| 2100 | .00908 | .00021 | .07134 | .00001 | .00001 | .00004 | .05991 | .00702 | .00002 | .75330 | .00014 | .00119 | .09774 |
| 2150 | .00908 | .00030 | .07124 | .00001 | .00001 | .00005 | .05975 | .00790 | .00002 | .75274 | .00019 | .00148 | .09724 |
| 2200 | .00907 | .00043 | .07109 | .00001 | .00001 | .00007 | .05955 | .00883 | .00002 | .75213 | .00026 | .00181 | .09670 |
| 2250 | .00907 | .00060 | .07090 | .00002 | .00001 | .00009 | .05931 | .00983 | .00002 | .75144 | .00036 | .00220 | .09613 |
| 2300 | .00907 | .00083 | .07065 | .00003 | .00001 | .00012 | .05903 | .01088 | .00002 | .75068 | .00048 | .00265 | .09554 |
| 2350 | .00907 | .00113 | .07033 | .00005 | .00001 | .00016 | .05870 | .01198 | .00002 | .74984 | .00064 | .00316 | .09491 |
| 2400 | .00906 | .00151 | .06991 | .00007 | .00001 | .00021 | .05832 | .01314 | .00003 | .74890 | .00084 | .00373 | .09426 |
| 2450 | .00906 | .00199 | .06939 | .00011 | .00002 | .00028 | .05788 | .01435 | .00003 | .74785 | .00108 | .00438 | .09359 |
| 2500 | .00905 | .00260 | .06874 | .00015 | .00002 | .00035 | .05738 | .01561 | .00003 | .74669 | .00139 | .00511 | .09290 |
| 2550 | .00904 | .00334 | .06793 | .00021 | .00002 | .00045 | .05680 | .01692 | .00003 | .74539 | .00176 | .00591 | .09220 |
| 2600 | .00903 | .00424 | .06696 | .00028 | .00002 | .00056 | .05615 | .01827 | .00003 | .74395 | .00221 | .00680 | .09150 |
| 2650 | .00902 | .00531 | .06580 | .00039 | .00002 | .00069 | .05541 | .01967 | .00003 | .74235 | .00276 | .00776 | .09079 |
| 2700 | .00901 | .00658 | .06444 | .00052 | .00003 | .00084 | .05458 | .02111 | .00003 | .74057 | .00341 | .00881 | .09008 |
| 2750 | .00899 | .00804 | .06286 | .00069 | .00003 | .00102 | .05366 | .02259 | .00003 | .73861 | .00418 | .00994 | .08937 |
| 2800 | .00898 | .00971 | .06105 | .00090 | .00003 | .00122 | .05263 | .02410 | .00003 | .73645 | .00508 | .01115 | .08866 |
| 2850 | .00896 | .01159 | .05903 | .00116 | .00003 | .00145 | .05150 | .02565 | .00003 | .73409 | .00614 | .01243 | .08794 |
| 2900 | .00894 | .01366 | .05679 | .00149 | .00004 | .00171 | .05025 | .02722 | .00003 | .73151 | .00737 | .01379 | .08720 |
| 2950 | .00891 | .01591 | .05435 | .00190 | .00004 | .00199 | .04890 | .02882 | .00003 | .72872 | .00879 | .01521 | .08644 |
| 3000 | .00889 | .01831 | .05174 | .00238 | .00004 | .00231 | .04743 | .03043 | .00003 | .72571 | .01042 | .01668 | .08564 |

TABLE 3.5B - EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.034826; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00001 | .00000 | .75718 | .00000 | .00000 | .00000 | .10156 |
| 950 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00001 | .00001 | .75718 | .00000 | .00000 | .00000 | .10155 |
| 1000 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00002 | .00001 | .75717 | .00000 | .00000 | .00000 | .10155 |
| 1050 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00004 | .00001 | .75717 | .00000 | .00000 | .00000 | .10154 |
| 1100 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00006 | .00001 | .75715 | .00000 | .00000 | .00000 | .10152 |
| 1150 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00010 | .00001 | .75714 | .00000 | .00000 | .00000 | .10151 |
| 1200 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00015 | .00001 | .75711 | .00000 | .00000 | .00000 | .10148 |
| 1250 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00021 | .00001 | .75708 | .00000 | .00000 | .00000 | .10145 |
| 1300 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00030 | .00002 | .75704 | .00000 | .00000 | .00000 | .10140 |
| 1350 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00040 | .00002 | .75698 | .00000 | .00000 | .00000 | .10135 |
| 1400 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00054 | .00002 | .75692 | .00000 | .00000 | .00001 | .10128 |
| 1450 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06058 | .00070 | .00002 | .75683 | .00000 | .00000 | .00001 | .10119 |
| 1500 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06057 | .00090 | .00002 | .75673 | .00000 | .00000 | .00002 | .10109 |
| 1550 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06057 | .00114 | .00002 | .75661 | .00000 | .00000 | .00003 | .10096 |
| 1600 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06056 | .00142 | .00003 | .75647 | .00000 | .00000 | .00004 | .10082 |
| 1650 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06055 | .00174 | .00003 | .75630 | .00000 | .00000 | .00006 | .10065 |
| 1700 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06054 | .00211 | .00003 | .75611 | .00000 | .00000 | .00009 | .10046 |
| 1750 | .00908 | .00000 | .07158 | .00000 | .00000 | .00000 | .06052 | .00253 | .00003 | .75589 | .00000 | .00000 | .00013 | .10023 |
| 1800 | .00908 | .00001 | .07157 | .00000 | .00000 | .00000 | .06049 | .00300 | .00003 | .75565 | .00000 | .00001 | .00017 | .09998 |
| 1850 | .00908 | .00001 | .07157 | .00000 | .00000 | .00000 | .06046 | .00353 | .00004 | .75537 | .00000 | .00001 | .00023 | .09970 |
| 1900 | .00908 | .00002 | .07156 | .00000 | .00000 | .00000 | .06042 | .00411 | .00004 | .75506 | .00000 | .00001 | .00030 | .09939 |
| 1950 | .00908 | .00003 | .07155 | .00000 | .00001 | .00001 | .06037 | .00475 | .00004 | .75471 | .00000 | .00002 | .00039 | .09904 |
| 2000 | .00908 | .00004 | .07153 | .00000 | .00001 | .00001 | .06031 | .00545 | .00004 | .75433 | .00000 | .00003 | .00050 | .09866 |
| 2050 | .00908 | .00006 | .07151 | .00000 | .00001 | .00001 | .06024 | .00621 | .00004 | .75391 | .00000 | .00004 | .00064 | .09825 |
| 2100 | .00908 | .00009 | .07147 | .00000 | .00001 | .00002 | .06015 | .00703 | .00005 | .75345 | .00000 | .00006 | .00080 | .09780 |
| 2150 | .00908 | .00014 | .07142 | .00000 | .00001 | .00002 | .06004 | .00790 | .00005 | .75295 | .00000 | .00009 | .00099 | .09731 |
| 2200 | .00908 | .00019 | .07136 | .00000 | .00001 | .00003 | .05991 | .00884 | .00005 | .75240 | .00000 | .00012 | .00122 | .09679 |
| 2250 | .00908 | .00027 | .07127 | .00001 | .00001 | .00004 | .05976 | .00983 | .00005 | .75180 | .00000 | .00016 | .00148 | .09623 |
| 2300 | .00907 | .00037 | .07116 | .00001 | .00002 | .00006 | .05958 | .01089 | .00005 | .75115 | .00000 | .00022 | .00178 | .09564 |
| 2350 | .00907 | .00051 | .07101 | .00002 | .00002 | .00007 | .05937 | .01199 | .00006 | .75045 | .00000 | .00029 | .00212 | .09502 |
| 2400 | .00907 | .00068 | .07082 | .00002 | .00002 | .00010 | .05913 | .01315 | .00006 | .74968 | .00000 | .00037 | .00252 | .09437 |
| 2450 | .00907 | .00091 | .07057 | .00003 | .00002 | .00013 | .05886 | .01437 | .00006 | .74885 | .00000 | .00048 | .00296 | .09370 |
| 2500 | .00906 | .00119 | .07027 | .00004 | .00003 | .00016 | .05855 | .01563 | .00006 | .74794 | .00001 | .00062 | .00345 | .09299 |
| 2550 | .00906 | .00153 | .06989 | .00006 | .00003 | .00020 | .05819 | .01694 | .00006 | .74696 | .00001 | .00079 | .00400 | .09227 |
| 2600 | .00906 | .00196 | .06942 | .00009 | .00003 | .00026 | .05779 | .01830 | .00006 | .74590 | .00001 | .00099 | .00461 | .09153 |
| 2650 | .00905 | .00249 | .06886 | .00012 | .00004 | .00032 | .05734 | .01970 | .00006 | .74474 | .00001 | .00123 | .00528 | .09077 |
| 2700 | .00904 | .00311 | .06818 | .00016 | .00004 | .00039 | .05684 | .02114 | .00006 | .74348 | .00001 | .00152 | .00601 | .09001 |
| 2750 | .00904 | .00386 | .06737 | .00021 | .00004 | .00048 | .05628 | .02263 | .00007 | .74211 | .00001 | .00187 | .00680 | .08924 |
| 2800 | .00903 | .00473 | .06643 | .00028 | .00005 | .00058 | .05566 | .02415 | .00007 | .74063 | .00001 | .00227 | .00766 | .08846 |
| 2850 | .00902 | .00574 | .06534 | .00036 | .00005 | .00069 | .05497 | .02570 | .00007 | .73903 | .00001 | .00274 | .00858 | .08769 |
| 2900 | .00901 | .00690 | .06409 | .00046 | .00006 | .00083 | .05422 | .02729 | .00007 | .73729 | .00001 | .00329 | .00957 | .08692 |
| 2950 | .00899 | .00822 | .06268 | .00059 | .00006 | .00097 | .05339 | .02890 | .00007 | .73542 | .00001 | .00392 | .01062 | .08615 |
| 3000 | .00898 | .00968 | .06110 | .00075 | .00006 | .00114 | .05249 | .03054 | .00007 | .73340 | .00001 | .00465 | .01172 | .08538 |

TABLE 3C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.034826; EQUIV.RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00908 | .07158 | .06043 | .00000 | .00015 | .75719 | .10157 |
| 220 | .00908 | .07158 | .05813 | .00000 | .00246 | .75719 | .10157 |
| 240 | .00908 | .07158 | .03471 | .00000 | .02587 | .75719 | .10157 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00908 | .07158 | .06057 | .00000 | .00001 | .75719 | .10157 |
| 220 | .00908 | .07158 | .06034 | .00000 | .00025 | .75719 | .10157 |
| 240 | .00908 | .07158 | .05806 | .00000 | .00252 | .75719 | .10157 |
| 260 | .00908 | .07158 | .04214 | .00000 | .01844 | .75719 | .10157 |
| 280 | .00908 | .07158 | .00000 | .00000 | .06058 | .75719 | .10157 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00908 | .07158 | .06058 | .00000 | .00000 | .75719 | .10157 |
| 220 | .00908 | .07158 | .06056 | .00000 | .00002 | .75719 | .10157 |
| 240 | .00908 | .07158 | .06033 | .00000 | .00025 | .75719 | .10157 |
| 260 | .00908 | .07158 | .05877 | .00000 | .00181 | .75719 | .10157 |
| 280 | .00908 | .07158 | .00000 | .05134 | .00925 | .75719 | .10157 |
| 298 | .00908 | .07158 | .00000 | .03041 | .03017 | .75719 | .10157 |
| 300 | .00908 | .07158 | .00000 | .02680 | .03379 | .75719 | .10157 |
| 320 | .00908 | .07158 | .00000 | .00000 | .06058 | .75719 | .10157 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00908 | .07158 | .06058 | .00000 | .00000 | .75719 | .10157 |
| 220 | .00908 | .07158 | .06058 | .00000 | .00000 | .75719 | .10157 |
| 240 | .00908 | .07158 | .06056 | .00000 | .00003 | .75719 | .10157 |
| 260 | .00908 | .07158 | .06040 | .00000 | .00018 | .75719 | .10157 |
| 280 | .00908 | .07158 | .00000 | .05967 | .00092 | .75719 | .10157 |
| 298 | .00908 | .07158 | .00000 | .05765 | .00293 | .75719 | .10157 |
| 300 | .00908 | .07158 | .00000 | .05731 | .00327 | .75719 | .10157 |
| 320 | .00908 | .07158 | .00000 | .05077 | .00981 | .75719 | .10157 |
| 340 | .00908 | .07158 | .00000 | .03495 | .02563 | .75719 | .10157 |
| 360 | .00908 | .07158 | .00000 | .00013 | .06046 | .75719 | .10157 |
| 380 | .00908 | .07158 | .00000 | .00000 | .06058 | .75719 | .10157 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00908 | .07158 | .06058 | .00000 | .00000 | .75719 | .10157 |
| 220 | .00908 | .07158 | .06058 | .00000 | .00000 | .75719 | .10157 |
| 240 | .00908 | .07158 | .06058 | .00000 | .00001 | .75719 | .10157 |
| 260 | .00908 | .07158 | .06055 | .00000 | .00004 | .75719 | .10157 |
| 280 | .00908 | .07158 | .00000 | .06040 | .00018 | .75719 | .10157 |
| 298 | .00908 | .07158 | .00000 | .06000 | .00059 | .75719 | .10157 |
| 300 | .00908 | .07158 | .00000 | .05993 | .00065 | .75719 | .10157 |
| 320 | .00908 | .07158 | .00000 | .05864 | .00195 | .75719 | .10157 |
| 340 | .00908 | .07158 | .00000 | .05557 | .00502 | .75719 | .10157 |
| 360 | .00908 | .07158 | .00000 | .04908 | .01150 | .75719 | .10157 |
| 380 | .00908 | .07158 | .00000 | .03661 | .02397 | .75719 | .10157 |
| 400 | .00908 | .07158 | .00000 | .01426 | .04632 | .75719 | .10157 |
| 420 | .00908 | .07158 | .00000 | .00000 | .06058 | .75719 | .10157 |

TABLE 4.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.052240; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00895 | .00000 | .10562 | .00000 | .00000 | .08952 | .00000 | .00000 | .74589 | .00000 | .00000 | .05002 |
| 950 | .00895 | .00000 | .10562 | .00000 | .00000 | .08952 | .00000 | .00001 | .74589 | .00000 | .00000 | .05002 |
| 1000 | .00895 | .00000 | .10562 | .00000 | .00000 | .08952 | .00000 | .00002 | .74588 | .00000 | .00000 | .05002 |
| 1050 | .00895 | .00000 | .10562 | .00000 | .00000 | .08952 | .00000 | .00003 | .74588 | .00000 | .00000 | .05001 |
| 1100 | .00895 | .00000 | .10562 | .00000 | .00000 | .08952 | .00000 | .00004 | .74587 | .00000 | .00000 | .05000 |
| 1150 | .00895 | .00000 | .10562 | .00000 | .00000 | .08952 | .00000 | .00007 | .74586 | .00000 | .00000 | .04999 |
| 1200 | .00895 | .00000 | .10562 | .00000 | .00000 | .08952 | .00000 | .00010 | .74584 | .00000 | .00001 | .04997 |
| 1250 | .00895 | .00000 | .10562 | .00000 | .00000 | .08951 | .00000 | .00015 | .74581 | .00000 | .00001 | .04995 |
| 1300 | .00895 | .00000 | .10562 | .00000 | .00000 | .08951 | .00000 | .00021 | .74578 | .00000 | .00002 | .04992 |
| 1350 | .00895 | .00000 | .10562 | .00000 | .00000 | .08950 | .00000 | .00028 | .74574 | .00000 | .00004 | .04988 |
| 1400 | .00895 | .00000 | .10561 | .00000 | .00000 | .08948 | .00000 | .00037 | .74569 | .00000 | .00007 | .04982 |
| 1450 | .00895 | .00001 | .10561 | .00000 | .00000 | .08946 | .00000 | .00049 | .74562 | .00000 | .00011 | .04976 |
| 1500 | .00895 | .00002 | .10559 | .00000 | .00001 | .08942 | .00000 | .00063 | .74553 | .00001 | .00017 | .04968 |
| 1550 | .00894 | .00005 | .10556 | .00000 | .00001 | .08937 | .00000 | .00079 | .74542 | .00002 | .00025 | .04958 |
| 1600 | .00894 | .00009 | .10551 | .00000 | .00003 | .08929 | .00000 | .00098 | .74527 | .00003 | .00038 | .04947 |
| 1650 | .00894 | .00018 | .10541 | .00001 | .00005 | .08917 | .00000 | .00121 | .74508 | .00006 | .00055 | .04936 |
| 1700 | .00894 | .00032 | .10525 | .00001 | .00008 | .08901 | .00000 | .00146 | .74482 | .00010 | .00077 | .04923 |
| 1750 | .00894 | .00056 | .10498 | .00003 | .00013 | .08877 | .00000 | .00176 | .74448 | .00016 | .00107 | .04912 |
| 1800 | .00894 | .00096 | .10454 | .00005 | .00021 | .08845 | .00000 | .00208 | .74401 | .00027 | .00146 | .04903 |
| 1850 | .00893 | .00158 | .10386 | .00010 | .00033 | .08801 | .00000 | .00245 | .74338 | .00042 | .00195 | .04899 |
| 1900 | .00892 | .00251 | .10283 | .00018 | .00051 | .08740 | .00000 | .00286 | .74251 | .00066 | .00256 | .04905 |
| 1950 | .00891 | .00388 | .10133 | .00031 | .00076 | .08659 | .00000 | .00332 | .74133 | .00100 | .00333 | .04924 |
| 2000 | .00890 | .00582 | .09921 | .00054 | .00110 | .08552 | .00000 | .00383 | .73975 | .00148 | .00425 | .04961 |
| 2050 | .00887 | .00844 | .09633 | .00089 | .00156 | .08411 | .00000 | .00439 | .73766 | .00217 | .00537 | .05022 |
| 2100 | .00884 | .01185 | .09258 | .00143 | .00215 | .08230 | .00000 | .00502 | .73495 | .00312 | .00669 | .05107 |
| 2150 | .00881 | .01610 | .08789 | .00225 | .00289 | .08000 | .00000 | .00570 | .73151 | .00444 | .00824 | .05217 |
| 2200 | .00876 | .02116 | .08228 | .00345 | .00379 | .07716 | .00000 | .00646 | .72724 | .00622 | .01001 | .05349 |
| 2250 | .00870 | .02694 | .07583 | .00514 | .00485 | .07368 | .00000 | .00728 | .72208 | .00859 | .01199 | .05491 |
| 2300 | .00864 | .03324 | .06872 | .00749 | .00605 | .06954 | .00000 | .00816 | .71596 | .01172 | .01416 | .05633 |
| 2350 | .00856 | .03981 | .06121 | .01065 | .00737 | .06470 | .00000 | .00907 | .70886 | .01575 | .01645 | .05758 |
| 2400 | .00846 | .04639 | .05355 | .01480 | .00876 | .05916 | .00000 | .01001 | .70077 | .02085 | .01877 | .05848 |
| 2450 | .00836 | .05269 | .04604 | .02009 | .01012 | .05300 | .00000 | .01094 | .69170 | .02718 | .02101 | .05887 |
| 2500 | .00825 | .05848 | .03890 | .02664 | .01136 | .04634 | .00000 | .01184 | .68173 | .03486 | .02301 | .05859 |
| 2550 | .00812 | .06358 | .03233 | .03448 | .01236 | .03938 | .00000 | .01268 | .67095 | .04399 | .02460 | .05753 |
| 2600 | .00799 | .06789 | .02645 | .04351 | .01300 | .03239 | .00001 | .01341 | .65954 | .05457 | .02563 | .05561 |
| 2650 | .00785 | .07139 | .02133 | .05350 | .01318 | .02567 | .00001 | .01402 | .64776 | .06651 | .02595 | .05282 |
| 2700 | .00771 | .07410 | .01697 | .06406 | .01286 | .01955 | .00001 | .01446 | .63593 | .07964 | .02549 | .04921 |
| 2750 | .00758 | .07612 | .01334 | .07469 | .01206 | .01427 | .00002 | .01472 | .62440 | .09362 | .02427 | .04490 |
| 2800 | .00745 | .07756 | .01037 | .08488 | .01089 | .00999 | .00003 | .01479 | .61352 | .10806 | .02240 | .04007 |
| 2850 | .00733 | .07854 | .00798 | .09418 | .00949 | .00672 | .00004 | .01466 | .60360 | .12246 | .02006 | .03495 |
| 2900 | .00722 | .07916 | .00609 | .10228 | .00801 | .00436 | .00005 | .01436 | .59483 | .13633 | .01747 | .02982 |
| 2950 | .00713 | .07954 | .00461 | .10909 | .00660 | .00275 | .00008 | .01389 | .58730 | .14925 | .01486 | .02492 |
| 3000 | .00705 | .07974 | .00348 | .11463 | .00533 | .00169 | .00011 | .01330 | .58099 | .16088 | .01238 | .02042 |

TABLE 4.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.052240; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00000 | .74589 | .00000 | .00000 | .05002 |
| 950 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00001 | .74589 | .00000 | .00000 | .05002 |
| 1000 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00002 | .74588 | .00000 | .00000 | .05002 |
| 1050 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00003 | .74588 | .00000 | .00000 | .05001 |
| 1100 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00004 | .74587 | .00000 | .00000 | .05000 |
| 1150 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00007 | .74586 | .00000 | .00000 | .04999 |
| 1200 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00010 | .74584 | .00000 | .00000 | .04997 |
| 1250 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00000 | .00015 | .74582 | .00000 | .00001 | .04995 |
| 1300 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00000 | .00021 | .74578 | .00000 | .00001 | .04992 |
| 1350 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00000 | .00028 | .74575 | .00000 | .00002 | .04988 |
| 1400 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08950 | .00000 | .00037 | .74570 | .00000 | .00004 | .04983 |
| 1450 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08949 | .00000 | .00049 | .74563 | .00000 | .00006 | .04977 |
| 1500 | .00895 | .00001 | .10561 | .00000 | .00000 | .00000 | .08947 | .00000 | .00063 | .74555 | .00000 | .00009 | .04969 |
| 1550 | .00895 | .00001 | .10560 | .00000 | .00000 | .00000 | .08944 | .00000 | .00079 | .74546 | .00001 | .00014 | .04960 |
| 1600 | .00895 | .00003 | .10558 | .00000 | .00000 | .00001 | .08940 | .00000 | .00098 | .74534 | .00001 | .00021 | .04949 |
| 1650 | .00894 | .00006 | .10555 | .00000 | .00000 | .00001 | .08934 | .00000 | .00121 | .74520 | .00002 | .00031 | .04936 |
| 1700 | .00894 | .00010 | .10550 | .00000 | .00000 | .00003 | .08926 | .00000 | .00146 | .74502 | .00003 | .00043 | .04922 |
| 1750 | .00894 | .00018 | .10541 | .00000 | .00000 | .00004 | .08915 | .00000 | .00176 | .74480 | .00005 | .00060 | .04907 |
| 1800 | .00894 | .00031 | .10527 | .00001 | .00000 | .00007 | .08900 | .00000 | .00208 | .74452 | .00008 | .00082 | .04890 |
| 1850 | .00894 | .00051 | .10505 | .00002 | .00000 | .00011 | .08879 | .00000 | .00245 | .74417 | .00013 | .00110 | .04874 |
| 1900 | .00894 | .00081 | .10470 | .00003 | .00000 | .00016 | .08853 | .00000 | .00285 | .74374 | .00021 | .00145 | .04858 |
| 1950 | .00893 | .00127 | .10420 | .00006 | .00000 | .00025 | .08818 | .00000 | .00330 | .74318 | .00031 | .00188 | .04845 |
| 2000 | .00893 | .00194 | .10346 | .00010 | .00000 | .00036 | .08772 | .00000 | .00379 | .74246 | .00046 | .00241 | .04837 |
| 2050 | .00892 | .00289 | .10242 | .00016 | .00000 | .00052 | .08713 | .00000 | .00432 | .74155 | .00067 | .00305 | .04836 |
| 2100 | .00891 | .00419 | .10099 | .00026 | .00000 | .00073 | .08638 | .00000 | .00490 | .74038 | .00096 | .00381 | .04846 |
| 2150 | .00890 | .00594 | .09909 | .00042 | .00000 | .00101 | .08544 | .00000 | .00554 | .73891 | .00136 | .00471 | .04870 |
| 2200 | .00888 | .00820 | .09661 | .00065 | .00000 | .00137 | .08426 | .00000 | .00623 | .73707 | .00188 | .00576 | .04909 |
| 2250 | .00885 | .01105 | .09350 | .00099 | .00000 | .00181 | .08281 | .00000 | .00698 | .73478 | .00258 | .00697 | .04966 |
| 2300 | .00883 | .01450 | .08970 | .00148 | .00000 | .00236 | .08104 | .00000 | .00780 | .73201 | .00350 | .00836 | .05041 |
| 2350 | .00879 | .01857 | .08523 | .00215 | .00000 | .00301 | .07892 | .00000 | .00868 | .72869 | .00470 | .00993 | .05132 |
| 2400 | .00875 | .02320 | .08012 | .00307 | .00000 | .00378 | .07641 | .00000 | .00963 | .72479 | .00624 | .01167 | .05234 |
| 2450 | .00870 | .02829 | .07446 | .00431 | .00000 | .00466 | .07348 | .00000 | .01064 | .72029 | .00819 | .01358 | .05341 |
| 2500 | .00865 | .03372 | .06838 | .00594 | .00000 | .00564 | .07011 | .00000 | .01169 | .71517 | .01063 | .01563 | .05445 |
| 2550 | .00859 | .03933 | .06204 | .00803 | .00000 | .00671 | .06629 | .00000 | .01279 | .70943 | .01365 | .01778 | .05537 |
| 2600 | .00852 | .04494 | .05560 | .01069 | .00000 | .00784 | .06203 | .00000 | .01390 | .70308 | .01733 | .01999 | .05607 |
| 2650 | .00844 | .05040 | .04924 | .01399 | .00001 | .00901 | .05736 | .00000 | .01502 | .69615 | .02175 | .02218 | .05646 |
| 2700 | .00836 | .05556 | .04310 | .01800 | .00001 | .01016 | .05232 | .00000 | .01612 | .68866 | .02698 | .02427 | .05647 |
| 2750 | .00827 | .06029 | .03731 | .02280 | .00001 | .01124 | .04699 | .00001 | .01717 | .68065 | .03307 | .02617 | .05602 |
| 2800 | .00817 | .06451 | .03196 | .02840 | .00001 | .01219 | .04148 | .00001 | .01815 | .67219 | .04007 | .02779 | .05508 |
| 2850 | .00807 | .06817 | .02712 | .03479 | .00001 | .01294 | .03591 | .00001 | .01904 | .66335 | .04796 | .02901 | .05362 |
| 2900 | .00797 | .07125 | .02280 | .04189 | .00001 | .01344 | .03044 | .00002 | .01981 | .65425 | .05673 | .02977 | .05164 |
| 2950 | .00786 | .07377 | .01901 | .04958 | .00001 | .01363 | .02522 | .00003 | .02045 | .64500 | .06630 | .02999 | .04916 |
| 3000 | .00775 | .07578 | .01573 | .05767 | .00001 | .01350 | .02040 | .00003 | .02093 | .63576 | .07655 | .02965 | .04624 |

TABLE 4.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.052240; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00000 | .00000 | .74589 | .00000 | .00000 | .05002 |
| 950 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00001 | .00000 | .74589 | .00000 | .00000 | .05002 |
| 1000 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00002 | .00000 | .74588 | .00000 | .00000 | .05002 |
| 1050 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00003 | .00000 | .74588 | .00000 | .00000 | .05001 |
| 1100 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00004 | .00000 | .74587 | .00000 | .00000 | .05000 |
| 1150 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00007 | .00000 | .74586 | .00000 | .00000 | .04999 |
| 1200 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00010 | .00000 | .74584 | .00000 | .00000 | .04997 |
| 1250 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00015 | .00000 | .74582 | .00000 | .00000 | .04995 |
| 1300 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00000 | .00021 | .00000 | .74579 | .00000 | .00001 | .04992 |
| 1350 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00000 | .00028 | .00000 | .74575 | .00000 | .00001 | .04988 |
| 1400 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00000 | .00037 | .00000 | .74570 | .00000 | .00002 | .04983 |
| 1450 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08950 | .00000 | .00049 | .00000 | .74564 | .00000 | .00003 | .04977 |
| 1500 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08949 | .00000 | .00063 | .00000 | .74557 | .00000 | .00005 | .04970 |
| 1550 | .00895 | .00000 | .10561 | .00000 | .00000 | .00000 | .08947 | .00000 | .00079 | .00000 | .74548 | .00000 | .00008 | .04961 |
| 1600 | .00895 | .00001 | .10561 | .00000 | .00000 | .00000 | .08945 | .00000 | .00098 | .00000 | .74537 | .00000 | .00012 | .04950 |
| 1650 | .00895 | .00002 | .10560 | .00000 | .00000 | .00000 | .08942 | .00000 | .00121 | .00000 | .74524 | .00001 | .00017 | .04938 |
| 1700 | .00895 | .00003 | .10558 | .00000 | .00000 | .00001 | .08938 | .00000 | .00146 | .00000 | .74509 | .00001 | .00024 | .04924 |
| 1750 | .00894 | .00006 | .10555 | .00000 | .00000 | .00001 | .08932 | .00000 | .00176 | .00000 | .74492 | .00002 | .00034 | .04908 |
| 1800 | .00894 | .00010 | .10550 | .00000 | .00000 | .00002 | .08925 | .00000 | .00208 | .00000 | .74471 | .00003 | .00046 | .04890 |
| 1850 | .00894 | .00016 | .10543 | .00000 | .00000 | .00003 | .08915 | .00000 | .00245 | .00000 | .74446 | .00004 | .00062 | .04871 |
| 1900 | .00894 | .00026 | .10532 | .00001 | .00000 | .00005 | .08902 | .00000 | .00285 | .00000 | .74417 | .00007 | .00082 | .04850 |
| 1950 | .00894 | .00041 | .10515 | .00001 | .00000 | .00008 | .08885 | .00000 | .00329 | .00000 | .74382 | .00010 | .00106 | .04828 |
| 2000 | .00894 | .00062 | .10491 | .00002 | .00000 | .00012 | .08864 | .00000 | .00378 | .00000 | .74341 | .00015 | .00136 | .04805 |
| 2050 | .00894 | .00094 | .10457 | .00003 | .00000 | .00017 | .08838 | .00000 | .00430 | .00000 | .74291 | .00021 | .00172 | .04784 |
| 2100 | .00893 | .00138 | .10408 | .00005 | .00000 | .00024 | .08804 | .00000 | .00487 | .00000 | .74231 | .00030 | .00215 | .04764 |
| 2150 | .00893 | .00199 | .10341 | .00008 | .00000 | .00033 | .08763 | .00000 | .00548 | .00000 | .74159 | .00042 | .00266 | .04748 |
| 2200 | .00892 | .00280 | .10252 | .00012 | .00000 | .00045 | .08712 | .00000 | .00614 | .00000 | .74072 | .00058 | .00326 | .04736 |
| 2250 | .00891 | .00388 | .10134 | .00018 | .00000 | .00061 | .08650 | .00000 | .00684 | .00000 | .73966 | .00080 | .00396 | .04731 |
| 2300 | .00890 | .00527 | .09983 | .00027 | .00000 | .00081 | .08574 | .00000 | .00759 | .00000 | .73838 | .00107 | .00476 | .04735 |
| 2350 | .00889 | .00701 | .09792 | .00040 | .00000 | .00106 | .08483 | .00000 | .00840 | .00000 | .73686 | .00143 | .00568 | .04750 |
| 2400 | .00887 | .00916 | .09558 | .00059 | .00001 | .00137 | .08375 | .00000 | .00927 | .00000 | .73505 | .00188 | .00671 | .04776 |
| 2450 | .00885 | .01174 | .09277 | .00083 | .00001 | .00174 | .08247 | .00000 | .01019 | .00000 | .73292 | .00246 | .00788 | .04814 |
| 2500 | .00883 | .01476 | .08946 | .00117 | .00001 | .00218 | .08098 | .00000 | .01117 | .00000 | .73044 | .00318 | .00918 | .04865 |
| 2550 | .00880 | .01821 | .08568 | .00161 | .00001 | .00269 | .07925 | .00000 | .01222 | .00000 | .72759 | .00407 | .01062 | .04925 |
| 2600 | .00877 | .02206 | .08145 | .00218 | .00001 | .00327 | .07727 | .00000 | .01332 | .00000 | .72436 | .00517 | .01219 | .04994 |
| 2650 | .00873 | .02625 | .07683 | .00292 | .00001 | .00393 | .07503 | .00000 | .01448 | .00000 | .72074 | .00651 | .01388 | .05067 |
| 2700 | .00869 | .03071 | .07189 | .00386 | .00001 | .00467 | .07251 | .00000 | .01569 | .00001 | .71673 | .00814 | .01569 | .05140 |
| 2750 | .00865 | .03535 | .06671 | .00503 | .00001 | .00547 | .06972 | .00000 | .01694 | .00001 | .71234 | .01008 | .01760 | .05209 |
| 2800 | .00860 | .04008 | .06141 | .00647 | .00001 | .00633 | .06664 | .00000 | .01821 | .00001 | .70758 | .01239 | .01959 | .05268 |
| 2850 | .00854 | .04478 | .05607 | .00823 | .00001 | .00725 | .06330 | .00000 | .01950 | .00001 | .70247 | .01510 | .02161 | .05312 |
| 2900 | .00848 | .04938 | .05080 | .01035 | .00002 | .00820 | .05970 | .00001 | .02079 | .00001 | .69702 | .01824 | .02364 | .05338 |
| 2950 | .00842 | .05378 | .04567 | .01285 | .00002 | .00916 | .05588 | .00001 | .02206 | .00001 | .69126 | .02185 | .02563 | .05340 |
| 3000 | .00836 | .05791 | .04077 | .01579 | .00002 | .01012 | .05185 | .00001 | .02330 | .00001 | .68522 | .02596 | .02752 | .05317 |

TABLE 4.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.052240; EQUIV. RATIO \approx 0.750; CHEM. EQUIV. RATIO \approx 0.7504; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00000 | .74589 | .00000 | .00000 | .05002 |
| 950 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00001 | .00000 | .74589 | .00000 | .00000 | .05002 |
| 1000 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00002 | .00000 | .74588 | .00000 | .00000 | .05002 |
| 1050 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00003 | .00000 | .74588 | .00000 | .00000 | .05001 |
| 1100 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00004 | .00000 | .74587 | .00000 | .00000 | .05000 |
| 1150 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00007 | .00000 | .74586 | .00000 | .00000 | .04999 |
| 1200 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00010 | .00000 | .74584 | .00000 | .00000 | .04997 |
| 1250 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00015 | .00000 | .74582 | .00000 | .00000 | .04995 |
| 1300 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00021 | .00000 | .74579 | .00000 | .00000 | .04992 |
| 1350 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00028 | .00000 | .74575 | .00000 | .00001 | .04988 |
| 1400 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00037 | .00000 | .74570 | .00000 | .00001 | .04983 |
| 1450 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00049 | .00000 | .74564 | .00000 | .00002 | .04977 |
| 1500 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08950 | .00063 | .00000 | .74557 | .00000 | .00003 | .04970 |
| 1550 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08949 | .00079 | .00001 | .74548 | .00000 | .00005 | .04961 |
| 1600 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08948 | .00098 | .00001 | .74538 | .00000 | .00007 | .04951 |
| 1650 | .00895 | .00001 | .10561 | .00000 | .00000 | .00000 | .08947 | .00121 | .00001 | .74526 | .00000 | .00010 | .04939 |
| 1700 | .00895 | .00001 | .10561 | .00000 | .00000 | .00000 | .08944 | .00146 | .00001 | .74513 | .00000 | .00014 | .04925 |
| 1750 | .00895 | .00002 | .10560 | .00000 | .00000 | .00000 | .08941 | .00176 | .00001 | .74497 | .00001 | .00019 | .04910 |
| 1800 | .00895 | .00003 | .10558 | .00000 | .00000 | .00001 | .08937 | .00208 | .00001 | .74478 | .00001 | .00026 | .04892 |
| 1850 | .00894 | .00005 | .10556 | .00000 | .00000 | .00001 | .08932 | .00245 | .00001 | .74457 | .00001 | .00035 | .04872 |
| 1900 | .00894 | .00008 | .10552 | .00000 | .00000 | .00002 | .08926 | .00285 | .00001 | .74433 | .00002 | .00046 | .04851 |
| 1950 | .00894 | .00013 | .10547 | .00000 | .00000 | .00002 | .08917 | .00329 | .00001 | .74406 | .00003 | .00060 | .04827 |
| 2000 | .00894 | .00020 | .10539 | .00000 | .00000 | .00004 | .08907 | .00378 | .00001 | .74375 | .00005 | .00077 | .04801 |
| 2050 | .00894 | .00030 | .10527 | .00001 | .00000 | .00005 | .08894 | .00430 | .00001 | .74340 | .00007 | .00097 | .04774 |
| 2100 | .00894 | .00044 | .10512 | .00001 | .00000 | .00008 | .08877 | .00486 | .00001 | .74300 | .00010 | .00121 | .04746 |
| 2150 | .00894 | .00064 | .10490 | .00001 | .00000 | .00011 | .08858 | .00547 | .00001 | .74254 | .00013 | .00150 | .04717 |
| 2200 | .00894 | .00091 | .10460 | .00002 | .00001 | .00015 | .08834 | .00611 | .00001 | .74202 | .00018 | .00184 | .04688 |
| 2250 | .00893 | .00127 | .10420 | .00003 | .00001 | .00020 | .08805 | .00680 | .00001 | .74141 | .00025 | .00224 | .04660 |
| 2300 | .00893 | .00175 | .10367 | .00005 | .00001 | .00027 | .08771 | .00752 | .00001 | .74072 | .00034 | .00269 | .04633 |
| 2350 | .00892 | .00237 | .10300 | .00007 | .00001 | .00035 | .08730 | .00829 | .00001 | .73992 | .00045 | .00321 | .04609 |
| 2400 | .00892 | .00316 | .10213 | .00011 | .00001 | .00046 | .08682 | .00911 | .00001 | .73900 | .00058 | .00381 | .04589 |
| 2450 | .00891 | .00415 | .10105 | .00015 | .00001 | .00059 | .08625 | .00996 | .00001 | .73794 | .00076 | .00447 | .04573 |
| 2500 | .00890 | .00537 | .09972 | .00022 | .00001 | .00075 | .08559 | .01087 | .00001 | .73671 | .00097 | .00522 | .04564 |
| 2550 | .00889 | .00685 | .09811 | .00030 | .00001 | .00095 | .08483 | .01182 | .00001 | .73531 | .00124 | .00606 | .04562 |
| 2600 | .00888 | .00861 | .09619 | .00041 | .00002 | .00118 | .08394 | .01282 | .00001 | .73371 | .00156 | .00698 | .04567 |
| 2650 | .00886 | .01068 | .09395 | .00056 | .00002 | .00145 | .08294 | .01387 | .00001 | .73190 | .00196 | .00800 | .04581 |
| 2700 | .00884 | .01305 | .09137 | .00075 | .00002 | .00176 | .08179 | .01498 | .00001 | .72985 | .00244 | .00912 | .04602 |
| 2750 | .00882 | .01572 | .08845 | .00099 | .00002 | .00212 | .08050 | .01614 | .00002 | .72757 | .00301 | .01033 | .04632 |
| 2800 | .00880 | .01868 | .08521 | .00129 | .00002 | .00252 | .07906 | .01735 | .00002 | .72504 | .00369 | .01164 | .04667 |
| 2850 | .00877 | .02191 | .08168 | .00167 | .00003 | .00298 | .07745 | .01862 | .00002 | .72226 | .00449 | .01304 | .04708 |
| 2900 | .00875 | .02537 | .07788 | .00213 | .00003 | .00348 | .07568 | .01993 | .00002 | .71923 | .00544 | .01454 | .04751 |
| 2950 | .00871 | .02902 | .07387 | .00270 | .00003 | .00404 | .07375 | .02128 | .00002 | .71597 | .00655 | .01612 | .04795 |
| 3000 | .00868 | .03281 | .06968 | .00338 | .00003 | .00464 | .07164 | .02266 | .00002 | .71247 | .00783 | .01777 | .04838 |

TABLE 4.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.052240; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00000 | .00000 | .74589 | .00000 | .00000 | .00000 | .05002 |
| 950 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00001 | .00000 | .74589 | .00000 | .00000 | .00000 | .05002 |
| 1000 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00002 | .00000 | .74588 | .00000 | .00000 | .00000 | .05001 |
| 1050 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00003 | .00000 | .74588 | .00000 | .00000 | .00000 | .05001 |
| 1100 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00004 | .00000 | .74587 | .00000 | .00000 | .00000 | .05000 |
| 1150 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00007 | .00001 | .74586 | .00000 | .00000 | .00000 | .04999 |
| 1200 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00010 | .00001 | .74584 | .00000 | .00000 | .00000 | .04997 |
| 1250 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00015 | .00001 | .74582 | .00000 | .00000 | .00000 | .04994 |
| 1300 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00021 | .00001 | .74579 | .00000 | .00000 | .00000 | .04991 |
| 1350 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08952 | .00028 | .00001 | .74575 | .00000 | .00000 | .00000 | .04988 |
| 1400 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00037 | .00001 | .74570 | .00000 | .00000 | .00001 | .04983 |
| 1450 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00049 | .00001 | .74564 | .00000 | .00000 | .00001 | .04977 |
| 1500 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08951 | .00063 | .00001 | .74557 | .00000 | .00000 | .00002 | .04970 |
| 1550 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08950 | .00079 | .00001 | .74549 | .00000 | .00000 | .00003 | .04961 |
| 1600 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08949 | .00098 | .00001 | .74539 | .00000 | .00000 | .00004 | .04951 |
| 1650 | .00895 | .00000 | .10562 | .00000 | .00000 | .00000 | .08948 | .00121 | .00001 | .74527 | .00000 | .00000 | .00007 | .04939 |
| 1700 | .00895 | .00000 | .10561 | .00000 | .00000 | .00000 | .08947 | .00146 | .00001 | .74514 | .00000 | .00000 | .00009 | .04925 |
| 1750 | .00895 | .00001 | .10561 | .00000 | .00000 | .00000 | .08945 | .00176 | .00002 | .74498 | .00000 | .00000 | .00013 | .04910 |
| 1800 | .00895 | .00001 | .10560 | .00000 | .00000 | .00000 | .08942 | .00208 | .00002 | .74481 | .00000 | .00000 | .00017 | .04893 |
| 1850 | .00895 | .00002 | .10559 | .00000 | .00000 | .00000 | .08939 | .00245 | .00002 | .74461 | .00000 | .00001 | .00023 | .04873 |
| 1900 | .00895 | .00004 | .10557 | .00000 | .00000 | .00001 | .08935 | .00285 | .00002 | .74439 | .00000 | .00001 | .00031 | .04851 |
| 1950 | .00894 | .00006 | .10555 | .00000 | .00000 | .00001 | .08929 | .00329 | .00002 | .74414 | .00000 | .00001 | .00040 | .04828 |
| 2000 | .00894 | .00009 | .10551 | .00000 | .00000 | .00002 | .08923 | .00378 | .00002 | .74386 | .00000 | .00002 | .00051 | .04802 |
| 2050 | .00894 | .00013 | .10546 | .00000 | .00001 | .00002 | .08914 | .00430 | .00002 | .74355 | .00000 | .00003 | .00065 | .04774 |
| 2100 | .00894 | .00020 | .10539 | .00000 | .00001 | .00003 | .08904 | .00486 | .00002 | .74320 | .00000 | .00004 | .00081 | .04744 |
| 2150 | .00894 | .00029 | .10529 | .00000 | .00001 | .00005 | .08892 | .00546 | .00002 | .74282 | .00000 | .00006 | .00101 | .04713 |
| 2200 | .00894 | .00041 | .10515 | .00001 | .00001 | .00007 | .08878 | .00611 | .00002 | .74239 | .00000 | .00008 | .00123 | .04680 |
| 2250 | .00894 | .00057 | .10497 | .00001 | .00001 | .00009 | .08860 | .00679 | .00002 | .74192 | .00000 | .00011 | .00150 | .04646 |
| 2300 | .00894 | .00079 | .10473 | .00001 | .00001 | .00012 | .08839 | .00751 | .00003 | .74139 | .00000 | .00015 | .00181 | .04612 |
| 2350 | .00893 | .00108 | .10441 | .00002 | .00001 | .00016 | .08815 | .00827 | .00003 | .74080 | .00000 | .00020 | .00216 | .04578 |
| 2400 | .00893 | .00145 | .10401 | .00003 | .00001 | .00021 | .08787 | .00907 | .00003 | .74015 | .00000 | .00026 | .00255 | .04544 |
| 2450 | .00893 | .00191 | .10349 | .00005 | .00002 | .00027 | .08753 | .00991 | .00003 | .73941 | .00000 | .00034 | .00300 | .04511 |
| 2500 | .00892 | .00250 | .10285 | .00007 | .00002 | .00035 | .08715 | .01078 | .00003 | .73858 | .00000 | .00043 | .00351 | .04481 |
| 2550 | .00892 | .00323 | .10206 | .00009 | .00002 | .00044 | .08670 | .01170 | .00003 | .73766 | .00000 | .00055 | .00407 | .04453 |
| 2600 | .00891 | .00411 | .10109 | .00013 | .00002 | .00055 | .08620 | .01265 | .00003 | .73662 | .00000 | .00069 | .00470 | .04430 |
| 2650 | .00890 | .00518 | .09994 | .00017 | .00003 | .00068 | .08562 | .01365 | .00003 | .73546 | .00000 | .00086 | .00539 | .04410 |
| 2700 | .00889 | .00644 | .09856 | .00023 | .00003 | .00084 | .08496 | .01468 | .00003 | .73416 | .00001 | .00106 | .00614 | .04396 |
| 2750 | .00888 | .00792 | .09696 | .00031 | .00003 | .00102 | .08421 | .01577 | .00003 | .73271 | .00001 | .00131 | .00697 | .04388 |
| 2800 | .00887 | .00962 | .09511 | .00040 | .00003 | .00123 | .08338 | .01689 | .00003 | .73111 | .00001 | .00160 | .00787 | .04385 |
| 2850 | .00886 | .01156 | .09300 | .00052 | .00004 | .00147 | .08245 | .01806 | .00003 | .72933 | .00001 | .00194 | .00884 | .04389 |
| 2900 | .00884 | .01373 | .09064 | .00067 | .00004 | .00174 | .08141 | .01928 | .00003 | .72739 | .00001 | .00234 | .00989 | .04398 |
| 2950 | .00882 | .01612 | .08803 | .00086 | .00004 | .00205 | .08027 | .02054 | .00004 | .72526 | .00001 | .00281 | .01101 | .04413 |
| 3000 | .00880 | .01874 | .08518 | .00108 | .00005 | .00239 | .07902 | .02185 | .00004 | .72295 | .00001 | .00335 | .01221 | .04433 |

TABLE 4C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.052240; EQUIV.RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00895 | .10562 | .08937 | .00000 | .00015 | .74589 | .05002 |
| 220 | .00895 | .10562 | .08714 | .00000 | .00238 | .74589 | .05002 |
| 240 | .00895 | .10562 | .06444 | .00000 | .02508 | .74589 | .05002 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00895 | .10562 | .08950 | .00000 | .00001 | .74589 | .05002 |
| 220 | .00895 | .10562 | .08928 | .00000 | .00024 | .74589 | .05002 |
| 240 | .00895 | .10562 | .08707 | .00000 | .00245 | .74589 | .05002 |
| 260 | .00895 | .10562 | .07165 | .00000 | .01787 | .74589 | .05002 |
| 280 | .00895 | .10562 | .00000 | .00000 | .08952 | .74589 | .05002 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00895 | .10562 | .08952 | .00000 | .00000 | .74589 | .05002 |
| 220 | .00895 | .10562 | .08949 | .00000 | .00002 | .74589 | .05002 |
| 240 | .00895 | .10562 | .08927 | .00000 | .00024 | .74589 | .05002 |
| 260 | .00895 | .10562 | .08776 | .00000 | .00176 | .74589 | .05002 |
| 280 | .00895 | .10562 | .00000 | .08056 | .00896 | .74589 | .05002 |
| 298 | .00895 | .10562 | .00000 | .06027 | .02924 | .74589 | .05002 |
| 300 | .00895 | .10562 | .00000 | .05677 | .03275 | .74589 | .05002 |
| 320 | .00895 | .10562 | .00000 | .00000 | .08952 | .74589 | .05002 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00895 | .10562 | .08952 | .00000 | .00000 | .74589 | .05002 |
| 220 | .00895 | .10562 | .08952 | .00000 | .00000 | .74589 | .05002 |
| 240 | .00895 | .10562 | .08949 | .00000 | .00002 | .74589 | .05002 |
| 260 | .00895 | .10562 | .08934 | .00000 | .00018 | .74589 | .05002 |
| 280 | .00895 | .10562 | .00000 | .08863 | .00089 | .74589 | .05002 |
| 298 | .00895 | .10562 | .00000 | .08668 | .00284 | .74589 | .05002 |
| 300 | .00895 | .10562 | .00000 | .08635 | .00317 | .74589 | .05002 |
| 320 | .00895 | .10562 | .00000 | .08001 | .00951 | .74589 | .05002 |
| 340 | .00895 | .10562 | .00000 | .06468 | .02484 | .74589 | .05002 |
| 360 | .00895 | .10562 | .00000 | .03092 | .05859 | .74589 | .05002 |
| 380 | .00895 | .10562 | .00000 | .00000 | .08952 | .74589 | .05002 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00895 | .10562 | .08952 | .00000 | .00000 | .74589 | .05002 |
| 220 | .00895 | .10562 | .08952 | .00000 | .00000 | .74589 | .05002 |
| 240 | .00895 | .10562 | .08951 | .00000 | .00000 | .74589 | .05002 |
| 260 | .00895 | .10562 | .08948 | .00000 | .00004 | .74589 | .05002 |
| 280 | .00895 | .10562 | .00000 | .08934 | .00018 | .74589 | .05002 |
| 298 | .00895 | .10562 | .00000 | .08895 | .00057 | .74589 | .05002 |
| 300 | .00895 | .10562 | .00000 | .08889 | .00063 | .74589 | .05002 |
| 320 | .00895 | .10562 | .00000 | .08763 | .00189 | .74589 | .05002 |
| 340 | .00895 | .10562 | .00000 | .08466 | .00486 | .74589 | .05002 |
| 360 | .00895 | .10562 | .00000 | .07837 | .01114 | .74589 | .05002 |
| 380 | .00895 | .10562 | .00000 | .06629 | .02323 | .74589 | .05002 |
| 400 | .00895 | .10562 | .00000 | .04462 | .04490 | .74589 | .05002 |
| 420 | .00895 | .10562 | .00000 | .00761 | .08191 | .74589 | .05002 |

TABLE 5.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.069653; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 950 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1000 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1050 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1100 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1150 | .00881 | .00000 | .13865 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1200 | .00881 | .00001 | .13865 | .00000 | .00001 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00001 |
| 1250 | .00881 | .00002 | .13863 | .00000 | .00001 | .11759 | .00000 | .00000 | .73491 | .00000 | .00000 | .00001 |
| 1300 | .00881 | .00004 | .13861 | .00000 | .00002 | .11758 | .00000 | .00000 | .73490 | .00000 | .00000 | .00003 |
| 1350 | .00881 | .00008 | .13857 | .00000 | .00003 | .11756 | .00000 | .00001 | .73488 | .00000 | .00001 | .00005 |
| 1400 | .00881 | .00014 | .13850 | .00000 | .00006 | .11753 | .00000 | .00002 | .73484 | .00000 | .00002 | .00009 |
| 1450 | .00881 | .00025 | .13838 | .00000 | .00009 | .11748 | .00000 | .00003 | .73478 | .00000 | .00003 | .00015 |
| 1500 | .00881 | .00042 | .13819 | .00000 | .00014 | .11740 | .00000 | .00004 | .73469 | .00000 | .00005 | .00025 |
| 1550 | .00881 | .00069 | .13790 | .00000 | .00021 | .11729 | .00000 | .00007 | .73454 | .00000 | .00009 | .00040 |
| 1600 | .00881 | .00109 | .13746 | .00001 | .00031 | .11713 | .00000 | .00011 | .73432 | .00000 | .00014 | .00061 |
| 1650 | .00880 | .00168 | .13682 | .00002 | .00045 | .11690 | .00000 | .00016 | .73401 | .00001 | .00023 | .00092 |
| 1700 | .00880 | .00250 | .13592 | .00004 | .00063 | .11658 | .00000 | .00024 | .73356 | .00002 | .00036 | .00136 |
| 1750 | .00879 | .00364 | .13468 | .00007 | .00087 | .11614 | .00000 | .00035 | .73294 | .00003 | .00055 | .00195 |
| 1800 | .00878 | .00517 | .13300 | .00012 | .00118 | .11554 | .00000 | .00049 | .73211 | .00006 | .00081 | .00273 |
| 1850 | .00877 | .00718 | .13080 | .00021 | .00158 | .11476 | .00000 | .00067 | .73100 | .00012 | .00117 | .00375 |
| 1900 | .00876 | .00976 | .12796 | .00036 | .00207 | .11373 | .00000 | .00091 | .72954 | .00021 | .00166 | .00503 |
| 1950 | .00873 | .01300 | .12441 | .00059 | .00269 | .11241 | .00000 | .00121 | .72768 | .00037 | .00230 | .00663 |
| 2000 | .00871 | .01695 | .12005 | .00095 | .00343 | .11073 | .00000 | .00157 | .72533 | .00061 | .00312 | .00855 |
| 2050 | .00868 | .02166 | .11482 | .00148 | .00433 | .10861 | .00000 | .00202 | .72241 | .00101 | .00416 | .01082 |
| 2100 | .00864 | .02715 | .10872 | .00227 | .00539 | .10599 | .00000 | .00254 | .71886 | .00160 | .00544 | .01341 |
| 2150 | .00859 | .03335 | .10176 | .00341 | .00664 | .10277 | .00000 | .00315 | .71458 | .00248 | .00698 | .01629 |
| 2200 | .00853 | .04018 | .09405 | .00503 | .00806 | .09888 | .00000 | .00384 | .70952 | .00374 | .00879 | .01939 |
| 2250 | .00847 | .04747 | .08572 | .00726 | .00966 | .09424 | .00000 | .00461 | .70361 | .00551 | .01086 | .02260 |
| 2300 | .00839 | .05500 | .07697 | .01028 | .01142 | .08880 | .00000 | .00545 | .69680 | .00793 | .01316 | .02580 |
| 2350 | .00830 | .06254 | .06806 | .01429 | .01329 | .08252 | .00000 | .00633 | .68905 | .01114 | .01563 | .02884 |
| 2400 | .00820 | .06982 | .05922 | .01949 | .01520 | .07543 | .00000 | .00725 | .68035 | .01531 | .01817 | .03156 |
| 2450 | .00809 | .07660 | .05071 | .02606 | .01703 | .06759 | .00000 | .00816 | .67071 | .02059 | .02065 | .03379 |
| 2500 | .00797 | .08267 | .04274 | .03415 | .01866 | .05917 | .00000 | .00906 | .66017 | .02710 | .02292 | .03539 |
| 2550 | .00784 | .08788 | .03547 | .04378 | .01993 | .05040 | .00000 | .00990 | .64884 | .03492 | .02480 | .03625 |
| 2600 | .00770 | .09217 | .02900 | .05487 | .02068 | .04160 | .00001 | .01064 | .63690 | .04406 | .02610 | .03626 |
| 2650 | .00756 | .09553 | .02337 | .06717 | .02078 | .03314 | .00001 | .01127 | .62460 | .05446 | .02668 | .03542 |
| 2700 | .00741 | .09804 | .01859 | .08024 | .02018 | .02540 | .00001 | .01175 | .61229 | .06593 | .02643 | .03373 |
| 2750 | .00727 | .09981 | .01460 | .09351 | .01891 | .01868 | .00002 | .01205 | .60034 | .07816 | .02537 | .03129 |
| 2800 | .00714 | .10097 | .01133 | .10636 | .01710 | .01318 | .00003 | .01217 | .58912 | .09076 | .02357 | .02826 |
| 2850 | .00702 | .10167 | .00871 | .11823 | .01495 | .00893 | .00004 | .01211 | .57896 | .10328 | .02123 | .02486 |
| 2900 | .00691 | .10204 | .00663 | .12871 | .01269 | .00584 | .00005 | .01188 | .57006 | .11527 | .01859 | .02132 |
| 2950 | .00682 | .10220 | .00502 | .13760 | .01050 | .00370 | .00007 | .01151 | .56250 | .12635 | .01586 | .01786 |
| 3000 | .00674 | .10222 | .00378 | .14491 | .00852 | .00229 | .00010 | .01102 | .55626 | .13625 | .01326 | .01465 |

TABLE 5.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.069653; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 10.1325 KPA (0.10 AT DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 950 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1000 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1050 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1100 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1150 | .00881 | .00000 | .13866 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1200 | .00881 | .00000 | .13865 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1250 | .00881 | .00001 | .13865 | .00000 | .00001 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00001 |
| 1300 | .00881 | .00002 | .13864 | .00000 | .00001 | .11759 | .00000 | .00000 | .73491 | .00000 | .00000 | .00001 |
| 1350 | .00881 | .00004 | .13862 | .00000 | .00002 | .11758 | .00000 | .00001 | .73490 | .00000 | .00000 | .00002 |
| 1400 | .00881 | .00007 | .13858 | .00000 | .00003 | .11757 | .00000 | .00001 | .73488 | .00000 | .00001 | .00004 |
| 1450 | .00881 | .00012 | .13853 | .00000 | .00004 | .11754 | .00000 | .00002 | .73486 | .00000 | .00001 | .00007 |
| 1500 | .00881 | .00020 | .13844 | .00000 | .00007 | .11751 | .00000 | .00003 | .73481 | .00000 | .00002 | .00011 |
| 1550 | .00881 | .00033 | .13830 | .00000 | .00010 | .11746 | .00000 | .00005 | .73474 | .00000 | .00004 | .00018 |
| 1600 | .00881 | .00052 | .13809 | .00000 | .00015 | .11738 | .00000 | .00007 | .73463 | .00000 | .00007 | .00028 |
| 1650 | .00881 | .00079 | .13779 | .00000 | .00021 | .11727 | .00000 | .00011 | .73448 | .00000 | .00011 | .00042 |
| 1700 | .00881 | .00118 | .13736 | .00001 | .00030 | .11713 | .00000 | .00016 | .73426 | .00000 | .00017 | .00062 |
| 1750 | .00880 | .00173 | .13677 | .00001 | .00041 | .11692 | .00000 | .00023 | .73396 | .00001 | .00025 | .00089 |
| 1800 | .00880 | .00247 | .13596 | .00003 | .00056 | .11665 | .00000 | .00033 | .73356 | .00001 | .00038 | .00125 |
| 1850 | .00879 | .00345 | .13489 | .00005 | .00074 | .11630 | .00000 | .00046 | .73302 | .00003 | .00055 | .00173 |
| 1900 | .00879 | .00472 | .13350 | .00008 | .00098 | .11583 | .00000 | .00062 | .73232 | .00005 | .00078 | .00234 |
| 1950 | .00878 | .00635 | .13173 | .00013 | .00127 | .11523 | .00000 | .00083 | .73141 | .00008 | .00108 | .00312 |
| 2000 | .00877 | .00838 | .12950 | .00021 | .00163 | .11448 | .00000 | .00109 | .73027 | .00013 | .00148 | .00407 |
| 2050 | .00875 | .01087 | .12677 | .00032 | .00206 | .11353 | .00000 | .00141 | .72884 | .00022 | .00199 | .00523 |
| 2100 | .00873 | .01388 | .12347 | .00050 | .00257 | .11235 | .00000 | .00180 | .72709 | .00036 | .00264 | .00662 |
| 2150 | .00871 | .01743 | .11956 | .00075 | .00319 | .11091 | .00000 | .00226 | .72497 | .00056 | .00344 | .00823 |
| 2200 | .00868 | .02155 | .11501 | .00111 | .00390 | .10917 | .00000 | .00280 | .72244 | .00085 | .00441 | .01008 |
| 2250 | .00865 | .02624 | .10983 | .00161 | .00474 | .10707 | .00000 | .00342 | .71946 | .00128 | .00557 | .01215 |
| 2300 | .00861 | .03145 | .10402 | .00230 | .00569 | .10459 | .00000 | .00413 | .71598 | .00187 | .00694 | .01441 |
| 2350 | .00857 | .03715 | .09765 | .00323 | .00678 | .10167 | .00000 | .00492 | .71199 | .00269 | .00853 | .01683 |
| 2400 | .00852 | .04323 | .09079 | .00447 | .00799 | .09828 | .00000 | .00579 | .70746 | .00379 | .01032 | .01936 |
| 2450 | .00846 | .04957 | .08357 | .00610 | .00934 | .09438 | .00000 | .00673 | .70236 | .00524 | .01231 | .02192 |
| 2500 | .00840 | .05605 | .07613 | .00821 | .01080 | .08995 | .00000 | .00773 | .69669 | .00712 | .01448 | .02443 |
| 2550 | .00833 | .06249 | .06860 | .01090 | .01236 | .08498 | .00000 | .00878 | .69045 | .00950 | .01679 | .02681 |
| 2600 | .00826 | .06876 | .06115 | .01427 | .01398 | .07948 | .00000 | .00986 | .68363 | .01246 | .01918 | .02898 |
| 2650 | .00818 | .07469 | .05393 | .01841 | .01561 | .07348 | .00000 | .01094 | .67625 | .01607 | .02158 | .03085 |
| 2700 | .00809 | .08016 | .04706 | .02343 | .01720 | .06704 | .00000 | .01202 | .66833 | .02042 | .02390 | .03234 |
| 2750 | .00799 | .08508 | .04066 | .02938 | .01867 | .06026 | .00001 | .01305 | .65991 | .02554 | .02604 | .03341 |
| 2800 | .00789 | .08937 | .03479 | .03631 | .01993 | .05326 | .00001 | .01403 | .65103 | .03147 | .02791 | .03399 |
| 2850 | .00779 | .09300 | .02949 | .04420 | .02090 | .04621 | .00001 | .01493 | .64179 | .03823 | .02938 | .03407 |
| 2900 | .00768 | .09599 | .02479 | .05296 | .02149 | .03928 | .00002 | .01572 | .63229 | .04578 | .03038 | .03363 |
| 2950 | .00757 | .09836 | .02067 | .06247 | .02165 | .03266 | .00002 | .01638 | .62266 | .05406 | .03082 | .03269 |
| 3000 | .00745 | .10016 | .01710 | .07251 | .02134 | .02652 | .00003 | .01690 | .61306 | .06296 | .03066 | .03128 |

TABLE 5.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.069653; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 950 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1000 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1050 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1100 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1150 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1200 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1250 | .00881 | .00000 | .13865 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1300 | .00881 | .00001 | .13865 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00001 |
| 1350 | .00881 | .00002 | .13864 | .00000 | .00000 | .00001 | .11759 | .00000 | .00000 | .73491 | .00000 | .00000 | .00001 |
| 1400 | .00881 | .00003 | .13862 | .00000 | .00000 | .00001 | .11759 | .00000 | .00001 | .73491 | .00000 | .00000 | .00002 |
| 1450 | .00881 | .00006 | .13860 | .00000 | .00000 | .00002 | .11758 | .00000 | .00001 | .73489 | .00000 | .00001 | .00003 |
| 1500 | .00881 | .00009 | .13855 | .00000 | .00000 | .00003 | .11756 | .00000 | .00002 | .73487 | .00000 | .00001 | .00005 |
| 1550 | .00881 | .00015 | .13849 | .00000 | .00000 | .00005 | .11753 | .00000 | .00003 | .73483 | .00000 | .00002 | .00008 |
| 1600 | .00881 | .00024 | .13839 | .00000 | .00000 | .00007 | .11750 | .00000 | .00005 | .73478 | .00000 | .00003 | .00012 |
| 1650 | .00881 | .00038 | .13825 | .00000 | .00000 | .00010 | .11745 | .00000 | .00007 | .73470 | .00000 | .00005 | .00019 |
| 1700 | .00881 | .00056 | .13804 | .00000 | .00000 | .00014 | .11738 | .00000 | .00011 | .73460 | .00000 | .00008 | .00028 |
| 1750 | .00881 | .00082 | .13776 | .00000 | .00000 | .00019 | .11729 | .00000 | .00016 | .73445 | .00000 | .00012 | .00040 |
| 1800 | .00881 | .00117 | .13738 | .00001 | .00000 | .00026 | .11716 | .00000 | .00022 | .73425 | .00000 | .00017 | .00056 |
| 1850 | .00880 | .00165 | .13686 | .00001 | .00000 | .00035 | .11699 | .00000 | .00031 | .73398 | .00001 | .00025 | .00078 |
| 1900 | .00880 | .00226 | .13619 | .00002 | .00000 | .00046 | .11678 | .00000 | .00042 | .73364 | .00001 | .00036 | .00106 |
| 1950 | .00880 | .00305 | .13533 | .00003 | .00000 | .00060 | .11650 | .00000 | .00056 | .73319 | .00002 | .00050 | .00142 |
| 2000 | .00879 | .00406 | .13424 | .00004 | .00000 | .00077 | .11616 | .00000 | .00074 | .73262 | .00003 | .00069 | .00187 |
| 2050 | .00878 | .00530 | .13288 | .00007 | .00000 | .00098 | .11572 | .00000 | .00096 | .73191 | .00005 | .00093 | .00242 |
| 2100 | .00878 | .00683 | .13121 | .00011 | .00000 | .00122 | .11518 | .00000 | .00123 | .73104 | .00008 | .00124 | .00309 |
| 2150 | .00876 | .00867 | .12920 | .00016 | .00000 | .00151 | .11453 | .00000 | .00156 | .72997 | .00012 | .00163 | .00389 |
| 2200 | .00875 | .01086 | .12681 | .00024 | .00000 | .00186 | .11373 | .00000 | .00194 | .72869 | .00019 | .00211 | .00483 |
| 2250 | .00874 | .01342 | .12400 | .00035 | .00000 | .00226 | .11277 | .00000 | .00240 | .72717 | .00028 | .00269 | .00592 |
| 2300 | .00872 | .01638 | .12075 | .00050 | .00000 | .00273 | .11164 | .00000 | .00293 | .72539 | .00042 | .00339 | .00716 |
| 2350 | .00870 | .01975 | .11705 | .00071 | .00000 | .00326 | .11030 | .00000 | .00353 | .72332 | .00061 | .00422 | .00856 |
| 2400 | .00867 | .02353 | .11289 | .00098 | .00000 | .00387 | .10874 | .00000 | .00422 | .72093 | .00087 | .00519 | .01010 |
| 2450 | .00864 | .02770 | .10828 | .00135 | .00000 | .00456 | .10694 | .00000 | .00499 | .71823 | .00122 | .00631 | .01178 |
| 2500 | .00861 | .03224 | .10325 | .00183 | .00000 | .00534 | .10486 | .00000 | .00584 | .71518 | .00168 | .00759 | .01358 |
| 2550 | .00858 | .03710 | .09783 | .00244 | .00000 | .00620 | .10249 | .00000 | .00677 | .71178 | .00228 | .00904 | .01547 |
| 2600 | .00854 | .04223 | .09209 | .00323 | .00000 | .00716 | .09982 | .00000 | .00778 | .70803 | .00305 | .01064 | .01742 |
| 2650 | .00850 | .04756 | .08609 | .00422 | .00001 | .00821 | .09683 | .00000 | .00885 | .70392 | .00403 | .01240 | .01939 |
| 2700 | .00845 | .05300 | .07991 | .00546 | .00001 | .00934 | .09350 | .00000 | .00998 | .69946 | .00524 | .01430 | .02134 |
| 2750 | .00840 | .05846 | .07365 | .00699 | .00001 | .01056 | .08983 | .00000 | .01117 | .69465 | .00673 | .01633 | .02322 |
| 2800 | .00834 | .06386 | .06740 | .00885 | .00001 | .01185 | .08583 | .00000 | .01238 | .68951 | .00853 | .01845 | .02499 |
| 2850 | .00829 | .06911 | .06124 | .01110 | .00001 | .01319 | .08149 | .00000 | .01362 | .68404 | .01068 | .02063 | .02660 |
| 2900 | .00822 | .07412 | .05525 | .01379 | .00001 | .01456 | .07685 | .00001 | .01486 | .67825 | .01322 | .02283 | .02803 |
| 2950 | .00816 | .07882 | .04952 | .01695 | .00001 | .01594 | .07192 | .00001 | .01609 | .67217 | .01616 | .02501 | .02923 |
| 3000 | .00809 | .08315 | .04410 | .02064 | .00001 | .01730 | .06675 | .00001 | .01730 | .66581 | .01955 | .02710 | .03017 |

TABLE 5.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.069653; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 950 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1000 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1050 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1100 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1150 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1200 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1250 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1300 | .00881 | .00000 | .13865 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1350 | .00881 | .00001 | .13865 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1400 | .00881 | .00001 | .13864 | .00000 | .00000 | .00001 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00001 |
| 1450 | .00881 | .00003 | .13863 | .00000 | .00000 | .00001 | .11759 | .00001 | .00000 | .73491 | .00000 | .00000 | .00001 |
| 1500 | .00881 | .00004 | .13861 | .00000 | .00000 | .00001 | .11758 | .00001 | .00000 | .73490 | .00000 | .00000 | .00002 |
| 1550 | .00881 | .00007 | .13858 | .00000 | .00000 | .00002 | .11757 | .00002 | .00000 | .73488 | .00000 | .00001 | .00004 |
| 1600 | .00881 | .00012 | .13853 | .00000 | .00000 | .00003 | .11755 | .00003 | .00000 | .73485 | .00000 | .00001 | .00006 |
| 1650 | .00881 | .00018 | .13846 | .00000 | .00000 | .00005 | .11753 | .00005 | .00000 | .73481 | .00000 | .00002 | .00008 |
| 1700 | .00881 | .00027 | .13836 | .00000 | .00000 | .00007 | .11750 | .00007 | .00000 | .73476 | .00000 | .00004 | .00012 |
| 1750 | .00881 | .00039 | .13823 | .00000 | .00000 | .00009 | .11745 | .00010 | .00000 | .73469 | .00000 | .00005 | .00018 |
| 1800 | .00881 | .00056 | .13805 | .00000 | .00000 | .00013 | .11739 | .00015 | .00000 | .73458 | .00000 | .00008 | .00025 |
| 1850 | .00881 | .00079 | .13780 | .00000 | .00000 | .00017 | .11732 | .00020 | .00000 | .73445 | .00000 | .00012 | .00035 |
| 1900 | .00881 | .00108 | .13748 | .00000 | .00000 | .00022 | .11722 | .00028 | .00000 | .73427 | .00000 | .00017 | .00047 |
| 1950 | .00881 | .00147 | .13706 | .00001 | .00000 | .00029 | .11709 | .00037 | .00000 | .73405 | .00000 | .00023 | .00063 |
| 2000 | .00880 | .00195 | .13653 | .00001 | .00000 | .00037 | .11692 | .00049 | .00000 | .73376 | .00001 | .00032 | .00083 |
| 2050 | .00880 | .00256 | .13587 | .00002 | .00000 | .00046 | .11672 | .00064 | .00000 | .73340 | .00001 | .00043 | .00108 |
| 2100 | .00880 | .00331 | .13505 | .00002 | .00000 | .00058 | .11647 | .00083 | .00000 | .73296 | .00002 | .00058 | .00139 |
| 2150 | .00879 | .00423 | .13405 | .00004 | .00000 | .00072 | .11617 | .00105 | .00000 | .73241 | .00003 | .00076 | .00176 |
| 2200 | .00878 | .00533 | .13285 | .00005 | .00000 | .00089 | .11580 | .00131 | .00000 | .73176 | .00004 | .00098 | .00220 |
| 2250 | .00878 | .00664 | .13143 | .00008 | .00000 | .00108 | .11536 | .00163 | .00000 | .73098 | .00006 | .00126 | .00272 |
| 2300 | .00877 | .00817 | .12975 | .00011 | .00000 | .00130 | .11483 | .00200 | .00000 | .73006 | .00009 | .00159 | .00332 |
| 2350 | .00876 | .00996 | .12781 | .00015 | .00000 | .00156 | .11421 | .00243 | .00000 | .72898 | .00013 | .00200 | .00401 |
| 2400 | .00875 | .01200 | .12557 | .00022 | .00000 | .00185 | .11349 | .00292 | .00000 | .72773 | .00019 | .00248 | .00480 |
| 2450 | .00873 | .01432 | .12304 | .00030 | .00000 | .00219 | .11265 | .00349 | .00000 | .72630 | .00027 | .00304 | .00569 |
| 2500 | .00872 | .01693 | .12018 | .00040 | .00000 | .00257 | .11168 | .00412 | .00000 | .72467 | .00037 | .00369 | .00667 |
| 2550 | .00870 | .01982 | .11701 | .00054 | .00000 | .00299 | .11057 | .00483 | .00000 | .72283 | .00051 | .00444 | .00775 |
| 2600 | .00868 | .02300 | .11352 | .00071 | .00001 | .00346 | .10932 | .00562 | .00000 | .72077 | .00069 | .00530 | .00892 |
| 2650 | .00866 | .02645 | .10972 | .00093 | .00001 | .00399 | .10790 | .00648 | .00000 | .71849 | .00092 | .00627 | .01018 |
| 2700 | .00863 | .03016 | .10562 | .00121 | .00001 | .00457 | .10631 | .00742 | .00000 | .71599 | .00122 | .00735 | .01151 |
| 2750 | .00860 | .03411 | .10126 | .00155 | .00001 | .00521 | .10454 | .00843 | .00000 | .71325 | .00159 | .00855 | .01289 |
| 2800 | .00858 | .03826 | .09665 | .00198 | .00001 | .00591 | .10258 | .00951 | .00000 | .71028 | .00204 | .00987 | .01432 |
| 2850 | .00854 | .04257 | .09184 | .00250 | .00001 | .00667 | .10042 | .01066 | .00001 | .70709 | .00260 | .01130 | .01577 |
| 2900 | .00851 | .04700 | .08688 | .00313 | .00001 | .00750 | .09807 | .01187 | .00001 | .70368 | .00328 | .01284 | .01723 |
| 2950 | .00847 | .05151 | .08180 | .00389 | .00002 | .00838 | .09550 | .01313 | .00001 | .70005 | .00409 | .01449 | .01867 |
| 3000 | .00844 | .05605 | .07667 | .00479 | .00002 | .00932 | .09273 | .01443 | .00001 | .69622 | .00504 | .01622 | .02007 |

TABLE 5.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.069653; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 950 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1000 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1050 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1100 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1150 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73493 | .00000 | .00000 | .00000 |
| 1200 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1250 | .00881 | .00000 | .13866 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1300 | .00881 | .00000 | .13865 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1350 | .00881 | .00000 | .13865 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1400 | .00881 | .00001 | .13865 | .00000 | .00000 | .00000 | .11760 | .00000 | .00000 | .73492 | .00000 | .00000 | .00000 |
| 1450 | .00881 | .00002 | .13864 | .00000 | .00000 | .00001 | .11760 | .00001 | .00000 | .73491 | .00000 | .00000 | .00001 |
| 1500 | .00881 | .00003 | .13863 | .00000 | .00000 | .00001 | .11759 | .00001 | .00000 | .73491 | .00000 | .00000 | .00001 |
| 1550 | .00881 | .00004 | .13861 | .00000 | .00000 | .00001 | .11758 | .00002 | .00000 | .73490 | .00000 | .00000 | .00002 |
| 1600 | .00881 | .00007 | .13858 | .00000 | .00000 | .00002 | .11757 | .00002 | .00000 | .73488 | .00000 | .00001 | .00003 |
| 1650 | .00881 | .00011 | .13854 | .00000 | .00000 | .00003 | .11756 | .00004 | .00000 | .73486 | .00000 | .00001 | .00005 |
| 1700 | .00881 | .00016 | .13848 | .00000 | .00000 | .00004 | .11754 | .00005 | .00000 | .73482 | .00000 | .00002 | .00007 |
| 1750 | .00881 | .00023 | .13840 | .00000 | .00000 | .00006 | .11751 | .00008 | .00000 | .73477 | .00000 | .00003 | .00010 |
| 1800 | .00881 | .00034 | .13829 | .00000 | .00000 | .00008 | .11748 | .00011 | .00000 | .73471 | .00000 | .00005 | .00014 |
| 1850 | .00881 | .00047 | .13814 | .00000 | .00000 | .00010 | .11743 | .00015 | .00000 | .73463 | .00000 | .00007 | .00019 |
| 1900 | .00881 | .00065 | .13795 | .00000 | .00000 | .00013 | .11737 | .00021 | .00000 | .73452 | .00000 | .00010 | .00026 |
| 1950 | .00881 | .00088 | .13770 | .00000 | .00000 | .00017 | .11730 | .00028 | .00000 | .73437 | .00000 | .00013 | .00035 |
| 2000 | .00881 | .00117 | .13738 | .00000 | .00000 | .00022 | .11720 | .00037 | .00000 | .73419 | .00000 | .00018 | .00047 |
| 2050 | .00881 | .00154 | .13698 | .00001 | .00000 | .00028 | .11708 | .00048 | .00000 | .73397 | .00000 | .00025 | .00061 |
| 2100 | .00880 | .00200 | .13648 | .00001 | .00000 | .00035 | .11693 | .00062 | .00000 | .73369 | .00001 | .00033 | .00078 |
| 2150 | .00880 | .00256 | .13588 | .00001 | .00000 | .00043 | .11675 | .00079 | .00000 | .73334 | .00001 | .00044 | .00099 |
| 2200 | .00880 | .00323 | .13515 | .00002 | .00000 | .00053 | .11654 | .00099 | .00000 | .73293 | .00001 | .00057 | .00124 |
| 2250 | .00879 | .00403 | .13427 | .00003 | .00000 | .00065 | .11628 | .00123 | .00000 | .73244 | .00002 | .00073 | .00154 |
| 2300 | .00879 | .00498 | .13324 | .00004 | .00000 | .00078 | .11597 | .00151 | .00000 | .73185 | .00003 | .00093 | .00189 |
| 2350 | .00878 | .00609 | .13203 | .00005 | .00000 | .00093 | .11560 | .00184 | .00000 | .73117 | .00004 | .00117 | .00229 |
| 2400 | .00877 | .00737 | .13063 | .00007 | .00000 | .00111 | .11518 | .00222 | .00000 | .73037 | .00006 | .00145 | .00275 |
| 2450 | .00876 | .00885 | .12903 | .00010 | .00000 | .00131 | .11468 | .00265 | .00000 | .72945 | .00009 | .00179 | .00328 |
| 2500 | .00875 | .01052 | .12721 | .00014 | .00000 | .00154 | .11411 | .00315 | .00000 | .72840 | .00013 | .00218 | .00387 |
| 2550 | .00874 | .01240 | .12515 | .00019 | .00000 | .00179 | .11346 | .00371 | .00000 | .72721 | .00017 | .00263 | .00454 |
| 2600 | .00873 | .01449 | .12287 | .00025 | .00001 | .00208 | .11272 | .00433 | .00000 | .72587 | .00024 | .00315 | .00527 |
| 2650 | .00872 | .01681 | .12033 | .00032 | .00001 | .00240 | .11188 | .00502 | .00000 | .72437 | .00032 | .00375 | .00607 |
| 2700 | .00870 | .01934 | .11756 | .00042 | .00001 | .00275 | .11094 | .00578 | .00000 | .72272 | .00042 | .00442 | .00693 |
| 2750 | .00869 | .02210 | .11454 | .00054 | .00001 | .00314 | .10988 | .00662 | .00001 | .72089 | .00055 | .00518 | .00786 |
| 2800 | .00867 | .02506 | .11128 | .00069 | .00001 | .00357 | .10871 | .00752 | .00001 | .71889 | .00072 | .00602 | .00884 |
| 2850 | .00865 | .02823 | .10780 | .00087 | .00001 | .00403 | .10742 | .00850 | .00001 | .71673 | .00092 | .00695 | .00988 |
| 2900 | .00863 | .03158 | .10411 | .00109 | .00002 | .00454 | .10600 | .00954 | .00001 | .71439 | .00117 | .00797 | .01096 |
| 2950 | .00860 | .03509 | .10022 | .00136 | .00002 | .00509 | .10444 | .01065 | .00001 | .71188 | .00147 | .00909 | .01208 |
| 3000 | .00858 | .03875 | .09617 | .00167 | .00002 | .00569 | .10275 | .01182 | .00001 | .70920 | .00183 | .01029 | .01321 |

TABLE 5C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.069653; EQUIV.RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 |
|----------------------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | |
| 200 | .00881 | .13866 | .11746 | .00000 | .00014 | .73493 |
| 220 | .00881 | .13866 | .11530 | .00000 | .00231 | .73493 |
| 240 | .00881 | .13866 | .09330 | .00000 | .02430 | .73493 |
| PRESSURE = 0.10 ATM | | | | | | |
| 200 | .00881 | .13866 | .11759 | .00000 | .00001 | .73493 |
| 220 | .00881 | .13866 | .11737 | .00000 | .00023 | .73493 |
| 240 | .00881 | .13866 | .11523 | .00000 | .00237 | .73493 |
| 260 | .00881 | .13866 | .10028 | .00000 | .01732 | .73493 |
| 280 | .00881 | .13866 | .00000 | .02232 | .09528 | .73493 |
| PRESSURE = 1.00 ATM | | | | | | |
| 200 | .00881 | .13866 | .11760 | .00000 | .00000 | .73493 |
| 220 | .00881 | .13866 | .11758 | .00000 | .00002 | .73493 |
| 240 | .00881 | .13866 | .11737 | .00000 | .00024 | .73493 |
| 260 | .00881 | .13866 | .11590 | .00000 | .00170 | .73493 |
| 280 | .00881 | .13866 | .00000 | .10892 | .00868 | .73493 |
| 298 | .00881 | .13866 | .00000 | .08926 | .02834 | .73493 |
| 300 | .00881 | .13866 | .00000 | .08587 | .03174 | .73493 |
| 320 | .00881 | .13866 | .00000 | .01592 | .10168 | .73493 |
| PRESSURE = 10.00 ATM | | | | | | |
| 200 | .00881 | .13866 | .11760 | .00000 | .00000 | .73493 |
| 220 | .00881 | .13866 | .11760 | .00000 | .00000 | .73493 |
| 240 | .00881 | .13866 | .11758 | .00000 | .00002 | .73493 |
| 260 | .00881 | .13866 | .11743 | .00000 | .00017 | .73493 |
| 280 | .00881 | .13866 | .00000 | .11674 | .00086 | .73493 |
| 298 | .00881 | .13866 | .00000 | .11485 | .00275 | .73493 |
| 300 | .00881 | .13866 | .00000 | .11453 | .00307 | .73493 |
| 320 | .00881 | .13866 | .00000 | .10839 | .00921 | .73493 |
| 340 | .00881 | .13866 | .00000 | .09353 | .02407 | .73493 |
| 360 | .00881 | .13866 | .00000 | .06082 | .05679 | .73493 |
| 380 | .00881 | .13866 | .00000 | .00000 | .11760 | .73493 |
| PRESSURE = 50.00 ATM | | | | | | |
| 200 | .00881 | .13866 | .11760 | .00000 | .00000 | .73493 |
| 220 | .00881 | .13866 | .11760 | .00000 | .00000 | .73493 |
| 240 | .00881 | .13866 | .11760 | .00000 | .00000 | .73493 |
| 260 | .00881 | .13866 | .11757 | .00000 | .00003 | .73493 |
| 280 | .00881 | .13866 | .00000 | .11743 | .00017 | .73493 |
| 298 | .00881 | .13866 | .00000 | .11705 | .00055 | .73493 |
| 300 | .00881 | .13866 | .00000 | .11699 | .00061 | .73493 |
| 320 | .00881 | .13866 | .00000 | .11578 | .00183 | .73493 |
| 340 | .00881 | .13866 | .00000 | .11289 | .00471 | .73493 |
| 360 | .00881 | .13866 | .00000 | .10680 | .01080 | .73493 |
| 380 | .00881 | .13866 | .00000 | .09509 | .02251 | .73493 |
| 400 | .00881 | .13866 | .00000 | .07409 | .04351 | .73493 |
| 420 | .00881 | .13866 | .00000 | .03822 | .07938 | .73493 |

TABLE 6.1D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 210 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 220 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 230 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 240 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 250 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 260 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 270 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 280 | .00869 | .02429 | .00000 | .14645 | .00000 | .00001 | .09630 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 290 | .00869 | .02428 | .00000 | .14645 | .00000 | .00001 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 298 | .00869 | .02428 | .00000 | .14645 | .00000 | .00002 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 300 | .00869 | .02428 | .00000 | .14645 | .00000 | .00002 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 310 | .00869 | .02428 | .00000 | .14646 | .00000 | .00004 | .09628 | .00000 | .00000 | .00000 | .72426 | .00000 | .00000 | .00000 |
| 320 | .00869 | .02427 | .00000 | .14646 | .00000 | .00007 | .09626 | .00000 | .00000 | .00000 | .72425 | .00000 | .00000 | .00000 |
| 330 | .00869 | .02426 | .00000 | .14647 | .00000 | .00011 | .09624 | .00000 | .00000 | .00000 | .72424 | .00000 | .00000 | .00000 |
| 340 | .00869 | .02424 | .00000 | .14648 | .00000 | .00016 | .09621 | .00000 | .00000 | .00000 | .72422 | .00000 | .00000 | .00000 |
| 350 | .00869 | .02422 | .00000 | .14649 | .00000 | .00025 | .09616 | .00000 | .00000 | .00000 | .72419 | .00000 | .00000 | .00000 |
| 360 | .00869 | .02419 | .00000 | .14652 | .00000 | .00037 | .09609 | .00000 | .00000 | .00000 | .72414 | .00000 | .00000 | .00000 |
| 370 | .00868 | .02414 | .00000 | .14655 | .00000 | .00055 | .09600 | .00000 | .00000 | .00000 | .72408 | .00000 | .00000 | .00000 |
| 380 | .00868 | .02408 | .00000 | .14659 | .00000 | .00078 | .09587 | .00000 | .00000 | .00000 | .72399 | .00000 | .00000 | .00000 |
| 390 | .00868 | .02400 | .00000 | .14664 | .00000 | .00110 | .09569 | .00000 | .00000 | .00000 | .72388 | .00000 | .00000 | .00000 |
| 400 | .00868 | .02389 | .00000 | .14672 | .00000 | .00152 | .09546 | .00000 | .00000 | .00000 | .72373 | .00000 | .00000 | .00000 |
| 410 | .00868 | .02374 | .00000 | .14681 | .00000 | .00207 | .09516 | .00000 | .00000 | .00000 | .72352 | .00000 | .00000 | .00000 |
| 420 | .00867 | .02356 | .00000 | .14694 | .00000 | .00278 | .09477 | .00000 | .00000 | .00000 | .72327 | .00000 | .00000 | .00000 |
| 430 | .00867 | .02332 | .00001 | .14709 | .00000 | .00368 | .09428 | .00000 | .00000 | .00000 | .72294 | .00000 | .00000 | .00000 |
| 440 | .00867 | .02302 | .00001 | .14729 | .00000 | .00480 | .09367 | .00000 | .00000 | .00000 | .72253 | .00000 | .00000 | .00000 |
| 450 | .00866 | .02266 | .00002 | .14752 | .00000 | .00619 | .09291 | .00000 | .00000 | .00000 | .72203 | .00000 | .00000 | .00000 |
| 460 | .00865 | .02221 | .00004 | .14781 | .00000 | .00787 | .09200 | .00000 | .00001 | .00000 | .72141 | .00000 | .00000 | .00000 |
| 470 | .00864 | .02168 | .00006 | .14815 | .00000 | .00989 | .09090 | .00000 | .00001 | .00000 | .72067 | .00000 | .00000 | .00000 |
| 480 | .00863 | .02104 | .00010 | .14854 | .00000 | .01227 | .08961 | .00000 | .00001 | .00000 | .71980 | .00000 | .00000 | .00000 |
| 490 | .00862 | .02030 | .00015 | .14899 | .00000 | .01506 | .08811 | .00000 | .00001 | .00000 | .71877 | .00000 | .00000 | .00000 |
| 500 | .00861 | .01944 | .00023 | .14949 | .00000 | .01826 | .08639 | .00000 | .00001 | .00000 | .71758 | .00000 | .00000 | .00000 |
| 510 | .00859 | .01846 | .00034 | .15004 | .00000 | .02188 | .08445 | .00000 | .00001 | .00000 | .71623 | .00000 | .00000 | .00000 |
| 520 | .00857 | .01736 | .00050 | .15063 | .00000 | .02593 | .08230 | .00000 | .00001 | .00000 | .71470 | .00000 | .00000 | .00000 |
| 530 | .00855 | .01613 | .00072 | .15123 | .00000 | .03038 | .07997 | .00000 | .00001 | .00000 | .71302 | .00000 | .00000 | .00000 |
| 540 | .00853 | .01480 | .00102 | .15183 | .00000 | .03518 | .07747 | .00000 | .00001 | .00000 | .71117 | .00000 | .00000 | .00000 |
| 550 | .00851 | .01336 | .00142 | .15240 | .00000 | .04027 | .07486 | .00000 | .00001 | .00000 | .70918 | .00000 | .00000 | .00000 |
| 560 | .00848 | .01183 | .00194 | .15291 | .00000 | .04557 | .07219 | .00000 | .00001 | .00000 | .70707 | .00000 | .00000 | .00000 |
| 570 | .00845 | .01024 | .00262 | .15330 | .00000 | .05097 | .06954 | .00000 | .00001 | .00000 | .70487 | .00000 | .00000 | .00000 |
| 580 | .00843 | .00861 | .00347 | .15354 | .00000 | .05631 | .06700 | .00000 | .00001 | .00000 | .70263 | .00000 | .00000 | .00000 |
| 590 | .00840 | .00700 | .00451 | .15360 | .00000 | .06143 | .06466 | .00000 | .00001 | .00000 | .70040 | .00000 | .00000 | .00000 |

TABLE 6.1D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00837 | .00545 | .00571 | .15344 | .00000 | .06613 | .06263 | .00000 | .00001 | .00000 | .69826 | .00000 | .00000 | .00000 |
| 610 | .00835 | .00404 | .00705 | .15305 | .00000 | .07019 | .06101 | .00000 | .00001 | .00000 | .69630 | .00000 | .00000 | .00000 |
| 620 | .00833 | .00282 | .00847 | .15246 | .00000 | .07341 | .05988 | .00000 | .00000 | .00000 | .69462 | .00000 | .00000 | .00000 |
| 630 | .00832 | .00186 | .00988 | .15169 | .00000 | .07568 | .05928 | .00000 | .00000 | .00000 | .69329 | .00000 | .00000 | .00000 |
| 640 | .00830 | .00116 | .01123 | .15081 | .00000 | .07699 | .05917 | .00000 | .00000 | .00000 | .69233 | .00000 | .00000 | .00000 |
| 650 | .00830 | .00069 | .01250 | .14986 | .00000 | .07750 | .05946 | .00000 | .00000 | .00000 | .69169 | .00000 | .00000 | .00000 |
| 660 | .00829 | .00041 | .01367 | .14888 | .00000 | .07742 | .06004 | .00000 | .00000 | .00000 | .69129 | .00000 | .00000 | .00000 |
| 670 | .00829 | .00023 | .01479 | .14788 | .00000 | .07696 | .06080 | .00000 | .00000 | .00000 | .69105 | .00000 | .00000 | .00000 |
| 680 | .00829 | .00013 | .01587 | .14686 | .00000 | .07626 | .06167 | .00000 | .00000 | .00000 | .69091 | .00000 | .00000 | .00000 |
| 690 | .00829 | .00008 | .01693 | .14585 | .00000 | .07542 | .06260 | .00000 | .00000 | .00000 | .69083 | .00000 | .00000 | .00000 |
| 700 | .00828 | .00005 | .01797 | .14483 | .00000 | .07451 | .06358 | .00000 | .00000 | .00000 | .69079 | .00000 | .00000 | .00000 |
| 710 | .00828 | .00003 | .01900 | .14381 | .00000 | .07354 | .06457 | .00000 | .00000 | .00000 | .69076 | .00000 | .00000 | .00000 |
| 720 | .00828 | .00002 | .02003 | .14279 | .00000 | .07256 | .06558 | .00000 | .00000 | .00000 | .69075 | .00000 | .00000 | .00000 |
| 730 | .00828 | .00001 | .02105 | .14177 | .00000 | .07156 | .06659 | .00000 | .00000 | .00000 | .69074 | .00000 | .00000 | .00000 |
| 740 | .00828 | .00001 | .02207 | .14075 | .00000 | .07056 | .06759 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 750 | .00828 | .00000 | .02308 | .13974 | .00000 | .06956 | .06860 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 760 | .00828 | .00000 | .02408 | .13874 | .00000 | .06856 | .06960 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 770 | .00828 | .00000 | .02508 | .13775 | .00000 | .06757 | .07059 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 780 | .00828 | .00000 | .02606 | .13676 | .00000 | .06658 | .07158 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 790 | .00828 | .00000 | .02704 | .13579 | .00000 | .06561 | .07255 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 800 | .00828 | .00000 | .02800 | .13482 | .00000 | .06464 | .07352 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 810 | .00828 | .00000 | .02896 | .13387 | .00000 | .06369 | .07447 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 820 | .00828 | .00000 | .02990 | .13293 | .00000 | .06275 | .07541 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 830 | .00828 | .00000 | .03082 | .13200 | .00000 | .06183 | .07634 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 840 | .00828 | .00000 | .03174 | .13109 | .00000 | .06091 | .07725 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 850 | .00828 | .00000 | .03264 | .13019 | .00000 | .06001 | .07815 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 860 | .00828 | .00000 | .03352 | .12931 | .00000 | .05913 | .07903 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 870 | .00828 | .00000 | .03439 | .12844 | .00000 | .05826 | .07990 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 880 | .00828 | .00000 | .03524 | .12758 | .00000 | .05741 | .08076 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 890 | .00828 | .00000 | .03608 | .12674 | .00000 | .05657 | .08160 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 900 | .00828 | .00000 | .03691 | .12592 | .00000 | .05574 | .08242 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 910 | .00828 | .00000 | .03772 | .12511 | .00000 | .05494 | .08323 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 920 | .00828 | .00000 | .03851 | .12432 | .00000 | .05414 | .08402 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 930 | .00828 | .00000 | .03929 | .12354 | .00000 | .05336 | .08480 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 940 | .00828 | .00000 | .04005 | .12278 | .00000 | .05260 | .08556 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 950 | .00828 | .00000 | .04079 | .12203 | .00000 | .05186 | .08631 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 960 | .00828 | .00000 | .04153 | .12130 | .00000 | .05112 | .08704 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 970 | .00828 | .00000 | .04224 | .12058 | .00000 | .05041 | .08776 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 980 | .00828 | .00000 | .04295 | .11988 | .00000 | .04971 | .08846 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 990 | .00828 | .00000 | .04363 | .11919 | .00000 | .04902 | .08914 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |

TABLE 6.1D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00828 | .00000 | .04431 | .11852 | .00000 | .04835 | .08982 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1050 | .00828 | .00000 | .04746 | .11537 | .00000 | .04519 | .09297 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1100 | .00828 | .00000 | .05028 | .11254 | .00000 | .04237 | .09580 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1150 | .00828 | .00000 | .05281 | .11001 | .00000 | .03984 | .09833 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1200 | .00828 | .00000 | .05508 | .10775 | .00000 | .03757 | .10059 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1250 | .00828 | .00000 | .05711 | .10572 | .00000 | .03554 | .10262 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1300 | .00828 | .00000 | .05893 | .10390 | .00000 | .03372 | .10444 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1350 | .00828 | .00000 | .06057 | .10226 | .00000 | .03208 | .10608 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1400 | .00828 | .00000 | .06204 | .10079 | .00001 | .03061 | .10755 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1450 | .00828 | .00000 | .06337 | .09945 | .00002 | .02927 | .10888 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1500 | .00828 | .00000 | .06457 | .09825 | .00003 | .02806 | .11008 | .00000 | .00000 | .00000 | .69071 | .00000 | .00000 | .00000 |
| 1550 | .00828 | .00000 | .06566 | .09716 | .00005 | .02697 | .11116 | .00000 | .00000 | .00000 | .69071 | .00000 | .00001 | .00000 |
| 1600 | .00828 | .00000 | .06665 | .09617 | .00009 | .02596 | .11214 | .00000 | .00000 | .00000 | .69069 | .00000 | .00002 | .00000 |
| 1650 | .00828 | .00000 | .06754 | .09527 | .00014 | .02505 | .11302 | .00000 | .00000 | .00000 | .69066 | .00000 | .00003 | .00000 |
| 1700 | .00828 | .00000 | .06835 | .09445 | .00023 | .02421 | .11380 | .00000 | .00000 | .00001 | .69062 | .00000 | .00006 | .00000 |
| 1750 | .00828 | .00000 | .06909 | .09369 | .00035 | .02343 | .11447 | .00000 | .00000 | .00001 | .69055 | .00000 | .00010 | .00000 |
| 1800 | .00828 | .00000 | .06977 | .09299 | .00054 | .02271 | .11504 | .00000 | .00000 | .00002 | .69045 | .00000 | .00018 | .00001 |
| 1850 | .00828 | .00000 | .07041 | .09232 | .00079 | .02204 | .11548 | .00000 | .00000 | .00005 | .69028 | .00001 | .00031 | .00002 |
| 1900 | .00828 | .00000 | .07102 | .09165 | .00115 | .02143 | .11576 | .00000 | .00000 | .00009 | .69002 | .00002 | .00052 | .00005 |
| 1950 | .00827 | .00000 | .07167 | .09092 | .00165 | .02088 | .11583 | .00000 | .00000 | .00016 | .68962 | .00005 | .00085 | .00012 |
| 2000 | .00826 | .00000 | .07243 | .09002 | .00231 | .02042 | .11560 | .00000 | .00000 | .00027 | .68898 | .00011 | .00134 | .00026 |
| 2050 | .00825 | .00000 | .07345 | .08879 | .00320 | .02009 | .11495 | .00000 | .00000 | .00045 | .68799 | .00023 | .00204 | .00056 |
| 2100 | .00824 | .00000 | .07493 | .08698 | .00438 | .01996 | .11371 | .00000 | .00000 | .00072 | .68646 | .00046 | .00303 | .00113 |
| 2150 | .00821 | .00000 | .07710 | .08431 | .00595 | .02012 | .11169 | .00000 | .00000 | .00110 | .68418 | .00089 | .00436 | .00209 |
| 2200 | .00818 | .00000 | .08016 | .08054 | .00804 | .02064 | .10868 | .00000 | .00000 | .00162 | .68092 | .00161 | .00604 | .00357 |
| 2250 | .00813 | .00000 | .08415 | .07560 | .01084 | .02155 | .10455 | .00000 | .00000 | .00225 | .67654 | .00274 | .00807 | .00559 |
| 2300 | .00806 | .00000 | .08891 | .06961 | .01453 | .02281 | .09923 | .00000 | .00000 | .00299 | .67094 | .00444 | .01041 | .00808 |
| 2350 | .00799 | .00000 | .09416 | .06285 | .01934 | .02434 | .09272 | .00000 | .00000 | .00381 | .66412 | .00684 | .01297 | .01085 |
| 2400 | .00790 | .00000 | .09957 | .05565 | .02551 | .02602 | .08510 | .00000 | .00000 | .00469 | .65611 | .01009 | .01566 | .01370 |
| 2450 | .00779 | .00000 | .10481 | .04835 | .03322 | .02767 | .07652 | .00000 | .00000 | .00559 | .64694 | .01435 | .01834 | .01641 |
| 2500 | .00768 | .00000 | .10960 | .04126 | .04263 | .02910 | .06717 | .00000 | .00000 | .00648 | .63673 | .01973 | .02084 | .01877 |
| 2550 | .00755 | .00000 | .11374 | .03460 | .05380 | .03010 | .05738 | .00000 | .00000 | .00733 | .62561 | .02632 | .02297 | .02060 |
| 2600 | .00741 | .00000 | .11710 | .02854 | .06663 | .03049 | .04751 | .00001 | .00000 | .00809 | .61378 | .03414 | .02455 | .02176 |
| 2650 | .00727 | .00000 | .11967 | .02317 | .08084 | .03010 | .03798 | .00001 | .00000 | .00875 | .60154 | .04310 | .02540 | .02218 |
| 2700 | .00712 | .00000 | .12147 | .01853 | .09597 | .02887 | .02922 | .00001 | .00000 | .00927 | .58925 | .05303 | .02543 | .02182 |
| 2750 | .00698 | .00000 | .12262 | .01460 | .11141 | .02684 | .02159 | .00002 | .00000 | .00962 | .57730 | .06365 | .02461 | .02075 |
| 2800 | .00685 | .00000 | .12324 | .01137 | .12646 | .02417 | .01530 | .00003 | .00000 | .00980 | .56610 | .07457 | .02303 | .01908 |
| 2850 | .00673 | .00000 | .12348 | .00874 | .14047 | .02111 | .01042 | .00004 | .00000 | .00981 | .55598 | .08537 | .02085 | .01699 |
| 2900 | .00662 | .00000 | .12347 | .00666 | .15297 | .01792 | .00684 | .00005 | .00000 | .00966 | .54715 | .09565 | .01833 | .01468 |
| 2950 | .00653 | .00000 | .12330 | .00504 | .16367 | .01486 | .00436 | .00007 | .00000 | .00937 | .53970 | .10506 | .01569 | .01235 |
| 3000 | .00645 | .00000 | .12307 | .00379 | .17255 | .01209 | .00271 | .00010 | .00000 | .00898 | .53358 | .11340 | .01314 | .01015 |

TABLE 6.2D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 210 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 220 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 230 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 240 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 250 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 260 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 270 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 280 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 290 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 298 | .00869 | .02429 | .00000 | .14645 | .00000 | .00001 | .09629 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 300 | .00869 | .02429 | .00000 | .14645 | .00000 | .00001 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 310 | .00869 | .02428 | .00000 | .14645 | .00000 | .00001 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 320 | .00869 | .02428 | .00000 | .14645 | .00000 | .00002 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 330 | .00869 | .02428 | .00000 | .14646 | .00000 | .00003 | .09628 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 340 | .00869 | .02427 | .00000 | .14646 | .00000 | .00005 | .09627 | .00000 | .00000 | .00000 | .72426 | .00000 | .00000 | .00000 |
| 350 | .00869 | .02427 | .00000 | .14646 | .00000 | .00008 | .09625 | .00000 | .00000 | .00000 | .72425 | .00000 | .00000 | .00000 |
| 360 | .00869 | .02426 | .00000 | .14647 | .00000 | .00012 | .09623 | .00000 | .00000 | .00000 | .72423 | .00000 | .00000 | .00000 |
| 370 | .00869 | .02424 | .00000 | .14648 | .00000 | .00017 | .09620 | .00000 | .00000 | .00000 | .72421 | .00000 | .00000 | .00000 |
| 380 | .00869 | .02422 | .00000 | .14649 | .00000 | .00025 | .09616 | .00000 | .00000 | .00000 | .72419 | .00000 | .00000 | .00000 |
| 390 | .00869 | .02419 | .00000 | .14651 | .00000 | .00035 | .09610 | .00000 | .00000 | .00000 | .72415 | .00000 | .00000 | .00000 |
| 400 | .00868 | .02416 | .00000 | .14654 | .00000 | .00048 | .09603 | .00000 | .00001 | .00000 | .72410 | .00000 | .00000 | .00000 |
| 410 | .00868 | .02411 | .00000 | .14657 | .00000 | .00066 | .09593 | .00000 | .00001 | .00000 | .72404 | .00000 | .00000 | .00000 |
| 420 | .00868 | .02405 | .00000 | .14661 | .00000 | .00089 | .09581 | .00000 | .00001 | .00000 | .72395 | .00000 | .00000 | .00000 |
| 430 | .00868 | .02397 | .00000 | .14666 | .00000 | .00118 | .09565 | .00000 | .00001 | .00000 | .72385 | .00000 | .00000 | .00000 |
| 440 | .00868 | .02388 | .00000 | .14672 | .00000 | .00155 | .09545 | .00000 | .00001 | .00000 | .72371 | .00000 | .00000 | .00000 |
| 450 | .00868 | .02376 | .00001 | .14680 | .00000 | .00201 | .09520 | .00000 | .00001 | .00000 | .72355 | .00000 | .00000 | .00000 |
| 460 | .00868 | .02361 | .00001 | .14690 | .00000 | .00257 | .09489 | .00000 | .00001 | .00000 | .72334 | .00000 | .00000 | .00000 |
| 470 | .00867 | .02342 | .00002 | .14701 | .00000 | .00326 | .09451 | .00000 | .00001 | .00000 | .72309 | .00000 | .00000 | .00000 |
| 480 | .00867 | .02320 | .00003 | .14715 | .00000 | .00409 | .09407 | .00000 | .00001 | .00000 | .72278 | .00000 | .00000 | .00000 |
| 490 | .00866 | .02294 | .00005 | .14731 | .00000 | .00507 | .09353 | .00000 | .00001 | .00000 | .72242 | .00000 | .00000 | .00000 |
| 500 | .00866 | .02263 | .00007 | .14750 | .00000 | .00624 | .09290 | .00000 | .00001 | .00000 | .72199 | .00000 | .00000 | .00000 |
| 510 | .00865 | .02226 | .00011 | .14771 | .00000 | .00761 | .09217 | .00000 | .00001 | .00000 | .72148 | .00000 | .00000 | .00000 |
| 520 | .00865 | .02183 | .00016 | .14795 | .00000 | .00919 | .09132 | .00000 | .00002 | .00000 | .72089 | .00000 | .00000 | .00000 |
| 530 | .00864 | .02134 | .00023 | .14822 | .00000 | .01101 | .09036 | .00000 | .00002 | .00000 | .72021 | .00000 | .00000 | .00000 |
| 540 | .00863 | .02077 | .00032 | .14850 | .00000 | .01307 | .08927 | .00000 | .00002 | .00000 | .71942 | .00000 | .00000 | .00000 |
| 550 | .00862 | .02013 | .00045 | .14881 | .00000 | .01540 | .08805 | .00000 | .00002 | .00000 | .71853 | .00000 | .00000 | .00000 |
| 560 | .00861 | .01940 | .00062 | .14912 | .00000 | .01799 | .08671 | .00000 | .00002 | .00000 | .71753 | .00000 | .00000 | .00000 |
| 570 | .00859 | .01859 | .00085 | .14944 | .00000 | .02085 | .08524 | .00000 | .00002 | .00000 | .71641 | .00000 | .00000 | .00000 |
| 580 | .00858 | .01769 | .00116 | .14974 | .00000 | .02397 | .08367 | .00000 | .00002 | .00000 | .71517 | .00000 | .00000 | .00000 |
| 590 | .00856 | .01671 | .00155 | .15002 | .00000 | .02735 | .08199 | .00000 | .00002 | .00000 | .71381 | .00000 | .00000 | .00000 |

TABLE 6.2D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00854 | .01563 | .00204 | .15025 | .00000 | .03096 | .08024 | .00000 | .00002 | .00000 | .71232 | .00000 | .00000 | .00000 |
| 610 | .00852 | .01446 | .00267 | .15041 | .00000 | .03478 | .07843 | .00000 | .00002 | .00000 | .71071 | .00000 | .00000 | .00000 |
| 620 | .00850 | .01322 | .00345 | .15047 | .00000 | .03876 | .07660 | .00000 | .00002 | .00000 | .70899 | .00000 | .00000 | .00000 |
| 630 | .00848 | .01190 | .00440 | .15041 | .00000 | .04285 | .07478 | .00000 | .00002 | .00000 | .70716 | .00000 | .00000 | .00000 |
| 640 | .00846 | .01051 | .00553 | .15021 | .00000 | .04698 | .07303 | .00000 | .00002 | .00000 | .70525 | .00000 | .00000 | .00000 |
| 650 | .00844 | .00909 | .00686 | .14984 | .00000 | .05108 | .07139 | .00000 | .00002 | .00000 | .70329 | .00000 | .00000 | .00000 |
| 660 | .00841 | .00766 | .00837 | .14929 | .00000 | .05503 | .06990 | .00000 | .00002 | .00000 | .70131 | .00000 | .00000 | .00000 |
| 670 | .00839 | .00626 | .01004 | .14857 | .00000 | .05872 | .06864 | .00000 | .00002 | .00000 | .69937 | .00000 | .00000 | .00000 |
| 680 | .00837 | .00493 | .01183 | .14768 | .00000 | .06201 | .06764 | .00000 | .00002 | .00000 | .69753 | .00000 | .00000 | .00000 |
| 690 | .00835 | .00372 | .01366 | .14665 | .00000 | .06476 | .06696 | .00000 | .00001 | .00000 | .69587 | .00000 | .00000 | .00000 |
| 700 | .00833 | .00269 | .01547 | .14554 | .00000 | .06688 | .06662 | .00000 | .00001 | .00000 | .69445 | .00000 | .00000 | .00000 |
| 710 | .00832 | .00187 | .01718 | .14439 | .00000 | .06832 | .06661 | .00000 | .00001 | .00000 | .69331 | .00000 | .00000 | .00000 |
| 720 | .00831 | .00125 | .01876 | .14323 | .00000 | .06910 | .06689 | .00000 | .00001 | .00000 | .69246 | .00000 | .00000 | .00000 |
| 730 | .00830 | .00081 | .02019 | .14208 | .00000 | .06934 | .06741 | .00000 | .00001 | .00000 | .69185 | .00000 | .00000 | .00000 |
| 740 | .00829 | .00052 | .02150 | .14097 | .00000 | .06915 | .06810 | .00000 | .00001 | .00000 | .69145 | .00000 | .00000 | .00000 |
| 750 | .00829 | .00033 | .02271 | .13990 | .00000 | .06868 | .06891 | .00000 | .00001 | .00000 | .69118 | .00000 | .00000 | .00000 |
| 760 | .00829 | .00021 | .02384 | .13884 | .00000 | .06801 | .06979 | .00000 | .00001 | .00000 | .69101 | .00000 | .00000 | .00000 |
| 770 | .00829 | .00013 | .02492 | .13782 | .00000 | .06722 | .07071 | .00000 | .00001 | .00000 | .69091 | .00000 | .00000 | .00000 |
| 780 | .00829 | .00008 | .02596 | .13681 | .00000 | .06636 | .07165 | .00000 | .00001 | .00000 | .69084 | .00000 | .00000 | .00000 |
| 790 | .00829 | .00005 | .02697 | .13582 | .00000 | .06547 | .07260 | .00000 | .00000 | .00000 | .69080 | .00000 | .00000 | .00000 |
| 800 | .00828 | .00003 | .02796 | .13484 | .00000 | .06455 | .07354 | .00000 | .00000 | .00000 | .69077 | .00000 | .00000 | .00000 |
| 810 | .00828 | .00002 | .02893 | .13388 | .00000 | .06363 | .07449 | .00000 | .00000 | .00000 | .69076 | .00000 | .00000 | .00000 |
| 820 | .00828 | .00001 | .02988 | .13294 | .00000 | .06271 | .07542 | .00000 | .00000 | .00000 | .69075 | .00000 | .00000 | .00000 |
| 830 | .00828 | .00001 | .03081 | .13201 | .00000 | .06180 | .07634 | .00000 | .00000 | .00000 | .69074 | .00000 | .00000 | .00000 |
| 840 | .00828 | .00001 | .03173 | .13110 | .00000 | .06090 | .07725 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 850 | .00828 | .00000 | .03263 | .13020 | .00000 | .06000 | .07815 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 860 | .00828 | .00000 | .03352 | .12931 | .00000 | .05912 | .07903 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 870 | .00828 | .00000 | .03439 | .12844 | .00000 | .05825 | .07990 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 880 | .00828 | .00000 | .03524 | .12758 | .00000 | .05740 | .08076 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 890 | .00828 | .00000 | .03608 | .12675 | .00000 | .05656 | .08160 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 900 | .00828 | .00000 | .03691 | .12592 | .00000 | .05574 | .08242 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 910 | .00828 | .00000 | .03771 | .12511 | .00000 | .05493 | .08323 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 920 | .00828 | .00000 | .03851 | .12432 | .00000 | .05414 | .08402 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 930 | .00828 | .00000 | .03928 | .12354 | .00000 | .05336 | .08480 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 940 | .00828 | .00000 | .04005 | .12278 | .00000 | .05260 | .08556 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 950 | .00828 | .00000 | .04079 | .12203 | .00000 | .05185 | .08631 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 960 | .00828 | .00000 | .04153 | .12130 | .00000 | .05112 | .08704 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 970 | .00828 | .00000 | .04224 | .12058 | .00000 | .05041 | .08776 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 980 | .00828 | .00000 | .04294 | .11988 | .00000 | .04970 | .08846 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 990 | .00828 | .00000 | .04363 | .11920 | .00000 | .04902 | .08914 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |

TABLE 6.2D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO \approx 1.700; F/A \approx 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO \approx 1.2496; P \approx 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00828 | .00000 | .04430 | .11852 | .00000 | .04834 | .08982 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1050 | .00828 | .00000 | .04746 | .11537 | .00000 | .04519 | .09297 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1100 | .00828 | .00000 | .05028 | .11254 | .00000 | .04237 | .09580 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1150 | .00828 | .00000 | .05281 | .11001 | .00000 | .03984 | .09833 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1200 | .00828 | .00000 | .05508 | .10775 | .00000 | .03757 | .10059 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1250 | .00828 | .00000 | .05711 | .10572 | .00000 | .03554 | .10262 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1300 | .00828 | .00000 | .05893 | .10390 | .00000 | .03372 | .10444 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1350 | .00828 | .00000 | .06057 | .10226 | .00000 | .03208 | .10608 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1400 | .00828 | .00000 | .06204 | .10078 | .00000 | .03061 | .10755 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1450 | .00828 | .00000 | .06337 | .09945 | .00001 | .02927 | .10889 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1500 | .00828 | .00000 | .06458 | .09825 | .00001 | .02807 | .11009 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1550 | .00828 | .00000 | .06567 | .09716 | .00002 | .02697 | .11118 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1600 | .00828 | .00000 | .06666 | .09616 | .00003 | .02598 | .11217 | .00000 | .00000 | .00000 | .69071 | .00000 | .00000 | .00000 |
| 1650 | .00828 | .00000 | .06756 | .09526 | .00005 | .02507 | .11306 | .00000 | .00000 | .00000 | .69071 | .00000 | .00001 | .00000 |
| 1700 | .00828 | .00000 | .06838 | .09444 | .00007 | .02424 | .11387 | .00000 | .00000 | .00000 | .69069 | .00000 | .00002 | .00000 |
| 1750 | .00828 | .00000 | .06914 | .09368 | .00011 | .02347 | .11461 | .00000 | .00000 | .00000 | .69067 | .00000 | .00003 | .00000 |
| 1800 | .00828 | .00000 | .06982 | .09298 | .00017 | .02277 | .11526 | .00000 | .00000 | .00001 | .69064 | .00000 | .00006 | .00000 |
| 1850 | .00828 | .00000 | .07046 | .09234 | .00025 | .02212 | .11584 | .00000 | .00000 | .00001 | .69059 | .00000 | .00010 | .00000 |
| 1900 | .00828 | .00000 | .07104 | .09174 | .00037 | .02152 | .11634 | .00000 | .00000 | .00003 | .69051 | .00000 | .00017 | .00000 |
| 1950 | .00828 | .00000 | .07160 | .09116 | .00052 | .02097 | .11674 | .00000 | .00000 | .00005 | .69040 | .00000 | .00027 | .00001 |
| 2000 | .00828 | .00000 | .07213 | .09059 | .00073 | .02046 | .11704 | .00000 | .00000 | .00009 | .69023 | .00001 | .00043 | .00003 |
| 2050 | .00828 | .00000 | .07268 | .08999 | .00101 | .02000 | .11720 | .00000 | .00000 | .00015 | .68997 | .00002 | .00066 | .00006 |
| 2100 | .00827 | .00000 | .07327 | .08931 | .00137 | .01959 | .11718 | .00000 | .00000 | .00024 | .68959 | .00005 | .00100 | .00012 |
| 2150 | .00827 | .00000 | .07398 | .08849 | .00184 | .01926 | .11694 | .00000 | .00000 | .00038 | .68902 | .00010 | .00147 | .00025 |
| 2200 | .00826 | .00000 | .07490 | .08739 | .00244 | .01904 | .11639 | .00000 | .00000 | .00060 | .68818 | .00019 | .00213 | .00048 |
| 2250 | .00824 | .00000 | .07616 | .08589 | .00321 | .01895 | .11544 | .00000 | .00000 | .00090 | .68697 | .00034 | .00300 | .00088 |
| 2300 | .00823 | .00000 | .07788 | .08381 | .00420 | .01906 | .11397 | .00000 | .00000 | .00131 | .68526 | .00061 | .00413 | .00153 |
| 2350 | .00820 | .00000 | .08021 | .08100 | .00546 | .01941 | .11187 | .00000 | .00000 | .00185 | .68293 | .00103 | .00554 | .00248 |
| 2400 | .00817 | .00000 | .08319 | .07737 | .00708 | .02003 | .10905 | .00000 | .00000 | .00251 | .67988 | .00168 | .00723 | .00380 |
| 2450 | .00813 | .00000 | .08680 | .07296 | .00914 | .02093 | .10546 | .00000 | .00000 | .00329 | .67604 | .00261 | .00919 | .00545 |
| 2500 | .00808 | .00000 | .09091 | .06785 | .01175 | .02208 | .10107 | .00000 | .00000 | .00417 | .67141 | .00391 | .01138 | .00738 |
| 2550 | .00802 | .00000 | .09535 | .06225 | .01501 | .02345 | .09590 | .00000 | .00000 | .00513 | .66600 | .00565 | .01376 | .00948 |
| 2600 | .00795 | .00000 | .09991 | .05635 | .01906 | .02496 | .08998 | .00000 | .00000 | .00614 | .65983 | .00790 | .01625 | .01166 |
| 2650 | .00787 | .00000 | .10440 | .05037 | .02400 | .02653 | .08340 | .00000 | .00000 | .00718 | .65294 | .01074 | .01879 | .01377 |
| 2700 | .00779 | .00000 | .10864 | .04447 | .02992 | .02807 | .07625 | .00000 | .00000 | .00823 | .64539 | .01423 | .02128 | .01572 |
| 2750 | .00770 | .00000 | .11250 | .03881 | .03691 | .02947 | .06865 | .00001 | .00000 | .00926 | .63723 | .01844 | .02362 | .01741 |
| 2800 | .00760 | .00000 | .11587 | .03350 | .04500 | .03062 | .06078 | .00001 | .00000 | .01024 | .62853 | .02338 | .02570 | .01876 |
| 2850 | .00750 | .00000 | .11870 | .02863 | .05418 | .03140 | .05282 | .00001 | .00000 | .01116 | .61941 | .02908 | .02740 | .01971 |
| 2900 | .00739 | .00000 | .12098 | .02423 | .06436 | .03173 | .04498 | .00002 | .00000 | .01197 | .60997 | .03551 | .02863 | .02023 |
| 2950 | .00728 | .00000 | .12271 | .02032 | .07539 | .03153 | .03748 | .00002 | .00000 | .01268 | .60038 | .04260 | .02931 | .02030 |
| 3000 | .00717 | .00000 | .12394 | .01690 | .08705 | .03076 | .03052 | .00003 | .00000 | .01325 | .59079 | .05027 | .02938 | .01994 |

TABLE 6.3D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 210 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 220 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 230 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 240 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 250 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 260 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 270 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 280 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 290 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 298 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 300 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 310 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 320 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00001 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 330 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00001 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 340 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00002 | .09629 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 350 | .00869 | .02428 | .00000 | .14646 | .00000 | .00000 | .00003 | .09628 | .00000 | .00000 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 360 | .00869 | .02428 | .00000 | .14646 | .00000 | .00000 | .00004 | .09627 | .00000 | .00001 | .00000 | .72426 | .00000 | .00000 | .00000 |
| 370 | .00869 | .02427 | .00000 | .14646 | .00000 | .00000 | .00005 | .09626 | .00000 | .00001 | .00000 | .72426 | .00000 | .00000 | .00000 |
| 380 | .00869 | .02426 | .00000 | .14647 | .00000 | .00000 | .00008 | .09625 | .00000 | .00001 | .00000 | .72425 | .00000 | .00000 | .00000 |
| 390 | .00869 | .02426 | .00000 | .14647 | .00000 | .00000 | .00011 | .09623 | .00000 | .00001 | .00000 | .72424 | .00000 | .00000 | .00000 |
| 400 | .00869 | .02424 | .00000 | .14648 | .00000 | .00000 | .00015 | .09621 | .00000 | .00001 | .00000 | .72422 | .00000 | .00000 | .00000 |
| 410 | .00869 | .02423 | .00000 | .14649 | .00000 | .00000 | .00021 | .09618 | .00000 | .00001 | .00000 | .72420 | .00000 | .00000 | .00000 |
| 420 | .00869 | .02421 | .00000 | .14650 | .00000 | .00000 | .00028 | .09614 | .00000 | .00001 | .00000 | .72417 | .00000 | .00000 | .00000 |
| 430 | .00869 | .02418 | .00000 | .14652 | .00000 | .00000 | .00038 | .09608 | .00000 | .00001 | .00000 | .72414 | .00000 | .00000 | .00000 |
| 440 | .00868 | .02415 | .00000 | .14654 | .00000 | .00000 | .00049 | .09602 | .00000 | .00002 | .00000 | .72409 | .00000 | .00000 | .00000 |
| 450 | .00868 | .02411 | .00000 | .14657 | .00000 | .00000 | .00064 | .09594 | .00000 | .00002 | .00000 | .72404 | .00000 | .00000 | .00000 |
| 460 | .00868 | .02406 | .00000 | .14660 | .00000 | .00000 | .00082 | .09584 | .00000 | .00002 | .00000 | .72397 | .00000 | .00000 | .00000 |
| 470 | .00868 | .02401 | .00001 | .14664 | .00000 | .00000 | .00104 | .09572 | .00000 | .00002 | .00000 | .72389 | .00000 | .00000 | .00000 |
| 480 | .00868 | .02393 | .00001 | .14668 | .00000 | .00000 | .00131 | .09557 | .00000 | .00002 | .00000 | .72379 | .00000 | .00000 | .00000 |
| 490 | .00868 | .02385 | .00002 | .14674 | .00000 | .00000 | .00164 | .09539 | .00000 | .00002 | .00000 | .72367 | .00000 | .00000 | .00000 |
| 500 | .00868 | .02374 | .00002 | .14680 | .00000 | .00000 | .00202 | .09518 | .00000 | .00002 | .00000 | .72353 | .00000 | .00000 | .00000 |
| 510 | .00868 | .02362 | .00003 | .14687 | .00000 | .00000 | .00248 | .09493 | .00000 | .00003 | .00000 | .72336 | .00000 | .00000 | .00000 |
| 520 | .00867 | .02347 | .00005 | .14695 | .00000 | .00000 | .00302 | .09465 | .00000 | .00003 | .00000 | .72316 | .00000 | .00000 | .00000 |
| 530 | .00867 | .02330 | .00007 | .14705 | .00000 | .00000 | .00364 | .09431 | .00000 | .00003 | .00000 | .72292 | .00000 | .00000 | .00000 |
| 540 | .00867 | .02311 | .00010 | .14715 | .00000 | .00000 | .00436 | .09393 | .00000 | .00003 | .00000 | .72265 | .00000 | .00000 | .00000 |
| 550 | .00866 | .02288 | .00014 | .14726 | .00000 | .00000 | .00519 | .09349 | .00000 | .00003 | .00000 | .72234 | .00000 | .00000 | .00000 |
| 560 | .00866 | .02261 | .00020 | .14739 | .00000 | .00000 | .00614 | .09300 | .00000 | .00004 | .00000 | .72197 | .00000 | .00000 | .00000 |
| 570 | .00865 | .02231 | .00027 | .14752 | .00000 | .00000 | .00721 | .09244 | .00000 | .00004 | .00000 | .72156 | .00000 | .00000 | .00000 |
| 580 | .00865 | .02197 | .00036 | .14765 | .00000 | .00000 | .00841 | .09182 | .00000 | .00004 | .00000 | .72109 | .00000 | .00000 | .00000 |
| 590 | .00864 | .02159 | .00049 | .14779 | .00000 | .00000 | .00976 | .09114 | .00000 | .00004 | .00000 | .72055 | .00000 | .00000 | .00000 |

TABLE 6.3D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00864 | .02115 | .00065 | .14792 | .00000 | .00000 | .01125 | .09039 | .00000 | .00004 | .00000 | .71995 | .00000 | .00000 | .00000 |
| 610 | .00863 | .02067 | .00085 | .14804 | .00000 | .00000 | .01290 | .08958 | .00000 | .00004 | .00000 | .71928 | .00000 | .00000 | .00000 |
| 620 | .00862 | .02012 | .00111 | .14815 | .00000 | .00000 | .01471 | .08871 | .00000 | .00005 | .00000 | .71853 | .00000 | .00000 | .00000 |
| 630 | .00861 | .01952 | .00144 | .14823 | .00000 | .00000 | .01668 | .08777 | .00000 | .00005 | .00000 | .71770 | .00000 | .00000 | .00000 |
| 640 | .00860 | .01886 | .00184 | .14828 | .00000 | .00000 | .01880 | .08679 | .00000 | .00005 | .00000 | .71679 | .00000 | .00000 | .00000 |
| 650 | .00858 | .01813 | .00233 | .14828 | .00000 | .00000 | .02109 | .08576 | .00000 | .00005 | .00000 | .71578 | .00000 | .00000 | .00000 |
| 660 | .00857 | .01733 | .00293 | .14821 | .00000 | .00000 | .02353 | .08469 | .00000 | .00005 | .00000 | .71468 | .00000 | .00000 | .00000 |
| 670 | .00856 | .01646 | .00366 | .14808 | .00000 | .00000 | .02612 | .08360 | .00000 | .00005 | .00000 | .71348 | .00000 | .00000 | .00000 |
| 680 | .00854 | .01552 | .00452 | .14785 | .00000 | .00000 | .02884 | .08249 | .00000 | .00005 | .00000 | .71218 | .00000 | .00000 | .00000 |
| 690 | .00853 | .01451 | .00553 | .14752 | .00000 | .00000 | .03168 | .08140 | .00000 | .00005 | .00000 | .71079 | .00000 | .00000 | .00000 |
| 700 | .00851 | .01344 | .00671 | .14706 | .00000 | .00000 | .03461 | .08032 | .00000 | .00005 | .00000 | .70930 | .00000 | .00000 | .00000 |
| 710 | .00849 | .01230 | .00806 | .14648 | .00000 | .00000 | .03761 | .07929 | .00000 | .00005 | .00000 | .70772 | .00000 | .00000 | .00000 |
| 720 | .00847 | .01110 | .00959 | .14576 | .00000 | .00000 | .04063 | .07832 | .00000 | .00005 | .00000 | .70607 | .00000 | .00000 | .00000 |
| 730 | .00845 | .00987 | .01128 | .14490 | .00000 | .00000 | .04364 | .07744 | .00000 | .00005 | .00000 | .70437 | .00000 | .00000 | .00000 |
| 740 | .00843 | .00862 | .01313 | .14389 | .00000 | .00000 | .04658 | .07666 | .00000 | .00005 | .00000 | .70264 | .00000 | .00000 | .00000 |
| 750 | .00841 | .00737 | .01511 | .14276 | .00000 | .00000 | .04938 | .07602 | .00000 | .00005 | .00000 | .70091 | .00000 | .00000 | .00000 |
| 760 | .00839 | .00615 | .01716 | .14153 | .00000 | .00000 | .05197 | .07553 | .00000 | .00005 | .00000 | .69923 | .00000 | .00000 | .00000 |
| 770 | .00837 | .00500 | .01925 | .14022 | .00000 | .00000 | .05428 | .07521 | .00000 | .00004 | .00000 | .69764 | .00000 | .00000 | .00000 |
| 780 | .00835 | .00395 | .02131 | .13886 | .00000 | .00000 | .05622 | .07508 | .00000 | .00004 | .00000 | .69619 | .00000 | .00000 | .00000 |
| 790 | .00833 | .00303 | .02328 | .13751 | .00000 | .00000 | .05776 | .07513 | .00000 | .00004 | .00000 | .69492 | .00000 | .00000 | .00000 |
| 800 | .00832 | .00226 | .02513 | .13618 | .00000 | .00000 | .05886 | .07536 | .00000 | .00004 | .00000 | .69385 | .00000 | .00000 | .00000 |
| 810 | .00831 | .00164 | .02682 | .13491 | .00000 | .00000 | .05954 | .07576 | .00000 | .00003 | .00000 | .69300 | .00000 | .00000 | .00000 |
| 820 | .00830 | .00117 | .02834 | .13371 | .00000 | .00000 | .05982 | .07629 | .00000 | .00003 | .00000 | .69234 | .00000 | .00000 | .00000 |
| 830 | .00830 | .00082 | .02971 | .13257 | .00000 | .00000 | .05979 | .07693 | .00000 | .00003 | .00000 | .69186 | .00000 | .00000 | .00000 |
| 840 | .00829 | .00056 | .03095 | .13150 | .00000 | .00000 | .05951 | .07764 | .00000 | .00002 | .00000 | .69151 | .00000 | .00000 | .00000 |
| 850 | .00829 | .00039 | .03208 | .13049 | .00000 | .00000 | .05906 | .07841 | .00000 | .00002 | .00000 | .69127 | .00000 | .00000 | .00000 |
| 860 | .00829 | .00027 | .03313 | .12952 | .00000 | .00000 | .05847 | .07920 | .00000 | .00002 | .00000 | .69110 | .00000 | .00000 | .00000 |
| 870 | .00829 | .00018 | .03412 | .12859 | .00000 | .00000 | .05781 | .08001 | .00000 | .00002 | .00000 | .69098 | .00000 | .00000 | .00000 |
| 880 | .00829 | .00013 | .03505 | .12769 | .00000 | .00000 | .05709 | .08083 | .00000 | .00002 | .00000 | .69090 | .00000 | .00000 | .00000 |
| 890 | .00829 | .00009 | .03595 | .12682 | .00000 | .00000 | .05635 | .08164 | .00000 | .00001 | .00000 | .69085 | .00000 | .00000 | .00000 |
| 900 | .00829 | .00006 | .03681 | .12598 | .00000 | .00000 | .05559 | .08245 | .00000 | .00001 | .00000 | .69081 | .00000 | .00000 | .00000 |
| 910 | .00829 | .00004 | .03765 | .12516 | .00000 | .00000 | .05483 | .08325 | .00000 | .00001 | .00000 | .69079 | .00000 | .00000 | .00000 |
| 920 | .00828 | .00003 | .03846 | .12435 | .00000 | .00000 | .05406 | .08403 | .00000 | .00001 | .00000 | .69077 | .00000 | .00000 | .00000 |
| 930 | .00828 | .00002 | .03925 | .12357 | .00000 | .00000 | .05331 | .08481 | .00000 | .00001 | .00000 | .69076 | .00000 | .00000 | .00000 |
| 940 | .00828 | .00001 | .04002 | .12280 | .00000 | .00000 | .05256 | .08556 | .00000 | .00001 | .00000 | .69075 | .00000 | .00000 | .00000 |
| 950 | .00828 | .00001 | .04077 | .12205 | .00000 | .00000 | .05182 | .08631 | .00000 | .00001 | .00000 | .69074 | .00000 | .00000 | .00000 |
| 960 | .00828 | .00001 | .04151 | .12131 | .00000 | .00000 | .05110 | .08704 | .00000 | .00001 | .00000 | .69074 | .00000 | .00000 | .00000 |
| 970 | .00828 | .00001 | .04223 | .12059 | .00000 | .00000 | .05039 | .08776 | .00000 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 980 | .00828 | .00000 | .04294 | .11989 | .00000 | .00000 | .04969 | .08846 | .00000 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 990 | .00828 | .00000 | .04362 | .11920 | .00000 | .00000 | .04901 | .08914 | .00000 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |

TABLE 6.3D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
DRY AIR

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00828 | .00000 | .04430 | .11853 | .00000 | .00000 | .04834 | .08982 | .00000 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1050 | .00828 | .00000 | .04746 | .11537 | .00000 | .00000 | .04519 | .09297 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1100 | .00828 | .00000 | .05028 | .11254 | .00000 | .00000 | .04236 | .09580 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1150 | .00828 | .00000 | .05281 | .11001 | .00000 | .00000 | .03983 | .09833 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1200 | .00828 | .00000 | .05508 | .10775 | .00000 | .00000 | .03757 | .10059 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1250 | .00828 | .00000 | .05711 | .10572 | .00000 | .00000 | .03554 | .10262 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1300 | .00828 | .00000 | .05893 | .10390 | .00000 | .00000 | .03372 | .10444 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1350 | .00828 | .00000 | .06057 | .10226 | .00000 | .00000 | .03208 | .10608 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1400 | .00828 | .00000 | .06204 | .10078 | .00000 | .00000 | .03061 | .10756 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1450 | .00828 | .00000 | .06337 | .09945 | .00000 | .00000 | .02928 | .10889 | .00000 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1500 | .00828 | .00000 | .06458 | .09825 | .00000 | .00000 | .02807 | .11009 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1550 | .00828 | .00000 | .06567 | .09715 | .00001 | .00000 | .02698 | .11118 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1600 | .00828 | .00000 | .06666 | .09616 | .00001 | .00000 | .02598 | .11218 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1650 | .00828 | .00000 | .06757 | .09526 | .00001 | .00000 | .02508 | .11308 | .00000 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1700 | .00828 | .00000 | .06839 | .09443 | .00002 | .00000 | .02425 | .11390 | .00000 | .00000 | .00000 | .69072 | .00000 | .00001 | .00000 |
| 1750 | .00828 | .00000 | .06915 | .09367 | .00004 | .00000 | .02349 | .11465 | .00000 | .00000 | .00000 | .69071 | .00000 | .00001 | .00000 |
| 1800 | .00828 | .00000 | .06984 | .09298 | .00005 | .00000 | .02279 | .11533 | .00000 | .00000 | .00000 | .69070 | .00000 | .00002 | .00000 |
| 1850 | .00828 | .00000 | .07048 | .09234 | .00008 | .00000 | .02215 | .11595 | .00000 | .00000 | .00000 | .69068 | .00000 | .00003 | .00000 |
| 1900 | .00828 | .00000 | .07106 | .09175 | .00012 | .00000 | .02156 | .11651 | .00000 | .00000 | .00001 | .69066 | .00000 | .00005 | .00000 |
| 1950 | .00828 | .00000 | .07161 | .09120 | .00017 | .00000 | .02101 | .11701 | .00000 | .00000 | .00002 | .69063 | .00000 | .00009 | .00000 |
| 2000 | .00828 | .00000 | .07211 | .09068 | .00023 | .00000 | .02050 | .11745 | .00000 | .00000 | .00003 | .69057 | .00000 | .00014 | .00000 |
| 2050 | .00828 | .00000 | .07259 | .09019 | .00032 | .00000 | .02004 | .11782 | .00000 | .00000 | .00005 | .69050 | .00000 | .00021 | .00001 |
| 2100 | .00828 | .00000 | .07305 | .08970 | .00043 | .00000 | .01960 | .11812 | .00000 | .00000 | .00008 | .69039 | .00000 | .00032 | .00001 |
| 2150 | .00828 | .00000 | .07351 | .08921 | .00058 | .00000 | .01921 | .11834 | .00000 | .00000 | .00012 | .69023 | .00001 | .00047 | .00003 |
| 2200 | .00828 | .00000 | .07399 | .08869 | .00077 | .00000 | .01886 | .11846 | .00000 | .00000 | .00019 | .69001 | .00002 | .00069 | .00005 |
| 2250 | .00827 | .00000 | .07451 | .08811 | .00101 | .00000 | .01855 | .11845 | .00000 | .00000 | .00030 | .68969 | .00004 | .00099 | .00010 |
| 2300 | .00827 | .00000 | .07511 | .08742 | .00130 | .00000 | .01829 | .11828 | .00000 | .00000 | .00045 | .68925 | .00007 | .00139 | .00018 |
| 2350 | .00826 | .00000 | .07585 | .08656 | .00167 | .00000 | .01810 | .11791 | .00000 | .00000 | .00066 | .68863 | .00012 | .00191 | .00032 |
| 2400 | .00825 | .00000 | .07679 | .08545 | .00212 | .00000 | .01801 | .11730 | .00000 | .00000 | .00096 | .68777 | .00020 | .00260 | .00054 |
| 2450 | .00824 | .00000 | .07801 | .08400 | .00268 | .00000 | .01803 | .11638 | .00000 | .00000 | .00134 | .68662 | .00033 | .00346 | .00089 |
| 2500 | .00823 | .00000 | .07960 | .08212 | .00337 | .00000 | .01819 | .11508 | .00000 | .00000 | .00184 | .68510 | .00054 | .00452 | .00141 |
| 2550 | .00821 | .00000 | .08161 | .07972 | .00422 | .00000 | .01852 | .11336 | .00000 | .00000 | .00246 | .68314 | .00085 | .00579 | .00212 |
| 2600 | .00818 | .00000 | .08407 | .07677 | .00527 | .00000 | .01904 | .11117 | .00000 | .00000 | .00319 | .68070 | .00128 | .00727 | .00306 |
| 2650 | .00815 | .00000 | .08696 | .07328 | .00655 | .00000 | .01975 | .10847 | .00000 | .00000 | .00404 | .67775 | .00188 | .00896 | .00420 |
| 2700 | .00812 | .00000 | .09023 | .06931 | .00812 | .00000 | .02065 | .10525 | .00000 | .00000 | .00499 | .67429 | .00267 | .01083 | .00554 |
| 2750 | .00808 | .00000 | .09379 | .06494 | .01002 | .00000 | .02171 | .10153 | .00000 | .00000 | .00603 | .67032 | .00370 | .01287 | .00701 |
| 2800 | .00803 | .00000 | .09752 | .06029 | .01231 | .00000 | .02292 | .09731 | .00000 | .00000 | .00713 | .66587 | .00500 | .01503 | .00858 |
| 2850 | .00798 | .00000 | .10130 | .05549 | .01506 | .00000 | .02425 | .09262 | .00000 | .00000 | .00828 | .66097 | .00660 | .01729 | .01017 |
| 2900 | .00792 | .00000 | .10503 | .05064 | .01830 | .00001 | .02564 | .08750 | .00001 | .00000 | .00945 | .65565 | .00855 | .01959 | .01172 |
| 2950 | .00786 | .00000 | .10862 | .04585 | .02209 | .00001 | .02706 | .08201 | .00001 | .00000 | .01063 | .64993 | .01086 | .02189 | .01319 |
| 3000 | .00779 | .00000 | .11196 | .04121 | .02648 | .00001 | .02846 | .07621 | .00001 | .00000 | .01181 | .64385 | .01357 | .02412 | .01453 |

TABLE 6.4D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 210 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 220 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 230 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 240 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 250 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 260 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 270 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 280 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 290 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 298 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 300 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 310 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 320 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 330 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 340 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00001 | .09629 | .00001 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 350 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00001 | .09629 | .00001 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 360 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00001 | .09629 | .00001 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 370 | .00869 | .02428 | .00000 | .14646 | .00000 | .00000 | .00002 | .09628 | .00001 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 380 | .00869 | .02428 | .00000 | .14646 | .00000 | .00000 | .00002 | .09628 | .00001 | .00000 | .72426 | .00000 | .00000 | .00000 |
| 390 | .00869 | .02427 | .00000 | .14646 | .00000 | .00000 | .00004 | .09627 | .00002 | .00000 | .72426 | .00000 | .00000 | .00000 |
| 400 | .00869 | .02427 | .00000 | .14646 | .00000 | .00000 | .00005 | .09626 | .00002 | .00000 | .72425 | .00000 | .00000 | .00000 |
| 410 | .00869 | .02426 | .00000 | .14647 | .00000 | .00000 | .00007 | .09625 | .00002 | .00000 | .72425 | .00000 | .00000 | .00000 |
| 420 | .00869 | .02426 | .00000 | .14647 | .00000 | .00000 | .00009 | .09623 | .00002 | .00000 | .72424 | .00000 | .00000 | .00000 |
| 430 | .00869 | .02425 | .00000 | .14648 | .00000 | .00000 | .00012 | .09622 | .00002 | .00000 | .72423 | .00000 | .00000 | .00000 |
| 440 | .00869 | .02424 | .00000 | .14649 | .00000 | .00000 | .00016 | .09619 | .00003 | .00000 | .72421 | .00000 | .00000 | .00000 |
| 450 | .00869 | .02422 | .00000 | .14650 | .00000 | .00000 | .00020 | .09617 | .00003 | .00000 | .72420 | .00000 | .00000 | .00000 |
| 460 | .00869 | .02421 | .00000 | .14651 | .00000 | .00000 | .00026 | .09613 | .00003 | .00000 | .72417 | .00000 | .00000 | .00000 |
| 470 | .00869 | .02419 | .00000 | .14652 | .00000 | .00000 | .00033 | .09609 | .00004 | .00000 | .72415 | .00000 | .00000 | .00000 |
| 480 | .00868 | .02416 | .00000 | .14654 | .00000 | .00000 | .00042 | .09604 | .00004 | .00000 | .72411 | .00000 | .00000 | .00000 |
| 490 | .00868 | .02413 | .00000 | .14655 | .00000 | .00000 | .00052 | .09599 | .00004 | .00000 | .72407 | .00000 | .00000 | .00000 |
| 500 | .00868 | .02410 | .00001 | .14658 | .00000 | .00000 | .00065 | .09592 | .00004 | .00000 | .72403 | .00000 | .00000 | .00000 |
| 510 | .00868 | .02406 | .00001 | .14660 | .00000 | .00000 | .00079 | .09583 | .00005 | .00000 | .72397 | .00000 | .00000 | .00000 |
| 520 | .00868 | .02401 | .00002 | .14663 | .00000 | .00000 | .00097 | .09574 | .00005 | .00000 | .72391 | .00000 | .00000 | .00000 |
| 530 | .00868 | .02396 | .00002 | .14666 | .00000 | .00000 | .00117 | .09563 | .00005 | .00000 | .72383 | .00000 | .00000 | .00000 |
| 540 | .00868 | .02389 | .00003 | .14669 | .00000 | .00000 | .00140 | .09550 | .00006 | .00000 | .72374 | .00000 | .00000 | .00000 |
| 550 | .00868 | .02381 | .00004 | .14673 | .00000 | .00000 | .00168 | .09535 | .00006 | .00000 | .72364 | .00000 | .00000 | .00000 |
| 560 | .00868 | .02373 | .00006 | .14678 | .00000 | .00000 | .00199 | .09519 | .00007 | .00000 | .72351 | .00000 | .00000 | .00000 |
| 570 | .00868 | .02362 | .00008 | .14682 | .00000 | .00000 | .00235 | .09500 | .00007 | .00000 | .72338 | .00000 | .00000 | .00000 |
| 580 | .00867 | .02351 | .00011 | .14687 | .00000 | .00000 | .00275 | .09479 | .00007 | .00000 | .72322 | .00000 | .00000 | .00000 |
| 590 | .00867 | .02338 | .00015 | .14692 | .00000 | .00000 | .00321 | .09455 | .00008 | .00000 | .72303 | .00000 | .00000 | .00000 |

TABLE 6.4D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00867 | .02323 | .00020 | .14697 | .00000 | .00000 | .00373 | .09429 | .00008 | .00000 | .72283 | .00000 | .00000 | .00000 |
| 610 | .00867 | .02306 | .00027 | .14702 | .00000 | .00000 | .00430 | .09400 | .00009 | .00000 | .72260 | .00000 | .00000 | .00000 |
| 620 | .00866 | .02287 | .00035 | .14707 | .00000 | .00000 | .00494 | .09368 | .00009 | .00000 | .72233 | .00000 | .00000 | .00000 |
| 630 | .00866 | .02265 | .00045 | .14711 | .00000 | .00000 | .00565 | .09334 | .00009 | .00000 | .72204 | .00000 | .00000 | .00000 |
| 640 | .00866 | .02241 | .00058 | .14715 | .00000 | .00000 | .00644 | .09296 | .00010 | .00000 | .72170 | .00000 | .00000 | .00000 |
| 650 | .00865 | .02214 | .00074 | .14717 | .00000 | .00000 | .00730 | .09256 | .00010 | .00000 | .72133 | .00000 | .00000 | .00000 |
| 660 | .00865 | .02184 | .00094 | .14718 | .00000 | .00000 | .00824 | .09213 | .00010 | .00000 | .72092 | .00000 | .00000 | .00000 |
| 670 | .00864 | .02151 | .00118 | .14716 | .00000 | .00000 | .00926 | .09167 | .00011 | .00000 | .72046 | .00000 | .00000 | .00000 |
| 680 | .00864 | .02114 | .00146 | .14712 | .00000 | .00000 | .01037 | .09119 | .00011 | .00000 | .71996 | .00000 | .00000 | .00000 |
| 690 | .00863 | .02074 | .00181 | .14705 | .00000 | .00000 | .01157 | .09069 | .00011 | .00000 | .71940 | .00000 | .00000 | .00000 |
| 700 | .00862 | .02029 | .00222 | .14694 | .00000 | .00000 | .01286 | .09017 | .00012 | .00000 | .71878 | .00000 | .00000 | .00000 |
| 710 | .00861 | .01980 | .00271 | .14679 | .00000 | .00000 | .01424 | .08963 | .00012 | .00000 | .71810 | .00000 | .00000 | .00000 |
| 720 | .00860 | .01927 | .00328 | .14658 | .00000 | .00000 | .01571 | .08908 | .00012 | .00000 | .71736 | .00000 | .00000 | .00000 |
| 730 | .00859 | .01868 | .00394 | .14631 | .00000 | .00000 | .01727 | .08853 | .00013 | .00000 | .71656 | .00000 | .00000 | .00000 |
| 740 | .00858 | .01805 | .00471 | .14596 | .00000 | .00000 | .01891 | .08797 | .00013 | .00000 | .71568 | .00000 | .00000 | .00000 |
| 750 | .00857 | .01736 | .00560 | .14554 | .00000 | .00000 | .02065 | .08742 | .00013 | .00000 | .71473 | .00000 | .00000 | .00000 |
| 760 | .00856 | .01662 | .00661 | .14503 | .00000 | .00000 | .02246 | .08688 | .00013 | .00000 | .71371 | .00000 | .00000 | .00000 |
| 770 | .00855 | .01582 | .00775 | .14443 | .00000 | .00000 | .02435 | .08636 | .00013 | .00000 | .71261 | .00000 | .00000 | .00000 |
| 780 | .00853 | .01498 | .00902 | .14373 | .00000 | .00000 | .02631 | .08586 | .00013 | .00000 | .71144 | .00000 | .00000 | .00000 |
| 790 | .00852 | .01408 | .01044 | .14292 | .00000 | .00000 | .02832 | .08539 | .00013 | .00000 | .71020 | .00000 | .00000 | .00000 |
| 800 | .00850 | .01313 | .01199 | .14200 | .00000 | .00000 | .03038 | .08497 | .00014 | .00000 | .70889 | .00000 | .00000 | .00000 |
| 810 | .00849 | .01214 | .01368 | .14098 | .00000 | .00000 | .03246 | .08459 | .00013 | .00000 | .70752 | .00000 | .00000 | .00000 |
| 820 | .00847 | .01112 | .01550 | .13985 | .00000 | .00000 | .03455 | .08427 | .00013 | .00000 | .70611 | .00000 | .00000 | .00000 |
| 830 | .00845 | .01007 | .01743 | .13863 | .00000 | .00000 | .03663 | .08400 | .00013 | .00000 | .70466 | .00000 | .00000 | .00000 |
| 840 | .00843 | .00901 | .01945 | .13733 | .00000 | .00000 | .03866 | .08380 | .00013 | .00000 | .70319 | .00000 | .00000 | .00000 |
| 850 | .00842 | .00795 | .02154 | .13595 | .00000 | .00000 | .04061 | .08368 | .00013 | .00000 | .70173 | .00000 | .00000 | .00000 |
| 860 | .00840 | .00691 | .02366 | .13453 | .00000 | .00000 | .04246 | .08363 | .00013 | .00000 | .70029 | .00000 | .00000 | .00000 |
| 870 | .00838 | .00591 | .02579 | .13307 | .00000 | .00000 | .04415 | .08366 | .00012 | .00000 | .69891 | .00000 | .00000 | .00000 |
| 880 | .00837 | .00496 | .02788 | .13162 | .00000 | .00000 | .04567 | .08378 | .00012 | .00000 | .69760 | .00000 | .00000 | .00000 |
| 890 | .00835 | .00409 | .02990 | .13018 | .00000 | .00000 | .04697 | .08398 | .00011 | .00000 | .69640 | .00000 | .00000 | .00000 |
| 900 | .00834 | .00331 | .03182 | .12879 | .00000 | .00000 | .04804 | .08427 | .00011 | .00000 | .69533 | .00000 | .00000 | .00000 |
| 910 | .00833 | .00264 | .03360 | .12746 | .00000 | .00000 | .04885 | .08463 | .00010 | .00000 | .69439 | .00000 | .00000 | .00000 |
| 920 | .00832 | .00206 | .03524 | .12621 | .00000 | .00000 | .04941 | .08507 | .00010 | .00000 | .69359 | .00000 | .00000 | .00000 |
| 930 | .00831 | .00159 | .03673 | .12504 | .00000 | .00000 | .04974 | .08557 | .00009 | .00000 | .69294 | .00000 | .00000 | .00000 |
| 940 | .00830 | .00121 | .03807 | .12396 | .00000 | .00000 | .04985 | .08611 | .00008 | .00000 | .69241 | .00000 | .00000 | .00000 |
| 950 | .00830 | .00091 | .03928 | .12295 | .00000 | .00000 | .04979 | .08670 | .00008 | .00000 | .69200 | .00000 | .00000 | .00000 |
| 960 | .00830 | .00068 | .04037 | .12201 | .00000 | .00000 | .04957 | .08732 | .00007 | .00000 | .69168 | .00000 | .00000 | .00000 |
| 970 | .00829 | .00051 | .04137 | .12113 | .00000 | .00000 | .04925 | .08795 | .00007 | .00000 | .69144 | .00000 | .00000 | .00000 |
| 980 | .00829 | .00038 | .04228 | .12030 | .00000 | .00000 | .04884 | .08859 | .00006 | .00000 | .69126 | .00000 | .00000 | .00000 |
| 990 | .00829 | .00028 | .04313 | .11952 | .00000 | .00000 | .04837 | .08923 | .00006 | .00000 | .69113 | .00000 | .00000 | .00000 |

TABLE 6.4D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00829 | .00021 | .04392 | .11877 | .00000 | .00000 | .04786 | .08987 | .00005 | .00000 | .69103 | .00000 | .00000 | .00000 |
| 1050 | .00829 | .00005 | .04735 | .11545 | .00000 | .00000 | .04506 | .09297 | .00003 | .00000 | .69080 | .00000 | .00000 | .00000 |
| 1100 | .00828 | .00001 | .05025 | .11257 | .00000 | .00000 | .04232 | .09579 | .00002 | .00000 | .69075 | .00000 | .00000 | .00000 |
| 1150 | .00828 | .00000 | .05280 | .11003 | .00000 | .00000 | .03981 | .09832 | .00002 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1200 | .00828 | .00000 | .05507 | .10776 | .00000 | .00000 | .03756 | .10059 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1250 | .00828 | .00000 | .05710 | .10572 | .00000 | .00000 | .03553 | .10262 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1300 | .00828 | .00000 | .05893 | .10390 | .00000 | .00000 | .03371 | .10444 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1350 | .00828 | .00000 | .06056 | .10226 | .00000 | .00000 | .03208 | .10608 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1400 | .00828 | .00000 | .06204 | .10079 | .00000 | .00000 | .03060 | .10755 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1450 | .00828 | .00000 | .06337 | .09945 | .00000 | .00000 | .02927 | .10889 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1500 | .00828 | .00000 | .06458 | .09825 | .00000 | .00000 | .02807 | .11009 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1550 | .00828 | .00000 | .06567 | .09716 | .00000 | .00000 | .02698 | .11118 | .00000 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1600 | .00828 | .00000 | .06666 | .09616 | .00000 | .00000 | .02598 | .11218 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1650 | .00828 | .00000 | .06757 | .09526 | .00000 | .00000 | .02508 | .11308 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1700 | .00828 | .00000 | .06840 | .09443 | .00001 | .00000 | .02425 | .11391 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1750 | .00828 | .00000 | .06915 | .09367 | .00001 | .00000 | .02349 | .11466 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1800 | .00828 | .00000 | .06985 | .09298 | .00002 | .00000 | .02280 | .11535 | .00000 | .00000 | .69072 | .00000 | .00001 | .00000 |
| 1850 | .00828 | .00000 | .07048 | .09234 | .00003 | .00000 | .02216 | .11598 | .00000 | .00000 | .69071 | .00000 | .00001 | .00000 |
| 1900 | .00828 | .00000 | .07107 | .09175 | .00004 | .00000 | .02157 | .11656 | .00000 | .00000 | .69071 | .00000 | .00002 | .00000 |
| 1950 | .00828 | .00000 | .07161 | .09121 | .00005 | .00000 | .02102 | .11709 | .00000 | .00000 | .69069 | .00000 | .00003 | .00000 |
| 2000 | .00828 | .00000 | .07212 | .09070 | .00007 | .00000 | .02052 | .11757 | .00000 | .00001 | .69068 | .00000 | .00004 | .00000 |
| 2050 | .00828 | .00000 | .07258 | .09023 | .00010 | .00000 | .02006 | .11801 | .00000 | .00001 | .69066 | .00000 | .00007 | .00000 |
| 2100 | .00828 | .00000 | .07302 | .08978 | .00014 | .00000 | .01962 | .11840 | .00000 | .00002 | .69062 | .00000 | .00010 | .00000 |
| 2150 | .00828 | .00000 | .07344 | .08936 | .00018 | .00000 | .01922 | .11875 | .00000 | .00004 | .69058 | .00000 | .00015 | .00000 |
| 2200 | .00828 | .00000 | .07383 | .08895 | .00024 | .00000 | .01885 | .11904 | .00000 | .00006 | .69051 | .00000 | .00022 | .00001 |
| 2250 | .00828 | .00000 | .07422 | .08855 | .00032 | .00000 | .01851 | .11928 | .00000 | .00010 | .69042 | .00000 | .00031 | .00001 |
| 2300 | .00828 | .00000 | .07461 | .08814 | .00041 | .00000 | .01820 | .11946 | .00000 | .00014 | .69029 | .00001 | .00044 | .00002 |
| 2350 | .00828 | .00000 | .07500 | .08771 | .00052 | .00000 | .01792 | .11957 | .00000 | .00022 | .69012 | .00001 | .00062 | .00003 |
| 2400 | .00828 | .00000 | .07543 | .08723 | .00066 | .00000 | .01767 | .11960 | .00000 | .00031 | .68988 | .00002 | .00084 | .00006 |
| 2450 | .00827 | .00000 | .07591 | .08670 | .00083 | .00000 | .01746 | .11953 | .00000 | .00045 | .68957 | .00004 | .00114 | .00010 |
| 2500 | .00827 | .00000 | .07646 | .08607 | .00104 | .00000 | .01729 | .11934 | .00000 | .00064 | .68915 | .00006 | .00152 | .00017 |
| 2550 | .00826 | .00000 | .07713 | .08530 | .00129 | .00000 | .01718 | .11901 | .00000 | .00088 | .68859 | .00010 | .00199 | .00027 |
| 2600 | .00826 | .00000 | .07794 | .08436 | .00158 | .00000 | .01713 | .11850 | .00000 | .00120 | .68787 | .00015 | .00258 | .00043 |
| 2650 | .00825 | .00000 | .07894 | .08318 | .00193 | .00000 | .01715 | .11780 | .00000 | .00161 | .68694 | .00023 | .00330 | .00066 |
| 2700 | .00824 | .00000 | .08018 | .08173 | .00235 | .00000 | .01727 | .11686 | .00000 | .00211 | .68577 | .00035 | .00416 | .00097 |
| 2750 | .00822 | .00000 | .08169 | .07995 | .00284 | .00000 | .01750 | .11565 | .00000 | .00272 | .68433 | .00052 | .00516 | .00140 |
| 2800 | .00821 | .00000 | .08349 | .07782 | .00344 | .00000 | .01784 | .11416 | .00000 | .00344 | .68258 | .00075 | .00632 | .00195 |
| 2850 | .00819 | .00000 | .08559 | .07533 | .00414 | .00000 | .01831 | .11235 | .00000 | .00427 | .68051 | .00106 | .00763 | .00262 |
| 2900 | .00816 | .00000 | .08798 | .07249 | .00497 | .00000 | .01890 | .11023 | .00000 | .00519 | .67810 | .00146 | .00909 | .00342 |
| 2950 | .00814 | .00000 | .09061 | .06933 | .00595 | .00001 | .01962 | .10778 | .00000 | .00621 | .67537 | .00197 | .01068 | .00433 |
| 3000 | .00811 | .00000 | .09345 | .06590 | .00710 | .00001 | .02046 | .10500 | .00000 | .00731 | .67233 | .00260 | .01240 | .00533 |

TABLE 6.5D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 210 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 220 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 230 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 240 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 250 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 260 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 270 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 280 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 290 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09630 | .00000 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 298 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 300 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 310 | .00869 | .02429 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 320 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72428 | .00000 | .00000 | .00000 |
| 330 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 340 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 350 | .00869 | .02428 | .00000 | .14645 | .00000 | .00000 | .00000 | .09629 | .00001 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 360 | .00869 | .02428 | .00000 | .14646 | .00000 | .00000 | .00001 | .09629 | .00002 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 370 | .00869 | .02428 | .00000 | .14646 | .00000 | .00000 | .00001 | .09628 | .00002 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 380 | .00869 | .02428 | .00000 | .14646 | .00000 | .00000 | .00001 | .09628 | .00002 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 390 | .00869 | .02428 | .00000 | .14646 | .00000 | .00000 | .00002 | .09627 | .00002 | .00000 | .72427 | .00000 | .00000 | .00000 |
| 400 | .00869 | .02427 | .00000 | .14646 | .00000 | .00000 | .00002 | .09627 | .00003 | .00000 | .72426 | .00000 | .00000 | .00000 |
| 410 | .00869 | .02427 | .00000 | .14647 | .00000 | .00000 | .00003 | .09626 | .00003 | .00000 | .72426 | .00000 | .00000 | .00000 |
| 420 | .00869 | .02427 | .00000 | .14647 | .00000 | .00000 | .00004 | .09625 | .00003 | .00000 | .72425 | .00000 | .00000 | .00000 |
| 430 | .00869 | .02426 | .00000 | .14647 | .00000 | .00000 | .00005 | .09624 | .00004 | .00000 | .72425 | .00000 | .00000 | .00000 |
| 440 | .00869 | .02425 | .00000 | .14648 | .00000 | .00000 | .00007 | .09623 | .00004 | .00000 | .72424 | .00000 | .00000 | .00000 |
| 450 | .00869 | .02425 | .00000 | .14648 | .00000 | .00000 | .00009 | .09622 | .00004 | .00000 | .72423 | .00000 | .00000 | .00000 |
| 460 | .00869 | .02424 | .00000 | .14649 | .00000 | .00000 | .00012 | .09620 | .00005 | .00000 | .72422 | .00000 | .00000 | .00000 |
| 470 | .00869 | .02423 | .00000 | .14650 | .00000 | .00000 | .00015 | .09618 | .00005 | .00000 | .72421 | .00000 | .00000 | .00000 |
| 480 | .00869 | .02422 | .00000 | .14650 | .00000 | .00000 | .00019 | .09616 | .00006 | .00000 | .72419 | .00000 | .00000 | .00000 |
| 490 | .00869 | .02420 | .00000 | .14651 | .00000 | .00000 | .00023 | .09613 | .00006 | .00000 | .72417 | .00000 | .00000 | .00000 |
| 500 | .00869 | .02419 | .00000 | .14652 | .00000 | .00000 | .00029 | .09609 | .00007 | .00000 | .72415 | .00000 | .00000 | .00000 |
| 510 | .00869 | .02417 | .00000 | .14654 | .00000 | .00000 | .00036 | .09605 | .00007 | .00000 | .72412 | .00000 | .00000 | .00000 |
| 520 | .00868 | .02414 | .00001 | .14655 | .00000 | .00000 | .00043 | .09601 | .00008 | .00000 | .72409 | .00000 | .00000 | .00000 |
| 530 | .00868 | .02412 | .00001 | .14657 | .00000 | .00000 | .00052 | .09596 | .00008 | .00000 | .72406 | .00000 | .00000 | .00000 |
| 540 | .00868 | .02409 | .00001 | .14658 | .00000 | .00000 | .00063 | .09590 | .00009 | .00000 | .72402 | .00000 | .00000 | .00000 |
| 550 | .00868 | .02405 | .00002 | .14660 | .00000 | .00000 | .00075 | .09583 | .00009 | .00000 | .72397 | .00000 | .00000 | .00000 |
| 560 | .00868 | .02401 | .00003 | .14663 | .00000 | .00000 | .00090 | .09575 | .00010 | .00000 | .72391 | .00000 | .00000 | .00000 |
| 570 | .00868 | .02396 | .00004 | .14665 | .00000 | .00000 | .00106 | .09566 | .00011 | .00000 | .72385 | .00000 | .00000 | .00000 |
| 580 | .00868 | .02391 | .00005 | .14667 | .00000 | .00000 | .00124 | .09556 | .00011 | .00000 | .72377 | .00000 | .00000 | .00000 |
| 590 | .00868 | .02385 | .00007 | .14670 | .00000 | .00000 | .00145 | .09545 | .00012 | .00000 | .72369 | .00000 | .00000 | .00000 |

TABLE 6.5D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00868 | .02378 | .00009 | .14672 | .00000 | .00000 | .00169 | .09533 | .00012 | .00000 | .72360 | .00000 | .00000 | .00000 |
| 610 | .00868 | .02370 | .00012 | .14675 | .00000 | .00000 | .00195 | .09519 | .00013 | .00000 | .72349 | .00000 | .00000 | .00000 |
| 620 | .00868 | .02361 | .00016 | .14677 | .00000 | .00000 | .00225 | .09504 | .00014 | .00000 | .72336 | .00000 | .00000 | .00000 |
| 630 | .00867 | .02351 | .00020 | .14680 | .00000 | .00000 | .00257 | .09488 | .00014 | .00000 | .72323 | .00000 | .00000 | .00000 |
| 640 | .00867 | .02339 | .00026 | .14681 | .00000 | .00000 | .00294 | .09470 | .00015 | .00000 | .72307 | .00000 | .00000 | .00000 |
| 650 | .00867 | .02327 | .00033 | .14683 | .00000 | .00000 | .00334 | .09450 | .00016 | .00000 | .72290 | .00000 | .00000 | .00000 |
| 660 | .00867 | .02313 | .00042 | .14684 | .00000 | .00000 | .00378 | .09430 | .00016 | .00000 | .72270 | .00000 | .00000 | .00000 |
| 670 | .00867 | .02297 | .00053 | .14684 | .00000 | .00000 | .00427 | .09407 | .00017 | .00000 | .72249 | .00000 | .00000 | .00000 |
| 680 | .00866 | .02279 | .00066 | .14683 | .00000 | .00000 | .00480 | .09384 | .00017 | .00000 | .72225 | .00000 | .00000 | .00000 |
| 690 | .00866 | .02260 | .00081 | .14680 | .00000 | .00000 | .00537 | .09359 | .00018 | .00000 | .72198 | .00000 | .00000 | .00000 |
| 700 | .00866 | .02238 | .00100 | .14676 | .00000 | .00000 | .00600 | .09333 | .00019 | .00000 | .72168 | .00000 | .00000 | .00000 |
| 710 | .00865 | .02215 | .00122 | .14670 | .00000 | .00000 | .00667 | .09305 | .00019 | .00000 | .72136 | .00000 | .00000 | .00000 |
| 720 | .00865 | .02189 | .00148 | .14662 | .00000 | .00000 | .00740 | .09277 | .00020 | .00000 | .72100 | .00000 | .00000 | .00000 |
| 730 | .00864 | .02160 | .00179 | .14650 | .00000 | .00000 | .00818 | .09247 | .00021 | .00000 | .72060 | .00000 | .00000 | .00000 |
| 740 | .00864 | .02128 | .00215 | .14636 | .00000 | .00000 | .00902 | .09218 | .00021 | .00000 | .72017 | .00000 | .00000 | .00000 |
| 750 | .00863 | .02094 | .00257 | .14618 | .00000 | .00000 | .00991 | .09187 | .00022 | .00000 | .71969 | .00000 | .00000 | .00000 |
| 760 | .00863 | .02056 | .00305 | .14595 | .00000 | .00000 | .01086 | .09156 | .00022 | .00000 | .71917 | .00000 | .00000 | .00000 |
| 770 | .00862 | .02015 | .00360 | .14567 | .00000 | .00000 | .01187 | .09126 | .00023 | .00000 | .71860 | .00000 | .00000 | .00000 |
| 780 | .00861 | .01970 | .00423 | .14534 | .00000 | .00000 | .01293 | .09095 | .00023 | .00000 | .71799 | .00000 | .00000 | .00000 |
| 790 | .00860 | .01922 | .00495 | .14496 | .00000 | .00000 | .01406 | .09066 | .00024 | .00000 | .71732 | .00000 | .00000 | .00000 |
| 800 | .00860 | .01870 | .00576 | .14450 | .00000 | .00000 | .01524 | .09037 | .00024 | .00000 | .71660 | .00000 | .00000 | .00000 |
| 810 | .00859 | .01813 | .00666 | .14398 | .00000 | .00000 | .01648 | .09010 | .00025 | .00000 | .71582 | .00000 | .00000 | .00000 |
| 820 | .00858 | .01753 | .00766 | .14338 | .00000 | .00000 | .01777 | .08984 | .00025 | .00000 | .71499 | .00000 | .00000 | .00000 |
| 830 | .00857 | .01688 | .00878 | .14271 | .00000 | .00000 | .01911 | .08960 | .00025 | .00000 | .71410 | .00000 | .00000 | .00000 |
| 840 | .00855 | .01620 | .01000 | .14195 | .00000 | .00000 | .02051 | .08939 | .00026 | .00000 | .71315 | .00000 | .00000 | .00000 |
| 850 | .00854 | .01547 | .01133 | .14111 | .00000 | .00000 | .02194 | .08920 | .00026 | .00000 | .71215 | .00000 | .00000 | .00000 |
| 860 | .00853 | .01470 | .01278 | .14018 | .00000 | .00000 | .02342 | .08904 | .00026 | .00000 | .71109 | .00000 | .00000 | .00000 |
| 870 | .00852 | .01390 | .01433 | .13917 | .00000 | .00000 | .02493 | .08892 | .00026 | .00000 | .70998 | .00000 | .00000 | .00000 |
| 880 | .00850 | .01306 | .01599 | .13807 | .00000 | .00000 | .02647 | .08882 | .00026 | .00000 | .70882 | .00000 | .00000 | .00000 |
| 890 | .00849 | .01219 | .01774 | .13690 | .00000 | .00000 | .02802 | .08877 | .00026 | .00000 | .70762 | .00000 | .00000 | .00000 |
| 900 | .00847 | .01130 | .01959 | .13566 | .00000 | .00000 | .02957 | .08875 | .00026 | .00000 | .70639 | .00000 | .00000 | .00000 |
| 910 | .00846 | .01040 | .02151 | .13435 | .00000 | .00000 | .03112 | .08877 | .00026 | .00000 | .70514 | .00000 | .00000 | .00000 |
| 920 | .00844 | .00948 | .02349 | .13299 | .00000 | .00000 | .03264 | .08883 | .00026 | .00000 | .70387 | .00000 | .00000 | .00000 |
| 930 | .00843 | .00856 | .02551 | .13159 | .00000 | .00000 | .03412 | .08894 | .00026 | .00000 | .70260 | .00000 | .00000 | .00000 |
| 940 | .00841 | .00766 | .02755 | .13016 | .00000 | .00000 | .03554 | .08908 | .00025 | .00000 | .70135 | .00000 | .00000 | .00000 |
| 950 | .00840 | .00677 | .02959 | .12871 | .00000 | .00000 | .03688 | .08927 | .00025 | .00000 | .70013 | .00000 | .00000 | .00000 |
| 960 | .00838 | .00592 | .03160 | .12728 | .00000 | .00000 | .03812 | .08950 | .00024 | .00000 | .69895 | .00000 | .00000 | .00000 |
| 970 | .00837 | .00511 | .03356 | .12586 | .00000 | .00000 | .03925 | .08978 | .00024 | .00000 | .69784 | .00000 | .00000 | .00000 |
| 980 | .00836 | .00436 | .03545 | .12448 | .00000 | .00000 | .04024 | .09009 | .00023 | .00000 | .69680 | .00000 | .00000 | .00000 |
| 990 | .00835 | .00367 | .03724 | .12314 | .00000 | .00000 | .04109 | .09045 | .00022 | .00000 | .69584 | .00000 | .00000 | .00000 |

TABLE 6.5D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00834 | .00306 | .03893 | .12188 | .00000 | .00000 | .04177 | .09084 | .00021 | .00000 | .69499 | .00000 | .00000 | .00000 |
| 1050 | .00830 | .00104 | .04551 | .11665 | .00000 | .00000 | .04296 | .09320 | .00016 | .00000 | .69219 | .00000 | .00000 | .00000 |
| 1100 | .00829 | .00031 | .04965 | .11299 | .00000 | .00000 | .04167 | .09581 | .00011 | .00000 | .69117 | .00000 | .00000 | .00000 |
| 1150 | .00829 | .00009 | .05259 | .11019 | .00000 | .00000 | .03959 | .09830 | .00008 | .00000 | .69087 | .00000 | .00000 | .00000 |
| 1200 | .00829 | .00003 | .05499 | .10783 | .00000 | .00000 | .03747 | .10056 | .00006 | .00000 | .69078 | .00000 | .00000 | .00000 |
| 1250 | .00828 | .00001 | .05706 | .10577 | .00000 | .00000 | .03549 | .10260 | .00004 | .00000 | .69075 | .00000 | .00000 | .00000 |
| 1300 | .00828 | .00000 | .05890 | .10393 | .00000 | .00000 | .03369 | .10442 | .00003 | .00000 | .69074 | .00000 | .00000 | .00000 |
| 1350 | .00828 | .00000 | .06055 | .10228 | .00000 | .00000 | .03206 | .10607 | .00002 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1400 | .00828 | .00000 | .06203 | .10080 | .00000 | .00000 | .03059 | .10754 | .00002 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1450 | .00828 | .00000 | .06336 | .09947 | .00000 | .00000 | .02926 | .10888 | .00002 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1500 | .00828 | .00000 | .06457 | .09826 | .00000 | .00000 | .02806 | .11008 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1550 | .00828 | .00000 | .06567 | .09716 | .00000 | .00000 | .02697 | .11118 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1600 | .00828 | .00000 | .06666 | .09617 | .00000 | .00000 | .02598 | .11217 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1650 | .00828 | .00000 | .06757 | .09526 | .00000 | .00000 | .02507 | .11308 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1700 | .00828 | .00000 | .06839 | .09443 | .00000 | .00000 | .02425 | .11391 | .00001 | .00000 | .69073 | .00000 | .00000 | .00000 |
| 1750 | .00828 | .00000 | .06915 | .09368 | .00001 | .00000 | .02349 | .11466 | .00001 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1800 | .00828 | .00000 | .06985 | .09298 | .00001 | .00000 | .02280 | .11536 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1850 | .00828 | .00000 | .07048 | .09234 | .00001 | .00000 | .02216 | .11599 | .00000 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 1900 | .00828 | .00000 | .07107 | .09175 | .00002 | .00000 | .02157 | .11657 | .00000 | .00000 | .69072 | .00000 | .00001 | .00000 |
| 1950 | .00828 | .00000 | .07161 | .09121 | .00002 | .00000 | .02103 | .11711 | .00000 | .00000 | .69071 | .00000 | .00001 | .00000 |
| 2000 | .00828 | .00000 | .07212 | .09071 | .00003 | .00000 | .02053 | .11760 | .00000 | .00000 | .69071 | .00000 | .00002 | .00000 |
| 2050 | .00828 | .00000 | .07258 | .09024 | .00005 | .00000 | .02006 | .11806 | .00000 | .00001 | .69069 | .00000 | .00003 | .00000 |
| 2100 | .00828 | .00000 | .07302 | .08980 | .00006 | .00000 | .01963 | .11847 | .00000 | .00001 | .69068 | .00000 | .00005 | .00000 |
| 2150 | .00828 | .00000 | .07342 | .08939 | .00008 | .00000 | .01923 | .11884 | .00000 | .00002 | .69066 | .00000 | .00007 | .00000 |
| 2200 | .00828 | .00000 | .07380 | .08900 | .00011 | .00000 | .01886 | .11918 | .00000 | .00003 | .69063 | .00000 | .00010 | .00000 |
| 2250 | .00828 | .00000 | .07417 | .08863 | .00014 | .00000 | .01851 | .11948 | .00000 | .00004 | .69059 | .00000 | .00014 | .00000 |
| 2300 | .00828 | .00000 | .07452 | .08827 | .00018 | .00000 | .01819 | .11974 | .00000 | .00006 | .69054 | .00000 | .00020 | .00000 |
| 2350 | .00828 | .00000 | .07486 | .08792 | .00023 | .00000 | .01790 | .11996 | .00000 | .00010 | .69046 | .00000 | .00028 | .00001 |
| 2400 | .00828 | .00000 | .07519 | .08756 | .00030 | .00000 | .01763 | .12014 | .00000 | .00014 | .69036 | .00000 | .00038 | .00001 |
| 2450 | .00828 | .00000 | .07554 | .08719 | .00037 | .00000 | .01738 | .12026 | .00000 | .00020 | .69023 | .00001 | .00051 | .00002 |
| 2500 | .00828 | .00000 | .07590 | .08680 | .00046 | .00000 | .01716 | .12032 | .00000 | .00029 | .69005 | .00001 | .00069 | .00003 |
| 2550 | .00828 | .00000 | .07630 | .08637 | .00057 | .00000 | .01697 | .12032 | .00000 | .00040 | .68982 | .00002 | .00091 | .00006 |
| 2600 | .00827 | .00000 | .07673 | .08587 | .00070 | .00000 | .01681 | .12023 | .00000 | .00056 | .68952 | .00003 | .00118 | .00009 |
| 2650 | .00827 | .00000 | .07724 | .08530 | .00085 | .00000 | .01668 | .12005 | .00000 | .00076 | .68913 | .00005 | .00153 | .00014 |
| 2700 | .00827 | .00000 | .07783 | .08462 | .00103 | .00000 | .01660 | .11976 | .00000 | .00101 | .68864 | .00008 | .00194 | .00022 |
| 2750 | .00826 | .00000 | .07854 | .08381 | .00124 | .00000 | .01656 | .11935 | .00000 | .00133 | .68802 | .00011 | .00245 | .00033 |
| 2800 | .00825 | .00000 | .07938 | .08283 | .00148 | .00000 | .01658 | .11879 | .00000 | .00173 | .68724 | .00017 | .00305 | .00049 |
| 2850 | .00824 | .00000 | .08039 | .08165 | .00177 | .00000 | .01667 | .11807 | .00000 | .00221 | .68629 | .00024 | .00376 | .00070 |
| 2900 | .00823 | .00000 | .08159 | .08025 | .00210 | .00000 | .01683 | .11716 | .00000 | .00279 | .68515 | .00035 | .00458 | .00098 |
| 2950 | .00822 | .00000 | .08300 | .07859 | .00248 | .00000 | .01707 | .11605 | .00000 | .00346 | .68378 | .00049 | .00551 | .00133 |
| 3000 | .00821 | .00000 | .08464 | .07668 | .00293 | .00001 | .01740 | .11473 | .00000 | .00423 | .68219 | .00067 | .00657 | .00176 |

TABLE 6.1E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13803 | .00013 | .00000 | .69073 |
| 220 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13603 | .00213 | .00000 | .69073 |
| 240 | .00828 | .04631 | .00001 | .00000 | .11651 | .00000 | .11569 | .02246 | .00000 | .69074 |
| 260 | .00829 | .04536 | .00051 | .00000 | .11713 | .00000 | .00000 | .13729 | .00000 | .69143 |
| 280 | .00830 | .04473 | .00084 | .00000 | .11754 | .00000 | .00000 | .13672 | .00000 | .69188 |
| 298 | .00830 | .04397 | .00123 | .00000 | .11803 | .00001 | .00000 | .13602 | .00000 | .69243 |
| 300 | .00831 | .04388 | .00128 | .00000 | .11809 | .00001 | .00000 | .13594 | .00000 | .69249 |
| 320 | .00831 | .04281 | .00183 | .00000 | .11878 | .00004 | .00000 | .13496 | .00000 | .69326 |
| 340 | .00833 | .04153 | .00248 | .00000 | .11962 | .00011 | .00000 | .13377 | .00000 | .69416 |
| 360 | .00834 | .04005 | .00322 | .00000 | .12060 | .00027 | .00000 | .13235 | .00000 | .69517 |
| 380 | .00835 | .03839 | .00400 | .00000 | .12174 | .00060 | .00000 | .13066 | .00000 | .69626 |
| 400 | .00836 | .03654 | .00481 | .00000 | .12305 | .00121 | .00000 | .12865 | .00000 | .69737 |
| 420 | .00838 | .03450 | .00560 | .00000 | .12455 | .00230 | .00000 | .12622 | .00000 | .69846 |
| 440 | .00839 | .03227 | .00630 | .00001 | .12630 | .00407 | .00000 | .12323 | .00000 | .69943 |
| 460 | .00840 | .02982 | .00686 | .00002 | .12836 | .00682 | .00000 | .11952 | .00000 | .70020 |
| 480 | .00840 | .02714 | .00720 | .00006 | .13077 | .01083 | .00000 | .11491 | .00001 | .70068 |
| 500 | .00840 | .02419 | .00729 | .00015 | .13358 | .01632 | .00000 | .10927 | .00001 | .70079 |
| 520 | .00840 | .02095 | .00707 | .00033 | .13678 | .02344 | .00000 | .10253 | .00001 | .70050 |
| 540 | .00839 | .01738 | .00657 | .00070 | .14031 | .03211 | .00000 | .09472 | .00001 | .69981 |
| 560 | .00838 | .01343 | .00585 | .00142 | .14403 | .04205 | .00000 | .08602 | .00001 | .69880 |
| 580 | .00837 | .00904 | .00498 | .00274 | .14769 | .05283 | .00000 | .07674 | .00001 | .69761 |
| 600 | .00835 | .00408 | .00408 | .00505 | .15095 | .06387 | .00000 | .06725 | .00001 | .69636 |
| 620 | .00833 | .00000 | .00282 | .00847 | .15246 | .07341 | .00000 | .05988 | .00000 | .69462 |
| 640 | .00830 | .00000 | .00116 | .01123 | .15081 | .07699 | .00000 | .05917 | .00000 | .69233 |
| 660 | .00829 | .00000 | .00041 | .01367 | .14888 | .07742 | .00000 | .06004 | .00000 | .69129 |
| 680 | .00829 | .00000 | .00013 | .01587 | .14686 | .07626 | .00000 | .06167 | .00000 | .69091 |
| 700 | .00828 | .00000 | .00005 | .01797 | .14483 | .07451 | .00000 | .06358 | .00000 | .69079 |
| 720 | .00828 | .00000 | .00002 | .02003 | .14279 | .07256 | .00000 | .06558 | .00000 | .69075 |
| 740 | .00828 | .00000 | .00001 | .02207 | .14075 | .07056 | .00000 | .06759 | .00000 | .69073 |
| 760 | .00828 | .00000 | .00000 | .02408 | .13874 | .06856 | .00000 | .06960 | .00000 | .69073 |
| 780 | .00828 | .00000 | .00000 | .02606 | .13676 | .06658 | .00000 | .07158 | .00000 | .69073 |
| 800 | .00828 | .00000 | .00000 | .02800 | .13482 | .06464 | .00000 | .07352 | .00000 | .69073 |

TABLE 6.2E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13815 | .00000 | .00001 | .00000 | .69073 |
| 220 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13795 | .00000 | .00021 | .00000 | .69073 |
| 240 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13597 | .00000 | .00219 | .00000 | .69073 |
| 260 | .00828 | .04631 | .00001 | .00000 | .11651 | .00000 | .12214 | .00000 | .01601 | .00000 | .69074 |
| 280 | .00829 | .04566 | .00035 | .00000 | .11693 | .00000 | .00000 | .04936 | .08820 | .00000 | .69121 |
| 298 | .00830 | .04397 | .00123 | .00000 | .11803 | .00000 | .00000 | .00000 | .13603 | .00000 | .69243 |
| 300 | .00831 | .04388 | .00128 | .00000 | .11808 | .00000 | .00000 | .00000 | .13595 | .00000 | .69249 |
| 320 | .00831 | .04282 | .00183 | .00000 | .11877 | .00001 | .00000 | .00000 | .13499 | .00000 | .69326 |
| 340 | .00833 | .04156 | .00249 | .00000 | .11959 | .00004 | .00000 | .00000 | .13384 | .00000 | .69416 |
| 360 | .00834 | .04013 | .00323 | .00000 | .12053 | .00009 | .00000 | .00000 | .13251 | .00000 | .69518 |
| 380 | .00835 | .03854 | .00403 | .00000 | .12157 | .00019 | .00000 | .00000 | .13102 | .00000 | .69630 |
| 400 | .00837 | .03682 | .00488 | .00000 | .12271 | .00039 | .00000 | .00000 | .12936 | .00000 | .69747 |
| 420 | .00838 | .03500 | .00574 | .00000 | .12395 | .00074 | .00000 | .00000 | .12753 | .00001 | .69866 |
| 440 | .00839 | .03310 | .00658 | .00000 | .12528 | .00132 | .00000 | .00000 | .12549 | .00001 | .69982 |
| 460 | .00841 | .03112 | .00738 | .00001 | .12672 | .00224 | .00000 | .00000 | .12320 | .00001 | .70092 |
| 480 | .00842 | .02907 | .00809 | .00002 | .12828 | .00362 | .00000 | .00000 | .12059 | .00001 | .70190 |
| 500 | .00843 | .02695 | .00867 | .00005 | .12999 | .00562 | .00000 | .00000 | .11758 | .00001 | .70270 |
| 520 | .00843 | .02475 | .00908 | .00010 | .13186 | .00838 | .00000 | .00000 | .11410 | .00001 | .70328 |
| 540 | .00844 | .02245 | .00930 | .00022 | .13390 | .01205 | .00000 | .00000 | .11007 | .00001 | .70358 |
| 560 | .00844 | .02002 | .00929 | .00043 | .13611 | .01671 | .00000 | .00000 | .10542 | .00002 | .70356 |
| 580 | .00843 | .01743 | .00905 | .00083 | .13846 | .02242 | .00000 | .00000 | .10013 | .00002 | .70323 |
| 600 | .00843 | .01461 | .00858 | .00154 | .14090 | .02913 | .00000 | .00000 | .09422 | .00002 | .70258 |
| 620 | .00842 | .01147 | .00792 | .00272 | .14330 | .03674 | .00000 | .00000 | .08774 | .00002 | .70168 |
| 640 | .00840 | .00788 | .00713 | .00464 | .14550 | .04503 | .00000 | .00000 | .08082 | .00002 | .70058 |
| 660 | .00839 | .00366 | .00626 | .00766 | .14728 | .05376 | .00000 | .00000 | .07359 | .00002 | .69937 |
| 680 | .00837 | .00000 | .00493 | .01183 | .14768 | .06201 | .00000 | .00000 | .06764 | .00002 | .69753 |
| 700 | .00833 | .00000 | .00269 | .01547 | .14554 | .06688 | .00000 | .00000 | .06662 | .00001 | .69445 |
| 720 | .00831 | .00000 | .00125 | .01876 | .14323 | .06910 | .00000 | .00000 | .06689 | .00001 | .69246 |
| 740 | .00829 | .00000 | .00052 | .02150 | .14097 | .06915 | .00000 | .00000 | .06810 | .00001 | .69145 |
| 760 | .00829 | .00000 | .00021 | .02384 | .13884 | .06801 | .00000 | .00000 | .06979 | .00001 | .69101 |
| 780 | .00829 | .00000 | .00008 | .02596 | .13681 | .06636 | .00000 | .00000 | .07165 | .00001 | .69084 |
| 800 | .00828 | .00000 | .00003 | .02796 | .13484 | .06455 | .00000 | .00000 | .07354 | .00000 | .69077 |

TABLE 6.3E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13816 | .00000 | .00000 | .00000 | .69073 |
| 220 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13814 | .00000 | .00002 | .00000 | .69073 |
| 240 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13794 | .00000 | .00022 | .00000 | .69073 |
| 260 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13659 | .00000 | .00157 | .00000 | .69073 |
| 280 | .00828 | .04632 | .00000 | .00000 | .11651 | .00000 | .00000 | .13013 | .00803 | .00000 | .69073 |
| 298 | .00828 | .04624 | .00005 | .00000 | .11656 | .00000 | .00000 | .11188 | .02620 | .00000 | .69079 |
| 300 | .00829 | .04621 | .00006 | .00000 | .11658 | .00000 | .00000 | .10872 | .02934 | .00000 | .69081 |
| 320 | .00830 | .04460 | .00090 | .00000 | .11762 | .00000 | .00000 | .04225 | .09435 | .00000 | .69197 |
| 340 | .00833 | .04157 | .00249 | .00000 | .11958 | .00001 | .00000 | .00000 | .13386 | .00000 | .69416 |
| 360 | .00834 | .04015 | .00323 | .00000 | .12050 | .00003 | .00000 | .00000 | .13256 | .00000 | .69519 |
| 380 | .00835 | .03858 | .00404 | .00000 | .12152 | .00006 | .00000 | .00000 | .13113 | .00001 | .69631 |
| 400 | .00837 | .03691 | .00490 | .00000 | .12261 | .00012 | .00000 | .00000 | .12958 | .00001 | .69750 |
| 420 | .00838 | .03516 | .00579 | .00000 | .12376 | .00023 | .00000 | .00000 | .12794 | .00001 | .69872 |
| 440 | .00839 | .03337 | .00668 | .00000 | .12496 | .00042 | .00000 | .00000 | .12622 | .00001 | .69995 |
| 460 | .00841 | .03154 | .00756 | .00000 | .12619 | .00072 | .00000 | .00000 | .12440 | .00001 | .70117 |
| 480 | .00842 | .02971 | .00840 | .00001 | .12745 | .00117 | .00000 | .00000 | .12249 | .00002 | .70233 |
| 500 | .00844 | .02787 | .00919 | .00001 | .12875 | .00183 | .00000 | .00000 | .12047 | .00002 | .70342 |
| 520 | .00845 | .02603 | .00990 | .00003 | .13009 | .00277 | .00000 | .00000 | .11830 | .00003 | .70440 |
| 540 | .00846 | .02420 | .01051 | .00007 | .13148 | .00405 | .00000 | .00000 | .11596 | .00003 | .70525 |
| 560 | .00847 | .02236 | .01101 | .00014 | .13291 | .00574 | .00000 | .00000 | .11340 | .00003 | .70594 |
| 580 | .00847 | .02052 | .01137 | .00026 | .13439 | .00793 | .00000 | .00000 | .11058 | .00004 | .70644 |
| 600 | .00848 | .01864 | .01158 | .00048 | .13591 | .01068 | .00000 | .00000 | .10748 | .00004 | .70672 |
| 620 | .00848 | .01670 | .01162 | .00084 | .13746 | .01403 | .00000 | .00000 | .10405 | .00004 | .70678 |
| 640 | .00847 | .01465 | .01149 | .00143 | .13900 | .01802 | .00000 | .00000 | .10028 | .00005 | .70661 |
| 660 | .00847 | .01243 | .01120 | .00236 | .14049 | .02264 | .00000 | .00000 | .09615 | .00005 | .70621 |
| 680 | .00846 | .00995 | .01075 | .00377 | .14186 | .02789 | .00000 | .00000 | .09168 | .00005 | .70559 |
| 700 | .00845 | .00711 | .01017 | .00587 | .14299 | .03369 | .00000 | .00000 | .08687 | .00005 | .70479 |
| 720 | .00844 | .00376 | .00948 | .00891 | .14377 | .03998 | .00000 | .00000 | .08178 | .00005 | .70383 |
| 740 | .00843 | .00000 | .00862 | .01313 | .14389 | .04658 | .00000 | .00000 | .07666 | .00005 | .70264 |
| 760 | .00839 | .00000 | .00615 | .01716 | .14153 | .05197 | .00000 | .00000 | .07553 | .00005 | .69923 |
| 780 | .00835 | .00000 | .00395 | .02131 | .13886 | .05622 | .00000 | .00000 | .07508 | .00004 | .69619 |
| 800 | .00832 | .00000 | .00226 | .02513 | .13618 | .05886 | .00000 | .00000 | .07536 | .00004 | .69385 |

TABLE 6.4E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13816 | .00000 | .00000 | .00000 | .69073 |
| 220 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13816 | .00000 | .00000 | .00000 | .69073 |
| 240 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13814 | .00000 | .00002 | .00000 | .69073 |
| 260 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13801 | .00000 | .00016 | .00000 | .69073 |
| 280 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13737 | .00000 | .00080 | .00000 | .69073 |
| 298 | .00828 | .04632 | .00000 | .00000 | .11650 | .00000 | .13562 | .00255 | .00000 | .00000 | .69073 |
| 300 | .00828 | .04632 | .00000 | .00000 | .11650 | .00000 | .13532 | .00284 | .00000 | .00000 | .69073 |
| 320 | .00828 | .04631 | .00001 | .00000 | .11651 | .00000 | .12964 | .00851 | .00000 | .00000 | .69074 |
| 340 | .00829 | .04619 | .00007 | .00000 | .11659 | .00000 | .11579 | .02225 | .00000 | .00000 | .69082 |
| 360 | .00829 | .04532 | .00052 | .00000 | .11715 | .00000 | .08465 | .05260 | .00000 | .00000 | .69145 |
| 380 | .00834 | .04007 | .00327 | .00000 | .12055 | .00002 | .08000 | .01494 | .11755 | .00001 | .69525 |
| 400 | .00837 | .03694 | .00491 | .00000 | .12258 | .00004 | .08000 | .00000 | .12965 | .00001 | .69751 |
| 420 | .00838 | .03521 | .00580 | .00000 | .12371 | .00007 | .08000 | .00000 | .12807 | .00002 | .69874 |
| 440 | .00840 | .03345 | .00671 | .00000 | .12486 | .00013 | .08000 | .00000 | .12644 | .00002 | .70000 |
| 460 | .00841 | .03167 | .00761 | .00000 | .12602 | .00023 | .08000 | .00000 | .12478 | .00003 | .70125 |
| 480 | .00843 | .02990 | .00850 | .00000 | .12719 | .00037 | .08000 | .00000 | .12310 | .00003 | .70247 |
| 500 | .00844 | .02816 | .00936 | .00000 | .12836 | .00058 | .08000 | .00000 | .12140 | .00004 | .70366 |
| 520 | .00845 | .02644 | .01017 | .00001 | .12952 | .00089 | .08000 | .00000 | .11968 | .00005 | .70479 |
| 540 | .00847 | .02476 | .01094 | .00002 | .13068 | .00130 | .08000 | .00000 | .11793 | .00005 | .70585 |
| 560 | .00848 | .02312 | .01164 | .00004 | .13182 | .00187 | .08000 | .00000 | .11614 | .00006 | .70682 |
| 580 | .00849 | .02152 | .01228 | .00008 | .13296 | .00261 | .08000 | .00000 | .11430 | .00007 | .70770 |
| 600 | .00850 | .01995 | .01283 | .00015 | .13409 | .00355 | .08000 | .00000 | .11239 | .00008 | .70846 |
| 620 | .00851 | .01841 | .01329 | .00026 | .13521 | .00474 | .08000 | .00000 | .11039 | .00008 | .70911 |
| 640 | .00851 | .01687 | .01366 | .00045 | .13631 | .00621 | .08000 | .00000 | .10828 | .00009 | .70962 |
| 660 | .00852 | .01533 | .01393 | .00074 | .13738 | .00797 | .08000 | .00000 | .10604 | .00010 | .70999 |
| 680 | .00852 | .01375 | .01409 | .00118 | .13841 | .01008 | .08000 | .00000 | .10366 | .00011 | .71021 |
| 700 | .00852 | .01211 | .01414 | .00183 | .13938 | .01253 | .08000 | .00000 | .10111 | .00011 | .71028 |
| 720 | .00852 | .01034 | .01407 | .00277 | .14024 | .01535 | .08000 | .00000 | .09839 | .00012 | .71019 |
| 740 | .00852 | .00840 | .01390 | .00411 | .14097 | .01854 | .08000 | .00000 | .09549 | .00012 | .70995 |
| 760 | .00851 | .00621 | .01363 | .00597 | .14149 | .02211 | .08000 | .00000 | .09239 | .00013 | .70957 |
| 780 | .00850 | .00369 | .01326 | .00849 | .14174 | .02604 | .08000 | .00000 | .08910 | .00013 | .70906 |
| 800 | .00850 | .00074 | .01280 | .01185 | .14163 | .03031 | .08000 | .00000 | .08561 | .00013 | .70844 |

TABLE 6.5E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.087066; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13816 | .00000 | .00000 | .00000 | .69073 |
| 220 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13816 | .00000 | .00000 | .00000 | .69073 |
| 240 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13816 | .00000 | .00000 | .00000 | .69073 |
| 260 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .13813 | .00000 | .00003 | .00000 | .69073 |
| 280 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .00000 | .13800 | .00016 | .00000 | .69073 |
| 298 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .00000 | .13766 | .00051 | .00000 | .69073 |
| 300 | .00828 | .04633 | .00000 | .00000 | .11650 | .00000 | .00000 | .13760 | .00057 | .00000 | .69073 |
| 320 | .00828 | .04632 | .00000 | .00000 | .11650 | .00000 | .00000 | .13647 | .00169 | .00000 | .69073 |
| 340 | .00828 | .04632 | .00000 | .00000 | .11651 | .00000 | .00000 | .13380 | .00435 | .00000 | .69073 |
| 360 | .00828 | .04629 | .00002 | .00000 | .11653 | .00000 | .00000 | .12815 | .00998 | .00000 | .69075 |
| 380 | .00829 | .04612 | .00011 | .00000 | .11663 | .00000 | .00000 | .11716 | .02082 | .00000 | .69087 |
| 400 | .00829 | .04537 | .00050 | .00000 | .11712 | .00001 | .00000 | .09699 | .04030 | .00000 | .69141 |
| 420 | .00832 | .04247 | .00201 | .00000 | .11901 | .00002 | .00000 | .06063 | .07403 | .00001 | .69351 |
| 440 | .00840 | .03347 | .00671 | .00000 | .12484 | .00006 | .00000 | .00000 | .12649 | .00003 | .70001 |
| 460 | .00841 | .03170 | .00762 | .00000 | .12599 | .00010 | .00000 | .00000 | .12486 | .00004 | .70127 |
| 480 | .00843 | .02995 | .00852 | .00000 | .12714 | .00017 | .00000 | .00000 | .12324 | .00005 | .70251 |
| 500 | .00844 | .02823 | .00940 | .00000 | .12827 | .00026 | .00000 | .00000 | .12162 | .00006 | .70372 |
| 520 | .00845 | .02654 | .01024 | .00000 | .12939 | .00040 | .00000 | .00000 | .12002 | .00007 | .70489 |
| 540 | .00847 | .02490 | .01105 | .00001 | .13048 | .00059 | .00000 | .00000 | .11843 | .00008 | .70600 |
| 560 | .00848 | .02331 | .01181 | .00002 | .13155 | .00084 | .00000 | .00000 | .11684 | .00009 | .70706 |
| 580 | .00849 | .02177 | .01252 | .00004 | .13260 | .00118 | .00000 | .00000 | .11527 | .00010 | .70804 |
| 600 | .00850 | .02028 | .01317 | .00007 | .13362 | .00161 | .00000 | .00000 | .11369 | .00012 | .70895 |
| 620 | .00851 | .01883 | .01377 | .00012 | .13461 | .00216 | .00000 | .00000 | .11210 | .00013 | .70977 |
| 640 | .00852 | .01743 | .01430 | .00020 | .13558 | .00284 | .00000 | .00000 | .11048 | .00014 | .71051 |
| 660 | .00853 | .01605 | .01477 | .00033 | .13651 | .00367 | .00000 | .00000 | .10883 | .00016 | .71115 |
| 680 | .00854 | .01470 | .01516 | .00052 | .13741 | .00467 | .00000 | .00000 | .10713 | .00017 | .71170 |
| 700 | .00854 | .01334 | .01548 | .00081 | .13827 | .00586 | .00000 | .00000 | .10538 | .00018 | .71214 |
| 720 | .00855 | .01196 | .01572 | .00123 | .13906 | .00725 | .00000 | .00000 | .10355 | .00019 | .71248 |
| 740 | .00855 | .01054 | .01589 | .00183 | .13978 | .00886 | .00000 | .00000 | .10165 | .00021 | .71271 |
| 760 | .00855 | .00903 | .01597 | .00265 | .14040 | .01069 | .00000 | .00000 | .09964 | .00022 | .71283 |
| 780 | .00855 | .00741 | .01598 | .00378 | .14090 | .01276 | .00000 | .00000 | .09754 | .00023 | .71285 |
| 800 | .00855 | .00562 | .01592 | .00528 | .14124 | .01508 | .00000 | .00000 | .09532 | .00024 | .71276 |

TABLE 7.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016907; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03463 | .00000 | .00000 | .03431 | .00000 | .00001 | .76744 | .00000 | .00000 | .15441 |
| 950 | .00920 | .00000 | .03463 | .00000 | .00000 | .03431 | .00000 | .00002 | .76743 | .00000 | .00000 | .15440 |
| 1000 | .00920 | .00000 | .03463 | .00000 | .00000 | .03431 | .00000 | .00003 | .76743 | .00000 | .00000 | .15440 |
| 1050 | .00920 | .00000 | .03463 | .00000 | .00000 | .03431 | .00000 | .00005 | .76742 | .00000 | .00000 | .15439 |
| 1100 | .00920 | .00000 | .03463 | .00000 | .00000 | .03431 | .00000 | .00008 | .76740 | .00000 | .00000 | .15437 |
| 1150 | .00920 | .00000 | .03463 | .00000 | .00000 | .03431 | .00000 | .00012 | .76738 | .00000 | .00000 | .15435 |
| 1200 | .00920 | .00000 | .03463 | .00000 | .00000 | .03431 | .00000 | .00018 | .76735 | .00000 | .00001 | .15432 |
| 1250 | .00920 | .00000 | .03463 | .00000 | .00000 | .03431 | .00000 | .00026 | .76731 | .00000 | .00001 | .15428 |
| 1300 | .00920 | .00000 | .03463 | .00000 | .00000 | .03430 | .00000 | .00037 | .76726 | .00000 | .00002 | .15422 |
| 1350 | .00920 | .00000 | .03463 | .00000 | .00000 | .03430 | .00000 | .00050 | .76719 | .00000 | .00003 | .15415 |
| 1400 | .00920 | .00000 | .03463 | .00000 | .00000 | .03429 | .00000 | .00067 | .76710 | .00000 | .00005 | .15406 |
| 1450 | .00920 | .00000 | .03462 | .00000 | .00000 | .03427 | .00000 | .00087 | .76699 | .00001 | .00009 | .15395 |
| 1500 | .00920 | .00000 | .03462 | .00000 | .00000 | .03424 | .00000 | .00112 | .76685 | .00002 | .00014 | .15381 |
| 1550 | .00920 | .00001 | .03462 | .00000 | .00000 | .03420 | .00000 | .00141 | .76668 | .00003 | .00021 | .15363 |
| 1600 | .00920 | .00002 | .03461 | .00000 | .00001 | .03415 | .00000 | .00176 | .76647 | .00006 | .00031 | .15342 |
| 1650 | .00920 | .00003 | .03459 | .00000 | .00001 | .03407 | .00000 | .00216 | .76622 | .00010 | .00045 | .15316 |
| 1700 | .00920 | .00006 | .03456 | .00001 | .00002 | .03397 | .00000 | .00262 | .76591 | .00017 | .00063 | .15285 |
| 1750 | .00920 | .00011 | .03451 | .00001 | .00003 | .03383 | .00000 | .00314 | .76554 | .00029 | .00088 | .15248 |
| 1800 | .00920 | .00018 | .03442 | .00002 | .00005 | .03364 | .00000 | .00372 | .76507 | .00047 | .00119 | .15203 |
| 1850 | .00920 | .00030 | .03430 | .00005 | .00007 | .03339 | .00000 | .00437 | .76450 | .00075 | .00159 | .15150 |
| 1900 | .00919 | .00048 | .03410 | .00008 | .00011 | .03307 | .00000 | .00509 | .76378 | .00115 | .00209 | .15086 |
| 1950 | .00918 | .00074 | .03381 | .00015 | .00016 | .03265 | .00000 | .00588 | .76289 | .00174 | .00270 | .15009 |
| 2000 | .00918 | .00113 | .03339 | .00025 | .00024 | .03213 | .00000 | .00674 | .76176 | .00257 | .00343 | .14918 |
| 2050 | .00917 | .00167 | .03281 | .00042 | .00034 | .03147 | .00000 | .00766 | .76035 | .00372 | .00430 | .14810 |
| 2100 | .00915 | .00242 | .03201 | .00067 | .00047 | .03064 | .00000 | .00864 | .75858 | .00529 | .00532 | .14681 |
| 2150 | .00913 | .00340 | .03095 | .00106 | .00064 | .02963 | .00000 | .00968 | .75636 | .00740 | .00648 | .14528 |
| 2200 | .00910 | .00465 | .02960 | .00163 | .00085 | .02838 | .00000 | .01077 | .75361 | .01018 | .00777 | .14345 |
| 2250 | .00907 | .00619 | .02793 | .00245 | .00110 | .02689 | .00000 | .01190 | .75023 | .01378 | .00917 | .14127 |
| 2300 | .00903 | .00800 | .02596 | .00359 | .00139 | .02513 | .00000 | .01306 | .74614 | .01838 | .01066 | .13865 |
| 2350 | .00898 | .01005 | .02371 | .00514 | .00172 | .02309 | .00000 | .01423 | .74125 | .02415 | .01217 | .13550 |
| 2400 | .00891 | .01227 | .02126 | .00716 | .00205 | .02078 | .00000 | .01539 | .73551 | .03129 | .01363 | .13173 |
| 2450 | .00884 | .01456 | .01870 | .00972 | .00237 | .01825 | .00000 | .01652 | .72889 | .03995 | .01495 | .12724 |
| 2500 | .00876 | .01681 | .01613 | .01286 | .00265 | .01557 | .00000 | .01758 | .72142 | .05029 | .01602 | .12192 |
| 2550 | .00866 | .01894 | .01366 | .01653 | .00284 | .01283 | .00000 | .01854 | .71315 | .06239 | .01673 | .11573 |
| 2600 | .00856 | .02086 | .01136 | .02064 | .00293 | .01018 | .00001 | .01937 | .70423 | .07626 | .01699 | .10863 |
| 2650 | .00845 | .02252 | .00929 | .02502 | .00288 | .00775 | .00001 | .02004 | .69483 | .09182 | .01675 | .10066 |
| 2700 | .00834 | .02390 | .00748 | .02945 | .00272 | .00565 | .00001 | .02051 | .68518 | .10884 | .01601 | .09192 |
| 2750 | .00823 | .02501 | .00594 | .03370 | .00246 | .00394 | .00002 | .02077 | .67554 | .12697 | .01485 | .08258 |
| 2800 | .00811 | .02586 | .00466 | .03757 | .00213 | .00264 | .00003 | .02079 | .66616 | .14576 | .01337 | .07290 |
| 2850 | .00801 | .02650 | .00362 | .04096 | .00179 | .00171 | .00004 | .02057 | .65727 | .16463 | .01173 | .06317 |
| 2900 | .00791 | .02696 | .00278 | .04381 | .00147 | .00107 | .00006 | .02013 | .64906 | .18298 | .01004 | .05372 |
| 2950 | .00781 | .02727 | .00212 | .04614 | .00118 | .00066 | .00008 | .01948 | .64169 | .20026 | .00843 | .04486 |
| 3000 | .00773 | .02748 | .00161 | .04801 | .00094 | .00040 | .00011 | .01867 | .63525 | .21602 | .00696 | .03682 |

TABLE 7.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016907; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00001 | .76744 | .00000 | .00000 | .15441 |
| 950 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00002 | .76743 | .00000 | .00000 | .15440 |
| 1000 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00003 | .76743 | .00000 | .00000 | .15440 |
| 1050 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00005 | .76742 | .00000 | .00000 | .15439 |
| 1100 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00008 | .76740 | .00000 | .00000 | .15437 |
| 1150 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00012 | .76738 | .00000 | .00000 | .15435 |
| 1200 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00018 | .76735 | .00000 | .00000 | .15432 |
| 1250 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00026 | .76731 | .00000 | .00001 | .15428 |
| 1300 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00037 | .76726 | .00000 | .00001 | .15422 |
| 1350 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03430 | .00000 | .00050 | .76719 | .00000 | .00002 | .15416 |
| 1400 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03430 | .00000 | .00067 | .76710 | .00000 | .00003 | .15407 |
| 1450 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03429 | .00000 | .00087 | .76700 | .00000 | .00005 | .15396 |
| 1500 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03427 | .00000 | .00112 | .76687 | .00000 | .00008 | .15383 |
| 1550 | .00920 | .00000 | .03462 | .00000 | .00000 | .00000 | .03425 | .00000 | .00141 | .76671 | .00001 | .00012 | .15367 |
| 1600 | .00920 | .00001 | .03462 | .00000 | .00000 | .00000 | .03422 | .00000 | .00176 | .76652 | .00002 | .00017 | .15347 |
| 1650 | .00920 | .00001 | .03461 | .00000 | .00000 | .00000 | .03418 | .00000 | .00216 | .76630 | .00003 | .00025 | .15325 |
| 1700 | .00920 | .00002 | .03460 | .00000 | .00000 | .00001 | .03412 | .00000 | .00262 | .76603 | .00005 | .00036 | .15298 |
| 1750 | .00920 | .00003 | .03459 | .00000 | .00000 | .00001 | .03405 | .00000 | .00314 | .76573 | .00009 | .00049 | .15266 |
| 1800 | .00920 | .00006 | .03456 | .00000 | .00000 | .00001 | .03395 | .00000 | .00373 | .76536 | .00015 | .00067 | .15230 |
| 1850 | .00920 | .00009 | .03452 | .00001 | .00000 | .00002 | .03382 | .00000 | .00438 | .76494 | .00024 | .00090 | .15187 |
| 1900 | .00920 | .00015 | .03446 | .00001 | .00000 | .00004 | .03366 | .00000 | .00510 | .76444 | .00036 | .00119 | .15138 |
| 1950 | .00920 | .00024 | .03436 | .00003 | .00000 | .00005 | .03345 | .00000 | .00590 | .76386 | .00055 | .00154 | .15082 |
| 2000 | .00919 | .00036 | .03422 | .00005 | .00000 | .00008 | .03319 | .00000 | .00676 | .76318 | .00081 | .00197 | .15018 |
| 2050 | .00919 | .00055 | .03403 | .00008 | .00000 | .00011 | .03287 | .00000 | .00770 | .76237 | .00118 | .00248 | .14945 |
| 2100 | .00918 | .00080 | .03375 | .00012 | .00000 | .00016 | .03248 | .00000 | .00871 | .76141 | .00168 | .00309 | .14861 |
| 2150 | .00918 | .00115 | .03338 | .00020 | .00000 | .00022 | .03200 | .00000 | .00978 | .76028 | .00236 | .00380 | .14766 |
| 2200 | .00917 | .00162 | .03287 | .00030 | .00000 | .00029 | .03142 | .00000 | .01093 | .75894 | .00325 | .00462 | .14658 |
| 2250 | .00916 | .00222 | .03222 | .00046 | .00000 | .00039 | .03073 | .00000 | .01213 | .75734 | .00442 | .00555 | .14535 |
| 2300 | .00914 | .00300 | .03139 | .00069 | .00000 | .00052 | .02991 | .00000 | .01339 | .75546 | .00592 | .00660 | .14397 |
| 2350 | .00912 | .00397 | .03035 | .00101 | .00000 | .00066 | .02896 | .00000 | .01471 | .75324 | .00783 | .00776 | .14239 |
| 2400 | .00910 | .00514 | .02909 | .00145 | .00000 | .00084 | .02785 | .00000 | .01606 | .75063 | .01022 | .00902 | .14059 |
| 2450 | .00907 | .00651 | .02761 | .00204 | .00000 | .00105 | .02657 | .00000 | .01745 | .74759 | .01318 | .01036 | .13855 |
| 2500 | .00904 | .00808 | .02592 | .00282 | .00000 | .00128 | .02512 | .00000 | .01887 | .74409 | .01681 | .01176 | .13621 |
| 2550 | .00900 | .00981 | .02404 | .00384 | .00001 | .00153 | .02350 | .00000 | .02029 | .74008 | .02119 | .01319 | .13353 |
| 2600 | .00895 | .01166 | .02201 | .00512 | .00001 | .00180 | .02171 | .00000 | .02169 | .73554 | .02643 | .01460 | .13047 |
| 2650 | .00890 | .01358 | .01990 | .00671 | .00001 | .00207 | .01978 | .00000 | .02307 | .73047 | .03261 | .01595 | .12696 |
| 2700 | .00884 | .01551 | .01775 | .00863 | .00001 | .00233 | .01773 | .00000 | .02440 | .72486 | .03981 | .01716 | .12297 |
| 2750 | .00877 | .01737 | .01564 | .01089 | .00001 | .00257 | .01560 | .00001 | .02566 | .71875 | .04809 | .01819 | .11846 |
| 2800 | .00870 | .01913 | .01360 | .01350 | .00001 | .00276 | .01345 | .00001 | .02681 | .71216 | .05749 | .01896 | .11341 |
| 2850 | .00862 | .02074 | .01170 | .01642 | .00001 | .00288 | .01135 | .00001 | .02784 | .70517 | .06801 | .01942 | .10782 |
| 2900 | .00854 | .02218 | .00996 | .01959 | .00001 | .00294 | .00934 | .00002 | .02872 | .69786 | .07961 | .01954 | .10170 |
| 2950 | .00846 | .02342 | .00839 | .02292 | .00001 | .00291 | .00750 | .00003 | .02942 | .69033 | .09221 | .01929 | .09511 |
| 3000 | .00837 | .02447 | .00701 | .02633 | .00000 | .00281 | .00587 | .00004 | .02994 | .68269 | .10567 | .01868 | .08812 |

TABLE 7.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016907; EQUIV. RATIO α 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00001 | .00000 | .76744 | .00000 | .00000 | .15441 |
| 950 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00002 | .00000 | .76743 | .00000 | .00000 | .15440 |
| 1000 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00003 | .00000 | .76743 | .00000 | .00000 | .15440 |
| 1050 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00005 | .00000 | .76742 | .00000 | .00000 | .15439 |
| 1100 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00008 | .00000 | .76740 | .00000 | .00000 | .15437 |
| 1150 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00012 | .00000 | .76738 | .00000 | .00000 | .15435 |
| 1200 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00018 | .00000 | .76735 | .00000 | .00000 | .15432 |
| 1250 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00026 | .00000 | .76731 | .00000 | .00000 | .15428 |
| 1300 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00037 | .00000 | .76726 | .00000 | .00001 | .15422 |
| 1350 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00000 | .00050 | .00000 | .76719 | .00000 | .00001 | .15416 |
| 1400 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03430 | .00000 | .00067 | .00000 | .76711 | .00000 | .00002 | .15407 |
| 1450 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03430 | .00000 | .00087 | .00000 | .76700 | .00000 | .00003 | .15396 |
| 1500 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03429 | .00000 | .00112 | .00000 | .76687 | .00000 | .00004 | .15383 |
| 1550 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03428 | .00000 | .00141 | .00001 | .76672 | .00000 | .00007 | .15368 |
| 1600 | .00920 | .00000 | .03462 | .00000 | .00000 | .00000 | .03426 | .00000 | .00176 | .00001 | .76654 | .00001 | .00010 | .15350 |
| 1650 | .00920 | .00000 | .03462 | .00000 | .00000 | .00000 | .03424 | .00000 | .00216 | .00001 | .76633 | .00001 | .00014 | .15328 |
| 1700 | .00920 | .00001 | .03462 | .00000 | .00000 | .00000 | .03421 | .00000 | .00262 | .00001 | .76609 | .00002 | .00020 | .15303 |
| 1750 | .00920 | .00001 | .03461 | .00000 | .00000 | .00000 | .03417 | .00000 | .00314 | .00001 | .76580 | .00003 | .00028 | .15274 |
| 1800 | .00920 | .00002 | .03460 | .00000 | .00000 | .00000 | .03411 | .00000 | .00373 | .00001 | .76548 | .00005 | .00038 | .15241 |
| 1850 | .00920 | .00003 | .03459 | .00000 | .00000 | .00001 | .03404 | .00000 | .00438 | .00001 | .76511 | .00007 | .00051 | .15204 |
| 1900 | .00920 | .00005 | .03457 | .00000 | .00000 | .00001 | .03396 | .00000 | .00511 | .00001 | .76469 | .00012 | .00067 | .15161 |
| 1950 | .00920 | .00008 | .03454 | .00000 | .00000 | .00002 | .03385 | .00000 | .00591 | .00001 | .76422 | .00017 | .00087 | .15114 |
| 2000 | .00920 | .00012 | .03449 | .00001 | .00000 | .00002 | .03371 | .00000 | .00678 | .00001 | .76368 | .00026 | .00111 | .15060 |
| 2050 | .00920 | .00017 | .03443 | .00001 | .00000 | .00004 | .03354 | .00000 | .00772 | .00001 | .76308 | .00037 | .00141 | .15001 |
| 2100 | .00920 | .00026 | .03434 | .00002 | .00000 | .00005 | .03334 | .00000 | .00874 | .00001 | .76240 | .00053 | .00176 | .14935 |
| 2150 | .00919 | .00037 | .03422 | .00004 | .00000 | .00007 | .03310 | .00000 | .00982 | .00001 | .76164 | .00075 | .00218 | .14862 |
| 2200 | .00919 | .00053 | .03405 | .00006 | .00000 | .00010 | .03280 | .00000 | .01099 | .00001 | .76077 | .00103 | .00266 | .14781 |
| 2250 | .00919 | .00073 | .03382 | .00008 | .00001 | .00013 | .03246 | .00000 | .01222 | .00001 | .75980 | .00141 | .00322 | .14693 |
| 2300 | .00918 | .00101 | .03353 | .00013 | .00001 | .00017 | .03206 | .00000 | .01351 | .00001 | .75870 | .00189 | .00386 | .14595 |
| 2350 | .00917 | .00136 | .03315 | .00019 | .00001 | .00023 | .03159 | .00000 | .01488 | .00001 | .75745 | .00250 | .00458 | .14489 |
| 2400 | .00917 | .00181 | .03268 | .00027 | .00001 | .00029 | .03104 | .00000 | .01630 | .00001 | .75604 | .00327 | .00538 | .14373 |
| 2450 | .00916 | .00236 | .03208 | .00039 | .00001 | .00037 | .03042 | .00000 | .01778 | .00001 | .75445 | .00423 | .00628 | .14246 |
| 2500 | .00914 | .00304 | .03136 | .00054 | .00001 | .00047 | .02971 | .00000 | .01931 | .00001 | .75266 | .00541 | .00726 | .14108 |
| 2550 | .00913 | .00385 | .03049 | .00075 | .00001 | .00058 | .02891 | .00000 | .02089 | .00001 | .75064 | .00685 | .00832 | .13957 |
| 2600 | .00911 | .00480 | .02947 | .00102 | .00001 | .00071 | .02801 | .00000 | .02250 | .00001 | .74838 | .00859 | .00946 | .13792 |
| 2650 | .00909 | .00590 | .02830 | .00137 | .00001 | .00086 | .02700 | .00000 | .02414 | .00001 | .74585 | .01068 | .01066 | .13612 |
| 2700 | .00907 | .00713 | .02697 | .00181 | .00001 | .00103 | .02589 | .00000 | .02581 | .00001 | .74303 | .01315 | .01192 | .13415 |
| 2750 | .00904 | .00849 | .02551 | .00237 | .00001 | .00122 | .02468 | .00000 | .02748 | .00001 | .73992 | .01605 | .01322 | .13199 |
| 2800 | .00901 | .00996 | .02393 | .00306 | .00002 | .00142 | .02337 | .00000 | .02915 | .00001 | .73650 | .01944 | .01453 | .12962 |
| 2850 | .00897 | .01150 | .02226 | .00390 | .00002 | .00163 | .02196 | .00000 | .03080 | .00001 | .73277 | .02334 | .01583 | .12702 |
| 2900 | .00893 | .01308 | .02053 | .00490 | .00002 | .00184 | .02046 | .00001 | .03242 | .00001 | .72872 | .02782 | .01709 | .12416 |
| 2950 | .00889 | .01468 | .01877 | .00609 | .00002 | .00206 | .01889 | .00001 | .03400 | .00001 | .72438 | .03289 | .01828 | .12102 |
| 3000 | .00885 | .01626 | .01702 | .00747 | .00002 | .00227 | .01728 | .00001 | .03551 | .00001 | .71974 | .03860 | .01937 | .11759 |

TABLE 7.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016907; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00001 | .00000 | .76744 | .00000 | .00000 | .00000 | .15440 |
| 950 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00002 | .00000 | .76743 | .00000 | .00000 | .00000 | .15440 |
| 1000 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00003 | .00000 | .76743 | .00000 | .00000 | .00000 | .15439 |
| 1050 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00005 | .00001 | .76742 | .00000 | .00000 | .00000 | .15438 |
| 1100 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00008 | .00001 | .76740 | .00000 | .00000 | .00000 | .15437 |
| 1150 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00012 | .00001 | .76738 | .00000 | .00000 | .00000 | .15434 |
| 1200 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00018 | .00001 | .76735 | .00000 | .00000 | .00000 | .15431 |
| 1250 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00026 | .00001 | .76731 | .00000 | .00000 | .00000 | .15427 |
| 1300 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00037 | .00001 | .76726 | .00000 | .00000 | .00000 | .15422 |
| 1350 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00050 | .00001 | .76719 | .00000 | .00000 | .00001 | .15415 |
| 1400 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00067 | .00001 | .76711 | .00000 | .00000 | .00001 | .15406 |
| 1450 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00087 | .00001 | .76700 | .00000 | .00000 | .00002 | .15396 |
| 1500 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03430 | .00112 | .00002 | .76688 | .00000 | .00000 | .00002 | .15383 |
| 1550 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03429 | .00141 | .00002 | .76673 | .00000 | .00000 | .00004 | .15368 |
| 1600 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03429 | .00176 | .00002 | .76655 | .00000 | .00000 | .00006 | .15350 |
| 1650 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03427 | .00216 | .00002 | .76634 | .00000 | .00000 | .00008 | .15329 |
| 1700 | .00920 | .00000 | .03462 | .00000 | .00000 | .00000 | .03426 | .00262 | .00002 | .76611 | .00000 | .00001 | .00011 | .15305 |
| 1750 | .00920 | .00000 | .03462 | .00000 | .00000 | .00000 | .03423 | .00314 | .00002 | .76584 | .00000 | .00001 | .00016 | .15277 |
| 1800 | .00920 | .00001 | .03462 | .00000 | .00000 | .00000 | .03420 | .00373 | .00002 | .76553 | .00000 | .00001 | .00021 | .15246 |
| 1850 | .00920 | .00001 | .03462 | .00000 | .00000 | .00000 | .03416 | .00438 | .00003 | .76518 | .00000 | .00002 | .00029 | .15210 |
| 1900 | .00920 | .00002 | .03461 | .00000 | .00000 | .00000 | .03412 | .00511 | .00003 | .76479 | .00000 | .00004 | .00038 | .15171 |
| 1950 | .00920 | .00002 | .03460 | .00000 | .00000 | .00001 | .03406 | .00591 | .00003 | .76436 | .00000 | .00006 | .00049 | .15127 |
| 2000 | .00920 | .00004 | .03458 | .00000 | .00000 | .00001 | .03398 | .00678 | .00003 | .76388 | .00000 | .00008 | .00063 | .15078 |
| 2050 | .00920 | .00006 | .03456 | .00000 | .00001 | .00001 | .03389 | .00773 | .00003 | .76335 | .00000 | .00012 | .00080 | .15025 |
| 2100 | .00920 | .00008 | .03453 | .00000 | .00001 | .00002 | .03378 | .00875 | .00003 | .76277 | .00000 | .00017 | .00100 | .14966 |
| 2150 | .00920 | .00012 | .03449 | .00001 | .00001 | .00002 | .03365 | .00984 | .00003 | .76213 | .00000 | .00024 | .00124 | .14902 |
| 2200 | .00920 | .00017 | .03444 | .00001 | .00001 | .00003 | .03350 | .01101 | .00003 | .76144 | .00000 | .00033 | .00151 | .14833 |
| 2250 | .00920 | .00024 | .03436 | .00002 | .00001 | .00004 | .03331 | .01225 | .00004 | .76068 | .00000 | .00045 | .00184 | .14758 |
| 2300 | .00919 | .00032 | .03427 | .00002 | .00001 | .00006 | .03310 | .01356 | .00004 | .75985 | .00000 | .00060 | .00221 | .14677 |
| 2350 | .00919 | .00044 | .03414 | .00003 | .00001 | .00007 | .03286 | .01494 | .00004 | .75894 | .00000 | .00079 | .00263 | .14590 |
| 2400 | .00919 | .00059 | .03398 | .00005 | .00001 | .00010 | .03257 | .01639 | .00004 | .75796 | .00000 | .00104 | .00311 | .14497 |
| 2450 | .00919 | .00078 | .03377 | .00007 | .00002 | .00012 | .03225 | .01790 | .00004 | .75688 | .00000 | .00134 | .00364 | .14398 |
| 2500 | .00918 | .00102 | .03352 | .00010 | .00002 | .00016 | .03189 | .01948 | .00004 | .75572 | .00000 | .00172 | .00424 | .14292 |
| 2550 | .00918 | .00132 | .03320 | .00014 | .00002 | .00020 | .03148 | .02111 | .00004 | .75445 | .00000 | .00218 | .00490 | .14179 |
| 2600 | .00917 | .00168 | .03282 | .00019 | .00002 | .00025 | .03102 | .02279 | .00004 | .75307 | .00000 | .00274 | .00562 | .14059 |
| 2650 | .00916 | .00211 | .03236 | .00026 | .00002 | .00030 | .03050 | .02452 | .00004 | .75157 | .00000 | .00342 | .00641 | .13933 |
| 2700 | .00915 | .00262 | .03181 | .00034 | .00003 | .00037 | .02993 | .02629 | .00004 | .74994 | .00000 | .00422 | .00726 | .13799 |
| 2750 | .00914 | .00323 | .03117 | .00046 | .00003 | .00045 | .02931 | .02811 | .00005 | .74817 | .00000 | .00516 | .00817 | .13657 |
| 2800 | .00913 | .00392 | .03043 | .00060 | .00003 | .00054 | .02862 | .02995 | .00005 | .74625 | .00000 | .00627 | .00913 | .13508 |
| 2850 | .00912 | .00471 | .02958 | .00077 | .00003 | .00064 | .02787 | .03182 | .00005 | .74418 | .00000 | .00757 | .01015 | .13350 |
| 2900 | .00910 | .00560 | .02864 | .00099 | .00004 | .00075 | .02706 | .03371 | .00005 | .74195 | .00001 | .00906 | .01122 | .13183 |
| 2950 | .00908 | .00658 | .02759 | .00125 | .00004 | .00087 | .02619 | .03561 | .00005 | .73955 | .00001 | .01078 | .01232 | .13007 |
| 3000 | .00906 | .00765 | .02645 | .00157 | .00004 | .00100 | .02525 | .03752 | .00005 | .73698 | .00001 | .01275 | .01346 | .12820 |

TABLE 7.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016907; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00001 | .00001 | .76744 | .00000 | .00000 | .00000 | .15440 |
| 950 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00002 | .00001 | .76743 | .00000 | .00000 | .00000 | .15440 |
| 1000 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00003 | .00001 | .76743 | .00000 | .00000 | .00000 | .15439 |
| 1050 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00005 | .00001 | .76742 | .00000 | .00000 | .00000 | .15438 |
| 1100 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00008 | .00001 | .76740 | .00000 | .00000 | .00000 | .15436 |
| 1150 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00012 | .00002 | .76738 | .00000 | .00000 | .00000 | .15434 |
| 1200 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00018 | .00002 | .76735 | .00000 | .00000 | .00000 | .15430 |
| 1250 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00026 | .00002 | .76731 | .00000 | .00000 | .00000 | .15426 |
| 1300 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00037 | .00002 | .76726 | .00000 | .00000 | .00000 | .15421 |
| 1350 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00050 | .00003 | .76719 | .00000 | .00000 | .00000 | .15414 |
| 1400 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00067 | .00003 | .76711 | .00000 | .00000 | .00001 | .15405 |
| 1450 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00087 | .00003 | .76700 | .00000 | .00000 | .00001 | .15394 |
| 1500 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03431 | .00112 | .00003 | .76688 | .00000 | .00000 | .00002 | .15382 |
| 1550 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03430 | .00141 | .00004 | .76673 | .00000 | .00000 | .00002 | .15366 |
| 1600 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03430 | .00176 | .00004 | .76655 | .00000 | .00000 | .00004 | .15348 |
| 1650 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03429 | .00216 | .00004 | .76635 | .00000 | .00000 | .00005 | .15327 |
| 1700 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03427 | .00262 | .00005 | .76611 | .00000 | .00000 | .00008 | .15303 |
| 1750 | .00920 | .00000 | .03463 | .00000 | .00000 | .00000 | .03426 | .00314 | .00005 | .76584 | .00000 | .00000 | .00011 | .15276 |
| 1800 | .00920 | .00000 | .03462 | .00000 | .00000 | .00000 | .03424 | .00373 | .00005 | .76554 | .00000 | .00001 | .00014 | .15245 |
| 1850 | .00920 | .00000 | .03462 | .00000 | .00000 | .00000 | .03421 | .00438 | .00006 | .76520 | .00000 | .00001 | .00019 | .15210 |
| 1900 | .00920 | .00001 | .03462 | .00000 | .00000 | .00000 | .03418 | .00511 | .00006 | .76482 | .00000 | .00002 | .00025 | .15172 |
| 1950 | .00920 | .00001 | .03461 | .00000 | .00001 | .00000 | .03414 | .00591 | .00006 | .76440 | .00000 | .00002 | .00033 | .15129 |
| 2000 | .00920 | .00002 | .03461 | .00000 | .00001 | .00000 | .03409 | .00678 | .00007 | .76394 | .00000 | .00004 | .00042 | .15082 |
| 2050 | .00920 | .00002 | .03460 | .00000 | .00001 | .00001 | .03403 | .00773 | .00007 | .76344 | .00000 | .00005 | .00053 | .15031 |
| 2100 | .00920 | .00004 | .03458 | .00000 | .00001 | .00001 | .03396 | .00875 | .00007 | .76289 | .00000 | .00008 | .00067 | .14974 |
| 2150 | .00920 | .00005 | .03457 | .00000 | .00001 | .00001 | .03387 | .00985 | .00007 | .76229 | .00000 | .00011 | .00083 | .14914 |
| 2200 | .00920 | .00008 | .03454 | .00000 | .00001 | .00001 | .03377 | .01102 | .00008 | .76164 | .00000 | .00015 | .00102 | .14848 |
| 2250 | .00920 | .00011 | .03451 | .00000 | .00001 | .00002 | .03365 | .01226 | .00008 | .76094 | .00000 | .00020 | .00123 | .14778 |
| 2300 | .00920 | .00015 | .03446 | .00001 | .00002 | .00003 | .03351 | .01358 | .00008 | .76019 | .00000 | .00027 | .00149 | .14702 |
| 2350 | .00920 | .00020 | .03440 | .00001 | .00002 | .00003 | .03336 | .01496 | .00009 | .75938 | .00001 | .00035 | .00177 | .14622 |
| 2400 | .00920 | .00027 | .03433 | .00001 | .00002 | .00004 | .03317 | .01642 | .00009 | .75852 | .00001 | .00046 | .00210 | .14536 |
| 2450 | .00919 | .00035 | .03424 | .00002 | .00002 | .00006 | .03296 | .01794 | .00009 | .75759 | .00001 | .00060 | .00247 | .14445 |
| 2500 | .00919 | .00046 | .03412 | .00003 | .00003 | .00007 | .03273 | .01953 | .00009 | .75660 | .00001 | .00077 | .00288 | .14350 |
| 2550 | .00919 | .00060 | .03397 | .00004 | .00003 | .00009 | .03246 | .02117 | .00009 | .75554 | .00001 | .00098 | .00333 | .14248 |
| 2600 | .00919 | .00077 | .03379 | .00006 | .00003 | .00011 | .03217 | .02288 | .00010 | .75442 | .00001 | .00123 | .00384 | .14142 |
| 2650 | .00918 | .00097 | .03357 | .00008 | .00004 | .00014 | .03184 | .02463 | .00010 | .75321 | .00001 | .00153 | .00439 | .14031 |
| 2700 | .00918 | .00122 | .03330 | .00011 | .00004 | .00017 | .03147 | .02644 | .00010 | .75193 | .00001 | .00189 | .00499 | .13914 |
| 2750 | .00917 | .00152 | .03299 | .00014 | .00004 | .00021 | .03107 | .02829 | .00010 | .75057 | .00001 | .00232 | .00564 | .13792 |
| 2800 | .00917 | .00187 | .03262 | .00018 | .00005 | .00026 | .03063 | .03018 | .00010 | .74912 | .00001 | .00282 | .00634 | .13665 |
| 2850 | .00916 | .00228 | .03218 | .00024 | .00005 | .00031 | .03015 | .03211 | .00011 | .74758 | .00001 | .00341 | .00709 | .13533 |
| 2900 | .00915 | .00275 | .03168 | .00031 | .00006 | .00036 | .02963 | .03407 | .00011 | .74595 | .00001 | .00409 | .00788 | .13396 |
| 2950 | .00914 | .00329 | .03111 | .00039 | .00006 | .00043 | .02907 | .03606 | .00011 | .74421 | .00001 | .00487 | .00872 | .13253 |
| 3000 | .00913 | .00390 | .03046 | .00050 | .00006 | .00050 | .02846 | .03807 | .00011 | .74237 | .00001 | .00576 | .00961 | .13105 |

TABLE 7C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016907; EQUIV.RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00920 | .03463 | .03416 | .00000 | .00015 | .76744 | .15441 |
| 220 | .00920 | .03463 | .03179 | .00000 | .00252 | .76744 | .15441 |
| 240 | .00920 | .03463 | .00772 | .00000 | .02660 | .76744 | .15441 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00920 | .03463 | .03430 | .00000 | .00002 | .76744 | .15441 |
| 220 | .00920 | .03463 | .03406 | .00000 | .00025 | .76744 | .15441 |
| 240 | .00920 | .03463 | .03172 | .00000 | .00260 | .76744 | .15441 |
| 260 | .00920 | .03463 | .01536 | .00000 | .01895 | .76744 | .15441 |
| 280 | .00920 | .03463 | .00000 | .00000 | .03431 | .76744 | .15441 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00920 | .03463 | .03431 | .00000 | .00000 | .76744 | .15441 |
| 220 | .00920 | .03463 | .03429 | .00000 | .00003 | .76744 | .15441 |
| 240 | .00920 | .03463 | .03405 | .00000 | .00026 | .76744 | .15441 |
| 260 | .00920 | .03463 | .03245 | .00000 | .00186 | .76744 | .15441 |
| 280 | .00920 | .03463 | .00000 | .02481 | .00950 | .76744 | .15441 |
| 298 | .00920 | .03463 | .00000 | .00330 | .03102 | .76744 | .15441 |
| 300 | .00920 | .03463 | .00000 | .00000 | .03431 | .76744 | .15441 |
| 320 | .00920 | .03463 | .00000 | .00000 | .03431 | .76744 | .15441 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00920 | .03463 | .03431 | .00000 | .00000 | .76744 | .15441 |
| 220 | .00920 | .03463 | .03431 | .00000 | .00000 | .76744 | .15441 |
| 240 | .00920 | .03463 | .03429 | .00000 | .00003 | .76744 | .15441 |
| 260 | .00920 | .03463 | .03413 | .00000 | .00019 | .76744 | .15441 |
| 280 | .00920 | .03463 | .00000 | .03337 | .00094 | .76744 | .15441 |
| 298 | .00920 | .03463 | .00000 | .03130 | .00301 | .76744 | .15441 |
| 300 | .00920 | .03463 | .00000 | .03095 | .00336 | .76744 | .15441 |
| 320 | .00920 | .03463 | .00000 | .02423 | .01008 | .76744 | .15441 |
| 340 | .00920 | .03463 | .00000 | .00797 | .02634 | .76744 | .15441 |
| 360 | .00920 | .03463 | .00000 | .00000 | .03431 | .76744 | .15441 |
| 380 | .00920 | .03463 | .00000 | .00000 | .03431 | .76744 | .15441 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00920 | .03463 | .03431 | .00000 | .00000 | .76744 | .15441 |
| 220 | .00920 | .03463 | .03431 | .00000 | .00000 | .76744 | .15441 |
| 240 | .00920 | .03463 | .03431 | .00000 | .00001 | .76744 | .15441 |
| 260 | .00920 | .03463 | .03428 | .00000 | .00004 | .76744 | .15441 |
| 280 | .00920 | .03463 | .00000 | .03413 | .00019 | .76744 | .15441 |
| 298 | .00920 | .03463 | .00000 | .03371 | .00060 | .76744 | .15441 |
| 300 | .00920 | .03463 | .00000 | .03364 | .00067 | .76744 | .15441 |
| 320 | .00920 | .03463 | .00000 | .03231 | .00200 | .76744 | .15441 |
| 340 | .00920 | .03463 | .00000 | .02916 | .00516 | .76744 | .15441 |
| 360 | .00920 | .03463 | .00000 | .02249 | .01182 | .76744 | .15441 |
| 380 | .00920 | .03463 | .00000 | .00968 | .02464 | .76744 | .15441 |
| 400 | .00920 | .03463 | .00000 | .00000 | .03431 | .76744 | .15441 |
| 420 | .00920 | .03463 | .00000 | .00000 | .03431 | .76744 | .15441 |

TABLE 8.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.033814; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO $\bar{\alpha}$ 0.5008; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00905 | .00000 | .06778 | .00000 | .00000 | .06747 | .00000 | .00001 | .75449 | .00000 | .00000 | .10120 |
| 950 | .00905 | .00000 | .06778 | .00000 | .00000 | .06747 | .00000 | .00001 | .75449 | .00000 | .00000 | .10120 |
| 1000 | .00905 | .00000 | .06778 | .00000 | .00000 | .06747 | .00000 | .00002 | .75449 | .00000 | .00000 | .10119 |
| 1050 | .00905 | .00000 | .06778 | .00000 | .00000 | .06747 | .00000 | .00004 | .75448 | .00000 | .00000 | .10118 |
| 1100 | .00905 | .00000 | .06778 | .00000 | .00000 | .06747 | .00000 | .00006 | .75447 | .00000 | .00000 | .10117 |
| 1150 | .00905 | .00000 | .06778 | .00000 | .00000 | .06747 | .00000 | .00010 | .75445 | .00000 | .00000 | .10115 |
| 1200 | .00905 | .00000 | .06778 | .00000 | .00000 | .06747 | .00000 | .00015 | .75442 | .00000 | .00001 | .10113 |
| 1250 | .00905 | .00000 | .06778 | .00000 | .00000 | .06746 | .00000 | .00021 | .75439 | .00000 | .00001 | .10110 |
| 1300 | .00905 | .00000 | .06778 | .00000 | .00000 | .06746 | .00000 | .00029 | .75435 | .00000 | .00002 | .10105 |
| 1350 | .00905 | .00000 | .06778 | .00000 | .00000 | .06745 | .00000 | .00040 | .75429 | .00000 | .00004 | .10099 |
| 1400 | .00905 | .00000 | .06777 | .00000 | .00000 | .06743 | .00000 | .00053 | .75422 | .00000 | .00007 | .10092 |
| 1450 | .00905 | .00000 | .06777 | .00000 | .00000 | .06741 | .00000 | .00070 | .75412 | .00001 | .00011 | .10082 |
| 1500 | .00905 | .00001 | .06776 | .00000 | .00000 | .06738 | .00000 | .00090 | .75401 | .00001 | .00017 | .10071 |
| 1550 | .00905 | .00002 | .06775 | .00000 | .00001 | .06732 | .00000 | .00113 | .75386 | .00002 | .00026 | .10056 |
| 1600 | .00905 | .00004 | .06773 | .00000 | .00001 | .06725 | .00000 | .00141 | .75368 | .00005 | .00039 | .10039 |
| 1650 | .00905 | .00008 | .06768 | .00000 | .00002 | .06714 | .00000 | .00173 | .75345 | .00008 | .00057 | .10019 |
| 1700 | .00905 | .00015 | .06761 | .00001 | .00004 | .06700 | .00000 | .00210 | .75317 | .00014 | .00080 | .09994 |
| 1750 | .00904 | .00025 | .06748 | .00002 | .00007 | .06680 | .00000 | .00252 | .75281 | .00023 | .00111 | .09966 |
| 1800 | .00904 | .00043 | .06729 | .00004 | .00011 | .06653 | .00000 | .00298 | .75235 | .00038 | .00151 | .09934 |
| 1850 | .00904 | .00072 | .06697 | .00007 | .00018 | .06616 | .00000 | .00351 | .75176 | .00060 | .00201 | .09898 |
| 1900 | .00903 | .00115 | .06650 | .00013 | .00027 | .06568 | .00000 | .00408 | .75100 | .00093 | .00265 | .09858 |
| 1950 | .00902 | .00179 | .06580 | .00023 | .00040 | .06505 | .00000 | .00472 | .75001 | .00141 | .00343 | .09815 |
| 2000 | .00901 | .00271 | .06480 | .00039 | .00059 | .06423 | .00000 | .00540 | .74872 | .00208 | .00437 | .09770 |
| 2050 | .00900 | .00399 | .06340 | .00065 | .00084 | .06317 | .00000 | .00615 | .74706 | .00302 | .00549 | .09724 |
| 2100 | .00898 | .00572 | .06151 | .00106 | .00117 | .06182 | .00000 | .00695 | .74492 | .00430 | .00681 | .09677 |
| 2150 | .00895 | .00796 | .05906 | .00168 | .00160 | .06012 | .00000 | .00781 | .74220 | .00603 | .00832 | .09628 |
| 2200 | .00891 | .01076 | .05599 | .00258 | .00213 | .05802 | .00000 | .00871 | .73879 | .00832 | .01004 | .09575 |
| 2250 | .00887 | .01412 | .05230 | .00389 | .00277 | .05544 | .00000 | .00967 | .73458 | .01131 | .01193 | .09512 |
| 2300 | .00881 | .01796 | .04805 | .00571 | .00352 | .05235 | .00000 | .01065 | .72948 | .01516 | .01397 | .09433 |
| 2350 | .00875 | .02216 | .04335 | .00819 | .00436 | .04871 | .00000 | .01166 | .72343 | .02004 | .01610 | .09325 |
| 2400 | .00867 | .02654 | .03838 | .01147 | .00526 | .04452 | .00000 | .01268 | .71638 | .02611 | .01822 | .09176 |
| 2450 | .00858 | .03091 | .03334 | .01568 | .00616 | .03984 | .00000 | .01367 | .70833 | .03355 | .02024 | .08971 |
| 2500 | .00848 | .03506 | .02842 | .02090 | .00699 | .03475 | .00000 | .01462 | .69932 | .04248 | .02199 | .08699 |
| 2550 | .00836 | .03884 | .02379 | .02715 | .00767 | .02943 | .00000 | .01548 | .68945 | .05299 | .02334 | .08349 |
| 2600 | .00824 | .04213 | .01958 | .03435 | .00810 | .02408 | .00001 | .01623 | .67888 | .06510 | .02414 | .07915 |
| 2650 | .00811 | .04488 | .01587 | .04227 | .00823 | .01897 | .00001 | .01684 | .66784 | .07872 | .02427 | .07399 |
| 2700 | .00798 | .04708 | .01268 | .05059 | .00802 | .01434 | .00001 | .01728 | .65664 | .09365 | .02367 | .06805 |
| 2750 | .00785 | .04878 | .01000 | .05888 | .00750 | .01038 | .00002 | .01752 | .64561 | .10957 | .02239 | .06149 |
| 2800 | .00772 | .05004 | .00780 | .06674 | .00673 | .00721 | .00003 | .01755 | .63509 | .12604 | .02054 | .05451 |
| 2850 | .00760 | .05094 | .00602 | .07383 | .00583 | .00481 | .00004 | .01737 | .62536 | .14254 | .01830 | .04736 |
| 2900 | .00750 | .05155 | .00461 | .07994 | .00490 | .00310 | .00006 | .01700 | .61662 | .15853 | .01588 | .04033 |
| 2950 | .00740 | .05194 | .00350 | .08503 | .00401 | .00194 | .00008 | .01644 | .60899 | .17352 | .01346 | .03368 |
| 3000 | .00732 | .05219 | .00265 | .08914 | .00323 | .00119 | .00011 | .01575 | .60248 | .18712 | .01120 | .02763 |

TABLE 8.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.033814; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00001 | .75449 | .00000 | .00000 | .10120 |
| 950 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00001 | .75449 | .00000 | .00000 | .10120 |
| 1000 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00002 | .75449 | .00000 | .00000 | .10119 |
| 1050 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00004 | .75448 | .00000 | .00000 | .10118 |
| 1100 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00006 | .75447 | .00000 | .00000 | .10117 |
| 1150 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00010 | .75445 | .00000 | .00000 | .10115 |
| 1200 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00015 | .75442 | .00000 | .00000 | .10113 |
| 1250 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00021 | .75439 | .00000 | .00001 | .10110 |
| 1300 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06746 | .00000 | .00029 | .75435 | .00000 | .00001 | .10105 |
| 1350 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06746 | .00000 | .00040 | .75429 | .00000 | .00002 | .10100 |
| 1400 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06745 | .00000 | .00053 | .75422 | .00000 | .00004 | .10093 |
| 1450 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06744 | .00000 | .00070 | .75414 | .00000 | .00006 | .10084 |
| 1500 | .00905 | .00000 | .06777 | .00000 | .00000 | .00000 | .06742 | .00000 | .00090 | .75403 | .00000 | .00010 | .10073 |
| 1550 | .00905 | .00001 | .06777 | .00000 | .00000 | .00000 | .06739 | .00000 | .00113 | .75390 | .00001 | .00015 | .10060 |
| 1600 | .00905 | .00001 | .06776 | .00000 | .00000 | .00000 | .06735 | .00000 | .00141 | .75374 | .00001 | .00022 | .10044 |
| 1650 | .00905 | .00003 | .06775 | .00000 | .00000 | .00001 | .06729 | .00000 | .00173 | .75355 | .00003 | .00032 | .10025 |
| 1700 | .00905 | .00005 | .06772 | .00000 | .00000 | .00001 | .06722 | .00000 | .00210 | .75332 | .00004 | .00045 | .10003 |
| 1750 | .00905 | .00008 | .06768 | .00000 | .00000 | .00002 | .06712 | .00000 | .00252 | .75305 | .00007 | .00062 | .09978 |
| 1800 | .00905 | .00014 | .06762 | .00001 | .00000 | .00004 | .06698 | .00000 | .00299 | .75273 | .00012 | .00085 | .09949 |
| 1850 | .00904 | .00023 | .06751 | .00001 | .00000 | .00006 | .06680 | .00000 | .00351 | .75234 | .00019 | .00114 | .09916 |
| 1900 | .00904 | .00037 | .06736 | .00002 | .00000 | .00009 | .06657 | .00000 | .00409 | .75188 | .00029 | .00150 | .09879 |
| 1950 | .00904 | .00058 | .06713 | .00004 | .00000 | .00013 | .06627 | .00000 | .00472 | .75131 | .00044 | .00195 | .09838 |
| 2000 | .00904 | .00088 | .06679 | .00007 | .00000 | .00019 | .06589 | .00000 | .00542 | .75063 | .00066 | .00249 | .09794 |
| 2050 | .00903 | .00132 | .06631 | .00012 | .00000 | .00027 | .06542 | .00000 | .00617 | .74979 | .00095 | .00314 | .09746 |
| 2100 | .00902 | .00193 | .06565 | .00019 | .00000 | .00039 | .06482 | .00000 | .00698 | .74878 | .00136 | .00392 | .09696 |
| 2150 | .00901 | .00276 | .06475 | .00031 | .00000 | .00054 | .06409 | .00000 | .00784 | .74753 | .00191 | .00483 | .09643 |
| 2200 | .00900 | .00386 | .06355 | .00048 | .00000 | .00073 | .06318 | .00000 | .00876 | .74601 | .00263 | .00589 | .09590 |
| 2250 | .00898 | .00529 | .06200 | .00073 | .00000 | .00098 | .06208 | .00000 | .00974 | .74416 | .00358 | .00710 | .09535 |
| 2300 | .00896 | .00708 | .06005 | .00109 | .00000 | .00129 | .06075 | .00000 | .01077 | .74193 | .00481 | .00847 | .09479 |
| 2350 | .00894 | .00927 | .05767 | .00160 | .00000 | .00167 | .05917 | .00000 | .01185 | .73925 | .00637 | .01000 | .09421 |
| 2400 | .00891 | .01187 | .05483 | .00230 | .00000 | .00212 | .05729 | .00000 | .01298 | .73608 | .00834 | .01168 | .09359 |
| 2450 | .00887 | .01486 | .05157 | .00325 | .00000 | .00265 | .05510 | .00000 | .01415 | .73236 | .01080 | .01350 | .09290 |
| 2500 | .00882 | .01817 | .04792 | .00451 | .00001 | .00325 | .05257 | .00000 | .01534 | .72807 | .01382 | .01543 | .09208 |
| 2550 | .00877 | .02173 | .04397 | .00614 | .00001 | .00392 | .04970 | .00000 | .01656 | .72317 | .01750 | .01743 | .09108 |
| 2600 | .00871 | .02544 | .03983 | .00822 | .00001 | .00464 | .04648 | .00000 | .01778 | .71766 | .02193 | .01946 | .08982 |
| 2650 | .00865 | .02916 | .03561 | .01082 | .00001 | .00540 | .04294 | .00000 | .01899 | .71154 | .02719 | .02145 | .08824 |
| 2700 | .00857 | .03279 | .03144 | .01400 | .00001 | .00615 | .03911 | .00000 | .02015 | .70483 | .03334 | .02333 | .08627 |
| 2750 | .00849 | .03621 | .02741 | .01781 | .00001 | .00686 | .03506 | .00001 | .02126 | .69756 | .04046 | .02501 | .08385 |
| 2800 | .00841 | .03934 | .02363 | .02225 | .00001 | .00748 | .03087 | .00001 | .02229 | .68979 | .04857 | .02639 | .08096 |
| 2850 | .00831 | .04212 | .02015 | .02732 | .00001 | .00798 | .02664 | .00001 | .02321 | .68159 | .05768 | .02740 | .07756 |
| 2900 | .00822 | .04452 | .01702 | .03294 | .00001 | .00831 | .02249 | .00002 | .02400 | .67307 | .06776 | .02797 | .07367 |
| 2950 | .00812 | .04655 | .01424 | .03901 | .00001 | .00844 | .01855 | .00003 | .02464 | .66435 | .07872 | .02802 | .06932 |
| 3000 | .00801 | .04820 | .01182 | .04537 | .00001 | .00836 | .01492 | .00004 | .02511 | .65558 | .09045 | .02756 | .06456 |

TABLE 8.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.033814; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00001 | .00000 | .75449 | .00000 | .00000 | .10120 |
| 950 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00001 | .00000 | .75449 | .00000 | .00000 | .10120 |
| 1000 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00002 | .00000 | .75449 | .00000 | .00000 | .10119 |
| 1050 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00004 | .00000 | .75448 | .00000 | .00000 | .10118 |
| 1100 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00006 | .00000 | .75447 | .00000 | .00000 | .10117 |
| 1150 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00010 | .00000 | .75445 | .00000 | .00000 | .10115 |
| 1200 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00015 | .00000 | .75442 | .00000 | .00000 | .10113 |
| 1250 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00021 | .00000 | .75439 | .00000 | .00000 | .10110 |
| 1300 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00000 | .00029 | .00000 | .75435 | .00000 | .00001 | .10105 |
| 1350 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06746 | .00000 | .00040 | .00000 | .75430 | .00000 | .00001 | .10100 |
| 1400 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06746 | .00000 | .00053 | .00000 | .75423 | .00000 | .00002 | .10093 |
| 1450 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06745 | .00000 | .00070 | .00000 | .75414 | .00000 | .00004 | .10084 |
| 1500 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06744 | .00000 | .00090 | .00000 | .75404 | .00000 | .00005 | .10074 |
| 1550 | .00905 | .00000 | .06777 | .00000 | .00000 | .00000 | .06743 | .00000 | .00113 | .00000 | .75391 | .00000 | .00008 | .10061 |
| 1600 | .00905 | .00000 | .06777 | .00000 | .00000 | .00000 | .06740 | .00000 | .00141 | .00000 | .75377 | .00000 | .00012 | .10046 |
| 1650 | .00905 | .00001 | .06777 | .00000 | .00000 | .00000 | .06737 | .00000 | .00173 | .00000 | .75359 | .00001 | .00018 | .10029 |
| 1700 | .00905 | .00001 | .06776 | .00000 | .00000 | .00000 | .06733 | .00000 | .00210 | .00000 | .75339 | .00001 | .00025 | .10008 |
| 1750 | .00905 | .00003 | .06774 | .00000 | .00000 | .00001 | .06728 | .00000 | .00252 | .00000 | .75315 | .00002 | .00035 | .09985 |
| 1800 | .00905 | .00004 | .06772 | .00000 | .00000 | .00001 | .06721 | .00000 | .00299 | .00000 | .75288 | .00004 | .00048 | .09958 |
| 1850 | .00905 | .00007 | .06769 | .00000 | .00000 | .00002 | .06711 | .00000 | .00351 | .00001 | .75256 | .00006 | .00064 | .09927 |
| 1900 | .00905 | .00012 | .06764 | .00000 | .00000 | .00003 | .06699 | .00000 | .00409 | .00001 | .75220 | .00009 | .00085 | .09893 |
| 1950 | .00904 | .00018 | .06756 | .00001 | .00000 | .00004 | .06684 | .00000 | .00473 | .00001 | .75178 | .00014 | .00110 | .09855 |
| 2000 | .00904 | .00028 | .06745 | .00001 | .00000 | .00006 | .06665 | .00000 | .00543 | .00001 | .75131 | .00021 | .00141 | .09814 |
| 2050 | .00904 | .00042 | .06730 | .00002 | .00000 | .00009 | .06642 | .00000 | .00618 | .00001 | .75075 | .00030 | .00178 | .09768 |
| 2100 | .00904 | .00062 | .06708 | .00003 | .00000 | .00012 | .06613 | .00000 | .00699 | .00001 | .75012 | .00043 | .00223 | .09719 |
| 2150 | .00903 | .00090 | .06677 | .00006 | .00000 | .00017 | .06578 | .00000 | .00786 | .00001 | .74938 | .00060 | .00276 | .09667 |
| 2200 | .00903 | .00127 | .06636 | .00009 | .00000 | .00024 | .06536 | .00000 | .00879 | .00001 | .74853 | .00083 | .00337 | .09611 |
| 2250 | .00902 | .00177 | .06582 | .00013 | .00001 | .00032 | .06485 | .00000 | .00977 | .00001 | .74755 | .00113 | .00409 | .09552 |
| 2300 | .00902 | .00243 | .06511 | .00020 | .00001 | .00043 | .06424 | .00000 | .01081 | .00001 | .74640 | .00152 | .00490 | .09492 |
| 2350 | .00901 | .00326 | .06420 | .00029 | .00001 | .00057 | .06353 | .00000 | .01190 | .00001 | .74508 | .00201 | .00583 | .09430 |
| 2400 | .00900 | .00432 | .06306 | .00043 | .00001 | .00073 | .06269 | .00000 | .01305 | .00001 | .74354 | .00264 | .00687 | .09366 |
| 2450 | .00898 | .00561 | .06166 | .00061 | .00001 | .00094 | .06170 | .00000 | .01425 | .00001 | .74175 | .00342 | .00804 | .09302 |
| 2500 | .00896 | .00718 | .05997 | .00086 | .00001 | .00118 | .06056 | .00000 | .01549 | .00001 | .73970 | .00438 | .00932 | .09237 |
| 2550 | .00894 | .00903 | .05796 | .00119 | .00001 | .00147 | .05925 | .00000 | .01678 | .00001 | .73736 | .00555 | .01072 | .09171 |
| 2600 | .00892 | .01116 | .05565 | .00162 | .00001 | .00181 | .05776 | .00000 | .01811 | .00001 | .73469 | .00698 | .01224 | .09103 |
| 2650 | .00889 | .01357 | .05303 | .00219 | .00001 | .00220 | .05607 | .00000 | .01948 | .00001 | .73168 | .00870 | .01387 | .09031 |
| 2700 | .00886 | .01623 | .05013 | .00290 | .00001 | .00264 | .05417 | .00000 | .02087 | .00001 | .72831 | .01074 | .01558 | .08953 |
| 2750 | .00882 | .01909 | .04700 | .00381 | .00002 | .00313 | .05206 | .00000 | .02229 | .00001 | .72458 | .01316 | .01738 | .08866 |
| 2800 | .00878 | .02210 | .04369 | .00492 | .00002 | .00367 | .04974 | .00000 | .02371 | .00001 | .72048 | .01598 | .01922 | .08767 |
| 2850 | .00874 | .02519 | .04026 | .00629 | .00002 | .00424 | .04722 | .00000 | .02513 | .00001 | .71602 | .01927 | .02109 | .08653 |
| 2900 | .00869 | .02830 | .03678 | .00795 | .00002 | .00484 | .04450 | .00001 | .02653 | .00001 | .71121 | .02304 | .02294 | .08519 |
| 2950 | .00864 | .03136 | .03333 | .00991 | .00002 | .00545 | .04160 | .00001 | .02790 | .00001 | .70606 | .02734 | .02474 | .08363 |
| 3000 | .00858 | .03430 | .02995 | .01222 | .00002 | .00607 | .03855 | .00001 | .02923 | .00001 | .70060 | .03220 | .02643 | .08183 |

TABLE 8.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.033814; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00001 | .00000 | .75449 | .00000 | .00000 | .10120 |
| 950 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00001 | .00000 | .75449 | .00000 | .00000 | .10120 |
| 1000 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00002 | .00000 | .75449 | .00000 | .00000 | .10119 |
| 1050 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00004 | .00000 | .75448 | .00000 | .00000 | .10118 |
| 1100 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00006 | .00000 | .75447 | .00000 | .00000 | .10117 |
| 1150 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00010 | .00000 | .75445 | .00000 | .00000 | .10115 |
| 1200 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00015 | .00001 | .75442 | .00000 | .00000 | .10113 |
| 1250 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00021 | .00001 | .75439 | .00000 | .00000 | .10109 |
| 1300 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00029 | .00001 | .75435 | .00000 | .00000 | .10105 |
| 1350 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00040 | .00001 | .75430 | .00000 | .00001 | .10099 |
| 1400 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06746 | .00053 | .00001 | .75423 | .00000 | .00001 | .10093 |
| 1450 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06746 | .00070 | .00001 | .75414 | .00000 | .00002 | .10084 |
| 1500 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06745 | .00090 | .00001 | .75404 | .00000 | .00003 | .10074 |
| 1550 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06745 | .00113 | .00001 | .75392 | .00000 | .00005 | .10061 |
| 1600 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06743 | .00141 | .00001 | .75378 | .00000 | .00007 | .10047 |
| 1650 | .00905 | .00000 | .06777 | .00000 | .00000 | .00000 | .06742 | .00173 | .00001 | .75361 | .00000 | .00010 | .10030 |
| 1700 | .00905 | .00000 | .06777 | .00000 | .00000 | .00000 | .06739 | .00210 | .00001 | .75342 | .00000 | .00014 | .10010 |
| 1750 | .00905 | .00001 | .06777 | .00000 | .00000 | .00000 | .06736 | .00252 | .00001 | .75319 | .00001 | .00020 | .09988 |
| 1800 | .00905 | .00001 | .06776 | .00000 | .00000 | .00000 | .06733 | .00299 | .00002 | .75294 | .00001 | .00027 | .09962 |
| 1850 | .00905 | .00002 | .06775 | .00000 | .00000 | .00001 | .06727 | .00351 | .00002 | .75265 | .00002 | .00036 | .09933 |
| 1900 | .00905 | .00004 | .06773 | .00000 | .00000 | .00001 | .06721 | .00410 | .00002 | .75233 | .00003 | .00048 | .09901 |
| 1950 | .00905 | .00006 | .06771 | .00000 | .00000 | .00001 | .06713 | .00473 | .00002 | .75197 | .00004 | .00062 | .09866 |
| 2000 | .00905 | .00009 | .06767 | .00000 | .00000 | .00002 | .06703 | .00543 | .00002 | .75157 | .00007 | .00079 | .09826 |
| 2050 | .00905 | .00013 | .06762 | .00000 | .00001 | .00003 | .06691 | .00618 | .00002 | .75112 | .00010 | .00101 | .09783 |
| 2100 | .00904 | .00020 | .06755 | .00001 | .00001 | .00004 | .06676 | .00700 | .00002 | .75062 | .00014 | .00126 | .09737 |
| 2150 | .00904 | .00029 | .06745 | .00001 | .00001 | .00006 | .06658 | .00787 | .00002 | .75006 | .00019 | .00156 | .09686 |
| 2200 | .00904 | .00041 | .06731 | .00002 | .00001 | .00008 | .06637 | .00880 | .00002 | .74944 | .00026 | .00191 | .09632 |
| 2250 | .00904 | .00057 | .06713 | .00002 | .00001 | .00010 | .06611 | .00979 | .00002 | .74876 | .00036 | .00232 | .09575 |
| 2300 | .00904 | .00079 | .06690 | .00004 | .00001 | .00014 | .06582 | .01083 | .00002 | .74800 | .00048 | .00279 | .09514 |
| 2350 | .00903 | .00107 | .06659 | .00005 | .00001 | .00018 | .06547 | .01193 | .00002 | .74716 | .00064 | .00333 | .09451 |
| 2400 | .00903 | .00143 | .06619 | .00008 | .00001 | .00024 | .06506 | .01309 | .00003 | .74622 | .00084 | .00394 | .09385 |
| 2450 | .00902 | .00189 | .06569 | .00011 | .00002 | .00031 | .06459 | .01429 | .00003 | .74518 | .00108 | .00463 | .09316 |
| 2500 | .00902 | .00246 | .06507 | .00016 | .00002 | .00040 | .06405 | .01554 | .00003 | .74402 | .00138 | .00539 | .09246 |
| 2550 | .00901 | .00317 | .06431 | .00022 | .00002 | .00050 | .06343 | .01684 | .00003 | .74273 | .00176 | .00624 | .09174 |
| 2600 | .00900 | .00402 | .06339 | .00030 | .00002 | .00062 | .06273 | .01819 | .00003 | .74129 | .00221 | .00717 | .09101 |
| 2650 | .00899 | .00504 | .06229 | .00041 | .00002 | .00077 | .06194 | .01958 | .00003 | .73970 | .00275 | .00819 | .09028 |
| 2700 | .00898 | .00624 | .06099 | .00055 | .00003 | .00094 | .06105 | .02101 | .00003 | .73794 | .00340 | .00930 | .08954 |
| 2750 | .00896 | .00764 | .05949 | .00073 | .00003 | .00114 | .06005 | .02248 | .00003 | .73599 | .00416 | .01050 | .08880 |
| 2800 | .00895 | .00922 | .05778 | .00095 | .00003 | .00137 | .05894 | .02398 | .00003 | .73384 | .00507 | .01178 | .08806 |
| 2850 | .00893 | .01100 | .05585 | .00123 | .00003 | .00163 | .05772 | .02551 | .00003 | .73149 | .00612 | .01314 | .08730 |
| 2900 | .00890 | .01297 | .05373 | .00158 | .00004 | .00192 | .05637 | .02707 | .00003 | .72893 | .00734 | .01458 | .08652 |
| 2950 | .00888 | .01511 | .05141 | .00201 | .00004 | .00225 | .05490 | .02865 | .00003 | .72615 | .00875 | .01608 | .08572 |
| 3000 | .00885 | .01739 | .04893 | .00253 | .00004 | .00260 | .05331 | .03024 | .00003 | .72316 | .01037 | .01764 | .08488 |

TABLE 8.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.033814; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00001 | .00000 | .75449 | .00000 | .00000 | .00000 | .10120 |
| 950 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00001 | .00001 | .75449 | .00000 | .00000 | .00000 | .10119 |
| 1000 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00002 | .00001 | .75449 | .00000 | .00000 | .00000 | .10119 |
| 1050 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00004 | .00001 | .75448 | .00000 | .00000 | .00000 | .10118 |
| 1100 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00006 | .00001 | .75447 | .00000 | .00000 | .00000 | .10116 |
| 1150 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00010 | .00001 | .75445 | .00000 | .00000 | .00000 | .10115 |
| 1200 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00015 | .00001 | .75442 | .00000 | .00000 | .00000 | .10112 |
| 1250 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00021 | .00001 | .75439 | .00000 | .00000 | .00000 | .10109 |
| 1300 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00029 | .00002 | .75435 | .00000 | .00000 | .00000 | .10104 |
| 1350 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00040 | .00002 | .75429 | .00000 | .00000 | .00000 | .10099 |
| 1400 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06747 | .00053 | .00002 | .75423 | .00000 | .00000 | .00001 | .10092 |
| 1450 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06746 | .00070 | .00002 | .75414 | .00000 | .00000 | .00001 | .10083 |
| 1500 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06746 | .00090 | .00002 | .75404 | .00000 | .00000 | .00002 | .10073 |
| 1550 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06745 | .00113 | .00002 | .75392 | .00000 | .00000 | .00003 | .10061 |
| 1600 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06745 | .00141 | .00003 | .75378 | .00000 | .00000 | .00005 | .10046 |
| 1650 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06743 | .00173 | .00003 | .75362 | .00000 | .00000 | .00007 | .10029 |
| 1700 | .00905 | .00000 | .06778 | .00000 | .00000 | .00000 | .06742 | .00210 | .00003 | .75342 | .00000 | .00000 | .00010 | .10010 |
| 1750 | .00905 | .00000 | .06777 | .00000 | .00000 | .00000 | .06740 | .00252 | .00003 | .75321 | .00000 | .00000 | .00013 | .09988 |
| 1800 | .00905 | .00001 | .06777 | .00000 | .00000 | .00000 | .06737 | .00299 | .00003 | .75296 | .00000 | .00001 | .00018 | .09963 |
| 1850 | .00905 | .00001 | .06776 | .00000 | .00000 | .00000 | .06734 | .00351 | .00004 | .75268 | .00000 | .00001 | .00024 | .09934 |
| 1900 | .00905 | .00002 | .06776 | .00000 | .00000 | .00000 | .06730 | .00410 | .00004 | .75237 | .00000 | .00001 | .00032 | .09903 |
| 1950 | .00905 | .00003 | .06774 | .00000 | .00001 | .00001 | .06725 | .00473 | .00004 | .75203 | .00000 | .00002 | .00041 | .09868 |
| 2000 | .00905 | .00004 | .06773 | .00000 | .00001 | .00001 | .06718 | .00543 | .00004 | .75165 | .00000 | .00003 | .00053 | .09830 |
| 2050 | .00905 | .00006 | .06770 | .00000 | .00001 | .00001 | .06710 | .00619 | .00004 | .75123 | .00000 | .00004 | .00067 | .09789 |
| 2100 | .00905 | .00009 | .06767 | .00000 | .00001 | .00002 | .06701 | .00700 | .00005 | .75077 | .00000 | .00006 | .00084 | .09743 |
| 2150 | .00905 | .00013 | .06763 | .00000 | .00001 | .00003 | .06689 | .00788 | .00005 | .75027 | .00000 | .00009 | .00105 | .09695 |
| 2200 | .00904 | .00018 | .06756 | .00000 | .00001 | .00003 | .06675 | .00881 | .00005 | .74972 | .00000 | .00012 | .00128 | .09642 |
| 2250 | .00904 | .00026 | .06748 | .00001 | .00001 | .00005 | .06659 | .00980 | .00005 | .74912 | .00000 | .00016 | .00156 | .09586 |
| 2300 | .00904 | .00035 | .06737 | .00001 | .00002 | .00006 | .06640 | .01085 | .00005 | .74847 | .00000 | .00022 | .00188 | .09527 |
| 2350 | .00904 | .00048 | .06723 | .00002 | .00002 | .00008 | .06618 | .01195 | .00005 | .74777 | .00000 | .00029 | .00224 | .09465 |
| 2400 | .00904 | .00065 | .06705 | .00002 | .00002 | .00011 | .06593 | .01310 | .00006 | .74700 | .00000 | .00037 | .00265 | .09399 |
| 2450 | .00904 | .00086 | .06682 | .00003 | .00002 | .00014 | .06564 | .01431 | .00006 | .74617 | .00000 | .00048 | .00312 | .09330 |
| 2500 | .00903 | .00113 | .06653 | .00005 | .00003 | .00018 | .06531 | .01557 | .00006 | .74527 | .00001 | .00062 | .00364 | .09259 |
| 2550 | .00903 | .00146 | .06617 | .00007 | .00003 | .00023 | .06493 | .01687 | .00006 | .74429 | .00001 | .00079 | .00422 | .09186 |
| 2600 | .00902 | .00186 | .06572 | .00009 | .00003 | .00029 | .06450 | .01822 | .00006 | .74323 | .00001 | .00099 | .00487 | .09111 |
| 2650 | .00902 | .00236 | .06519 | .00012 | .00004 | .00036 | .06402 | .01962 | .00006 | .74208 | .00001 | .00123 | .00557 | .09034 |
| 2700 | .00901 | .00295 | .06454 | .00017 | .00004 | .00044 | .06348 | .02105 | .00006 | .74082 | .00001 | .00152 | .00634 | .08955 |
| 2750 | .00900 | .00366 | .06378 | .00022 | .00005 | .00053 | .06288 | .02253 | .00007 | .73947 | .00001 | .00186 | .00718 | .08876 |
| 2800 | .00900 | .00449 | .06289 | .00029 | .00005 | .00065 | .06221 | .02404 | .00007 | .73799 | .00001 | .00226 | .00809 | .08797 |
| 2850 | .00899 | .00545 | .06185 | .00038 | .00005 | .00078 | .06147 | .02558 | .00007 | .73640 | .00001 | .00273 | .00906 | .08717 |
| 2900 | .00897 | .00656 | .06067 | .00049 | .00006 | .00093 | .06066 | .02715 | .00007 | .73467 | .00001 | .00328 | .01011 | .08638 |
| 2950 | .00896 | .00780 | .05932 | .00063 | .00006 | .00110 | .05977 | .02876 | .00007 | .73281 | .00001 | .00391 | .01121 | .08558 |
| 3000 | .00895 | .00920 | .05782 | .00080 | .00007 | .00129 | .05880 | .03038 | .00007 | .73081 | .00001 | .00464 | .01239 | .08478 |

TABLE 8C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.033814; EQUIV.RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00905 | .06778 | .06732 | .00000 | .00015 | .75450 | .10120 |
| 220 | .00905 | .06778 | .06503 | .00000 | .00244 | .75450 | .10120 |
| 240 | .00905 | .06778 | .04179 | .00000 | .02568 | .75450 | .10120 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00905 | .06778 | .06745 | .00000 | .00001 | .75450 | .10120 |
| 220 | .00905 | .06778 | .06723 | .00000 | .00024 | .75450 | .10120 |
| 240 | .00905 | .06778 | .06496 | .00000 | .00251 | .75450 | .10120 |
| 260 | .00905 | .06778 | .04917 | .00000 | .01830 | .75450 | .10120 |
| 280 | .00905 | .06778 | .00000 | .00000 | .06747 | .75450 | .10120 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00905 | .06778 | .06747 | .00000 | .00000 | .75450 | .10120 |
| 220 | .00905 | .06778 | .06745 | .00000 | .00002 | .75450 | .10120 |
| 240 | .00905 | .06778 | .06722 | .00000 | .00025 | .75450 | .10120 |
| 260 | .00905 | .06778 | .06567 | .00000 | .00180 | .75450 | .10120 |
| 280 | .00905 | .06778 | .00000 | .05829 | .00918 | .75450 | .10120 |
| 298 | .00905 | .06778 | .00000 | .03752 | .02995 | .75450 | .10120 |
| 300 | .00905 | .06778 | .00000 | .03393 | .03354 | .75450 | .10120 |
| 320 | .00905 | .06778 | .00000 | .00000 | .06747 | .75450 | .10120 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00905 | .06778 | .06747 | .00000 | .00000 | .75450 | .10120 |
| 220 | .00905 | .06778 | .06747 | .00000 | .00000 | .75450 | .10120 |
| 240 | .00905 | .06778 | .06744 | .00000 | .00002 | .75450 | .10120 |
| 260 | .00905 | .06778 | .06729 | .00000 | .00018 | .75450 | .10120 |
| 280 | .00905 | .06778 | .00000 | .06656 | .00091 | .75450 | .10120 |
| 298 | .00905 | .06778 | .00000 | .06456 | .00291 | .75450 | .10120 |
| 300 | .00905 | .06778 | .00000 | .06422 | .00325 | .75450 | .10120 |
| 320 | .00905 | .06778 | .00000 | .05773 | .00974 | .75450 | .10120 |
| 340 | .00905 | .06778 | .00000 | .04203 | .02544 | .75450 | .10120 |
| 360 | .00905 | .06778 | .00000 | .00746 | .06001 | .75450 | .10120 |
| 380 | .00905 | .06778 | .00000 | .00000 | .06747 | .75450 | .10120 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00905 | .06778 | .06747 | .00000 | .00000 | .75450 | .10120 |
| 220 | .00905 | .06778 | .06747 | .00000 | .00000 | .75450 | .10120 |
| 240 | .00905 | .06778 | .06746 | .00000 | .00000 | .75450 | .10120 |
| 260 | .00905 | .06778 | .06743 | .00000 | .00004 | .75450 | .10120 |
| 280 | .00905 | .06778 | .00000 | .06729 | .00018 | .75450 | .10120 |
| 298 | .00905 | .06778 | .00000 | .06689 | .00058 | .75450 | .10120 |
| 300 | .00905 | .06778 | .00000 | .06682 | .00065 | .75450 | .10120 |
| 320 | .00905 | .06778 | .00000 | .06554 | .00193 | .75450 | .10120 |
| 340 | .00905 | .06778 | .00000 | .06249 | .00498 | .75450 | .10120 |
| 360 | .00905 | .06778 | .00000 | .05606 | .01141 | .75450 | .10120 |
| 380 | .00905 | .06778 | .00000 | .04368 | .02379 | .75450 | .10120 |
| 400 | .00905 | .06778 | .00000 | .02149 | .04598 | .75450 | .10120 |
| 420 | .00905 | .06778 | .00000 | .00000 | .06747 | .75450 | .10120 |

TABLE 9.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.050721; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00890 | .00000 | .09983 | .00000 | .00000 | .09953 | .00000 | .00000 | .74198 | .00000 | .00000 | .04976 |
| 950 | .00890 | .00000 | .09983 | .00000 | .00000 | .09953 | .00000 | .00001 | .74198 | .00000 | .00000 | .04976 |
| 1000 | .00890 | .00000 | .09983 | .00000 | .00000 | .09953 | .00000 | .00002 | .74197 | .00000 | .00000 | .04975 |
| 1050 | .00890 | .00000 | .09983 | .00000 | .00000 | .09953 | .00000 | .00003 | .74197 | .00000 | .00000 | .04975 |
| 1100 | .00890 | .00000 | .09983 | .00000 | .00000 | .09953 | .00000 | .00004 | .74196 | .00000 | .00000 | .04974 |
| 1150 | .00890 | .00000 | .09983 | .00000 | .00000 | .09952 | .00000 | .00007 | .74195 | .00000 | .00000 | .04973 |
| 1200 | .00890 | .00000 | .09983 | .00000 | .00000 | .09952 | .00000 | .00010 | .74193 | .00000 | .00001 | .04971 |
| 1250 | .00890 | .00000 | .09983 | .00000 | .00000 | .09952 | .00000 | .00015 | .74191 | .00000 | .00001 | .04969 |
| 1300 | .00890 | .00000 | .09983 | .00000 | .00000 | .09951 | .00000 | .00020 | .74188 | .00000 | .00002 | .04965 |
| 1350 | .00890 | .00000 | .09983 | .00000 | .00000 | .09950 | .00000 | .00028 | .74183 | .00000 | .00004 | .04961 |
| 1400 | .00890 | .00000 | .09982 | .00000 | .00000 | .09949 | .00000 | .00037 | .74178 | .00000 | .00007 | .04956 |
| 1450 | .00890 | .00001 | .09982 | .00000 | .00000 | .09946 | .00000 | .00049 | .74171 | .00000 | .00011 | .04949 |
| 1500 | .00890 | .00002 | .09980 | .00000 | .00001 | .09942 | .00000 | .00062 | .74162 | .00001 | .00018 | .04941 |
| 1550 | .00890 | .00004 | .09977 | .00000 | .00002 | .09936 | .00000 | .00079 | .74151 | .00002 | .00027 | .04932 |
| 1600 | .00890 | .00009 | .09972 | .00000 | .00003 | .09928 | .00000 | .00098 | .74136 | .00003 | .00040 | .04921 |
| 1650 | .00890 | .00017 | .09963 | .00001 | .00005 | .09915 | .00000 | .00120 | .74117 | .00006 | .00057 | .04909 |
| 1700 | .00889 | .00030 | .09948 | .00001 | .00009 | .09898 | .00000 | .00146 | .74091 | .00010 | .00081 | .04896 |
| 1750 | .00889 | .00054 | .09922 | .00003 | .00015 | .09873 | .00000 | .00175 | .74057 | .00016 | .00113 | .04884 |
| 1800 | .00889 | .00091 | .09881 | .00005 | .00024 | .09838 | .00000 | .00207 | .74011 | .00027 | .00153 | .04874 |
| 1850 | .00888 | .00150 | .09816 | .00010 | .00037 | .09790 | .00000 | .00244 | .73948 | .00042 | .00205 | .04869 |
| 1900 | .00888 | .00238 | .09718 | .00019 | .00057 | .09725 | .00000 | .00285 | .73862 | .00065 | .00270 | .04873 |
| 1950 | .00886 | .00368 | .09576 | .00033 | .00085 | .09637 | .00000 | .00330 | .73745 | .00099 | .00350 | .04890 |
| 2000 | .00885 | .00552 | .09375 | .00057 | .00123 | .09521 | .00000 | .00380 | .73589 | .00148 | .00448 | .04924 |
| 2050 | .00883 | .00800 | .09102 | .00094 | .00174 | .09368 | .00000 | .00436 | .73381 | .00216 | .00566 | .04979 |
| 2100 | .00880 | .01124 | .08746 | .00152 | .00240 | .09172 | .00000 | .00498 | .73113 | .00311 | .00705 | .05060 |
| 2150 | .00876 | .01528 | .08301 | .00238 | .00324 | .08922 | .00000 | .00566 | .72771 | .00441 | .00868 | .05164 |
| 2200 | .00872 | .02009 | .07768 | .00365 | .00425 | .08612 | .00000 | .00641 | .72347 | .00618 | .01054 | .05289 |
| 2250 | .00866 | .02558 | .07156 | .00545 | .00545 | .08234 | .00000 | .00722 | .71832 | .00854 | .01264 | .05425 |
| 2300 | .00859 | .03155 | .06482 | .00794 | .00682 | .07782 | .00000 | .00808 | .71220 | .01164 | .01493 | .05561 |
| 2350 | .00851 | .03778 | .05769 | .01131 | .00832 | .07252 | .00000 | .00899 | .70507 | .01564 | .01735 | .05681 |
| 2400 | .00842 | .04399 | .05044 | .01574 | .00990 | .06646 | .00000 | .00991 | .69691 | .02071 | .01983 | .05769 |
| 2450 | .00831 | .04993 | .04333 | .02139 | .01148 | .05969 | .00000 | .01084 | .68774 | .02699 | .02222 | .05807 |
| 2500 | .00820 | .05537 | .03659 | .02841 | .01292 | .05236 | .00000 | .01173 | .67760 | .03463 | .02437 | .05781 |
| 2550 | .00807 | .06014 | .03039 | .03684 | .01411 | .04467 | .00000 | .01256 | .66659 | .04371 | .02612 | .05680 |
| 2600 | .00793 | .06416 | .02485 | .04658 | .01490 | .03690 | .00001 | .01329 | .65490 | .05425 | .02727 | .05496 |
| 2650 | .00779 | .06739 | .02003 | .05741 | .01518 | .02941 | .00001 | .01389 | .64277 | .06616 | .02770 | .05226 |
| 2700 | .00765 | .06987 | .01593 | .06893 | .01489 | .02253 | .00001 | .01433 | .63053 | .07927 | .02730 | .04876 |
| 2750 | .00751 | .07170 | .01251 | .08060 | .01405 | .01656 | .00002 | .01460 | .61857 | .09326 | .02609 | .04455 |
| 2800 | .00737 | .07297 | .00972 | .09187 | .01276 | .01167 | .00003 | .01467 | .60726 | .10772 | .02416 | .03981 |
| 2850 | .00725 | .07381 | .00748 | .10222 | .01118 | .00790 | .00004 | .01455 | .59691 | .12216 | .02172 | .03479 |
| 2900 | .00714 | .07433 | .00571 | .11132 | .00949 | .00516 | .00005 | .01425 | .58776 | .13610 | .01898 | .02972 |
| 2950 | .00704 | .07463 | .00432 | .11900 | .00785 | .00327 | .00008 | .01379 | .57989 | .14909 | .01619 | .02486 |
| 3000 | .00696 | .07477 | .00326 | .12528 | .00637 | .00202 | .00010 | .01320 | .57331 | .16080 | .01353 | .02040 |

TABLE 9.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.050721; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00000 | .74198 | .00000 | .00000 | .04976 |
| 950 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00001 | .74198 | .00000 | .00000 | .04976 |
| 1000 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00002 | .74197 | .00000 | .00000 | .04975 |
| 1050 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00003 | .74197 | .00000 | .00000 | .04975 |
| 1100 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00004 | .74196 | .00000 | .00000 | .04974 |
| 1150 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00007 | .74195 | .00000 | .00000 | .04973 |
| 1200 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00000 | .00010 | .74193 | .00000 | .00000 | .04971 |
| 1250 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00000 | .00015 | .74191 | .00000 | .00001 | .04969 |
| 1300 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00000 | .00020 | .74188 | .00000 | .00001 | .04966 |
| 1350 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09951 | .00000 | .00028 | .74184 | .00000 | .00002 | .04962 |
| 1400 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09950 | .00000 | .00037 | .74179 | .00000 | .00004 | .04957 |
| 1450 | .00890 | .00000 | .09982 | .00000 | .00000 | .00000 | .09949 | .00000 | .00049 | .74173 | .00000 | .00006 | .04950 |
| 1500 | .00890 | .00001 | .09982 | .00000 | .00000 | .00000 | .09947 | .00000 | .00062 | .74165 | .00000 | .00010 | .04943 |
| 1550 | .00890 | .00001 | .09981 | .00000 | .00000 | .00001 | .09944 | .00000 | .00079 | .74155 | .00001 | .00015 | .04934 |
| 1600 | .00890 | .00003 | .09979 | .00000 | .00000 | .00001 | .09940 | .00000 | .00098 | .74143 | .00001 | .00022 | .04923 |
| 1650 | .00890 | .00005 | .09976 | .00000 | .00000 | .00002 | .09933 | .00000 | .00120 | .74129 | .00002 | .00032 | .04910 |
| 1700 | .00890 | .00010 | .09971 | .00000 | .00000 | .00003 | .09925 | .00000 | .00146 | .74111 | .00003 | .00046 | .04896 |
| 1750 | .00890 | .00017 | .09963 | .00001 | .00000 | .00005 | .09913 | .00000 | .00175 | .74089 | .00005 | .00063 | .04880 |
| 1800 | .00889 | .00029 | .09949 | .00001 | .00000 | .00008 | .09897 | .00000 | .00207 | .74061 | .00008 | .00086 | .04863 |
| 1850 | .00889 | .00048 | .09928 | .00002 | .00000 | .00012 | .09875 | .00000 | .00243 | .74027 | .00013 | .00116 | .04846 |
| 1900 | .00889 | .00077 | .09896 | .00003 | .00000 | .00018 | .09847 | .00000 | .00284 | .73983 | .00021 | .00152 | .04830 |
| 1950 | .00889 | .00121 | .09848 | .00006 | .00000 | .00027 | .09809 | .00000 | .00328 | .73928 | .00031 | .00198 | .04816 |
| 2000 | .00888 | .00184 | .09778 | .00010 | .00000 | .00040 | .09760 | .00000 | .00376 | .73857 | .00046 | .00254 | .04806 |
| 2050 | .00887 | .00274 | .09680 | .00017 | .00000 | .00058 | .09696 | .00000 | .00429 | .73766 | .00067 | .00321 | .04803 |
| 2100 | .00886 | .00398 | .09544 | .00028 | .00000 | .00082 | .09616 | .00000 | .00487 | .73651 | .00096 | .00401 | .04811 |
| 2150 | .00885 | .00563 | .09363 | .00045 | .00000 | .00113 | .09514 | .00000 | .00550 | .73506 | .00135 | .00496 | .04831 |
| 2200 | .00883 | .00778 | .09128 | .00069 | .00000 | .00153 | .09386 | .00000 | .00619 | .73323 | .00187 | .00606 | .04866 |
| 2250 | .00881 | .01049 | .08833 | .00105 | .00000 | .00203 | .09229 | .00000 | .00693 | .73097 | .00257 | .00734 | .04919 |
| 2300 | .00878 | .01377 | .08473 | .00156 | .00000 | .00264 | .09037 | .00000 | .00774 | .72823 | .00349 | .00880 | .04988 |
| 2350 | .00875 | .01764 | .08048 | .00228 | .00000 | .00338 | .08807 | .00000 | .00861 | .72494 | .00467 | .01045 | .05073 |
| 2400 | .00871 | .02203 | .07562 | .00326 | .00000 | .00425 | .08534 | .00000 | .00955 | .72107 | .00620 | .01229 | .05169 |
| 2450 | .00866 | .02687 | .07025 | .00457 | .00000 | .00524 | .08214 | .00000 | .01054 | .71659 | .00813 | .01431 | .05270 |
| 2500 | .00860 | .03202 | .06448 | .00630 | .00000 | .00636 | .07847 | .00000 | .01158 | .71148 | .01055 | .01647 | .05368 |
| 2550 | .00854 | .03734 | .05846 | .00853 | .00000 | .00757 | .07429 | .00000 | .01266 | .70574 | .01355 | .01875 | .05455 |
| 2600 | .00847 | .04266 | .05237 | .01137 | .00001 | .00887 | .06963 | .00000 | .01376 | .69937 | .01719 | .02109 | .05521 |
| 2650 | .00839 | .04781 | .04634 | .01489 | .00001 | .01021 | .06450 | .00000 | .01486 | .69239 | .02158 | .02342 | .05559 |
| 2700 | .00831 | .05267 | .04054 | .01919 | .00001 | .01154 | .05896 | .00000 | .01595 | .68482 | .02677 | .02566 | .05559 |
| 2750 | .00822 | .05712 | .03507 | .02433 | .00001 | .01280 | .05308 | .00001 | .01699 | .67669 | .03282 | .02771 | .05516 |
| 2800 | .00812 | .06107 | .03003 | .03034 | .00001 | .01392 | .04699 | .00001 | .01796 | .66807 | .03976 | .02946 | .05425 |
| 2850 | .00802 | .06448 | .02546 | .03722 | .00001 | .01482 | .04082 | .00001 | .01884 | .65904 | .04761 | .03082 | .05285 |
| 2900 | .00791 | .06733 | .02140 | .04489 | .00001 | .01544 | .03473 | .00002 | .01961 | .64969 | .05634 | .03169 | .05094 |
| 2950 | .00780 | .06966 | .01784 | .05323 | .00001 | .01572 | .02889 | .00003 | .02024 | .64017 | .06588 | .03200 | .04854 |
| 3000 | .00769 | .07149 | .01476 | .06205 | .00001 | .01563 | .02347 | .00003 | .02072 | .63063 | .07611 | .03171 | .04571 |

TABLE 9.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.050721; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00000 | .00000 | .74198 | .00000 | .00000 | .04976 |
| 950 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00001 | .00000 | .74198 | .00000 | .00000 | .04976 |
| 1000 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00002 | .00000 | .74197 | .00000 | .00000 | .04975 |
| 1050 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00003 | .00000 | .74197 | .00000 | .00000 | .04975 |
| 1100 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00004 | .00000 | .74196 | .00000 | .00000 | .04974 |
| 1150 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00007 | .00000 | .74195 | .00000 | .00000 | .04973 |
| 1200 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00000 | .00010 | .00000 | .74193 | .00000 | .00000 | .04971 |
| 1250 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00000 | .00015 | .00000 | .74191 | .00000 | .00000 | .04969 |
| 1300 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00000 | .00020 | .00000 | .74188 | .00000 | .00001 | .04966 |
| 1350 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00000 | .00028 | .00000 | .74184 | .00000 | .00001 | .04962 |
| 1400 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09951 | .00000 | .00037 | .00000 | .74179 | .00000 | .00002 | .04957 |
| 1450 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09951 | .00000 | .00049 | .00000 | .74173 | .00000 | .00004 | .04951 |
| 1500 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09950 | .00000 | .00062 | .00000 | .74166 | .00000 | .00006 | .04944 |
| 1550 | .00890 | .00000 | .09982 | .00000 | .00000 | .00000 | .09948 | .00000 | .00079 | .00000 | .74157 | .00000 | .00008 | .04935 |
| 1600 | .00890 | .00001 | .09982 | .00000 | .00000 | .00000 | .09946 | .00000 | .00098 | .00000 | .74146 | .00000 | .00013 | .04924 |
| 1650 | .00890 | .00002 | .09981 | .00000 | .00000 | .00001 | .09942 | .00000 | .00120 | .00000 | .74134 | .00001 | .00018 | .04912 |
| 1700 | .00890 | .00003 | .09979 | .00000 | .00000 | .00001 | .09938 | .00000 | .00146 | .00000 | .74119 | .00001 | .00026 | .04898 |
| 1750 | .00890 | .00005 | .09976 | .00000 | .00000 | .00001 | .09932 | .00000 | .00175 | .00000 | .74101 | .00002 | .00036 | .04882 |
| 1800 | .00890 | .00009 | .09972 | .00000 | .00000 | .00002 | .09924 | .00000 | .00207 | .00000 | .74080 | .00003 | .00049 | .04864 |
| 1850 | .00890 | .00015 | .09965 | .00000 | .00000 | .00004 | .09913 | .00000 | .00243 | .00000 | .74056 | .00004 | .00065 | .04844 |
| 1900 | .00890 | .00025 | .09954 | .00001 | .00000 | .00006 | .09899 | .00000 | .00284 | .00000 | .74027 | .00007 | .00086 | .04823 |
| 1950 | .00889 | .00039 | .09939 | .00001 | .00000 | .00009 | .09882 | .00000 | .00328 | .00000 | .73992 | .00010 | .00112 | .04800 |
| 2000 | .00889 | .00059 | .09916 | .00002 | .00000 | .00013 | .09859 | .00000 | .00376 | .00000 | .73951 | .00015 | .00143 | .04778 |
| 2050 | .00889 | .00089 | .09883 | .00003 | .00000 | .00019 | .09831 | .00000 | .00428 | .00000 | .73901 | .00021 | .00181 | .04755 |
| 2100 | .00889 | .00131 | .09837 | .00005 | .00000 | .00027 | .09795 | .00000 | .00484 | .00000 | .73842 | .00030 | .00227 | .04734 |
| 2150 | .00888 | .00188 | .09774 | .00008 | .00000 | .00037 | .09750 | .00000 | .00545 | .00000 | .73770 | .00042 | .00280 | .04716 |
| 2200 | .00887 | .00266 | .09689 | .00013 | .00000 | .00051 | .09696 | .00000 | .00610 | .00000 | .73684 | .00058 | .00344 | .04703 |
| 2250 | .00887 | .00368 | .09577 | .00019 | .00000 | .00068 | .09628 | .00000 | .00680 | .00000 | .73579 | .00079 | .00417 | .04696 |
| 2300 | .00885 | .00500 | .09434 | .00029 | .00000 | .00091 | .09547 | .00000 | .00754 | .00000 | .73453 | .00107 | .00501 | .04697 |
| 2350 | .00884 | .00666 | .09253 | .00043 | .00001 | .00119 | .09449 | .00000 | .00834 | .00000 | .73303 | .00142 | .00598 | .04709 |
| 2400 | .00883 | .00870 | .09031 | .00062 | .00001 | .00154 | .09332 | .00000 | .00920 | .00000 | .73124 | .00188 | .00707 | .04731 |
| 2450 | .00881 | .01115 | .08763 | .00088 | .00001 | .00195 | .09194 | .00000 | .01011 | .00000 | .72913 | .00245 | .00830 | .04765 |
| 2500 | .00878 | .01402 | .08450 | .00124 | .00001 | .00244 | .09032 | .00000 | .01108 | .00000 | .72668 | .00316 | .00967 | .04810 |
| 2550 | .00875 | .01730 | .08091 | .00170 | .00001 | .00302 | .08844 | .00000 | .01211 | .00000 | .72387 | .00405 | .01118 | .04866 |
| 2600 | .00872 | .02096 | .07689 | .00231 | .00001 | .00368 | .08629 | .00000 | .01320 | .00000 | .72067 | .00514 | .01283 | .04929 |
| 2650 | .00869 | .02495 | .07250 | .00310 | .00001 | .00443 | .08385 | .00000 | .01434 | .00000 | .71708 | .00647 | .01462 | .04996 |
| 2700 | .00865 | .02919 | .06780 | .00410 | .00001 | .00526 | .08111 | .00000 | .01553 | .00001 | .71309 | .00808 | .01654 | .05064 |
| 2750 | .00860 | .03359 | .06289 | .00534 | .00001 | .00617 | .07806 | .00000 | .01676 | .00001 | .70872 | .01001 | .01855 | .05128 |
| 2800 | .00855 | .03807 | .05786 | .00688 | .00001 | .00716 | .07470 | .00000 | .01802 | .00001 | .70397 | .01229 | .02065 | .05182 |
| 2850 | .00850 | .04253 | .05280 | .00876 | .00001 | .00821 | .07105 | .00000 | .01929 | .00001 | .69886 | .01497 | .02280 | .05223 |
| 2900 | .00844 | .04687 | .04780 | .01102 | .00002 | .00929 | .06710 | .00001 | .02056 | .00001 | .69340 | .01808 | .02495 | .05246 |
| 2950 | .00838 | .05103 | .04296 | .01370 | .00002 | .01041 | .06290 | .00001 | .02181 | .00001 | .68760 | .02166 | .02707 | .05247 |
| 3000 | .00831 | .05492 | .03832 | .01684 | .00002 | .01151 | .05847 | .00001 | .02303 | .00001 | .68150 | .02573 | .02910 | .05223 |

TABLE 9.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.050721; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00000 | .74198 | .00000 | .00000 | .04976 |
| 950 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00001 | .00000 | .74198 | .00000 | .00000 | .04976 |
| 1000 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00002 | .00000 | .74197 | .00000 | .00000 | .04975 |
| 1050 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00003 | .00000 | .74197 | .00000 | .00000 | .04975 |
| 1100 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00004 | .00000 | .74196 | .00000 | .00000 | .04974 |
| 1150 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00007 | .00000 | .74195 | .00000 | .00000 | .04973 |
| 1200 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00010 | .00000 | .74193 | .00000 | .00000 | .04971 |
| 1250 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00015 | .00000 | .74191 | .00000 | .00000 | .04969 |
| 1300 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00020 | .00000 | .74188 | .00000 | .00000 | .04966 |
| 1350 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00028 | .00000 | .74184 | .00000 | .00001 | .04962 |
| 1400 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00037 | .00000 | .74179 | .00000 | .00001 | .04957 |
| 1450 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00049 | .00000 | .74174 | .00000 | .00002 | .04951 |
| 1500 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09951 | .00062 | .00000 | .74166 | .00000 | .00003 | .04944 |
| 1550 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09950 | .00079 | .00001 | .74158 | .00000 | .00005 | .04935 |
| 1600 | .00890 | .00000 | .09982 | .00000 | .00000 | .00000 | .09949 | .00098 | .00001 | .74148 | .00000 | .00007 | .04925 |
| 1650 | .00890 | .00001 | .09982 | .00000 | .00000 | .00000 | .09947 | .00120 | .00001 | .74136 | .00000 | .00010 | .04913 |
| 1700 | .00890 | .00001 | .09982 | .00000 | .00000 | .00000 | .09945 | .00146 | .00001 | .74122 | .00000 | .00014 | .04899 |
| 1750 | .00890 | .00002 | .09981 | .00000 | .00000 | .00000 | .09941 | .00175 | .00001 | .74106 | .00001 | .00020 | .04884 |
| 1800 | .00890 | .00003 | .09979 | .00000 | .00000 | .00001 | .09937 | .00207 | .00001 | .74088 | .00001 | .00027 | .04866 |
| 1850 | .00890 | .00005 | .09977 | .00000 | .00000 | .00001 | .09932 | .00243 | .00001 | .74067 | .00001 | .00037 | .04846 |
| 1900 | .00890 | .00008 | .09973 | .00000 | .00000 | .00002 | .09925 | .00284 | .00001 | .74043 | .00002 | .00048 | .04824 |
| 1950 | .00890 | .00012 | .09968 | .00000 | .00000 | .00003 | .09916 | .00328 | .00001 | .74016 | .00003 | .00063 | .04800 |
| 2000 | .00890 | .00019 | .09961 | .00000 | .00000 | .00004 | .09905 | .00376 | .00001 | .73985 | .00005 | .00081 | .04775 |
| 2050 | .00889 | .00028 | .09950 | .00001 | .00000 | .00006 | .09891 | .00427 | .00001 | .73950 | .00007 | .00102 | .04747 |
| 2100 | .00889 | .00042 | .09935 | .00001 | .00000 | .00008 | .09873 | .00483 | .00001 | .73910 | .00009 | .00128 | .04719 |
| 2150 | .00889 | .00061 | .09914 | .00001 | .00001 | .00012 | .09852 | .00543 | .00001 | .73865 | .00013 | .00158 | .04689 |
| 2200 | .00889 | .00086 | .09886 | .00002 | .00001 | .00016 | .09827 | .00608 | .00001 | .73812 | .00018 | .00194 | .04660 |
| 2250 | .00889 | .00120 | .09848 | .00003 | .00001 | .00022 | .09796 | .00676 | .00001 | .73753 | .00025 | .00236 | .04630 |
| 2300 | .00888 | .00166 | .09798 | .00005 | .00001 | .00030 | .09759 | .00748 | .00001 | .73684 | .00033 | .00284 | .04603 |
| 2350 | .00888 | .00225 | .09734 | .00008 | .00001 | .00039 | .09716 | .00824 | .00001 | .73605 | .00044 | .00338 | .04577 |
| 2400 | .00887 | .00300 | .09652 | .00011 | .00001 | .00051 | .09664 | .00905 | .00001 | .73513 | .00058 | .00401 | .04555 |
| 2450 | .00886 | .00394 | .09550 | .00016 | .00001 | .00066 | .09603 | .00990 | .00001 | .73408 | .00075 | .00471 | .04538 |
| 2500 | .00885 | .00510 | .09423 | .00023 | .00001 | .00084 | .09532 | .01079 | .00001 | .73288 | .00097 | .00550 | .04526 |
| 2550 | .00884 | .00650 | .09270 | .00032 | .00001 | .00106 | .09449 | .01173 | .00001 | .73149 | .00123 | .00638 | .04521 |
| 2600 | .00883 | .00818 | .09088 | .00044 | .00002 | .00132 | .09354 | .01273 | .00001 | .72991 | .00156 | .00735 | .04523 |
| 2650 | .00882 | .01014 | .08875 | .00059 | .00002 | .00162 | .09245 | .01377 | .00001 | .72812 | .00195 | .00843 | .04533 |
| 2700 | .00880 | .01239 | .08630 | .00079 | .00002 | .00197 | .09121 | .01486 | .00001 | .72610 | .00242 | .00960 | .04551 |
| 2750 | .00878 | .01494 | .08353 | .00105 | .00002 | .00238 | .08982 | .01600 | .00001 | .72385 | .00299 | .01088 | .04576 |
| 2800 | .00875 | .01776 | .08046 | .00137 | .00002 | .00284 | .08825 | .01720 | .00002 | .72135 | .00366 | .01226 | .04607 |
| 2850 | .00873 | .02083 | .07710 | .00177 | .00003 | .00335 | .08651 | .01844 | .00002 | .71860 | .00446 | .01374 | .04642 |
| 2900 | .00870 | .02412 | .07349 | .00226 | .00003 | .00392 | .08459 | .01973 | .00002 | .71561 | .00540 | .01531 | .04681 |
| 2950 | .00867 | .02759 | .06967 | .00286 | .00003 | .00455 | .08248 | .02106 | .00002 | .71238 | .00650 | .01698 | .04721 |
| 3000 | .00864 | .03119 | .06570 | .00359 | .00003 | .00523 | .08019 | .02242 | .00002 | .70891 | .00777 | .01872 | .04759 |

TABLE 9.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.050721; EQUIV. RATIO ϕ 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00000 | .00000 | .74198 | .00000 | .00000 | .00000 | .04976 |
| 950 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00001 | .00000 | .74198 | .00000 | .00000 | .00000 | .04976 |
| 1000 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00002 | .00000 | .74197 | .00000 | .00000 | .00000 | .04975 |
| 1050 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00003 | .00000 | .74197 | .00000 | .00000 | .00000 | .04975 |
| 1100 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00004 | .00000 | .74196 | .00000 | .00000 | .00000 | .04974 |
| 1150 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00007 | .00001 | .74195 | .00000 | .00000 | .00000 | .04972 |
| 1200 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00010 | .00001 | .74193 | .00000 | .00000 | .00000 | .04971 |
| 1250 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09953 | .00015 | .00001 | .74191 | .00000 | .00000 | .00000 | .04968 |
| 1300 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00020 | .00001 | .74188 | .00000 | .00000 | .00000 | .04965 |
| 1350 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00028 | .00001 | .74184 | .00000 | .00000 | .00000 | .04961 |
| 1400 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00037 | .00001 | .74179 | .00000 | .00000 | .00001 | .04957 |
| 1450 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00049 | .00001 | .74174 | .00000 | .00000 | .00001 | .04951 |
| 1500 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09952 | .00062 | .00001 | .74167 | .00000 | .00000 | .00002 | .04943 |
| 1550 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09951 | .00079 | .00001 | .74158 | .00000 | .00000 | .00003 | .04935 |
| 1600 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09950 | .00098 | .00001 | .74148 | .00000 | .00000 | .00005 | .04925 |
| 1650 | .00890 | .00000 | .09983 | .00000 | .00000 | .00000 | .09949 | .00120 | .00001 | .74137 | .00000 | .00000 | .00007 | .04913 |
| 1700 | .00890 | .00000 | .09982 | .00000 | .00000 | .00000 | .09947 | .00146 | .00001 | .74123 | .00000 | .00000 | .00010 | .04900 |
| 1750 | .00890 | .00001 | .09982 | .00000 | .00000 | .00000 | .09945 | .00175 | .00002 | .74108 | .00000 | .00000 | .00013 | .04884 |
| 1800 | .00890 | .00001 | .09981 | .00000 | .00000 | .00000 | .09943 | .00207 | .00002 | .74090 | .00000 | .00000 | .00018 | .04867 |
| 1850 | .00890 | .00002 | .09980 | .00000 | .00000 | .00001 | .09939 | .00244 | .00002 | .74071 | .00000 | .00001 | .00025 | .04847 |
| 1900 | .00890 | .00003 | .09978 | .00000 | .00000 | .00001 | .09934 | .00284 | .00002 | .74048 | .00000 | .00001 | .00032 | .04825 |
| 1950 | .00890 | .00005 | .09976 | .00000 | .00000 | .00001 | .09929 | .00328 | .00002 | .74023 | .00000 | .00001 | .00042 | .04802 |
| 2000 | .00890 | .00008 | .09973 | .00000 | .00000 | .00002 | .09922 | .00376 | .00002 | .73996 | .00000 | .00002 | .00054 | .04776 |
| 2050 | .00890 | .00013 | .09968 | .00000 | .00001 | .00003 | .09913 | .00428 | .00002 | .73965 | .00000 | .00003 | .00068 | .04748 |
| 2100 | .00890 | .00019 | .09961 | .00000 | .00001 | .00004 | .09902 | .00483 | .00002 | .73930 | .00000 | .00004 | .00086 | .04718 |
| 2150 | .00890 | .00027 | .09951 | .00000 | .00001 | .00005 | .09889 | .00543 | .00002 | .73892 | .00000 | .00006 | .00106 | .04686 |
| 2200 | .00889 | .00039 | .09938 | .00001 | .00001 | .00007 | .09874 | .00607 | .00002 | .73850 | .00000 | .00008 | .00130 | .04653 |
| 2250 | .00889 | .00054 | .09921 | .00001 | .00001 | .00010 | .09855 | .00675 | .00002 | .73803 | .00000 | .00011 | .00158 | .04619 |
| 2300 | .00889 | .00075 | .09898 | .00002 | .00001 | .00013 | .09833 | .00747 | .00003 | .73750 | .00000 | .00015 | .00190 | .04584 |
| 2350 | .00889 | .00102 | .09868 | .00002 | .00001 | .00018 | .09807 | .00822 | .00003 | .73692 | .00000 | .00020 | .00227 | .04549 |
| 2400 | .00888 | .00137 | .09830 | .00003 | .00002 | .00023 | .09776 | .00902 | .00003 | .73626 | .00000 | .00026 | .00269 | .04514 |
| 2450 | .00888 | .00181 | .09781 | .00005 | .00002 | .00030 | .09741 | .00985 | .00003 | .73553 | .00000 | .00034 | .00316 | .04481 |
| 2500 | .00888 | .00237 | .09720 | .00007 | .00002 | .00039 | .09699 | .01071 | .00003 | .73472 | .00000 | .00043 | .00370 | .04449 |
| 2550 | .00887 | .00306 | .09645 | .00010 | .00002 | .00049 | .09652 | .01162 | .00003 | .73380 | .00000 | .00055 | .00429 | .04420 |
| 2600 | .00886 | .00390 | .09554 | .00013 | .00002 | .00061 | .09597 | .01257 | .00003 | .73278 | .00000 | .00069 | .00495 | .04395 |
| 2650 | .00886 | .00491 | .09444 | .00018 | .00003 | .00076 | .09535 | .01355 | .00003 | .73163 | .00000 | .00086 | .00567 | .04373 |
| 2700 | .00885 | .00611 | .09313 | .00024 | .00003 | .00094 | .09464 | .01458 | .00003 | .73035 | .00000 | .00106 | .00647 | .04357 |
| 2750 | .00884 | .00752 | .09161 | .00032 | .00003 | .00114 | .09384 | .01565 | .00003 | .72892 | .00001 | .00130 | .00734 | .04345 |
| 2800 | .00882 | .00914 | .08985 | .00043 | .00004 | .00138 | .09294 | .01676 | .00003 | .72734 | .00001 | .00159 | .00829 | .04340 |
| 2850 | .00881 | .01098 | .08785 | .00055 | .00004 | .00165 | .09193 | .01792 | .00003 | .72559 | .00001 | .00193 | .00931 | .04340 |
| 2900 | .00879 | .01304 | .08561 | .00071 | .00004 | .00195 | .09081 | .01912 | .00003 | .72367 | .00001 | .00233 | .01041 | .04346 |
| 2950 | .00878 | .01532 | .08313 | .00091 | .00005 | .00230 | .08958 | .02036 | .00003 | .72157 | .00001 | .00279 | .01160 | .04357 |
| 3000 | .00876 | .01781 | .08042 | .00115 | .00005 | .00269 | .08822 | .02165 | .00004 | .71929 | .00001 | .00333 | .01286 | .04373 |

TABLE 9C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.050721; EQUIV.RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00890 | .09983 | .09938 | .00000 | .00014 | .74198 | .04976 |
| 220 | .00890 | .09983 | .09717 | .00000 | .00235 | .74198 | .04976 |
| 240 | .00890 | .09983 | .07473 | .00000 | .02480 | .74198 | .04976 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00890 | .09983 | .09951 | .00000 | .00001 | .74198 | .04976 |
| 220 | .00890 | .09983 | .09929 | .00000 | .00023 | .74198 | .04976 |
| 240 | .00890 | .09983 | .09711 | .00000 | .00242 | .74198 | .04976 |
| 260 | .00890 | .09983 | .08185 | .00000 | .01767 | .74198 | .04976 |
| 280 | .00890 | .09983 | .00000 | .00229 | .09723 | .74198 | .04976 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00890 | .09983 | .09952 | .00000 | .00000 | .74198 | .04976 |
| 220 | .00890 | .09983 | .09950 | .00000 | .00002 | .74198 | .04976 |
| 240 | .00890 | .09983 | .09928 | .00000 | .00024 | .74198 | .04976 |
| 260 | .00890 | .09983 | .09779 | .00000 | .00174 | .74198 | .04976 |
| 280 | .00890 | .09983 | .00000 | .09066 | .00886 | .74198 | .04976 |
| 298 | .00890 | .09983 | .00000 | .07060 | .02892 | .74198 | .04976 |
| 300 | .00890 | .09983 | .00000 | .06714 | .03239 | .74198 | .04976 |
| 320 | .00890 | .09983 | .00000 | .00000 | .09953 | .74198 | .04976 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00890 | .09983 | .09953 | .00000 | .00000 | .74198 | .04976 |
| 220 | .00890 | .09983 | .09952 | .00000 | .00000 | .74198 | .04976 |
| 240 | .00890 | .09983 | .09950 | .00000 | .00002 | .74198 | .04976 |
| 260 | .00890 | .09983 | .09935 | .00000 | .00017 | .74198 | .04976 |
| 280 | .00890 | .09983 | .00000 | .09865 | .00088 | .74198 | .04976 |
| 298 | .00890 | .09983 | .00000 | .09672 | .00281 | .74198 | .04976 |
| 300 | .00890 | .09983 | .00000 | .09639 | .00314 | .74198 | .04976 |
| 320 | .00890 | .09983 | .00000 | .09012 | .00940 | .74198 | .04976 |
| 340 | .00890 | .09983 | .00000 | .07496 | .02457 | .74198 | .04976 |
| 360 | .00890 | .09983 | .00000 | .04158 | .05795 | .74198 | .04976 |
| 380 | .00890 | .09983 | .00000 | .00000 | .09953 | .74198 | .04976 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00890 | .09983 | .09953 | .00000 | .00000 | .74198 | .04976 |
| 220 | .00890 | .09983 | .09953 | .00000 | .00000 | .74198 | .04976 |
| 240 | .00890 | .09983 | .09952 | .00000 | .00000 | .74198 | .04976 |
| 260 | .00890 | .09983 | .09949 | .00000 | .00003 | .74198 | .04976 |
| 280 | .00890 | .09983 | .00000 | .09935 | .00018 | .74198 | .04976 |
| 298 | .00890 | .09983 | .00000 | .09897 | .00056 | .74198 | .04976 |
| 300 | .00890 | .09983 | .00000 | .09890 | .00063 | .74198 | .04976 |
| 320 | .00890 | .09983 | .00000 | .09766 | .00186 | .74198 | .04976 |
| 340 | .00890 | .09983 | .00000 | .09472 | .00481 | .74198 | .04976 |
| 360 | .00890 | .09983 | .00000 | .08850 | .01102 | .74198 | .04976 |
| 380 | .00890 | .09983 | .00000 | .07655 | .02297 | .74198 | .04976 |
| 400 | .00890 | .09983 | .00000 | .05512 | .04440 | .74198 | .04976 |
| 420 | .00890 | .09983 | .00000 | .01852 | .08101 | .74198 | .04976 |

TABLE 10.1B - EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.067628; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00875 | .00000 | .13083 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 950 | .00875 | .00000 | .13083 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1000 | .00875 | .00000 | .13083 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1050 | .00875 | .00000 | .13083 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1100 | .00875 | .00000 | .13083 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1150 | .00875 | .00000 | .13083 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1200 | .00875 | .00001 | .13082 | .00000 | .00001 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00001 |
| 1250 | .00875 | .00002 | .13081 | .00000 | .00001 | .13052 | .00000 | .00000 | .72986 | .00000 | .00000 | .00001 |
| 1300 | .00875 | .00004 | .13079 | .00000 | .00002 | .13051 | .00000 | .00000 | .72985 | .00000 | .00000 | .00003 |
| 1350 | .00875 | .00007 | .13075 | .00000 | .00004 | .13049 | .00000 | .00001 | .72983 | .00000 | .00001 | .00005 |
| 1400 | .00875 | .00014 | .13069 | .00000 | .00006 | .13045 | .00000 | .00002 | .72979 | .00000 | .00002 | .00009 |
| 1450 | .00875 | .00024 | .13057 | .00000 | .00010 | .13040 | .00000 | .00003 | .72973 | .00000 | .00003 | .00015 |
| 1500 | .00875 | .00040 | .13039 | .00000 | .00016 | .13031 | .00000 | .00004 | .72964 | .00000 | .00005 | .00024 |
| 1550 | .00875 | .00066 | .13011 | .00000 | .00024 | .13019 | .00000 | .00007 | .72950 | .00000 | .00009 | .00039 |
| 1600 | .00875 | .00104 | .12970 | .00001 | .00035 | .13001 | .00000 | .00011 | .72928 | .00000 | .00015 | .00060 |
| 1650 | .00874 | .00160 | .12909 | .00002 | .00050 | .12976 | .00000 | .00016 | .72897 | .00001 | .00024 | .00091 |
| 1700 | .00874 | .00238 | .12823 | .00004 | .00071 | .12940 | .00000 | .00024 | .72853 | .00002 | .00038 | .00133 |
| 1750 | .00873 | .00347 | .12705 | .00007 | .00098 | .12892 | .00000 | .00034 | .72793 | .00003 | .00057 | .00191 |
| 1800 | .00872 | .00493 | .12545 | .00013 | .00133 | .12827 | .00000 | .00048 | .72711 | .00006 | .00085 | .00268 |
| 1850 | .00871 | .00685 | .12335 | .00023 | .00177 | .12741 | .00000 | .00066 | .72601 | .00012 | .00123 | .00367 |
| 1900 | .00870 | .00931 | .12066 | .00038 | .00233 | .12628 | .00000 | .00090 | .72458 | .00021 | .00174 | .00493 |
| 1950 | .00868 | .01239 | .11727 | .00063 | .00302 | .12484 | .00000 | .00119 | .72275 | .00036 | .00241 | .00648 |
| 2000 | .00865 | .01615 | .11313 | .00100 | .00386 | .12299 | .00000 | .00155 | .72043 | .00061 | .00327 | .00836 |
| 2050 | .00862 | .02064 | .10816 | .00157 | .00487 | .12068 | .00000 | .00199 | .71755 | .00099 | .00436 | .01057 |
| 2100 | .00858 | .02586 | .10236 | .00241 | .00607 | .11781 | .00000 | .00250 | .71404 | .00158 | .00570 | .01310 |
| 2150 | .00853 | .03175 | .09576 | .00362 | .00747 | .11429 | .00000 | .00310 | .70980 | .00245 | .00732 | .01591 |
| 2200 | .00848 | .03823 | .08844 | .00533 | .00908 | .11003 | .00000 | .00378 | .70477 | .00370 | .00922 | .01894 |
| 2250 | .00841 | .04513 | .08056 | .00770 | .01089 | .10496 | .00000 | .00454 | .69888 | .00545 | .01140 | .02209 |
| 2300 | .00833 | .05224 | .07229 | .01092 | .01288 | .09901 | .00000 | .00537 | .69207 | .00784 | .01382 | .02523 |
| 2350 | .00824 | .05934 | .06388 | .01518 | .01500 | .09214 | .00000 | .00624 | .68429 | .01102 | .01642 | .02823 |
| 2400 | .00814 | .06618 | .05555 | .02072 | .01717 | .08437 | .00000 | .00715 | .67552 | .01516 | .01911 | .03092 |
| 2450 | .00803 | .07251 | .04755 | .02773 | .01928 | .07577 | .00000 | .00806 | .66576 | .02040 | .02176 | .03316 |
| 2500 | .00791 | .07816 | .04006 | .03636 | .02116 | .06651 | .00000 | .00895 | .65503 | .02687 | .02420 | .03479 |
| 2550 | .00778 | .08298 | .03324 | .04667 | .02265 | .05685 | .00000 | .00978 | .64345 | .03466 | .02624 | .03571 |
| 2600 | .00763 | .08691 | .02717 | .05859 | .02357 | .04712 | .00001 | .01053 | .63118 | .04379 | .02769 | .03581 |
| 2650 | .00748 | .08997 | .02190 | .07185 | .02378 | .03772 | .00001 | .01116 | .61850 | .05419 | .02839 | .03506 |
| 2700 | .00733 | .09221 | .01742 | .08601 | .02319 | .02907 | .00001 | .01164 | .60573 | .06568 | .02823 | .03348 |
| 2750 | .00719 | .09374 | .01368 | .10047 | .02183 | .02151 | .00002 | .01195 | .59329 | .07798 | .02719 | .03114 |
| 2800 | .00705 | .09471 | .01062 | .11458 | .01984 | .01528 | .00003 | .01208 | .58157 | .09067 | .02537 | .02821 |
| 2850 | .00692 | .09526 | .00816 | .12770 | .01744 | .01042 | .00004 | .01203 | .57091 | .10330 | .02294 | .02487 |
| 2900 | .00681 | .09551 | .00622 | .13936 | .01488 | .00686 | .00005 | .01181 | .56155 | .11542 | .02015 | .02138 |
| 2950 | .00671 | .09556 | .00470 | .14933 | .01237 | .00437 | .00007 | .01144 | .55359 | .12665 | .01726 | .01794 |
| 3000 | .00663 | .09550 | .00354 | .15758 | .01008 | .00272 | .00010 | .01096 | .54700 | .13669 | .01446 | .01474 |

TABLE 10.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.067628; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 950 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1000 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1050 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1100 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1150 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1200 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1250 | .00875 | .00001 | .13082 | .00000 | .00000 | .00001 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00001 |
| 1300 | .00875 | .00002 | .13081 | .00000 | .00000 | .00001 | .13052 | .00000 | .00000 | .72986 | .00000 | .00000 | .00001 |
| 1350 | .00875 | .00003 | .13080 | .00000 | .00000 | .00002 | .13051 | .00000 | .00001 | .72985 | .00000 | .00000 | .00002 |
| 1400 | .00875 | .00006 | .13076 | .00000 | .00000 | .00003 | .13050 | .00000 | .00001 | .72984 | .00000 | .00001 | .00004 |
| 1450 | .00875 | .00011 | .13071 | .00000 | .00000 | .00005 | .13047 | .00000 | .00002 | .72981 | .00000 | .00001 | .00007 |
| 1500 | .00875 | .00019 | .13063 | .00000 | .00000 | .00007 | .13043 | .00000 | .00003 | .72976 | .00000 | .00002 | .00011 |
| 1550 | .00875 | .00031 | .13050 | .00000 | .00000 | .00011 | .13037 | .00000 | .00005 | .72969 | .00000 | .00004 | .00018 |
| 1600 | .00875 | .00049 | .13030 | .00000 | .00000 | .00016 | .13029 | .00000 | .00007 | .72959 | .00000 | .00007 | .00027 |
| 1650 | .00875 | .00075 | .13001 | .00000 | .00000 | .00024 | .13017 | .00000 | .00011 | .72944 | .00000 | .00011 | .00041 |
| 1700 | .00875 | .00113 | .12960 | .00001 | .00000 | .00033 | .13001 | .00000 | .00016 | .72923 | .00000 | .00017 | .00061 |
| 1750 | .00874 | .00165 | .12904 | .00002 | .00000 | .00046 | .12979 | .00000 | .00023 | .72893 | .00001 | .00027 | .00087 |
| 1800 | .00874 | .00235 | .12827 | .00003 | .00000 | .00062 | .12949 | .00000 | .00033 | .72853 | .00001 | .00039 | .00123 |
| 1850 | .00873 | .00329 | .12725 | .00005 | .00000 | .00083 | .12910 | .00000 | .00045 | .72801 | .00002 | .00057 | .00169 |
| 1900 | .00873 | .00450 | .12593 | .00008 | .00000 | .00110 | .12859 | .00000 | .00061 | .72732 | .00004 | .00081 | .00229 |
| 1950 | .00872 | .00606 | .12423 | .00014 | .00000 | .00143 | .12793 | .00000 | .00082 | .72643 | .00008 | .00113 | .00304 |
| 2000 | .00871 | .00800 | .12211 | .00022 | .00000 | .00183 | .12710 | .00000 | .00107 | .72530 | .00013 | .00155 | .00398 |
| 2050 | .00869 | .01038 | .11951 | .00034 | .00000 | .00231 | .12606 | .00000 | .00139 | .72390 | .00022 | .00209 | .00511 |
| 2100 | .00867 | .01325 | .11637 | .00053 | .00000 | .00289 | .12478 | .00000 | .00177 | .72218 | .00035 | .00276 | .00645 |
| 2150 | .00865 | .01663 | .11265 | .00079 | .00000 | .00358 | .12320 | .00000 | .00222 | .72010 | .00055 | .00360 | .00802 |
| 2200 | .00862 | .02056 | .10832 | .00117 | .00000 | .00439 | .12130 | .00000 | .00275 | .71760 | .00084 | .00462 | .00982 |
| 2250 | .00859 | .02502 | .10339 | .00170 | .00000 | .00533 | .11901 | .00000 | .00336 | .71466 | .00126 | .00584 | .01183 |
| 2300 | .00855 | .02999 | .09787 | .00244 | .00000 | .00641 | .11629 | .00000 | .00406 | .71123 | .00185 | .00727 | .01404 |
| 2350 | .00851 | .03540 | .09182 | .00343 | .00000 | .00764 | .11311 | .00000 | .00484 | .70728 | .00266 | .00893 | .01639 |
| 2400 | .00846 | .04116 | .08533 | .00475 | .00000 | .00902 | .10940 | .00000 | .00569 | .70278 | .00374 | .01082 | .01885 |
| 2450 | .00841 | .04717 | .07849 | .00648 | .00000 | .01054 | .10514 | .00000 | .00662 | .69771 | .00518 | .01291 | .02135 |
| 2500 | .00835 | .05329 | .07145 | .00873 | .00000 | .01220 | .10029 | .00000 | .00761 | .69206 | .00703 | .01520 | .02381 |
| 2550 | .00828 | .05936 | .06435 | .01159 | .00000 | .01397 | .09485 | .00000 | .00864 | .68581 | .00938 | .01763 | .02614 |
| 2600 | .00820 | .06525 | .05733 | .01517 | .00000 | .01581 | .08882 | .00000 | .00970 | .67897 | .01231 | .02015 | .02828 |
| 2650 | .00812 | .07081 | .05053 | .01959 | .00000 | .01768 | .08224 | .00000 | .01078 | .67153 | .01589 | .02270 | .03013 |
| 2700 | .00803 | .07592 | .04408 | .02494 | .00000 | .01950 | .07516 | .00000 | .01184 | .66351 | .02019 | .02517 | .03164 |
| 2750 | .00793 | .08049 | .03807 | .03131 | .00000 | .02120 | .06770 | .00001 | .01287 | .65495 | .02528 | .02747 | .03272 |
| 2800 | .00783 | .08446 | .03257 | .03872 | .00000 | .02266 | .05999 | .00001 | .01385 | .64590 | .03118 | .02948 | .03335 |
| 2850 | .00772 | .08780 | .02761 | .04717 | .00001 | .02381 | .05220 | .00001 | .01474 | .63644 | .03791 | .03110 | .03349 |
| 2900 | .00761 | .09052 | .02320 | .05660 | .00001 | .02454 | .04452 | .00002 | .01553 | .62666 | .04544 | .03222 | .03313 |
| 2950 | .00749 | .09266 | .01935 | .06685 | .00001 | .02479 | .03716 | .00002 | .01620 | .61672 | .05372 | .03277 | .03228 |
| 3000 | .00738 | .09426 | .01601 | .07771 | .00000 | .02451 | .03030 | .00003 | .01673 | .60678 | .06263 | .03269 | .03096 |

TABLE 10.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.067628; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 950 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1000 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1050 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1100 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1150 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1200 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1250 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1300 | .00875 | .00001 | .13082 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00001 |
| 1350 | .00875 | .00002 | .13082 | .00000 | .00000 | .00001 | .13052 | .00000 | .00000 | .72987 | .00000 | .00000 | .00001 |
| 1400 | .00875 | .00003 | .13080 | .00000 | .00000 | .00001 | .13052 | .00000 | .00001 | .72986 | .00000 | .00000 | .00002 |
| 1450 | .00875 | .00005 | .13078 | .00000 | .00000 | .00002 | .13051 | .00000 | .00001 | .72984 | .00000 | .00001 | .00003 |
| 1500 | .00875 | .00009 | .13074 | .00000 | .00000 | .00003 | .13049 | .00000 | .00002 | .72982 | .00000 | .00001 | .00005 |
| 1550 | .00875 | .00015 | .13067 | .00000 | .00000 | .00005 | .13046 | .00000 | .00003 | .72978 | .00000 | .00002 | .00008 |
| 1600 | .00875 | .00023 | .13058 | .00000 | .00000 | .00008 | .13042 | .00000 | .00005 | .72973 | .00000 | .00003 | .00012 |
| 1650 | .00875 | .00036 | .13044 | .00000 | .00000 | .00011 | .13037 | .00000 | .00007 | .72966 | .00000 | .00005 | .00019 |
| 1700 | .00875 | .00053 | .13025 | .00000 | .00000 | .00016 | .13029 | .00000 | .00011 | .72955 | .00000 | .00008 | .00027 |
| 1750 | .00875 | .00078 | .12998 | .00000 | .00000 | .00022 | .13019 | .00000 | .00016 | .72941 | .00000 | .00012 | .00039 |
| 1800 | .00875 | .00112 | .12961 | .00001 | .00000 | .00030 | .13005 | .00000 | .00022 | .72921 | .00000 | .00018 | .00055 |
| 1850 | .00874 | .00157 | .12913 | .00001 | .00000 | .00040 | .12986 | .00000 | .00030 | .72895 | .00001 | .00026 | .00076 |
| 1900 | .00874 | .00216 | .12849 | .00002 | .00000 | .00052 | .12963 | .00000 | .00041 | .72861 | .00001 | .00038 | .00104 |
| 1950 | .00874 | .00292 | .12766 | .00003 | .00000 | .00068 | .12933 | .00000 | .00055 | .72817 | .00002 | .00053 | .00139 |
| 2000 | .00873 | .00387 | .12662 | .00005 | .00000 | .00087 | .12895 | .00000 | .00073 | .72762 | .00003 | .00072 | .00182 |
| 2050 | .00872 | .00506 | .12533 | .00007 | .00000 | .00110 | .12847 | .00000 | .00094 | .72692 | .00005 | .00098 | .00236 |
| 2100 | .00872 | .00652 | .12374 | .00011 | .00000 | .00137 | .12788 | .00000 | .00121 | .72606 | .00008 | .00130 | .00301 |
| 2150 | .00870 | .00828 | .12182 | .00017 | .00000 | .00170 | .12716 | .00000 | .00153 | .72502 | .00012 | .00170 | .00378 |
| 2200 | .00869 | .01037 | .11954 | .00026 | .00000 | .00209 | .12629 | .00000 | .00191 | .72376 | .00018 | .00220 | .00470 |
| 2250 | .00868 | .01282 | .11686 | .00037 | .00000 | .00254 | .12525 | .00000 | .00236 | .72227 | .00028 | .00281 | .00576 |
| 2300 | .00866 | .01565 | .11376 | .00053 | .00000 | .00307 | .12401 | .00000 | .00288 | .72052 | .00041 | .00354 | .00696 |
| 2350 | .00864 | .01887 | .11024 | .00075 | .00000 | .00368 | .12255 | .00000 | .00347 | .71848 | .00060 | .00441 | .00832 |
| 2400 | .00861 | .02247 | .10628 | .00104 | .00000 | .00437 | .12085 | .00000 | .00415 | .71614 | .00085 | .00543 | .00982 |
| 2450 | .00859 | .02644 | .10189 | .00143 | .00000 | .00515 | .11887 | .00000 | .00490 | .71347 | .00120 | .00661 | .01145 |
| 2500 | .00856 | .03076 | .09710 | .00194 | .00000 | .00602 | .11661 | .00000 | .00574 | .71047 | .00165 | .00795 | .01319 |
| 2550 | .00852 | .03539 | .09196 | .00260 | .00000 | .00700 | .11402 | .00000 | .00665 | .70711 | .00225 | .00946 | .01503 |
| 2600 | .00848 | .04026 | .08651 | .00343 | .00000 | .00809 | .11110 | .00000 | .00764 | .70340 | .00301 | .01115 | .01692 |
| 2650 | .00844 | .04531 | .08083 | .00449 | .00001 | .00928 | .10783 | .00000 | .00869 | .69933 | .00397 | .01299 | .01883 |
| 2700 | .00839 | .05046 | .07498 | .00581 | .00001 | .01056 | .10419 | .00000 | .00981 | .69490 | .00517 | .01499 | .02072 |
| 2750 | .00834 | .05562 | .06907 | .00743 | .00001 | .01195 | .10018 | .00000 | .01097 | .69012 | .00664 | .01712 | .02255 |
| 2800 | .00829 | .06071 | .06316 | .00942 | .00001 | .01341 | .09580 | .00000 | .01217 | .68498 | .00841 | .01935 | .02428 |
| 2850 | .00823 | .06565 | .05736 | .01182 | .00001 | .01494 | .09104 | .00000 | .01338 | .67951 | .01053 | .02165 | .02587 |
| 2900 | .00817 | .07035 | .05173 | .01468 | .00001 | .01651 | .08595 | .00001 | .01461 | .67370 | .01304 | .02398 | .02727 |
| 2950 | .00810 | .07474 | .04634 | .01806 | .00001 | .01809 | .08054 | .00001 | .01583 | .66757 | .01595 | .02629 | .02846 |
| 3000 | .00803 | .07879 | .04126 | .02200 | .00001 | .01965 | .07486 | .00001 | .01702 | .66115 | .01931 | .02852 | .02941 |

TABLE 10.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.067628; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 950 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1000 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1050 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1100 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1150 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1200 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1250 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1300 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1350 | .00875 | .00001 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1400 | .00875 | .00001 | .13082 | .00000 | .00000 | .00001 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00001 |
| 1450 | .00875 | .00003 | .13081 | .00000 | .00000 | .00001 | .13052 | .00001 | .00000 | .72986 | .00000 | .00000 | .00001 |
| 1500 | .00875 | .00004 | .13079 | .00000 | .00000 | .00002 | .13051 | .00001 | .00000 | .72985 | .00000 | .00001 | .00002 |
| 1550 | .00875 | .00007 | .13076 | .00000 | .00000 | .00002 | .13050 | .00002 | .00000 | .72983 | .00000 | .00001 | .00004 |
| 1600 | .00875 | .00011 | .13071 | .00000 | .00000 | .00004 | .13048 | .00003 | .00000 | .72980 | .00000 | .00001 | .00005 |
| 1650 | .00875 | .00017 | .13065 | .00000 | .00000 | .00005 | .13046 | .00005 | .00000 | .72977 | .00000 | .00002 | .00008 |
| 1700 | .00875 | .00026 | .13056 | .00000 | .00000 | .00007 | .13042 | .00007 | .00000 | .72971 | .00000 | .00004 | .00012 |
| 1750 | .00875 | .00037 | .13043 | .00000 | .00000 | .00010 | .13037 | .00010 | .00000 | .72964 | .00000 | .00006 | .00017 |
| 1800 | .00875 | .00054 | .13025 | .00000 | .00000 | .00014 | .13031 | .00015 | .00000 | .72954 | .00000 | .00008 | .00024 |
| 1850 | .00875 | .00075 | .13002 | .00000 | .00000 | .00019 | .13022 | .00020 | .00000 | .72941 | .00000 | .00012 | .00034 |
| 1900 | .00875 | .00103 | .12971 | .00000 | .00000 | .00025 | .13011 | .00028 | .00000 | .72924 | .00000 | .00017 | .00046 |
| 1950 | .00875 | .00140 | .12931 | .00001 | .00000 | .00032 | .12997 | .00037 | .00000 | .72901 | .00000 | .00024 | .00062 |
| 2000 | .00874 | .00187 | .12881 | .00001 | .00000 | .00041 | .12979 | .00049 | .00000 | .72873 | .00001 | .00033 | .00081 |
| 2050 | .00874 | .00245 | .12817 | .00002 | .00000 | .00052 | .12957 | .00063 | .00000 | .72838 | .00001 | .00045 | .00106 |
| 2100 | .00874 | .00317 | .12739 | .00003 | .00000 | .00066 | .12929 | .00081 | .00000 | .72795 | .00002 | .00060 | .00135 |
| 2150 | .00873 | .00404 | .12644 | .00004 | .00000 | .00081 | .12896 | .00103 | .00000 | .72742 | .00003 | .00079 | .00171 |
| 2200 | .00872 | .00510 | .12530 | .00006 | .00000 | .00100 | .12856 | .00129 | .00000 | .72677 | .00004 | .00103 | .00214 |
| 2250 | .00872 | .00635 | .12394 | .00008 | .00000 | .00121 | .12807 | .00160 | .00000 | .72601 | .00006 | .00132 | .00264 |
| 2300 | .00871 | .00782 | .12234 | .00012 | .00000 | .00147 | .12750 | .00196 | .00000 | .72511 | .00009 | .00167 | .00323 |
| 2350 | .00870 | .00952 | .12048 | .00016 | .00000 | .00176 | .12682 | .00239 | .00000 | .72405 | .00013 | .00209 | .00390 |
| 2400 | .00869 | .01148 | .11835 | .00023 | .00000 | .00209 | .12603 | .00287 | .00000 | .72282 | .00019 | .00259 | .00466 |
| 2450 | .00867 | .01370 | .11593 | .00031 | .00000 | .00247 | .12512 | .00342 | .00000 | .72142 | .00026 | .00318 | .00552 |
| 2500 | .00866 | .01619 | .11320 | .00043 | .00000 | .00289 | .12406 | .00405 | .00000 | .71982 | .00037 | .00386 | .00647 |
| 2550 | .00864 | .01896 | .11018 | .00057 | .00000 | .00337 | .12285 | .00474 | .00000 | .71801 | .00050 | .00465 | .00752 |
| 2600 | .00862 | .02199 | .10685 | .00075 | .00001 | .00391 | .12148 | .00551 | .00000 | .71600 | .00068 | .00554 | .00865 |
| 2650 | .00860 | .02528 | .10323 | .00099 | .00001 | .00451 | .11994 | .00636 | .00000 | .71376 | .00091 | .00656 | .00986 |
| 2700 | .00857 | .02882 | .09933 | .00128 | .00001 | .00517 | .11821 | .00728 | .00000 | .71129 | .00120 | .00769 | .01115 |
| 2750 | .00855 | .03258 | .09518 | .00165 | .00001 | .00589 | .11627 | .00827 | .00000 | .70860 | .00156 | .00895 | .01249 |
| 2800 | .00852 | .03653 | .09081 | .00210 | .00001 | .00669 | .11414 | .00933 | .00000 | .70567 | .00201 | .01032 | .01387 |
| 2850 | .00849 | .04062 | .08624 | .00266 | .00001 | .00755 | .11178 | .01046 | .00001 | .70252 | .00256 | .01183 | .01527 |
| 2900 | .00846 | .04483 | .08154 | .00333 | .00002 | .00848 | .10921 | .01164 | .00001 | .69915 | .00322 | .01344 | .01668 |
| 2950 | .00842 | .04911 | .07673 | .00414 | .00002 | .00949 | .10640 | .01287 | .00001 | .69556 | .00402 | .01517 | .01807 |
| 3000 | .00838 | .05340 | .07187 | .00510 | .00002 | .01056 | .10337 | .01415 | .00001 | .69176 | .00496 | .01699 | .01943 |

TABLE 10.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.067628; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 950 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1000 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1050 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1100 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1150 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1200 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72988 | .00000 | .00000 | .00000 |
| 1250 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13054 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1300 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1350 | .00875 | .00000 | .13083 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1400 | .00875 | .00001 | .13082 | .00000 | .00000 | .00000 | .13053 | .00000 | .00000 | .72987 | .00000 | .00000 | .00000 |
| 1450 | .00875 | .00001 | .13082 | .00000 | .00000 | .00001 | .13053 | .00001 | .00000 | .72987 | .00000 | .00000 | .00001 |
| 1500 | .00875 | .00003 | .13081 | .00000 | .00000 | .00001 | .13052 | .00001 | .00000 | .72986 | .00000 | .00000 | .00001 |
| 1550 | .00875 | .00004 | .13079 | .00000 | .00000 | .00001 | .13051 | .00002 | .00000 | .72985 | .00000 | .00001 | .00002 |
| 1600 | .00875 | .00007 | .13076 | .00000 | .00000 | .00002 | .13050 | .00002 | .00000 | .72983 | .00000 | .00001 | .00003 |
| 1650 | .00875 | .00010 | .13072 | .00000 | .00000 | .00003 | .13049 | .00004 | .00000 | .72981 | .00000 | .00001 | .00005 |
| 1700 | .00875 | .00015 | .13067 | .00000 | .00000 | .00004 | .13047 | .00005 | .00000 | .72977 | .00000 | .00002 | .00007 |
| 1750 | .00875 | .00022 | .13059 | .00000 | .00000 | .00006 | .13044 | .00008 | .00000 | .72973 | .00000 | .00003 | .00010 |
| 1800 | .00875 | .00032 | .13048 | .00000 | .00000 | .00008 | .13040 | .00011 | .00000 | .72967 | .00000 | .00005 | .00014 |
| 1850 | .00875 | .00045 | .13034 | .00000 | .00000 | .00011 | .13035 | .00015 | .00000 | .72958 | .00000 | .00007 | .00019 |
| 1900 | .00875 | .00062 | .13016 | .00000 | .00000 | .00015 | .13028 | .00021 | .00000 | .72947 | .00000 | .00010 | .00026 |
| 1950 | .00875 | .00084 | .12992 | .00000 | .00000 | .00019 | .13020 | .00028 | .00000 | .72933 | .00000 | .00014 | .00034 |
| 2000 | .00875 | .00112 | .12962 | .00000 | .00000 | .00025 | .13009 | .00036 | .00000 | .72916 | .00000 | .00019 | .00045 |
| 2050 | .00875 | .00147 | .12923 | .00001 | .00000 | .00031 | .12996 | .00047 | .00000 | .72894 | .00000 | .00026 | .00059 |
| 2100 | .00874 | .00191 | .12876 | .00001 | .00000 | .00039 | .12980 | .00061 | .00000 | .72866 | .00001 | .00035 | .00076 |
| 2150 | .00874 | .00244 | .12818 | .00001 | .00000 | .00049 | .12960 | .00077 | .00000 | .72833 | .00001 | .00046 | .00096 |
| 2200 | .00874 | .00309 | .12748 | .00002 | .00000 | .00060 | .12937 | .00097 | .00000 | .72792 | .00001 | .00060 | .00121 |
| 2250 | .00873 | .00386 | .12665 | .00003 | .00000 | .00073 | .12908 | .00121 | .00000 | .72744 | .00002 | .00077 | .00149 |
| 2300 | .00873 | .00477 | .12566 | .00004 | .00000 | .00088 | .12874 | .00148 | .00000 | .72686 | .00003 | .00097 | .00183 |
| 2350 | .00872 | .00583 | .12451 | .00006 | .00000 | .00105 | .12835 | .00180 | .00000 | .72619 | .00004 | .00122 | .00222 |
| 2400 | .00871 | .00706 | .12317 | .00008 | .00000 | .00125 | .12788 | .00218 | .00000 | .72541 | .00006 | .00152 | .00267 |
| 2450 | .00871 | .00847 | .12164 | .00011 | .00000 | .00148 | .12734 | .00260 | .00000 | .72451 | .00009 | .00187 | .00318 |
| 2500 | .00870 | .01007 | .11990 | .00015 | .00000 | .00174 | .12672 | .00309 | .00000 | .72348 | .00012 | .00228 | .00376 |
| 2550 | .00868 | .01187 | .11794 | .00020 | .00000 | .00202 | .12601 | .00364 | .00000 | .72232 | .00017 | .00275 | .00440 |
| 2600 | .00867 | .01387 | .11575 | .00026 | .00001 | .00235 | .12520 | .00425 | .00000 | .72100 | .00023 | .00330 | .00510 |
| 2650 | .00866 | .01609 | .11334 | .00034 | .00001 | .00271 | .12429 | .00493 | .00000 | .71954 | .00031 | .00392 | .00587 |
| 2700 | .00864 | .01851 | .11069 | .00045 | .00001 | .00311 | .12326 | .00567 | .00000 | .71791 | .00042 | .00463 | .00671 |
| 2750 | .00863 | .02114 | .10781 | .00057 | .00001 | .00355 | .12211 | .00649 | .00001 | .71612 | .00054 | .00542 | .00760 |
| 2800 | .00861 | .02398 | .10470 | .00073 | .00001 | .00403 | .12084 | .00737 | .00001 | .71416 | .00071 | .00630 | .00856 |
| 2850 | .00859 | .02700 | .10139 | .00092 | .00001 | .00456 | .11943 | .00833 | .00001 | .71203 | .00091 | .00727 | .00956 |
| 2900 | .00857 | .03019 | .09787 | .00116 | .00002 | .00514 | .11788 | .00935 | .00001 | .70973 | .00115 | .00834 | .01060 |
| 2950 | .00855 | .03354 | .09418 | .00144 | .00002 | .00576 | .11618 | .01043 | .00001 | .70727 | .00144 | .00950 | .01167 |
| 3000 | .00852 | .03702 | .09033 | .00178 | .00002 | .00644 | .11434 | .01158 | .00001 | .70463 | .00180 | .01076 | .01277 |

TABLE 10C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.067628; EQUIV.RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 |
|----------------------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | |
| 200 | .00875 | .13083 | .13040 | .00000 | .00014 | .72988 |
| 220 | .00875 | .13083 | .12826 | .00000 | .00227 | .72988 |
| 240 | .00875 | .13083 | .10659 | .00000 | .02395 | .72988 |
| PRESSURE = 0.10 ATM | | | | | | |
| 200 | .00875 | .13083 | .13052 | .00000 | .00001 | .72988 |
| 220 | .00875 | .13083 | .13031 | .00000 | .00023 | .72988 |
| 240 | .00875 | .13083 | .12820 | .00000 | .00234 | .72988 |
| 260 | .00875 | .13083 | .11347 | .00000 | .01707 | .72988 |
| 280 | .00875 | .13083 | .00000 | .03665 | .09388 | .72988 |
| PRESSURE = 1.00 ATM | | | | | | |
| 200 | .00875 | .13083 | .13053 | .00000 | .00000 | .72988 |
| 220 | .00875 | .13083 | .13051 | .00000 | .00002 | .72988 |
| 240 | .00875 | .13083 | .13030 | .00000 | .00023 | .72988 |
| 260 | .00875 | .13083 | .12886 | .00000 | .00168 | .72988 |
| 280 | .00875 | .13083 | .00000 | .12198 | .00856 | .72988 |
| 298 | .00875 | .13083 | .00000 | .10261 | .02793 | .72988 |
| 300 | .00875 | .13083 | .00000 | .09926 | .03127 | .72988 |
| 320 | .00875 | .13083 | .00000 | .03034 | .10019 | .72988 |
| PRESSURE = 10.00 ATM | | | | | | |
| 200 | .00875 | .13083 | .13054 | .00000 | .00000 | .72988 |
| 220 | .00875 | .13083 | .13053 | .00000 | .00000 | .72988 |
| 240 | .00875 | .13083 | .13051 | .00000 | .00002 | .72988 |
| 260 | .00875 | .13083 | .13037 | .00000 | .00017 | .72988 |
| 280 | .00875 | .13083 | .00000 | .12969 | .00085 | .72988 |
| 298 | .00875 | .13083 | .00000 | .12782 | .00271 | .72988 |
| 300 | .00875 | .13083 | .00000 | .12751 | .00303 | .72988 |
| 320 | .00875 | .13083 | .00000 | .12146 | .00908 | .72988 |
| 340 | .00875 | .13083 | .00000 | .10682 | .02372 | .72988 |
| 360 | .00875 | .13083 | .00000 | .07458 | .05595 | .72988 |
| 380 | .00875 | .13083 | .00000 | .00701 | .12352 | .72988 |
| PRESSURE = 50.00 ATM | | | | | | |
| 200 | .00875 | .13083 | .13054 | .00000 | .00000 | .72988 |
| 220 | .00875 | .13083 | .13054 | .00000 | .00000 | .72988 |
| 240 | .00875 | .13083 | .13053 | .00000 | .00000 | .72988 |
| 260 | .00875 | .13083 | .13050 | .00000 | .00003 | .72988 |
| 280 | .00875 | .13083 | .00000 | .13037 | .00017 | .72988 |
| 298 | .00875 | .13083 | .00000 | .12999 | .00054 | .72988 |
| 300 | .00875 | .13083 | .00000 | .12993 | .00060 | .72988 |
| 320 | .00875 | .13083 | .00000 | .12874 | .00180 | .72988 |
| 340 | .00875 | .13083 | .00000 | .12589 | .00464 | .72988 |
| 360 | .00875 | .13083 | .00000 | .11989 | .01064 | .72988 |
| 380 | .00875 | .13083 | .00000 | .10835 | .02218 | .72988 |
| 400 | .00875 | .13083 | .00000 | .08766 | .04287 | .72988 |
| 420 | .00875 | .13083 | .00000 | .05232 | .07822 | .72988 |

TABLE 11.1D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 210 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 220 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 230 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 240 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 250 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 260 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 270 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 280 | .00861 | .02408 | .00000 | .13676 | .00000 | .00001 | .11238 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 290 | .00861 | .02408 | .00000 | .13676 | .00000 | .00001 | .11238 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 298 | .00861 | .02408 | .00000 | .13677 | .00000 | .00002 | .11237 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 300 | .00861 | .02408 | .00000 | .13677 | .00000 | .00003 | .11237 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 310 | .00861 | .02407 | .00000 | .13677 | .00000 | .00004 | .11236 | .00000 | .00000 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 320 | .00861 | .02406 | .00000 | .13677 | .00000 | .00007 | .11234 | .00000 | .00000 | .00000 | .71813 | .00000 | .00000 | .00000 |
| 330 | .00861 | .02405 | .00000 | .13678 | .00000 | .00012 | .11232 | .00000 | .00000 | .00000 | .71812 | .00000 | .00000 | .00000 |
| 340 | .00861 | .02403 | .00000 | .13679 | .00000 | .00018 | .11228 | .00000 | .00000 | .00000 | .71809 | .00000 | .00000 | .00000 |
| 350 | .00861 | .02401 | .00000 | .13681 | .00000 | .00027 | .11223 | .00000 | .00000 | .00000 | .71806 | .00000 | .00000 | .00000 |
| 360 | .00861 | .02397 | .00000 | .13684 | .00000 | .00041 | .11216 | .00000 | .00000 | .00000 | .71801 | .00000 | .00000 | .00000 |
| 370 | .00861 | .02392 | .00000 | .13687 | .00000 | .00060 | .11205 | .00000 | .00000 | .00000 | .71794 | .00000 | .00000 | .00000 |
| 380 | .00861 | .02386 | .00000 | .13692 | .00000 | .00086 | .11191 | .00000 | .00000 | .00000 | .71785 | .00000 | .00000 | .00000 |
| 390 | .00861 | .02377 | .00000 | .13698 | .00000 | .00121 | .11171 | .00000 | .00000 | .00000 | .71772 | .00000 | .00000 | .00000 |
| 400 | .00861 | .02364 | .00000 | .13706 | .00000 | .00167 | .11145 | .00000 | .00000 | .00000 | .71756 | .00000 | .00000 | .00000 |
| 410 | .00860 | .02348 | .00000 | .13717 | .00000 | .00227 | .11112 | .00000 | .00000 | .00000 | .71734 | .00000 | .00000 | .00000 |
| 420 | .00860 | .02328 | .00000 | .13731 | .00000 | .00305 | .11069 | .00000 | .00000 | .00000 | .71706 | .00000 | .00000 | .00000 |
| 430 | .00860 | .02302 | .00001 | .13749 | .00000 | .00403 | .11014 | .00000 | .00000 | .00000 | .71671 | .00000 | .00000 | .00000 |
| 440 | .00859 | .02270 | .00001 | .13771 | .00000 | .00526 | .10946 | .00000 | .00001 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 450 | .00858 | .02230 | .00002 | .13798 | .00000 | .00678 | .10862 | .00000 | .00001 | .00000 | .71571 | .00000 | .00000 | .00000 |
| 460 | .00858 | .02181 | .00003 | .13830 | .00000 | .00862 | .10760 | .00000 | .00001 | .00000 | .71505 | .00000 | .00000 | .00000 |
| 470 | .00857 | .02123 | .00006 | .13868 | .00000 | .01082 | .10639 | .00000 | .00001 | .00000 | .71425 | .00000 | .00000 | .00000 |
| 480 | .00856 | .02054 | .00009 | .13913 | .00000 | .01342 | .10495 | .00000 | .00001 | .00000 | .71331 | .00000 | .00000 | .00000 |
| 490 | .00854 | .01973 | .00013 | .13964 | .00000 | .01645 | .10329 | .00000 | .00001 | .00000 | .71220 | .00000 | .00000 | .00000 |
| 500 | .00853 | .01880 | .00020 | .14022 | .00000 | .01993 | .10138 | .00000 | .00001 | .00000 | .71093 | .00000 | .00000 | .00000 |
| 510 | .00851 | .01775 | .00030 | .14086 | .00000 | .02387 | .09924 | .00000 | .00001 | .00000 | .70948 | .00000 | .00000 | .00000 |
| 520 | .00849 | .01657 | .00043 | .14154 | .00000 | .02824 | .09686 | .00000 | .00001 | .00000 | .70786 | .00000 | .00000 | .00000 |
| 530 | .00847 | .01526 | .00062 | .14225 | .00000 | .03303 | .09428 | .00000 | .00001 | .00000 | .70607 | .00000 | .00000 | .00000 |
| 540 | .00845 | .01385 | .00088 | .14298 | .00000 | .03818 | .09153 | .00000 | .00001 | .00000 | .70413 | .00000 | .00000 | .00000 |
| 550 | .00842 | .01233 | .00122 | .14368 | .00000 | .04360 | .08867 | .00000 | .00001 | .00000 | .70206 | .00000 | .00000 | .00000 |
| 560 | .00839 | .01075 | .00167 | .14434 | .00000 | .04920 | .08575 | .00000 | .00001 | .00000 | .69989 | .00000 | .00000 | .00000 |
| 570 | .00837 | .00913 | .00224 | .14489 | .00000 | .05483 | .08288 | .00000 | .00001 | .00000 | .69766 | .00000 | .00000 | .00000 |
| 580 | .00834 | .00750 | .00295 | .14531 | .00000 | .06032 | .08014 | .00000 | .00001 | .00000 | .69544 | .00000 | .00000 | .00000 |
| 590 | .00831 | .00593 | .00379 | .14555 | .00000 | .06547 | .07765 | .00000 | .00001 | .00000 | .69329 | .00000 | .00000 | .00000 |

TABLE 11.1D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00829 | .00448 | .00476 | .14559 | .00000 | .07005 | .07553 | .00000 | .00001 | .00000 | .69129 | .00000 | .00000 | .00000 |
| 610 | .00827 | .00320 | .00582 | .14541 | .00000 | .07385 | .07389 | .00000 | .00001 | .00000 | .68955 | .00000 | .00000 | .00000 |
| 620 | .00825 | .00216 | .00692 | .14503 | .00000 | .07671 | .07279 | .00000 | .00001 | .00000 | .68812 | .00000 | .00000 | .00000 |
| 630 | .00824 | .00139 | .00802 | .14447 | .00000 | .07859 | .07223 | .00000 | .00000 | .00000 | .68706 | .00000 | .00000 | .00000 |
| 640 | .00823 | .00085 | .00908 | .14379 | .00000 | .07958 | .07215 | .00000 | .00000 | .00000 | .68632 | .00000 | .00000 | .00000 |
| 650 | .00823 | .00050 | .01009 | .14301 | .00000 | .07988 | .07243 | .00000 | .00000 | .00000 | .68585 | .00000 | .00000 | .00000 |
| 660 | .00822 | .00029 | .01106 | .14218 | .00000 | .07971 | .07296 | .00000 | .00000 | .00000 | .68556 | .00000 | .00000 | .00000 |
| 670 | .00822 | .00017 | .01201 | .14132 | .00000 | .07923 | .07365 | .00000 | .00000 | .00000 | .68539 | .00000 | .00000 | .00000 |
| 680 | .00822 | .00010 | .01295 | .14043 | .00000 | .07857 | .07443 | .00000 | .00000 | .00000 | .68529 | .00000 | .00000 | .00000 |
| 690 | .00822 | .00006 | .01389 | .13952 | .00000 | .07779 | .07528 | .00000 | .00000 | .00000 | .68524 | .00000 | .00000 | .00000 |
| 700 | .00822 | .00003 | .01483 | .13860 | .00000 | .07694 | .07617 | .00000 | .00000 | .00000 | .68520 | .00000 | .00000 | .00000 |
| 710 | .00822 | .00002 | .01576 | .13768 | .00000 | .07606 | .07708 | .00000 | .00000 | .00000 | .68519 | .00000 | .00000 | .00000 |
| 720 | .00822 | .00001 | .01670 | .13674 | .00000 | .07515 | .07800 | .00000 | .00000 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 730 | .00822 | .00001 | .01765 | .13580 | .00000 | .07423 | .07893 | .00000 | .00000 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 740 | .00822 | .00000 | .01859 | .13486 | .00000 | .07329 | .07987 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 750 | .00822 | .00000 | .01953 | .13392 | .00000 | .07236 | .08081 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 760 | .00822 | .00000 | .02047 | .13298 | .00000 | .07142 | .08175 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 770 | .00822 | .00000 | .02141 | .13204 | .00000 | .07049 | .08268 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 780 | .00822 | .00000 | .02235 | .13111 | .00000 | .06955 | .08362 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 790 | .00822 | .00000 | .02327 | .13018 | .00000 | .06863 | .08454 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 800 | .00822 | .00000 | .02419 | .12926 | .00000 | .06771 | .08546 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 810 | .00822 | .00000 | .02510 | .12835 | .00000 | .06680 | .08637 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 820 | .00822 | .00000 | .02601 | .12745 | .00000 | .06590 | .08728 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 830 | .00822 | .00000 | .02690 | .12655 | .00000 | .06500 | .08817 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 840 | .00822 | .00000 | .02778 | .12567 | .00000 | .06412 | .08905 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 850 | .00822 | .00000 | .02865 | .12480 | .00000 | .06325 | .08992 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 860 | .00822 | .00000 | .02951 | .12394 | .00000 | .06239 | .09078 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 870 | .00822 | .00000 | .03036 | .12309 | .00000 | .06154 | .09163 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 880 | .00822 | .00000 | .03119 | .12226 | .00000 | .06071 | .09246 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 890 | .00822 | .00000 | .03202 | .12144 | .00000 | .05989 | .09328 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 900 | .00822 | .00000 | .03282 | .12063 | .00000 | .05908 | .09409 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 910 | .00822 | .00000 | .03362 | .11983 | .00000 | .05829 | .09489 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 920 | .00822 | .00000 | .03440 | .11905 | .00000 | .05750 | .09567 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 930 | .00822 | .00000 | .03517 | .11829 | .00000 | .05674 | .09644 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 940 | .00822 | .00000 | .03592 | .11753 | .00000 | .05598 | .09719 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 950 | .00822 | .00000 | .03666 | .11679 | .00000 | .05524 | .09793 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 960 | .00822 | .00000 | .03738 | .11607 | .00000 | .05452 | .09865 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 970 | .00822 | .00000 | .03810 | .11536 | .00000 | .05381 | .09937 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 980 | .00822 | .00000 | .03880 | .11466 | .00000 | .05311 | .10006 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 990 | .00822 | .00000 | .03948 | .11397 | .00000 | .05242 | .10075 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |

TABLE 11.1D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM.RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00822 | .00000 | .04015 | .11330 | .00000 | .05175 | .10142 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1050 | .00822 | .00000 | .04331 | .11014 | .00000 | .04859 | .10458 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1100 | .00822 | .00000 | .04616 | .10729 | .00000 | .04574 | .10743 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1150 | .00822 | .00000 | .04872 | .10473 | .00000 | .04318 | .10999 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1200 | .00822 | .00000 | .05103 | .10243 | .00000 | .04088 | .11230 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1250 | .00822 | .00000 | .05310 | .10035 | .00000 | .03880 | .11437 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1300 | .00822 | .00000 | .05497 | .09848 | .00000 | .03693 | .11624 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1350 | .00822 | .00000 | .05666 | .09680 | .00000 | .03524 | .11793 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1400 | .00822 | .00000 | .05818 | .09527 | .00001 | .03372 | .11945 | .00000 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1450 | .00822 | .00000 | .05956 | .09389 | .00002 | .03234 | .12083 | .00000 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1500 | .00822 | .00000 | .06081 | .09264 | .00003 | .03108 | .12207 | .00000 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1550 | .00822 | .00000 | .06194 | .09151 | .00005 | .02994 | .12320 | .00000 | .00000 | .00000 | .68514 | .00000 | .00001 | .00000 |
| 1600 | .00822 | .00000 | .06297 | .09047 | .00009 | .02889 | .12422 | .00000 | .00000 | .00000 | .68512 | .00000 | .00002 | .00000 |
| 1650 | .00822 | .00000 | .06391 | .08953 | .00015 | .02793 | .12514 | .00000 | .00000 | .00000 | .68509 | .00000 | .00003 | .00000 |
| 1700 | .00822 | .00000 | .06476 | .08866 | .00024 | .02704 | .12596 | .00000 | .00000 | .00001 | .68505 | .00000 | .00006 | .00000 |
| 1750 | .00822 | .00000 | .06554 | .08787 | .00037 | .02622 | .12667 | .00000 | .00000 | .00001 | .68498 | .00000 | .00011 | .00000 |
| 1800 | .00821 | .00000 | .06626 | .08713 | .00057 | .02546 | .12727 | .00000 | .00000 | .00002 | .68487 | .00000 | .00019 | .00001 |
| 1850 | .00821 | .00000 | .06693 | .08643 | .00084 | .02475 | .12773 | .00000 | .00000 | .00005 | .68470 | .00001 | .00033 | .00002 |
| 1900 | .00821 | .00000 | .06757 | .08573 | .00122 | .02410 | .12803 | .00000 | .00000 | .00009 | .68443 | .00002 | .00055 | .00005 |
| 1950 | .00820 | .00000 | .06823 | .08498 | .00175 | .02352 | .12810 | .00000 | .00000 | .00015 | .68402 | .00005 | .00088 | .00011 |
| 2000 | .00820 | .00000 | .06900 | .08409 | .00245 | .02303 | .12785 | .00000 | .00000 | .00026 | .68337 | .00011 | .00139 | .00025 |
| 2050 | .00819 | .00000 | .06999 | .08289 | .00340 | .02268 | .12716 | .00000 | .00000 | .00044 | .68237 | .00022 | .00213 | .00054 |
| 2100 | .00817 | .00000 | .07139 | .08117 | .00465 | .02255 | .12583 | .00000 | .00000 | .00070 | .68084 | .00045 | .00316 | .00108 |
| 2150 | .00814 | .00000 | .07343 | .07867 | .00632 | .02274 | .12365 | .00000 | .00000 | .00108 | .67856 | .00087 | .00454 | .00201 |
| 2200 | .00811 | .00000 | .07627 | .07515 | .00855 | .02332 | .12041 | .00000 | .00000 | .00158 | .67531 | .00158 | .00629 | .00344 |
| 2250 | .00806 | .00000 | .07996 | .07056 | .01151 | .02433 | .11594 | .00000 | .00000 | .00220 | .67093 | .00269 | .00842 | .00540 |
| 2300 | .00800 | .00000 | .08435 | .06498 | .01543 | .02574 | .11017 | .00000 | .00000 | .00293 | .66533 | .00436 | .01088 | .00782 |
| 2350 | .00792 | .00000 | .08920 | .05869 | .02055 | .02746 | .10310 | .00000 | .00000 | .00374 | .65847 | .00674 | .01358 | .01055 |
| 2400 | .00783 | .00000 | .09419 | .05199 | .02709 | .02935 | .09481 | .00000 | .00000 | .00461 | .65037 | .00997 | .01643 | .01337 |
| 2450 | .00772 | .00000 | .09900 | .04520 | .03529 | .03122 | .08543 | .00000 | .00000 | .00551 | .64108 | .01420 | .01928 | .01607 |
| 2500 | .00760 | .00000 | .10337 | .03859 | .04530 | .03286 | .07522 | .00000 | .00000 | .00639 | .63067 | .01957 | .02196 | .01846 |
| 2550 | .00747 | .00000 | .10712 | .03239 | .05721 | .03404 | .06447 | .00000 | .00000 | .00724 | .61928 | .02616 | .02427 | .02034 |
| 2600 | .00733 | .00000 | .11014 | .02673 | .07092 | .03455 | .05360 | .00001 | .00000 | .00802 | .60711 | .03399 | .02602 | .02158 |
| 2650 | .00718 | .00000 | .11240 | .02171 | .08617 | .03420 | .04307 | .00001 | .00000 | .00868 | .59446 | .04301 | .02702 | .02208 |
| 2700 | .00703 | .00000 | .11394 | .01737 | .10249 | .03292 | .03332 | .00001 | .00000 | .00921 | .58169 | .05303 | .02716 | .02182 |
| 2750 | .00688 | .00000 | .11485 | .01371 | .11923 | .03074 | .02478 | .00002 | .00000 | .00957 | .56922 | .06377 | .02639 | .02083 |
| 2800 | .00674 | .00000 | .11528 | .01067 | .13565 | .02782 | .01768 | .00003 | .00000 | .00977 | .55747 | .07486 | .02480 | .01923 |
| 2850 | .00662 | .00000 | .11535 | .00821 | .15106 | .02441 | .01212 | .00004 | .00000 | .00979 | .54681 | .08586 | .02255 | .01718 |
| 2900 | .00650 | .00000 | .11520 | .00626 | .16489 | .02083 | .00801 | .00005 | .00000 | .00964 | .53746 | .09635 | .01990 | .01489 |
| 2950 | .00641 | .00000 | .11492 | .00473 | .17683 | .01734 | .00513 | .00007 | .00000 | .00937 | .52955 | .10598 | .01710 | .01256 |
| 3000 | .00633 | .00000 | .11460 | .00356 | .18679 | .01416 | .00320 | .00010 | .00000 | .00898 | .52303 | .11453 | .01437 | .01035 |

TABLE 11.2D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 210 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 220 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 230 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 240 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 250 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 260 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 270 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 280 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 290 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 298 | .00861 | .02408 | .00000 | .13676 | .00000 | .00001 | .11238 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 300 | .00861 | .02408 | .00000 | .13676 | .00000 | .00001 | .11238 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 310 | .00861 | .02408 | .00000 | .13676 | .00000 | .00001 | .11238 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 320 | .00861 | .02408 | .00000 | .13677 | .00000 | .00002 | .11237 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 330 | .00861 | .02407 | .00000 | .13677 | .00000 | .00004 | .11236 | .00000 | .00000 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 340 | .00861 | .02407 | .00000 | .13677 | .00000 | .00006 | .11235 | .00000 | .00000 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 350 | .00861 | .02406 | .00000 | .13678 | .00000 | .00009 | .11233 | .00000 | .00000 | .00000 | .71813 | .00000 | .00000 | .00000 |
| 360 | .00861 | .02405 | .00000 | .13679 | .00000 | .00013 | .11231 | .00000 | .00000 | .00000 | .71811 | .00000 | .00000 | .00000 |
| 370 | .00861 | .02403 | .00000 | .13680 | .00000 | .00019 | .11228 | .00000 | .00000 | .00000 | .71809 | .00000 | .00000 | .00000 |
| 380 | .00861 | .02401 | .00000 | .13681 | .00000 | .00027 | .11223 | .00000 | .00000 | .00000 | .71806 | .00000 | .00000 | .00000 |
| 390 | .00861 | .02398 | .00000 | .13683 | .00000 | .00038 | .11217 | .00000 | .00001 | .00000 | .71802 | .00000 | .00000 | .00000 |
| 400 | .00861 | .02394 | .00000 | .13686 | .00000 | .00053 | .11209 | .00000 | .00001 | .00000 | .71797 | .00000 | .00000 | .00000 |
| 410 | .00861 | .02389 | .00000 | .13690 | .00000 | .00073 | .11198 | .00000 | .00001 | .00000 | .71790 | .00000 | .00000 | .00000 |
| 420 | .00861 | .02382 | .00000 | .13694 | .00000 | .00098 | .11184 | .00000 | .00001 | .00000 | .71780 | .00000 | .00000 | .00000 |
| 430 | .00861 | .02374 | .00000 | .13700 | .00000 | .00130 | .11166 | .00000 | .00001 | .00000 | .71769 | .00000 | .00000 | .00000 |
| 440 | .00861 | .02363 | .00000 | .13707 | .00000 | .00170 | .11144 | .00000 | .00001 | .00000 | .71754 | .00000 | .00000 | .00000 |
| 450 | .00860 | .02350 | .00001 | .13716 | .00000 | .00220 | .11116 | .00000 | .00001 | .00000 | .71736 | .00000 | .00000 | .00000 |
| 460 | .00860 | .02334 | .00001 | .13727 | .00000 | .00282 | .11081 | .00000 | .00001 | .00000 | .71714 | .00000 | .00000 | .00000 |
| 470 | .00860 | .02314 | .00002 | .13740 | .00000 | .00357 | .11040 | .00000 | .00001 | .00000 | .71687 | .00000 | .00000 | .00000 |
| 480 | .00859 | .02290 | .00003 | .13756 | .00000 | .00448 | .10990 | .00000 | .00001 | .00000 | .71654 | .00000 | .00000 | .00000 |
| 490 | .00859 | .02261 | .00004 | .13774 | .00000 | .00556 | .10930 | .00000 | .00001 | .00000 | .71614 | .00000 | .00000 | .00000 |
| 500 | .00858 | .02227 | .00006 | .13796 | .00000 | .00683 | .10860 | .00000 | .00002 | .00000 | .71568 | .00000 | .00000 | .00000 |
| 510 | .00858 | .02187 | .00009 | .13820 | .00000 | .00833 | .10778 | .00000 | .00002 | .00000 | .71513 | .00000 | .00000 | .00000 |
| 520 | .00857 | .02141 | .00014 | .13848 | .00000 | .01005 | .10684 | .00000 | .00002 | .00000 | .71449 | .00000 | .00000 | .00000 |
| 530 | .00856 | .02087 | .00020 | .13879 | .00000 | .01204 | .10576 | .00000 | .00002 | .00000 | .71376 | .00000 | .00000 | .00000 |
| 540 | .00855 | .02026 | .00028 | .13913 | .00000 | .01429 | .10455 | .00000 | .00002 | .00000 | .71292 | .00000 | .00000 | .00000 |
| 550 | .00854 | .01957 | .00039 | .13950 | .00000 | .01682 | .10319 | .00000 | .00002 | .00000 | .71197 | .00000 | .00000 | .00000 |
| 560 | .00853 | .01879 | .00054 | .13989 | .00000 | .01963 | .10169 | .00000 | .00002 | .00000 | .71091 | .00000 | .00000 | .00000 |
| 570 | .00851 | .01792 | .00074 | .14029 | .00000 | .02274 | .10006 | .00000 | .00002 | .00000 | .70972 | .00000 | .00000 | .00000 |
| 580 | .00850 | .01697 | .00101 | .14069 | .00000 | .02612 | .09829 | .00000 | .00002 | .00000 | .70841 | .00000 | .00000 | .00000 |
| 590 | .00848 | .01592 | .00134 | .14107 | .00000 | .02976 | .09641 | .00000 | .00002 | .00000 | .70698 | .00000 | .00000 | .00000 |

TABLE 11.2D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00846 | .01479 | .00178 | .14143 | .00000 | .03364 | .09445 | .00000 | .00002 | .00000 | .70543 | .00000 | .00000 | .00000 |
| 610 | .00844 | .01358 | .00232 | .14172 | .00000 | .03772 | .09242 | .00000 | .00002 | .00000 | .70377 | .00000 | .00000 | .00000 |
| 620 | .00842 | .01230 | .00299 | .14195 | .00000 | .04195 | .09036 | .00000 | .00002 | .00000 | .70201 | .00000 | .00000 | .00000 |
| 630 | .00840 | .01095 | .00380 | .14207 | .00000 | .04627 | .08832 | .00000 | .00002 | .00000 | .70017 | .00000 | .00000 | .00000 |
| 640 | .00837 | .00957 | .00477 | .14206 | .00000 | .05060 | .08634 | .00000 | .00002 | .00000 | .69827 | .00000 | .00000 | .00000 |
| 650 | .00835 | .00816 | .00589 | .14191 | .00000 | .05483 | .08449 | .00000 | .00002 | .00000 | .69635 | .00000 | .00000 | .00000 |
| 660 | .00833 | .00677 | .00717 | .14159 | .00000 | .05886 | .08282 | .00000 | .00002 | .00000 | .69444 | .00000 | .00000 | .00000 |
| 670 | .00831 | .00544 | .00857 | .14111 | .00000 | .06255 | .08139 | .00000 | .00002 | .00000 | .69262 | .00000 | .00000 | .00000 |
| 680 | .00829 | .00421 | .01006 | .14048 | .00000 | .06576 | .08026 | .00000 | .00002 | .00000 | .69093 | .00000 | .00000 | .00000 |
| 690 | .00827 | .00313 | .01158 | .13971 | .00000 | .06837 | .07948 | .00000 | .00002 | .00000 | .68945 | .00000 | .00000 | .00000 |
| 700 | .00825 | .00223 | .01307 | .13884 | .00000 | .07031 | .07907 | .00000 | .00001 | .00000 | .68821 | .00000 | .00000 | .00000 |
| 710 | .00824 | .00153 | .01449 | .13790 | .00000 | .07156 | .07901 | .00000 | .00001 | .00000 | .68725 | .00000 | .00000 | .00000 |
| 720 | .00823 | .00102 | .01582 | .13693 | .00000 | .07219 | .07924 | .00000 | .00001 | .00000 | .68655 | .00000 | .00000 | .00000 |
| 730 | .00823 | .00066 | .01705 | .13595 | .00000 | .07233 | .07971 | .00000 | .00001 | .00000 | .68606 | .00000 | .00000 | .00000 |
| 740 | .00822 | .00042 | .01819 | .13497 | .00000 | .07209 | .08036 | .00000 | .00001 | .00000 | .68574 | .00000 | .00000 | .00000 |
| 750 | .00822 | .00027 | .01927 | .13400 | .00000 | .07160 | .08111 | .00000 | .00001 | .00000 | .68553 | .00000 | .00000 | .00000 |
| 760 | .00822 | .00017 | .02030 | .13304 | .00000 | .07094 | .08193 | .00000 | .00001 | .00000 | .68539 | .00000 | .00000 | .00000 |
| 770 | .00822 | .00011 | .02130 | .13208 | .00000 | .07018 | .08280 | .00000 | .00001 | .00000 | .68531 | .00000 | .00000 | .00000 |
| 780 | .00822 | .00007 | .02227 | .13114 | .00000 | .06936 | .08369 | .00000 | .00001 | .00000 | .68525 | .00000 | .00000 | .00000 |
| 790 | .00822 | .00004 | .02322 | .13020 | .00000 | .06850 | .08459 | .00000 | .00000 | .00000 | .68522 | .00000 | .00000 | .00000 |
| 800 | .00822 | .00003 | .02416 | .12927 | .00000 | .06763 | .08549 | .00000 | .00000 | .00000 | .68520 | .00000 | .00000 | .00000 |
| 810 | .00822 | .00002 | .02508 | .12836 | .00000 | .06674 | .08639 | .00000 | .00000 | .00000 | .68518 | .00000 | .00000 | .00000 |
| 820 | .00822 | .00001 | .02599 | .12745 | .00000 | .06586 | .08729 | .00000 | .00000 | .00000 | .68518 | .00000 | .00000 | .00000 |
| 830 | .00822 | .00001 | .02689 | .12656 | .00000 | .06498 | .08818 | .00000 | .00000 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 840 | .00822 | .00001 | .02778 | .12567 | .00000 | .06410 | .08906 | .00000 | .00000 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 850 | .00822 | .00000 | .02865 | .12480 | .00000 | .06324 | .08993 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 860 | .00822 | .00000 | .02951 | .12394 | .00000 | .06238 | .09078 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 870 | .00822 | .00000 | .03036 | .12309 | .00000 | .06154 | .09163 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 880 | .00822 | .00000 | .03119 | .12226 | .00000 | .06070 | .09246 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 890 | .00822 | .00000 | .03201 | .12144 | .00000 | .05988 | .09328 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 900 | .00822 | .00000 | .03282 | .12063 | .00000 | .05908 | .09409 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 910 | .00822 | .00000 | .03362 | .11984 | .00000 | .05828 | .09489 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 920 | .00822 | .00000 | .03440 | .11905 | .00000 | .05750 | .09567 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 930 | .00822 | .00000 | .03517 | .11829 | .00000 | .05674 | .09643 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 940 | .00822 | .00000 | .03592 | .11753 | .00000 | .05598 | .09719 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 950 | .00822 | .00000 | .03666 | .11679 | .00000 | .05524 | .09793 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 960 | .00822 | .00000 | .03738 | .11607 | .00000 | .05452 | .09865 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 970 | .00822 | .00000 | .03810 | .11536 | .00000 | .05381 | .09937 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 980 | .00822 | .00000 | .03879 | .11466 | .00000 | .05311 | .10006 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 990 | .00822 | .00000 | .03948 | .11397 | .00000 | .05242 | .10075 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |

TABLE 11.2D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00822 | .00000 | .04015 | .11330 | .00000 | .05175 | .10142 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1050 | .00822 | .00000 | .04331 | .11014 | .00000 | .04859 | .10458 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1100 | .00822 | .00000 | .04616 | .10729 | .00000 | .04574 | .10743 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1150 | .00822 | .00000 | .04872 | .10473 | .00000 | .04318 | .10999 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1200 | .00822 | .00000 | .05103 | .10243 | .00000 | .04088 | .11230 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1250 | .00822 | .00000 | .05310 | .10035 | .00000 | .03880 | .11437 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1300 | .00822 | .00000 | .05497 | .09848 | .00000 | .03693 | .11624 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1350 | .00822 | .00000 | .05666 | .09680 | .00000 | .03525 | .11793 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1400 | .00822 | .00000 | .05818 | .09527 | .00000 | .03372 | .11945 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1450 | .00822 | .00000 | .05956 | .09389 | .00001 | .03234 | .12083 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1500 | .00822 | .00000 | .06081 | .09264 | .00001 | .03109 | .12208 | .00000 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1550 | .00822 | .00000 | .06195 | .09150 | .00002 | .02994 | .12322 | .00000 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1600 | .00822 | .00000 | .06299 | .09046 | .00003 | .02890 | .12425 | .00000 | .00000 | .00000 | .68515 | .00000 | .00001 | .00000 |
| 1650 | .00822 | .00000 | .06393 | .08952 | .00005 | .02795 | .12519 | .00000 | .00000 | .00000 | .68514 | .00000 | .00001 | .00000 |
| 1700 | .00822 | .00000 | .06480 | .08865 | .00008 | .02708 | .12604 | .00000 | .00000 | .00000 | .68512 | .00000 | .00002 | .00000 |
| 1750 | .00822 | .00000 | .06559 | .08785 | .00012 | .02627 | .12681 | .00000 | .00000 | .00000 | .68510 | .00000 | .00003 | .00000 |
| 1800 | .00822 | .00000 | .06631 | .08712 | .00018 | .02553 | .12750 | .00000 | .00000 | .00001 | .68507 | .00000 | .00006 | .00000 |
| 1850 | .00822 | .00000 | .06698 | .08644 | .00027 | .02484 | .12811 | .00000 | .00000 | .00001 | .68502 | .00000 | .00010 | .00000 |
| 1900 | .00821 | .00000 | .06760 | .08581 | .00039 | .02421 | .12864 | .00000 | .00000 | .00003 | .68494 | .00000 | .00017 | .00000 |
| 1950 | .00821 | .00000 | .06818 | .08520 | .00055 | .02362 | .12907 | .00000 | .00000 | .00005 | .68482 | .00000 | .00028 | .00001 |
| 2000 | .00821 | .00000 | .06874 | .08460 | .00078 | .02308 | .12938 | .00000 | .00000 | .00008 | .68464 | .00001 | .00044 | .00003 |
| 2050 | .00821 | .00000 | .06931 | .08399 | .00107 | .02259 | .12955 | .00000 | .00000 | .00014 | .68438 | .00002 | .00069 | .00006 |
| 2100 | .00820 | .00000 | .06992 | .08330 | .00146 | .02216 | .12954 | .00000 | .00000 | .00023 | .68399 | .00005 | .00104 | .00012 |
| 2150 | .00820 | .00000 | .07062 | .08248 | .00196 | .02181 | .12928 | .00000 | .00000 | .00037 | .68342 | .00009 | .00153 | .00024 |
| 2200 | .00819 | .00000 | .07151 | .08143 | .00260 | .02157 | .12869 | .00000 | .00000 | .00058 | .68258 | .00018 | .00221 | .00046 |
| 2250 | .00818 | .00000 | .07271 | .08000 | .00342 | .02149 | .12767 | .00000 | .00000 | .00087 | .68137 | .00034 | .00312 | .00084 |
| 2300 | .00816 | .00000 | .07433 | .07804 | .00447 | .02162 | .12609 | .00000 | .00000 | .00128 | .67968 | .00059 | .00430 | .00145 |
| 2350 | .00813 | .00000 | .07649 | .07542 | .00582 | .02201 | .12383 | .00000 | .00000 | .00180 | .67736 | .00101 | .00576 | .00237 |
| 2400 | .00810 | .00000 | .07925 | .07205 | .00753 | .02270 | .12079 | .00000 | .00000 | .00245 | .67433 | .00164 | .00753 | .00363 |
| 2450 | .00806 | .00000 | .08258 | .06795 | .00972 | .02370 | .11690 | .00000 | .00000 | .00321 | .67051 | .00256 | .00957 | .00522 |
| 2500 | .00801 | .00000 | .08638 | .06321 | .01249 | .02499 | .11214 | .00000 | .00000 | .00407 | .66589 | .00384 | .01187 | .00709 |
| 2550 | .00795 | .00000 | .09047 | .05801 | .01597 | .02652 | .10652 | .00000 | .00000 | .00502 | .66047 | .00555 | .01437 | .00915 |
| 2600 | .00788 | .00000 | .09467 | .05254 | .02027 | .02821 | .10009 | .00000 | .00000 | .00602 | .65426 | .00777 | .01700 | .01128 |
| 2650 | .00781 | .00000 | .09879 | .04697 | .02551 | .02998 | .09291 | .00000 | .00000 | .00705 | .64731 | .01058 | .01969 | .01338 |
| 2700 | .00772 | .00000 | .10268 | .04149 | .03182 | .03173 | .08510 | .00000 | .00000 | .00809 | .63965 | .01405 | .02234 | .01532 |
| 2750 | .00763 | .00000 | .10619 | .03623 | .03925 | .03332 | .07679 | .00001 | .00000 | .00912 | .63135 | .01823 | .02484 | .01703 |
| 2800 | .00753 | .00000 | .10924 | .03130 | .04788 | .03465 | .06816 | .00001 | .00000 | .01010 | .62246 | .02317 | .02709 | .01842 |
| 2850 | .00742 | .00000 | .11178 | .02677 | .05767 | .03558 | .05941 | .00001 | .00000 | .01102 | .61310 | .02887 | .02895 | .01943 |
| 2900 | .00731 | .00000 | .11380 | .02267 | .06856 | .03600 | .05077 | .00002 | .00000 | .01184 | .60338 | .03531 | .03033 | .02001 |
| 2950 | .00719 | .00000 | .11530 | .01902 | .08039 | .03585 | .04246 | .00002 | .00000 | .01256 | .59345 | .04245 | .03114 | .02016 |
| 3000 | .00708 | .00000 | .11633 | .01583 | .09294 | .03506 | .03472 | .00003 | .00000 | .01314 | .58350 | .05017 | .03132 | .01987 |

TABLE 11.3D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 210 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11239 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 220 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 230 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 240 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 250 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 260 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 270 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 280 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 290 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 298 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 300 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 310 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 320 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00001 | .11238 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 330 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00001 | .11238 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 340 | .00861 | .02408 | .00000 | .13677 | .00000 | .00000 | .00002 | .11237 | .00000 | .00000 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 350 | .00861 | .02407 | .00000 | .13677 | .00000 | .00000 | .00003 | .11237 | .00000 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 360 | .00861 | .02407 | .00000 | .13677 | .00000 | .00000 | .00004 | .11236 | .00000 | .00001 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 370 | .00861 | .02406 | .00000 | .13678 | .00000 | .00000 | .00006 | .11235 | .00000 | .00001 | .00000 | .71813 | .00000 | .00000 | .00000 |
| 380 | .00861 | .02406 | .00000 | .13678 | .00000 | .00000 | .00009 | .11233 | .00000 | .00001 | .00000 | .71812 | .00000 | .00000 | .00000 |
| 390 | .00861 | .02405 | .00000 | .13679 | .00000 | .00000 | .00012 | .11231 | .00000 | .00001 | .00000 | .71811 | .00000 | .00000 | .00000 |
| 400 | .00861 | .02403 | .00000 | .13680 | .00000 | .00000 | .00017 | .11228 | .00000 | .00001 | .00000 | .71809 | .00000 | .00000 | .00000 |
| 410 | .00861 | .02402 | .00000 | .13681 | .00000 | .00000 | .00023 | .11225 | .00000 | .00001 | .00000 | .71807 | .00000 | .00000 | .00000 |
| 420 | .00861 | .02400 | .00000 | .13682 | .00000 | .00000 | .00031 | .11220 | .00000 | .00001 | .00000 | .71804 | .00000 | .00000 | .00000 |
| 430 | .00861 | .02397 | .00000 | .13684 | .00000 | .00000 | .00041 | .11215 | .00000 | .00002 | .00000 | .71801 | .00000 | .00000 | .00000 |
| 440 | .00861 | .02393 | .00000 | .13687 | .00000 | .00000 | .00054 | .11207 | .00000 | .00002 | .00000 | .71796 | .00000 | .00000 | .00000 |
| 450 | .00861 | .02389 | .00000 | .13689 | .00000 | .00000 | .00070 | .11198 | .00000 | .00002 | .00000 | .71790 | .00000 | .00000 | .00000 |
| 460 | .00861 | .02384 | .00000 | .13693 | .00000 | .00000 | .00090 | .11187 | .00000 | .00002 | .00000 | .71783 | .00000 | .00000 | .00000 |
| 470 | .00861 | .02377 | .00001 | .13697 | .00000 | .00000 | .00114 | .11174 | .00000 | .00002 | .00000 | .71774 | .00000 | .00000 | .00000 |
| 480 | .00861 | .02369 | .00001 | .13703 | .00000 | .00000 | .00144 | .11157 | .00000 | .00002 | .00000 | .71763 | .00000 | .00000 | .00000 |
| 490 | .00861 | .02360 | .00001 | .13709 | .00000 | .00000 | .00179 | .11137 | .00000 | .00003 | .00000 | .71750 | .00000 | .00000 | .00000 |
| 500 | .00860 | .02349 | .00002 | .13716 | .00000 | .00000 | .00222 | .11114 | .00000 | .00003 | .00000 | .71735 | .00000 | .00000 | .00000 |
| 510 | .00860 | .02335 | .00003 | .13724 | .00000 | .00000 | .00272 | .11086 | .00000 | .00003 | .00000 | .71716 | .00000 | .00000 | .00000 |
| 520 | .00860 | .02319 | .00004 | .13734 | .00000 | .00000 | .00331 | .11054 | .00000 | .00003 | .00000 | .71694 | .00000 | .00000 | .00000 |
| 530 | .00860 | .02301 | .00006 | .13745 | .00000 | .00000 | .00399 | .11017 | .00000 | .00003 | .00000 | .71669 | .00000 | .00000 | .00000 |
| 540 | .00859 | .02279 | .00009 | .13757 | .00000 | .00000 | .00478 | .10974 | .00000 | .00004 | .00000 | .71640 | .00000 | .00000 | .00000 |
| 550 | .00859 | .02255 | .00012 | .13771 | .00000 | .00000 | .00569 | .10925 | .00000 | .00004 | .00000 | .71606 | .00000 | .00000 | .00000 |
| 560 | .00858 | .02226 | .00017 | .13786 | .00000 | .00000 | .00672 | .10869 | .00000 | .00004 | .00000 | .71567 | .00000 | .00000 | .00000 |
| 570 | .00858 | .02194 | .00024 | .13802 | .00000 | .00000 | .00789 | .10807 | .00000 | .00004 | .00000 | .71523 | .00000 | .00000 | .00000 |
| 580 | .00857 | .02157 | .00032 | .13819 | .00000 | .00000 | .00921 | .10737 | .00000 | .00004 | .00000 | .71472 | .00000 | .00000 | .00000 |
| 590 | .00857 | .02116 | .00043 | .13837 | .00000 | .00000 | .01068 | .10660 | .00000 | .00005 | .00000 | .71416 | .00000 | .00000 | .00000 |

TABLE 11.3D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00856 | .02069 | .00057 | .13855 | .00000 | .00000 | .01230 | .10576 | .00000 | .00005 | .00000 | .71352 | .00000 | .00000 | .00000 |
| 610 | .00855 | .02017 | .00075 | .13873 | .00000 | .00000 | .01410 | .10484 | .00000 | .00005 | .00000 | .71281 | .00000 | .00000 | .00000 |
| 620 | .00854 | .01960 | .00097 | .13890 | .00000 | .00000 | .01607 | .10384 | .00000 | .00005 | .00000 | .71202 | .00000 | .00000 | .00000 |
| 630 | .00853 | .01896 | .00126 | .13906 | .00000 | .00000 | .01820 | .10278 | .00000 | .00005 | .00000 | .71115 | .00000 | .00000 | .00000 |
| 640 | .00852 | .01827 | .00161 | .13919 | .00000 | .00000 | .02051 | .10165 | .00000 | .00005 | .00000 | .71020 | .00000 | .00000 | .00000 |
| 650 | .00851 | .01750 | .00204 | .13929 | .00000 | .00000 | .02299 | .10046 | .00000 | .00006 | .00000 | .70915 | .00000 | .00000 | .00000 |
| 660 | .00849 | .01668 | .00256 | .13934 | .00000 | .00000 | .02562 | .09923 | .00000 | .00006 | .00000 | .70802 | .00000 | .00000 | .00000 |
| 670 | .00848 | .01578 | .00319 | .13933 | .00000 | .00000 | .02841 | .09796 | .00000 | .00006 | .00000 | .70679 | .00000 | .00000 | .00000 |
| 680 | .00846 | .01482 | .00394 | .13925 | .00000 | .00000 | .03133 | .09667 | .00000 | .00006 | .00000 | .70547 | .00000 | .00000 | .00000 |
| 690 | .00844 | .01379 | .00483 | .13907 | .00000 | .00000 | .03436 | .09537 | .00000 | .00006 | .00000 | .70407 | .00000 | .00000 | .00000 |
| 700 | .00843 | .01271 | .00585 | .13880 | .00000 | .00000 | .03748 | .09410 | .00000 | .00006 | .00000 | .70258 | .00000 | .00000 | .00000 |
| 710 | .00841 | .01157 | .00703 | .13841 | .00000 | .00000 | .04065 | .09285 | .00000 | .00006 | .00000 | .70102 | .00000 | .00000 | .00000 |
| 720 | .00839 | .01038 | .00836 | .13790 | .00000 | .00000 | .04383 | .09167 | .00000 | .00006 | .00000 | .69940 | .00000 | .00000 | .00000 |
| 730 | .00837 | .00917 | .00984 | .13727 | .00000 | .00000 | .04698 | .09058 | .00000 | .00006 | .00000 | .69774 | .00000 | .00000 | .00000 |
| 740 | .00835 | .00796 | .01145 | .13650 | .00000 | .00000 | .05002 | .08961 | .00000 | .00005 | .00000 | .69607 | .00000 | .00000 | .00000 |
| 750 | .00833 | .00675 | .01316 | .13562 | .00000 | .00000 | .05289 | .08877 | .00000 | .00005 | .00000 | .69442 | .00000 | .00000 | .00000 |
| 760 | .00831 | .00560 | .01495 | .13463 | .00000 | .00000 | .05552 | .08811 | .00000 | .00005 | .00000 | .69284 | .00000 | .00000 | .00000 |
| 770 | .00829 | .00452 | .01677 | .13356 | .00000 | .00000 | .05783 | .08763 | .00000 | .00005 | .00000 | .69136 | .00000 | .00000 | .00000 |
| 780 | .00828 | .00355 | .01856 | .13244 | .00000 | .00000 | .05975 | .08736 | .00000 | .00005 | .00000 | .69003 | .00000 | .00000 | .00000 |
| 790 | .00826 | .00271 | .02028 | .13130 | .00000 | .00000 | .06124 | .08730 | .00000 | .00004 | .00000 | .68887 | .00000 | .00000 | .00000 |
| 800 | .00825 | .00201 | .02190 | .13016 | .00000 | .00000 | .06228 | .08744 | .00000 | .00004 | .00000 | .68792 | .00000 | .00000 | .00000 |
| 810 | .00824 | .00146 | .02340 | .12905 | .00000 | .00000 | .06290 | .08776 | .00000 | .00004 | .00000 | .68716 | .00000 | .00000 | .00000 |
| 820 | .00823 | .00104 | .02476 | .12798 | .00000 | .00000 | .06315 | .08823 | .00000 | .00003 | .00000 | .68658 | .00000 | .00000 | .00000 |
| 830 | .00823 | .00073 | .02600 | .12695 | .00000 | .00000 | .06309 | .08881 | .00000 | .00003 | .00000 | .68616 | .00000 | .00000 | .00000 |
| 840 | .00823 | .00050 | .02714 | .12597 | .00000 | .00000 | .06280 | .08948 | .00000 | .00003 | .00000 | .68585 | .00000 | .00000 | .00000 |
| 850 | .00822 | .00035 | .02820 | .12502 | .00000 | .00000 | .06234 | .09021 | .00000 | .00002 | .00000 | .68564 | .00000 | .00000 | .00000 |
| 860 | .00822 | .00024 | .02919 | .12410 | .00000 | .00000 | .06176 | .09097 | .00000 | .00002 | .00000 | .68549 | .00000 | .00000 | .00000 |
| 870 | .00822 | .00017 | .03013 | .12321 | .00000 | .00000 | .06111 | .09176 | .00000 | .00002 | .00000 | .68539 | .00000 | .00000 | .00000 |
| 880 | .00822 | .00012 | .03103 | .12234 | .00000 | .00000 | .06041 | .09255 | .00000 | .00002 | .00000 | .68532 | .00000 | .00000 | .00000 |
| 890 | .00822 | .00008 | .03190 | .12150 | .00000 | .00000 | .05967 | .09334 | .00000 | .00002 | .00000 | .68527 | .00000 | .00000 | .00000 |
| 900 | .00822 | .00006 | .03274 | .12068 | .00000 | .00000 | .05893 | .09413 | .00000 | .00001 | .00000 | .68524 | .00000 | .00000 | .00000 |
| 910 | .00822 | .00004 | .03356 | .11987 | .00000 | .00000 | .05818 | .09491 | .00000 | .00001 | .00000 | .68521 | .00000 | .00000 | .00000 |
| 920 | .00822 | .00003 | .03435 | .11908 | .00000 | .00000 | .05743 | .09568 | .00000 | .00001 | .00000 | .68520 | .00000 | .00000 | .00000 |
| 930 | .00822 | .00002 | .03513 | .11831 | .00000 | .00000 | .05668 | .09644 | .00000 | .00001 | .00000 | .68519 | .00000 | .00000 | .00000 |
| 940 | .00822 | .00001 | .03589 | .11755 | .00000 | .00000 | .05594 | .09719 | .00000 | .00001 | .00000 | .68518 | .00000 | .00000 | .00000 |
| 950 | .00822 | .00001 | .03664 | .11681 | .00000 | .00000 | .05521 | .09793 | .00000 | .00001 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 960 | .00822 | .00001 | .03737 | .11608 | .00000 | .00000 | .05449 | .09866 | .00000 | .00001 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 970 | .00822 | .00001 | .03809 | .11536 | .00000 | .00000 | .05379 | .09937 | .00000 | .00001 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 980 | .00822 | .00000 | .03879 | .11466 | .00000 | .00000 | .05309 | .10006 | .00000 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 990 | .00822 | .00000 | .03947 | .11398 | .00000 | .00000 | .05241 | .10075 | .00000 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |

TABLE 11.3D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00822 | .00000 | .04015 | .11331 | .00000 | .00000 | .05174 | .10142 | .00000 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1050 | .00822 | .00000 | .04331 | .11014 | .00000 | .00000 | .04859 | .10458 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1100 | .00822 | .00000 | .04616 | .10730 | .00000 | .00000 | .04574 | .10743 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1150 | .00822 | .00000 | .04872 | .10473 | .00000 | .00000 | .04318 | .10999 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1200 | .00822 | .00000 | .05103 | .10243 | .00000 | .00000 | .04087 | .11230 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1250 | .00822 | .00000 | .05310 | .10035 | .00000 | .00000 | .03880 | .11437 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1300 | .00822 | .00000 | .05497 | .09848 | .00000 | .00000 | .03693 | .11624 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1350 | .00822 | .00000 | .05666 | .09680 | .00000 | .00000 | .03525 | .11793 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1400 | .00822 | .00000 | .05818 | .09527 | .00000 | .00000 | .03372 | .11945 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1450 | .00822 | .00000 | .05956 | .09389 | .00000 | .00000 | .03234 | .12083 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1500 | .00822 | .00000 | .06081 | .09264 | .00000 | .00000 | .03109 | .12208 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1550 | .00822 | .00000 | .06195 | .09150 | .00001 | .00000 | .02995 | .12322 | .00000 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1600 | .00822 | .00000 | .06299 | .09046 | .00001 | .00000 | .02891 | .12426 | .00000 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1650 | .00822 | .00000 | .06394 | .08951 | .00002 | .00000 | .02796 | .12520 | .00000 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1700 | .00822 | .00000 | .06481 | .08865 | .00002 | .00000 | .02709 | .12607 | .00000 | .00000 | .00000 | .68515 | .00000 | .00001 | .00000 |
| 1750 | .00822 | .00000 | .06560 | .08785 | .00004 | .00000 | .02629 | .12686 | .00000 | .00000 | .00000 | .68514 | .00000 | .00001 | .00000 |
| 1800 | .00822 | .00000 | .06633 | .08712 | .00006 | .00000 | .02555 | .12757 | .00000 | .00000 | .00000 | .68513 | .00000 | .00002 | .00000 |
| 1850 | .00822 | .00000 | .06700 | .08644 | .00008 | .00000 | .02488 | .12823 | .00000 | .00000 | .00000 | .68511 | .00000 | .00003 | .00000 |
| 1900 | .00822 | .00000 | .06762 | .08582 | .00012 | .00000 | .02425 | .12882 | .00000 | .00000 | .00001 | .68509 | .00000 | .00005 | .00000 |
| 1950 | .00822 | .00000 | .06820 | .08523 | .00018 | .00000 | .02367 | .12935 | .00000 | .00000 | .00002 | .68505 | .00000 | .00009 | .00000 |
| 2000 | .00822 | .00000 | .06873 | .08469 | .00025 | .00000 | .02313 | .12982 | .00000 | .00000 | .00003 | .68500 | .00000 | .00014 | .00000 |
| 2050 | .00821 | .00000 | .06924 | .08416 | .00034 | .00000 | .02263 | .13021 | .00000 | .00000 | .00005 | .68492 | .00000 | .00022 | .00001 |
| 2100 | .00821 | .00000 | .06973 | .08366 | .00046 | .00000 | .02217 | .13054 | .00000 | .00000 | .00007 | .68481 | .00000 | .00033 | .00001 |
| 2150 | .00821 | .00000 | .07021 | .08315 | .00062 | .00000 | .02175 | .13077 | .00000 | .00000 | .00012 | .68465 | .00001 | .00049 | .00002 |
| 2200 | .00821 | .00000 | .07070 | .08261 | .00082 | .00000 | .02137 | .13089 | .00000 | .00000 | .00019 | .68443 | .00002 | .00071 | .00005 |
| 2250 | .00821 | .00000 | .07122 | .08203 | .00107 | .00000 | .02104 | .13088 | .00000 | .00000 | .00029 | .68411 | .00004 | .00102 | .00009 |
| 2300 | .00820 | .00000 | .07182 | .08134 | .00139 | .00000 | .02077 | .13070 | .00000 | .00000 | .00044 | .68366 | .00006 | .00144 | .00017 |
| 2350 | .00820 | .00000 | .07254 | .08051 | .00178 | .00000 | .02058 | .13031 | .00000 | .00000 | .00064 | .68304 | .00011 | .00198 | .00030 |
| 2400 | .00819 | .00000 | .07345 | .07944 | .00226 | .00000 | .02048 | .12966 | .00000 | .00000 | .00093 | .68220 | .00020 | .00269 | .00051 |
| 2450 | .00818 | .00000 | .07461 | .07807 | .00286 | .00000 | .02051 | .12867 | .00000 | .00000 | .00130 | .68105 | .00033 | .00358 | .00084 |
| 2500 | .00816 | .00000 | .07609 | .07631 | .00360 | .00000 | .02070 | .12728 | .00000 | .00000 | .00178 | .67955 | .00053 | .00468 | .00133 |
| 2550 | .00814 | .00000 | .07795 | .07408 | .00450 | .00000 | .02107 | .12543 | .00000 | .00000 | .00238 | .67761 | .00082 | .00600 | .00201 |
| 2600 | .00812 | .00000 | .08023 | .07134 | .00561 | .00000 | .02165 | .12306 | .00000 | .00000 | .00310 | .67520 | .00125 | .00755 | .00290 |
| 2650 | .00809 | .00000 | .08290 | .06810 | .00698 | .00000 | .02244 | .12015 | .00000 | .00000 | .00393 | .67228 | .00183 | .00931 | .00399 |
| 2700 | .00805 | .00000 | .08592 | .06442 | .00865 | .00000 | .02344 | .11667 | .00000 | .00000 | .00485 | .66884 | .00261 | .01127 | .00527 |
| 2750 | .00801 | .00000 | .08920 | .06037 | .01067 | .00000 | .02464 | .11262 | .00000 | .00000 | .00587 | .66489 | .00362 | .01340 | .00670 |
| 2800 | .00796 | .00000 | .09263 | .05607 | .01311 | .00000 | .02600 | .10803 | .00000 | .00000 | .00695 | .66045 | .00489 | .01567 | .00822 |
| 2850 | .00791 | .00000 | .09611 | .05162 | .01603 | .00001 | .02748 | .10293 | .00000 | .00000 | .00808 | .65554 | .00647 | .01805 | .00977 |
| 2900 | .00785 | .00000 | .09953 | .04712 | .01947 | .00001 | .02905 | .09736 | .00001 | .00000 | .00924 | .65018 | .00839 | .02048 | .01130 |
| 2950 | .00779 | .00000 | .10281 | .04268 | .02351 | .00001 | .03065 | .09136 | .00001 | .00000 | .01041 | .64441 | .01068 | .02291 | .01276 |
| 3000 | .00772 | .00000 | .10587 | .03838 | .02818 | .00001 | .03223 | .08502 | .00001 | .00000 | .01158 | .63826 | .01337 | .02529 | .01410 |

TABLE 11.4D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A \square 0.084535; EQUIV. RATIO \square 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11239 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 210 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 220 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 230 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 240 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 250 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 260 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 270 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 280 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 290 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 298 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 300 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 310 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00001 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 320 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00001 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 330 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 340 | .00861 | .02408 | .00000 | .13677 | .00000 | .00000 | .00001 | .11238 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 350 | .00861 | .02408 | .00000 | .13677 | .00000 | .00000 | .00001 | .11237 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 360 | .00861 | .02407 | .00000 | .13677 | .00000 | .00000 | .00001 | .11237 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 370 | .00861 | .02407 | .00000 | .13677 | .00000 | .00000 | .00002 | .11236 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 380 | .00861 | .02407 | .00000 | .13677 | .00000 | .00000 | .00003 | .11236 | .00002 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 390 | .00861 | .02407 | .00000 | .13678 | .00000 | .00000 | .00004 | .11235 | .00002 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 400 | .00861 | .02406 | .00000 | .13678 | .00000 | .00000 | .00005 | .11234 | .00002 | .00000 | .71813 | .00000 | .00000 | .00000 |
| 410 | .00861 | .02406 | .00000 | .13678 | .00000 | .00000 | .00007 | .11233 | .00002 | .00000 | .71812 | .00000 | .00000 | .00000 |
| 420 | .00861 | .02405 | .00000 | .13679 | .00000 | .00000 | .00010 | .11231 | .00002 | .00000 | .71811 | .00000 | .00000 | .00000 |
| 430 | .00861 | .02404 | .00000 | .13680 | .00000 | .00000 | .00013 | .11229 | .00003 | .00000 | .71810 | .00000 | .00000 | .00000 |
| 440 | .00861 | .02403 | .00000 | .13680 | .00000 | .00000 | .00017 | .11227 | .00003 | .00000 | .71809 | .00000 | .00000 | .00000 |
| 450 | .00861 | .02401 | .00000 | .13681 | .00000 | .00000 | .00022 | .11224 | .00003 | .00000 | .71807 | .00000 | .00000 | .00000 |
| 460 | .00861 | .02399 | .00000 | .13683 | .00000 | .00000 | .00029 | .11220 | .00004 | .00000 | .71804 | .00000 | .00000 | .00000 |
| 470 | .00861 | .02397 | .00000 | .13684 | .00000 | .00000 | .00036 | .11215 | .00004 | .00000 | .71801 | .00000 | .00000 | .00000 |
| 480 | .00861 | .02395 | .00000 | .13686 | .00000 | .00000 | .00046 | .11210 | .00004 | .00000 | .71798 | .00000 | .00000 | .00000 |
| 490 | .00861 | .02391 | .00000 | .13688 | .00000 | .00000 | .00057 | .11204 | .00005 | .00000 | .71794 | .00000 | .00000 | .00000 |
| 500 | .00861 | .02388 | .00001 | .13691 | .00000 | .00000 | .00071 | .11196 | .00005 | .00000 | .71789 | .00000 | .00000 | .00000 |
| 510 | .00861 | .02383 | .00001 | .13693 | .00000 | .00000 | .00087 | .11187 | .00005 | .00000 | .71783 | .00000 | .00000 | .00000 |
| 520 | .00861 | .02378 | .00001 | .13697 | .00000 | .00000 | .00106 | .11176 | .00006 | .00000 | .71775 | .00000 | .00000 | .00000 |
| 530 | .00861 | .02372 | .00002 | .13700 | .00000 | .00000 | .00128 | .11164 | .00006 | .00000 | .71767 | .00000 | .00000 | .00000 |
| 540 | .00861 | .02365 | .00003 | .13705 | .00000 | .00000 | .00154 | .11149 | .00007 | .00000 | .71757 | .00000 | .00000 | .00000 |
| 550 | .00861 | .02356 | .00004 | .13709 | .00000 | .00000 | .00184 | .11133 | .00007 | .00000 | .71746 | .00000 | .00000 | .00000 |
| 560 | .00860 | .02347 | .00005 | .13714 | .00000 | .00000 | .00218 | .11114 | .00008 | .00000 | .71733 | .00000 | .00000 | .00000 |
| 570 | .00860 | .02336 | .00007 | .13720 | .00000 | .00000 | .00257 | .11093 | .00008 | .00000 | .71718 | .00000 | .00000 | .00000 |
| 580 | .00860 | .02323 | .00010 | .13726 | .00000 | .00000 | .00302 | .11069 | .00008 | .00000 | .71701 | .00000 | .00000 | .00000 |
| 590 | .00860 | .02309 | .00014 | .13733 | .00000 | .00000 | .00352 | .11042 | .00009 | .00000 | .71682 | .00000 | .00000 | .00000 |

TABLE 11.4D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00860 | .02293 | .00018 | .13739 | .00000 | .00000 | .00408 | .11013 | .00009 | .00000 | .71660 | .00000 | .00000 | .00000 |
| 610 | .00859 | .02275 | .00024 | .13746 | .00000 | .00000 | .00471 | .10980 | .00010 | .00000 | .71635 | .00000 | .00000 | .00000 |
| 620 | .00859 | .02255 | .00031 | .13753 | .00000 | .00000 | .00541 | .10944 | .00010 | .00000 | .71607 | .00000 | .00000 | .00000 |
| 630 | .00859 | .02232 | .00040 | .13760 | .00000 | .00000 | .00619 | .10904 | .00011 | .00000 | .71576 | .00000 | .00000 | .00000 |
| 640 | .00858 | .02206 | .00051 | .13767 | .00000 | .00000 | .00705 | .10861 | .00011 | .00000 | .71541 | .00000 | .00000 | .00000 |
| 650 | .00858 | .02178 | .00065 | .13773 | .00000 | .00000 | .00799 | .10815 | .00011 | .00000 | .71502 | .00000 | .00000 | .00000 |
| 660 | .00857 | .02146 | .00082 | .13777 | .00000 | .00000 | .00901 | .10765 | .00012 | .00000 | .71459 | .00000 | .00000 | .00000 |
| 670 | .00857 | .02111 | .00103 | .13781 | .00000 | .00000 | .01013 | .10712 | .00012 | .00000 | .71411 | .00000 | .00000 | .00000 |
| 680 | .00856 | .02073 | .00128 | .13782 | .00000 | .00000 | .01134 | .10656 | .00013 | .00000 | .71359 | .00000 | .00000 | .00000 |
| 690 | .00855 | .02031 | .00158 | .13781 | .00000 | .00000 | .01264 | .10596 | .00013 | .00000 | .71301 | .00000 | .00000 | .00000 |
| 700 | .00854 | .01984 | .00194 | .13777 | .00000 | .00000 | .01405 | .10534 | .00013 | .00000 | .71237 | .00000 | .00000 | .00000 |
| 710 | .00854 | .01934 | .00237 | .13770 | .00000 | .00000 | .01554 | .10469 | .00014 | .00000 | .71168 | .00000 | .00000 | .00000 |
| 720 | .00853 | .01879 | .00287 | .13758 | .00000 | .00000 | .01714 | .10403 | .00014 | .00000 | .71093 | .00000 | .00000 | .00000 |
| 730 | .00852 | .01819 | .00346 | .13741 | .00000 | .00000 | .01882 | .10335 | .00014 | .00000 | .71011 | .00000 | .00000 | .00000 |
| 740 | .00851 | .01755 | .00414 | .13718 | .00000 | .00000 | .02061 | .10266 | .00014 | .00000 | .70923 | .00000 | .00000 | .00000 |
| 750 | .00850 | .01685 | .00491 | .13688 | .00000 | .00000 | .02248 | .10196 | .00015 | .00000 | .70828 | .00000 | .00000 | .00000 |
| 760 | .00848 | .01611 | .00580 | .13651 | .00000 | .00000 | .02443 | .10127 | .00015 | .00000 | .70726 | .00000 | .00000 | .00000 |
| 770 | .00847 | .01531 | .00681 | .13606 | .00000 | .00000 | .02646 | .10058 | .00015 | .00000 | .70617 | .00000 | .00000 | .00000 |
| 780 | .00846 | .01447 | .00793 | .13552 | .00000 | .00000 | .02855 | .09992 | .00015 | .00000 | .70501 | .00000 | .00000 | .00000 |
| 790 | .00844 | .01357 | .00919 | .13488 | .00000 | .00000 | .03070 | .09928 | .00015 | .00000 | .70379 | .00000 | .00000 | .00000 |
| 800 | .00843 | .01264 | .01056 | .13415 | .00000 | .00000 | .03289 | .09867 | .00015 | .00000 | .70251 | .00000 | .00000 | .00000 |
| 810 | .00841 | .01167 | .01206 | .13332 | .00000 | .00000 | .03510 | .09811 | .00015 | .00000 | .70117 | .00000 | .00000 | .00000 |
| 820 | .00839 | .01067 | .01368 | .13240 | .00000 | .00000 | .03731 | .09760 | .00015 | .00000 | .69980 | .00000 | .00000 | .00000 |
| 830 | .00838 | .00964 | .01540 | .13139 | .00000 | .00000 | .03949 | .09715 | .00015 | .00000 | .69840 | .00000 | .00000 | .00000 |
| 840 | .00836 | .00861 | .01721 | .13030 | .00000 | .00000 | .04162 | .09677 | .00015 | .00000 | .69699 | .00000 | .00000 | .00000 |
| 850 | .00834 | .00759 | .01908 | .12914 | .00000 | .00000 | .04366 | .09646 | .00014 | .00000 | .69558 | .00000 | .00000 | .00000 |
| 860 | .00833 | .00659 | .02099 | .12792 | .00000 | .00000 | .04558 | .09625 | .00014 | .00000 | .69421 | .00000 | .00000 | .00000 |
| 870 | .00831 | .00563 | .02291 | .12667 | .00000 | .00000 | .04734 | .09612 | .00014 | .00000 | .69289 | .00000 | .00000 | .00000 |
| 880 | .00830 | .00472 | .02480 | .12540 | .00000 | .00000 | .04890 | .09610 | .00013 | .00000 | .69165 | .00000 | .00000 | .00000 |
| 890 | .00828 | .00389 | .02663 | .12414 | .00000 | .00000 | .05024 | .09617 | .00012 | .00000 | .69052 | .00000 | .00000 | .00000 |
| 900 | .00827 | .00315 | .02837 | .12291 | .00000 | .00000 | .05133 | .09635 | .00012 | .00000 | .68950 | .00000 | .00000 | .00000 |
| 910 | .00826 | .00251 | .03001 | .12172 | .00000 | .00000 | .05216 | .09661 | .00011 | .00000 | .68862 | .00000 | .00000 | .00000 |
| 920 | .00825 | .00197 | .03152 | .12059 | .00000 | .00000 | .05273 | .09697 | .00011 | .00000 | .68787 | .00000 | .00000 | .00000 |
| 930 | .00824 | .00152 | .03290 | .11951 | .00000 | .00000 | .05307 | .09740 | .00010 | .00000 | .68726 | .00000 | .00000 | .00000 |
| 940 | .00824 | .00116 | .03416 | .11850 | .00000 | .00000 | .05319 | .09790 | .00009 | .00000 | .68676 | .00000 | .00000 | .00000 |
| 950 | .00823 | .00088 | .03530 | .11755 | .00000 | .00000 | .05313 | .09844 | .00008 | .00000 | .68637 | .00000 | .00000 | .00000 |
| 960 | .00823 | .00066 | .03635 | .11666 | .00000 | .00000 | .05293 | .09902 | .00008 | .00000 | .68608 | .00000 | .00000 | .00000 |
| 970 | .00823 | .00049 | .03730 | .11582 | .00000 | .00000 | .05261 | .09963 | .00007 | .00000 | .68585 | .00000 | .00000 | .00000 |
| 980 | .00822 | .00037 | .03819 | .11502 | .00000 | .00000 | .05221 | .10025 | .00007 | .00000 | .68568 | .00000 | .00000 | .00000 |
| 990 | .00822 | .00028 | .03902 | .11425 | .00000 | .00000 | .05175 | .10088 | .00006 | .00000 | .68555 | .00000 | .00000 | .00000 |

TABLE 11.4D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00822 | .00021 | .03980 | .11352 | .00000 | .00000 | .05124 | .10151 | .00006 | .00000 | .68545 | .00000 | .00000 | .00000 |
| 1050 | .00822 | .00005 | .04321 | .11022 | .00000 | .00000 | .04845 | .10459 | .00004 | .00000 | .68523 | .00000 | .00000 | .00000 |
| 1100 | .00822 | .00001 | .04612 | .10732 | .00000 | .00000 | .04569 | .10742 | .00003 | .00000 | .68518 | .00000 | .00000 | .00000 |
| 1150 | .00822 | .00000 | .04871 | .10475 | .00000 | .00000 | .04316 | .10998 | .00002 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 1200 | .00822 | .00000 | .05102 | .10244 | .00000 | .00000 | .04086 | .11229 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1250 | .00822 | .00000 | .05310 | .10036 | .00000 | .00000 | .03879 | .11437 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1300 | .00822 | .00000 | .05497 | .09849 | .00000 | .00000 | .03693 | .11624 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1350 | .00822 | .00000 | .05665 | .09680 | .00000 | .00000 | .03524 | .11792 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1400 | .00822 | .00000 | .05818 | .09527 | .00000 | .00000 | .03372 | .11945 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1450 | .00822 | .00000 | .05956 | .09389 | .00000 | .00000 | .03234 | .12083 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1500 | .00822 | .00000 | .06081 | .09264 | .00000 | .00000 | .03109 | .12208 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1550 | .00822 | .00000 | .06195 | .09150 | .00000 | .00000 | .02995 | .12322 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1600 | .00822 | .00000 | .06299 | .09046 | .00000 | .00000 | .02891 | .12426 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1650 | .00822 | .00000 | .06394 | .08951 | .00000 | .00000 | .02796 | .12521 | .00000 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1700 | .00822 | .00000 | .06481 | .08864 | .00001 | .00000 | .02709 | .12607 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1750 | .00822 | .00000 | .06560 | .08785 | .00001 | .00000 | .02629 | .12687 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1800 | .00822 | .00000 | .06634 | .08712 | .00002 | .00000 | .02556 | .12760 | .00000 | .00000 | .68515 | .00000 | .00001 | .00000 |
| 1850 | .00822 | .00000 | .06701 | .08644 | .00003 | .00000 | .02489 | .12826 | .00000 | .00000 | .68514 | .00000 | .00001 | .00000 |
| 1900 | .00822 | .00000 | .06763 | .08582 | .00004 | .00000 | .02426 | .12888 | .00000 | .00000 | .68514 | .00000 | .00002 | .00000 |
| 1950 | .00822 | .00000 | .06821 | .08524 | .00006 | .00000 | .02368 | .12944 | .00000 | .00000 | .68512 | .00000 | .00003 | .00000 |
| 2000 | .00822 | .00000 | .06874 | .08470 | .00008 | .00000 | .02315 | .12995 | .00000 | .00001 | .68511 | .00000 | .00004 | .00000 |
| 2050 | .00822 | .00000 | .06924 | .08420 | .00011 | .00000 | .02265 | .13041 | .00000 | .00001 | .68508 | .00000 | .00007 | .00000 |
| 2100 | .00822 | .00000 | .06970 | .08373 | .00015 | .00000 | .02219 | .13083 | .00000 | .00002 | .68505 | .00000 | .00010 | .00000 |
| 2150 | .00822 | .00000 | .07014 | .08328 | .00020 | .00000 | .02177 | .13120 | .00000 | .00004 | .68500 | .00000 | .00016 | .00000 |
| 2200 | .00822 | .00000 | .07056 | .08285 | .00026 | .00000 | .02137 | .13151 | .00000 | .00006 | .68494 | .00000 | .00023 | .00000 |
| 2250 | .00821 | .00000 | .07097 | .08243 | .00034 | .00000 | .02101 | .13177 | .00000 | .00009 | .68484 | .00000 | .00033 | .00001 |
| 2300 | .00821 | .00000 | .07137 | .08200 | .00044 | .00000 | .02067 | .13197 | .00000 | .00014 | .68472 | .00001 | .00046 | .00002 |
| 2350 | .00821 | .00000 | .07178 | .08155 | .00056 | .00000 | .02037 | .13209 | .00000 | .00021 | .68454 | .00001 | .00064 | .00003 |
| 2400 | .00821 | .00000 | .07222 | .08108 | .00071 | .00000 | .02011 | .13212 | .00000 | .00030 | .68431 | .00002 | .00087 | .00006 |
| 2450 | .00821 | .00000 | .07270 | .08054 | .00089 | .00000 | .01988 | .13204 | .00000 | .00044 | .68399 | .00003 | .00118 | .00009 |
| 2500 | .00820 | .00000 | .07325 | .07992 | .00111 | .00000 | .01971 | .13184 | .00000 | .00062 | .68357 | .00006 | .00157 | .00016 |
| 2550 | .00820 | .00000 | .07389 | .07918 | .00137 | .00000 | .01959 | .13149 | .00000 | .00085 | .68302 | .00009 | .00206 | .00026 |
| 2600 | .00819 | .00000 | .07467 | .07828 | .00169 | .00000 | .01954 | .13095 | .00000 | .00116 | .68231 | .00015 | .00267 | .00040 |
| 2650 | .00818 | .00000 | .07562 | .07717 | .00206 | .00000 | .01958 | .13019 | .00000 | .00155 | .68139 | .00023 | .00341 | .00062 |
| 2700 | .00817 | .00000 | .07678 | .07580 | .00251 | .00000 | .01971 | .12918 | .00000 | .00204 | .68024 | .00034 | .00430 | .00091 |
| 2750 | .00816 | .00000 | .07818 | .07414 | .00304 | .00000 | .01997 | .12789 | .00000 | .00263 | .67882 | .00051 | .00535 | .00132 |
| 2800 | .00814 | .00000 | .07985 | .07217 | .00367 | .00000 | .02035 | .12628 | .00000 | .00332 | .67710 | .00073 | .00655 | .00183 |
| 2850 | .00812 | .00000 | .08180 | .06986 | .00442 | .00000 | .02088 | .12433 | .00000 | .00412 | .67506 | .00103 | .00791 | .00247 |
| 2900 | .00810 | .00000 | .08400 | .06722 | .00530 | .00000 | .02154 | .12204 | .00000 | .00502 | .67269 | .00142 | .00943 | .00323 |
| 2950 | .00807 | .00000 | .08643 | .06430 | .00635 | .00001 | .02235 | .11938 | .00000 | .00602 | .66999 | .00191 | .01109 | .00410 |
| 3000 | .00804 | .00000 | .08904 | .06113 | .00758 | .00001 | .02329 | .11638 | .00000 | .00709 | .66697 | .00253 | .01288 | .00506 |

TABLE 11.5D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 210 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 220 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 230 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 240 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 250 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 260 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 270 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 280 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 290 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00000 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 298 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00001 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 300 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00001 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 310 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00001 | .00000 | .71816 | .00000 | .00000 | .00000 |
| 320 | .00861 | .02408 | .00000 | .13676 | .00000 | .00000 | .00000 | .11238 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 330 | .00861 | .02408 | .00000 | .13677 | .00000 | .00000 | .00000 | .11238 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 340 | .00861 | .02408 | .00000 | .13677 | .00000 | .00000 | .00000 | .11237 | .00001 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 350 | .00861 | .02408 | .00000 | .13677 | .00000 | .00000 | .00000 | .11237 | .00002 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 360 | .00861 | .02407 | .00000 | .13677 | .00000 | .00000 | .00001 | .11237 | .00002 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 370 | .00861 | .02407 | .00000 | .13677 | .00000 | .00000 | .00001 | .11237 | .00002 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 380 | .00861 | .02407 | .00000 | .13677 | .00000 | .00000 | .00001 | .11236 | .00002 | .00000 | .71815 | .00000 | .00000 | .00000 |
| 390 | .00861 | .02407 | .00000 | .13678 | .00000 | .00000 | .00002 | .11236 | .00003 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 400 | .00861 | .02407 | .00000 | .13678 | .00000 | .00000 | .00002 | .11235 | .00003 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 410 | .00861 | .02406 | .00000 | .13678 | .00000 | .00000 | .00003 | .11234 | .00003 | .00000 | .71814 | .00000 | .00000 | .00000 |
| 420 | .00861 | .02406 | .00000 | .13678 | .00000 | .00000 | .00004 | .11233 | .00004 | .00000 | .71813 | .00000 | .00000 | .00000 |
| 430 | .00861 | .02405 | .00000 | .13679 | .00000 | .00000 | .00006 | .11232 | .00004 | .00000 | .71812 | .00000 | .00000 | .00000 |
| 440 | .00861 | .02405 | .00000 | .13679 | .00000 | .00000 | .00008 | .11231 | .00005 | .00000 | .71812 | .00000 | .00000 | .00000 |
| 450 | .00861 | .02404 | .00000 | .13680 | .00000 | .00000 | .00010 | .11229 | .00005 | .00000 | .71811 | .00000 | .00000 | .00000 |
| 460 | .00861 | .02403 | .00000 | .13681 | .00000 | .00000 | .00013 | .11227 | .00006 | .00000 | .71809 | .00000 | .00000 | .00000 |
| 470 | .00861 | .02402 | .00000 | .13681 | .00000 | .00000 | .00016 | .11225 | .00006 | .00000 | .71808 | .00000 | .00000 | .00000 |
| 480 | .00861 | .02400 | .00000 | .13682 | .00000 | .00000 | .00020 | .11222 | .00007 | .00000 | .71806 | .00000 | .00000 | .00000 |
| 490 | .00861 | .02399 | .00000 | .13684 | .00000 | .00000 | .00026 | .11219 | .00007 | .00000 | .71804 | .00000 | .00000 | .00000 |
| 500 | .00861 | .02397 | .00000 | .13685 | .00000 | .00000 | .00032 | .11215 | .00008 | .00000 | .71802 | .00000 | .00000 | .00000 |
| 510 | .00861 | .02395 | .00000 | .13686 | .00000 | .00000 | .00039 | .11211 | .00008 | .00000 | .71799 | .00000 | .00000 | .00000 |
| 520 | .00861 | .02392 | .00001 | .13688 | .00000 | .00000 | .00047 | .11206 | .00009 | .00000 | .71796 | .00000 | .00000 | .00000 |
| 530 | .00861 | .02389 | .00001 | .13690 | .00000 | .00000 | .00057 | .11200 | .00009 | .00000 | .71792 | .00000 | .00000 | .00000 |
| 540 | .00861 | .02386 | .00001 | .13692 | .00000 | .00000 | .00069 | .11193 | .00010 | .00000 | .71787 | .00000 | .00000 | .00000 |
| 550 | .00861 | .02382 | .00002 | .13694 | .00000 | .00000 | .00083 | .11186 | .00011 | .00000 | .71782 | .00000 | .00000 | .00000 |
| 560 | .00861 | .02378 | .00002 | .13697 | .00000 | .00000 | .00098 | .11177 | .00011 | .00000 | .71776 | .00000 | .00000 | .00000 |
| 570 | .00861 | .02373 | .00003 | .13699 | .00000 | .00000 | .00116 | .11167 | .00012 | .00000 | .71769 | .00000 | .00000 | .00000 |
| 580 | .00861 | .02367 | .00005 | .13702 | .00000 | .00000 | .00136 | .11156 | .00013 | .00000 | .71761 | .00000 | .00000 | .00000 |
| 590 | .00861 | .02360 | .00006 | .13706 | .00000 | .00000 | .00159 | .11143 | .00013 | .00000 | .71752 | .00000 | .00000 | .00000 |

TABLE 11.5D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00861 | .02353 | .00008 | .13709 | .00000 | .00000 | .00185 | .11129 | .00014 | .00000 | .71742 | .00000 | .00000 | .00000 |
| 610 | .00860 | .02344 | .00011 | .13712 | .00000 | .00000 | .00214 | .11114 | .00015 | .00000 | .71730 | .00000 | .00000 | .00000 |
| 620 | .00860 | .02334 | .00014 | .13716 | .00000 | .00000 | .00246 | .11096 | .00016 | .00000 | .71717 | .00000 | .00000 | .00000 |
| 630 | .00860 | .02324 | .00018 | .13719 | .00000 | .00000 | .00282 | .11078 | .00016 | .00000 | .71703 | .00000 | .00000 | .00000 |
| 640 | .00860 | .02312 | .00023 | .13723 | .00000 | .00000 | .00322 | .11057 | .00017 | .00000 | .71687 | .00000 | .00000 | .00000 |
| 650 | .00860 | .02298 | .00029 | .13726 | .00000 | .00000 | .00366 | .11035 | .00018 | .00000 | .71668 | .00000 | .00000 | .00000 |
| 660 | .00859 | .02283 | .00037 | .13729 | .00000 | .00000 | .00414 | .11011 | .00018 | .00000 | .71648 | .00000 | .00000 | .00000 |
| 670 | .00859 | .02267 | .00046 | .13731 | .00000 | .00000 | .00467 | .10985 | .00019 | .00000 | .71625 | .00000 | .00000 | .00000 |
| 680 | .00859 | .02248 | .00058 | .13733 | .00000 | .00000 | .00525 | .10957 | .00020 | .00000 | .71600 | .00000 | .00000 | .00000 |
| 690 | .00859 | .02228 | .00071 | .13733 | .00000 | .00000 | .00588 | .10928 | .00021 | .00000 | .71572 | .00000 | .00000 | .00000 |
| 700 | .00858 | .02205 | .00088 | .13732 | .00000 | .00000 | .00656 | .10897 | .00021 | .00000 | .71542 | .00000 | .00000 | .00000 |
| 710 | .00858 | .02181 | .00107 | .13730 | .00000 | .00000 | .00730 | .10864 | .00022 | .00000 | .71508 | .00000 | .00000 | .00000 |
| 720 | .00857 | .02154 | .00130 | .13726 | .00000 | .00000 | .00810 | .10830 | .00023 | .00000 | .71471 | .00000 | .00000 | .00000 |
| 730 | .00857 | .02124 | .00157 | .13720 | .00000 | .00000 | .00895 | .10794 | .00023 | .00000 | .71431 | .00000 | .00000 | .00000 |
| 740 | .00856 | .02092 | .00189 | .13711 | .00000 | .00000 | .00986 | .10757 | .00024 | .00000 | .71386 | .00000 | .00000 | .00000 |
| 750 | .00856 | .02056 | .00225 | .13698 | .00000 | .00000 | .01083 | .10718 | .00025 | .00000 | .71338 | .00000 | .00000 | .00000 |
| 760 | .00855 | .02018 | .00268 | .13683 | .00000 | .00000 | .01186 | .10679 | .00025 | .00000 | .71286 | .00000 | .00000 | .00000 |
| 770 | .00854 | .01976 | .00317 | .13663 | .00000 | .00000 | .01296 | .10640 | .00026 | .00000 | .71229 | .00000 | .00000 | .00000 |
| 780 | .00854 | .01931 | .00372 | .13639 | .00000 | .00000 | .01411 | .10600 | .00026 | .00000 | .71167 | .00000 | .00000 | .00000 |
| 790 | .00853 | .01883 | .00435 | .13609 | .00000 | .00000 | .01533 | .10560 | .00027 | .00000 | .71100 | .00000 | .00000 | .00000 |
| 800 | .00852 | .01830 | .00506 | .13575 | .00000 | .00000 | .01661 | .10520 | .00027 | .00000 | .71029 | .00000 | .00000 | .00000 |
| 810 | .00851 | .01774 | .00586 | .13534 | .00000 | .00000 | .01795 | .10480 | .00028 | .00000 | .70952 | .00000 | .00000 | .00000 |
| 820 | .00850 | .01714 | .00675 | .13486 | .00000 | .00000 | .01934 | .10442 | .00028 | .00000 | .70870 | .00000 | .00000 | .00000 |
| 830 | .00849 | .01650 | .00774 | .13432 | .00000 | .00000 | .02079 | .10405 | .00029 | .00000 | .70782 | .00000 | .00000 | .00000 |
| 840 | .00848 | .01582 | .00882 | .13371 | .00000 | .00000 | .02229 | .10370 | .00029 | .00000 | .70689 | .00000 | .00000 | .00000 |
| 850 | .00847 | .01511 | .01001 | .13302 | .00000 | .00000 | .02383 | .10336 | .00029 | .00000 | .70591 | .00000 | .00000 | .00000 |
| 860 | .00846 | .01435 | .01130 | .13225 | .00000 | .00000 | .02541 | .10305 | .00029 | .00000 | .70488 | .00000 | .00000 | .00000 |
| 870 | .00844 | .01357 | .01269 | .13141 | .00000 | .00000 | .02703 | .10277 | .00029 | .00000 | .70380 | .00000 | .00000 | .00000 |
| 880 | .00843 | .01275 | .01418 | .13049 | .00000 | .00000 | .02867 | .10252 | .00029 | .00000 | .70268 | .00000 | .00000 | .00000 |
| 890 | .00842 | .01190 | .01576 | .12949 | .00000 | .00000 | .03031 | .10230 | .00029 | .00000 | .70152 | .00000 | .00000 | .00000 |
| 900 | .00840 | .01103 | .01742 | .12843 | .00000 | .00000 | .03197 | .10213 | .00029 | .00000 | .70033 | .00000 | .00000 | .00000 |
| 910 | .00839 | .01015 | .01916 | .12731 | .00000 | .00000 | .03360 | .10199 | .00029 | .00000 | .69912 | .00000 | .00000 | .00000 |
| 920 | .00837 | .00926 | .02095 | .12613 | .00000 | .00000 | .03521 | .10189 | .00029 | .00000 | .69790 | .00000 | .00000 | .00000 |
| 930 | .00836 | .00837 | .02279 | .12491 | .00000 | .00000 | .03678 | .10184 | .00029 | .00000 | .69668 | .00000 | .00000 | .00000 |
| 940 | .00834 | .00749 | .02466 | .12365 | .00000 | .00000 | .03827 | .10184 | .00028 | .00000 | .69547 | .00000 | .00000 | .00000 |
| 950 | .00833 | .00663 | .02652 | .12238 | .00000 | .00000 | .03969 | .10188 | .00028 | .00000 | .69429 | .00000 | .00000 | .00000 |
| 960 | .00832 | .00580 | .02837 | .12110 | .00000 | .00000 | .04100 | .10198 | .00027 | .00000 | .69316 | .00000 | .00000 | .00000 |
| 970 | .00830 | .00502 | .03019 | .11983 | .00000 | .00000 | .04219 | .10213 | .00026 | .00000 | .69209 | .00000 | .00000 | .00000 |
| 980 | .00829 | .00429 | .03194 | .11858 | .00000 | .00000 | .04323 | .10233 | .00025 | .00000 | .69108 | .00000 | .00000 | .00000 |
| 990 | .00828 | .00362 | .03361 | .11737 | .00000 | .00000 | .04413 | .10258 | .00024 | .00000 | .69017 | .00000 | .00000 | .00000 |

TABLE 11.5D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00827 | .00302 | .03519 | .11621 | .00000 | .00000 | .04486 | .10288 | .00023 | .00000 | .68934 | .00000 | .00000 | .00000 |
| 1050 | .00824 | .00104 | .04146 | .11129 | .00000 | .00000 | .04620 | .10496 | .00018 | .00000 | .68662 | .00000 | .00000 | .00000 |
| 1100 | .00822 | .00032 | .04554 | .10772 | .00000 | .00000 | .04497 | .10749 | .00013 | .00000 | .68562 | .00000 | .00000 | .00000 |
| 1150 | .00822 | .00010 | .04850 | .10490 | .00000 | .00000 | .04291 | .10998 | .00009 | .00000 | .68531 | .00000 | .00000 | .00000 |
| 1200 | .00822 | .00003 | .05093 | .10251 | .00000 | .00000 | .04076 | .11227 | .00007 | .00000 | .68521 | .00000 | .00000 | .00000 |
| 1250 | .00822 | .00001 | .05305 | .10040 | .00000 | .00000 | .03874 | .11435 | .00005 | .00000 | .68518 | .00000 | .00000 | .00000 |
| 1300 | .00822 | .00000 | .05494 | .09851 | .00000 | .00000 | .03689 | .11622 | .00004 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 1350 | .00822 | .00000 | .05664 | .09682 | .00000 | .00000 | .03522 | .11791 | .00003 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 1400 | .00822 | .00000 | .05817 | .09529 | .00000 | .00000 | .03370 | .11944 | .00002 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1450 | .00822 | .00000 | .05955 | .09390 | .00000 | .00000 | .03233 | .12082 | .00002 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1500 | .00822 | .00000 | .06081 | .09265 | .00000 | .00000 | .03108 | .12208 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1550 | .00822 | .00000 | .06195 | .09151 | .00000 | .00000 | .02994 | .12322 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1600 | .00822 | .00000 | .06299 | .09047 | .00000 | .00000 | .02890 | .12426 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1650 | .00822 | .00000 | .06394 | .08952 | .00000 | .00000 | .02796 | .12520 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1700 | .00822 | .00000 | .06480 | .08865 | .00000 | .00000 | .02709 | .12607 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1750 | .00822 | .00000 | .06560 | .08785 | .00001 | .00000 | .02629 | .12687 | .00001 | .00000 | .68516 | .00000 | .00000 | .00000 |
| 1800 | .00822 | .00000 | .06633 | .08712 | .00001 | .00000 | .02556 | .12760 | .00001 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1850 | .00822 | .00000 | .06701 | .08644 | .00001 | .00000 | .02489 | .12827 | .00000 | .00000 | .68515 | .00000 | .00000 | .00000 |
| 1900 | .00822 | .00000 | .06763 | .08582 | .00002 | .00000 | .02426 | .12889 | .00000 | .00000 | .68515 | .00000 | .00001 | .00000 |
| 1950 | .00822 | .00000 | .06821 | .08524 | .00002 | .00000 | .02369 | .12946 | .00000 | .00000 | .68514 | .00000 | .00001 | .00000 |
| 2000 | .00822 | .00000 | .06874 | .08471 | .00003 | .00000 | .02315 | .12998 | .00000 | .00000 | .68514 | .00000 | .00002 | .00000 |
| 2050 | .00822 | .00000 | .06923 | .08421 | .00005 | .00000 | .02266 | .13046 | .00000 | .00001 | .68513 | .00000 | .00003 | .00000 |
| 2100 | .00822 | .00000 | .06970 | .08375 | .00007 | .00000 | .02220 | .13090 | .00000 | .00001 | .68511 | .00000 | .00005 | .00000 |
| 2150 | .00822 | .00000 | .07013 | .08331 | .00009 | .00000 | .02177 | .13130 | .00000 | .00002 | .68509 | .00000 | .00007 | .00000 |
| 2200 | .00822 | .00000 | .07053 | .08290 | .00012 | .00000 | .02138 | .13167 | .00000 | .00003 | .68506 | .00000 | .00010 | .00000 |
| 2250 | .00822 | .00000 | .07092 | .08251 | .00015 | .00000 | .02101 | .13199 | .00000 | .00004 | .68502 | .00000 | .00015 | .00000 |
| 2300 | .00822 | .00000 | .07129 | .08213 | .00020 | .00000 | .02067 | .13227 | .00000 | .00006 | .68496 | .00000 | .00021 | .00000 |
| 2350 | .00821 | .00000 | .07165 | .08175 | .00025 | .00000 | .02035 | .13250 | .00000 | .00009 | .68489 | .00000 | .00029 | .00001 |
| 2400 | .00821 | .00000 | .07200 | .08138 | .00032 | .00000 | .02006 | .13269 | .00000 | .00014 | .68479 | .00000 | .00039 | .00001 |
| 2450 | .00821 | .00000 | .07236 | .08100 | .00040 | .00000 | .01980 | .13282 | .00000 | .00020 | .68466 | .00001 | .00053 | .00002 |
| 2500 | .00821 | .00000 | .07274 | .08060 | .00049 | .00000 | .01956 | .13289 | .00000 | .00028 | .68448 | .00001 | .00071 | .00003 |
| 2550 | .00821 | .00000 | .07313 | .08016 | .00061 | .00000 | .01935 | .13288 | .00000 | .00039 | .68425 | .00002 | .00094 | .00005 |
| 2600 | .00821 | .00000 | .07357 | .07967 | .00075 | .00000 | .01918 | .13279 | .00000 | .00054 | .68395 | .00003 | .00122 | .00009 |
| 2650 | .00820 | .00000 | .07407 | .07911 | .00091 | .00000 | .01905 | .13260 | .00000 | .00073 | .68357 | .00005 | .00158 | .00013 |
| 2700 | .00820 | .00000 | .07464 | .07845 | .00110 | .00000 | .01896 | .13230 | .00000 | .00097 | .68308 | .00007 | .00201 | .00021 |
| 2750 | .00819 | .00000 | .07532 | .07768 | .00132 | .00000 | .01893 | .13186 | .00000 | .00128 | .68247 | .00011 | .00253 | .00031 |
| 2800 | .00819 | .00000 | .07612 | .07675 | .00158 | .00000 | .01896 | .13126 | .00000 | .00166 | .68171 | .00016 | .00315 | .00046 |
| 2850 | .00818 | .00000 | .07707 | .07564 | .00189 | .00000 | .01906 | .13048 | .00000 | .00213 | .68078 | .00024 | .00388 | .00065 |
| 2900 | .00817 | .00000 | .07819 | .07433 | .00224 | .00000 | .01925 | .12951 | .00000 | .00268 | .67965 | .00034 | .00473 | .00091 |
| 2950 | .00816 | .00000 | .07950 | .07279 | .00265 | .00000 | .01952 | .12831 | .00000 | .00333 | .67831 | .00047 | .00570 | .00124 |
| 3000 | .00814 | .00000 | .08101 | .07101 | .00313 | .00001 | .01989 | .12689 | .00000 | .00408 | .67675 | .00065 | .00679 | .00165 |

TABLE 11.1E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15304 | .00013 | .00000 | .68516 |
| 220 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15108 | .00209 | .00000 | .68516 |
| 240 | .00822 | .04594 | .00001 | .00000 | .10751 | .00000 | .13110 | .02206 | .00000 | .68517 |
| 260 | .00823 | .04467 | .00067 | .00000 | .10832 | .00000 | .00000 | .15203 | .00000 | .68608 |
| 280 | .00824 | .04384 | .00111 | .00000 | .10885 | .00000 | .00000 | .15129 | .00000 | .68667 |
| 298 | .00824 | .04284 | .00163 | .00000 | .10948 | .00001 | .00000 | .15040 | .00000 | .68739 |
| 300 | .00825 | .04273 | .00169 | .00000 | .10956 | .00002 | .00000 | .15030 | .00000 | .68747 |
| 320 | .00826 | .04134 | .00240 | .00000 | .11044 | .00005 | .00000 | .14906 | .00000 | .68845 |
| 340 | .00827 | .03970 | .00324 | .00000 | .11150 | .00013 | .00000 | .14755 | .00000 | .68960 |
| 360 | .00829 | .03783 | .00418 | .00000 | .11273 | .00031 | .00000 | .14579 | .00000 | .69088 |
| 380 | .00830 | .03575 | .00517 | .00000 | .11412 | .00068 | .00000 | .14373 | .00000 | .69224 |
| 400 | .00832 | .03347 | .00618 | .00000 | .11570 | .00138 | .00000 | .14133 | .00000 | .69362 |
| 420 | .00833 | .03102 | .00714 | .00000 | .11748 | .00260 | .00000 | .13847 | .00000 | .69494 |
| 440 | .00835 | .02839 | .00799 | .00001 | .11951 | .00460 | .00000 | .13503 | .00000 | .69611 |
| 460 | .00836 | .02558 | .00865 | .00002 | .12185 | .00768 | .00000 | .13083 | .00001 | .69702 |
| 480 | .00837 | .02257 | .00905 | .00006 | .12455 | .01216 | .00000 | .12568 | .00001 | .69756 |
| 500 | .00837 | .01935 | .00911 | .00014 | .12765 | .01830 | .00000 | .11944 | .00001 | .69764 |
| 520 | .00836 | .01588 | .00880 | .00032 | .13115 | .02622 | .00000 | .11203 | .00001 | .69722 |
| 540 | .00835 | .01211 | .00815 | .00069 | .13500 | .03586 | .00000 | .10349 | .00001 | .69633 |
| 560 | .00834 | .00800 | .00723 | .00140 | .13905 | .04690 | .00000 | .09401 | .00001 | .69507 |
| 580 | .00832 | .00344 | .00615 | .00270 | .14305 | .05885 | .00000 | .08390 | .00001 | .69358 |
| 600 | .00829 | .00000 | .00448 | .00476 | .14559 | .07005 | .00000 | .07553 | .00001 | .69129 |
| 620 | .00825 | .00000 | .00216 | .00692 | .14503 | .07671 | .00000 | .07279 | .00001 | .68812 |
| 640 | .00823 | .00000 | .00085 | .00908 | .14379 | .07958 | .00000 | .07215 | .00000 | .68632 |
| 660 | .00822 | .00000 | .00029 | .01106 | .14218 | .07971 | .00000 | .07296 | .00000 | .68556 |
| 680 | .00822 | .00000 | .00010 | .01295 | .14043 | .07857 | .00000 | .07443 | .00000 | .68529 |
| 700 | .00822 | .00000 | .00003 | .01483 | .13860 | .07694 | .00000 | .07617 | .00000 | .68520 |
| 720 | .00822 | .00000 | .00001 | .01670 | .13674 | .07515 | .00000 | .07800 | .00000 | .68517 |
| 740 | .00822 | .00000 | .00000 | .01859 | .13486 | .07329 | .00000 | .07987 | .00000 | .68516 |
| 760 | .00822 | .00000 | .00000 | .02047 | .13298 | .07142 | .00000 | .08175 | .00000 | .68516 |
| 780 | .00822 | .00000 | .00000 | .02235 | .13111 | .06955 | .00000 | .08362 | .00000 | .68516 |
| 800 | .00822 | .00000 | .00000 | .02419 | .12926 | .06771 | .00000 | .08546 | .00000 | .68516 |

TABLE 11.2E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15316 | .00000 | .00001 | .00000 | .68516 |
| 220 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15296 | .00000 | .00021 | .00000 | .68516 |
| 240 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15102 | .00000 | .00215 | .00000 | .68516 |
| 260 | .00822 | .04594 | .00001 | .00000 | .10751 | .00000 | .13744 | .00000 | .01572 | .00000 | .68517 |
| 280 | .00822 | .04525 | .00037 | .00000 | .10795 | .00000 | .00000 | .06593 | .08662 | .00000 | .68566 |
| 298 | .00824 | .04285 | .00163 | .00000 | .10948 | .00000 | .00000 | .00000 | .15041 | .00000 | .68739 |
| 300 | .00825 | .04273 | .00169 | .00000 | .10955 | .00000 | .00000 | .00000 | .15031 | .00000 | .68747 |
| 320 | .00826 | .04136 | .00240 | .00000 | .11043 | .00002 | .00000 | .00000 | .14909 | .00000 | .68845 |
| 340 | .00827 | .03974 | .00325 | .00000 | .11147 | .00004 | .00000 | .00000 | .14763 | .00000 | .68960 |
| 360 | .00829 | .03791 | .00419 | .00000 | .11264 | .00010 | .00000 | .00000 | .14598 | .00000 | .69090 |
| 380 | .00830 | .03591 | .00521 | .00000 | .11394 | .00022 | .00000 | .00000 | .14413 | .00000 | .69229 |
| 400 | .00832 | .03377 | .00627 | .00000 | .11534 | .00044 | .00000 | .00000 | .14212 | .00000 | .69374 |
| 420 | .00834 | .03154 | .00733 | .00000 | .11683 | .00083 | .00000 | .00000 | .13992 | .00001 | .69520 |
| 440 | .00835 | .02924 | .00837 | .00000 | .11841 | .00149 | .00000 | .00000 | .13751 | .00001 | .69662 |
| 460 | .00837 | .02688 | .00933 | .00001 | .12010 | .00252 | .00000 | .00000 | .13484 | .00001 | .69794 |
| 480 | .00838 | .02448 | .01017 | .00002 | .12190 | .00407 | .00000 | .00000 | .13185 | .00001 | .69910 |
| 500 | .00840 | .02205 | .01086 | .00004 | .12384 | .00631 | .00000 | .00000 | .12845 | .00001 | .70004 |
| 520 | .00840 | .01957 | .01134 | .00010 | .12593 | .00939 | .00000 | .00000 | .12456 | .00002 | .70069 |
| 540 | .00841 | .01703 | .01156 | .00021 | .12819 | .01347 | .00000 | .00000 | .12009 | .00002 | .70101 |
| 560 | .00841 | .01442 | .01152 | .00043 | .13062 | .01866 | .00000 | .00000 | .11498 | .00002 | .70094 |
| 580 | .00840 | .01168 | .01119 | .00082 | .13320 | .02500 | .00000 | .00000 | .10920 | .00002 | .70049 |
| 600 | .00839 | .00875 | .01059 | .00151 | .13585 | .03246 | .00000 | .00000 | .10276 | .00002 | .69967 |
| 620 | .00838 | .00553 | .00976 | .00268 | .13848 | .04089 | .00000 | .00000 | .09572 | .00002 | .69854 |
| 640 | .00836 | .00187 | .00877 | .00458 | .14093 | .05009 | .00000 | .00000 | .08820 | .00002 | .69718 |
| 660 | .00833 | .00000 | .00677 | .00717 | .14159 | .05886 | .00000 | .00000 | .08282 | .00002 | .69444 |
| 680 | .00829 | .00000 | .00421 | .01006 | .14048 | .06576 | .00000 | .00000 | .08026 | .00002 | .69093 |
| 700 | .00825 | .00000 | .00223 | .01307 | .13884 | .07031 | .00000 | .00000 | .07907 | .00001 | .68821 |
| 720 | .00823 | .00000 | .00102 | .01582 | .13693 | .07219 | .00000 | .00000 | .07924 | .00001 | .68655 |
| 740 | .00822 | .00000 | .00042 | .01819 | .13497 | .07209 | .00000 | .00000 | .08036 | .00001 | .68574 |
| 760 | .00822 | .00000 | .00017 | .02030 | .13304 | .07094 | .00000 | .00000 | .08193 | .00001 | .68539 |
| 780 | .00822 | .00000 | .00007 | .02227 | .13114 | .06936 | .00000 | .00000 | .08369 | .00001 | .68525 |
| 800 | .00822 | .00000 | .00003 | .02416 | .12927 | .06763 | .00000 | .00000 | .08549 | .00000 | .68520 |

TABLE 11.3E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15317 | .00000 | .00000 | .00000 | .68516 |
| 220 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15315 | .00000 | .00002 | .00000 | .68516 |
| 240 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15296 | .00000 | .00021 | .00000 | .68516 |
| 260 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15163 | .00000 | .00154 | .00000 | .68516 |
| 280 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .14529 | .00788 | .00000 | .68516 |
| 298 | .00822 | .04586 | .00005 | .00000 | .10756 | .00000 | .00000 | .12736 | .02573 | .00000 | .68522 |
| 300 | .00822 | .04583 | .00006 | .00000 | .10758 | .00000 | .00000 | .12425 | .02881 | .00000 | .68524 |
| 320 | .00823 | .04415 | .00094 | .00000 | .10865 | .00000 | .00000 | .05889 | .09268 | .00000 | .68645 |
| 340 | .00827 | .03975 | .00325 | .00000 | .11145 | .00001 | .00000 | .00000 | .14766 | .00000 | .68961 |
| 360 | .00829 | .03793 | .00419 | .00000 | .11262 | .00003 | .00000 | .00000 | .14603 | .00000 | .69091 |
| 380 | .00830 | .03596 | .00522 | .00000 | .11388 | .00007 | .00000 | .00000 | .14426 | .00001 | .69231 |
| 400 | .00832 | .03387 | .00629 | .00000 | .11522 | .00014 | .00000 | .00000 | .14236 | .00001 | .69378 |
| 420 | .00834 | .03171 | .00739 | .00000 | .11662 | .00026 | .00000 | .00000 | .14037 | .00001 | .69529 |
| 440 | .00836 | .02951 | .00849 | .00000 | .11806 | .00047 | .00000 | .00000 | .13830 | .00001 | .69679 |
| 460 | .00837 | .02730 | .00956 | .00000 | .11953 | .00081 | .00000 | .00000 | .13616 | .00002 | .69826 |
| 480 | .00839 | .02510 | .01057 | .00001 | .12102 | .00131 | .00000 | .00000 | .13392 | .00002 | .69965 |
| 500 | .00841 | .02293 | .01152 | .00001 | .12253 | .00205 | .00000 | .00000 | .13158 | .00003 | .70094 |
| 520 | .00842 | .02078 | .01236 | .00003 | .12408 | .00310 | .00000 | .00000 | .12910 | .00003 | .70210 |
| 540 | .00843 | .01867 | .01308 | .00007 | .12565 | .00453 | .00000 | .00000 | .12645 | .00003 | .70309 |
| 560 | .00844 | .01660 | .01365 | .00013 | .12727 | .00642 | .00000 | .00000 | .12358 | .00004 | .70387 |
| 580 | .00845 | .01454 | .01406 | .00026 | .12892 | .00885 | .00000 | .00000 | .12045 | .00004 | .70443 |
| 600 | .00845 | .01249 | .01428 | .00047 | .13061 | .01190 | .00000 | .00000 | .11703 | .00005 | .70473 |
| 620 | .00845 | .01041 | .01430 | .00083 | .13232 | .01562 | .00000 | .00000 | .11327 | .00005 | .70477 |
| 640 | .00845 | .00825 | .01412 | .00141 | .13402 | .02004 | .00000 | .00000 | .10915 | .00005 | .70452 |
| 660 | .00844 | .00595 | .01374 | .00232 | .13566 | .02516 | .00000 | .00000 | .10466 | .00006 | .70400 |
| 680 | .00843 | .00342 | .01318 | .00372 | .13719 | .03097 | .00000 | .00000 | .09981 | .00006 | .70322 |
| 700 | .00842 | .00055 | .01245 | .00580 | .13848 | .03740 | .00000 | .00000 | .09460 | .00006 | .70223 |
| 720 | .00839 | .00000 | .01038 | .00836 | .13790 | .04383 | .00000 | .00000 | .09167 | .00006 | .69940 |
| 740 | .00835 | .00000 | .00796 | .01145 | .13650 | .05002 | .00000 | .00000 | .08961 | .00005 | .69607 |
| 760 | .00831 | .00000 | .00560 | .01495 | .13463 | .05552 | .00000 | .00000 | .08811 | .00005 | .69284 |
| 780 | .00828 | .00000 | .00355 | .01856 | .13244 | .05975 | .00000 | .00000 | .08736 | .00005 | .69003 |
| 800 | .00825 | .00000 | .00201 | .02190 | .13016 | .06228 | .00000 | .00000 | .08744 | .00004 | .68792 |

TABLE 11.4E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15317 | .00000 | .00000 | .00000 | .68516 |
| 220 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15317 | .00000 | .00000 | .00000 | .68516 |
| 240 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15315 | .00000 | .00002 | .00000 | .68516 |
| 260 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15302 | .00000 | .00015 | .00000 | .68516 |
| 280 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .15239 | .00078 | .00000 | .68516 |
| 298 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .15067 | .00250 | .00000 | .68516 |
| 300 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .15038 | .00279 | .00000 | .68516 |
| 320 | .00822 | .04594 | .00001 | .00000 | .10751 | .00000 | .00000 | .14480 | .00836 | .00000 | .68517 |
| 340 | .00822 | .04581 | .00007 | .00000 | .10759 | .00000 | .00000 | .13119 | .02186 | .00000 | .68526 |
| 360 | .00823 | .04491 | .00055 | .00000 | .10817 | .00000 | .00000 | .10057 | .05167 | .00000 | .68591 |
| 380 | .00827 | .03942 | .00341 | .00000 | .11166 | .00002 | .00000 | .03183 | .11553 | .00001 | .68984 |
| 400 | .00832 | .03389 | .00630 | .00000 | .11519 | .00004 | .00000 | .00000 | .14243 | .00002 | .69380 |
| 420 | .00834 | .03176 | .00741 | .00000 | .11656 | .00008 | .00000 | .00000 | .14051 | .00002 | .69532 |
| 440 | .00836 | .02959 | .00853 | .00000 | .11796 | .00015 | .00000 | .00000 | .13855 | .00003 | .69684 |
| 460 | .00838 | .02743 | .00963 | .00000 | .11935 | .00026 | .00000 | .00000 | .13657 | .00003 | .69836 |
| 480 | .00839 | .02530 | .01070 | .00000 | .12074 | .00042 | .00000 | .00000 | .13458 | .00004 | .69983 |
| 500 | .00841 | .02320 | .01173 | .00000 | .12212 | .00066 | .00000 | .00000 | .13259 | .00005 | .70124 |
| 520 | .00843 | .02117 | .01271 | .00001 | .12348 | .00099 | .00000 | .00000 | .13059 | .00005 | .70258 |
| 540 | .00844 | .01919 | .01361 | .00002 | .12481 | .00146 | .00000 | .00000 | .12857 | .00006 | .70382 |
| 560 | .00846 | .01728 | .01444 | .00004 | .12613 | .00209 | .00000 | .00000 | .12653 | .00007 | .70496 |
| 580 | .00847 | .01543 | .01518 | .00008 | .12743 | .00291 | .00000 | .00000 | .12444 | .00008 | .70598 |
| 600 | .00848 | .01364 | .01582 | .00015 | .12871 | .00396 | .00000 | .00000 | .12229 | .00009 | .70686 |
| 620 | .00849 | .01190 | .01636 | .00026 | .12997 | .00528 | .00000 | .00000 | .12006 | .00010 | .70759 |
| 640 | .00849 | .01020 | .01678 | .00044 | .13121 | .00690 | .00000 | .00000 | .11772 | .00011 | .70817 |
| 660 | .00850 | .00851 | .01707 | .00072 | .13241 | .00886 | .00000 | .00000 | .11525 | .00012 | .70857 |
| 680 | .00850 | .00681 | .01724 | .00116 | .13356 | .01118 | .00000 | .00000 | .11263 | .00012 | .70880 |
| 700 | .00850 | .00506 | .01727 | .00180 | .13464 | .01390 | .00000 | .00000 | .10985 | .00013 | .70885 |
| 720 | .00850 | .00321 | .01717 | .00274 | .13562 | .01702 | .00000 | .00000 | .10689 | .00014 | .70871 |
| 740 | .00850 | .00121 | .01695 | .00406 | .13646 | .02055 | .00000 | .00000 | .10373 | .00014 | .70841 |
| 760 | .00848 | .00000 | .01611 | .00580 | .13651 | .02443 | .00000 | .00000 | .10127 | .00015 | .70726 |
| 780 | .00846 | .00000 | .01447 | .00793 | .13552 | .02855 | .00000 | .00000 | .09992 | .00015 | .70501 |
| 800 | .00843 | .00000 | .01264 | .01056 | .13415 | .03289 | .00000 | .00000 | .09867 | .00015 | .70251 |

TABLE 11.5E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.084535; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15317 | .00000 | .00000 | .00000 | .68516 |
| 220 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15317 | .00000 | .00000 | .00000 | .68516 |
| 240 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15317 | .00000 | .00000 | .00000 | .68516 |
| 260 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .15314 | .00000 | .00003 | .00000 | .68516 |
| 280 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .15302 | .00016 | .00000 | .68516 |
| 298 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .15267 | .00050 | .00000 | .68516 |
| 300 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .15262 | .00056 | .00000 | .68516 |
| 320 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .15151 | .00166 | .00000 | .68516 |
| 340 | .00822 | .04595 | .00000 | .00000 | .10750 | .00000 | .00000 | .14889 | .00428 | .00000 | .68516 |
| 360 | .00822 | .04591 | .00002 | .00000 | .10753 | .00000 | .00000 | .14333 | .00980 | .00000 | .68518 |
| 380 | .00822 | .04574 | .00011 | .00000 | .10764 | .00000 | .00000 | .13254 | .02044 | .00000 | .68531 |
| 400 | .00823 | .04496 | .00052 | .00000 | .10814 | .00001 | .00000 | .11270 | .03958 | .00000 | .68587 |
| 420 | .00825 | .04192 | .00210 | .00000 | .11008 | .00002 | .00000 | .07684 | .07273 | .00001 | .68804 |
| 440 | .00834 | .03130 | .00765 | .00000 | .11686 | .00006 | .00000 | .00947 | .13064 | .00004 | .69565 |
| 460 | .00838 | .02746 | .00964 | .00000 | .11932 | .00011 | .00000 | .00000 | .13666 | .00005 | .69838 |
| 480 | .00839 | .02534 | .01073 | .00000 | .12068 | .00019 | .00000 | .00000 | .13473 | .00006 | .69987 |
| 500 | .00841 | .02327 | .01178 | .00000 | .12202 | .00029 | .00000 | .00000 | .13283 | .00007 | .70132 |
| 520 | .00843 | .02126 | .01279 | .00000 | .12333 | .00045 | .00000 | .00000 | .13095 | .00008 | .70270 |
| 540 | .00844 | .01932 | .01375 | .00001 | .12461 | .00066 | .00000 | .00000 | .12910 | .00009 | .70401 |
| 560 | .00846 | .01745 | .01465 | .00002 | .12585 | .00094 | .00000 | .00000 | .12728 | .00011 | .70525 |
| 580 | .00847 | .01565 | .01548 | .00004 | .12705 | .00131 | .00000 | .00000 | .12548 | .00012 | .70639 |
| 600 | .00849 | .01393 | .01625 | .00007 | .12822 | .00179 | .00000 | .00000 | .12368 | .00014 | .70745 |
| 620 | .00850 | .01227 | .01694 | .00012 | .12935 | .00240 | .00000 | .00000 | .12188 | .00015 | .70840 |
| 640 | .00851 | .01066 | .01755 | .00020 | .13045 | .00316 | .00000 | .00000 | .12006 | .00017 | .70924 |
| 660 | .00852 | .00911 | .01809 | .00032 | .13151 | .00408 | .00000 | .00000 | .11822 | .00018 | .70997 |
| 680 | .00852 | .00760 | .01853 | .00052 | .13252 | .00518 | .00000 | .00000 | .11634 | .00020 | .71059 |
| 700 | .00853 | .00611 | .01889 | .00080 | .13348 | .00650 | .00000 | .00000 | .11440 | .00021 | .71108 |
| 720 | .00853 | .00461 | .01916 | .00122 | .13438 | .00803 | .00000 | .00000 | .11239 | .00022 | .71145 |
| 740 | .00854 | .00308 | .01934 | .00181 | .13520 | .00981 | .00000 | .00000 | .11029 | .00024 | .71170 |
| 760 | .00854 | .00149 | .01942 | .00262 | .13592 | .01183 | .00000 | .00000 | .10811 | .00025 | .71182 |
| 780 | .00854 | .00000 | .01931 | .00372 | .13639 | .01411 | .00000 | .00000 | .10600 | .00026 | .71167 |
| 800 | .00852 | .00000 | .01830 | .00506 | .13575 | .01661 | .00000 | .00000 | .10520 | .00027 | .71029 |

TABLE 12.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016749; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03405 | .00000 | .00000 | .03542 | .00000 | .00001 | .76701 | .00000 | .00000 | .15432 |
| 950 | .00920 | .00000 | .03405 | .00000 | .00000 | .03542 | .00000 | .00002 | .76700 | .00000 | .00000 | .15432 |
| 1000 | .00920 | .00000 | .03405 | .00000 | .00000 | .03542 | .00000 | .00003 | .76700 | .00000 | .00000 | .15431 |
| 1050 | .00920 | .00000 | .03405 | .00000 | .00000 | .03542 | .00000 | .00005 | .76699 | .00000 | .00000 | .15430 |
| 1100 | .00920 | .00000 | .03405 | .00000 | .00000 | .03542 | .00000 | .00008 | .76697 | .00000 | .00000 | .15428 |
| 1150 | .00920 | .00000 | .03405 | .00000 | .00000 | .03542 | .00000 | .00012 | .76695 | .00000 | .00000 | .15426 |
| 1200 | .00920 | .00000 | .03405 | .00000 | .00000 | .03542 | .00000 | .00018 | .76692 | .00000 | .00001 | .15423 |
| 1250 | .00920 | .00000 | .03405 | .00000 | .00000 | .03541 | .00000 | .00026 | .76688 | .00000 | .00001 | .15419 |
| 1300 | .00920 | .00000 | .03405 | .00000 | .00000 | .03541 | .00000 | .00037 | .76682 | .00000 | .00002 | .15414 |
| 1350 | .00920 | .00000 | .03404 | .00000 | .00000 | .03540 | .00000 | .00050 | .76675 | .00000 | .00003 | .15406 |
| 1400 | .00920 | .00000 | .03404 | .00000 | .00000 | .03539 | .00000 | .00067 | .76667 | .00000 | .00006 | .15397 |
| 1450 | .00920 | .00000 | .03404 | .00000 | .00000 | .03537 | .00000 | .00087 | .76656 | .00001 | .00009 | .15386 |
| 1500 | .00920 | .00000 | .03404 | .00000 | .00000 | .03535 | .00000 | .00112 | .76642 | .00002 | .00014 | .15372 |
| 1550 | .00920 | .00001 | .03403 | .00000 | .00000 | .03531 | .00000 | .00141 | .76625 | .00003 | .00021 | .15354 |
| 1600 | .00920 | .00002 | .03402 | .00000 | .00001 | .03525 | .00000 | .00176 | .76604 | .00006 | .00031 | .15333 |
| 1650 | .00920 | .00003 | .03401 | .00000 | .00001 | .03517 | .00000 | .00216 | .76579 | .00010 | .00045 | .15308 |
| 1700 | .00920 | .00006 | .03398 | .00001 | .00002 | .03507 | .00000 | .00261 | .76548 | .00017 | .00064 | .15276 |
| 1750 | .00920 | .00010 | .03393 | .00001 | .00003 | .03492 | .00000 | .00314 | .76510 | .00029 | .00089 | .15239 |
| 1800 | .00919 | .00018 | .03385 | .00002 | .00005 | .03473 | .00000 | .00372 | .76464 | .00047 | .00121 | .15194 |
| 1850 | .00919 | .00029 | .03372 | .00005 | .00007 | .03448 | .00000 | .00437 | .76406 | .00075 | .00162 | .15140 |
| 1900 | .00919 | .00047 | .03353 | .00008 | .00011 | .03415 | .00000 | .00509 | .76335 | .00115 | .00212 | .15076 |
| 1950 | .00918 | .00073 | .03324 | .00015 | .00017 | .03373 | .00000 | .00588 | .76245 | .00174 | .00274 | .14999 |
| 2000 | .00917 | .00111 | .03283 | .00025 | .00025 | .03319 | .00000 | .00673 | .76133 | .00257 | .00349 | .14908 |
| 2050 | .00916 | .00165 | .03226 | .00042 | .00035 | .03252 | .00000 | .00765 | .75991 | .00372 | .00438 | .14799 |
| 2100 | .00914 | .00238 | .03147 | .00068 | .00049 | .03168 | .00000 | .00863 | .75814 | .00529 | .00541 | .14669 |
| 2150 | .00912 | .00334 | .03043 | .00108 | .00066 | .03064 | .00000 | .00967 | .75592 | .00740 | .00658 | .14515 |
| 2200 | .00910 | .00457 | .02910 | .00166 | .00088 | .02937 | .00000 | .01076 | .75317 | .01017 | .00790 | .14332 |
| 2250 | .00906 | .00609 | .02746 | .00250 | .00114 | .02784 | .00000 | .01189 | .74979 | .01377 | .00933 | .14112 |
| 2300 | .00902 | .00787 | .02552 | .00366 | .00145 | .02604 | .00000 | .01305 | .74568 | .01837 | .01085 | .13849 |
| 2350 | .00897 | .00989 | .02331 | .00523 | .00178 | .02394 | .00000 | .01422 | .74078 | .02414 | .01239 | .13534 |
| 2400 | .00891 | .01207 | .02090 | .00730 | .00213 | .02158 | .00000 | .01538 | .73503 | .03127 | .01388 | .13156 |
| 2450 | .00883 | .01432 | .01838 | .00992 | .00247 | .01897 | .00000 | .01650 | .72839 | .03993 | .01524 | .12706 |
| 2500 | .00875 | .01653 | .01585 | .01312 | .00276 | .01621 | .00000 | .01756 | .72088 | .05026 | .01634 | .12174 |
| 2550 | .00866 | .01862 | .01342 | .01689 | .00297 | .01339 | .00000 | .01852 | .71258 | .06234 | .01708 | .11555 |
| 2600 | .00855 | .02050 | .01116 | .02111 | .00306 | .01064 | .00001 | .01935 | .70360 | .07620 | .01736 | .10846 |
| 2650 | .00845 | .02213 | .00912 | .02562 | .00302 | .00812 | .00001 | .02001 | .69415 | .09174 | .01714 | .10050 |
| 2700 | .00833 | .02349 | .00735 | .03019 | .00286 | .00593 | .00001 | .02048 | .68444 | .10875 | .01640 | .09177 |
| 2750 | .00822 | .02458 | .00583 | .03458 | .00259 | .00415 | .00002 | .02074 | .67474 | .12688 | .01523 | .08246 |
| 2800 | .00810 | .02541 | .00458 | .03860 | .00225 | .00279 | .00003 | .02076 | .66530 | .14565 | .01373 | .07279 |
| 2850 | .00800 | .02604 | .00355 | .04211 | .00190 | .00181 | .00004 | .02054 | .65636 | .16451 | .01205 | .06309 |
| 2900 | .00789 | .02648 | .00273 | .04508 | .00156 | .00114 | .00006 | .02010 | .64812 | .18286 | .01033 | .05366 |
| 2950 | .00780 | .02679 | .00208 | .04750 | .00125 | .00070 | .00008 | .01946 | .64072 | .20014 | .00867 | .04481 |
| 3000 | .00772 | .02699 | .00158 | .04944 | .00099 | .00042 | .00011 | .01864 | .63425 | .21590 | .00717 | .03678 |

TABLE 12.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016749; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00001 | .76701 | .00000 | .00000 | .15432 |
| 950 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00002 | .76700 | .00000 | .00000 | .15432 |
| 1000 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00003 | .76700 | .00000 | .00000 | .15431 |
| 1050 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00005 | .76699 | .00000 | .00000 | .15430 |
| 1100 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00008 | .76697 | .00000 | .00000 | .15428 |
| 1150 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00012 | .76695 | .00000 | .00000 | .15426 |
| 1200 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00018 | .76692 | .00000 | .00000 | .15423 |
| 1250 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00026 | .76688 | .00000 | .00001 | .15419 |
| 1300 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00000 | .00037 | .76683 | .00000 | .00001 | .15414 |
| 1350 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00000 | .00050 | .76676 | .00000 | .00002 | .15407 |
| 1400 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03540 | .00000 | .00067 | .76667 | .00000 | .00003 | .15398 |
| 1450 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03539 | .00000 | .00087 | .76657 | .00000 | .00005 | .15387 |
| 1500 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03538 | .00000 | .00112 | .76644 | .00000 | .00008 | .15374 |
| 1550 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03536 | .00000 | .00141 | .76628 | .00001 | .00012 | .15358 |
| 1600 | .00920 | .00001 | .03404 | .00000 | .00000 | .00000 | .03533 | .00000 | .00176 | .76609 | .00002 | .00018 | .15339 |
| 1650 | .00920 | .00001 | .03403 | .00000 | .00000 | .00000 | .03528 | .00000 | .00216 | .76587 | .00003 | .00026 | .15316 |
| 1700 | .00920 | .00002 | .03402 | .00000 | .00000 | .00001 | .03523 | .00000 | .00262 | .76560 | .00005 | .00036 | .15289 |
| 1750 | .00920 | .00003 | .03401 | .00000 | .00000 | .00001 | .03515 | .00000 | .00314 | .76529 | .00009 | .00050 | .15257 |
| 1800 | .00920 | .00006 | .03398 | .00000 | .00000 | .00002 | .03505 | .00000 | .00372 | .76493 | .00015 | .00068 | .15221 |
| 1850 | .00920 | .00009 | .03394 | .00001 | .00000 | .00002 | .03492 | .00000 | .00438 | .76451 | .00024 | .00092 | .15178 |
| 1900 | .00919 | .00015 | .03388 | .00002 | .00000 | .00004 | .03475 | .00000 | .00510 | .76401 | .00036 | .00120 | .15129 |
| 1950 | .00919 | .00023 | .03378 | .00003 | .00000 | .00005 | .03454 | .00000 | .00589 | .76343 | .00055 | .00156 | .15073 |
| 2000 | .00919 | .00036 | .03365 | .00005 | .00000 | .00008 | .03428 | .00000 | .00676 | .76274 | .00081 | .00200 | .15009 |
| 2050 | .00918 | .00054 | .03345 | .00008 | .00000 | .00012 | .03395 | .00000 | .00770 | .76193 | .00118 | .00252 | .14935 |
| 2100 | .00918 | .00079 | .03318 | .00012 | .00000 | .00016 | .03355 | .00000 | .00870 | .76098 | .00168 | .00314 | .14851 |
| 2150 | .00917 | .00113 | .03281 | .00020 | .00000 | .00022 | .03306 | .00000 | .00978 | .75984 | .00236 | .00386 | .14755 |
| 2200 | .00916 | .00159 | .03232 | .00031 | .00000 | .00030 | .03247 | .00000 | .01092 | .75850 | .00325 | .00470 | .14647 |
| 2250 | .00915 | .00219 | .03168 | .00047 | .00000 | .00041 | .03177 | .00000 | .01212 | .75691 | .00442 | .00565 | .14524 |
| 2300 | .00914 | .00295 | .03086 | .00070 | .00000 | .00053 | .03093 | .00000 | .01338 | .75502 | .00592 | .00671 | .14384 |
| 2350 | .00912 | .00390 | .02984 | .00103 | .00000 | .00069 | .02995 | .00000 | .01470 | .75280 | .00783 | .00789 | .14226 |
| 2400 | .00909 | .00505 | .02860 | .00148 | .00000 | .00087 | .02882 | .00000 | .01605 | .75019 | .01022 | .00917 | .14045 |
| 2450 | .00907 | .00641 | .02714 | .00208 | .00000 | .00108 | .02751 | .00000 | .01744 | .74715 | .01318 | .01054 | .13840 |
| 2500 | .00903 | .00795 | .02548 | .00288 | .00000 | .00132 | .02603 | .00000 | .01885 | .74364 | .01680 | .01197 | .13605 |
| 2550 | .00899 | .00965 | .02363 | .00391 | .00001 | .00159 | .02436 | .00000 | .02027 | .73962 | .02118 | .01343 | .13336 |
| 2600 | .00895 | .01147 | .02164 | .00522 | .00001 | .00187 | .02253 | .00000 | .02167 | .73508 | .02641 | .01487 | .13029 |
| 2650 | .00889 | .01336 | .01955 | .00684 | .00001 | .00215 | .02054 | .00000 | .02305 | .72999 | .03258 | .01625 | .12677 |
| 2700 | .00883 | .01525 | .01744 | .00880 | .00001 | .00243 | .01843 | .00000 | .02438 | .72437 | .03978 | .01749 | .12278 |
| 2750 | .00877 | .01709 | .01536 | .01112 | .00001 | .00268 | .01624 | .00001 | .02563 | .71823 | .04805 | .01855 | .11827 |
| 2800 | .00870 | .01882 | .01337 | .01379 | .00001 | .00288 | .01403 | .00001 | .02678 | .71162 | .05744 | .01935 | .11322 |
| 2850 | .00862 | .02040 | .01150 | .01679 | .00001 | .00301 | .01185 | .00001 | .02780 | .70460 | .06795 | .01984 | .10763 |
| 2900 | .00853 | .02180 | .00978 | .02004 | .00001 | .00308 | .00977 | .00002 | .02868 | .69725 | .07954 | .01997 | .10152 |
| 2950 | .00845 | .02302 | .00824 | .02348 | .00001 | .00306 | .00786 | .00003 | .02938 | .68968 | .09213 | .01974 | .09494 |
| 3000 | .00836 | .02405 | .00689 | .02699 | .00000 | .00296 | .00616 | .00004 | .02989 | .68199 | .10557 | .01913 | .08796 |

TABLE 12.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016749; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00001 | .00000 | .76701 | .00000 | .00000 | .15432 |
| 950 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00002 | .00000 | .76700 | .00000 | .00000 | .15432 |
| 1000 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00003 | .00000 | .76700 | .00000 | .00000 | .15431 |
| 1050 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00005 | .00000 | .76699 | .00000 | .00000 | .15430 |
| 1100 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00008 | .00000 | .76697 | .00000 | .00000 | .15428 |
| 1150 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00012 | .00000 | .76695 | .00000 | .00000 | .15426 |
| 1200 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00018 | .00000 | .76692 | .00000 | .00000 | .15423 |
| 1250 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00026 | .00000 | .76688 | .00000 | .00000 | .15419 |
| 1300 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00000 | .00037 | .00000 | .76683 | .00000 | .00001 | .15414 |
| 1350 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00000 | .00050 | .00000 | .76676 | .00000 | .00001 | .15407 |
| 1400 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00000 | .00067 | .00000 | .76667 | .00000 | .00002 | .15398 |
| 1450 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03540 | .00000 | .00087 | .00000 | .76657 | .00000 | .00003 | .15388 |
| 1500 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03540 | .00000 | .00112 | .00000 | .76644 | .00000 | .00004 | .15375 |
| 1550 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03538 | .00000 | .00141 | .00001 | .76629 | .00000 | .00007 | .15359 |
| 1600 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03537 | .00000 | .00176 | .00001 | .76611 | .00001 | .00010 | .15341 |
| 1650 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03534 | .00000 | .00216 | .00001 | .76590 | .00001 | .00014 | .15319 |
| 1700 | .00920 | .00001 | .03404 | .00000 | .00000 | .00000 | .03531 | .00000 | .00262 | .00001 | .76565 | .00002 | .00020 | .15294 |
| 1750 | .00920 | .00001 | .03403 | .00000 | .00000 | .00000 | .03527 | .00000 | .00314 | .00001 | .76537 | .00003 | .00028 | .15266 |
| 1800 | .00920 | .00002 | .03402 | .00000 | .00000 | .00000 | .03522 | .00000 | .00373 | .00001 | .76505 | .00005 | .00039 | .15233 |
| 1850 | .00920 | .00003 | .03401 | .00000 | .00000 | .00001 | .03515 | .00000 | .00438 | .00001 | .76468 | .00007 | .00052 | .15195 |
| 1900 | .00920 | .00005 | .03399 | .00000 | .00000 | .00001 | .03506 | .00000 | .00511 | .00001 | .76426 | .00012 | .00068 | .15153 |
| 1950 | .00920 | .00007 | .03396 | .00000 | .00000 | .00002 | .03494 | .00000 | .00590 | .00001 | .76379 | .00017 | .00088 | .15105 |
| 2000 | .00919 | .00011 | .03391 | .00001 | .00000 | .00003 | .03480 | .00000 | .00677 | .00001 | .76325 | .00026 | .00113 | .15051 |
| 2050 | .00919 | .00017 | .03385 | .00001 | .00000 | .00004 | .03463 | .00000 | .00771 | .00001 | .76265 | .00037 | .00143 | .14992 |
| 2100 | .00919 | .00025 | .03376 | .00002 | .00000 | .00005 | .03443 | .00000 | .00873 | .00001 | .76197 | .00053 | .00179 | .14926 |
| 2150 | .00919 | .00037 | .03364 | .00004 | .00000 | .00007 | .03418 | .00000 | .00982 | .00001 | .76120 | .00075 | .00221 | .14852 |
| 2200 | .00919 | .00052 | .03348 | .00006 | .00000 | .00010 | .03388 | .00000 | .01098 | .00001 | .76034 | .00103 | .00270 | .14771 |
| 2250 | .00918 | .00072 | .03325 | .00009 | .00001 | .00013 | .03353 | .00000 | .01221 | .00001 | .75936 | .00141 | .00327 | .14683 |
| 2300 | .00918 | .00099 | .03297 | .00013 | .00001 | .00018 | .03312 | .00000 | .01351 | .00001 | .75826 | .00189 | .00392 | .14585 |
| 2350 | .00917 | .00134 | .03260 | .00019 | .00001 | .00023 | .03264 | .00000 | .01487 | .00001 | .75702 | .00250 | .00465 | .14478 |
| 2400 | .00916 | .00178 | .03213 | .00028 | .00001 | .00030 | .03209 | .00000 | .01629 | .00001 | .75561 | .00327 | .00547 | .14361 |
| 2450 | .00915 | .00232 | .03154 | .00039 | .00001 | .00039 | .03145 | .00000 | .01777 | .00001 | .75402 | .00423 | .00638 | .14234 |
| 2500 | .00914 | .00299 | .03083 | .00055 | .00001 | .00049 | .03073 | .00000 | .01930 | .00001 | .75223 | .00541 | .00738 | .14095 |
| 2550 | .00912 | .00379 | .02998 | .00076 | .00001 | .00060 | .02991 | .00000 | .02087 | .00001 | .75021 | .00685 | .00846 | .13943 |
| 2600 | .00911 | .00472 | .02897 | .00104 | .00001 | .00074 | .02898 | .00000 | .02248 | .00001 | .74794 | .00859 | .00962 | .13778 |
| 2650 | .00908 | .00580 | .02782 | .00139 | .00001 | .00089 | .02796 | .00000 | .02412 | .00001 | .74541 | .01067 | .01085 | .13597 |
| 2700 | .00906 | .00702 | .02652 | .00185 | .00001 | .00107 | .02682 | .00000 | .02578 | .00001 | .74259 | .01314 | .01213 | .13399 |
| 2750 | .00903 | .00835 | .02508 | .00242 | .00001 | .00126 | .02558 | .00000 | .02745 | .00001 | .73948 | .01604 | .01345 | .13182 |
| 2800 | .00900 | .00979 | .02352 | .00312 | .00002 | .00147 | .02423 | .00000 | .02912 | .00001 | .73605 | .01942 | .01479 | .12944 |
| 2850 | .00897 | .01131 | .02188 | .00397 | .00002 | .00169 | .02279 | .00000 | .03077 | .00001 | .73232 | .02333 | .01612 | .12683 |
| 2900 | .00893 | .01287 | .02018 | .00500 | .00002 | .00191 | .02125 | .00001 | .03239 | .00001 | .72827 | .02779 | .01741 | .12396 |
| 2950 | .00889 | .01444 | .01845 | .00621 | .00002 | .00214 | .01964 | .00001 | .03396 | .00001 | .72392 | .03287 | .01863 | .12082 |
| 3000 | .00884 | .01599 | .01673 | .00763 | .00002 | .00236 | .01797 | .00001 | .03547 | .00001 | .71927 | .03857 | .01975 | .11739 |

TABLE 12.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016749; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00001 | .00000 | .76701 | .00000 | .00000 | .00000 | .15432 |
| 950 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00002 | .00000 | .76700 | .00000 | .00000 | .00000 | .15431 |
| 1000 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00003 | .00000 | .76700 | .00000 | .00000 | .00000 | .15431 |
| 1050 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00005 | .00001 | .76699 | .00000 | .00000 | .00000 | .15430 |
| 1100 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00008 | .00001 | .76697 | .00000 | .00000 | .00000 | .15428 |
| 1150 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00012 | .00001 | .76695 | .00000 | .00000 | .00000 | .15426 |
| 1200 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00018 | .00001 | .76692 | .00000 | .00000 | .00000 | .15423 |
| 1250 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00026 | .00001 | .76688 | .00000 | .00000 | .00000 | .15418 |
| 1300 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00037 | .00001 | .76683 | .00000 | .00000 | .00000 | .15413 |
| 1350 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00050 | .00001 | .76676 | .00000 | .00000 | .00001 | .15406 |
| 1400 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00067 | .00001 | .76668 | .00000 | .00000 | .00001 | .15398 |
| 1450 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00087 | .00001 | .76657 | .00000 | .00000 | .00002 | .15387 |
| 1500 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00112 | .00002 | .76645 | .00000 | .00000 | .00002 | .15374 |
| 1550 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03540 | .00141 | .00002 | .76630 | .00000 | .00000 | .00004 | .15359 |
| 1600 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03539 | .00176 | .00002 | .76612 | .00000 | .00000 | .00006 | .15341 |
| 1650 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03538 | .00216 | .00002 | .76591 | .00000 | .00000 | .00008 | .15320 |
| 1700 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03536 | .00262 | .00002 | .76568 | .00000 | .00001 | .00011 | .15296 |
| 1750 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03534 | .00314 | .00002 | .76540 | .00000 | .00001 | .00016 | .15268 |
| 1800 | .00920 | .00001 | .03404 | .00000 | .00000 | .00000 | .03531 | .00373 | .00002 | .76510 | .00000 | .00001 | .00022 | .15237 |
| 1850 | .00920 | .00001 | .03403 | .00000 | .00000 | .00000 | .03527 | .00438 | .00003 | .76475 | .00000 | .00002 | .00029 | .15202 |
| 1900 | .00920 | .00001 | .03403 | .00000 | .00000 | .00000 | .03522 | .00511 | .00003 | .76436 | .00000 | .00004 | .00038 | .15162 |
| 1950 | .00920 | .00002 | .03402 | .00000 | .00000 | .00001 | .03516 | .00591 | .00003 | .76393 | .00000 | .00006 | .00050 | .15118 |
| 2000 | .00920 | .00004 | .03400 | .00000 | .00000 | .00001 | .03508 | .00678 | .00003 | .76345 | .00000 | .00008 | .00064 | .15069 |
| 2050 | .00920 | .00005 | .03398 | .00000 | .00001 | .00001 | .03499 | .00772 | .00003 | .76292 | .00000 | .00012 | .00081 | .15016 |
| 2100 | .00920 | .00008 | .03395 | .00000 | .00001 | .00002 | .03488 | .00874 | .00003 | .76234 | .00000 | .00017 | .00101 | .14957 |
| 2150 | .00919 | .00012 | .03391 | .00001 | .00001 | .00002 | .03474 | .00984 | .00003 | .76170 | .00000 | .00024 | .00125 | .14893 |
| 2200 | .00919 | .00017 | .03386 | .00001 | .00001 | .00003 | .03459 | .01100 | .00003 | .76101 | .00000 | .00033 | .00154 | .14824 |
| 2250 | .00919 | .00023 | .03379 | .00002 | .00001 | .00004 | .03440 | .01224 | .00004 | .76024 | .00000 | .00045 | .00187 | .14749 |
| 2300 | .00919 | .00032 | .03369 | .00002 | .00001 | .00006 | .03419 | .01355 | .00004 | .75941 | .00000 | .00060 | .00224 | .14668 |
| 2350 | .00919 | .00043 | .03357 | .00003 | .00001 | .00008 | .03394 | .01493 | .00004 | .75851 | .00000 | .00079 | .00267 | .14580 |
| 2400 | .00918 | .00058 | .03341 | .00005 | .00001 | .00010 | .03365 | .01638 | .00004 | .75752 | .00000 | .00104 | .00316 | .14487 |
| 2450 | .00918 | .00077 | .03321 | .00007 | .00002 | .00013 | .03332 | .01789 | .00004 | .75645 | .00000 | .00134 | .00370 | .14387 |
| 2500 | .00918 | .00100 | .03295 | .00010 | .00002 | .00016 | .03295 | .01946 | .00004 | .75528 | .00000 | .00172 | .00431 | .14281 |
| 2550 | .00917 | .00129 | .03264 | .00014 | .00002 | .00021 | .03253 | .02109 | .00004 | .75401 | .00000 | .00218 | .00498 | .14168 |
| 2600 | .00916 | .00165 | .03227 | .00019 | .00002 | .00026 | .03206 | .02277 | .00004 | .75263 | .00000 | .00274 | .00572 | .14048 |
| 2650 | .00916 | .00207 | .03181 | .00026 | .00002 | .00032 | .03154 | .02450 | .00004 | .75113 | .00000 | .00341 | .00652 | .13921 |
| 2700 | .00915 | .00258 | .03127 | .00035 | .00003 | .00038 | .03096 | .02627 | .00004 | .74950 | .00000 | .00422 | .00738 | .13786 |
| 2750 | .00914 | .00317 | .03064 | .00046 | .00003 | .00046 | .03031 | .02808 | .00005 | .74773 | .00000 | .00516 | .00830 | .13644 |
| 2800 | .00912 | .00386 | .02991 | .00061 | .00003 | .00056 | .02961 | .02993 | .00005 | .74582 | .00000 | .00627 | .00929 | .13494 |
| 2850 | .00911 | .00464 | .02908 | .00079 | .00003 | .00066 | .02885 | .03179 | .00005 | .74375 | .00000 | .00756 | .01033 | .13336 |
| 2900 | .00910 | .00551 | .02815 | .00101 | .00004 | .00077 | .02802 | .03368 | .00005 | .74152 | .00001 | .00906 | .01141 | .13168 |
| 2950 | .00908 | .00647 | .02712 | .00128 | .00004 | .00090 | .02713 | .03558 | .00005 | .73912 | .00001 | .01078 | .01254 | .12991 |
| 3000 | .00906 | .00753 | .02600 | .00160 | .00004 | .00104 | .02617 | .03748 | .00005 | .73655 | .00001 | .01274 | .01370 | .12804 |

TABLE 12.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016749; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00001 | .00001 | .76701 | .00000 | .00000 | .00000 | .15431 |
| 950 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00002 | .00001 | .76700 | .00000 | .00000 | .00000 | .15431 |
| 1000 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00003 | .00001 | .76700 | .00000 | .00000 | .00000 | .15430 |
| 1050 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00005 | .00001 | .76699 | .00000 | .00000 | .00000 | .15429 |
| 1100 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00008 | .00001 | .76697 | .00000 | .00000 | .00000 | .15427 |
| 1150 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00012 | .00002 | .76695 | .00000 | .00000 | .00000 | .15425 |
| 1200 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00018 | .00002 | .76692 | .00000 | .00000 | .00000 | .15422 |
| 1250 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00026 | .00002 | .76688 | .00000 | .00000 | .00000 | .15417 |
| 1300 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00037 | .00002 | .76683 | .00000 | .00000 | .00000 | .15412 |
| 1350 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00050 | .00003 | .76676 | .00000 | .00000 | .00000 | .15405 |
| 1400 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03542 | .00067 | .00003 | .76667 | .00000 | .00000 | .00001 | .15396 |
| 1450 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00087 | .00003 | .76657 | .00000 | .00000 | .00001 | .15386 |
| 1500 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00112 | .00003 | .76645 | .00000 | .00000 | .00002 | .15373 |
| 1550 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03541 | .00141 | .00004 | .76630 | .00000 | .00000 | .00003 | .15358 |
| 1600 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03540 | .00176 | .00004 | .76612 | .00000 | .00000 | .00004 | .15340 |
| 1650 | .00920 | .00000 | .03405 | .00000 | .00000 | .00000 | .03539 | .00216 | .00004 | .76592 | .00000 | .00000 | .00005 | .15319 |
| 1700 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03538 | .00262 | .00005 | .76568 | .00000 | .00000 | .00008 | .15295 |
| 1750 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03536 | .00314 | .00005 | .76541 | .00000 | .00000 | .00011 | .15267 |
| 1800 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03534 | .00373 | .00005 | .76511 | .00000 | .00001 | .00015 | .15237 |
| 1850 | .00920 | .00000 | .03404 | .00000 | .00000 | .00000 | .03532 | .00438 | .00006 | .76477 | .00000 | .00001 | .00019 | .15202 |
| 1900 | .00920 | .00001 | .03404 | .00000 | .00000 | .00000 | .03528 | .00511 | .00006 | .76439 | .00000 | .00002 | .00026 | .15163 |
| 1950 | .00920 | .00001 | .03403 | .00000 | .00001 | .00000 | .03524 | .00591 | .00006 | .76397 | .00000 | .00002 | .00033 | .15120 |
| 2000 | .00920 | .00002 | .03403 | .00000 | .00001 | .00000 | .03519 | .00678 | .00007 | .76351 | .00000 | .00004 | .00043 | .15073 |
| 2050 | .00920 | .00002 | .03402 | .00000 | .00001 | .00001 | .03513 | .00772 | .00007 | .76301 | .00000 | .00005 | .00054 | .15022 |
| 2100 | .00920 | .00004 | .03400 | .00000 | .00001 | .00001 | .03506 | .00874 | .00007 | .76245 | .00000 | .00008 | .00068 | .14966 |
| 2150 | .00920 | .00005 | .03398 | .00000 | .00001 | .00001 | .03497 | .00984 | .00007 | .76186 | .00000 | .00011 | .00084 | .14905 |
| 2200 | .00920 | .00007 | .03396 | .00000 | .00001 | .00001 | .03487 | .01101 | .00008 | .76121 | .00000 | .00015 | .00103 | .14839 |
| 2250 | .00920 | .00010 | .03393 | .00000 | .00001 | .00002 | .03475 | .01225 | .00008 | .76051 | .00000 | .00020 | .00125 | .14769 |
| 2300 | .00919 | .00014 | .03388 | .00001 | .00002 | .00003 | .03461 | .01357 | .00008 | .75976 | .00000 | .00027 | .00151 | .14693 |
| 2350 | .00919 | .00020 | .03383 | .00001 | .00002 | .00003 | .03444 | .01496 | .00009 | .75895 | .00001 | .00035 | .00180 | .14613 |
| 2400 | .00919 | .00026 | .03375 | .00002 | .00002 | .00005 | .03426 | .01641 | .00009 | .75808 | .00001 | .00046 | .00213 | .14527 |
| 2450 | .00919 | .00035 | .03366 | .00002 | .00002 | .00006 | .03405 | .01793 | .00009 | .75716 | .00001 | .00060 | .00251 | .14436 |
| 2500 | .00919 | .00046 | .03354 | .00003 | .00003 | .00007 | .03381 | .01951 | .00009 | .75617 | .00001 | .00077 | .00292 | .14340 |
| 2550 | .00918 | .00059 | .03340 | .00004 | .00003 | .00009 | .03354 | .02116 | .00009 | .75511 | .00001 | .00098 | .00339 | .14239 |
| 2600 | .00918 | .00076 | .03322 | .00006 | .00003 | .00012 | .03323 | .02286 | .00010 | .75398 | .00001 | .00123 | .00390 | .14132 |
| 2650 | .00918 | .00096 | .03300 | .00008 | .00004 | .00015 | .03290 | .02462 | .00010 | .75278 | .00001 | .00153 | .00446 | .14020 |
| 2700 | .00917 | .00120 | .03274 | .00011 | .00004 | .00018 | .03253 | .02642 | .00010 | .75150 | .00001 | .00189 | .00507 | .13903 |
| 2750 | .00917 | .00149 | .03243 | .00014 | .00005 | .00022 | .03212 | .02827 | .00010 | .75014 | .00001 | .00232 | .00573 | .13781 |
| 2800 | .00916 | .00184 | .03207 | .00019 | .00005 | .00026 | .03167 | .03016 | .00010 | .74869 | .00001 | .00282 | .00644 | .13654 |
| 2850 | .00915 | .00224 | .03164 | .00024 | .00005 | .00032 | .03118 | .03209 | .00011 | .74715 | .00001 | .00341 | .00720 | .13521 |
| 2900 | .00915 | .00270 | .03115 | .00031 | .00006 | .00038 | .03065 | .03405 | .00011 | .74551 | .00001 | .00408 | .00801 | .13383 |
| 2950 | .00914 | .00323 | .03058 | .00040 | .00006 | .00044 | .03007 | .03603 | .00011 | .74378 | .00001 | .00487 | .00887 | .13240 |
| 3000 | .00913 | .00383 | .02995 | .00051 | .00007 | .00052 | .02945 | .03804 | .00011 | .74194 | .00001 | .00576 | .00977 | .13091 |

TABLE 12C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016749; EQUIV.RATIO = 0.250; CHEM. EQUIV. RATIO = 0.2511;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00920 | .03405 | .03526 | .00000 | .00015 | .76701 | .15432 |
| 220 | .00920 | .03405 | .03290 | .00000 | .00252 | .76701 | .15432 |
| 240 | .00920 | .03405 | .00885 | .00000 | .02657 | .76701 | .15432 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00920 | .03405 | .03540 | .00000 | .00002 | .76701 | .15432 |
| 220 | .00920 | .03405 | .03517 | .00000 | .00025 | .76701 | .15432 |
| 240 | .00920 | .03405 | .03283 | .00000 | .00259 | .76701 | .15432 |
| 260 | .00920 | .03405 | .01649 | .00000 | .01893 | .76701 | .15432 |
| 280 | .00920 | .03405 | .00000 | .00000 | .03542 | .76701 | .15432 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00920 | .03405 | .03542 | .00000 | .00000 | .76701 | .15432 |
| 220 | .00920 | .03405 | .03539 | .00000 | .00003 | .76701 | .15432 |
| 240 | .00920 | .03405 | .03516 | .00000 | .00026 | .76701 | .15432 |
| 260 | .00920 | .03405 | .03356 | .00000 | .00186 | .76701 | .15432 |
| 280 | .00920 | .03405 | .00000 | .02593 | .00949 | .76701 | .15432 |
| 298 | .00920 | .03405 | .00000 | .00444 | .03098 | .76701 | .15432 |
| 300 | .00920 | .03405 | .00000 | .00073 | .03469 | .76701 | .15432 |
| 320 | .00920 | .03405 | .00000 | .00000 | .03542 | .76701 | .15432 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00920 | .03405 | .03542 | .00000 | .00000 | .76701 | .15432 |
| 220 | .00920 | .03405 | .03542 | .00000 | .00000 | .76701 | .15432 |
| 240 | .00920 | .03405 | .03539 | .00000 | .00003 | .76701 | .15432 |
| 260 | .00920 | .03405 | .03523 | .00000 | .00019 | .76701 | .15432 |
| 280 | .00920 | .03405 | .00000 | .03448 | .00094 | .76701 | .15432 |
| 298 | .00920 | .03405 | .00000 | .03241 | .00301 | .76701 | .15432 |
| 300 | .00920 | .03405 | .00000 | .03206 | .00336 | .76701 | .15432 |
| 320 | .00920 | .03405 | .00000 | .02535 | .01007 | .76701 | .15432 |
| 340 | .00920 | .03405 | .00000 | .00910 | .02631 | .76701 | .15432 |
| 360 | .00920 | .03405 | .00000 | .00000 | .03542 | .76701 | .15432 |
| 380 | .00920 | .03405 | .00000 | .00000 | .03542 | .76701 | .15432 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00920 | .03405 | .03542 | .00000 | .00000 | .76701 | .15432 |
| 220 | .00920 | .03405 | .03542 | .00000 | .00000 | .76701 | .15432 |
| 240 | .00920 | .03405 | .03541 | .00000 | .00001 | .76701 | .15432 |
| 260 | .00920 | .03405 | .03538 | .00000 | .00004 | .76701 | .15432 |
| 280 | .00920 | .03405 | .00000 | .03523 | .00019 | .76701 | .15432 |
| 298 | .00920 | .03405 | .00000 | .03482 | .00060 | .76701 | .15432 |
| 300 | .00920 | .03405 | .00000 | .03475 | .00067 | .76701 | .15432 |
| 320 | .00920 | .03405 | .00000 | .03342 | .00200 | .76701 | .15432 |
| 340 | .00920 | .03405 | .00000 | .03027 | .00515 | .76701 | .15432 |
| 360 | .00920 | .03405 | .00000 | .02361 | .01181 | .76701 | .15432 |
| 380 | .00920 | .03405 | .00000 | .01081 | .02461 | .76701 | .15432 |
| 400 | .00920 | .03405 | .00000 | .00000 | .03542 | .76701 | .15432 |
| 420 | .00920 | .03405 | .00000 | .00000 | .03542 | .76701 | .15432 |

TABLE 13.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.033499; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00904 | .00000 | .06660 | .00000 | .00000 | .06960 | .00000 | .00001 | .75366 | .00000 | .00000 | .10109 |
| 950 | .00904 | .00000 | .06660 | .00000 | .00000 | .06960 | .00000 | .00001 | .75366 | .00000 | .00000 | .10109 |
| 1000 | .00904 | .00000 | .06660 | .00000 | .00000 | .06960 | .00000 | .00002 | .75365 | .00000 | .00000 | .10108 |
| 1050 | .00904 | .00000 | .06660 | .00000 | .00000 | .06960 | .00000 | .00004 | .75364 | .00000 | .00000 | .10107 |
| 1100 | .00904 | .00000 | .06660 | .00000 | .00000 | .06960 | .00000 | .00006 | .75363 | .00000 | .00000 | .10106 |
| 1150 | .00904 | .00000 | .06660 | .00000 | .00000 | .06960 | .00000 | .00010 | .75362 | .00000 | .00000 | .10104 |
| 1200 | .00904 | .00000 | .06660 | .00000 | .00000 | .06960 | .00000 | .00015 | .75359 | .00000 | .00001 | .10102 |
| 1250 | .00904 | .00000 | .06660 | .00000 | .00000 | .06960 | .00000 | .00021 | .75356 | .00000 | .00001 | .10098 |
| 1300 | .00904 | .00000 | .06660 | .00000 | .00000 | .06959 | .00000 | .00029 | .75351 | .00000 | .00002 | .10094 |
| 1350 | .00904 | .00000 | .06660 | .00000 | .00000 | .06958 | .00000 | .00040 | .75346 | .00000 | .00004 | .10088 |
| 1400 | .00904 | .00000 | .06659 | .00000 | .00000 | .06957 | .00000 | .00053 | .75338 | .00000 | .00007 | .10081 |
| 1450 | .00904 | .00000 | .06659 | .00000 | .00000 | .06954 | .00000 | .00070 | .75329 | .00001 | .00011 | .10071 |
| 1500 | .00904 | .00001 | .06658 | .00000 | .00000 | .06951 | .00000 | .00090 | .75317 | .00001 | .00018 | .10060 |
| 1550 | .00904 | .00002 | .06657 | .00000 | .00001 | .06946 | .00000 | .00113 | .75303 | .00002 | .00027 | .10045 |
| 1600 | .00904 | .00004 | .06655 | .00000 | .00001 | .06938 | .00000 | .00141 | .75285 | .00005 | .00040 | .10028 |
| 1650 | .00904 | .00008 | .06650 | .00000 | .00003 | .06927 | .00000 | .00173 | .75262 | .00008 | .00057 | .10007 |
| 1700 | .00904 | .00014 | .06643 | .00001 | .00004 | .06912 | .00000 | .00210 | .75234 | .00014 | .00081 | .09983 |
| 1750 | .00903 | .00025 | .06631 | .00002 | .00007 | .06892 | .00000 | .00251 | .75198 | .00023 | .00113 | .09955 |
| 1800 | .00903 | .00043 | .06611 | .00004 | .00012 | .06864 | .00000 | .00298 | .75152 | .00038 | .00153 | .09922 |
| 1850 | .00903 | .00070 | .06581 | .00007 | .00018 | .06827 | .00000 | .00350 | .75093 | .00060 | .00204 | .09886 |
| 1900 | .00902 | .00113 | .06534 | .00013 | .00028 | .06778 | .00000 | .00408 | .75016 | .00093 | .00269 | .09846 |
| 1950 | .00901 | .00176 | .06465 | .00023 | .00042 | .06713 | .00000 | .00471 | .74918 | .00140 | .00348 | .09802 |
| 2000 | .00900 | .00266 | .06367 | .00040 | .00061 | .06629 | .00000 | .00540 | .74789 | .00208 | .00444 | .09757 |
| 2050 | .00899 | .00392 | .06229 | .00066 | .00087 | .06521 | .00000 | .00614 | .74623 | .00301 | .00558 | .09710 |
| 2100 | .00897 | .00562 | .06044 | .00108 | .00121 | .06383 | .00000 | .00694 | .74409 | .00429 | .00691 | .09661 |
| 2150 | .00894 | .00783 | .05803 | .00170 | .00165 | .06210 | .00000 | .00779 | .74137 | .00602 | .00846 | .09611 |
| 2200 | .00890 | .01058 | .05501 | .00263 | .00220 | .05994 | .00000 | .00870 | .73796 | .00831 | .01020 | .09556 |
| 2250 | .00886 | .01388 | .05138 | .00395 | .00287 | .05730 | .00000 | .00965 | .73375 | .01130 | .01212 | .09493 |
| 2300 | .00880 | .01766 | .04720 | .00581 | .00365 | .05413 | .00000 | .01064 | .72865 | .01514 | .01420 | .09412 |
| 2350 | .00874 | .02179 | .04258 | .00834 | .00452 | .05040 | .00000 | .01164 | .72259 | .02001 | .01637 | .09302 |
| 2400 | .00866 | .02610 | .03769 | .01168 | .00545 | .04611 | .00000 | .01265 | .71553 | .02608 | .01853 | .09152 |
| 2450 | .00857 | .03039 | .03273 | .01597 | .00639 | .04129 | .00000 | .01364 | .70745 | .03350 | .02059 | .08947 |
| 2500 | .00846 | .03446 | .02789 | .02130 | .00727 | .03606 | .00000 | .01459 | .69840 | .04242 | .02239 | .08675 |
| 2550 | .00835 | .03817 | .02335 | .02770 | .00798 | .03058 | .00000 | .01545 | .68847 | .05292 | .02378 | .08325 |
| 2600 | .00823 | .04140 | .01922 | .03507 | .00845 | .02506 | .00001 | .01620 | .67782 | .06501 | .02461 | .07894 |
| 2650 | .00810 | .04409 | .01557 | .04319 | .00859 | .01978 | .00001 | .01681 | .66670 | .07861 | .02476 | .07379 |
| 2700 | .00796 | .04624 | .01244 | .05174 | .00839 | .01498 | .00001 | .01724 | .65540 | .09353 | .02418 | .06788 |
| 2750 | .00783 | .04790 | .00981 | .06028 | .00786 | .01087 | .00002 | .01748 | .64427 | .10944 | .02290 | .06135 |
| 2800 | .00770 | .04912 | .00765 | .06838 | .00707 | .00756 | .00003 | .01751 | .63365 | .12591 | .02103 | .05439 |
| 2850 | .00759 | .04999 | .00590 | .07571 | .00613 | .00505 | .00004 | .01734 | .62382 | .14241 | .01875 | .04727 |
| 2900 | .00748 | .05058 | .00452 | .08205 | .00516 | .00326 | .00006 | .01696 | .61500 | .15840 | .01628 | .04026 |
| 2950 | .00738 | .05096 | .00343 | .08733 | .00423 | .00205 | .00008 | .01641 | .60729 | .17340 | .01382 | .03363 |
| 3000 | .00730 | .05119 | .00260 | .09159 | .00341 | .00126 | .00011 | .01572 | .60073 | .18701 | .01150 | .02760 |

TABLE 13.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.033499; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00001 | .75366 | .00000 | .00000 | .10109 |
| 950 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00001 | .75366 | .00000 | .00000 | .10109 |
| 1000 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00002 | .75365 | .00000 | .00000 | .10108 |
| 1050 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00004 | .75364 | .00000 | .00000 | .10107 |
| 1100 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00006 | .75363 | .00000 | .00000 | .10106 |
| 1150 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00010 | .75362 | .00000 | .00000 | .10104 |
| 1200 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00015 | .75359 | .00000 | .00000 | .10102 |
| 1250 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00021 | .75356 | .00000 | .00001 | .10099 |
| 1300 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00029 | .75352 | .00000 | .00001 | .10094 |
| 1350 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06959 | .00000 | .00040 | .75346 | .00000 | .00002 | .10089 |
| 1400 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06958 | .00000 | .00053 | .75339 | .00000 | .00004 | .10081 |
| 1450 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06957 | .00000 | .00070 | .75330 | .00000 | .00006 | .10073 |
| 1500 | .00904 | .00000 | .06659 | .00000 | .00000 | .00000 | .06955 | .00000 | .00090 | .75319 | .00000 | .00010 | .10062 |
| 1550 | .00904 | .00001 | .06659 | .00000 | .00000 | .00000 | .06952 | .00000 | .00113 | .75306 | .00001 | .00015 | .10048 |
| 1600 | .00904 | .00001 | .06658 | .00000 | .00000 | .00000 | .06948 | .00000 | .00141 | .75291 | .00001 | .00022 | .10033 |
| 1650 | .00904 | .00002 | .06657 | .00000 | .00000 | .00001 | .06943 | .00000 | .00173 | .75272 | .00003 | .00032 | .10014 |
| 1700 | .00904 | .00005 | .06654 | .00000 | .00000 | .00001 | .06935 | .00000 | .00210 | .75249 | .00004 | .00046 | .09992 |
| 1750 | .00904 | .00008 | .06650 | .00000 | .00000 | .00002 | .06925 | .00000 | .00251 | .75222 | .00007 | .00063 | .09967 |
| 1800 | .00904 | .00014 | .06644 | .00001 | .00000 | .00004 | .06911 | .00000 | .00298 | .75190 | .00012 | .00086 | .09937 |
| 1850 | .00903 | .00022 | .06634 | .00001 | .00000 | .00006 | .06892 | .00000 | .00351 | .75151 | .00019 | .00116 | .09904 |
| 1900 | .00903 | .00036 | .06619 | .00002 | .00000 | .00009 | .06869 | .00000 | .00408 | .75104 | .00029 | .00152 | .09867 |
| 1950 | .00903 | .00057 | .06596 | .00004 | .00000 | .00013 | .06839 | .00000 | .00472 | .75048 | .00044 | .00198 | .09826 |
| 2000 | .00903 | .00087 | .06563 | .00007 | .00000 | .00020 | .06800 | .00000 | .00541 | .74979 | .00066 | .00253 | .09782 |
| 2050 | .00902 | .00130 | .06516 | .00012 | .00000 | .00028 | .06751 | .00000 | .00616 | .74896 | .00095 | .00319 | .09734 |
| 2100 | .00901 | .00190 | .06451 | .00020 | .00000 | .00040 | .06691 | .00000 | .00697 | .74794 | .00136 | .00398 | .09683 |
| 2150 | .00900 | .00271 | .06362 | .00031 | .00000 | .00056 | .06616 | .00000 | .00783 | .74670 | .00191 | .00491 | .09630 |
| 2200 | .00899 | .00380 | .06244 | .00049 | .00000 | .00076 | .06523 | .00000 | .00875 | .74518 | .00263 | .00599 | .09575 |
| 2250 | .00897 | .00520 | .06092 | .00074 | .00000 | .00101 | .06411 | .00000 | .00973 | .74333 | .00358 | .00722 | .09519 |
| 2300 | .00895 | .00696 | .05900 | .00111 | .00000 | .00133 | .06275 | .00000 | .01075 | .74110 | .00480 | .00861 | .09462 |
| 2350 | .00893 | .00912 | .05666 | .00163 | .00000 | .00172 | .06112 | .00000 | .01183 | .73843 | .00636 | .01016 | .09403 |
| 2400 | .00890 | .01168 | .05387 | .00234 | .00000 | .00219 | .05920 | .00000 | .01296 | .73526 | .00833 | .01187 | .09339 |
| 2450 | .00886 | .01461 | .05066 | .00331 | .00000 | .00274 | .05696 | .00000 | .01412 | .73155 | .01078 | .01372 | .09269 |
| 2500 | .00881 | .01787 | .04707 | .00459 | .00001 | .00337 | .05437 | .00000 | .01532 | .72725 | .01380 | .01568 | .09186 |
| 2550 | .00876 | .02137 | .04319 | .00625 | .00001 | .00406 | .05142 | .00000 | .01653 | .72235 | .01748 | .01772 | .09084 |
| 2600 | .00870 | .02501 | .03911 | .00837 | .00001 | .00481 | .04812 | .00000 | .01775 | .71684 | .02190 | .01979 | .08957 |
| 2650 | .00864 | .02867 | .03497 | .01102 | .00001 | .00560 | .04449 | .00000 | .01895 | .71070 | .02715 | .02182 | .08798 |
| 2700 | .00856 | .03223 | .03086 | .01427 | .00001 | .00638 | .04056 | .00000 | .02011 | .70397 | .03329 | .02374 | .08601 |
| 2750 | .00848 | .03559 | .02691 | .01815 | .00001 | .00713 | .03639 | .00001 | .02122 | .69667 | .04040 | .02545 | .08359 |
| 2800 | .00840 | .03867 | .02319 | .02270 | .00001 | .00779 | .03207 | .00001 | .02224 | .68886 | .04850 | .02688 | .08070 |
| 2850 | .00830 | .04139 | .01977 | .02788 | .00001 | .00832 | .02770 | .00001 | .02316 | .68062 | .05759 | .02793 | .07731 |
| 2900 | .00820 | .04375 | .01669 | .03364 | .00001 | .00867 | .02342 | .00002 | .02395 | .67204 | .06765 | .02851 | .07344 |
| 2950 | .00810 | .04573 | .01397 | .03987 | .00001 | .00882 | .01934 | .00003 | .02458 | .66325 | .07860 | .02859 | .06911 |
| 3000 | .00800 | .04734 | .01160 | .04640 | .00001 | .00874 | .01558 | .00004 | .02505 | .65441 | .09032 | .02814 | .06437 |

TABLE 13.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.033499; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00001 | .00000 | .75366 | .00000 | .00000 | .10109 |
| 950 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00001 | .00000 | .75366 | .00000 | .00000 | .10109 |
| 1000 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00002 | .00000 | .75365 | .00000 | .00000 | .10108 |
| 1050 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00004 | .00000 | .75364 | .00000 | .00000 | .10107 |
| 1100 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00006 | .00000 | .75363 | .00000 | .00000 | .10106 |
| 1150 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00010 | .00000 | .75362 | .00000 | .00000 | .10104 |
| 1200 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00015 | .00000 | .75359 | .00000 | .00000 | .10102 |
| 1250 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00021 | .00000 | .75356 | .00000 | .00000 | .10098 |
| 1300 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00029 | .00000 | .75352 | .00000 | .00001 | .10094 |
| 1350 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00000 | .00040 | .00000 | .75346 | .00000 | .00001 | .10089 |
| 1400 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06959 | .00000 | .00053 | .00000 | .75339 | .00000 | .00002 | .10082 |
| 1450 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06959 | .00000 | .00070 | .00000 | .75331 | .00000 | .00004 | .10073 |
| 1500 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06958 | .00000 | .00090 | .00000 | .75321 | .00000 | .00006 | .10063 |
| 1550 | .00904 | .00000 | .06659 | .00000 | .00000 | .00000 | .06956 | .00000 | .00113 | .00000 | .75308 | .00000 | .00008 | .10050 |
| 1600 | .00904 | .00000 | .06659 | .00000 | .00000 | .00000 | .06954 | .00000 | .00141 | .00000 | .75293 | .00000 | .00013 | .10035 |
| 1650 | .00904 | .00001 | .06659 | .00000 | .00000 | .00000 | .06951 | .00000 | .00173 | .00000 | .75276 | .00001 | .00018 | .10017 |
| 1700 | .00904 | .00001 | .06658 | .00000 | .00000 | .00000 | .06947 | .00000 | .00210 | .00000 | .75255 | .00001 | .00026 | .09997 |
| 1750 | .00904 | .00003 | .06657 | .00000 | .00000 | .00001 | .06941 | .00000 | .00252 | .00000 | .75232 | .00002 | .00036 | .09973 |
| 1800 | .00904 | .00004 | .06654 | .00000 | .00000 | .00001 | .06934 | .00000 | .00299 | .00000 | .75204 | .00004 | .00049 | .09946 |
| 1850 | .00904 | .00007 | .06651 | .00000 | .00000 | .00002 | .06924 | .00000 | .00351 | .00001 | .75173 | .00006 | .00065 | .09916 |
| 1900 | .00904 | .00011 | .06646 | .00000 | .00000 | .00003 | .06912 | .00000 | .00409 | .00001 | .75137 | .00009 | .00086 | .09882 |
| 1950 | .00903 | .00018 | .06639 | .00001 | .00000 | .00004 | .06897 | .00000 | .00472 | .00001 | .75095 | .00014 | .00112 | .09844 |
| 2000 | .00903 | .00028 | .06628 | .00001 | .00000 | .00006 | .06877 | .00000 | .00542 | .00001 | .75047 | .00021 | .00143 | .09802 |
| 2050 | .00903 | .00042 | .06613 | .00002 | .00000 | .00009 | .06854 | .00000 | .00617 | .00001 | .74992 | .00030 | .00181 | .09757 |
| 2100 | .00903 | .00061 | .06591 | .00004 | .00000 | .00013 | .06824 | .00000 | .00698 | .00001 | .74929 | .00043 | .00226 | .09707 |
| 2150 | .00902 | .00088 | .06561 | .00006 | .00000 | .00018 | .06789 | .00000 | .00785 | .00001 | .74855 | .00060 | .00280 | .09654 |
| 2200 | .00902 | .00125 | .06521 | .00009 | .00000 | .00025 | .06745 | .00000 | .00878 | .00001 | .74770 | .00083 | .00342 | .09598 |
| 2250 | .00901 | .00174 | .06467 | .00013 | .00001 | .00033 | .06694 | .00000 | .00976 | .00001 | .74672 | .00113 | .00415 | .09539 |
| 2300 | .00901 | .00239 | .06398 | .00020 | .00001 | .00045 | .06632 | .00000 | .01080 | .00001 | .74557 | .00152 | .00498 | .09478 |
| 2350 | .00900 | .00321 | .06308 | .00030 | .00001 | .00058 | .06559 | .00000 | .01189 | .00001 | .74425 | .00201 | .00592 | .09415 |
| 2400 | .00899 | .00424 | .06196 | .00044 | .00001 | .00076 | .06473 | .00000 | .01303 | .00001 | .74271 | .00264 | .00698 | .09351 |
| 2450 | .00897 | .00552 | .06058 | .00062 | .00001 | .00097 | .06372 | .00000 | .01423 | .00001 | .74093 | .00341 | .00816 | .09286 |
| 2500 | .00895 | .00706 | .05892 | .00087 | .00001 | .00122 | .06256 | .00000 | .01547 | .00001 | .73888 | .00437 | .00947 | .09220 |
| 2550 | .00893 | .00888 | .05695 | .00121 | .00001 | .00152 | .06122 | .00000 | .01675 | .00001 | .73654 | .00555 | .01089 | .09153 |
| 2600 | .00891 | .01098 | .05467 | .00165 | .00001 | .00188 | .05969 | .00000 | .01808 | .00001 | .73388 | .00697 | .01244 | .09084 |
| 2650 | .00888 | .01335 | .05209 | .00222 | .00001 | .00228 | .05796 | .00000 | .01944 | .00001 | .73087 | .00869 | .01409 | .09010 |
| 2700 | .00885 | .01596 | .04925 | .00295 | .00001 | .00274 | .05601 | .00000 | .02083 | .00001 | .72751 | .01073 | .01584 | .08931 |
| 2750 | .00881 | .01878 | .04616 | .00387 | .00002 | .00324 | .05385 | .00000 | .02224 | .00001 | .72378 | .01314 | .01766 | .08843 |
| 2800 | .00877 | .02174 | .04291 | .00501 | .00002 | .00380 | .05148 | .00000 | .02366 | .00001 | .71968 | .01596 | .01954 | .08742 |
| 2850 | .00873 | .02478 | .03953 | .00641 | .00002 | .00439 | .04889 | .00000 | .02508 | .00001 | .71522 | .01924 | .02144 | .08627 |
| 2900 | .00868 | .02783 | .03611 | .00809 | .00002 | .00502 | .04609 | .00001 | .02647 | .00001 | .71041 | .02301 | .02333 | .08492 |
| 2950 | .00863 | .03083 | .03272 | .01010 | .00002 | .00566 | .04312 | .00001 | .02784 | .00001 | .70525 | .02730 | .02516 | .08335 |
| 3000 | .00857 | .03372 | .02940 | .01246 | .00002 | .00630 | .03998 | .00001 | .02916 | .00001 | .69977 | .03215 | .02690 | .08155 |

TABLE 13.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.033499; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00001 | .00000 | .75366 | .00000 | .00000 | .10109 |
| 950 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00001 | .00000 | .75366 | .00000 | .00000 | .10108 |
| 1000 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00002 | .00000 | .75365 | .00000 | .00000 | .10108 |
| 1050 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00004 | .00000 | .75364 | .00000 | .00000 | .10107 |
| 1100 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00006 | .00000 | .75363 | .00000 | .00000 | .10106 |
| 1150 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00010 | .00000 | .75361 | .00000 | .00000 | .10104 |
| 1200 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00015 | .00001 | .75359 | .00000 | .00000 | .10101 |
| 1250 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00021 | .00001 | .75356 | .00000 | .00000 | .10098 |
| 1300 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00029 | .00001 | .75352 | .00000 | .00000 | .10094 |
| 1350 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00040 | .00001 | .75346 | .00000 | .00001 | .10088 |
| 1400 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00053 | .00001 | .75339 | .00000 | .00001 | .10081 |
| 1450 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06959 | .00070 | .00001 | .75331 | .00000 | .00002 | .10073 |
| 1500 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06959 | .00090 | .00001 | .75321 | .00000 | .00003 | .10063 |
| 1550 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06958 | .00113 | .00001 | .75309 | .00000 | .00005 | .10050 |
| 1600 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06957 | .00141 | .00001 | .75294 | .00000 | .00007 | .10036 |
| 1650 | .00904 | .00000 | .06659 | .00000 | .00000 | .00000 | .06955 | .00173 | .00001 | .75278 | .00000 | .00010 | .10019 |
| 1700 | .00904 | .00000 | .06659 | .00000 | .00000 | .00000 | .06953 | .00210 | .00001 | .75258 | .00000 | .00014 | .09999 |
| 1750 | .00904 | .00001 | .06659 | .00000 | .00000 | .00000 | .06950 | .00252 | .00001 | .75236 | .00001 | .00020 | .09977 |
| 1800 | .00904 | .00001 | .06658 | .00000 | .00000 | .00000 | .06946 | .00299 | .00002 | .75211 | .00001 | .00027 | .09951 |
| 1850 | .00904 | .00002 | .06657 | .00000 | .00000 | .00001 | .06941 | .00351 | .00002 | .75182 | .00002 | .00037 | .09922 |
| 1900 | .00904 | .00004 | .06655 | .00000 | .00000 | .00001 | .06934 | .00409 | .00002 | .75150 | .00003 | .00048 | .09890 |
| 1950 | .00904 | .00006 | .06653 | .00000 | .00000 | .00001 | .06926 | .00473 | .00002 | .75114 | .00004 | .00063 | .09854 |
| 2000 | .00904 | .00009 | .06649 | .00000 | .00000 | .00002 | .06916 | .00542 | .00002 | .75073 | .00007 | .00081 | .09815 |
| 2050 | .00904 | .00013 | .06644 | .00000 | .00001 | .00003 | .06903 | .00618 | .00002 | .75028 | .00010 | .00102 | .09772 |
| 2100 | .00903 | .00019 | .06637 | .00001 | .00001 | .00004 | .06888 | .00699 | .00002 | .74978 | .00014 | .00128 | .09725 |
| 2150 | .00903 | .00028 | .06627 | .00001 | .00001 | .00006 | .06870 | .00786 | .00002 | .74923 | .00019 | .00158 | .09675 |
| 2200 | .00903 | .00040 | .06614 | .00002 | .00001 | .00008 | .06848 | .00879 | .00002 | .74861 | .00026 | .00194 | .09621 |
| 2250 | .00903 | .00056 | .06596 | .00002 | .00001 | .00011 | .06822 | .00978 | .00002 | .74793 | .00036 | .00236 | .09563 |
| 2300 | .00903 | .00077 | .06573 | .00004 | .00001 | .00014 | .06792 | .01082 | .00002 | .74717 | .00048 | .00284 | .09502 |
| 2350 | .00902 | .00105 | .06543 | .00005 | .00001 | .00019 | .06756 | .01192 | .00002 | .74633 | .00064 | .00338 | .09439 |
| 2400 | .00902 | .00141 | .06504 | .00008 | .00001 | .00025 | .06715 | .01307 | .00003 | .74539 | .00083 | .00400 | .09372 |
| 2450 | .00901 | .00186 | .06455 | .00011 | .00002 | .00032 | .06667 | .01427 | .00003 | .74435 | .00108 | .00470 | .09303 |
| 2500 | .00901 | .00242 | .06394 | .00016 | .00002 | .00041 | .06612 | .01552 | .00003 | .74319 | .00138 | .00548 | .09232 |
| 2550 | .00900 | .00311 | .06319 | .00022 | .00002 | .00052 | .06549 | .01682 | .00003 | .74190 | .00176 | .00634 | .09160 |
| 2600 | .00899 | .00395 | .06228 | .00031 | .00002 | .00064 | .06478 | .01817 | .00003 | .74047 | .00221 | .00729 | .09087 |
| 2650 | .00898 | .00496 | .06120 | .00042 | .00003 | .00080 | .06397 | .01955 | .00003 | .73888 | .00275 | .00832 | .09012 |
| 2700 | .00897 | .00614 | .05992 | .00056 | .00003 | .00097 | .06306 | .02098 | .00003 | .73712 | .00339 | .00945 | .08938 |
| 2750 | .00895 | .00751 | .05845 | .00074 | .00003 | .00118 | .06204 | .02244 | .00003 | .73517 | .00416 | .01067 | .08863 |
| 2800 | .00894 | .00907 | .05676 | .00097 | .00003 | .00142 | .06091 | .02394 | .00003 | .73303 | .00506 | .01197 | .08787 |
| 2850 | .00892 | .01082 | .05487 | .00126 | .00004 | .00169 | .05965 | .02547 | .00003 | .73069 | .00611 | .01335 | .08710 |
| 2900 | .00890 | .01276 | .05278 | .00161 | .00004 | .00199 | .05828 | .02702 | .00003 | .72813 | .00733 | .01481 | .08632 |
| 2950 | .00887 | .01486 | .05050 | .00205 | .00004 | .00233 | .05677 | .02860 | .00003 | .72536 | .00874 | .01634 | .08550 |
| 3000 | .00885 | .01711 | .04806 | .00258 | .00004 | .00270 | .05514 | .03018 | .00003 | .72237 | .01036 | .01793 | .08465 |

TABLE 13.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.033499; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5008; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06961 | .00001 | .00000 | .75366 | .00000 | .00000 | .00000 | .10109 |
| 950 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06961 | .00001 | .00001 | .75366 | .00000 | .00000 | .00000 | .10108 |
| 1000 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06961 | .00002 | .00001 | .75365 | .00000 | .00000 | .00000 | .10108 |
| 1050 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06961 | .00004 | .00001 | .75364 | .00000 | .00000 | .00000 | .10107 |
| 1100 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06961 | .00006 | .00001 | .75363 | .00000 | .00000 | .00000 | .10105 |
| 1150 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06961 | .00010 | .00001 | .75361 | .00000 | .00000 | .00000 | .10103 |
| 1200 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00015 | .00001 | .75359 | .00000 | .00000 | .00000 | .10101 |
| 1250 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00021 | .00001 | .75356 | .00000 | .00000 | .00000 | .10097 |
| 1300 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00029 | .00002 | .75352 | .00000 | .00000 | .00000 | .10093 |
| 1350 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00040 | .00002 | .75346 | .00000 | .00000 | .00000 | .10087 |
| 1400 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00053 | .00002 | .75339 | .00000 | .00000 | .00001 | .10081 |
| 1450 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06960 | .00070 | .00002 | .75331 | .00000 | .00000 | .00001 | .10072 |
| 1500 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06959 | .00090 | .00002 | .75321 | .00000 | .00000 | .00002 | .10062 |
| 1550 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06959 | .00113 | .00002 | .75309 | .00000 | .00000 | .00003 | .10049 |
| 1600 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06958 | .00141 | .00003 | .75295 | .00000 | .00000 | .00005 | .10035 |
| 1650 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06957 | .00173 | .00003 | .75278 | .00000 | .00000 | .00007 | .10018 |
| 1700 | .00904 | .00000 | .06660 | .00000 | .00000 | .00000 | .06955 | .00210 | .00003 | .75259 | .00000 | .00000 | .00010 | .09999 |
| 1750 | .00904 | .00000 | .06659 | .00000 | .00000 | .00000 | .06953 | .00252 | .00003 | .75237 | .00000 | .00000 | .00013 | .09977 |
| 1800 | .00904 | .00001 | .06659 | .00000 | .00000 | .00000 | .06951 | .00299 | .00003 | .75213 | .00000 | .00001 | .00018 | .09951 |
| 1850 | .00904 | .00001 | .06658 | .00000 | .00000 | .00000 | .06947 | .00351 | .00004 | .75185 | .00000 | .00001 | .00025 | .09923 |
| 1900 | .00904 | .00002 | .06658 | .00000 | .00000 | .00000 | .06943 | .00409 | .00004 | .75154 | .00000 | .00001 | .00032 | .09892 |
| 1950 | .00904 | .00003 | .06657 | .00000 | .00001 | .00001 | .06938 | .00473 | .00004 | .75120 | .00000 | .00002 | .00042 | .09857 |
| 2000 | .00904 | .00004 | .06655 | .00000 | .00001 | .00001 | .06931 | .00542 | .00004 | .75082 | .00000 | .00003 | .00054 | .09819 |
| 2050 | .00904 | .00006 | .06653 | .00000 | .00001 | .00001 | .06923 | .00618 | .00004 | .75040 | .00000 | .00004 | .00068 | .09777 |
| 2100 | .00904 | .00009 | .06649 | .00000 | .00001 | .00002 | .06913 | .00699 | .00005 | .74994 | .00000 | .00006 | .00086 | .09732 |
| 2150 | .00904 | .00013 | .06645 | .00000 | .00001 | .00003 | .06902 | .00787 | .00005 | .74943 | .00000 | .00009 | .00106 | .09683 |
| 2200 | .00903 | .00018 | .06639 | .00000 | .00001 | .00004 | .06888 | .00880 | .00005 | .74889 | .00000 | .00012 | .00130 | .09631 |
| 2250 | .00903 | .00025 | .06631 | .00001 | .00002 | .00005 | .06871 | .00979 | .00005 | .74829 | .00000 | .00016 | .00158 | .09575 |
| 2300 | .00903 | .00035 | .06620 | .00001 | .00002 | .00006 | .06852 | .01083 | .00005 | .74764 | .00000 | .00022 | .00191 | .09516 |
| 2350 | .00903 | .00047 | .06606 | .00002 | .00002 | .00009 | .06830 | .01193 | .00005 | .74694 | .00000 | .00029 | .00227 | .09453 |
| 2400 | .00903 | .00064 | .06588 | .00002 | .00002 | .00011 | .06804 | .01309 | .00006 | .74617 | .00000 | .00037 | .00269 | .09387 |
| 2450 | .00903 | .00084 | .06565 | .00003 | .00003 | .00015 | .06774 | .01429 | .00006 | .74534 | .00000 | .00048 | .00317 | .09318 |
| 2500 | .00902 | .00111 | .06537 | .00005 | .00003 | .00019 | .06740 | .01555 | .00006 | .74444 | .00001 | .00062 | .00370 | .09247 |
| 2550 | .00902 | .00143 | .06501 | .00007 | .00003 | .00024 | .06701 | .01685 | .00006 | .74346 | .00001 | .00079 | .00429 | .09173 |
| 2600 | .00901 | .00183 | .06458 | .00009 | .00003 | .00030 | .06658 | .01820 | .00006 | .74240 | .00001 | .00099 | .00494 | .09097 |
| 2650 | .00901 | .00232 | .06405 | .00013 | .00004 | .00037 | .06609 | .01959 | .00006 | .74125 | .00001 | .00123 | .00566 | .09020 |
| 2700 | .00900 | .00291 | .06342 | .00017 | .00004 | .00045 | .06554 | .02102 | .00006 | .74000 | .00001 | .00152 | .00644 | .08942 |
| 2750 | .00899 | .00360 | .06267 | .00023 | .00005 | .00055 | .06492 | .02250 | .00007 | .73864 | .00001 | .00186 | .00730 | .08862 |
| 2800 | .00899 | .00442 | .06179 | .00030 | .00005 | .00067 | .06424 | .02400 | .00007 | .73717 | .00001 | .00226 | .00822 | .08782 |
| 2850 | .00898 | .00536 | .06077 | .00039 | .00005 | .00080 | .06349 | .02554 | .00007 | .73558 | .00001 | .00273 | .00921 | .08701 |
| 2900 | .00896 | .00645 | .05960 | .00050 | .00006 | .00096 | .06266 | .02711 | .00007 | .73386 | .00001 | .00328 | .01027 | .08621 |
| 2950 | .00895 | .00767 | .05828 | .00064 | .00006 | .00113 | .06175 | .02871 | .00007 | .73201 | .00001 | .00391 | .01139 | .08540 |
| 3000 | .00894 | .00905 | .05681 | .00081 | .00007 | .00133 | .06076 | .03033 | .00007 | .73001 | .00001 | .00463 | .01258 | .08460 |

TABLE 13C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.033499; EQUIV.RATIO = 0.500; CHEM. EQUIV. RATIO $\bar{\nu}$ 0.5008;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00904 | .06660 | .06946 | .00000 | .00015 | .75366 | .10109 |
| 220 | .00904 | .06660 | .06717 | .00000 | .00243 | .75366 | .10109 |
| 240 | .00904 | .06660 | .04398 | .00000 | .02562 | .75366 | .10109 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00904 | .06660 | .06959 | .00000 | .00001 | .75366 | .10109 |
| 220 | .00904 | .06660 | .06936 | .00000 | .00024 | .75366 | .10109 |
| 240 | .00904 | .06660 | .06710 | .00000 | .00250 | .75366 | .10109 |
| 260 | .00904 | .06660 | .05134 | .00000 | .01826 | .75366 | .10109 |
| 280 | .00904 | .06660 | .00000 | .00000 | .06960 | .75366 | .10109 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00904 | .06660 | .06960 | .00000 | .00000 | .75366 | .10109 |
| 220 | .00904 | .06660 | .06958 | .00000 | .00002 | .75366 | .10109 |
| 240 | .00904 | .06660 | .06936 | .00000 | .00025 | .75366 | .10109 |
| 260 | .00904 | .06660 | .06781 | .00000 | .00179 | .75366 | .10109 |
| 280 | .00904 | .06660 | .00000 | .06045 | .00916 | .75366 | .10109 |
| 298 | .00904 | .06660 | .00000 | .03972 | .02988 | .75366 | .10109 |
| 300 | .00904 | .06660 | .00000 | .03614 | .03346 | .75366 | .10109 |
| 320 | .00904 | .06660 | .00000 | .00000 | .06960 | .75366 | .10109 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00904 | .06660 | .06960 | .00000 | .00000 | .75366 | .10109 |
| 220 | .00904 | .06660 | .06960 | .00000 | .00000 | .75366 | .10109 |
| 240 | .00904 | .06660 | .06958 | .00000 | .00002 | .75366 | .10109 |
| 260 | .00904 | .06660 | .06943 | .00000 | .00018 | .75366 | .10109 |
| 280 | .00904 | .06660 | .00000 | .06870 | .00091 | .75366 | .10109 |
| 298 | .00904 | .06660 | .00000 | .06670 | .00290 | .75366 | .10109 |
| 300 | .00904 | .06660 | .00000 | .06636 | .00324 | .75366 | .10109 |
| 320 | .00904 | .06660 | .00000 | .05989 | .00971 | .75366 | .10109 |
| 340 | .00904 | .06660 | .00000 | .04422 | .02538 | .75366 | .10109 |
| 360 | .00904 | .06660 | .00000 | .00973 | .05988 | .75366 | .10109 |
| 380 | .00904 | .06660 | .00000 | .00000 | .06960 | .75366 | .10109 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00904 | .06660 | .06960 | .00000 | .00000 | .75366 | .10109 |
| 220 | .00904 | .06660 | .06960 | .00000 | .00000 | .75366 | .10109 |
| 240 | .00904 | .06660 | .06960 | .00000 | .00000 | .75366 | .10109 |
| 260 | .00904 | .06660 | .06957 | .00000 | .00004 | .75366 | .10109 |
| 280 | .00904 | .06660 | .00000 | .06942 | .00018 | .75366 | .10109 |
| 298 | .00904 | .06660 | .00000 | .06903 | .00058 | .75366 | .10109 |
| 300 | .00904 | .06660 | .00000 | .06896 | .00065 | .75366 | .10109 |
| 320 | .00904 | .06660 | .00000 | .06768 | .00193 | .75366 | .10109 |
| 340 | .00904 | .06660 | .00000 | .06464 | .00497 | .75366 | .10109 |
| 360 | .00904 | .06660 | .00000 | .05822 | .01139 | .75366 | .10109 |
| 380 | .00904 | .06660 | .00000 | .04587 | .02374 | .75366 | .10109 |
| 400 | .00904 | .06660 | .00000 | .02373 | .04588 | .75366 | .10109 |
| 420 | .00904 | .06660 | .00000 | .00000 | .06960 | .75366 | .10109 |

TABLE 14.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.050248; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00888 | .00000 | .09804 | .00000 | .00000 | .10262 | .00000 | .00000 | .74077 | .00000 | .00000 | .04968 |
| 950 | .00888 | .00000 | .09804 | .00000 | .00000 | .10262 | .00000 | .00001 | .74077 | .00000 | .00000 | .04968 |
| 1000 | .00888 | .00000 | .09804 | .00000 | .00000 | .10262 | .00000 | .00002 | .74077 | .00000 | .00000 | .04967 |
| 1050 | .00888 | .00000 | .09804 | .00000 | .00000 | .10262 | .00000 | .00003 | .74076 | .00000 | .00000 | .04967 |
| 1100 | .00888 | .00000 | .09804 | .00000 | .00000 | .10262 | .00000 | .00004 | .74075 | .00000 | .00000 | .04966 |
| 1150 | .00888 | .00000 | .09804 | .00000 | .00000 | .10262 | .00000 | .00007 | .74074 | .00000 | .00000 | .04965 |
| 1200 | .00888 | .00000 | .09804 | .00000 | .00000 | .10262 | .00000 | .00010 | .74072 | .00000 | .00001 | .04963 |
| 1250 | .00888 | .00000 | .09804 | .00000 | .00000 | .10261 | .00000 | .00015 | .74070 | .00000 | .00001 | .04961 |
| 1300 | .00888 | .00000 | .09804 | .00000 | .00000 | .10261 | .00000 | .00020 | .74067 | .00000 | .00002 | .04957 |
| 1350 | .00888 | .00000 | .09803 | .00000 | .00000 | .10260 | .00000 | .00028 | .74063 | .00000 | .00004 | .04953 |
| 1400 | .00888 | .00000 | .09803 | .00000 | .00000 | .10258 | .00000 | .00037 | .74057 | .00000 | .00007 | .04948 |
| 1450 | .00888 | .00001 | .09802 | .00000 | .00000 | .10256 | .00000 | .00048 | .74050 | .00000 | .00011 | .04941 |
| 1500 | .00888 | .00002 | .09801 | .00000 | .00001 | .10252 | .00000 | .00062 | .74042 | .00001 | .00018 | .04933 |
| 1550 | .00888 | .00004 | .09798 | .00000 | .00002 | .10246 | .00000 | .00079 | .74030 | .00002 | .00027 | .04924 |
| 1600 | .00888 | .00009 | .09793 | .00000 | .00003 | .10237 | .00000 | .00098 | .74015 | .00003 | .00040 | .04913 |
| 1650 | .00888 | .00016 | .09784 | .00001 | .00005 | .10224 | .00000 | .00120 | .73996 | .00006 | .00058 | .04900 |
| 1700 | .00888 | .00030 | .09769 | .00001 | .00009 | .10206 | .00000 | .00145 | .73971 | .00010 | .00083 | .04888 |
| 1750 | .00888 | .00053 | .09744 | .00003 | .00015 | .10181 | .00000 | .00174 | .73936 | .00016 | .00114 | .04875 |
| 1800 | .00887 | .00089 | .09703 | .00006 | .00025 | .10145 | .00000 | .00207 | .73890 | .00027 | .00156 | .04865 |
| 1850 | .00887 | .00147 | .09640 | .00011 | .00039 | .10096 | .00000 | .00243 | .73827 | .00042 | .00208 | .04860 |
| 1900 | .00886 | .00234 | .09544 | .00019 | .00059 | .10030 | .00000 | .00284 | .73741 | .00065 | .00274 | .04863 |
| 1950 | .00885 | .00362 | .09404 | .00034 | .00088 | .09940 | .00000 | .00329 | .73625 | .00099 | .00356 | .04879 |
| 2000 | .00883 | .00542 | .09206 | .00058 | .00127 | .09821 | .00000 | .00380 | .73469 | .00147 | .00455 | .04912 |
| 2050 | .00881 | .00787 | .08938 | .00096 | .00180 | .09665 | .00000 | .00435 | .73263 | .00216 | .00574 | .04966 |
| 2100 | .00878 | .01105 | .08588 | .00154 | .00248 | .09463 | .00000 | .00497 | .72994 | .00310 | .00716 | .05045 |
| 2150 | .00875 | .01503 | .08150 | .00242 | .00334 | .09208 | .00000 | .00565 | .72654 | .00441 | .00881 | .05148 |
| 2200 | .00870 | .01976 | .07626 | .00371 | .00440 | .08890 | .00000 | .00639 | .72230 | .00617 | .01070 | .05270 |
| 2250 | .00864 | .02515 | .07024 | .00554 | .00564 | .08502 | .00000 | .00720 | .71716 | .00852 | .01283 | .05405 |
| 2300 | .00858 | .03103 | .06361 | .00808 | .00706 | .08038 | .00000 | .00806 | .71104 | .01162 | .01516 | .05539 |
| 2350 | .00850 | .03714 | .05661 | .01151 | .00862 | .07495 | .00000 | .00896 | .70390 | .01561 | .01762 | .05658 |
| 2400 | .00840 | .04325 | .04948 | .01602 | .01026 | .06872 | .00000 | .00989 | .69573 | .02066 | .02014 | .05744 |
| 2450 | .00830 | .04908 | .04250 | .02179 | .01190 | .06177 | .00000 | .01081 | .68652 | .02693 | .02258 | .05782 |
| 2500 | .00818 | .05441 | .03588 | .02895 | .01341 | .05423 | .00000 | .01169 | .67633 | .03456 | .02478 | .05757 |
| 2550 | .00805 | .05908 | .02979 | .03754 | .01466 | .04631 | .00000 | .01252 | .66526 | .04362 | .02657 | .05658 |
| 2600 | .00792 | .06300 | .02436 | .04751 | .01550 | .03831 | .00001 | .01325 | .65348 | .05415 | .02776 | .05476 |
| 2650 | .00777 | .06615 | .01963 | .05859 | .01581 | .03058 | .00001 | .01385 | .64124 | .06605 | .02822 | .05209 |
| 2700 | .00763 | .06857 | .01561 | .07039 | .01553 | .02346 | .00001 | .01429 | .62889 | .07916 | .02784 | .04862 |
| 2750 | .00748 | .07033 | .01226 | .08238 | .01467 | .01727 | .00002 | .01456 | .61679 | .09315 | .02663 | .04444 |
| 2800 | .00735 | .07156 | .00952 | .09397 | .01335 | .01220 | .00003 | .01463 | .60535 | .10762 | .02469 | .03974 |
| 2850 | .00722 | .07236 | .00733 | .10465 | .01171 | .00827 | .00004 | .01451 | .59487 | .12208 | .02222 | .03474 |
| 2900 | .00711 | .07286 | .00559 | .11404 | .00996 | .00541 | .00005 | .01421 | .58560 | .13603 | .01944 | .02969 |
| 2950 | .00701 | .07313 | .00424 | .12199 | .00825 | .00343 | .00008 | .01376 | .57764 | .14904 | .01659 | .02485 |
| 3000 | .00693 | .07325 | .00319 | .12850 | .00670 | .00213 | .00010 | .01317 | .57097 | .16078 | .01387 | .02040 |

TABLE 14.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.050248; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00000 | .74077 | .00000 | .00000 | .04968 |
| 950 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00001 | .74077 | .00000 | .00000 | .04968 |
| 1000 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00002 | .74077 | .00000 | .00000 | .04967 |
| 1050 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00003 | .74076 | .00000 | .00000 | .04967 |
| 1100 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00004 | .74075 | .00000 | .00000 | .04966 |
| 1150 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00007 | .74074 | .00000 | .00000 | .04965 |
| 1200 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00010 | .74072 | .00000 | .00000 | .04963 |
| 1250 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00015 | .74070 | .00000 | .00001 | .04961 |
| 1300 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10261 | .00000 | .00020 | .74067 | .00000 | .00001 | .04958 |
| 1350 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10261 | .00000 | .00028 | .74063 | .00000 | .00002 | .04954 |
| 1400 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10260 | .00000 | .00037 | .74058 | .00000 | .00004 | .04949 |
| 1450 | .00888 | .00000 | .09803 | .00000 | .00000 | .00000 | .10259 | .00000 | .00048 | .74052 | .00000 | .00006 | .04942 |
| 1500 | .00888 | .00001 | .09803 | .00000 | .00000 | .00000 | .10257 | .00000 | .00062 | .74044 | .00000 | .00010 | .04935 |
| 1550 | .00888 | .00001 | .09802 | .00000 | .00000 | .00001 | .10253 | .00000 | .00079 | .74034 | .00001 | .00015 | .04925 |
| 1600 | .00888 | .00003 | .09800 | .00000 | .00000 | .00001 | .10249 | .00000 | .00098 | .74023 | .00001 | .00023 | .04915 |
| 1650 | .00888 | .00005 | .09797 | .00000 | .00000 | .00002 | .10243 | .00000 | .00120 | .74008 | .00002 | .00033 | .04902 |
| 1700 | .00888 | .00009 | .09792 | .00000 | .00000 | .00003 | .10234 | .00000 | .00145 | .73990 | .00003 | .00046 | .04888 |
| 1750 | .00888 | .00017 | .09784 | .00001 | .00000 | .00005 | .10222 | .00000 | .00174 | .73968 | .00005 | .00064 | .04872 |
| 1800 | .00888 | .00028 | .09771 | .00001 | .00000 | .00008 | .10205 | .00000 | .00207 | .73941 | .00008 | .00088 | .04855 |
| 1850 | .00888 | .00047 | .09750 | .00002 | .00000 | .00012 | .10183 | .00000 | .00243 | .73906 | .00013 | .00117 | .04837 |
| 1900 | .00888 | .00076 | .09718 | .00003 | .00000 | .00019 | .10154 | .00000 | .00283 | .73863 | .00021 | .00155 | .04821 |
| 1950 | .00887 | .00119 | .09671 | .00006 | .00000 | .00028 | .10115 | .00000 | .00327 | .73807 | .00031 | .00201 | .04806 |
| 2000 | .00887 | .00181 | .09602 | .00010 | .00000 | .00042 | .10065 | .00000 | .00376 | .73737 | .00046 | .00257 | .04796 |
| 2050 | .00886 | .00269 | .09506 | .00017 | .00000 | .00060 | .10001 | .00000 | .00429 | .73646 | .00067 | .00326 | .04793 |
| 2100 | .00885 | .00391 | .09373 | .00028 | .00000 | .00084 | .09918 | .00000 | .00486 | .73532 | .00096 | .00407 | .04800 |
| 2150 | .00883 | .00554 | .09195 | .00045 | .00000 | .00116 | .09814 | .00000 | .00549 | .73386 | .00135 | .00503 | .04819 |
| 2200 | .00882 | .00765 | .08964 | .00070 | .00000 | .00158 | .09683 | .00000 | .00617 | .73204 | .00187 | .00615 | .04853 |
| 2250 | .00879 | .01031 | .08673 | .00107 | .00000 | .00210 | .09522 | .00000 | .00692 | .72980 | .00257 | .00745 | .04904 |
| 2300 | .00877 | .01354 | .08319 | .00159 | .00000 | .00273 | .09326 | .00000 | .00772 | .72706 | .00348 | .00894 | .04972 |
| 2350 | .00873 | .01735 | .07901 | .00232 | .00000 | .00350 | .09090 | .00000 | .00859 | .72378 | .00467 | .01061 | .05055 |
| 2400 | .00869 | .02167 | .07424 | .00331 | .00000 | .00439 | .08810 | .00000 | .00952 | .71992 | .00619 | .01248 | .05149 |
| 2450 | .00864 | .02643 | .06895 | .00465 | .00000 | .00542 | .08483 | .00000 | .01051 | .71544 | .00811 | .01452 | .05248 |
| 2500 | .00859 | .03150 | .06328 | .00641 | .00000 | .00658 | .08106 | .00000 | .01155 | .71034 | .01053 | .01672 | .05345 |
| 2550 | .00853 | .03672 | .05736 | .00869 | .00000 | .00785 | .07677 | .00000 | .01262 | .70460 | .01351 | .01904 | .05430 |
| 2600 | .00846 | .04194 | .05137 | .01157 | .00001 | .00919 | .07199 | .00000 | .01372 | .69823 | .01715 | .02142 | .05495 |
| 2650 | .00838 | .04701 | .04545 | .01516 | .00001 | .01059 | .06672 | .00000 | .01482 | .69123 | .02152 | .02379 | .05532 |
| 2700 | .00829 | .05177 | .03975 | .01954 | .00001 | .01197 | .06102 | .00000 | .01589 | .68364 | .02670 | .02608 | .05532 |
| 2750 | .00820 | .05613 | .03439 | .02479 | .00001 | .01329 | .05498 | .00001 | .01693 | .67548 | .03274 | .02817 | .05490 |
| 2800 | .00810 | .06000 | .02944 | .03093 | .00001 | .01446 | .04871 | .00001 | .01790 | .66681 | .03967 | .02996 | .05400 |
| 2850 | .00800 | .06333 | .02496 | .03795 | .00001 | .01541 | .04235 | .00001 | .01878 | .65772 | .04751 | .03136 | .05261 |
| 2900 | .00789 | .06612 | .02097 | .04580 | .00001 | .01607 | .03607 | .00002 | .01955 | .64830 | .05622 | .03226 | .05072 |
| 2950 | .00778 | .06839 | .01748 | .05433 | .00001 | .01637 | .03004 | .00003 | .02018 | .63870 | .06575 | .03260 | .04836 |
| 3000 | .00767 | .07016 | .01446 | .06336 | .00001 | .01630 | .02444 | .00003 | .02066 | .62906 | .07597 | .03233 | .04555 |

TABLE 14.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.050248; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO \approx 0.7504; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00000 | .00000 | .74077 | .00000 | .00000 | .04968 |
| 950 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00001 | .00000 | .74077 | .00000 | .00000 | .04968 |
| 1000 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00002 | .00000 | .74077 | .00000 | .00000 | .04967 |
| 1050 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00003 | .00000 | .74076 | .00000 | .00000 | .04967 |
| 1100 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00004 | .00000 | .74075 | .00000 | .00000 | .04966 |
| 1150 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00007 | .00000 | .74074 | .00000 | .00000 | .04965 |
| 1200 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00010 | .00000 | .74072 | .00000 | .00000 | .04963 |
| 1250 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00015 | .00000 | .74070 | .00000 | .00000 | .04961 |
| 1300 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00020 | .00000 | .74067 | .00000 | .00001 | .04958 |
| 1350 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10261 | .00000 | .00028 | .00000 | .74063 | .00000 | .00001 | .04954 |
| 1400 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10261 | .00000 | .00037 | .00000 | .74058 | .00000 | .00002 | .04949 |
| 1450 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10260 | .00000 | .00049 | .00000 | .74052 | .00000 | .00004 | .04943 |
| 1500 | .00888 | .00000 | .09803 | .00000 | .00000 | .00000 | .10259 | .00000 | .00062 | .00000 | .74045 | .00000 | .00006 | .04936 |
| 1550 | .00888 | .00000 | .09803 | .00000 | .00000 | .00000 | .10257 | .00000 | .00079 | .00000 | .74036 | .00000 | .00009 | .04927 |
| 1600 | .00888 | .00001 | .09803 | .00000 | .00000 | .00000 | .10255 | .00000 | .00098 | .00000 | .74026 | .00000 | .00013 | .04916 |
| 1650 | .00888 | .00002 | .09802 | .00000 | .00000 | .00001 | .10252 | .00000 | .00120 | .00000 | .74013 | .00001 | .00018 | .04904 |
| 1700 | .00888 | .00003 | .09800 | .00000 | .00000 | .00001 | .10247 | .00000 | .00145 | .00000 | .73998 | .00001 | .00026 | .04890 |
| 1750 | .00888 | .00005 | .09797 | .00000 | .00000 | .00002 | .10241 | .00000 | .00174 | .00000 | .73980 | .00002 | .00036 | .04874 |
| 1800 | .00888 | .00009 | .09793 | .00000 | .00000 | .00002 | .10233 | .00000 | .00207 | .00000 | .73960 | .00003 | .00049 | .04856 |
| 1850 | .00888 | .00015 | .09786 | .00000 | .00000 | .00004 | .10222 | .00000 | .00243 | .00000 | .73935 | .00004 | .00066 | .04836 |
| 1900 | .00888 | .00024 | .09776 | .00001 | .00000 | .00006 | .10208 | .00000 | .00283 | .00000 | .73906 | .00007 | .00087 | .04814 |
| 1950 | .00888 | .00038 | .09760 | .00001 | .00000 | .00009 | .10190 | .00000 | .00327 | .00000 | .73871 | .00010 | .00113 | .04792 |
| 2000 | .00888 | .00058 | .09738 | .00002 | .00000 | .00013 | .10167 | .00000 | .00375 | .00000 | .73830 | .00015 | .00145 | .04769 |
| 2050 | .00887 | .00087 | .09705 | .00003 | .00000 | .00019 | .10138 | .00000 | .00427 | .00000 | .73781 | .00021 | .00184 | .04746 |
| 2100 | .00887 | .00128 | .09660 | .00005 | .00000 | .00027 | .10101 | .00000 | .00483 | .00000 | .73722 | .00030 | .00230 | .04725 |
| 2150 | .00887 | .00185 | .09598 | .00008 | .00000 | .00038 | .10056 | .00000 | .00544 | .00000 | .73650 | .00042 | .00285 | .04707 |
| 2200 | .00886 | .00261 | .09515 | .00013 | .00000 | .00052 | .10000 | .00000 | .00609 | .00000 | .73564 | .00058 | .00349 | .04693 |
| 2250 | .00885 | .00362 | .09405 | .00020 | .00000 | .00071 | .09931 | .00000 | .00678 | .00000 | .73459 | .00079 | .00423 | .04685 |
| 2300 | .00884 | .00491 | .09264 | .00029 | .00000 | .00094 | .09848 | .00000 | .00753 | .00000 | .73334 | .00107 | .00509 | .04686 |
| 2350 | .00883 | .00654 | .09086 | .00043 | .00001 | .00123 | .09748 | .00000 | .00833 | .00000 | .73184 | .00142 | .00607 | .04696 |
| 2400 | .00881 | .00855 | .08867 | .00063 | .00001 | .00159 | .09628 | .00000 | .00918 | .00000 | .73006 | .00187 | .00718 | .04717 |
| 2450 | .00879 | .01096 | .08605 | .00090 | .00001 | .00202 | .09487 | .00000 | .01008 | .00000 | .72796 | .00244 | .00842 | .04750 |
| 2500 | .00877 | .01379 | .08296 | .00126 | .00001 | .00253 | .09321 | .00000 | .01105 | .00000 | .72552 | .00315 | .00981 | .04794 |
| 2550 | .00874 | .01702 | .07943 | .00173 | .00001 | .00312 | .09129 | .00000 | .01208 | .00000 | .72272 | .00404 | .01135 | .04847 |
| 2600 | .00871 | .02062 | .07548 | .00235 | .00001 | .00381 | .08909 | .00000 | .01316 | .00000 | .71953 | .00513 | .01303 | .04909 |
| 2650 | .00867 | .02454 | .07116 | .00315 | .00001 | .00458 | .08659 | .00000 | .01430 | .00000 | .71595 | .00645 | .01484 | .04975 |
| 2700 | .00863 | .02871 | .06654 | .00417 | .00001 | .00545 | .08378 | .00000 | .01548 | .00001 | .71197 | .00806 | .01679 | .05041 |
| 2750 | .00859 | .03304 | .06171 | .00544 | .00001 | .00639 | .08065 | .00000 | .01671 | .00001 | .70761 | .00998 | .01884 | .05103 |
| 2800 | .00854 | .03744 | .05676 | .00701 | .00001 | .00742 | .07720 | .00000 | .01796 | .00001 | .70286 | .01226 | .02097 | .05156 |
| 2850 | .00848 | .04182 | .05179 | .00892 | .00002 | .00850 | .07345 | .00000 | .01922 | .00001 | .69775 | .01493 | .02315 | .05195 |
| 2900 | .00843 | .04609 | .04688 | .01122 | .00002 | .00964 | .06940 | .00001 | .02049 | .00001 | .69228 | .01803 | .02534 | .05217 |
| 2950 | .00836 | .05017 | .04212 | .01395 | .00002 | .01080 | .06508 | .00001 | .02173 | .00001 | .68648 | .02160 | .02750 | .05218 |
| 3000 | .00830 | .05399 | .03757 | .01716 | .00002 | .01195 | .06052 | .00001 | .02295 | .00001 | .68036 | .02566 | .02956 | .05195 |

TABLE 14.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.050248; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00000 | .74077 | .00000 | .00000 | .04968 |
| 950 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00001 | .00000 | .74077 | .00000 | .00000 | .04968 |
| 1000 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00002 | .00000 | .74077 | .00000 | .00000 | .04967 |
| 1050 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00003 | .00000 | .74076 | .00000 | .00000 | .04967 |
| 1100 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00004 | .00000 | .74075 | .00000 | .00000 | .04966 |
| 1150 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00007 | .00000 | .74074 | .00000 | .00000 | .04965 |
| 1200 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00010 | .00000 | .74072 | .00000 | .00000 | .04963 |
| 1250 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00015 | .00000 | .74070 | .00000 | .00000 | .04961 |
| 1300 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00020 | .00000 | .74067 | .00000 | .00000 | .04958 |
| 1350 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00028 | .00000 | .74063 | .00000 | .00001 | .04954 |
| 1400 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00037 | .00000 | .74059 | .00000 | .00001 | .04949 |
| 1450 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10261 | .00049 | .00000 | .74053 | .00000 | .00002 | .04943 |
| 1500 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10260 | .00062 | .00000 | .74046 | .00000 | .00003 | .04936 |
| 1550 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10260 | .00079 | .00001 | .74037 | .00000 | .00005 | .04927 |
| 1600 | .00888 | .00000 | .09803 | .00000 | .00000 | .00000 | .10258 | .00098 | .00001 | .74027 | .00000 | .00007 | .04917 |
| 1650 | .00888 | .00001 | .09803 | .00000 | .00000 | .00000 | .10256 | .00120 | .00001 | .74015 | .00000 | .00010 | .04905 |
| 1700 | .00888 | .00001 | .09802 | .00000 | .00000 | .00000 | .10254 | .00145 | .00001 | .74001 | .00000 | .00015 | .04891 |
| 1750 | .00888 | .00002 | .09801 | .00000 | .00000 | .00000 | .10251 | .00174 | .00001 | .73985 | .00001 | .00020 | .04876 |
| 1800 | .00888 | .00003 | .09800 | .00000 | .00000 | .00001 | .10246 | .00207 | .00001 | .73967 | .00001 | .00028 | .04858 |
| 1850 | .00888 | .00005 | .09798 | .00000 | .00000 | .00001 | .10241 | .00243 | .00001 | .73946 | .00001 | .00037 | .04838 |
| 1900 | .00888 | .00008 | .09794 | .00000 | .00000 | .00002 | .10234 | .00283 | .00001 | .73922 | .00002 | .00049 | .04816 |
| 1950 | .00888 | .00012 | .09789 | .00000 | .00000 | .00003 | .10225 | .00327 | .00001 | .73895 | .00003 | .00064 | .04792 |
| 2000 | .00888 | .00018 | .09782 | .00000 | .00000 | .00004 | .10213 | .00375 | .00001 | .73864 | .00005 | .00082 | .04767 |
| 2050 | .00888 | .00028 | .09771 | .00001 | .00000 | .00006 | .10199 | .00427 | .00001 | .73829 | .00007 | .00104 | .04739 |
| 2100 | .00888 | .00041 | .09757 | .00001 | .00000 | .00009 | .10181 | .00483 | .00001 | .73790 | .00009 | .00130 | .04710 |
| 2150 | .00888 | .00060 | .09736 | .00001 | .00001 | .00012 | .10160 | .00543 | .00001 | .73744 | .00013 | .00161 | .04681 |
| 2200 | .00887 | .00085 | .09708 | .00002 | .00001 | .00017 | .10134 | .00606 | .00001 | .73692 | .00018 | .00197 | .04651 |
| 2250 | .00887 | .00118 | .09671 | .00004 | .00001 | .00023 | .10103 | .00674 | .00001 | .73632 | .00025 | .00239 | .04621 |
| 2300 | .00887 | .00163 | .09622 | .00005 | .00001 | .00031 | .10065 | .00747 | .00001 | .73564 | .00033 | .00288 | .04593 |
| 2350 | .00886 | .00221 | .09559 | .00008 | .00001 | .00041 | .10020 | .00823 | .00001 | .73485 | .00044 | .00344 | .04567 |
| 2400 | .00886 | .00295 | .09479 | .00012 | .00001 | .00053 | .09968 | .00903 | .00001 | .73394 | .00058 | .00407 | .04545 |
| 2450 | .00885 | .00387 | .09378 | .00016 | .00001 | .00068 | .09905 | .00988 | .00001 | .73289 | .00075 | .00478 | .04527 |
| 2500 | .00884 | .00501 | .09254 | .00023 | .00001 | .00087 | .09833 | .01077 | .00001 | .73169 | .00097 | .00558 | .04514 |
| 2550 | .00883 | .00640 | .09103 | .00032 | .00001 | .00109 | .09748 | .01171 | .00001 | .73031 | .00123 | .00648 | .04508 |
| 2600 | .00882 | .00804 | .08924 | .00045 | .00002 | .00136 | .09651 | .01270 | .00001 | .72874 | .00155 | .00747 | .04510 |
| 2650 | .00880 | .00997 | .08715 | .00060 | .00002 | .00168 | .09540 | .01373 | .00001 | .72695 | .00195 | .00855 | .04518 |
| 2700 | .00878 | .01219 | .08474 | .00081 | .00002 | .00204 | .09413 | .01482 | .00001 | .72495 | .00242 | .00975 | .04535 |
| 2750 | .00876 | .01469 | .08201 | .00107 | .00002 | .00246 | .09270 | .01596 | .00001 | .72270 | .00298 | .01104 | .04558 |
| 2800 | .00874 | .01747 | .07899 | .00139 | .00002 | .00293 | .09110 | .01715 | .00002 | .72021 | .00366 | .01244 | .04588 |
| 2850 | .00872 | .02049 | .07568 | .00180 | .00003 | .00347 | .08932 | .01839 | .00002 | .71748 | .00445 | .01394 | .04622 |
| 2900 | .00869 | .02373 | .07213 | .00230 | .00003 | .00406 | .08735 | .01967 | .00002 | .71449 | .00539 | .01554 | .04660 |
| 2950 | .00866 | .02714 | .06838 | .00291 | .00003 | .00471 | .08519 | .02099 | .00002 | .71127 | .00648 | .01723 | .04698 |
| 3000 | .00862 | .03069 | .06447 | .00365 | .00003 | .00542 | .08284 | .02234 | .00002 | .70781 | .00775 | .01900 | .04735 |

TABLE 14.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.050248; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00000 | .00000 | .74077 | .00000 | .00000 | .00000 | .04968 |
| 950 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00001 | .00000 | .74077 | .00000 | .00000 | .00000 | .04967 |
| 1000 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00002 | .00000 | .74077 | .00000 | .00000 | .00000 | .04967 |
| 1050 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00003 | .00000 | .74076 | .00000 | .00000 | .00000 | .04966 |
| 1100 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00004 | .00000 | .74075 | .00000 | .00000 | .00000 | .04966 |
| 1150 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00007 | .00000 | .74074 | .00000 | .00000 | .00000 | .04964 |
| 1200 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00010 | .00001 | .74072 | .00000 | .00000 | .00000 | .04963 |
| 1250 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00015 | .00001 | .74070 | .00000 | .00000 | .00000 | .04960 |
| 1300 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00020 | .00001 | .74067 | .00000 | .00000 | .00000 | .04957 |
| 1350 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00028 | .00001 | .74063 | .00000 | .00000 | .00001 | .04953 |
| 1400 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10262 | .00037 | .00001 | .74059 | .00000 | .00000 | .00001 | .04949 |
| 1450 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10261 | .00049 | .00001 | .74053 | .00000 | .00000 | .00001 | .04943 |
| 1500 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10261 | .00062 | .00001 | .74046 | .00000 | .00000 | .00002 | .04935 |
| 1550 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10260 | .00079 | .00001 | .74037 | .00000 | .00000 | .00003 | .04927 |
| 1600 | .00888 | .00000 | .09804 | .00000 | .00000 | .00000 | .10260 | .00098 | .00001 | .74027 | .00000 | .00000 | .00005 | .04917 |
| 1650 | .00888 | .00000 | .09803 | .00000 | .00000 | .00000 | .10258 | .00120 | .00001 | .74016 | .00000 | .00000 | .00007 | .04905 |
| 1700 | .00888 | .00000 | .09803 | .00000 | .00000 | .00000 | .10257 | .00145 | .00001 | .74002 | .00000 | .00000 | .00010 | .04891 |
| 1750 | .00888 | .00001 | .09803 | .00000 | .00000 | .00000 | .10255 | .00174 | .00002 | .73987 | .00000 | .00000 | .00014 | .04876 |
| 1800 | .00888 | .00001 | .09802 | .00000 | .00000 | .00000 | .10252 | .00207 | .00002 | .73970 | .00000 | .00000 | .00019 | .04859 |
| 1850 | .00888 | .00002 | .09801 | .00000 | .00000 | .00001 | .10248 | .00243 | .00002 | .73950 | .00000 | .00001 | .00025 | .04839 |
| 1900 | .00888 | .00003 | .09799 | .00000 | .00000 | .00001 | .10244 | .00283 | .00002 | .73928 | .00000 | .00001 | .00033 | .04817 |
| 1950 | .00888 | .00005 | .09797 | .00000 | .00000 | .00001 | .10238 | .00327 | .00002 | .73903 | .00000 | .00001 | .00043 | .04794 |
| 2000 | .00888 | .00008 | .09794 | .00000 | .00000 | .00002 | .10231 | .00375 | .00002 | .73875 | .00000 | .00002 | .00055 | .04768 |
| 2050 | .00888 | .00012 | .09789 | .00000 | .00001 | .00003 | .10222 | .00427 | .00002 | .73844 | .00000 | .00003 | .00069 | .04740 |
| 2100 | .00888 | .00018 | .09782 | .00000 | .00001 | .00004 | .10211 | .00483 | .00002 | .73810 | .00000 | .00004 | .00087 | .04710 |
| 2150 | .00888 | .00027 | .09773 | .00000 | .00001 | .00005 | .10198 | .00542 | .00002 | .73772 | .00000 | .00006 | .00108 | .04678 |
| 2200 | .00888 | .00038 | .09760 | .00001 | .00001 | .00008 | .10182 | .00606 | .00002 | .73729 | .00000 | .00008 | .00132 | .04645 |
| 2250 | .00888 | .00053 | .09743 | .00001 | .00001 | .00010 | .10163 | .00674 | .00002 | .73682 | .00000 | .00011 | .00160 | .04611 |
| 2300 | .00888 | .00074 | .09720 | .00002 | .00001 | .00014 | .10140 | .00745 | .00003 | .73630 | .00000 | .00015 | .00193 | .04575 |
| 2350 | .00887 | .00100 | .09691 | .00002 | .00001 | .00018 | .10114 | .00821 | .00003 | .73572 | .00000 | .00020 | .00230 | .04540 |
| 2400 | .00887 | .00135 | .09653 | .00003 | .00002 | .00024 | .10083 | .00900 | .00003 | .73506 | .00000 | .00026 | .00273 | .04505 |
| 2450 | .00887 | .00178 | .09605 | .00005 | .00002 | .00031 | .10046 | .00983 | .00003 | .73434 | .00000 | .00033 | .00321 | .04471 |
| 2500 | .00886 | .00233 | .09546 | .00007 | .00002 | .00040 | .10004 | .01069 | .00003 | .73352 | .00000 | .00043 | .00375 | .04439 |
| 2550 | .00886 | .00301 | .09472 | .00010 | .00002 | .00050 | .09955 | .01160 | .00003 | .73261 | .00000 | .00054 | .00435 | .04410 |
| 2600 | .00885 | .00384 | .09382 | .00014 | .00002 | .00063 | .09900 | .01254 | .00003 | .73159 | .00000 | .00069 | .00502 | .04384 |
| 2650 | .00884 | .00483 | .09274 | .00018 | .00003 | .00079 | .09836 | .01352 | .00003 | .73044 | .00000 | .00085 | .00576 | .04362 |
| 2700 | .00883 | .00601 | .09146 | .00025 | .00003 | .00097 | .09764 | .01455 | .00003 | .72917 | .00000 | .00106 | .00657 | .04344 |
| 2750 | .00882 | .00739 | .08996 | .00033 | .00003 | .00118 | .09682 | .01561 | .00003 | .72775 | .00001 | .00130 | .00745 | .04332 |
| 2800 | .00881 | .00899 | .08823 | .00043 | .00004 | .00142 | .09590 | .01672 | .00003 | .72617 | .00001 | .00159 | .00841 | .04326 |
| 2850 | .00880 | .01080 | .08626 | .00056 | .00004 | .00170 | .09487 | .01787 | .00003 | .72443 | .00001 | .00193 | .00945 | .04325 |
| 2900 | .00878 | .01283 | .08406 | .00073 | .00004 | .00202 | .09373 | .01907 | .00003 | .72252 | .00001 | .00232 | .01057 | .04330 |
| 2950 | .00876 | .01508 | .08162 | .00093 | .00005 | .00238 | .09246 | .02030 | .00003 | .72043 | .00001 | .00279 | .01177 | .04340 |
| 3000 | .00874 | .01752 | .07895 | .00117 | .00005 | .00278 | .09108 | .02158 | .00004 | .71816 | .00001 | .00332 | .01305 | .04354 |

TABLE 14C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.050248; EQUIV.RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7504;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00888 | .09804 | .10248 | .00000 | .00014 | .74077 | .04968 |
| 220 | .00888 | .09804 | .10028 | .00000 | .00235 | .74077 | .04968 |
| 240 | .00888 | .09804 | .07791 | .00000 | .02472 | .74077 | .04968 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00888 | .09804 | .10261 | .00000 | .00001 | .74077 | .04968 |
| 220 | .00888 | .09804 | .10239 | .00000 | .00023 | .74077 | .04968 |
| 240 | .00888 | .09804 | .10021 | .00000 | .00241 | .74077 | .04968 |
| 260 | .00888 | .09804 | .08501 | .00000 | .01761 | .74077 | .04968 |
| 280 | .00888 | .09804 | .00000 | .00572 | .09690 | .74077 | .04968 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00888 | .09804 | .10262 | .00000 | .00000 | .74077 | .04968 |
| 220 | .00888 | .09804 | .10260 | .00000 | .00002 | .74077 | .04968 |
| 240 | .00888 | .09804 | .10238 | .00000 | .00024 | .74077 | .04968 |
| 260 | .00888 | .09804 | .10089 | .00000 | .00173 | .74077 | .04968 |
| 280 | .00888 | .09804 | .00000 | .09379 | .00883 | .74077 | .04968 |
| 298 | .00888 | .09804 | .00000 | .07380 | .02882 | .74077 | .04968 |
| 300 | .00888 | .09804 | .00000 | .07035 | .03228 | .74077 | .04968 |
| 320 | .00888 | .09804 | .00000 | .00000 | .10262 | .74077 | .04968 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00888 | .09804 | .10262 | .00000 | .00000 | .74077 | .04968 |
| 220 | .00888 | .09804 | .10262 | .00000 | .00000 | .74077 | .04968 |
| 240 | .00888 | .09804 | .10260 | .00000 | .00002 | .74077 | .04968 |
| 260 | .00888 | .09804 | .10245 | .00000 | .00017 | .74077 | .04968 |
| 280 | .00888 | .09804 | .00000 | .10175 | .00088 | .74077 | .04968 |
| 298 | .00888 | .09804 | .00000 | .09982 | .00280 | .74077 | .04968 |
| 300 | .00888 | .09804 | .00000 | .09950 | .00313 | .74077 | .04968 |
| 320 | .00888 | .09804 | .00000 | .09325 | .00937 | .74077 | .04968 |
| 340 | .00888 | .09804 | .00000 | .07814 | .02448 | .74077 | .04968 |
| 360 | .00888 | .09804 | .00000 | .04487 | .05775 | .74077 | .04968 |
| 380 | .00888 | .09804 | .00000 | .00000 | .10262 | .74077 | .04968 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00888 | .09804 | .10262 | .00000 | .00000 | .74077 | .04968 |
| 220 | .00888 | .09804 | .10262 | .00000 | .00000 | .74077 | .04968 |
| 240 | .00888 | .09804 | .10262 | .00000 | .00000 | .74077 | .04968 |
| 260 | .00888 | .09804 | .10259 | .00000 | .00003 | .74077 | .04968 |
| 280 | .00888 | .09804 | .00000 | .10245 | .00017 | .74077 | .04968 |
| 298 | .00888 | .09804 | .00000 | .10206 | .00056 | .74077 | .04968 |
| 300 | .00888 | .09804 | .00000 | .10200 | .00062 | .74077 | .04968 |
| 320 | .00888 | .09804 | .00000 | .10076 | .00186 | .74077 | .04968 |
| 340 | .00888 | .09804 | .00000 | .09783 | .00479 | .74077 | .04968 |
| 360 | .00888 | .09804 | .00000 | .09164 | .01098 | .74077 | .04968 |
| 380 | .00888 | .09804 | .00000 | .07973 | .02290 | .74077 | .04968 |
| 400 | .00888 | .09804 | .00000 | .05837 | .04425 | .74077 | .04968 |
| 420 | .00888 | .09804 | .00000 | .02189 | .08073 | .74077 | .04968 |

TABLE 15.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.066997; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00874 | .00000 | .12842 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 950 | .00874 | .00000 | .12842 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1000 | .00874 | .00000 | .12842 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1050 | .00874 | .00000 | .12842 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1100 | .00874 | .00000 | .12842 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1150 | .00874 | .00000 | .12842 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00000 |
| 1200 | .00874 | .00001 | .12841 | .00000 | .00001 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00001 |
| 1250 | .00873 | .00002 | .12840 | .00000 | .00001 | .13451 | .00000 | .00000 | .72831 | .00000 | .00000 | .00001 |
| 1300 | .00873 | .00004 | .12838 | .00000 | .00002 | .13450 | .00000 | .00000 | .72829 | .00000 | .00000 | .00003 |
| 1350 | .00873 | .00007 | .12834 | .00000 | .00004 | .13448 | .00000 | .00001 | .72827 | .00000 | .00001 | .00005 |
| 1400 | .00873 | .00013 | .12827 | .00000 | .00006 | .13444 | .00000 | .00002 | .72824 | .00000 | .00002 | .00009 |
| 1450 | .00873 | .00023 | .12816 | .00000 | .00010 | .13438 | .00000 | .00003 | .72818 | .00000 | .00003 | .00015 |
| 1500 | .00873 | .00040 | .12799 | .00000 | .00016 | .13430 | .00000 | .00004 | .72808 | .00000 | .00005 | .00024 |
| 1550 | .00873 | .00065 | .12771 | .00000 | .00024 | .13417 | .00000 | .00007 | .72794 | .00000 | .00009 | .00039 |
| 1600 | .00873 | .00102 | .12730 | .00001 | .00036 | .13399 | .00000 | .00011 | .72773 | .00000 | .00015 | .00060 |
| 1650 | .00873 | .00157 | .12671 | .00002 | .00052 | .13373 | .00000 | .00016 | .72742 | .00001 | .00025 | .00090 |
| 1700 | .00872 | .00234 | .12586 | .00004 | .00073 | .13336 | .00000 | .00024 | .72698 | .00002 | .00038 | .00133 |
| 1750 | .00871 | .00341 | .12469 | .00007 | .00101 | .13286 | .00000 | .00034 | .72638 | .00003 | .00058 | .00190 |
| 1800 | .00870 | .00485 | .12312 | .00013 | .00137 | .13220 | .00000 | .00048 | .72556 | .00006 | .00086 | .00266 |
| 1850 | .00869 | .00674 | .12106 | .00023 | .00183 | .13131 | .00000 | .00066 | .72447 | .00012 | .00124 | .00364 |
| 1900 | .00868 | .00916 | .11841 | .00039 | .00241 | .13016 | .00000 | .00089 | .72305 | .00021 | .00176 | .00489 |
| 1950 | .00866 | .01220 | .11507 | .00064 | .00312 | .12867 | .00000 | .00118 | .72123 | .00036 | .00244 | .00644 |
| 2000 | .00863 | .01591 | .11099 | .00102 | .00399 | .12678 | .00000 | .00154 | .71892 | .00061 | .00331 | .00830 |
| 2050 | .00860 | .02033 | .10611 | .00160 | .00503 | .12440 | .00000 | .00198 | .71606 | .00099 | .00442 | .01049 |
| 2100 | .00856 | .02546 | .10040 | .00245 | .00628 | .12145 | .00000 | .00249 | .71255 | .00158 | .00578 | .01300 |
| 2150 | .00851 | .03126 | .09391 | .00369 | .00773 | .11784 | .00000 | .00309 | .70833 | .00244 | .00742 | .01579 |
| 2200 | .00846 | .03762 | .08672 | .00543 | .00939 | .11348 | .00000 | .00377 | .70331 | .00369 | .00934 | .01880 |
| 2250 | .00839 | .04440 | .07897 | .00784 | .01127 | .10827 | .00000 | .00452 | .69742 | .00543 | .01155 | .02193 |
| 2300 | .00831 | .05138 | .07086 | .01111 | .01333 | .10216 | .00000 | .00534 | .69061 | .00781 | .01401 | .02506 |
| 2350 | .00823 | .05835 | .06260 | .01545 | .01554 | .09511 | .00000 | .00621 | .68283 | .01099 | .01666 | .02804 |
| 2400 | .00813 | .06504 | .05443 | .02109 | .01779 | .08713 | .00000 | .00712 | .67404 | .01511 | .01939 | .03073 |
| 2450 | .00801 | .07125 | .04658 | .02823 | .01998 | .07830 | .00000 | .00803 | .66424 | .02034 | .02209 | .03296 |
| 2500 | .00789 | .07676 | .03924 | .03702 | .02194 | .06878 | .00000 | .00891 | .65346 | .02680 | .02457 | .03461 |
| 2550 | .00776 | .08147 | .03256 | .04754 | .02350 | .05884 | .00000 | .00975 | .64180 | .03458 | .02666 | .03554 |
| 2600 | .00761 | .08530 | .02662 | .05970 | .02448 | .04883 | .00001 | .01049 | .62944 | .04370 | .02816 | .03567 |
| 2650 | .00746 | .08826 | .02145 | .07325 | .02471 | .03914 | .00001 | .01112 | .61664 | .05411 | .02890 | .03495 |
| 2700 | .00731 | .09042 | .01706 | .08773 | .02413 | .03021 | .00001 | .01161 | .60374 | .06561 | .02876 | .03340 |
| 2750 | .00716 | .09189 | .01340 | .10256 | .02275 | .02240 | .00002 | .01192 | .59115 | .07792 | .02774 | .03110 |
| 2800 | .00702 | .09280 | .01040 | .11704 | .02071 | .01594 | .00003 | .01205 | .57928 | .09064 | .02591 | .02819 |
| 2850 | .00689 | .09330 | .00799 | .13054 | .01823 | .01089 | .00004 | .01201 | .56847 | .10331 | .02345 | .02488 |
| 2900 | .00678 | .09351 | .00609 | .14256 | .01557 | .00718 | .00005 | .01179 | .55898 | .11547 | .02062 | .02140 |
| 2950 | .00668 | .09354 | .00461 | .15286 | .01296 | .00458 | .00007 | .01142 | .55089 | .12674 | .01768 | .01797 |
| 3000 | .00659 | .09346 | .00347 | .16139 | .01057 | .00286 | .00010 | .01094 | .54419 | .13682 | .01483 | .01477 |

TABLE 15.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.066997; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 950 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1000 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1050 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1100 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1150 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1200 | .00874 | .00000 | .12841 | .00000 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00000 |
| 1250 | .00874 | .00001 | .12841 | .00000 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00000 |
| 1300 | .00873 | .00002 | .12840 | .00000 | .00000 | .00001 | .13451 | .00000 | .00000 | .72831 | .00000 | .00000 | .00001 |
| 1350 | .00873 | .00003 | .12838 | .00000 | .00000 | .00002 | .13450 | .00000 | .00001 | .72830 | .00000 | .00000 | .00002 |
| 1400 | .00873 | .00006 | .12835 | .00000 | .00000 | .00003 | .13449 | .00000 | .00001 | .72828 | .00000 | .00001 | .00004 |
| 1450 | .00873 | .00011 | .12830 | .00000 | .00000 | .00005 | .13446 | .00000 | .00002 | .72825 | .00000 | .00001 | .00007 |
| 1500 | .00873 | .00019 | .12822 | .00000 | .00000 | .00008 | .13442 | .00000 | .00003 | .72820 | .00000 | .00003 | .00011 |
| 1550 | .00873 | .00030 | .12809 | .00000 | .00000 | .00011 | .13436 | .00000 | .00005 | .72813 | .00000 | .00004 | .00018 |
| 1600 | .00873 | .00048 | .12789 | .00000 | .00000 | .00017 | .13428 | .00000 | .00007 | .72803 | .00000 | .00007 | .00027 |
| 1650 | .00873 | .00074 | .12761 | .00000 | .00000 | .00024 | .13415 | .00000 | .00011 | .72788 | .00000 | .00011 | .00041 |
| 1700 | .00873 | .00111 | .12721 | .00001 | .00000 | .00034 | .13399 | .00000 | .00016 | .72767 | .00000 | .00018 | .00060 |
| 1750 | .00873 | .00162 | .12665 | .00002 | .00000 | .00048 | .13376 | .00000 | .00023 | .72738 | .00001 | .00027 | .00087 |
| 1800 | .00872 | .00232 | .12590 | .00003 | .00000 | .00065 | .13345 | .00000 | .00032 | .72698 | .00001 | .00040 | .00122 |
| 1850 | .00872 | .00324 | .12489 | .00005 | .00000 | .00086 | .13305 | .00000 | .00045 | .72646 | .00002 | .00058 | .00168 |
| 1900 | .00871 | .00444 | .12359 | .00008 | .00000 | .00114 | .13252 | .00000 | .00061 | .72577 | .00004 | .00082 | .00227 |
| 1950 | .00870 | .00596 | .12192 | .00014 | .00000 | .00148 | .13185 | .00000 | .00081 | .72489 | .00008 | .00115 | .00302 |
| 2000 | .00869 | .00788 | .11984 | .00022 | .00000 | .00189 | .13100 | .00000 | .00107 | .72377 | .00013 | .00157 | .00395 |
| 2050 | .00867 | .01022 | .11727 | .00035 | .00000 | .00239 | .12993 | .00000 | .00138 | .72238 | .00022 | .00212 | .00507 |
| 2100 | .00865 | .01305 | .11418 | .00054 | .00000 | .00300 | .12861 | .00000 | .00176 | .72067 | .00035 | .00280 | .00640 |
| 2150 | .00863 | .01639 | .11051 | .00081 | .00000 | .00371 | .12700 | .00000 | .00221 | .71859 | .00055 | .00365 | .00796 |
| 2200 | .00861 | .02025 | .10626 | .00119 | .00000 | .00455 | .12504 | .00000 | .00274 | .71611 | .00084 | .00468 | .00974 |
| 2250 | .00857 | .02464 | .10140 | .00173 | .00000 | .00552 | .12269 | .00000 | .00334 | .71318 | .00126 | .00592 | .01174 |
| 2300 | .00854 | .02953 | .09598 | .00248 | .00000 | .00664 | .11991 | .00000 | .00404 | .70976 | .00184 | .00737 | .01392 |
| 2350 | .00849 | .03485 | .09003 | .00349 | .00000 | .00791 | .11664 | .00000 | .00481 | .70582 | .00265 | .00905 | .01626 |
| 2400 | .00845 | .04052 | .08364 | .00483 | .00000 | .00934 | .11283 | .00000 | .00566 | .70134 | .00373 | .01096 | .01870 |
| 2450 | .00839 | .04642 | .07693 | .00660 | .00000 | .01092 | .10846 | .00000 | .00659 | .69628 | .00515 | .01309 | .02118 |
| 2500 | .00833 | .05243 | .07001 | .00888 | .00000 | .01264 | .10348 | .00000 | .00757 | .69063 | .00700 | .01541 | .02362 |
| 2550 | .00826 | .05839 | .06304 | .01180 | .00000 | .01447 | .09790 | .00000 | .00860 | .68438 | .00934 | .01787 | .02594 |
| 2600 | .00818 | .06416 | .05616 | .01545 | .00000 | .01639 | .09170 | .00000 | .00966 | .67753 | .01226 | .02044 | .02807 |
| 2650 | .00810 | .06960 | .04949 | .01995 | .00000 | .01833 | .08494 | .00000 | .01073 | .67008 | .01583 | .02302 | .02992 |
| 2700 | .00801 | .07460 | .04317 | .02540 | .00000 | .02022 | .07768 | .00000 | .01179 | .66204 | .02012 | .02554 | .03142 |
| 2750 | .00791 | .07907 | .03728 | .03189 | .00000 | .02199 | .07001 | .00001 | .01282 | .65344 | .02520 | .02788 | .03252 |
| 2800 | .00781 | .08294 | .03189 | .03944 | .00001 | .02352 | .06208 | .00001 | .01379 | .64433 | .03109 | .02994 | .03316 |
| 2850 | .00770 | .08619 | .02703 | .04807 | .00001 | .02472 | .05406 | .00001 | .01468 | .63480 | .03781 | .03161 | .03332 |
| 2900 | .00759 | .08884 | .02272 | .05769 | .00001 | .02549 | .04614 | .00002 | .01548 | .62494 | .04534 | .03277 | .03298 |
| 2950 | .00747 | .09090 | .01894 | .06816 | .00001 | .02577 | .03855 | .00002 | .01615 | .61491 | .05362 | .03334 | .03215 |
| 3000 | .00735 | .09244 | .01568 | .07927 | .00000 | .02551 | .03148 | .00003 | .01668 | .60487 | .06254 | .03329 | .03086 |

TABLE 15.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.066997; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 950 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1000 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1050 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1100 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1150 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1200 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1250 | .00874 | .00000 | .12841 | .00000 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00000 |
| 1300 | .00874 | .00001 | .12841 | .00000 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00001 |
| 1350 | .00873 | .00002 | .12840 | .00000 | .00000 | .00001 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00001 |
| 1400 | .00873 | .00003 | .12839 | .00000 | .00000 | .00001 | .13451 | .00000 | .00001 | .72830 | .00000 | .00000 | .00002 |
| 1450 | .00873 | .00005 | .12836 | .00000 | .00000 | .00002 | .13450 | .00000 | .00001 | .72828 | .00000 | .00001 | .00003 |
| 1500 | .00873 | .00009 | .12832 | .00000 | .00000 | .00004 | .13448 | .00000 | .00002 | .72826 | .00000 | .00001 | .00005 |
| 1550 | .00873 | .00014 | .12826 | .00000 | .00000 | .00005 | .13445 | .00000 | .00003 | .72823 | .00000 | .00002 | .00008 |
| 1600 | .00873 | .00023 | .12817 | .00000 | .00000 | .00008 | .13441 | .00000 | .00005 | .72818 | .00000 | .00003 | .00012 |
| 1650 | .00873 | .00035 | .12804 | .00000 | .00000 | .00012 | .13435 | .00000 | .00007 | .72810 | .00000 | .00005 | .00018 |
| 1700 | .00873 | .00053 | .12785 | .00000 | .00000 | .00016 | .13427 | .00000 | .00011 | .72800 | .00000 | .00008 | .00027 |
| 1750 | .00873 | .00077 | .12758 | .00000 | .00000 | .00022 | .13417 | .00000 | .00015 | .72785 | .00000 | .00012 | .00039 |
| 1800 | .00873 | .00110 | .12722 | .00001 | .00000 | .00031 | .13403 | .00000 | .00022 | .72766 | .00000 | .00018 | .00055 |
| 1850 | .00873 | .00155 | .12674 | .00001 | .00000 | .00041 | .13384 | .00000 | .00030 | .72740 | .00001 | .00027 | .00076 |
| 1900 | .00872 | .00213 | .12611 | .00002 | .00000 | .00054 | .13360 | .00000 | .00041 | .72706 | .00001 | .00038 | .00103 |
| 1950 | .00872 | .00287 | .12530 | .00003 | .00000 | .00070 | .13328 | .00000 | .00055 | .72662 | .00002 | .00053 | .00138 |
| 2000 | .00871 | .00382 | .12427 | .00005 | .00000 | .00090 | .13289 | .00000 | .00072 | .72607 | .00003 | .00073 | .00181 |
| 2050 | .00871 | .00499 | .12299 | .00008 | .00000 | .00113 | .13240 | .00000 | .00094 | .72538 | .00005 | .00099 | .00234 |
| 2100 | .00870 | .00643 | .12143 | .00012 | .00000 | .00142 | .13180 | .00000 | .00120 | .72453 | .00008 | .00132 | .00298 |
| 2150 | .00869 | .00816 | .11954 | .00018 | .00000 | .00176 | .13106 | .00000 | .00152 | .72349 | .00012 | .00173 | .00375 |
| 2200 | .00867 | .01022 | .11729 | .00026 | .00000 | .00216 | .13017 | .00000 | .00190 | .72224 | .00018 | .00223 | .00466 |
| 2250 | .00866 | .01264 | .11466 | .00038 | .00000 | .00263 | .12910 | .00000 | .00234 | .72076 | .00028 | .00285 | .00571 |
| 2300 | .00864 | .01542 | .11161 | .00054 | .00000 | .00318 | .12783 | .00000 | .00286 | .71901 | .00041 | .00359 | .00690 |
| 2350 | .00862 | .01859 | .10814 | .00076 | .00000 | .00381 | .12633 | .00000 | .00345 | .71699 | .00060 | .00447 | .00824 |
| 2400 | .00860 | .02214 | .10424 | .00106 | .00000 | .00452 | .12458 | .00000 | .00412 | .71466 | .00085 | .00550 | .00973 |
| 2450 | .00857 | .02605 | .09992 | .00146 | .00000 | .00533 | .12256 | .00000 | .00487 | .71200 | .00119 | .00669 | .01134 |
| 2500 | .00854 | .03030 | .09521 | .00197 | .00000 | .00624 | .12023 | .00000 | .00571 | .70901 | .00165 | .00805 | .01307 |
| 2550 | .00850 | .03485 | .09016 | .00264 | .00000 | .00726 | .11758 | .00000 | .00661 | .70567 | .00224 | .00959 | .01489 |
| 2600 | .00846 | .03965 | .08480 | .00349 | .00000 | .00838 | .11459 | .00000 | .00760 | .70198 | .00300 | .01129 | .01676 |
| 2650 | .00842 | .04461 | .07921 | .00457 | .00001 | .00961 | .11123 | .00000 | .00865 | .69792 | .00395 | .01317 | .01866 |
| 2700 | .00838 | .04967 | .07347 | .00591 | .00001 | .01095 | .10750 | .00000 | .00975 | .69350 | .00514 | .01519 | .02053 |
| 2750 | .00833 | .05474 | .06766 | .00757 | .00001 | .01238 | .10338 | .00000 | .01091 | .68872 | .00661 | .01735 | .02235 |
| 2800 | .00827 | .05973 | .06187 | .00959 | .00001 | .01390 | .09887 | .00000 | .01210 | .68359 | .00837 | .01961 | .02407 |
| 2850 | .00821 | .06457 | .05617 | .01203 | .00001 | .01549 | .09399 | .00000 | .01331 | .67811 | .01049 | .02195 | .02564 |
| 2900 | .00815 | .06917 | .05065 | .01495 | .00001 | .01712 | .08876 | .00001 | .01453 | .67230 | .01298 | .02432 | .02704 |
| 2950 | .00808 | .07348 | .04537 | .01839 | .00001 | .01877 | .08320 | .00001 | .01575 | .66616 | .01589 | .02666 | .02823 |
| 3000 | .00801 | .07743 | .04039 | .02241 | .00001 | .02038 | .07736 | .00001 | .01694 | .65971 | .01923 | .02894 | .02918 |

TABLE 15.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.066997; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 950 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1000 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1050 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1100 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1150 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1200 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1250 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1300 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00000 |
| 1350 | .00874 | .00001 | .12841 | .00000 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00000 |
| 1400 | .00873 | .00001 | .12840 | .00000 | .00000 | .00001 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00001 |
| 1450 | .00873 | .00002 | .12839 | .00000 | .00000 | .00001 | .13451 | .00001 | .00000 | .72830 | .00000 | .00000 | .00001 |
| 1500 | .00873 | .00004 | .12837 | .00000 | .00000 | .00002 | .13450 | .00001 | .00000 | .72829 | .00000 | .00001 | .00002 |
| 1550 | .00873 | .00007 | .12834 | .00000 | .00000 | .00003 | .13449 | .00002 | .00000 | .72827 | .00000 | .00001 | .00003 |
| 1600 | .00873 | .00011 | .12830 | .00000 | .00000 | .00004 | .13447 | .00003 | .00000 | .72825 | .00000 | .00001 | .00005 |
| 1650 | .00873 | .00017 | .12824 | .00000 | .00000 | .00005 | .13444 | .00005 | .00000 | .72821 | .00000 | .00002 | .00008 |
| 1700 | .00873 | .00025 | .12815 | .00000 | .00000 | .00008 | .13441 | .00007 | .00000 | .72816 | .00000 | .00004 | .00012 |
| 1750 | .00873 | .00037 | .12802 | .00000 | .00000 | .00011 | .13436 | .00010 | .00000 | .72808 | .00000 | .00006 | .00017 |
| 1800 | .00873 | .00053 | .12785 | .00000 | .00000 | .00015 | .13429 | .00015 | .00000 | .72798 | .00000 | .00008 | .00024 |
| 1850 | .00873 | .00074 | .12762 | .00000 | .00000 | .00019 | .13420 | .00020 | .00000 | .72785 | .00000 | .00012 | .00034 |
| 1900 | .00873 | .00102 | .12731 | .00000 | .00000 | .00026 | .13409 | .00027 | .00000 | .72768 | .00000 | .00018 | .00046 |
| 1950 | .00873 | .00138 | .12692 | .00001 | .00000 | .00033 | .13394 | .00037 | .00000 | .72746 | .00000 | .00025 | .00061 |
| 2000 | .00872 | .00184 | .12642 | .00001 | .00000 | .00043 | .13376 | .00048 | .00000 | .72718 | .00001 | .00034 | .00081 |
| 2050 | .00872 | .00241 | .12580 | .00002 | .00000 | .00054 | .13353 | .00063 | .00000 | .72683 | .00001 | .00046 | .00105 |
| 2100 | .00872 | .00312 | .12503 | .00003 | .00000 | .00068 | .13325 | .00081 | .00000 | .72640 | .00002 | .00061 | .00134 |
| 2150 | .00871 | .00398 | .12409 | .00004 | .00000 | .00084 | .13291 | .00102 | .00000 | .72587 | .00003 | .00080 | .00170 |
| 2200 | .00871 | .00502 | .12297 | .00006 | .00000 | .00103 | .13250 | .00128 | .00000 | .72524 | .00004 | .00104 | .00212 |
| 2250 | .00870 | .00626 | .12162 | .00008 | .00000 | .00126 | .13200 | .00159 | .00000 | .72448 | .00006 | .00133 | .00262 |
| 2300 | .00869 | .00771 | .12005 | .00012 | .00000 | .00152 | .13141 | .00195 | .00000 | .72358 | .00009 | .00169 | .00320 |
| 2350 | .00868 | .00939 | .11822 | .00017 | .00000 | .00182 | .13072 | .00237 | .00000 | .72253 | .00013 | .00212 | .00386 |
| 2400 | .00867 | .01132 | .11612 | .00023 | .00000 | .00216 | .12991 | .00285 | .00000 | .72131 | .00019 | .00262 | .00462 |
| 2450 | .00865 | .01350 | .11373 | .00032 | .00000 | .00255 | .12897 | .00340 | .00000 | .71991 | .00026 | .00322 | .00547 |
| 2500 | .00864 | .01596 | .11105 | .00043 | .00000 | .00300 | .12788 | .00402 | .00000 | .71832 | .00036 | .00391 | .00641 |
| 2550 | .00862 | .01868 | .10807 | .00058 | .00000 | .00350 | .12665 | .00471 | .00000 | .71653 | .00050 | .00471 | .00745 |
| 2600 | .00860 | .02167 | .10480 | .00077 | .00001 | .00405 | .12524 | .00548 | .00000 | .71452 | .00068 | .00561 | .00857 |
| 2650 | .00858 | .02492 | .10123 | .00101 | .00001 | .00467 | .12366 | .00632 | .00000 | .71229 | .00090 | .00664 | .00977 |
| 2700 | .00856 | .02840 | .09740 | .00131 | .00001 | .00535 | .12188 | .00723 | .00000 | .70984 | .00119 | .00779 | .01103 |
| 2750 | .00853 | .03210 | .09331 | .00168 | .00001 | .00611 | .11990 | .00822 | .00000 | .70716 | .00155 | .00906 | .01236 |
| 2800 | .00850 | .03598 | .08901 | .00214 | .00001 | .00693 | .11770 | .00928 | .00000 | .70425 | .00200 | .01046 | .01373 |
| 2850 | .00847 | .04002 | .08452 | .00270 | .00001 | .00783 | .11529 | .01039 | .00001 | .70111 | .00255 | .01198 | .01512 |
| 2900 | .00844 | .04416 | .07990 | .00339 | .00002 | .00879 | .11265 | .01157 | .00001 | .69775 | .00321 | .01362 | .01651 |
| 2950 | .00840 | .04836 | .07517 | .00421 | .00002 | .00984 | .10977 | .01280 | .00001 | .69417 | .00400 | .01537 | .01789 |
| 3000 | .00836 | .05257 | .07040 | .00519 | .00002 | .01095 | .10666 | .01406 | .00001 | .69038 | .00494 | .01722 | .01923 |

TABLE 15.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.066997; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 950 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1000 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1050 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1100 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1150 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1200 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1250 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1300 | .00874 | .00000 | .12842 | .00000 | .00000 | .00000 | .13453 | .00000 | .00000 | .72832 | .00000 | .00000 | .00000 |
| 1350 | .00874 | .00000 | .12841 | .00000 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00000 |
| 1400 | .00874 | .00001 | .12841 | .00000 | .00000 | .00000 | .13452 | .00000 | .00000 | .72831 | .00000 | .00000 | .00000 |
| 1450 | .00873 | .00001 | .12840 | .00000 | .00000 | .00001 | .13452 | .00001 | .00000 | .72831 | .00000 | .00000 | .00001 |
| 1500 | .00873 | .00003 | .12839 | .00000 | .00000 | .00001 | .13451 | .00001 | .00000 | .72830 | .00000 | .00000 | .00001 |
| 1550 | .00873 | .00004 | .12837 | .00000 | .00000 | .00002 | .13451 | .00002 | .00000 | .72829 | .00000 | .00001 | .00002 |
| 1600 | .00873 | .00007 | .12835 | .00000 | .00000 | .00002 | .13449 | .00002 | .00000 | .72827 | .00000 | .00001 | .00003 |
| 1650 | .00873 | .00010 | .12831 | .00000 | .00000 | .00003 | .13448 | .00004 | .00000 | .72825 | .00000 | .00001 | .00005 |
| 1700 | .00873 | .00015 | .12826 | .00000 | .00000 | .00005 | .13446 | .00005 | .00000 | .72822 | .00000 | .00002 | .00007 |
| 1750 | .00873 | .00022 | .12818 | .00000 | .00000 | .00006 | .13443 | .00008 | .00000 | .72817 | .00000 | .00003 | .00010 |
| 1800 | .00873 | .00032 | .12808 | .00000 | .00000 | .00009 | .13439 | .00011 | .00000 | .72811 | .00000 | .00005 | .00014 |
| 1850 | .00873 | .00044 | .12794 | .00000 | .00000 | .00012 | .13433 | .00015 | .00000 | .72803 | .00000 | .00007 | .00019 |
| 1900 | .00873 | .00061 | .12775 | .00000 | .00000 | .00015 | .13427 | .00020 | .00000 | .72792 | .00000 | .00010 | .00026 |
| 1950 | .00873 | .00083 | .12752 | .00000 | .00000 | .00020 | .13418 | .00027 | .00000 | .72778 | .00000 | .00014 | .00034 |
| 2000 | .00873 | .00111 | .12722 | .00000 | .00000 | .00026 | .13407 | .00036 | .00000 | .72760 | .00000 | .00020 | .00045 |
| 2050 | .00873 | .00145 | .12684 | .00001 | .00000 | .00032 | .13394 | .00047 | .00000 | .72738 | .00000 | .00026 | .00059 |
| 2100 | .00872 | .00188 | .12638 | .00001 | .00000 | .00041 | .13377 | .00061 | .00000 | .72711 | .00001 | .00035 | .00075 |
| 2150 | .00872 | .00241 | .12581 | .00001 | .00000 | .00050 | .13357 | .00077 | .00000 | .72678 | .00001 | .00047 | .00095 |
| 2200 | .00872 | .00304 | .12512 | .00002 | .00000 | .00062 | .13333 | .00097 | .00000 | .72638 | .00001 | .00060 | .00120 |
| 2250 | .00871 | .00380 | .12429 | .00003 | .00000 | .00075 | .13303 | .00120 | .00000 | .72589 | .00002 | .00078 | .00148 |
| 2300 | .00871 | .00470 | .12332 | .00004 | .00000 | .00091 | .13269 | .00147 | .00000 | .72533 | .00003 | .00099 | .00182 |
| 2350 | .00870 | .00575 | .12219 | .00006 | .00000 | .00109 | .13228 | .00179 | .00000 | .72466 | .00004 | .00124 | .00220 |
| 2400 | .00869 | .00696 | .12087 | .00008 | .00000 | .00130 | .13180 | .00216 | .00000 | .72388 | .00006 | .00154 | .00265 |
| 2450 | .00869 | .00835 | .11936 | .00011 | .00000 | .00153 | .13125 | .00259 | .00000 | .72299 | .00009 | .00189 | .00315 |
| 2500 | .00868 | .00993 | .11764 | .00015 | .00000 | .00180 | .13061 | .00307 | .00000 | .72197 | .00012 | .00231 | .00372 |
| 2550 | .00867 | .01170 | .11571 | .00020 | .00000 | .00210 | .12988 | .00361 | .00000 | .72081 | .00017 | .00279 | .00435 |
| 2600 | .00865 | .01368 | .11356 | .00027 | .00001 | .00243 | .12905 | .00422 | .00000 | .71950 | .00023 | .00334 | .00505 |
| 2650 | .00864 | .01586 | .11118 | .00035 | .00001 | .00280 | .12812 | .00490 | .00000 | .71805 | .00031 | .00397 | .00581 |
| 2700 | .00863 | .01825 | .10857 | .00045 | .00001 | .00322 | .12706 | .00564 | .00000 | .71643 | .00041 | .00468 | .00664 |
| 2750 | .00861 | .02085 | .10573 | .00058 | .00001 | .00368 | .12589 | .00645 | .00001 | .71465 | .00054 | .00548 | .00753 |
| 2800 | .00859 | .02364 | .10268 | .00074 | .00001 | .00418 | .12458 | .00733 | .00001 | .71270 | .00070 | .00638 | .00847 |
| 2850 | .00857 | .02661 | .99941 | .00094 | .00001 | .00473 | .12313 | .00828 | .00001 | .71059 | .00090 | .00736 | .00946 |
| 2900 | .00855 | .02976 | .99595 | .00118 | .00002 | .00533 | .12154 | .00929 | .00001 | .70830 | .00114 | .00844 | .01049 |
| 2950 | .00853 | .03306 | .99232 | .00147 | .00002 | .00598 | .11981 | .01037 | .00001 | .70584 | .00144 | .00962 | .01155 |
| 3000 | .00850 | .03648 | .98853 | .00181 | .00002 | .00668 | .11791 | .01150 | .00001 | .70322 | .00179 | .01090 | .01263 |

TABLE 15C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.066997; EQUIV.RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000;
 DRY AIR

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 |
|----------------------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | |
| 200 | .00874 | .12842 | .13439 | .00000 | .00014 | .72832 |
| 220 | .00874 | .12842 | .13226 | .00000 | .00226 | .72832 |
| 240 | .00874 | .12842 | .11069 | .00000 | .02384 | .72832 |
| PRESSURE = 0.10 ATM | | | | | | |
| 200 | .00874 | .12842 | .13451 | .00000 | .00001 | .72832 |
| 220 | .00874 | .12842 | .13430 | .00000 | .00023 | .72832 |
| 240 | .00874 | .12842 | .13220 | .00000 | .00233 | .72832 |
| 260 | .00874 | .12842 | .11754 | .00000 | .01699 | .72832 |
| 280 | .00874 | .12842 | .00000 | .04107 | .09345 | .72832 |
| PRESSURE = 1.00 ATM | | | | | | |
| 200 | .00874 | .12842 | .13453 | .00000 | .00000 | .72832 |
| 220 | .00874 | .12842 | .13451 | .00000 | .00002 | .72832 |
| 240 | .00874 | .12842 | .13430 | .00000 | .00023 | .72832 |
| 260 | .00874 | .12842 | .13286 | .00000 | .00167 | .72832 |
| 280 | .00874 | .12842 | .00000 | .12601 | .00852 | .72832 |
| 298 | .00874 | .12842 | .00000 | .10673 | .02780 | .72832 |
| 300 | .00874 | .12842 | .00000 | .10340 | .03113 | .72832 |
| 320 | .00874 | .12842 | .00000 | .03480 | .09973 | .72832 |
| PRESSURE = 10.00 ATM | | | | | | |
| 200 | .00874 | .12842 | .13453 | .00000 | .00000 | .72832 |
| 220 | .00874 | .12842 | .13453 | .00000 | .00000 | .72832 |
| 240 | .00874 | .12842 | .13450 | .00000 | .00002 | .72832 |
| 260 | .00874 | .12842 | .13436 | .00000 | .00017 | .72832 |
| 280 | .00874 | .12842 | .00000 | .13368 | .00084 | .72832 |
| 298 | .00874 | .12842 | .00000 | .13183 | .00270 | .72832 |
| 300 | .00874 | .12842 | .00000 | .13151 | .00302 | .72832 |
| 320 | .00874 | .12842 | .00000 | .12549 | .00904 | .72832 |
| 340 | .00874 | .12842 | .00000 | .11092 | .02361 | .72832 |
| 360 | .00874 | .12842 | .00000 | .07883 | .05570 | .72832 |
| 380 | .00874 | .12842 | .00000 | .01157 | .12296 | .72832 |
| PRESSURE = 50.00 ATM | | | | | | |
| 200 | .00874 | .12842 | .13453 | .00000 | .00000 | .72832 |
| 220 | .00874 | .12842 | .13453 | .00000 | .00000 | .72832 |
| 240 | .00874 | .12842 | .13452 | .00000 | .00000 | .72832 |
| 260 | .00874 | .12842 | .13449 | .00000 | .00003 | .72832 |
| 280 | .00874 | .12842 | .00000 | .13436 | .00017 | .72832 |
| 298 | .00874 | .12842 | .00000 | .13399 | .00054 | .72832 |
| 300 | .00874 | .12842 | .00000 | .13393 | .00060 | .72832 |
| 320 | .00874 | .12842 | .00000 | .13274 | .00179 | .72832 |
| 340 | .00874 | .12842 | .00000 | .12991 | .00462 | .72832 |
| 360 | .00874 | .12842 | .00000 | .12393 | .01059 | .72832 |
| 380 | .00874 | .12842 | .00000 | .11245 | .02208 | .72832 |
| 400 | .00874 | .12842 | .00000 | .09185 | .04268 | .72832 |
| 420 | .00874 | .12842 | .00000 | .05667 | .07786 | .72832 |

TABLE 16.1D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 210 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 220 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 230 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 240 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 250 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 260 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 270 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 280 | .00859 | .02402 | .00000 | .13378 | .00000 | .00001 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 290 | .00859 | .02402 | .00000 | .13378 | .00000 | .00001 | .11733 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 298 | .00859 | .02401 | .00000 | .13378 | .00000 | .00002 | .11733 | .00000 | .00000 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 300 | .00859 | .02401 | .00000 | .13378 | .00000 | .00003 | .11733 | .00000 | .00000 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 310 | .00859 | .02401 | .00000 | .13379 | .00000 | .00004 | .11731 | .00000 | .00000 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 320 | .00859 | .02400 | .00000 | .13379 | .00000 | .00007 | .11730 | .00000 | .00000 | .00000 | .71625 | .00000 | .00000 | .00000 |
| 330 | .00859 | .02399 | .00000 | .13380 | .00000 | .00012 | .11727 | .00000 | .00000 | .00000 | .71623 | .00000 | .00000 | .00000 |
| 340 | .00859 | .02397 | .00000 | .13381 | .00000 | .00018 | .11724 | .00000 | .00000 | .00000 | .71621 | .00000 | .00000 | .00000 |
| 350 | .00859 | .02394 | .00000 | .13383 | .00000 | .00028 | .11718 | .00000 | .00000 | .00000 | .71617 | .00000 | .00000 | .00000 |
| 360 | .00859 | .02391 | .00000 | .13385 | .00000 | .00042 | .11710 | .00000 | .00000 | .00000 | .71612 | .00000 | .00000 | .00000 |
| 370 | .00859 | .02386 | .00000 | .13389 | .00000 | .00061 | .11700 | .00000 | .00000 | .00000 | .71605 | .00000 | .00000 | .00000 |
| 380 | .00859 | .02379 | .00000 | .13394 | .00000 | .00088 | .11685 | .00000 | .00000 | .00000 | .71596 | .00000 | .00000 | .00000 |
| 390 | .00859 | .02369 | .00000 | .13400 | .00000 | .00124 | .11665 | .00000 | .00000 | .00000 | .71583 | .00000 | .00000 | .00000 |
| 400 | .00858 | .02357 | .00000 | .13409 | .00000 | .00171 | .11638 | .00000 | .00000 | .00000 | .71566 | .00000 | .00000 | .00000 |
| 410 | .00858 | .02341 | .00000 | .13420 | .00000 | .00233 | .11603 | .00000 | .00000 | .00000 | .71543 | .00000 | .00000 | .00000 |
| 420 | .00858 | .02320 | .00000 | .13435 | .00000 | .00313 | .11559 | .00000 | .00000 | .00000 | .71515 | .00000 | .00000 | .00000 |
| 430 | .00857 | .02293 | .00001 | .13453 | .00000 | .00414 | .11503 | .00000 | .00000 | .00000 | .71479 | .00000 | .00000 | .00000 |
| 440 | .00857 | .02260 | .00001 | .13476 | .00000 | .00540 | .11432 | .00000 | .00001 | .00000 | .71433 | .00000 | .00000 | .00000 |
| 450 | .00856 | .02219 | .00002 | .13504 | .00000 | .00696 | .11346 | .00000 | .00001 | .00000 | .71377 | .00000 | .00000 | .00000 |
| 460 | .00855 | .02169 | .00003 | .13537 | .00000 | .00884 | .11241 | .00000 | .00001 | .00000 | .71309 | .00000 | .00000 | .00000 |
| 470 | .00854 | .02109 | .00005 | .13577 | .00000 | .01110 | .11116 | .00000 | .00001 | .00000 | .71228 | .00000 | .00000 | .00000 |
| 480 | .00853 | .02039 | .00008 | .13623 | .00000 | .01377 | .10968 | .00000 | .00001 | .00000 | .71131 | .00000 | .00000 | .00000 |
| 490 | .00852 | .01956 | .00013 | .13677 | .00000 | .01687 | .10796 | .00000 | .00001 | .00000 | .71018 | .00000 | .00000 | .00000 |
| 500 | .00850 | .01861 | .00019 | .13736 | .00000 | .02043 | .10600 | .00000 | .00001 | .00000 | .70888 | .00000 | .00000 | .00000 |
| 510 | .00848 | .01753 | .00029 | .13803 | .00000 | .02446 | .10380 | .00000 | .00001 | .00000 | .70741 | .00000 | .00000 | .00000 |
| 520 | .00846 | .01633 | .00042 | .13874 | .00000 | .02893 | .10136 | .00000 | .00001 | .00000 | .70576 | .00000 | .00000 | .00000 |
| 530 | .00844 | .01500 | .00060 | .13949 | .00000 | .03382 | .09871 | .00000 | .00001 | .00000 | .70395 | .00000 | .00000 | .00000 |
| 540 | .00842 | .01356 | .00084 | .14025 | .00000 | .03906 | .09588 | .00000 | .00001 | .00000 | .70198 | .00000 | .00000 | .00000 |
| 550 | .00839 | .01203 | .00117 | .14099 | .00000 | .04458 | .09295 | .00000 | .00001 | .00000 | .69989 | .00000 | .00000 | .00000 |
| 560 | .00837 | .01043 | .00159 | .14168 | .00000 | .05025 | .08996 | .00000 | .00001 | .00000 | .69770 | .00000 | .00000 | .00000 |
| 570 | .00834 | .00880 | .00214 | .14228 | .00000 | .05593 | .08703 | .00000 | .00001 | .00000 | .69547 | .00000 | .00000 | .00000 |
| 580 | .00831 | .00718 | .00280 | .14274 | .00000 | .06145 | .08424 | .00000 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 590 | .00829 | .00563 | .00360 | .14303 | .00000 | .06658 | .08173 | .00000 | .00001 | .00000 | .69114 | .00000 | .00000 | .00000 |

TABLE 16.1D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00827 | .00421 | .00451 | .14312 | .00000 | .07110 | .07960 | .00000 | .00001 | .00000 | .68919 | .00000 | .00000 | .00000 |
| 610 | .00825 | .00298 | .00549 | .14299 | .00000 | .07480 | .07797 | .00000 | .00001 | .00000 | .68751 | .00000 | .00000 | .00000 |
| 620 | .00823 | .00199 | .00652 | .14265 | .00000 | .07754 | .07689 | .00000 | .00001 | .00000 | .68617 | .00000 | .00000 | .00000 |
| 630 | .00822 | .00127 | .00753 | .14215 | .00000 | .07930 | .07636 | .00000 | .00000 | .00000 | .68517 | .00000 | .00000 | .00000 |
| 640 | .00821 | .00077 | .00852 | .14151 | .00000 | .08021 | .07629 | .00000 | .00000 | .00000 | .68450 | .00000 | .00000 | .00000 |
| 650 | .00820 | .00046 | .00946 | .14078 | .00000 | .08046 | .07656 | .00000 | .00000 | .00000 | .68407 | .00000 | .00000 | .00000 |
| 660 | .00820 | .00027 | .01038 | .13999 | .00000 | .08027 | .07708 | .00000 | .00000 | .00000 | .68381 | .00000 | .00000 | .00000 |
| 670 | .00820 | .00016 | .01129 | .13917 | .00000 | .07979 | .07774 | .00000 | .00000 | .00000 | .68365 | .00000 | .00000 | .00000 |
| 680 | .00820 | .00009 | .01219 | .13831 | .00000 | .07914 | .07850 | .00000 | .00000 | .00000 | .68357 | .00000 | .00000 | .00000 |
| 690 | .00820 | .00005 | .01308 | .13744 | .00000 | .07838 | .07932 | .00000 | .00000 | .00000 | .68351 | .00000 | .00000 | .00000 |
| 700 | .00820 | .00003 | .01399 | .13655 | .00000 | .07756 | .08018 | .00000 | .00000 | .00000 | .68348 | .00000 | .00000 | .00000 |
| 710 | .00820 | .00002 | .01489 | .13566 | .00000 | .07671 | .08106 | .00000 | .00000 | .00000 | .68347 | .00000 | .00000 | .00000 |
| 720 | .00820 | .00001 | .01581 | .13475 | .00000 | .07582 | .08196 | .00000 | .00000 | .00000 | .68346 | .00000 | .00000 | .00000 |
| 730 | .00820 | .00001 | .01672 | .13384 | .00000 | .07492 | .08286 | .00000 | .00000 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 740 | .00820 | .00000 | .01764 | .13292 | .00000 | .07402 | .08377 | .00000 | .00000 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 750 | .00820 | .00000 | .01856 | .13200 | .00000 | .07310 | .08469 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 760 | .00820 | .00000 | .01948 | .13108 | .00000 | .07219 | .08561 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 770 | .00820 | .00000 | .02040 | .13017 | .00000 | .07127 | .08652 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 780 | .00820 | .00000 | .02131 | .12925 | .00000 | .07036 | .08744 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 790 | .00820 | .00000 | .02222 | .12834 | .00000 | .06945 | .08835 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 800 | .00820 | .00000 | .02312 | .12744 | .00000 | .06855 | .08925 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 810 | .00820 | .00000 | .02402 | .12654 | .00000 | .06765 | .09015 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 820 | .00820 | .00000 | .02491 | .12566 | .00000 | .06676 | .09103 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 830 | .00820 | .00000 | .02579 | .12478 | .00000 | .06588 | .09191 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 840 | .00820 | .00000 | .02666 | .12391 | .00000 | .06502 | .09278 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 850 | .00820 | .00000 | .02752 | .12305 | .00000 | .06416 | .09364 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 860 | .00820 | .00000 | .02837 | .12220 | .00000 | .06331 | .09449 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 870 | .00820 | .00000 | .02920 | .12136 | .00000 | .06247 | .09533 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 880 | .00820 | .00000 | .03003 | .12053 | .00000 | .06164 | .09615 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 890 | .00820 | .00000 | .03084 | .11972 | .00000 | .06083 | .09697 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 900 | .00820 | .00000 | .03164 | .11892 | .00000 | .06003 | .09777 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 910 | .00820 | .00000 | .03243 | .11813 | .00000 | .05924 | .09856 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 920 | .00820 | .00000 | .03321 | .11736 | .00000 | .05847 | .09933 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 930 | .00820 | .00000 | .03397 | .11660 | .00000 | .05771 | .10009 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 940 | .00820 | .00000 | .03472 | .11585 | .00000 | .05696 | .10084 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 950 | .00820 | .00000 | .03545 | .11511 | .00000 | .05622 | .10158 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 960 | .00820 | .00000 | .03617 | .11439 | .00000 | .05550 | .10230 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 970 | .00820 | .00000 | .03688 | .11368 | .00000 | .05479 | .10301 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 980 | .00820 | .00000 | .03758 | .11299 | .00000 | .05410 | .10370 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 990 | .00820 | .00000 | .03826 | .11231 | .00000 | .05342 | .10438 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |

TABLE 16.1D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00820 | .00000 | .03893 | .11164 | .00000 | .05275 | .10505 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1050 | .00820 | .00000 | .04208 | .10848 | .00000 | .04959 | .10820 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1100 | .00820 | .00000 | .04493 | .10564 | .00000 | .04675 | .11105 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1150 | .00820 | .00000 | .04749 | .10307 | .00000 | .04418 | .11362 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1200 | .00820 | .00000 | .04980 | .10076 | .00000 | .04187 | .11593 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1250 | .00820 | .00000 | .05189 | .09868 | .00000 | .03979 | .11801 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1300 | .00820 | .00000 | .05377 | .09680 | .00000 | .03791 | .11989 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1350 | .00820 | .00000 | .05546 | .09510 | .00000 | .03621 | .12159 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1400 | .00820 | .00000 | .05700 | .09357 | .00001 | .03467 | .12312 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1450 | .00820 | .00000 | .05839 | .09217 | .00002 | .03328 | .12451 | .00000 | .00000 | .00000 | .68343 | .00000 | .00000 | .00000 |
| 1500 | .00820 | .00000 | .05965 | .09091 | .00003 | .03201 | .12577 | .00000 | .00000 | .00000 | .68343 | .00000 | .00000 | .00000 |
| 1550 | .00820 | .00000 | .06080 | .08976 | .00005 | .03085 | .12691 | .00000 | .00000 | .00000 | .68342 | .00000 | .00001 | .00000 |
| 1600 | .00820 | .00000 | .06184 | .08872 | .00009 | .02979 | .12794 | .00000 | .00000 | .00000 | .68340 | .00000 | .00002 | .00000 |
| 1650 | .00820 | .00000 | .06279 | .08776 | .00015 | .02882 | .12887 | .00000 | .00000 | .00000 | .68338 | .00000 | .00003 | .00000 |
| 1700 | .00820 | .00000 | .06365 | .08689 | .00024 | .02792 | .12970 | .00000 | .00000 | .00001 | .68333 | .00000 | .00006 | .00000 |
| 1750 | .00819 | .00000 | .06444 | .08609 | .00038 | .02709 | .13042 | .00000 | .00000 | .00001 | .68326 | .00000 | .00011 | .00000 |
| 1800 | .00819 | .00000 | .06516 | .08534 | .00058 | .02632 | .13103 | .00000 | .00000 | .00002 | .68315 | .00000 | .00019 | .00001 |
| 1850 | .00819 | .00000 | .06584 | .08463 | .00086 | .02560 | .13150 | .00000 | .00000 | .00005 | .68298 | .00001 | .00033 | .00002 |
| 1900 | .00819 | .00000 | .06649 | .08392 | .00125 | .02494 | .13180 | .00000 | .00000 | .00008 | .68271 | .00002 | .00055 | .00005 |
| 1950 | .00818 | .00000 | .06716 | .08317 | .00178 | .02435 | .13186 | .00000 | .00000 | .00015 | .68229 | .00005 | .00089 | .00011 |
| 2000 | .00818 | .00000 | .06792 | .08228 | .00250 | .02385 | .13161 | .00000 | .00000 | .00026 | .68165 | .00011 | .00141 | .00025 |
| 2050 | .00817 | .00000 | .06890 | .08109 | .00346 | .02350 | .13090 | .00000 | .00000 | .00043 | .68064 | .00022 | .00215 | .00053 |
| 2100 | .00815 | .00000 | .07028 | .07940 | .00473 | .02337 | .12955 | .00000 | .00000 | .00070 | .67911 | .00045 | .00319 | .00107 |
| 2150 | .00812 | .00000 | .07228 | .07695 | .00643 | .02356 | .12732 | .00000 | .00000 | .00107 | .67683 | .00086 | .00459 | .00198 |
| 2200 | .00809 | .00000 | .07505 | .07351 | .00870 | .02416 | .12401 | .00000 | .00000 | .00157 | .67358 | .00157 | .00637 | .00339 |
| 2250 | .00804 | .00000 | .07865 | .06902 | .01172 | .02520 | .11944 | .00000 | .00000 | .00219 | .66921 | .00268 | .00852 | .00534 |
| 2300 | .00798 | .00000 | .08294 | .06357 | .01571 | .02666 | .11353 | .00000 | .00000 | .00291 | .66360 | .00434 | .01101 | .00774 |
| 2350 | .00790 | .00000 | .08767 | .05742 | .02091 | .02844 | .10629 | .00000 | .00000 | .00372 | .65673 | .00671 | .01376 | .01045 |
| 2400 | .00781 | .00000 | .09252 | .05088 | .02756 | .03039 | .09779 | .00000 | .00000 | .00459 | .64862 | .00993 | .01666 | .01327 |
| 2450 | .00770 | .00000 | .09720 | .04424 | .03591 | .03232 | .08818 | .00000 | .00000 | .00548 | .63928 | .01416 | .01956 | .01597 |
| 2500 | .00758 | .00000 | .10145 | .03778 | .04610 | .03403 | .07770 | .00000 | .00000 | .00637 | .62882 | .01952 | .02229 | .01836 |
| 2550 | .00745 | .00000 | .10509 | .03171 | .05823 | .03527 | .06666 | .00000 | .00000 | .00722 | .61735 | .02611 | .02466 | .02026 |
| 2600 | .00731 | .00000 | .10800 | .02618 | .07221 | .03581 | .05549 | .00001 | .00000 | .00799 | .60508 | .03395 | .02646 | .02152 |
| 2650 | .00716 | .00000 | .11017 | .02127 | .08776 | .03548 | .04464 | .00001 | .00000 | .00866 | .59231 | .04298 | .02750 | .02205 |
| 2700 | .00700 | .00000 | .11163 | .01702 | .10443 | .03418 | .03460 | .00001 | .00000 | .00919 | .57940 | .05303 | .02767 | .02182 |
| 2750 | .00686 | .00000 | .11248 | .01343 | .12156 | .03195 | .02577 | .00002 | .00000 | .00956 | .56677 | .06381 | .02692 | .02086 |
| 2800 | .00671 | .00000 | .11285 | .01046 | .13840 | .02895 | .01842 | .00003 | .00000 | .00976 | .55486 | .07495 | .02533 | .01928 |
| 2850 | .00658 | .00000 | .11288 | .00805 | .15422 | .02544 | .01266 | .00004 | .00000 | .00978 | .54403 | .08601 | .02307 | .01724 |
| 2900 | .00647 | .00000 | .11269 | .00614 | .16846 | .02174 | .00838 | .00005 | .00000 | .00964 | .53454 | .09656 | .02038 | .01496 |
| 2950 | .00637 | .00000 | .11238 | .00464 | .18077 | .01813 | .00537 | .00007 | .00000 | .00936 | .52649 | .10626 | .01753 | .01263 |
| 3000 | .00629 | .00000 | .11203 | .00349 | .19106 | .01482 | .00336 | .00010 | .00000 | .00898 | .51985 | .11487 | .01474 | .01041 |

TABLE 16.2D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 210 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 220 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 230 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 240 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 250 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 260 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 270 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 280 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 290 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 298 | .00859 | .02402 | .00000 | .13378 | .00000 | .00001 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 300 | .00859 | .02402 | .00000 | .13378 | .00000 | .00001 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 310 | .00859 | .02402 | .00000 | .13378 | .00000 | .00001 | .11733 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 320 | .00859 | .02401 | .00000 | .13378 | .00000 | .00002 | .11733 | .00000 | .00000 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 330 | .00859 | .02401 | .00000 | .13378 | .00000 | .00004 | .11732 | .00000 | .00000 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 340 | .00859 | .02400 | .00000 | .13379 | .00000 | .00006 | .11731 | .00000 | .00000 | .00000 | .71625 | .00000 | .00000 | .00000 |
| 350 | .00859 | .02399 | .00000 | .13379 | .00000 | .00009 | .11729 | .00000 | .00000 | .00000 | .71624 | .00000 | .00000 | .00000 |
| 360 | .00859 | .02398 | .00000 | .13380 | .00000 | .00013 | .11726 | .00000 | .00000 | .00000 | .71622 | .00000 | .00000 | .00000 |
| 370 | .00859 | .02397 | .00000 | .13381 | .00000 | .00019 | .11723 | .00000 | .00000 | .00000 | .71620 | .00000 | .00000 | .00000 |
| 380 | .00859 | .02394 | .00000 | .13383 | .00000 | .00028 | .11718 | .00000 | .00001 | .00000 | .71617 | .00000 | .00000 | .00000 |
| 390 | .00859 | .02391 | .00000 | .13385 | .00000 | .00039 | .11712 | .00000 | .00001 | .00000 | .71613 | .00000 | .00000 | .00000 |
| 400 | .00859 | .02387 | .00000 | .13388 | .00000 | .00055 | .11703 | .00000 | .00001 | .00000 | .71608 | .00000 | .00000 | .00000 |
| 410 | .00859 | .02382 | .00000 | .13392 | .00000 | .00074 | .11692 | .00000 | .00001 | .00000 | .71600 | .00000 | .00000 | .00000 |
| 420 | .00859 | .02375 | .00000 | .13396 | .00000 | .00100 | .11678 | .00000 | .00001 | .00000 | .71591 | .00000 | .00000 | .00000 |
| 430 | .00858 | .02367 | .00000 | .13402 | .00000 | .00133 | .11659 | .00000 | .00001 | .00000 | .71579 | .00000 | .00000 | .00000 |
| 440 | .00858 | .02356 | .00000 | .13410 | .00000 | .00174 | .11636 | .00000 | .00001 | .00000 | .71564 | .00000 | .00000 | .00000 |
| 450 | .00858 | .02342 | .00001 | .13419 | .00000 | .00226 | .11607 | .00000 | .00001 | .00000 | .71546 | .00000 | .00000 | .00000 |
| 460 | .00858 | .02325 | .00001 | .13430 | .00000 | .00289 | .11572 | .00000 | .00001 | .00000 | .71523 | .00000 | .00000 | .00000 |
| 470 | .00857 | .02305 | .00002 | .13444 | .00000 | .00366 | .11529 | .00000 | .00001 | .00000 | .71495 | .00000 | .00000 | .00000 |
| 480 | .00857 | .02280 | .00003 | .13460 | .00000 | .00459 | .11478 | .00000 | .00001 | .00000 | .71461 | .00000 | .00000 | .00000 |
| 490 | .00857 | .02251 | .00004 | .13479 | .00000 | .00570 | .11416 | .00000 | .00001 | .00000 | .71421 | .00000 | .00000 | .00000 |
| 500 | .00856 | .02216 | .00006 | .13502 | .00000 | .00701 | .11344 | .00000 | .00002 | .00000 | .71373 | .00000 | .00000 | .00000 |
| 510 | .00855 | .02175 | .00009 | .13528 | .00000 | .00854 | .11259 | .00000 | .00002 | .00000 | .71318 | .00000 | .00000 | .00000 |
| 520 | .00855 | .02128 | .00013 | .13557 | .00000 | .01032 | .11162 | .00000 | .00002 | .00000 | .71253 | .00000 | .00000 | .00000 |
| 530 | .00854 | .02073 | .00019 | .13589 | .00000 | .01235 | .11051 | .00000 | .00002 | .00000 | .71178 | .00000 | .00000 | .00000 |
| 540 | .00853 | .02010 | .00027 | .13625 | .00000 | .01465 | .10926 | .00000 | .00002 | .00000 | .71092 | .00000 | .00000 | .00000 |
| 550 | .00851 | .01939 | .00038 | .13663 | .00000 | .01725 | .10786 | .00000 | .00002 | .00000 | .70995 | .00000 | .00000 | .00000 |
| 560 | .00850 | .01860 | .00052 | .13704 | .00000 | .02013 | .10631 | .00000 | .00002 | .00000 | .70887 | .00000 | .00000 | .00000 |
| 570 | .00849 | .01772 | .00072 | .13747 | .00000 | .02330 | .10462 | .00000 | .00002 | .00000 | .70766 | .00000 | .00000 | .00000 |
| 580 | .00847 | .01675 | .00097 | .13790 | .00000 | .02676 | .10280 | .00000 | .00002 | .00000 | .70634 | .00000 | .00000 | .00000 |
| 590 | .00845 | .01569 | .00129 | .13831 | .00000 | .03048 | .10087 | .00000 | .00002 | .00000 | .70489 | .00000 | .00000 | .00000 |

TABLE 16.2D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00844 | .01454 | .00170 | .13870 | .00000 | .03443 | .09884 | .00000 | .00002 | .00000 | .70332 | .00000 | .00000 | .00000 |
| 610 | .00842 | .01332 | .00222 | .13904 | .00000 | .03859 | .09675 | .00000 | .00002 | .00000 | .70165 | .00000 | .00000 | .00000 |
| 620 | .00839 | .01202 | .00286 | .13930 | .00000 | .04289 | .09463 | .00000 | .00002 | .00000 | .69988 | .00000 | .00000 | .00000 |
| 630 | .00837 | .01067 | .00364 | .13947 | .00000 | .04727 | .09252 | .00000 | .00002 | .00000 | .69803 | .00000 | .00000 | .00000 |
| 640 | .00835 | .00929 | .00456 | .13952 | .00000 | .05164 | .09048 | .00000 | .00002 | .00000 | .69614 | .00000 | .00000 | .00000 |
| 650 | .00833 | .00789 | .00563 | .13942 | .00000 | .05591 | .08857 | .00000 | .00002 | .00000 | .69423 | .00000 | .00000 | .00000 |
| 660 | .00830 | .00651 | .00684 | .13917 | .00000 | .05995 | .08685 | .00000 | .00002 | .00000 | .69235 | .00000 | .00000 | .00000 |
| 670 | .00828 | .00520 | .00817 | .13876 | .00000 | .06362 | .08539 | .00000 | .00002 | .00000 | .69056 | .00000 | .00000 | .00000 |
| 680 | .00826 | .00400 | .00958 | .13819 | .00000 | .06680 | .08424 | .00000 | .00002 | .00000 | .68892 | .00000 | .00000 | .00000 |
| 690 | .00825 | .00296 | .01101 | .13749 | .00000 | .06936 | .08344 | .00000 | .00002 | .00000 | .68749 | .00000 | .00000 | .00000 |
| 700 | .00823 | .00210 | .01242 | .13668 | .00000 | .07123 | .08302 | .00000 | .00001 | .00000 | .68631 | .00000 | .00000 | .00000 |
| 710 | .00822 | .00143 | .01376 | .13580 | .00000 | .07243 | .08294 | .00000 | .00001 | .00000 | .68540 | .00000 | .00000 | .00000 |
| 720 | .00821 | .00095 | .01501 | .13489 | .00000 | .07302 | .08317 | .00000 | .00001 | .00000 | .68474 | .00000 | .00000 | .00000 |
| 730 | .00821 | .00062 | .01618 | .13395 | .00000 | .07312 | .08362 | .00000 | .00001 | .00000 | .68429 | .00000 | .00000 | .00000 |
| 740 | .00820 | .00040 | .01728 | .13301 | .00000 | .07287 | .08425 | .00000 | .00001 | .00000 | .68398 | .00000 | .00000 | .00000 |
| 750 | .00820 | .00025 | .01832 | .13207 | .00000 | .07238 | .08498 | .00000 | .00001 | .00000 | .68379 | .00000 | .00000 | .00000 |
| 760 | .00820 | .00016 | .01932 | .13113 | .00000 | .07173 | .08579 | .00000 | .00001 | .00000 | .68366 | .00000 | .00000 | .00000 |
| 770 | .00820 | .00010 | .02029 | .13020 | .00000 | .07098 | .08664 | .00000 | .00001 | .00000 | .68358 | .00000 | .00000 | .00000 |
| 780 | .00820 | .00007 | .02124 | .12928 | .00000 | .07017 | .08751 | .00000 | .00001 | .00000 | .68353 | .00000 | .00000 | .00000 |
| 790 | .00820 | .00004 | .02217 | .12836 | .00000 | .06933 | .08839 | .00000 | .00001 | .00000 | .68350 | .00000 | .00000 | .00000 |
| 800 | .00820 | .00003 | .02309 | .12745 | .00000 | .06847 | .08928 | .00000 | .00000 | .00000 | .68348 | .00000 | .00000 | .00000 |
| 810 | .00820 | .00002 | .02400 | .12655 | .00000 | .06760 | .09016 | .00000 | .00000 | .00000 | .68347 | .00000 | .00000 | .00000 |
| 820 | .00820 | .00001 | .02489 | .12566 | .00000 | .06673 | .09104 | .00000 | .00000 | .00000 | .68346 | .00000 | .00000 | .00000 |
| 830 | .00820 | .00001 | .02578 | .12478 | .00000 | .06586 | .09192 | .00000 | .00000 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 840 | .00820 | .00001 | .02665 | .12391 | .00000 | .06500 | .09279 | .00000 | .00000 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 850 | .00820 | .00000 | .02751 | .12305 | .00000 | .06414 | .09365 | .00000 | .00000 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 860 | .00820 | .00000 | .02836 | .12220 | .00000 | .06330 | .09449 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 870 | .00820 | .00000 | .02920 | .12136 | .00000 | .06246 | .09533 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 880 | .00820 | .00000 | .03003 | .12054 | .00000 | .06164 | .09615 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 890 | .00820 | .00000 | .03084 | .11972 | .00000 | .06083 | .09697 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 900 | .00820 | .00000 | .03164 | .11892 | .00000 | .06003 | .09777 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 910 | .00820 | .00000 | .03243 | .11813 | .00000 | .05924 | .09856 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 920 | .00820 | .00000 | .03320 | .11736 | .00000 | .05847 | .09933 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 930 | .00820 | .00000 | .03397 | .11660 | .00000 | .05770 | .10009 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 940 | .00820 | .00000 | .03472 | .11585 | .00000 | .05696 | .10084 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 950 | .00820 | .00000 | .03545 | .11511 | .00000 | .05622 | .10158 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 960 | .00820 | .00000 | .03617 | .11439 | .00000 | .05550 | .10230 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 970 | .00820 | .00000 | .03688 | .11368 | .00000 | .05479 | .10301 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 980 | .00820 | .00000 | .03758 | .11299 | .00000 | .05410 | .10370 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 990 | .00820 | .00000 | .03826 | .11231 | .00000 | .05341 | .10438 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |

TABLE 16.2D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00820 | .00000 | .03893 | .11164 | .00000 | .05275 | .10505 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1050 | .00820 | .00000 | .04208 | .10848 | .00000 | .04959 | .10820 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1100 | .00820 | .00000 | .04493 | .10564 | .00000 | .04675 | .11105 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1150 | .00820 | .00000 | .04749 | .10307 | .00000 | .04418 | .11362 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1200 | .00820 | .00000 | .04980 | .10076 | .00000 | .04187 | .11593 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1250 | .00820 | .00000 | .05189 | .09868 | .00000 | .03979 | .11801 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1300 | .00820 | .00000 | .05377 | .09680 | .00000 | .03791 | .11989 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1350 | .00820 | .00000 | .05546 | .09510 | .00000 | .03621 | .12159 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1400 | .00820 | .00000 | .05700 | .09356 | .00000 | .03467 | .12312 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1450 | .00820 | .00000 | .05839 | .09217 | .00001 | .03328 | .12451 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1500 | .00820 | .00000 | .05965 | .09091 | .00001 | .03201 | .12578 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1550 | .00820 | .00000 | .06080 | .08976 | .00002 | .03086 | .12692 | .00000 | .00000 | .00000 | .68343 | .00000 | .00000 | .00000 |
| 1600 | .00820 | .00000 | .06185 | .08871 | .00003 | .02981 | .12797 | .00000 | .00000 | .00000 | .68343 | .00000 | .00001 | .00000 |
| 1650 | .00820 | .00000 | .06281 | .08775 | .00005 | .02885 | .12892 | .00000 | .00000 | .00000 | .68342 | .00000 | .00001 | .00000 |
| 1700 | .00820 | .00000 | .06368 | .08688 | .00008 | .02796 | .12978 | .00000 | .00000 | .00000 | .68341 | .00000 | .00002 | .00000 |
| 1750 | .00820 | .00000 | .06448 | .08607 | .00012 | .02715 | .13056 | .00000 | .00000 | .00000 | .68338 | .00000 | .00003 | .00000 |
| 1800 | .00820 | .00000 | .06522 | .08533 | .00018 | .02639 | .13126 | .00000 | .00000 | .00001 | .68335 | .00000 | .00006 | .00000 |
| 1850 | .00820 | .00000 | .06589 | .08464 | .00027 | .02570 | .13188 | .00000 | .00000 | .00001 | .68330 | .00000 | .00011 | .00000 |
| 1900 | .00819 | .00000 | .06652 | .08400 | .00039 | .02505 | .13241 | .00000 | .00000 | .00003 | .68322 | .00000 | .00018 | .00000 |
| 1950 | .00819 | .00000 | .06711 | .08338 | .00056 | .02445 | .13285 | .00000 | .00000 | .00005 | .68310 | .00000 | .00028 | .00001 |
| 2000 | .00819 | .00000 | .06768 | .08278 | .00079 | .02390 | .13317 | .00000 | .00000 | .00008 | .68292 | .00001 | .00045 | .00003 |
| 2050 | .00819 | .00000 | .06825 | .08215 | .00109 | .02340 | .13334 | .00000 | .00000 | .00014 | .68266 | .00002 | .00069 | .00006 |
| 2100 | .00818 | .00000 | .06886 | .08147 | .00148 | .02297 | .13332 | .00000 | .00000 | .00023 | .68227 | .00005 | .00105 | .00012 |
| 2150 | .00818 | .00000 | .06957 | .08065 | .00199 | .02261 | .13306 | .00000 | .00000 | .00037 | .68169 | .00009 | .00155 | .00024 |
| 2200 | .00817 | .00000 | .07045 | .07961 | .00265 | .02237 | .13246 | .00000 | .00000 | .00057 | .68086 | .00018 | .00224 | .00045 |
| 2250 | .00816 | .00000 | .07162 | .07820 | .00349 | .02229 | .13142 | .00000 | .00000 | .00087 | .67965 | .00033 | .00315 | .00083 |
| 2300 | .00814 | .00000 | .07321 | .07628 | .00456 | .02242 | .12981 | .00000 | .00000 | .00126 | .67796 | .00059 | .00434 | .00143 |
| 2350 | .00811 | .00000 | .07532 | .07372 | .00592 | .02283 | .12750 | .00000 | .00000 | .00178 | .67565 | .00100 | .00583 | .00233 |
| 2400 | .00808 | .00000 | .07802 | .07043 | .00767 | .02354 | .12439 | .00000 | .00000 | .00243 | .67262 | .00163 | .00761 | .00358 |
| 2450 | .00804 | .00000 | .08127 | .06642 | .00990 | .02458 | .12042 | .00000 | .00000 | .00318 | .66881 | .00254 | .00968 | .00515 |
| 2500 | .00799 | .00000 | .08497 | .06180 | .01272 | .02591 | .11554 | .00000 | .00000 | .00404 | .66419 | .00381 | .01201 | .00701 |
| 2550 | .00793 | .00000 | .08895 | .05672 | .01626 | .02749 | .10979 | .00000 | .00000 | .00498 | .65877 | .00552 | .01455 | .00905 |
| 2600 | .00786 | .00000 | .09304 | .05137 | .02063 | .02924 | .10320 | .00000 | .00000 | .00598 | .65255 | .00773 | .01722 | .01117 |
| 2650 | .00778 | .00000 | .09706 | .04594 | .02597 | .03107 | .09584 | .00000 | .00000 | .00701 | .64558 | .01054 | .01995 | .01326 |
| 2700 | .00770 | .00000 | .10083 | .04059 | .03238 | .03287 | .08782 | .00000 | .00000 | .00805 | .63790 | .01400 | .02265 | .01520 |
| 2750 | .00760 | .00000 | .10424 | .03545 | .03996 | .03453 | .07930 | .00001 | .00000 | .00907 | .62955 | .01817 | .02520 | .01692 |
| 2800 | .00750 | .00000 | .10720 | .03063 | .04874 | .03590 | .07043 | .00001 | .00000 | .01006 | .62061 | .02310 | .02750 | .01832 |
| 2850 | .00740 | .00000 | .10966 | .02620 | .05871 | .03688 | .06144 | .00001 | .00000 | .01098 | .61117 | .02880 | .02941 | .01934 |
| 2900 | .00728 | .00000 | .11159 | .02219 | .06981 | .03733 | .05255 | .00002 | .00000 | .01180 | .60137 | .03526 | .03084 | .01994 |
| 2950 | .00717 | .00000 | .11303 | .01863 | .08188 | .03719 | .04401 | .00002 | .00000 | .01252 | .59135 | .04240 | .03168 | .02011 |
| 3000 | .00705 | .00000 | .11400 | .01551 | .09470 | .03640 | .03603 | .00003 | .00000 | .01311 | .58128 | .05015 | .03189 | .01984 |

TABLE 16.3D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 210 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 220 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 230 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 240 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 250 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 260 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 270 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 280 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 290 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 298 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 300 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 310 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 320 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00001 | .11733 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 330 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00001 | .11733 | .00000 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 340 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00002 | .11733 | .00000 | .00001 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 350 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00003 | .11732 | .00000 | .00001 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 360 | .00859 | .02401 | .00000 | .13379 | .00000 | .00000 | .00004 | .11731 | .00000 | .00001 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 370 | .00859 | .02400 | .00000 | .13379 | .00000 | .00000 | .00006 | .11730 | .00000 | .00001 | .00000 | .71625 | .00000 | .00000 | .00000 |
| 380 | .00859 | .02399 | .00000 | .13380 | .00000 | .00000 | .00009 | .11728 | .00000 | .00001 | .00000 | .71624 | .00000 | .00000 | .00000 |
| 390 | .00859 | .02398 | .00000 | .13380 | .00000 | .00000 | .00012 | .11726 | .00000 | .00001 | .00000 | .71622 | .00000 | .00000 | .00000 |
| 400 | .00859 | .02397 | .00000 | .13381 | .00000 | .00000 | .00017 | .11724 | .00000 | .00001 | .00000 | .71621 | .00000 | .00000 | .00000 |
| 410 | .00859 | .02395 | .00000 | .13383 | .00000 | .00000 | .00024 | .11720 | .00000 | .00001 | .00000 | .71618 | .00000 | .00000 | .00000 |
| 420 | .00859 | .02393 | .00000 | .13384 | .00000 | .00000 | .00032 | .11715 | .00000 | .00001 | .00000 | .71615 | .00000 | .00000 | .00000 |
| 430 | .00859 | .02390 | .00000 | .13386 | .00000 | .00000 | .00042 | .11709 | .00000 | .00002 | .00000 | .71612 | .00000 | .00000 | .00000 |
| 440 | .00859 | .02387 | .00000 | .13389 | .00000 | .00000 | .00055 | .11702 | .00000 | .00002 | .00000 | .71607 | .00000 | .00000 | .00000 |
| 450 | .00859 | .02382 | .00000 | .13392 | .00000 | .00000 | .00072 | .11692 | .00000 | .00002 | .00000 | .71601 | .00000 | .00000 | .00000 |
| 460 | .00859 | .02377 | .00000 | .13395 | .00000 | .00000 | .00092 | .11681 | .00000 | .00002 | .00000 | .71593 | .00000 | .00000 | .00000 |
| 470 | .00859 | .02370 | .00001 | .13400 | .00000 | .00000 | .00117 | .11667 | .00000 | .00002 | .00000 | .71584 | .00000 | .00000 | .00000 |
| 480 | .00858 | .02362 | .00001 | .13405 | .00000 | .00000 | .00148 | .11650 | .00000 | .00003 | .00000 | .71573 | .00000 | .00000 | .00000 |
| 490 | .00858 | .02352 | .00001 | .13412 | .00000 | .00000 | .00184 | .11630 | .00000 | .00003 | .00000 | .71560 | .00000 | .00000 | .00000 |
| 500 | .00858 | .02341 | .00002 | .13419 | .00000 | .00000 | .00228 | .11606 | .00000 | .00003 | .00000 | .71544 | .00000 | .00000 | .00000 |
| 510 | .00858 | .02327 | .00003 | .13428 | .00000 | .00000 | .00279 | .11577 | .00000 | .00003 | .00000 | .71525 | .00000 | .00000 | .00000 |
| 520 | .00858 | .02311 | .00004 | .13438 | .00000 | .00000 | .00339 | .11544 | .00000 | .00003 | .00000 | .71503 | .00000 | .00000 | .00000 |
| 530 | .00857 | .02292 | .00006 | .13449 | .00000 | .00000 | .00410 | .11505 | .00000 | .00004 | .00000 | .71477 | .00000 | .00000 | .00000 |
| 540 | .00857 | .02270 | .00008 | .13462 | .00000 | .00000 | .00491 | .11461 | .00000 | .00004 | .00000 | .71447 | .00000 | .00000 | .00000 |
| 550 | .00857 | .02244 | .00012 | .13477 | .00000 | .00000 | .00584 | .11410 | .00000 | .00004 | .00000 | .71413 | .00000 | .00000 | .00000 |
| 560 | .00856 | .02215 | .00017 | .13492 | .00000 | .00000 | .00690 | .11353 | .00000 | .00004 | .00000 | .71373 | .00000 | .00000 | .00000 |
| 570 | .00855 | .02182 | .00023 | .13509 | .00000 | .00000 | .00810 | .11288 | .00000 | .00004 | .00000 | .71328 | .00000 | .00000 | .00000 |
| 580 | .00855 | .02145 | .00031 | .13528 | .00000 | .00000 | .00945 | .11216 | .00000 | .00005 | .00000 | .71276 | .00000 | .00000 | .00000 |
| 590 | .00854 | .02102 | .00041 | .13547 | .00000 | .00000 | .01095 | .11137 | .00000 | .00005 | .00000 | .71219 | .00000 | .00000 | .00000 |

TABLE 16.3D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00853 | .02055 | .00055 | .13566 | .00000 | .00000 | .01262 | .11049 | .00000 | .00005 | .00000 | .71154 | .00000 | .00000 | .00000 |
| 610 | .00853 | .02002 | .00072 | .13586 | .00000 | .00000 | .01446 | .10954 | .00000 | .00005 | .00000 | .71082 | .00000 | .00000 | .00000 |
| 620 | .00852 | .01944 | .00094 | .13605 | .00000 | .00000 | .01647 | .10851 | .00000 | .00005 | .00000 | .71002 | .00000 | .00000 | .00000 |
| 630 | .00851 | .01879 | .00121 | .13623 | .00000 | .00000 | .01866 | .10741 | .00000 | .00006 | .00000 | .70914 | .00000 | .00000 | .00000 |
| 640 | .00849 | .01809 | .00154 | .13639 | .00000 | .00000 | .02102 | .10624 | .00000 | .00006 | .00000 | .70817 | .00000 | .00000 | .00000 |
| 650 | .00848 | .01731 | .00196 | .13651 | .00000 | .00000 | .02355 | .10500 | .00000 | .00006 | .00000 | .70712 | .00000 | .00000 | .00000 |
| 660 | .00847 | .01648 | .00246 | .13660 | .00000 | .00000 | .02625 | .10372 | .00000 | .00006 | .00000 | .70597 | .00000 | .00000 | .00000 |
| 670 | .00845 | .01557 | .00307 | .13662 | .00000 | .00000 | .02909 | .10240 | .00000 | .00006 | .00000 | .70474 | .00000 | .00000 | .00000 |
| 680 | .00844 | .01460 | .00379 | .13658 | .00000 | .00000 | .03207 | .10105 | .00000 | .00006 | .00000 | .70341 | .00000 | .00000 | .00000 |
| 690 | .00842 | .01357 | .00464 | .13645 | .00000 | .00000 | .03516 | .09970 | .00000 | .00006 | .00000 | .70200 | .00000 | .00000 | .00000 |
| 700 | .00840 | .01248 | .00562 | .13623 | .00000 | .00000 | .03833 | .09836 | .00000 | .00006 | .00000 | .70051 | .00000 | .00000 | .00000 |
| 710 | .00838 | .01134 | .00675 | .13590 | .00000 | .00000 | .04155 | .09706 | .00000 | .00006 | .00000 | .69896 | .00000 | .00000 | .00000 |
| 720 | .00836 | .01016 | .00802 | .13544 | .00000 | .00000 | .04478 | .09582 | .00000 | .00006 | .00000 | .69734 | .00000 | .00000 | .00000 |
| 730 | .00834 | .00896 | .00944 | .13487 | .00000 | .00000 | .04795 | .09467 | .00000 | .00006 | .00000 | .69570 | .00000 | .00000 | .00000 |
| 740 | .00832 | .00775 | .01098 | .13417 | .00000 | .00000 | .05102 | .09364 | .00000 | .00006 | .00000 | .69405 | .00000 | .00000 | .00000 |
| 750 | .00830 | .00657 | .01263 | .13336 | .00000 | .00000 | .05391 | .09276 | .00000 | .00005 | .00000 | .69243 | .00000 | .00000 | .00000 |
| 760 | .00829 | .00543 | .01434 | .13244 | .00000 | .00000 | .05654 | .09204 | .00000 | .00005 | .00000 | .69087 | .00000 | .00000 | .00000 |
| 770 | .00827 | .00437 | .01608 | .13144 | .00000 | .00000 | .05884 | .09153 | .00000 | .00005 | .00000 | .68943 | .00000 | .00000 | .00000 |
| 780 | .00825 | .00342 | .01779 | .13039 | .00000 | .00000 | .06075 | .09122 | .00000 | .00005 | .00000 | .68813 | .00000 | .00000 | .00000 |
| 790 | .00824 | .00261 | .01944 | .12931 | .00000 | .00000 | .06222 | .09113 | .00000 | .00004 | .00000 | .68701 | .00000 | .00000 | .00000 |
| 800 | .00823 | .00193 | .02100 | .12822 | .00000 | .00000 | .06325 | .09124 | .00000 | .00004 | .00000 | .68609 | .00000 | .00000 | .00000 |
| 810 | .00822 | .00140 | .02243 | .12716 | .00000 | .00000 | .06385 | .09154 | .00000 | .00004 | .00000 | .68536 | .00000 | .00000 | .00000 |
| 820 | .00821 | .00100 | .02375 | .12613 | .00000 | .00000 | .06408 | .09200 | .00000 | .00003 | .00000 | .68481 | .00000 | .00000 | .00000 |
| 830 | .00821 | .00070 | .02495 | .12513 | .00000 | .00000 | .06402 | .09257 | .00000 | .00003 | .00000 | .68440 | .00000 | .00000 | .00000 |
| 840 | .00821 | .00049 | .02606 | .12417 | .00000 | .00000 | .06372 | .09322 | .00000 | .00003 | .00000 | .68411 | .00000 | .00000 | .00000 |
| 850 | .00820 | .00034 | .02709 | .12324 | .00000 | .00000 | .06326 | .09394 | .00000 | .00002 | .00000 | .68391 | .00000 | .00000 | .00000 |
| 860 | .00820 | .00023 | .02806 | .12234 | .00000 | .00000 | .06269 | .09469 | .00000 | .00002 | .00000 | .68376 | .00000 | .00000 | .00000 |
| 870 | .00820 | .00016 | .02899 | .12147 | .00000 | .00000 | .06204 | .09546 | .00000 | .00002 | .00000 | .68367 | .00000 | .00000 | .00000 |
| 880 | .00820 | .00011 | .02988 | .12061 | .00000 | .00000 | .06134 | .09624 | .00000 | .00002 | .00000 | .68360 | .00000 | .00000 | .00000 |
| 890 | .00820 | .00008 | .03073 | .11978 | .00000 | .00000 | .06062 | .09702 | .00000 | .00002 | .00000 | .68355 | .00000 | .00000 | .00000 |
| 900 | .00820 | .00005 | .03156 | .11896 | .00000 | .00000 | .05988 | .09781 | .00000 | .00001 | .00000 | .68352 | .00000 | .00000 | .00000 |
| 910 | .00820 | .00004 | .03237 | .11817 | .00000 | .00000 | .05913 | .09858 | .00000 | .00001 | .00000 | .68350 | .00000 | .00000 | .00000 |
| 920 | .00820 | .00003 | .03316 | .11738 | .00000 | .00000 | .05839 | .09935 | .00000 | .00001 | .00000 | .68348 | .00000 | .00000 | .00000 |
| 930 | .00820 | .00002 | .03394 | .11662 | .00000 | .00000 | .05765 | .10010 | .00000 | .00001 | .00000 | .68347 | .00000 | .00000 | .00000 |
| 940 | .00820 | .00001 | .03469 | .11586 | .00000 | .00000 | .05691 | .10085 | .00000 | .00001 | .00000 | .68346 | .00000 | .00000 | .00000 |
| 950 | .00820 | .00001 | .03543 | .11513 | .00000 | .00000 | .05619 | .10158 | .00000 | .00001 | .00000 | .68346 | .00000 | .00000 | .00000 |
| 960 | .00820 | .00001 | .03616 | .11440 | .00000 | .00000 | .05548 | .10230 | .00000 | .00001 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 970 | .00820 | .00001 | .03687 | .11369 | .00000 | .00000 | .05477 | .10301 | .00000 | .00001 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 980 | .00820 | .00000 | .03757 | .11299 | .00000 | .00000 | .05408 | .10370 | .00000 | .00001 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 990 | .00820 | .00000 | .03825 | .11231 | .00000 | .00000 | .05340 | .10438 | .00000 | .00001 | .00000 | .68345 | .00000 | .00000 | .00000 |

TABLE 16.3D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00820 | .00000 | .03892 | .11164 | .00000 | .00000 | .05274 | .10505 | .00000 | .00001 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 1050 | .00820 | .00000 | .04208 | .10849 | .00000 | .00000 | .04959 | .10820 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1100 | .00820 | .00000 | .04493 | .10564 | .00000 | .00000 | .04674 | .11105 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1150 | .00820 | .00000 | .04749 | .10307 | .00000 | .00000 | .04418 | .11362 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1200 | .00820 | .00000 | .04980 | .10076 | .00000 | .00000 | .04187 | .11593 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1250 | .00820 | .00000 | .05189 | .09868 | .00000 | .00000 | .03978 | .11801 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1300 | .00820 | .00000 | .05377 | .09680 | .00000 | .00000 | .03791 | .11989 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1350 | .00820 | .00000 | .05546 | .09510 | .00000 | .00000 | .03621 | .12159 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1400 | .00820 | .00000 | .05700 | .09356 | .00000 | .00000 | .03467 | .12312 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1450 | .00820 | .00000 | .05839 | .09217 | .00000 | .00000 | .03328 | .12452 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1500 | .00820 | .00000 | .05966 | .09091 | .00000 | .00000 | .03202 | .12578 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1550 | .00820 | .00000 | .06081 | .08976 | .00001 | .00000 | .03086 | .12693 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1600 | .00820 | .00000 | .06185 | .08871 | .00001 | .00000 | .02981 | .12798 | .00000 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1650 | .00820 | .00000 | .06281 | .08775 | .00002 | .00000 | .02885 | .12893 | .00000 | .00000 | .00000 | .68343 | .00000 | .00000 | .00000 |
| 1700 | .00820 | .00000 | .06369 | .08687 | .00002 | .00000 | .02797 | .12981 | .00000 | .00000 | .00000 | .68343 | .00000 | .00001 | .00000 |
| 1750 | .00820 | .00000 | .06450 | .08606 | .00004 | .00000 | .02716 | .13061 | .00000 | .00000 | .00000 | .68342 | .00000 | .00001 | .00000 |
| 1800 | .00820 | .00000 | .06524 | .08532 | .00006 | .00000 | .02642 | .13134 | .00000 | .00000 | .00000 | .68341 | .00000 | .00002 | .00000 |
| 1850 | .00820 | .00000 | .06592 | .08464 | .00009 | .00000 | .02573 | .13200 | .00000 | .00000 | .00000 | .68340 | .00000 | .00003 | .00000 |
| 1900 | .00820 | .00000 | .06655 | .08400 | .00012 | .00000 | .02509 | .13260 | .00000 | .00000 | .00001 | .68337 | .00000 | .00006 | .00000 |
| 1950 | .00820 | .00000 | .06713 | .08341 | .00018 | .00000 | .02450 | .13314 | .00000 | .00000 | .00002 | .68334 | .00000 | .00009 | .00000 |
| 2000 | .00820 | .00000 | .06768 | .08286 | .00025 | .00000 | .02396 | .13361 | .00000 | .00000 | .00003 | .68328 | .00000 | .00014 | .00000 |
| 2050 | .00819 | .00000 | .06819 | .08233 | .00035 | .00000 | .02345 | .13402 | .00000 | .00000 | .00004 | .68321 | .00000 | .00022 | .00001 |
| 2100 | .00819 | .00000 | .06868 | .08181 | .00047 | .00000 | .02298 | .13434 | .00000 | .00000 | .00007 | .68309 | .00000 | .00033 | .00001 |
| 2150 | .00819 | .00000 | .06917 | .08130 | .00063 | .00000 | .02256 | .13458 | .00000 | .00000 | .00012 | .68293 | .00001 | .00050 | .00002 |
| 2200 | .00819 | .00000 | .06966 | .08076 | .00083 | .00000 | .02217 | .13470 | .00000 | .00000 | .00019 | .68271 | .00002 | .00072 | .00005 |
| 2250 | .00819 | .00000 | .07019 | .08017 | .00109 | .00000 | .02184 | .13469 | .00000 | .00000 | .00029 | .68239 | .00003 | .00103 | .00009 |
| 2300 | .00818 | .00000 | .07079 | .07949 | .00141 | .00000 | .02156 | .13451 | .00000 | .00000 | .00043 | .68194 | .00006 | .00145 | .00017 |
| 2350 | .00818 | .00000 | .07150 | .07866 | .00181 | .00000 | .02136 | .13411 | .00000 | .00000 | .00064 | .68132 | .00011 | .00200 | .00029 |
| 2400 | .00817 | .00000 | .07240 | .07762 | .00231 | .00000 | .02127 | .13344 | .00000 | .00000 | .00092 | .68048 | .00019 | .00272 | .00050 |
| 2450 | .00816 | .00000 | .07353 | .07627 | .00291 | .00000 | .02130 | .13243 | .00000 | .00000 | .00129 | .67934 | .00032 | .00362 | .00083 |
| 2500 | .00814 | .00000 | .07498 | .07454 | .00366 | .00000 | .02149 | .13102 | .00000 | .00000 | .00177 | .67784 | .00052 | .00473 | .00131 |
| 2550 | .00812 | .00000 | .07680 | .07236 | .00459 | .00000 | .02188 | .12913 | .00000 | .00000 | .00236 | .67591 | .00082 | .00606 | .00198 |
| 2600 | .00810 | .00000 | .07903 | .06969 | .00572 | .00000 | .02248 | .12671 | .00000 | .00000 | .00307 | .67351 | .00124 | .00763 | .00285 |
| 2650 | .00807 | .00000 | .08163 | .06653 | .00711 | .00000 | .02329 | .12373 | .00000 | .00000 | .00389 | .67060 | .00181 | .00941 | .00393 |
| 2700 | .00803 | .00000 | .08457 | .06294 | .00881 | .00000 | .02433 | .12017 | .00000 | .00000 | .00481 | .66716 | .00259 | .01139 | .00520 |
| 2750 | .00799 | .00000 | .08776 | .05899 | .01087 | .00000 | .02556 | .11603 | .00000 | .00000 | .00582 | .66322 | .00359 | .01355 | .00661 |
| 2800 | .00794 | .00000 | .09111 | .05479 | .01336 | .00000 | .02696 | .11133 | .00000 | .00000 | .00690 | .65878 | .00486 | .01586 | .00811 |
| 2850 | .00789 | .00000 | .09449 | .05044 | .01632 | .00001 | .02850 | .10610 | .00000 | .00000 | .00802 | .65387 | .00644 | .01827 | .00965 |
| 2900 | .00783 | .00000 | .09782 | .04605 | .01983 | .00001 | .03012 | .10038 | .00001 | .00000 | .00918 | .64850 | .00835 | .02074 | .01118 |
| 2950 | .00777 | .00000 | .10101 | .04172 | .02394 | .00001 | .03178 | .09424 | .00001 | .00000 | .01035 | .64272 | .01063 | .02321 | .01263 |
| 3000 | .00770 | .00000 | .10398 | .03752 | .02869 | .00001 | .03341 | .08773 | .00001 | .00000 | .01151 | .63654 | .01330 | .02563 | .01397 |

TABLE 16.4D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO $\bar{\nu}$ 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 210 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 220 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 230 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 240 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 250 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 260 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 270 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 280 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 290 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 298 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 300 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 310 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 320 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11733 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 330 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11733 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 340 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00001 | .11733 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 350 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00001 | .11733 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 360 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00001 | .11732 | .00001 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 370 | .00859 | .02401 | .00000 | .13379 | .00000 | .00000 | .00002 | .11732 | .00001 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 380 | .00859 | .02401 | .00000 | .13379 | .00000 | .00000 | .00003 | .11731 | .00002 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 390 | .00859 | .02400 | .00000 | .13379 | .00000 | .00000 | .00004 | .11730 | .00002 | .00000 | .71625 | .00000 | .00000 | .00000 |
| 400 | .00859 | .02400 | .00000 | .13380 | .00000 | .00000 | .00005 | .11729 | .00002 | .00000 | .71625 | .00000 | .00000 | .00000 |
| 410 | .00859 | .02399 | .00000 | .13380 | .00000 | .00000 | .00007 | .11728 | .00002 | .00000 | .71624 | .00000 | .00000 | .00000 |
| 420 | .00859 | .02398 | .00000 | .13381 | .00000 | .00000 | .00010 | .11727 | .00003 | .00000 | .71623 | .00000 | .00000 | .00000 |
| 430 | .00859 | .02397 | .00000 | .13381 | .00000 | .00000 | .00013 | .11724 | .00003 | .00000 | .71622 | .00000 | .00000 | .00000 |
| 440 | .00859 | .02396 | .00000 | .13382 | .00000 | .00000 | .00018 | .11722 | .00003 | .00000 | .71620 | .00000 | .00000 | .00000 |
| 450 | .00859 | .02395 | .00000 | .13383 | .00000 | .00000 | .00023 | .11719 | .00003 | .00000 | .71618 | .00000 | .00000 | .00000 |
| 460 | .00859 | .02393 | .00000 | .13385 | .00000 | .00000 | .00029 | .11715 | .00004 | .00000 | .71616 | .00000 | .00000 | .00000 |
| 470 | .00859 | .02391 | .00000 | .13386 | .00000 | .00000 | .00037 | .11710 | .00004 | .00000 | .71613 | .00000 | .00000 | .00000 |
| 480 | .00859 | .02388 | .00000 | .13388 | .00000 | .00000 | .00047 | .11705 | .00005 | .00000 | .71609 | .00000 | .00000 | .00000 |
| 490 | .00859 | .02385 | .00000 | .13390 | .00000 | .00000 | .00059 | .11698 | .00005 | .00000 | .71605 | .00000 | .00000 | .00000 |
| 500 | .00859 | .02381 | .00001 | .13393 | .00000 | .00000 | .00073 | .11690 | .00005 | .00000 | .71599 | .00000 | .00000 | .00000 |
| 510 | .00859 | .02376 | .00001 | .13396 | .00000 | .00000 | .00089 | .11680 | .00006 | .00000 | .71593 | .00000 | .00000 | .00000 |
| 520 | .00859 | .02371 | .00001 | .13399 | .00000 | .00000 | .00109 | .11669 | .00006 | .00000 | .71586 | .00000 | .00000 | .00000 |
| 530 | .00859 | .02365 | .00002 | .13403 | .00000 | .00000 | .00132 | .11657 | .00007 | .00000 | .71577 | .00000 | .00000 | .00000 |
| 540 | .00858 | .02357 | .00003 | .13407 | .00000 | .00000 | .00158 | .11642 | .00007 | .00000 | .71567 | .00000 | .00000 | .00000 |
| 550 | .00858 | .02349 | .00004 | .13412 | .00000 | .00000 | .00189 | .11625 | .00007 | .00000 | .71556 | .00000 | .00000 | .00000 |
| 560 | .00858 | .02339 | .00005 | .13418 | .00000 | .00000 | .00224 | .11606 | .00008 | .00000 | .71543 | .00000 | .00000 | .00000 |
| 570 | .00858 | .02328 | .00007 | .13424 | .00000 | .00000 | .00264 | .11584 | .00008 | .00000 | .71528 | .00000 | .00000 | .00000 |
| 580 | .00858 | .02315 | .00010 | .13430 | .00000 | .00000 | .00310 | .11559 | .00009 | .00000 | .71510 | .00000 | .00000 | .00000 |
| 590 | .00857 | .02301 | .00013 | .13437 | .00000 | .00000 | .00361 | .11531 | .00009 | .00000 | .71490 | .00000 | .00000 | .00000 |

TABLE 16.4D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00857 | .02284 | .00017 | .13444 | .00000 | .00000 | .00419 | .11501 | .00010 | .00000 | .71468 | .00000 | .00000 | .00000 |
| 610 | .00857 | .02266 | .00023 | .13452 | .00000 | .00000 | .00484 | .11467 | .00010 | .00000 | .71443 | .00000 | .00000 | .00000 |
| 620 | .00857 | .02245 | .00030 | .13460 | .00000 | .00000 | .00556 | .11429 | .00011 | .00000 | .71414 | .00000 | .00000 | .00000 |
| 630 | .00856 | .02221 | .00038 | .13467 | .00000 | .00000 | .00635 | .11388 | .00011 | .00000 | .71382 | .00000 | .00000 | .00000 |
| 640 | .00856 | .02195 | .00049 | .13475 | .00000 | .00000 | .00723 | .11343 | .00011 | .00000 | .71347 | .00000 | .00000 | .00000 |
| 650 | .00855 | .02166 | .00063 | .13482 | .00000 | .00000 | .00820 | .11295 | .00012 | .00000 | .71308 | .00000 | .00000 | .00000 |
| 660 | .00855 | .02134 | .00079 | .13488 | .00000 | .00000 | .00925 | .11243 | .00012 | .00000 | .71264 | .00000 | .00000 | .00000 |
| 670 | .00854 | .02099 | .00099 | .13492 | .00000 | .00000 | .01039 | .11188 | .00013 | .00000 | .71215 | .00000 | .00000 | .00000 |
| 680 | .00854 | .02060 | .00123 | .13495 | .00000 | .00000 | .01163 | .11129 | .00013 | .00000 | .71162 | .00000 | .00000 | .00000 |
| 690 | .00853 | .02017 | .00152 | .13496 | .00000 | .00000 | .01297 | .11067 | .00013 | .00000 | .71104 | .00000 | .00000 | .00000 |
| 700 | .00852 | .01970 | .00187 | .13494 | .00000 | .00000 | .01440 | .11002 | .00014 | .00000 | .71040 | .00000 | .00000 | .00000 |
| 710 | .00851 | .01919 | .00228 | .13489 | .00000 | .00000 | .01594 | .10934 | .00014 | .00000 | .70970 | .00000 | .00000 | .00000 |
| 720 | .00850 | .01864 | .00276 | .13480 | .00000 | .00000 | .01757 | .10864 | .00014 | .00000 | .70895 | .00000 | .00000 | .00000 |
| 730 | .00849 | .01804 | .00333 | .13465 | .00000 | .00000 | .01929 | .10792 | .00015 | .00000 | .70812 | .00000 | .00000 | .00000 |
| 740 | .00848 | .01739 | .00398 | .13445 | .00000 | .00000 | .02111 | .10719 | .00015 | .00000 | .70724 | .00000 | .00000 | .00000 |
| 750 | .00847 | .01669 | .00473 | .13419 | .00000 | .00000 | .02302 | .10645 | .00015 | .00000 | .70628 | .00000 | .00000 | .00000 |
| 760 | .00846 | .01594 | .00558 | .13386 | .00000 | .00000 | .02500 | .10572 | .00015 | .00000 | .70526 | .00000 | .00000 | .00000 |
| 770 | .00845 | .01515 | .00655 | .13345 | .00000 | .00000 | .02709 | .10499 | .00016 | .00000 | .70418 | .00000 | .00000 | .00000 |
| 780 | .00843 | .01430 | .00763 | .13296 | .00000 | .00000 | .02922 | .10427 | .00016 | .00000 | .70302 | .00000 | .00000 | .00000 |
| 790 | .00842 | .01341 | .00884 | .13237 | .00000 | .00000 | .03141 | .10358 | .00016 | .00000 | .70181 | .00000 | .00000 | .00000 |
| 800 | .00840 | .01248 | .01017 | .13169 | .00000 | .00000 | .03364 | .10292 | .00016 | .00000 | .70053 | .00000 | .00000 | .00000 |
| 810 | .00839 | .01152 | .01162 | .13092 | .00000 | .00000 | .03589 | .10231 | .00016 | .00000 | .69921 | .00000 | .00000 | .00000 |
| 820 | .00837 | .01052 | .01317 | .13006 | .00000 | .00000 | .03813 | .10174 | .00015 | .00000 | .69785 | .00000 | .00000 | .00000 |
| 830 | .00835 | .00951 | .01483 | .12911 | .00000 | .00000 | .04035 | .10124 | .00015 | .00000 | .69646 | .00000 | .00000 | .00000 |
| 840 | .00834 | .00848 | .01658 | .12808 | .00000 | .00000 | .04250 | .10080 | .00015 | .00000 | .69506 | .00000 | .00000 | .00000 |
| 850 | .00832 | .00747 | .01839 | .12698 | .00000 | .00000 | .04457 | .10045 | .00015 | .00000 | .69368 | .00000 | .00000 | .00000 |
| 860 | .00830 | .00648 | .02024 | .12582 | .00000 | .00000 | .04650 | .10019 | .00014 | .00000 | .69232 | .00000 | .00000 | .00000 |
| 870 | .00829 | .00553 | .02209 | .12463 | .00000 | .00000 | .04828 | .10002 | .00014 | .00000 | .69103 | .00000 | .00000 | .00000 |
| 880 | .00827 | .00464 | .02392 | .12342 | .00000 | .00000 | .04985 | .09995 | .00013 | .00000 | .68981 | .00000 | .00000 | .00000 |
| 890 | .00826 | .00383 | .02570 | .12221 | .00000 | .00000 | .05120 | .09999 | .00013 | .00000 | .68869 | .00000 | .00000 | .00000 |
| 900 | .00825 | .00310 | .02739 | .12103 | .00000 | .00000 | .05229 | .10013 | .00012 | .00000 | .68770 | .00000 | .00000 | .00000 |
| 910 | .00824 | .00247 | .02898 | .11988 | .00000 | .00000 | .05312 | .10037 | .00012 | .00000 | .68683 | .00000 | .00000 | .00000 |
| 920 | .00823 | .00193 | .03045 | .11878 | .00000 | .00000 | .05370 | .10070 | .00011 | .00000 | .68610 | .00000 | .00000 | .00000 |
| 930 | .00822 | .00149 | .03180 | .11774 | .00000 | .00000 | .05404 | .10111 | .00010 | .00000 | .68550 | .00000 | .00000 | .00000 |
| 940 | .00822 | .00114 | .03303 | .11675 | .00000 | .00000 | .05416 | .10159 | .00009 | .00000 | .68502 | .00000 | .00000 | .00000 |
| 950 | .00821 | .00086 | .03415 | .11583 | .00000 | .00000 | .05411 | .10212 | .00009 | .00000 | .68464 | .00000 | .00000 | .00000 |
| 960 | .00821 | .00065 | .03517 | .11495 | .00000 | .00000 | .05391 | .10269 | .00008 | .00000 | .68434 | .00000 | .00000 | .00000 |
| 970 | .00821 | .00049 | .03612 | .11412 | .00000 | .00000 | .05359 | .10328 | .00007 | .00000 | .68412 | .00000 | .00000 | .00000 |
| 980 | .00820 | .00036 | .03699 | .11333 | .00000 | .00000 | .05319 | .10390 | .00007 | .00000 | .68395 | .00000 | .00000 | .00000 |
| 990 | .00820 | .00027 | .03781 | .11257 | .00000 | .00000 | .05273 | .10452 | .00006 | .00000 | .68383 | .00000 | .00000 | .00000 |

TABLE 16.4D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00820 | .00020 | .03858 | .11185 | .00000 | .00000 | .05223 | .10515 | .00006 | .00000 | .68373 | .00000 | .00000 | .00000 |
| 1050 | .00820 | .00005 | .04198 | .10856 | .00000 | .00000 | .04945 | .10821 | .00004 | .00000 | .68352 | .00000 | .00000 | .00000 |
| 1100 | .00820 | .00001 | .04489 | .10567 | .00000 | .00000 | .04669 | .11105 | .00003 | .00000 | .68346 | .00000 | .00000 | .00000 |
| 1150 | .00820 | .00000 | .04748 | .10309 | .00000 | .00000 | .04415 | .11361 | .00002 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 1200 | .00820 | .00000 | .04980 | .10077 | .00000 | .00000 | .04185 | .11592 | .00001 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 1250 | .00820 | .00000 | .05188 | .09868 | .00000 | .00000 | .03978 | .11801 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1300 | .00820 | .00000 | .05376 | .09680 | .00000 | .00000 | .03790 | .11989 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1350 | .00820 | .00000 | .05546 | .09510 | .00000 | .00000 | .03620 | .12159 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1400 | .00820 | .00000 | .05700 | .09357 | .00000 | .00000 | .03467 | .12312 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1450 | .00820 | .00000 | .05839 | .09217 | .00000 | .00000 | .03328 | .12451 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1500 | .00820 | .00000 | .05965 | .09091 | .00000 | .00000 | .03201 | .12578 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1550 | .00820 | .00000 | .06081 | .08976 | .00000 | .00000 | .03086 | .12693 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1600 | .00820 | .00000 | .06185 | .08871 | .00000 | .00000 | .02981 | .12798 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1650 | .00820 | .00000 | .06281 | .08775 | .00000 | .00000 | .02885 | .12894 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1700 | .00820 | .00000 | .06369 | .08687 | .00001 | .00000 | .02798 | .12982 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1750 | .00820 | .00000 | .06450 | .08606 | .00001 | .00000 | .02717 | .13062 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1800 | .00820 | .00000 | .06524 | .08532 | .00002 | .00000 | .02642 | .13136 | .00000 | .00000 | .68343 | .00000 | .00001 | .00000 |
| 1850 | .00820 | .00000 | .06592 | .08464 | .00003 | .00000 | .02574 | .13204 | .00000 | .00000 | .68343 | .00000 | .00001 | .00000 |
| 1900 | .00820 | .00000 | .06655 | .08400 | .00004 | .00000 | .02511 | .13266 | .00000 | .00000 | .68342 | .00000 | .00002 | .00000 |
| 1950 | .00820 | .00000 | .06714 | .08342 | .00006 | .00000 | .02452 | .13323 | .00000 | .00000 | .68341 | .00000 | .00003 | .00000 |
| 2000 | .00820 | .00000 | .06768 | .08287 | .00008 | .00000 | .02398 | .13375 | .00000 | .00001 | .68339 | .00000 | .00005 | .00000 |
| 2050 | .00820 | .00000 | .06819 | .08236 | .00011 | .00000 | .02347 | .13422 | .00000 | .00001 | .68337 | .00000 | .00007 | .00000 |
| 2100 | .00820 | .00000 | .06866 | .08188 | .00015 | .00000 | .02301 | .13464 | .00000 | .00002 | .68333 | .00000 | .00011 | .00000 |
| 2150 | .00820 | .00000 | .06910 | .08143 | .00020 | .00000 | .02257 | .13502 | .00000 | .00004 | .68329 | .00000 | .00016 | .00000 |
| 2200 | .00819 | .00000 | .06953 | .08099 | .00026 | .00000 | .02217 | .13534 | .00000 | .00006 | .68322 | .00000 | .00023 | .00000 |
| 2250 | .00819 | .00000 | .06994 | .08056 | .00034 | .00000 | .02180 | .13560 | .00000 | .00009 | .68313 | .00000 | .00033 | .00001 |
| 2300 | .00819 | .00000 | .07035 | .08013 | .00045 | .00000 | .02146 | .13580 | .00000 | .00014 | .68300 | .00001 | .00046 | .00002 |
| 2350 | .00819 | .00000 | .07077 | .07968 | .00057 | .00000 | .02115 | .13592 | .00000 | .00021 | .68282 | .00001 | .00065 | .00003 |
| 2400 | .00819 | .00000 | .07121 | .07920 | .00072 | .00000 | .02088 | .13595 | .00000 | .00030 | .68259 | .00002 | .00088 | .00005 |
| 2450 | .00819 | .00000 | .07168 | .07867 | .00091 | .00000 | .02065 | .13587 | .00000 | .00043 | .68227 | .00003 | .00119 | .00009 |
| 2500 | .00818 | .00000 | .07223 | .07805 | .00113 | .00000 | .02048 | .13567 | .00000 | .00061 | .68186 | .00006 | .00159 | .00015 |
| 2550 | .00818 | .00000 | .07287 | .07732 | .00140 | .00000 | .02036 | .13531 | .00000 | .00084 | .68131 | .00009 | .00208 | .00025 |
| 2600 | .00817 | .00000 | .07363 | .07643 | .00172 | .00000 | .02031 | .13476 | .00000 | .00115 | .68060 | .00015 | .00270 | .00039 |
| 2650 | .00816 | .00000 | .07457 | .07534 | .00210 | .00000 | .02035 | .13399 | .00000 | .00154 | .67969 | .00022 | .00345 | .00060 |
| 2700 | .00815 | .00000 | .07570 | .07400 | .00256 | .00000 | .02049 | .13296 | .00000 | .00202 | .67854 | .00034 | .00434 | .00090 |
| 2750 | .00814 | .00000 | .07708 | .07238 | .00310 | .00000 | .02076 | .13164 | .00000 | .00260 | .67713 | .00050 | .00540 | .00129 |
| 2800 | .00812 | .00000 | .07871 | .07045 | .00374 | .00000 | .02115 | .12999 | .00000 | .00329 | .67541 | .00072 | .00661 | .00180 |
| 2850 | .00810 | .00000 | .08060 | .06819 | .00450 | .00000 | .02169 | .12800 | .00000 | .00408 | .67338 | .00102 | .00799 | .00243 |
| 2900 | .00808 | .00000 | .08275 | .06563 | .00541 | .00000 | .02238 | .12566 | .00000 | .00497 | .67102 | .00141 | .00952 | .00317 |
| 2950 | .00805 | .00000 | .08511 | .06278 | .00647 | .00001 | .02322 | .12294 | .00000 | .00596 | .66833 | .00190 | .01120 | .00403 |
| 3000 | .00802 | .00000 | .08766 | .05969 | .00772 | .00001 | .02419 | .11986 | .00000 | .00702 | .66533 | .00251 | .01301 | .00497 |

TABLE 16.5D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 210 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 220 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 230 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 240 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 250 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 260 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 270 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 280 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00000 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 290 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 298 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 300 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11734 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 310 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11733 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 320 | .00859 | .02402 | .00000 | .13378 | .00000 | .00000 | .00000 | .11733 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 330 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00000 | .11733 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 340 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00000 | .11733 | .00001 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 350 | .00859 | .02401 | .00000 | .13378 | .00000 | .00000 | .00000 | .11733 | .00002 | .00000 | .71627 | .00000 | .00000 | .00000 |
| 360 | .00859 | .02401 | .00000 | .13379 | .00000 | .00000 | .00001 | .11732 | .00002 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 370 | .00859 | .02401 | .00000 | .13379 | .00000 | .00000 | .00001 | .11732 | .00002 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 380 | .00859 | .02401 | .00000 | .13379 | .00000 | .00000 | .00001 | .11732 | .00002 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 390 | .00859 | .02400 | .00000 | .13379 | .00000 | .00000 | .00002 | .11731 | .00003 | .00000 | .71626 | .00000 | .00000 | .00000 |
| 400 | .00859 | .02400 | .00000 | .13379 | .00000 | .00000 | .00002 | .11730 | .00003 | .00000 | .71625 | .00000 | .00000 | .00000 |
| 410 | .00859 | .02400 | .00000 | .13380 | .00000 | .00000 | .00003 | .11730 | .00003 | .00000 | .71625 | .00000 | .00000 | .00000 |
| 420 | .00859 | .02399 | .00000 | .13380 | .00000 | .00000 | .00005 | .11729 | .00004 | .00000 | .71624 | .00000 | .00000 | .00000 |
| 430 | .00859 | .02399 | .00000 | .13381 | .00000 | .00000 | .00006 | .11728 | .00004 | .00000 | .71624 | .00000 | .00000 | .00000 |
| 440 | .00859 | .02398 | .00000 | .13381 | .00000 | .00000 | .00008 | .11726 | .00005 | .00000 | .71623 | .00000 | .00000 | .00000 |
| 450 | .00859 | .02397 | .00000 | .13382 | .00000 | .00000 | .00010 | .11725 | .00005 | .00000 | .71622 | .00000 | .00000 | .00000 |
| 460 | .00859 | .02396 | .00000 | .13382 | .00000 | .00000 | .00013 | .11723 | .00006 | .00000 | .71621 | .00000 | .00000 | .00000 |
| 470 | .00859 | .02395 | .00000 | .13383 | .00000 | .00000 | .00017 | .11720 | .00006 | .00000 | .71619 | .00000 | .00000 | .00000 |
| 480 | .00859 | .02394 | .00000 | .13384 | .00000 | .00000 | .00021 | .11717 | .00007 | .00000 | .71618 | .00000 | .00000 | .00000 |
| 490 | .00859 | .02392 | .00000 | .13385 | .00000 | .00000 | .00026 | .11714 | .00007 | .00000 | .71615 | .00000 | .00000 | .00000 |
| 500 | .00859 | .02390 | .00000 | .13387 | .00000 | .00000 | .00033 | .11710 | .00008 | .00000 | .71613 | .00000 | .00000 | .00000 |
| 510 | .00859 | .02388 | .00000 | .13388 | .00000 | .00000 | .00040 | .11706 | .00009 | .00000 | .71610 | .00000 | .00000 | .00000 |
| 520 | .00859 | .02386 | .00001 | .13390 | .00000 | .00000 | .00049 | .11700 | .00009 | .00000 | .71607 | .00000 | .00000 | .00000 |
| 530 | .00859 | .02383 | .00001 | .13392 | .00000 | .00000 | .00059 | .11694 | .00010 | .00000 | .71603 | .00000 | .00000 | .00000 |
| 540 | .00859 | .02379 | .00001 | .13394 | .00000 | .00000 | .00071 | .11687 | .00010 | .00000 | .71598 | .00000 | .00000 | .00000 |
| 550 | .00859 | .02375 | .00002 | .13396 | .00000 | .00000 | .00085 | .11679 | .00011 | .00000 | .71593 | .00000 | .00000 | .00000 |
| 560 | .00859 | .02371 | .00002 | .13399 | .00000 | .00000 | .00101 | .11670 | .00012 | .00000 | .71587 | .00000 | .00000 | .00000 |
| 570 | .00859 | .02365 | .00003 | .13402 | .00000 | .00000 | .00119 | .11660 | .00013 | .00000 | .71580 | .00000 | .00000 | .00000 |
| 580 | .00858 | .02359 | .00004 | .13405 | .00000 | .00000 | .00140 | .11648 | .00013 | .00000 | .71571 | .00000 | .00000 | .00000 |
| 590 | .00858 | .02352 | .00006 | .13409 | .00000 | .00000 | .00163 | .11635 | .00014 | .00000 | .71562 | .00000 | .00000 | .00000 |

TABLE 16.5D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00858 | .02345 | .00008 | .13412 | .00000 | .00000 | .00190 | .11621 | .00015 | .00000 | .71552 | .00000 | .00000 | .00000 |
| 610 | .00858 | .02336 | .00010 | .13416 | .00000 | .00000 | .00219 | .11605 | .00015 | .00000 | .71540 | .00000 | .00000 | .00000 |
| 620 | .00858 | .02326 | .00013 | .13420 | .00000 | .00000 | .00253 | .11587 | .00016 | .00000 | .71527 | .00000 | .00000 | .00000 |
| 630 | .00858 | .02315 | .00017 | .13424 | .00000 | .00000 | .00290 | .11568 | .00017 | .00000 | .71512 | .00000 | .00000 | .00000 |
| 640 | .00858 | .02303 | .00022 | .13427 | .00000 | .00000 | .00331 | .11546 | .00018 | .00000 | .71495 | .00000 | .00000 | .00000 |
| 650 | .00857 | .02289 | .00028 | .13431 | .00000 | .00000 | .00376 | .11523 | .00018 | .00000 | .71477 | .00000 | .00000 | .00000 |
| 660 | .00857 | .02274 | .00035 | .13435 | .00000 | .00000 | .00425 | .11498 | .00019 | .00000 | .71456 | .00000 | .00000 | .00000 |
| 670 | .00857 | .02257 | .00044 | .13437 | .00000 | .00000 | .00480 | .11471 | .00020 | .00000 | .71433 | .00000 | .00000 | .00000 |
| 680 | .00857 | .02239 | .00055 | .13440 | .00000 | .00000 | .00539 | .11442 | .00021 | .00000 | .71408 | .00000 | .00000 | .00000 |
| 690 | .00856 | .02218 | .00069 | .13441 | .00000 | .00000 | .00604 | .11412 | .00021 | .00000 | .71380 | .00000 | .00000 | .00000 |
| 700 | .00856 | .02195 | .00084 | .13441 | .00000 | .00000 | .00674 | .11379 | .00022 | .00000 | .71349 | .00000 | .00000 | .00000 |
| 710 | .00855 | .02170 | .00103 | .13440 | .00000 | .00000 | .00749 | .11344 | .00023 | .00000 | .71315 | .00000 | .00000 | .00000 |
| 720 | .00855 | .02143 | .00125 | .13437 | .00000 | .00000 | .00831 | .11308 | .00024 | .00000 | .71277 | .00000 | .00000 | .00000 |
| 730 | .00855 | .02113 | .00151 | .13432 | .00000 | .00000 | .00918 | .11270 | .00024 | .00000 | .71237 | .00000 | .00000 | .00000 |
| 740 | .00854 | .02080 | .00182 | .13425 | .00000 | .00000 | .01011 | .11231 | .00025 | .00000 | .71192 | .00000 | .00000 | .00000 |
| 750 | .00853 | .02045 | .00217 | .13414 | .00000 | .00000 | .01111 | .11191 | .00026 | .00000 | .71144 | .00000 | .00000 | .00000 |
| 760 | .00853 | .02006 | .00258 | .13401 | .00000 | .00000 | .01217 | .11149 | .00026 | .00000 | .71091 | .00000 | .00000 | .00000 |
| 770 | .00852 | .01964 | .00305 | .13383 | .00000 | .00000 | .01329 | .11107 | .00027 | .00000 | .71034 | .00000 | .00000 | .00000 |
| 780 | .00851 | .01919 | .00358 | .13361 | .00000 | .00000 | .01447 | .11064 | .00027 | .00000 | .70972 | .00000 | .00000 | .00000 |
| 790 | .00851 | .01870 | .00419 | .13335 | .00000 | .00000 | .01572 | .11021 | .00028 | .00000 | .70905 | .00000 | .00000 | .00000 |
| 800 | .00850 | .01818 | .00487 | .13303 | .00000 | .00000 | .01702 | .10978 | .00028 | .00000 | .70834 | .00000 | .00000 | .00000 |
| 810 | .00849 | .01762 | .00564 | .13265 | .00000 | .00000 | .01839 | .10935 | .00029 | .00000 | .70757 | .00000 | .00000 | .00000 |
| 820 | .00848 | .01702 | .00650 | .13221 | .00000 | .00000 | .01982 | .10893 | .00029 | .00000 | .70675 | .00000 | .00000 | .00000 |
| 830 | .00847 | .01638 | .00745 | .13171 | .00000 | .00000 | .02130 | .10852 | .00030 | .00000 | .70588 | .00000 | .00000 | .00000 |
| 840 | .00846 | .01570 | .00850 | .13114 | .00000 | .00000 | .02283 | .10812 | .00030 | .00000 | .70496 | .00000 | .00000 | .00000 |
| 850 | .00845 | .01499 | .00965 | .13049 | .00000 | .00000 | .02440 | .10775 | .00030 | .00000 | .70398 | .00000 | .00000 | .00000 |
| 860 | .00843 | .01424 | .01089 | .12977 | .00000 | .00000 | .02601 | .10740 | .00030 | .00000 | .70296 | .00000 | .00000 | .00000 |
| 870 | .00842 | .01345 | .01223 | .12897 | .00000 | .00000 | .02766 | .10707 | .00030 | .00000 | .70189 | .00000 | .00000 | .00000 |
| 880 | .00841 | .01264 | .01367 | .12810 | .00000 | .00000 | .02933 | .10677 | .00030 | .00000 | .70078 | .00000 | .00000 | .00000 |
| 890 | .00839 | .01180 | .01520 | .12716 | .00000 | .00000 | .03101 | .10651 | .00030 | .00000 | .69963 | .00000 | .00000 | .00000 |
| 900 | .00838 | .01094 | .01681 | .12615 | .00000 | .00000 | .03269 | .10628 | .00030 | .00000 | .69845 | .00000 | .00000 | .00000 |
| 910 | .00836 | .01006 | .01850 | .12508 | .00000 | .00000 | .03435 | .10609 | .00030 | .00000 | .69725 | .00000 | .00000 | .00000 |
| 920 | .00835 | .00918 | .02024 | .12396 | .00000 | .00000 | .03599 | .10595 | .00030 | .00000 | .69604 | .00000 | .00000 | .00000 |
| 930 | .00834 | .00830 | .02202 | .12279 | .00000 | .00000 | .03757 | .10586 | .00030 | .00000 | .69484 | .00000 | .00000 | .00000 |
| 940 | .00832 | .00742 | .02383 | .12159 | .00000 | .00000 | .03909 | .10581 | .00029 | .00000 | .69364 | .00000 | .00000 | .00000 |
| 950 | .00831 | .00657 | .02565 | .12036 | .00000 | .00000 | .04053 | .10581 | .00028 | .00000 | .69248 | .00000 | .00000 | .00000 |
| 960 | .00829 | .00576 | .02745 | .11913 | .00000 | .00000 | .04186 | .10587 | .00028 | .00000 | .69136 | .00000 | .00000 | .00000 |
| 970 | .00828 | .00498 | .02922 | .11790 | .00000 | .00000 | .04306 | .10598 | .00027 | .00000 | .69030 | .00000 | .00000 | .00000 |
| 980 | .00827 | .00426 | .03093 | .11670 | .00000 | .00000 | .04413 | .10615 | .00026 | .00000 | .68931 | .00000 | .00000 | .00000 |
| 990 | .00826 | .00360 | .03256 | .11553 | .00000 | .00000 | .04503 | .10637 | .00025 | .00000 | .68840 | .00000 | .00000 | .00000 |

TABLE 16.5D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00825 | .00300 | .03410 | .11440 | .00000 | .00000 | .04578 | .10664 | .00024 | .00000 | .68759 | .00000 | .00000 | .00000 |
| 1050 | .00822 | .00104 | .04027 | .10959 | .00000 | .00000 | .04717 | .10863 | .00018 | .00000 | .68490 | .00000 | .00000 | .00000 |
| 1100 | .00820 | .00032 | .04431 | .10605 | .00000 | .00000 | .04596 | .11113 | .00013 | .00000 | .68390 | .00000 | .00000 | .00000 |
| 1150 | .00820 | .00010 | .04727 | .10324 | .00000 | .00000 | .04390 | .11361 | .00009 | .00000 | .68359 | .00000 | .00000 | .00000 |
| 1200 | .00820 | .00003 | .04971 | .10084 | .00000 | .00000 | .04174 | .11591 | .00007 | .00000 | .68350 | .00000 | .00000 | .00000 |
| 1250 | .00820 | .00001 | .05184 | .09873 | .00000 | .00000 | .03972 | .11799 | .00005 | .00000 | .68347 | .00000 | .00000 | .00000 |
| 1300 | .00820 | .00000 | .05374 | .09683 | .00000 | .00000 | .03787 | .11987 | .00004 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 1350 | .00820 | .00000 | .05544 | .09512 | .00000 | .00000 | .03618 | .12157 | .00003 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 1400 | .00820 | .00000 | .05698 | .09358 | .00000 | .00000 | .03465 | .12311 | .00002 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 1450 | .00820 | .00000 | .05838 | .09219 | .00000 | .00000 | .03327 | .12451 | .00002 | .00000 | .68345 | .00000 | .00000 | .00000 |
| 1500 | .00820 | .00000 | .05965 | .09092 | .00000 | .00000 | .03201 | .12577 | .00002 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1550 | .00820 | .00000 | .06080 | .08977 | .00000 | .00000 | .03086 | .12692 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1600 | .00820 | .00000 | .06185 | .08872 | .00000 | .00000 | .02981 | .12798 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1650 | .00820 | .00000 | .06281 | .08775 | .00000 | .00000 | .02885 | .12894 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1700 | .00820 | .00000 | .06369 | .08687 | .00000 | .00000 | .02797 | .12981 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1750 | .00820 | .00000 | .06450 | .08607 | .00001 | .00000 | .02717 | .13062 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1800 | .00820 | .00000 | .06524 | .08532 | .00001 | .00000 | .02642 | .13136 | .00001 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1850 | .00820 | .00000 | .06592 | .08464 | .00001 | .00000 | .02574 | .13204 | .00000 | .00000 | .68344 | .00000 | .00000 | .00000 |
| 1900 | .00820 | .00000 | .06655 | .08401 | .00002 | .00000 | .02511 | .13267 | .00000 | .00000 | .68343 | .00000 | .00001 | .00000 |
| 1950 | .00820 | .00000 | .06714 | .08342 | .00003 | .00000 | .02452 | .13325 | .00000 | .00000 | .68343 | .00000 | .00001 | .00000 |
| 2000 | .00820 | .00000 | .06768 | .08288 | .00004 | .00000 | .02398 | .13378 | .00000 | .00000 | .68342 | .00000 | .00002 | .00000 |
| 2050 | .00820 | .00000 | .06818 | .08237 | .00005 | .00000 | .02348 | .13427 | .00000 | .00001 | .68341 | .00000 | .00003 | .00000 |
| 2100 | .00820 | .00000 | .06865 | .08190 | .00007 | .00000 | .02301 | .13472 | .00000 | .00001 | .68339 | .00000 | .00005 | .00000 |
| 2150 | .00820 | .00000 | .06909 | .08146 | .00009 | .00000 | .02258 | .13512 | .00000 | .00002 | .68337 | .00000 | .00007 | .00000 |
| 2200 | .00820 | .00000 | .06951 | .08104 | .00012 | .00000 | .02217 | .13549 | .00000 | .00003 | .68334 | .00000 | .00010 | .00000 |
| 2250 | .00820 | .00000 | .06990 | .08064 | .00015 | .00000 | .02180 | .13582 | .00000 | .00004 | .68330 | .00000 | .00015 | .00000 |
| 2300 | .00819 | .00000 | .07027 | .08025 | .00020 | .00000 | .02145 | .13610 | .00000 | .00006 | .68325 | .00000 | .00021 | .00000 |
| 2350 | .00819 | .00000 | .07064 | .07988 | .00025 | .00000 | .02113 | .13634 | .00000 | .00009 | .68317 | .00000 | .00029 | .00001 |
| 2400 | .00819 | .00000 | .07100 | .07950 | .00032 | .00000 | .02083 | .13653 | .00000 | .00014 | .68307 | .00000 | .00040 | .00001 |
| 2450 | .00819 | .00000 | .07136 | .07912 | .00041 | .00000 | .02056 | .13667 | .00000 | .00020 | .68294 | .00001 | .00054 | .00002 |
| 2500 | .00819 | .00000 | .07173 | .07871 | .00050 | .00000 | .02032 | .13674 | .00000 | .00028 | .68276 | .00001 | .00072 | .00003 |
| 2550 | .00819 | .00000 | .07213 | .07827 | .00062 | .00000 | .02011 | .13673 | .00000 | .00039 | .68253 | .00002 | .00095 | .00005 |
| 2600 | .00819 | .00000 | .07257 | .07779 | .00076 | .00000 | .01994 | .13664 | .00000 | .00053 | .68223 | .00003 | .00123 | .00008 |
| 2650 | .00818 | .00000 | .07306 | .07723 | .00093 | .00000 | .01981 | .13645 | .00000 | .00072 | .68185 | .00005 | .00159 | .00013 |
| 2700 | .00818 | .00000 | .07363 | .07658 | .00112 | .00000 | .01972 | .13613 | .00000 | .00096 | .68137 | .00007 | .00203 | .00020 |
| 2750 | .00817 | .00000 | .07430 | .07581 | .00135 | .00000 | .01969 | .13568 | .00000 | .00127 | .68076 | .00011 | .00255 | .00030 |
| 2800 | .00817 | .00000 | .07508 | .07490 | .00162 | .00000 | .01972 | .13507 | .00000 | .00164 | .68000 | .00016 | .00318 | .00045 |
| 2850 | .00816 | .00000 | .07602 | .07382 | .00193 | .00000 | .01983 | .13428 | .00000 | .00210 | .67908 | .00023 | .00392 | .00064 |
| 2900 | .00815 | .00000 | .07711 | .07253 | .00229 | .00000 | .02002 | .13329 | .00000 | .00265 | .67796 | .00033 | .00478 | .00089 |
| 2950 | .00813 | .00000 | .07840 | .07103 | .00271 | .00000 | .02030 | .13207 | .00000 | .00329 | .67663 | .00047 | .00575 | .00122 |
| 3000 | .00812 | .00000 | .07987 | .06929 | .00319 | .00001 | .02069 | .13061 | .00000 | .00403 | .67507 | .00064 | .00686 | .00161 |

TABLE 16.1E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1.01325 KPA (0.01 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15767 | .00013 | .00000 | .68344 |
| 220 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15572 | .00208 | .00000 | .68344 |
| 240 | .00820 | .04582 | .00001 | .00000 | .10474 | .00000 | .13585 | .02193 | .00000 | .68345 |
| 260 | .00821 | .04444 | .00073 | .00000 | .10561 | .00000 | .00000 | .15657 | .00000 | .68444 |
| 280 | .00822 | .04354 | .00120 | .00000 | .10618 | .00000 | .00000 | .15577 | .00000 | .68509 |
| 298 | .00823 | .04246 | .00176 | .00000 | .10687 | .00001 | .00000 | .15481 | .00000 | .68585 |
| 300 | .00823 | .04234 | .00183 | .00000 | .10695 | .00002 | .00000 | .15470 | .00000 | .68594 |
| 320 | .00824 | .04084 | .00260 | .00000 | .10790 | .00005 | .00000 | .15336 | .00000 | .68700 |
| 340 | .00825 | .03908 | .00351 | .00000 | .10903 | .00013 | .00000 | .15176 | .00000 | .68823 |
| 360 | .00827 | .03707 | .00451 | .00000 | .11034 | .00032 | .00000 | .14988 | .00000 | .68960 |
| 380 | .00829 | .03485 | .00557 | .00000 | .11182 | .00071 | .00000 | .14770 | .00000 | .69106 |
| 400 | .00831 | .03244 | .00665 | .00000 | .11348 | .00143 | .00000 | .14517 | .00000 | .69252 |
| 420 | .00832 | .02985 | .00767 | .00000 | .11535 | .00269 | .00000 | .14218 | .00000 | .69392 |
| 440 | .00834 | .02710 | .00857 | .00001 | .11747 | .00476 | .00000 | .13860 | .00000 | .69515 |
| 460 | .00835 | .02417 | .00926 | .00002 | .11990 | .00795 | .00000 | .13424 | .00001 | .69610 |
| 480 | .00836 | .02107 | .00967 | .00006 | .12268 | .01258 | .00000 | .12893 | .00001 | .69665 |
| 500 | .00836 | .01776 | .00972 | .00014 | .12587 | .01892 | .00000 | .12251 | .00001 | .69672 |
| 520 | .00835 | .01422 | .00938 | .00032 | .12946 | .02709 | .00000 | .11490 | .00001 | .69627 |
| 540 | .00834 | .01041 | .00868 | .00069 | .13340 | .03703 | .00000 | .10614 | .00001 | .69531 |
| 560 | .00832 | .00625 | .00769 | .00139 | .13755 | .04841 | .00000 | .09642 | .00001 | .69396 |
| 580 | .00830 | .00166 | .00653 | .00269 | .14165 | .06072 | .00000 | .08606 | .00001 | .69237 |
| 600 | .00827 | .00000 | .00421 | .00451 | .14312 | .07110 | .00000 | .07960 | .00001 | .68919 |
| 620 | .00823 | .00000 | .00199 | .00652 | .14265 | .07754 | .00000 | .07689 | .00001 | .68617 |
| 640 | .00821 | .00000 | .00077 | .00852 | .14151 | .08021 | .00000 | .07629 | .00000 | .68450 |
| 660 | .00820 | .00000 | .00027 | .01038 | .13999 | .08027 | .00000 | .07708 | .00000 | .68381 |
| 680 | .00820 | .00000 | .00009 | .01219 | .13831 | .07914 | .00000 | .07850 | .00000 | .68357 |
| 700 | .00820 | .00000 | .00003 | .01399 | .13655 | .07756 | .00000 | .08018 | .00000 | .68348 |
| 720 | .00820 | .00000 | .00001 | .01581 | .13475 | .07582 | .00000 | .08196 | .00000 | .68346 |
| 740 | .00820 | .00000 | .00000 | .01764 | .13292 | .07402 | .00000 | .08377 | .00000 | .68345 |
| 760 | .00820 | .00000 | .00000 | .01948 | .13108 | .07219 | .00000 | .08561 | .00000 | .68344 |
| 780 | .00820 | .00000 | .00000 | .02131 | .12925 | .07036 | .00000 | .08744 | .00000 | .68344 |
| 800 | .00820 | .00000 | .00000 | .02312 | .12744 | .06855 | .00000 | .08925 | .00000 | .68344 |

TABLE 16.2E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 10.1325 KPA (0.10 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15779 | .00000 | .00001 | .00000 | .68344 |
| 220 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15759 | .00000 | .00021 | .00000 | .68344 |
| 240 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15566 | .00000 | .00214 | .00000 | .68344 |
| 260 | .00820 | .04582 | .00001 | .00000 | .10474 | .00000 | .14216 | .00000 | .01563 | .00000 | .68345 |
| 280 | .00820 | .04513 | .00037 | .00000 | .10518 | .00000 | .00000 | .07104 | .08614 | .00000 | .68395 |
| 298 | .00823 | .04247 | .00177 | .00000 | .10686 | .00000 | .00000 | .00000 | .15482 | .00000 | .68585 |
| 300 | .00823 | .04234 | .00183 | .00000 | .10694 | .00001 | .00000 | .00000 | .15471 | .00000 | .68594 |
| 320 | .00824 | .04086 | .00260 | .00000 | .10789 | .00002 | .00000 | .00000 | .15339 | .00000 | .68700 |
| 340 | .00825 | .03911 | .00351 | .00000 | .10900 | .00004 | .00000 | .00000 | .15184 | .00000 | .68824 |
| 360 | .00827 | .03715 | .00452 | .00000 | .11025 | .00010 | .00000 | .00000 | .15007 | .00000 | .68963 |
| 380 | .00829 | .03501 | .00561 | .00000 | .11163 | .00022 | .00000 | .00000 | .14812 | .00000 | .69111 |
| 400 | .00831 | .03274 | .00674 | .00000 | .11311 | .00046 | .00000 | .00000 | .14598 | .00001 | .69266 |
| 420 | .00833 | .03037 | .00787 | .00000 | .11469 | .00086 | .00000 | .00000 | .14366 | .00001 | .69420 |
| 440 | .00834 | .02794 | .00897 | .00000 | .11635 | .00154 | .00000 | .00000 | .14114 | .00001 | .69570 |
| 460 | .00836 | .02547 | .00999 | .00001 | .11811 | .00261 | .00000 | .00000 | .13836 | .00001 | .69709 |
| 480 | .00838 | .02296 | .01088 | .00002 | .11999 | .00422 | .00000 | .00000 | .13525 | .00001 | .69831 |
| 500 | .00839 | .02042 | .01159 | .00004 | .12200 | .00652 | .00000 | .00000 | .13173 | .00001 | .69929 |
| 520 | .00840 | .01786 | .01209 | .00010 | .12416 | .00971 | .00000 | .00000 | .12771 | .00002 | .69996 |
| 540 | .00840 | .01526 | .01232 | .00021 | .12649 | .01391 | .00000 | .00000 | .12311 | .00002 | .70028 |
| 560 | .00840 | .01259 | .01226 | .00042 | .12898 | .01926 | .00000 | .00000 | .11787 | .00002 | .70020 |
| 580 | .00839 | .00982 | .01189 | .00082 | .13162 | .02580 | .00000 | .00000 | .11194 | .00002 | .69970 |
| 600 | .00838 | .00686 | .01125 | .00151 | .13434 | .03349 | .00000 | .00000 | .10534 | .00002 | .69882 |
| 620 | .00837 | .00362 | .01037 | .00267 | .13704 | .04218 | .00000 | .00000 | .09813 | .00002 | .69761 |
| 640 | .00835 | .00000 | .00929 | .00456 | .13952 | .05164 | .00000 | .00000 | .09048 | .00002 | .69614 |
| 660 | .00830 | .00000 | .00651 | .00684 | .13917 | .05995 | .00000 | .00000 | .08685 | .00002 | .69235 |
| 680 | .00826 | .00000 | .00400 | .00958 | .13819 | .06680 | .00000 | .00000 | .08424 | .00002 | .68892 |
| 700 | .00823 | .00000 | .00210 | .01242 | .13668 | .07123 | .00000 | .00000 | .08302 | .00001 | .68631 |
| 720 | .00821 | .00000 | .00095 | .01501 | .13489 | .07302 | .00000 | .00000 | .08317 | .00001 | .68474 |
| 740 | .00820 | .00000 | .00040 | .01728 | .13301 | .07287 | .00000 | .00000 | .08425 | .00001 | .68398 |
| 760 | .00820 | .00000 | .00016 | .01932 | .13113 | .07173 | .00000 | .00000 | .08579 | .00001 | .68366 |
| 780 | .00820 | .00000 | .00007 | .02124 | .12928 | .07017 | .00000 | .00000 | .08751 | .00001 | .68353 |
| 800 | .00820 | .00000 | .00003 | .02309 | .12745 | .06847 | .00000 | .00000 | .08928 | .00000 | .68348 |

TABLE 16.3E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 101.325 KPA (1.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15780 | .00000 | .00000 | .00000 | .68344 |
| 220 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15778 | .00000 | .00002 | .00000 | .68344 |
| 240 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15758 | .00000 | .00021 | .00000 | .68344 |
| 260 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15626 | .00000 | .00154 | .00000 | .68344 |
| 280 | .00820 | .04583 | .00000 | .00000 | .10473 | .00000 | .14996 | .00000 | .00784 | .00000 | .68345 |
| 298 | .00820 | .04574 | .00005 | .00000 | .10479 | .00000 | .00000 | .13213 | .02558 | .00000 | .68351 |
| 300 | .00820 | .04571 | .00006 | .00000 | .10480 | .00000 | .00000 | .12904 | .02865 | .00000 | .68353 |
| 320 | .00821 | .04401 | .00096 | .00000 | .10589 | .00000 | .00000 | .06402 | .09217 | .00000 | .68475 |
| 340 | .00825 | .03913 | .00351 | .00000 | .10898 | .00001 | .00000 | .00000 | .15186 | .00000 | .68824 |
| 360 | .00827 | .03717 | .00453 | .00000 | .11022 | .00003 | .00000 | .00000 | .15013 | .00000 | .68963 |
| 380 | .00829 | .03506 | .00563 | .00000 | .11157 | .00007 | .00000 | .00000 | .14824 | .00001 | .69113 |
| 400 | .00831 | .03284 | .00677 | .00000 | .11300 | .00014 | .00000 | .00000 | .14624 | .00001 | .69270 |
| 420 | .00833 | .03054 | .00794 | .00000 | .11448 | .00027 | .00000 | .00000 | .14413 | .00001 | .69430 |
| 440 | .00835 | .02821 | .00910 | .00000 | .11599 | .00049 | .00000 | .00000 | .14196 | .00002 | .69588 |
| 460 | .00836 | .02588 | .01023 | .00000 | .11753 | .00084 | .00000 | .00000 | .13970 | .00002 | .69743 |
| 480 | .00838 | .02357 | .01130 | .00001 | .11909 | .00136 | .00000 | .00000 | .13737 | .00002 | .69890 |
| 500 | .00840 | .02129 | .01230 | .00001 | .12068 | .00212 | .00000 | .00000 | .13493 | .00003 | .70025 |
| 520 | .00841 | .01905 | .01318 | .00003 | .12228 | .00320 | .00000 | .00000 | .13235 | .00003 | .70146 |
| 540 | .00843 | .01685 | .01393 | .00007 | .12391 | .00468 | .00000 | .00000 | .12961 | .00004 | .70249 |
| 560 | .00844 | .01470 | .01453 | .00013 | .12558 | .00663 | .00000 | .00000 | .12664 | .00004 | .70331 |
| 580 | .00844 | .01258 | .01495 | .00025 | .12729 | .00914 | .00000 | .00000 | .12342 | .00004 | .70389 |
| 600 | .00845 | .01047 | .01517 | .00047 | .12903 | .01228 | .00000 | .00000 | .11990 | .00005 | .70419 |
| 620 | .00845 | .00835 | .01519 | .00082 | .13078 | .01611 | .00000 | .00000 | .11604 | .00005 | .70421 |
| 640 | .00844 | .00617 | .01499 | .00140 | .13253 | .02066 | .00000 | .00000 | .11182 | .00006 | .70394 |
| 660 | .00844 | .00385 | .01458 | .00231 | .13422 | .02595 | .00000 | .00000 | .10722 | .00006 | .70338 |
| 680 | .00843 | .00131 | .01397 | .00371 | .13579 | .03193 | .00000 | .00000 | .10225 | .00006 | .70255 |
| 700 | .00840 | .00000 | .01248 | .00562 | .13623 | .03833 | .00000 | .00000 | .09836 | .00006 | .70051 |
| 720 | .00836 | .00000 | .01016 | .00802 | .13544 | .04478 | .00000 | .00000 | .09582 | .00006 | .69734 |
| 740 | .00832 | .00000 | .00775 | .01098 | .13417 | .05102 | .00000 | .00000 | .09364 | .00006 | .69405 |
| 760 | .00829 | .00000 | .00543 | .01434 | .13244 | .05654 | .00000 | .00000 | .09204 | .00005 | .69087 |
| 780 | .00825 | .00000 | .00342 | .01779 | .13039 | .06075 | .00000 | .00000 | .09122 | .00005 | .68813 |
| 800 | .00823 | .00000 | .00193 | .02100 | .12822 | .06325 | .00000 | .00000 | .09124 | .00004 | .68609 |

TABLE 16.4E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 1013.25 KPA (10.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15780 | .00000 | .00000 | .00000 | .68344 |
| 220 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15780 | .00000 | .00000 | .00000 | .68344 |
| 240 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15778 | .00000 | .00002 | .00000 | .68344 |
| 260 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15765 | .00000 | .00015 | .00000 | .68344 |
| 280 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .00000 | .15702 | .00078 | .00000 | .68344 |
| 298 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .00000 | .15531 | .00249 | .00000 | .68344 |
| 300 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .00000 | .15502 | .00277 | .00000 | .68344 |
| 320 | .00820 | .04582 | .00001 | .00000 | .10474 | .00000 | .00000 | .14947 | .00831 | .00000 | .68345 |
| 340 | .00820 | .04569 | .00007 | .00000 | .10482 | .00000 | .00000 | .13594 | .02173 | .00000 | .68354 |
| 360 | .00821 | .04478 | .00055 | .00000 | .10540 | .00000 | .00000 | .10548 | .05138 | .00000 | .68420 |
| 380 | .00825 | .03922 | .00346 | .00000 | .10893 | .00002 | .00000 | .03703 | .11491 | .00001 | .68817 |
| 400 | .00831 | .03286 | .00678 | .00000 | .11296 | .00005 | .00000 | .00000 | .14631 | .00002 | .69271 |
| 420 | .00833 | .03059 | .00796 | .00000 | .11441 | .00009 | .00000 | .00000 | .14428 | .00002 | .69432 |
| 440 | .00835 | .02829 | .00914 | .00000 | .11588 | .00016 | .00000 | .00000 | .14221 | .00003 | .69594 |
| 460 | .00837 | .02601 | .01031 | .00000 | .11736 | .00027 | .00000 | .00000 | .14012 | .00003 | .69754 |
| 480 | .00838 | .02376 | .01144 | .00000 | .11881 | .00043 | .00000 | .00000 | .13804 | .00004 | .69909 |
| 500 | .00840 | .02156 | .01253 | .00000 | .12026 | .00068 | .00000 | .00000 | .13596 | .00005 | .70057 |
| 520 | .00842 | .01942 | .01355 | .00001 | .12167 | .00103 | .00000 | .00000 | .13387 | .00006 | .70197 |
| 540 | .00844 | .01735 | .01450 | .00002 | .12307 | .00151 | .00000 | .00000 | .13177 | .00007 | .70328 |
| 560 | .00845 | .01535 | .01537 | .00004 | .12444 | .00215 | .00000 | .00000 | .12965 | .00007 | .70446 |
| 580 | .00846 | .01343 | .01614 | .00008 | .12578 | .00300 | .00000 | .00000 | .12749 | .00008 | .70552 |
| 600 | .00847 | .01157 | .01681 | .00015 | .12711 | .00408 | .00000 | .00000 | .12527 | .00009 | .70644 |
| 620 | .00848 | .00977 | .01737 | .00026 | .12841 | .00544 | .00000 | .00000 | .12296 | .00010 | .70720 |
| 640 | .00849 | .00801 | .01780 | .00044 | .12969 | .00711 | .00000 | .00000 | .12055 | .00011 | .70779 |
| 660 | .00849 | .00628 | .01810 | .00072 | .13093 | .00913 | .00000 | .00000 | .11801 | .00012 | .70821 |
| 680 | .00850 | .00454 | .01827 | .00115 | .13212 | .01153 | .00000 | .00000 | .11533 | .00013 | .70844 |
| 700 | .00850 | .00277 | .01830 | .00180 | .13324 | .01432 | .00000 | .00000 | .11247 | .00014 | .70848 |
| 720 | .00850 | .00090 | .01819 | .00273 | .13425 | .01753 | .00000 | .00000 | .10944 | .00014 | .70833 |
| 740 | .00848 | .00000 | .01739 | .00398 | .13445 | .02111 | .00000 | .00000 | .10719 | .00015 | .70724 |
| 760 | .00846 | .00000 | .01594 | .00558 | .13386 | .02502 | .00000 | .00000 | .10572 | .00015 | .70526 |
| 780 | .00843 | .00000 | .01430 | .00763 | .13296 | .02922 | .00000 | .00000 | .10427 | .00016 | .70302 |
| 800 | .00840 | .00000 | .01248 | .01017 | .13169 | .03364 | .00000 | .00000 | .10292 | .00016 | .70053 |

TABLE 16.5E -- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.083747; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2496; P = 5066.25 KPA (50.00 ATM)
 DRY AIR

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15780 | .00000 | .00000 | .00000 | .68344 |
| 220 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15780 | .00000 | .00000 | .00000 | .68344 |
| 240 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15779 | .00000 | .00000 | .00000 | .68344 |
| 260 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .15777 | .00000 | .00003 | .00000 | .68344 |
| 280 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .00000 | .15764 | .00016 | .00000 | .68344 |
| 298 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .00000 | .15730 | .00050 | .00000 | .68344 |
| 300 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .00000 | .15725 | .00055 | .00000 | .68344 |
| 320 | .00820 | .04584 | .00000 | .00000 | .10473 | .00000 | .00000 | .15615 | .00165 | .00000 | .68344 |
| 340 | .00820 | .04583 | .00000 | .00000 | .10473 | .00000 | .00000 | .15354 | .00425 | .00000 | .68345 |
| 360 | .00820 | .04580 | .00002 | .00000 | .10475 | .00000 | .00000 | .14802 | .00975 | .00000 | .68347 |
| 380 | .00820 | .04562 | .00011 | .00000 | .10486 | .00000 | .00000 | .13728 | .02033 | .00000 | .68360 |
| 400 | .00821 | .04483 | .00053 | .00000 | .10537 | .00001 | .00000 | .11754 | .03936 | .00000 | .68416 |
| 420 | .00823 | .04175 | .00213 | .00000 | .10733 | .00002 | .00000 | .08183 | .07234 | .00001 | .68636 |
| 440 | .00832 | .03099 | .00775 | .00000 | .11416 | .00006 | .00000 | .01466 | .12997 | .00004 | .69404 |
| 460 | .00837 | .02604 | .01033 | .00000 | .11732 | .00012 | .00000 | .00000 | .14022 | .00005 | .69756 |
| 480 | .00839 | .02380 | .01147 | .00000 | .11875 | .00019 | .00000 | .00000 | .13820 | .00006 | .69914 |
| 500 | .00840 | .02162 | .01258 | .00000 | .12016 | .00030 | .00000 | .00000 | .13620 | .00007 | .70065 |
| 520 | .00842 | .01951 | .01364 | .00000 | .12153 | .00046 | .00000 | .00000 | .13424 | .00009 | .70211 |
| 540 | .00844 | .01747 | .01465 | .00001 | .12286 | .00068 | .00000 | .00000 | .13232 | .00010 | .70348 |
| 560 | .00845 | .01552 | .01559 | .00002 | .12415 | .00097 | .00000 | .00000 | .13042 | .00011 | .70477 |
| 580 | .00847 | .01364 | .01646 | .00004 | .12541 | .00135 | .00000 | .00000 | .12854 | .00013 | .70597 |
| 600 | .00848 | .01184 | .01726 | .00007 | .12662 | .00185 | .00000 | .00000 | .12668 | .00014 | .70706 |
| 620 | .00849 | .01011 | .01798 | .00011 | .12779 | .00248 | .00000 | .00000 | .12482 | .00016 | .70805 |
| 640 | .00850 | .00845 | .01862 | .00020 | .12893 | .00325 | .00000 | .00000 | .12294 | .00017 | .70893 |
| 660 | .00851 | .00685 | .01918 | .00032 | .13002 | .00420 | .00000 | .00000 | .12104 | .00019 | .70969 |
| 680 | .00852 | .00529 | .01964 | .00051 | .13107 | .00534 | .00000 | .00000 | .11910 | .00020 | .71032 |
| 700 | .00853 | .00375 | .02001 | .00080 | .13206 | .00669 | .00000 | .00000 | .11710 | .00022 | .71083 |
| 720 | .00853 | .00222 | .02029 | .00121 | .13299 | .00828 | .00000 | .00000 | .11504 | .00023 | .71121 |
| 740 | .00853 | .00066 | .02046 | .00180 | .13384 | .01010 | .00000 | .00000 | .11289 | .00025 | .71146 |
| 760 | .00853 | .00000 | .02006 | .00258 | .13401 | .01217 | .00000 | .00000 | .11149 | .00026 | .71091 |
| 780 | .00851 | .00000 | .01919 | .00358 | .13361 | .01447 | .00000 | .00000 | .11064 | .00027 | .70972 |
| 800 | .00850 | .00000 | .01818 | .00487 | .13303 | .01702 | .00000 | .00000 | .10978 | .00028 | .70834 |

TABLE 17.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

WET AIR ONLY (W/A= 0.03); F/A = 0; EQUIV. RATIO =0; CHEM. EQUIV. RATIO = 0.1045;

P = 1.01325 KPA (0.01 ATM)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00893 | .00000 | .00030 | .00000 | .00000 | .04601 | .00000 | .00001 | .74490 | .00000 | .00000 | .19983 |
| 950 | .00893 | .00000 | .00030 | .00000 | .00000 | .04601 | .00000 | .00002 | .74490 | .00000 | .00000 | .19983 |
| 1000 | .00893 | .00000 | .00030 | .00000 | .00000 | .04601 | .00000 | .00003 | .74489 | .00000 | .00000 | .19982 |
| 1050 | .00893 | .00000 | .00030 | .00000 | .00000 | .04601 | .00000 | .00006 | .74488 | .00000 | .00000 | .19981 |
| 1100 | .00893 | .00000 | .00030 | .00000 | .00000 | .04601 | .00000 | .00009 | .74486 | .00000 | .00000 | .19979 |
| 1150 | .00893 | .00000 | .00030 | .00000 | .00000 | .04601 | .00000 | .00014 | .74484 | .00000 | .00000 | .19977 |
| 1200 | .00893 | .00000 | .00030 | .00000 | .00000 | .04601 | .00000 | .00020 | .74481 | .00000 | .00001 | .19973 |
| 1250 | .00893 | .00000 | .00030 | .00000 | .00000 | .04601 | .00000 | .00029 | .74476 | .00000 | .00001 | .19969 |
| 1300 | .00893 | .00000 | .00030 | .00000 | .00000 | .04600 | .00000 | .00041 | .74470 | .00000 | .00002 | .19962 |
| 1350 | .00893 | .00000 | .00030 | .00000 | .00000 | .04599 | .00000 | .00056 | .74462 | .00000 | .00004 | .19954 |
| 1400 | .00893 | .00000 | .00030 | .00000 | .00000 | .04598 | .00000 | .00075 | .74452 | .00000 | .00007 | .19944 |
| 1450 | .00893 | .00000 | .00030 | .00000 | .00000 | .04596 | .00000 | .00098 | .74440 | .00001 | .00011 | .19931 |
| 1500 | .00893 | .00000 | .00030 | .00000 | .00000 | .04593 | .00000 | .00125 | .74424 | .00002 | .00017 | .19915 |
| 1550 | .00893 | .00000 | .00030 | .00000 | .00000 | .04588 | .00000 | .00158 | .74406 | .00003 | .00026 | .19895 |
| 1600 | .00893 | .00000 | .00030 | .00000 | .00001 | .04581 | .00000 | .00197 | .74383 | .00006 | .00038 | .19870 |
| 1650 | .00893 | .00000 | .00030 | .00000 | .00001 | .04572 | .00000 | .00242 | .74355 | .00011 | .00055 | .19840 |
| 1700 | .00893 | .00000 | .00030 | .00001 | .00002 | .04559 | .00000 | .00293 | .74321 | .00020 | .00078 | .19802 |
| 1750 | .00893 | .00000 | .00030 | .00001 | .00003 | .04541 | .00000 | .00352 | .74281 | .00033 | .00108 | .19757 |
| 1800 | .00893 | .00000 | .00030 | .00003 | .00005 | .04518 | .00000 | .00417 | .74231 | .00054 | .00147 | .19701 |
| 1850 | .00893 | .00000 | .00030 | .00005 | .00009 | .04487 | .00000 | .00490 | .74171 | .00085 | .00197 | .19632 |
| 1900 | .00892 | .00000 | .00030 | .00009 | .00013 | .04448 | .00000 | .00571 | .74099 | .00131 | .00258 | .19548 |
| 1950 | .00892 | .00001 | .00030 | .00016 | .00019 | .04398 | .00000 | .00659 | .74009 | .00198 | .00334 | .19445 |
| 2000 | .00891 | .00001 | .00029 | .00027 | .00028 | .04334 | .00000 | .00755 | .73899 | .00292 | .00425 | .19318 |
| 2050 | .00890 | .00001 | .00029 | .00045 | .00040 | .04253 | .00000 | .00858 | .73764 | .00423 | .00534 | .19162 |
| 2100 | .00888 | .00002 | .00028 | .00073 | .00056 | .04153 | .00000 | .00967 | .73598 | .00602 | .00660 | .18971 |
| 2150 | .00887 | .00003 | .00028 | .00116 | .00077 | .04030 | .00000 | .01083 | .73392 | .00841 | .00805 | .18740 |
| 2200 | .00884 | .00004 | .00026 | .00179 | .00102 | .03879 | .00000 | .01204 | .73139 | .01155 | .00967 | .18459 |
| 2250 | .00881 | .00005 | .00025 | .00270 | .00134 | .03698 | .00000 | .01328 | .72830 | .01561 | .01145 | .18122 |
| 2300 | .00878 | .00006 | .00023 | .00398 | .00171 | .03483 | .00000 | .01455 | .72453 | .02078 | .01334 | .17720 |
| 2350 | .00873 | .00008 | .00022 | .00572 | .00213 | .03233 | .00000 | .01582 | .71998 | .02725 | .01529 | .17244 |
| 2400 | .00867 | .00010 | .00020 | .00803 | .00258 | .02946 | .00000 | .01708 | .71456 | .03522 | .01722 | .16688 |
| 2450 | .00860 | .00012 | .00017 | .01101 | .00304 | .02627 | .00000 | .01828 | .70819 | .04487 | .01900 | .16044 |
| 2500 | .00852 | .00014 | .00015 | .01470 | .00346 | .02282 | .00000 | .01941 | .70084 | .05635 | .02052 | .15308 |
| 2550 | .00843 | .00016 | .00013 | .01912 | .00380 | .01922 | .00000 | .02043 | .69251 | .06978 | .02165 | .14476 |
| 2600 | .00832 | .00018 | .00011 | .02419 | .00402 | .01563 | .00001 | .02131 | .68330 | .08518 | .02224 | .13551 |
| 2650 | .00821 | .00019 | .00009 | .02974 | .00407 | .01222 | .00001 | .02202 | .67339 | .10247 | .02222 | .12537 |
| 2700 | .00809 | .00020 | .00007 | .03551 | .00395 | .00916 | .00001 | .02252 | .66300 | .12146 | .02155 | .11447 |
| 2750 | .00796 | .00021 | .00006 | .04122 | .00367 | .00658 | .00002 | .02279 | .65244 | .14179 | .02028 | .10297 |
| 2800 | .00784 | .00022 | .00004 | .04657 | .00328 | .00454 | .00003 | .02282 | .64200 | .16298 | .01853 | .09115 |
| 2850 | .00772 | .00023 | .00003 | .05135 | .00282 | .00301 | .00004 | .02260 | .63199 | .18445 | .01647 | .07930 |
| 2900 | .00760 | .00023 | .00003 | .05545 | .00235 | .00193 | .00006 | .02214 | .62265 | .20551 | .01428 | .06777 |
| 2950 | .00750 | .00023 | .00002 | .05884 | .00192 | .00121 | .00008 | .02147 | .61417 | .22555 | .01211 | .05690 |
| 3000 | .00740 | .00024 | .00002 | .06158 | .00154 | .00074 | .00011 | .02061 | .60669 | .24401 | .01009 | .04698 |

TABLE 17.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

WET AIR ONLY (W/A= 0.03); F/A = 0; EQUIV. RATIO = 0; CHEM. EQUIV. RATIO = 0.1045; P = 10.1325 KPA (0.10 ATM)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00001 | .74490 | .00000 | .00000 | .19983 |
| 950 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00002 | .74490 | .00000 | .00000 | .19983 |
| 1000 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00003 | .74489 | .00000 | .00000 | .19982 |
| 1050 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00006 | .74488 | .00000 | .00000 | .19981 |
| 1100 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00009 | .74486 | .00000 | .00000 | .19979 |
| 1150 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00014 | .74484 | .00000 | .00000 | .19977 |
| 1200 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00020 | .74481 | .00000 | .00000 | .19973 |
| 1250 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00029 | .74476 | .00000 | .00001 | .19969 |
| 1300 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00041 | .74470 | .00000 | .00001 | .19963 |
| 1350 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04600 | .00000 | .00056 | .74463 | .00000 | .00002 | .19955 |
| 1400 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04600 | .00000 | .00075 | .74453 | .00000 | .00004 | .19945 |
| 1450 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04598 | .00000 | .00098 | .74441 | .00000 | .00006 | .19933 |
| 1500 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04597 | .00000 | .00125 | .74426 | .00001 | .00010 | .19918 |
| 1550 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04594 | .00000 | .00158 | .74409 | .00001 | .00015 | .19899 |
| 1600 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04590 | .00000 | .00197 | .74388 | .00002 | .00022 | .19877 |
| 1650 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04585 | .00000 | .00242 | .74363 | .00004 | .00031 | .19851 |
| 1700 | .00893 | .00000 | .00030 | .00000 | .00000 | .00001 | .04578 | .00000 | .00294 | .74333 | .00006 | .00044 | .19820 |
| 1750 | .00893 | .00000 | .00030 | .00000 | .00000 | .00001 | .04569 | .00000 | .00352 | .74299 | .00010 | .00061 | .19783 |
| 1800 | .00893 | .00000 | .00030 | .00000 | .00000 | .00002 | .04556 | .00000 | .00418 | .74259 | .00017 | .00083 | .19740 |
| 1850 | .00893 | .00000 | .00030 | .00001 | .00000 | .00003 | .04541 | .00000 | .00491 | .74213 | .00027 | .00111 | .19689 |
| 1900 | .00893 | .00000 | .00030 | .00002 | .00000 | .00004 | .04520 | .00000 | .00572 | .74159 | .00042 | .00147 | .19630 |
| 1950 | .00893 | .00000 | .00030 | .00003 | .00000 | .00006 | .04495 | .00000 | .00662 | .74097 | .00063 | .00190 | .19561 |
| 2000 | .00892 | .00000 | .00030 | .00005 | .00000 | .00009 | .04463 | .00000 | .00759 | .74025 | .00093 | .00243 | .19480 |
| 2050 | .00892 | .00000 | .00030 | .00008 | .00000 | .00013 | .04423 | .00000 | .00864 | .73942 | .00135 | .00307 | .19385 |
| 2100 | .00892 | .00001 | .00030 | .00013 | .00000 | .00019 | .04375 | .00000 | .00977 | .73845 | .00192 | .00383 | .19274 |
| 2150 | .00891 | .00001 | .00029 | .00021 | .00000 | .00026 | .04317 | .00000 | .01097 | .73733 | .00269 | .00471 | .19145 |
| 2200 | .00890 | .00001 | .00029 | .00033 | .00000 | .00035 | .04246 | .00000 | .01225 | .73602 | .00370 | .00573 | .18994 |
| 2250 | .00889 | .00002 | .00029 | .00050 | .00000 | .00047 | .04162 | .00000 | .01359 | .73449 | .00503 | .00690 | .18819 |
| 2300 | .00888 | .00002 | .00028 | .00075 | .00000 | .00062 | .04063 | .00000 | .01500 | .73271 | .00673 | .00820 | .18616 |
| 2350 | .00886 | .00003 | .00027 | .00111 | .00001 | .00080 | .03946 | .00000 | .01646 | .73064 | .00890 | .00966 | .18381 |
| 2400 | .00884 | .00004 | .00026 | .00159 | .00001 | .00101 | .03811 | .00000 | .01796 | .72824 | .01160 | .01124 | .18110 |
| 2450 | .00882 | .00005 | .00025 | .00225 | .00001 | .00127 | .03655 | .00000 | .01949 | .72544 | .01494 | .01294 | .17799 |
| 2500 | .00879 | .00006 | .00023 | .00312 | .00001 | .00156 | .03477 | .00000 | .02103 | .72221 | .01902 | .01472 | .17445 |
| 2550 | .00875 | .00008 | .00022 | .00426 | .00001 | .00189 | .03278 | .00000 | .02258 | .71850 | .02394 | .01656 | .17042 |
| 2600 | .00871 | .00009 | .00020 | .00572 | .00001 | .00225 | .03056 | .00000 | .02411 | .71426 | .02980 | .01840 | .16589 |
| 2650 | .00866 | .00011 | .00018 | .00754 | .00001 | .00262 | .02813 | .00000 | .02559 | .70946 | .03670 | .02018 | .16081 |
| 2700 | .00861 | .00013 | .00016 | .00977 | .00001 | .00299 | .02553 | .00000 | .02702 | .70406 | .04472 | .02183 | .15517 |
| 2750 | .00854 | .00014 | .00015 | .01244 | .00001 | .00334 | .02279 | .00001 | .02835 | .69806 | .05393 | .02328 | .14896 |
| 2800 | .00847 | .00016 | .00013 | .01555 | .00001 | .00365 | .01997 | .00001 | .02958 | .69148 | .06437 | .02444 | .14217 |
| 2850 | .00839 | .00018 | .00011 | .01909 | .00001 | .00390 | .01715 | .00001 | .03067 | .68435 | .07606 | .02525 | .13483 |
| 2900 | .00831 | .00019 | .00009 | .02301 | .00001 | .00405 | .01440 | .00002 | .03160 | .67676 | .08896 | .02564 | .12697 |
| 2950 | .00822 | .00020 | .00008 | .02721 | .00001 | .00411 | .01181 | .00003 | .03235 | .66879 | .10299 | .02557 | .11864 |
| 3000 | .00812 | .00021 | .00007 | .03160 | .00001 | .00405 | .00944 | .00004 | .03289 | .66057 | .11803 | .02505 | .10993 |

TABLE 17.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

WET AIR ONLY (W/A= 0.03); F/A = 0; EQUIV. RATIO =0; CHEM. EQUIV. RATIO = 0.1045; P = 101.325 KPA (1.00 ATM)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00001 | .00000 | .74490 | .00000 | .00000 | .19983 |
| 950 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00002 | .00000 | .74490 | .00000 | .00000 | .19983 |
| 1000 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00003 | .00000 | .74489 | .00000 | .00000 | .19982 |
| 1050 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00006 | .00000 | .74488 | .00000 | .00000 | .19981 |
| 1100 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00009 | .00000 | .74486 | .00000 | .00000 | .19979 |
| 1150 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00014 | .00000 | .74484 | .00000 | .00000 | .19977 |
| 1200 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00020 | .00000 | .74481 | .00000 | .00000 | .19973 |
| 1250 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00029 | .00000 | .74476 | .00000 | .00000 | .19969 |
| 1300 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00041 | .00000 | .74470 | .00000 | .00001 | .19963 |
| 1350 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00000 | .00056 | .00000 | .74463 | .00000 | .00001 | .19955 |
| 1400 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04600 | .00000 | .00075 | .00001 | .74453 | .00000 | .00002 | .19945 |
| 1450 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04600 | .00000 | .00098 | .00001 | .74441 | .00000 | .00003 | .19933 |
| 1500 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04599 | .00000 | .00125 | .00001 | .74427 | .00000 | .00005 | .19919 |
| 1550 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04597 | .00000 | .00158 | .00001 | .74410 | .00000 | .00008 | .19901 |
| 1600 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04595 | .00000 | .00197 | .00001 | .74390 | .00001 | .00012 | .19880 |
| 1650 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04592 | .00000 | .00242 | .00001 | .74366 | .00001 | .00018 | .19856 |
| 1700 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04588 | .00000 | .00294 | .00001 | .74339 | .00002 | .00025 | .19828 |
| 1750 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04583 | .00000 | .00352 | .00001 | .74307 | .00003 | .00034 | .19795 |
| 1800 | .00893 | .00000 | .00030 | .00000 | .00000 | .00001 | .04577 | .00000 | .00418 | .00001 | .74271 | .00005 | .00047 | .19757 |
| 1850 | .00893 | .00000 | .00030 | .00000 | .00000 | .00001 | .04568 | .00000 | .00492 | .00001 | .74230 | .00009 | .00063 | .19713 |
| 1900 | .00893 | .00000 | .00030 | .00000 | .00000 | .00001 | .04557 | .00000 | .00573 | .00001 | .74183 | .00013 | .00083 | .19664 |
| 1950 | .00893 | .00000 | .00030 | .00001 | .00000 | .00002 | .04544 | .00000 | .00663 | .00001 | .74131 | .00020 | .00108 | .19608 |
| 2000 | .00893 | .00000 | .00030 | .00001 | .00000 | .00003 | .04527 | .00000 | .00760 | .00001 | .74073 | .00029 | .00138 | .19545 |
| 2050 | .00893 | .00000 | .00030 | .00001 | .00000 | .00004 | .04506 | .00000 | .00866 | .00001 | .74007 | .00043 | .00174 | .19473 |
| 2100 | .00893 | .00000 | .00030 | .00002 | .00000 | .00006 | .04481 | .00000 | .00980 | .00001 | .73934 | .00061 | .00218 | .19393 |
| 2150 | .00892 | .00000 | .00030 | .00004 | .00001 | .00008 | .04451 | .00000 | .01103 | .00001 | .73852 | .00085 | .00269 | .19303 |
| 2200 | .00892 | .00000 | .00030 | .00006 | .00001 | .00011 | .04415 | .00000 | .01233 | .00001 | .73761 | .00118 | .00330 | .19201 |
| 2250 | .00892 | .00001 | .00030 | .00009 | .00001 | .00015 | .04373 | .00000 | .01371 | .00001 | .73660 | .00160 | .00399 | .19088 |
| 2300 | .00891 | .00001 | .00030 | .00014 | .00001 | .00021 | .04323 | .00000 | .01517 | .00001 | .73548 | .00215 | .00478 | .18961 |
| 2350 | .00891 | .00001 | .00029 | .00020 | .00001 | .00027 | .04266 | .00000 | .01669 | .00002 | .73423 | .00285 | .00568 | .18819 |
| 2400 | .00890 | .00001 | .00029 | .00029 | .00001 | .00035 | .04199 | .00000 | .01829 | .00002 | .73283 | .00372 | .00668 | .18661 |
| 2450 | .00889 | .00002 | .00028 | .00042 | .00001 | .00044 | .04123 | .00000 | .01994 | .00002 | .73129 | .00482 | .00780 | .18484 |
| 2500 | .00888 | .00002 | .00028 | .00059 | .00001 | .00056 | .04036 | .00000 | .02165 | .00002 | .72956 | .00616 | .00903 | .18288 |
| 2550 | .00887 | .00003 | .00027 | .00082 | .00002 | .00070 | .03938 | .00000 | .02340 | .00002 | .72765 | .00780 | .01036 | .18070 |
| 2600 | .00885 | .00004 | .00026 | .00112 | .00002 | .00086 | .03828 | .00000 | .02519 | .00002 | .72552 | .00977 | .01179 | .17829 |
| 2650 | .00884 | .00005 | .00025 | .00151 | .00002 | .00104 | .03705 | .00000 | .02700 | .00002 | .72317 | .01213 | .01331 | .17563 |
| 2700 | .00882 | .00006 | .00024 | .00200 | .00002 | .00125 | .03569 | .00000 | .02883 | .00002 | .72056 | .01492 | .01491 | .17269 |
| 2750 | .00879 | .00007 | .00023 | .00262 | .00002 | .00149 | .03419 | .00000 | .03066 | .00002 | .71767 | .01819 | .01656 | .16948 |
| 2800 | .00876 | .00008 | .00022 | .00340 | .00002 | .00174 | .03257 | .00000 | .03248 | .00002 | .71450 | .02199 | .01824 | .16597 |
| 2850 | .00873 | .00009 | .00020 | .00435 | .00002 | .00202 | .03081 | .00000 | .03428 | .00002 | .71102 | .02637 | .01993 | .16214 |
| 2900 | .00870 | .00011 | .00019 | .00549 | .00002 | .00231 | .02894 | .00001 | .03603 | .00002 | .70721 | .03138 | .02159 | .15800 |
| 2950 | .00866 | .00012 | .00017 | .00686 | .00002 | .00261 | .02696 | .00001 | .03773 | .00002 | .70308 | .03705 | .02318 | .15354 |
| 3000 | .00861 | .00013 | .00016 | .00846 | .00003 | .00290 | .02489 | .00001 | .03935 | .00002 | .69861 | .04342 | .02466 | .14875 |

TABLE 17.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

| WET AIR ONLY (W/A= 0.03); F/A = 0; EQUIV. RATIO =0; CHEM. EQUIV. RATIO = 0.1045; | | | | | | | | | | | | | P = 1013.25 KPA (10.00 ATM) | |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------------|--------|
| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
| 900 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00001 | .00000 | .74490 | .00000 | .00000 | .00000 | .19983 |
| 950 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00002 | .00000 | .74490 | .00000 | .00000 | .00000 | .19982 |
| 1000 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00003 | .00001 | .74489 | .00000 | .00000 | .00000 | .19982 |
| 1050 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00006 | .00001 | .74488 | .00000 | .00000 | .00000 | .19980 |
| 1100 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00009 | .00001 | .74486 | .00000 | .00000 | .00000 | .19979 |
| 1150 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00014 | .00001 | .74484 | .00000 | .00000 | .00000 | .19976 |
| 1200 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00020 | .00001 | .74481 | .00000 | .00000 | .00000 | .19972 |
| 1250 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00029 | .00001 | .74476 | .00000 | .00000 | .00000 | .19968 |
| 1300 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00041 | .00001 | .74470 | .00000 | .00000 | .00000 | .19962 |
| 1350 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00056 | .00001 | .74463 | .00000 | .00000 | .00001 | .19954 |
| 1400 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00075 | .00002 | .74453 | .00000 | .00000 | .00001 | .19944 |
| 1450 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00098 | .00002 | .74442 | .00000 | .00000 | .00002 | .19933 |
| 1500 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04600 | .00125 | .00002 | .74427 | .00000 | .00000 | .00003 | .19918 |
| 1550 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04599 | .00158 | .00002 | .74411 | .00000 | .00000 | .00005 | .19901 |
| 1600 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04598 | .00197 | .00002 | .74391 | .00000 | .00000 | .00007 | .19881 |
| 1650 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04596 | .00242 | .00002 | .74368 | .00000 | .00000 | .00010 | .19857 |
| 1700 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04594 | .00294 | .00003 | .74341 | .00000 | .00001 | .00014 | .19830 |
| 1750 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04591 | .00352 | .00003 | .74310 | .00000 | .00001 | .00019 | .19798 |
| 1800 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04588 | .00418 | .00003 | .74276 | .00000 | .00002 | .00026 | .19763 |
| 1850 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04583 | .00492 | .00003 | .74237 | .00000 | .00003 | .00035 | .19723 |
| 1900 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04577 | .00573 | .00003 | .74193 | .00000 | .00004 | .00047 | .19677 |
| 1950 | .00893 | .00000 | .00030 | .00000 | .00001 | .00001 | .04569 | .00663 | .00004 | .74145 | .00000 | .00006 | .00061 | .19627 |
| 2000 | .00893 | .00000 | .00030 | .00000 | .00001 | .00001 | .04560 | .00761 | .00004 | .74092 | .00000 | .00009 | .00078 | .19571 |
| 2050 | .00893 | .00000 | .00030 | .00000 | .00001 | .00001 | .04549 | .00867 | .00004 | .74033 | .00000 | .00014 | .00099 | .19509 |
| 2100 | .00893 | .00000 | .00030 | .00000 | .00001 | .00002 | .04535 | .00982 | .00004 | .73969 | .00000 | .00019 | .00123 | .19441 |
| 2150 | .00893 | .00000 | .00030 | .00001 | .00001 | .00003 | .04519 | .01105 | .00004 | .73898 | .00000 | .00027 | .00153 | .19366 |
| 2200 | .00893 | .00000 | .00030 | .00001 | .00001 | .00004 | .04500 | .01236 | .00004 | .73822 | .00000 | .00037 | .00187 | .19284 |
| 2250 | .00893 | .00000 | .00030 | .00002 | .00001 | .00005 | .04478 | .01376 | .00005 | .73739 | .00000 | .00051 | .00227 | .19194 |
| 2300 | .00892 | .00000 | .00030 | .00002 | .00002 | .00007 | .04451 | .01523 | .00005 | .73649 | .00000 | .00068 | .00273 | .19097 |
| 2350 | .00892 | .00000 | .00030 | .00004 | .00002 | .00009 | .04421 | .01678 | .00005 | .73552 | .00000 | .00090 | .00326 | .18991 |
| 2400 | .00892 | .00000 | .00030 | .00005 | .00002 | .00011 | .04386 | .01841 | .00005 | .73447 | .00000 | .00118 | .00385 | .18876 |
| 2450 | .00892 | .00001 | .00030 | .00008 | .00002 | .00015 | .04347 | .02011 | .00005 | .73334 | .00000 | .00153 | .00452 | .18751 |
| 2500 | .00891 | .00001 | .00030 | .00011 | .00003 | .00019 | .04302 | .02188 | .00005 | .73212 | .00000 | .00197 | .00526 | .18616 |
| 2550 | .00891 | .00001 | .00029 | .00015 | .00003 | .00024 | .04251 | .02371 | .00005 | .73081 | .00000 | .00249 | .00608 | .18471 |
| 2600 | .00890 | .00001 | .00029 | .00021 | .00003 | .00029 | .04194 | .02560 | .00006 | .72941 | .00000 | .00313 | .00699 | .18314 |
| 2650 | .00890 | .00002 | .00029 | .00028 | .00003 | .00036 | .04131 | .02754 | .00006 | .72790 | .00000 | .00390 | .00797 | .18144 |
| 2700 | .00889 | .00002 | .00028 | .00038 | .00004 | .00044 | .04061 | .02952 | .00006 | .72629 | .00000 | .00481 | .00903 | .17962 |
| 2750 | .00888 | .00003 | .00028 | .00050 | .00004 | .00054 | .03984 | .03155 | .00006 | .72456 | .00000 | .00589 | .01017 | .17767 |
| 2800 | .00887 | .00003 | .00027 | .00065 | .00004 | .00064 | .03900 | .03360 | .00006 | .72271 | .00001 | .00715 | .01139 | .17558 |
| 2850 | .00886 | .00004 | .00026 | .00084 | .00005 | .00076 | .03808 | .03568 | .00006 | .72072 | .00001 | .00862 | .01267 | .17334 |
| 2900 | .00885 | .00004 | .00026 | .00108 | .00005 | .00090 | .03708 | .03778 | .00006 | .71861 | .00001 | .01032 | .01402 | .17095 |
| 2950 | .00883 | .00005 | .00025 | .00138 | .00005 | .00105 | .03601 | .03988 | .00006 | .71634 | .00001 | .01227 | .01542 | .16840 |
| 3000 | .00881 | .00006 | .00024 | .00173 | .00006 | .00122 | .03486 | .04198 | .00006 | .71393 | .00001 | .01449 | .01686 | .16568 |

TABLE 17.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

WET AIR ONLY (W/A= 0.03); F/A = 0; EQUIV. RATIO =0; CHEM. EQUIV. RATIO = 0.1045; P = 5066.25 KPA (50.00 ATM)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00001 | .00001 | .74490 | .00000 | .00000 | .00000 | .19982 |
| 950 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00002 | .00001 | .74490 | .00000 | .00000 | .00000 | .19982 |
| 1000 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00003 | .00001 | .74489 | .00000 | .00000 | .00000 | .19981 |
| 1050 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00006 | .00001 | .74488 | .00000 | .00000 | .00000 | .19980 |
| 1100 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00009 | .00002 | .74486 | .00000 | .00000 | .00000 | .19978 |
| 1150 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00014 | .00002 | .74484 | .00000 | .00000 | .00000 | .19975 |
| 1200 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04602 | .00020 | .00002 | .74480 | .00000 | .00000 | .00000 | .19971 |
| 1250 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00029 | .00003 | .74476 | .00000 | .00000 | .00000 | .19967 |
| 1300 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00041 | .00003 | .74470 | .00000 | .00000 | .00000 | .19960 |
| 1350 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00056 | .00003 | .74462 | .00000 | .00000 | .00000 | .19953 |
| 1400 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00075 | .00004 | .74453 | .00000 | .00000 | .00001 | .19943 |
| 1450 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00098 | .00004 | .74441 | .00000 | .00000 | .00001 | .19931 |
| 1500 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04601 | .00125 | .00004 | .74427 | .00000 | .00000 | .00002 | .19916 |
| 1550 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04600 | .00158 | .00005 | .74411 | .00000 | .00000 | .00003 | .19899 |
| 1600 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04599 | .00197 | .00005 | .74391 | .00000 | .00000 | .00005 | .19879 |
| 1650 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04598 | .00242 | .00006 | .74368 | .00000 | .00000 | .00007 | .19855 |
| 1700 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04597 | .00294 | .00006 | .74342 | .00000 | .00000 | .00009 | .19828 |
| 1750 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04595 | .00352 | .00006 | .74311 | .00000 | .00000 | .00013 | .19797 |
| 1800 | .00893 | .00000 | .00030 | .00000 | .00000 | .00000 | .04592 | .00418 | .00007 | .74277 | .00000 | .00001 | .00018 | .19762 |
| 1850 | .00893 | .00000 | .00030 | .00000 | .00001 | .00000 | .04589 | .00492 | .00007 | .74239 | .00000 | .00001 | .00024 | .19723 |
| 1900 | .00893 | .00000 | .00030 | .00000 | .00001 | .00000 | .04585 | .00573 | .00008 | .74197 | .00000 | .00002 | .00031 | .19679 |
| 1950 | .00893 | .00000 | .00030 | .00000 | .00001 | .00000 | .04580 | .00663 | .00008 | .74150 | .00000 | .00003 | .00041 | .19631 |
| 2000 | .00893 | .00000 | .00030 | .00000 | .00001 | .00000 | .04574 | .00761 | .00008 | .74098 | .00000 | .00004 | .00052 | .19577 |
| 2050 | .00893 | .00000 | .00030 | .00000 | .00001 | .00001 | .04567 | .00867 | .00009 | .74041 | .00000 | .00006 | .00066 | .19518 |
| 2100 | .00893 | .00000 | .00030 | .00000 | .00001 | .00001 | .04558 | .00982 | .00009 | .73980 | .00000 | .00009 | .00083 | .19454 |
| 2150 | .00893 | .00000 | .00030 | .00000 | .00002 | .00001 | .04547 | .01105 | .00010 | .73913 | .00000 | .00012 | .00103 | .19384 |
| 2200 | .00893 | .00000 | .00030 | .00000 | .00002 | .00002 | .04534 | .01237 | .00010 | .73841 | .00000 | .00017 | .00126 | .19308 |
| 2250 | .00893 | .00000 | .00030 | .00000 | .00002 | .00002 | .04520 | .01377 | .00010 | .73763 | .00000 | .00023 | .00153 | .19226 |
| 2300 | .00893 | .00000 | .00030 | .00001 | .00002 | .00003 | .04502 | .01525 | .00011 | .73680 | .00001 | .00031 | .00184 | .19138 |
| 2350 | .00893 | .00000 | .00030 | .00001 | .00003 | .00004 | .04483 | .01681 | .00011 | .73591 | .00001 | .00040 | .00220 | .19043 |
| 2400 | .00893 | .00000 | .00030 | .00002 | .00003 | .00005 | .04460 | .01845 | .00011 | .73496 | .00001 | .00053 | .00260 | .18941 |
| 2450 | .00892 | .00000 | .00030 | .00002 | .00003 | .00007 | .04434 | .02016 | .00012 | .73395 | .00001 | .00069 | .00306 | .18833 |
| 2500 | .00892 | .00000 | .00030 | .00003 | .00004 | .00009 | .04405 | .02195 | .00012 | .73288 | .00001 | .00088 | .00357 | .18717 |
| 2550 | .00892 | .00000 | .00030 | .00005 | .00004 | .00011 | .04372 | .02380 | .00012 | .73174 | .00001 | .00112 | .00413 | .18593 |
| 2600 | .00892 | .00001 | .00030 | .00006 | .00005 | .00014 | .04336 | .02572 | .00012 | .73054 | .00001 | .00141 | .00476 | .18462 |
| 2650 | .00891 | .00001 | .00030 | .00009 | .00005 | .00017 | .04295 | .02770 | .00013 | .72927 | .00001 | .00175 | .00545 | .18323 |
| 2700 | .00891 | .00001 | .00029 | .00011 | .00006 | .00021 | .04250 | .02973 | .00013 | .72793 | .00001 | .00216 | .00620 | .18175 |
| 2750 | .00891 | .00001 | .00029 | .00015 | .00006 | .00025 | .04200 | .03181 | .00013 | .72652 | .00001 | .00265 | .00701 | .18019 |
| 2800 | .00890 | .00001 | .00029 | .00020 | .00007 | .00030 | .04146 | .03394 | .00013 | .72503 | .00001 | .00323 | .00788 | .17854 |
| 2850 | .00889 | .00002 | .00029 | .00026 | .00007 | .00036 | .04087 | .03611 | .00014 | .72346 | .00001 | .00389 | .00882 | .17680 |
| 2900 | .00889 | .00002 | .00028 | .00034 | .00008 | .00043 | .04023 | .03831 | .00014 | .72182 | .00001 | .00467 | .00982 | .17497 |
| 2950 | .00888 | .00003 | .00028 | .00043 | .00009 | .00051 | .03953 | .04053 | .00014 | .72010 | .00001 | .00556 | .01088 | .17304 |
| 3000 | .00887 | .00003 | .00027 | .00054 | .00009 | .00060 | .03879 | .04278 | .00014 | .71829 | .00001 | .00658 | .01199 | .17101 |

TABLE 17C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

WET AIR ONLY (W/A= 0.03); F/A = 0; EQUIV. RATIO = 0; CHEM. EQUIV. RATIO = 0.1045

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00893 | .00030 | .04586 | .00000 | .00015 | .74491 | .19984 |
| 220 | .00893 | .00030 | .04352 | .00000 | .00249 | .74491 | .19984 |
| 240 | .00893 | .00030 | .01974 | .00000 | .02627 | .74491 | .19984 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00893 | .00030 | .04600 | .00000 | .00002 | .74491 | .19984 |
| 220 | .00893 | .00030 | .04577 | .00000 | .00025 | .74491 | .19984 |
| 240 | .00893 | .00030 | .04345 | .00000 | .00256 | .74491 | .19984 |
| 260 | .00893 | .00030 | .02729 | .00000 | .01872 | .74491 | .19984 |
| 280 | .00893 | .00030 | .00000 | .00000 | .04601 | .74491 | .19984 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00893 | .00030 | .04601 | .00000 | .00000 | .74491 | .19984 |
| 220 | .00893 | .00030 | .04599 | .00000 | .00002 | .74491 | .19984 |
| 240 | .00893 | .00030 | .04576 | .00000 | .00026 | .74491 | .19984 |
| 260 | .00893 | .00030 | .04418 | .00000 | .00184 | .74491 | .19984 |
| 280 | .00893 | .00030 | .00000 | .03663 | .00939 | .74491 | .19984 |
| 298 | .00893 | .00030 | .00000 | .01537 | .03064 | .74491 | .19984 |
| 300 | .00893 | .00030 | .00000 | .01170 | .03431 | .74491 | .19984 |
| 320 | .00893 | .00030 | .00000 | .00000 | .04601 | .74491 | .19984 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00893 | .00030 | .04601 | .00000 | .00000 | .74491 | .19984 |
| 220 | .00893 | .00030 | .04601 | .00000 | .00000 | .74491 | .19984 |
| 240 | .00893 | .00030 | .04599 | .00000 | .00003 | .74491 | .19984 |
| 260 | .00893 | .00030 | .04583 | .00000 | .00018 | .74491 | .19984 |
| 280 | .00893 | .00030 | .00000 | .04508 | .00093 | .74491 | .19984 |
| 298 | .00893 | .00030 | .00000 | .04304 | .00298 | .74491 | .19984 |
| 300 | .00893 | .00030 | .00000 | .04269 | .00332 | .74491 | .19984 |
| 320 | .00893 | .00030 | .00000 | .03605 | .00996 | .74491 | .19984 |
| 340 | .00893 | .00030 | .00000 | .01999 | .02603 | .74491 | .19984 |
| 360 | .00893 | .00030 | .00000 | .00000 | .04601 | .74491 | .19984 |
| 380 | .00893 | .00030 | .00000 | .00000 | .04601 | .74491 | .19984 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00893 | .00030 | .04601 | .00000 | .00000 | .74491 | .19984 |
| 220 | .00893 | .00030 | .04601 | .00000 | .00000 | .74491 | .19984 |
| 240 | .00893 | .00030 | .04601 | .00000 | .00001 | .74491 | .19984 |
| 260 | .00893 | .00030 | .04598 | .00000 | .00004 | .74491 | .19984 |
| 280 | .00893 | .00030 | .00000 | .04583 | .00019 | .74491 | .19984 |
| 298 | .00893 | .00030 | .00000 | .04542 | .00059 | .74491 | .19984 |
| 300 | .00893 | .00030 | .00000 | .04535 | .00066 | .74491 | .19984 |
| 320 | .00893 | .00030 | .00000 | .04404 | .00198 | .74491 | .19984 |
| 340 | .00893 | .00030 | .00000 | .04092 | .00509 | .74491 | .19984 |
| 360 | .00893 | .00030 | .00000 | .03434 | .01168 | .74491 | .19984 |
| 380 | .00893 | .00030 | .00000 | .02167 | .02434 | .74491 | .19984 |
| 400 | .00893 | .00030 | .00000 | .00000 | .04601 | .74491 | .19984 |
| 420 | .00893 | .00030 | .00000 | .00000 | .04601 | .74491 | .19984 |

TABLE 18.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.016906; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 1.01325 KPA (0.01 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00880 | .00000 | .03484 | .00000 | .00000 | .07470 | .00000 | .00001 | .73397 | .00000 | .00000 | .14767 |
| 950 | .00880 | .00000 | .03484 | .00000 | .00000 | .07470 | .00000 | .00002 | .73397 | .00000 | .00000 | .14767 |
| 1000 | .00880 | .00000 | .03484 | .00000 | .00000 | .07470 | .00000 | .00003 | .73396 | .00000 | .00000 | .14766 |
| 1050 | .00880 | .00000 | .03484 | .00000 | .00000 | .07470 | .00000 | .00005 | .73395 | .00000 | .00000 | .14765 |
| 1100 | .00880 | .00000 | .03484 | .00000 | .00000 | .07470 | .00000 | .00008 | .73393 | .00000 | .00000 | .14764 |
| 1150 | .00880 | .00000 | .03484 | .00000 | .00000 | .07470 | .00000 | .00012 | .73391 | .00000 | .00000 | .14762 |
| 1200 | .00880 | .00000 | .03484 | .00000 | .00000 | .07470 | .00000 | .00017 | .73388 | .00000 | .00001 | .14759 |
| 1250 | .00880 | .00000 | .03484 | .00000 | .00000 | .07469 | .00000 | .00025 | .73385 | .00000 | .00001 | .14755 |
| 1300 | .00880 | .00000 | .03484 | .00000 | .00000 | .07469 | .00000 | .00035 | .73379 | .00000 | .00003 | .14749 |
| 1350 | .00880 | .00000 | .03484 | .00000 | .00000 | .07468 | .00000 | .00048 | .73372 | .00000 | .00005 | .14742 |
| 1400 | .00880 | .00000 | .03484 | .00000 | .00000 | .07466 | .00000 | .00064 | .73364 | .00000 | .00008 | .14733 |
| 1450 | .00880 | .00000 | .03484 | .00000 | .00000 | .07463 | .00000 | .00083 | .73353 | .00001 | .00013 | .14722 |
| 1500 | .00880 | .00000 | .03484 | .00000 | .00000 | .07459 | .00000 | .00107 | .73339 | .00002 | .00020 | .14708 |
| 1550 | .00880 | .00001 | .03483 | .00000 | .00001 | .07453 | .00000 | .00135 | .73322 | .00003 | .00031 | .14690 |
| 1600 | .00880 | .00002 | .03482 | .00000 | .00001 | .07445 | .00000 | .00168 | .73302 | .00006 | .00045 | .14669 |
| 1650 | .00880 | .00003 | .03480 | .00000 | .00002 | .07433 | .00000 | .00206 | .73276 | .00010 | .00065 | .14643 |
| 1700 | .00880 | .00006 | .03477 | .00001 | .00004 | .07417 | .00000 | .00250 | .73245 | .00017 | .00092 | .14611 |
| 1750 | .00880 | .00011 | .03472 | .00002 | .00006 | .07395 | .00000 | .00300 | .73206 | .00028 | .00128 | .14572 |
| 1800 | .00880 | .00018 | .03463 | .00004 | .00010 | .07365 | .00000 | .00356 | .73158 | .00046 | .00174 | .14526 |
| 1850 | .00879 | .00030 | .03450 | .00007 | .00016 | .07325 | .00000 | .00418 | .73098 | .00073 | .00233 | .14471 |
| 1900 | .00879 | .00049 | .03429 | .00012 | .00025 | .07273 | .00000 | .00487 | .73023 | .00113 | .00306 | .14405 |
| 1950 | .00878 | .00076 | .03399 | .00022 | .00037 | .07205 | .00000 | .00562 | .72928 | .00170 | .00396 | .14327 |
| 2000 | .00877 | .00116 | .03356 | .00038 | .00054 | .07117 | .00000 | .00643 | .72808 | .00251 | .00505 | .14235 |
| 2050 | .00876 | .00172 | .03295 | .00063 | .00077 | .07006 | .00000 | .00731 | .72656 | .00363 | .00635 | .14126 |
| 2100 | .00874 | .00248 | .03212 | .00102 | .00108 | .06865 | .00000 | .00825 | .72464 | .00517 | .00787 | .13999 |
| 2150 | .00872 | .00349 | .03102 | .00161 | .00148 | .06688 | .00000 | .00924 | .72223 | .00723 | .00961 | .13849 |
| 2200 | .00869 | .00477 | .02962 | .00249 | .00199 | .06469 | .00000 | .01027 | .71921 | .00994 | .01159 | .13674 |
| 2250 | .00865 | .00633 | .02791 | .00377 | .00261 | .06202 | .00000 | .01135 | .71548 | .01346 | .01377 | .13466 |
| 2300 | .00860 | .00817 | .02588 | .00556 | .00334 | .05881 | .00000 | .01245 | .71092 | .01795 | .01611 | .13221 |
| 2350 | .00854 | .01023 | .02358 | .00802 | .00418 | .05501 | .00000 | .01356 | .70542 | .02359 | .01856 | .12929 |
| 2400 | .00847 | .01245 | .02108 | .01130 | .00511 | .05061 | .00000 | .01466 | .69890 | .03058 | .02103 | .12582 |
| 2450 | .00839 | .01471 | .01848 | .01555 | .00606 | .04564 | .00000 | .01573 | .69130 | .03908 | .02337 | .12170 |
| 2500 | .00829 | .01691 | .01589 | .02088 | .00698 | .04018 | .00000 | .01674 | .68261 | .04923 | .02546 | .11684 |
| 2550 | .00818 | .01896 | .01340 | .02733 | .00777 | .03439 | .00000 | .01765 | .67288 | .06115 | .02711 | .11118 |
| 2600 | .00805 | .02077 | .01110 | .03485 | .00834 | .02850 | .00001 | .01844 | .66224 | .07486 | .02816 | .10467 |
| 2650 | .00792 | .02231 | .00905 | .04323 | .00861 | .02276 | .00001 | .01907 | .65092 | .09030 | .02847 | .09735 |
| 2700 | .00778 | .02355 | .00726 | .05216 | .00853 | .01746 | .00001 | .01952 | .63922 | .10726 | .02796 | .08927 |
| 2750 | .00764 | .02451 | .00575 | .06121 | .00810 | .01284 | .00002 | .01977 | .62749 | .12543 | .02665 | .08058 |
| 2800 | .00751 | .02522 | .00450 | .06991 | .00739 | .00905 | .00003 | .01980 | .61611 | .14435 | .02464 | .07150 |
| 2850 | .00738 | .02572 | .00349 | .07786 | .00649 | .00613 | .00004 | .01960 | .60541 | .16346 | .02213 | .06228 |
| 2900 | .00726 | .02606 | .00268 | .08481 | .00551 | .00401 | .00005 | .01920 | .59565 | .18217 | .01936 | .05325 |
| 2950 | .00715 | .02627 | .00204 | .09065 | .00456 | .00254 | .00008 | .01860 | .58701 | .19988 | .01653 | .04469 |
| 3000 | .00706 | .02639 | .00155 | .09541 | .00369 | .00158 | .00011 | .01784 | .57955 | .21613 | .01385 | .03686 |

TABLE 18.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.016906; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00001 | .73397 | .00000 | .00000 | .14767 |
| 950 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00002 | .73397 | .00000 | .00000 | .14767 |
| 1000 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00003 | .73396 | .00000 | .00000 | .14766 |
| 1050 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00005 | .73395 | .00000 | .00000 | .14765 |
| 1100 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00008 | .73393 | .00000 | .00000 | .14764 |
| 1150 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00012 | .73391 | .00000 | .00000 | .14762 |
| 1200 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00017 | .73389 | .00000 | .00000 | .14759 |
| 1250 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00025 | .73385 | .00000 | .00001 | .14755 |
| 1300 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07469 | .00000 | .00035 | .73380 | .00000 | .00002 | .14750 |
| 1350 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07469 | .00000 | .00048 | .73373 | .00000 | .00003 | .14743 |
| 1400 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07468 | .00000 | .00064 | .73365 | .00000 | .00004 | .14734 |
| 1450 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07466 | .00000 | .00083 | .73354 | .00000 | .00007 | .14724 |
| 1500 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07464 | .00000 | .00107 | .73342 | .00000 | .00011 | .14711 |
| 1550 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07461 | .00000 | .00135 | .73326 | .00001 | .00017 | .14695 |
| 1600 | .00880 | .00001 | .03484 | .00000 | .00000 | .00000 | .07456 | .00000 | .00168 | .73308 | .00002 | .00025 | .14676 |
| 1650 | .00880 | .00001 | .03483 | .00000 | .00000 | .00001 | .07450 | .00000 | .00206 | .73286 | .00003 | .00037 | .14653 |
| 1700 | .00880 | .00002 | .03482 | .00000 | .00000 | .00001 | .07442 | .00000 | .00250 | .73259 | .00005 | .00052 | .14626 |
| 1750 | .00880 | .00003 | .03480 | .00000 | .00000 | .00002 | .07430 | .00000 | .00300 | .73229 | .00009 | .00072 | .14594 |
| 1800 | .00880 | .00006 | .03477 | .00001 | .00000 | .00003 | .07415 | .00000 | .00356 | .73192 | .00015 | .00098 | .14557 |
| 1850 | .00880 | .00010 | .03473 | .00001 | .00000 | .00005 | .07395 | .00000 | .00419 | .73149 | .00023 | .00132 | .14514 |
| 1900 | .00880 | .00016 | .03466 | .00002 | .00000 | .00008 | .07369 | .00000 | .00488 | .73099 | .00036 | .00174 | .14464 |
| 1950 | .00879 | .00024 | .03456 | .00004 | .00000 | .00012 | .07336 | .00000 | .00564 | .73039 | .00054 | .00225 | .14406 |
| 2000 | .00879 | .00038 | .03442 | .00007 | .00000 | .00017 | .07294 | .00000 | .00646 | .72968 | .00080 | .00288 | .14340 |
| 2050 | .00879 | .00056 | .03421 | .00011 | .00000 | .00025 | .07243 | .00000 | .00736 | .72884 | .00115 | .00364 | .14265 |
| 2100 | .00878 | .00082 | .03393 | .00018 | .00000 | .00036 | .07178 | .00000 | .00832 | .72784 | .00165 | .00454 | .14180 |
| 2150 | .00877 | .00118 | .03354 | .00029 | .00000 | .00049 | .07099 | .00000 | .00934 | .72665 | .00230 | .00559 | .14083 |
| 2200 | .00876 | .00166 | .03302 | .00046 | .00000 | .00067 | .07003 | .00000 | .01043 | .72523 | .00318 | .00682 | .13974 |
| 2250 | .00875 | .00229 | .03234 | .00070 | .00000 | .00090 | .06887 | .00000 | .01157 | .72354 | .00432 | .00821 | .13851 |
| 2300 | .00873 | .00309 | .03147 | .00105 | .00000 | .00119 | .06747 | .00000 | .01277 | .72152 | .00578 | .00979 | .13712 |
| 2350 | .00871 | .00407 | .03040 | .00154 | .00001 | .00155 | .06581 | .00000 | .01402 | .71913 | .00764 | .01155 | .13557 |
| 2400 | .00868 | .00527 | .02910 | .00222 | .00001 | .00198 | .06385 | .00000 | .01531 | .71630 | .00997 | .01349 | .13382 |
| 2450 | .00865 | .00667 | .02757 | .00315 | .00001 | .00248 | .06156 | .00000 | .01663 | .71299 | .01286 | .01558 | .13184 |
| 2500 | .00861 | .00826 | .02583 | .00438 | .00001 | .00307 | .05893 | .00000 | .01797 | .70914 | .01640 | .01779 | .12961 |
| 2550 | .00857 | .01000 | .02391 | .00599 | .00001 | .00374 | .05592 | .00000 | .01931 | .70470 | .02067 | .02010 | .12707 |
| 2600 | .00851 | .01186 | .02184 | .00806 | .00001 | .00446 | .05254 | .00000 | .02064 | .69964 | .02579 | .02244 | .12419 |
| 2650 | .00845 | .01377 | .01969 | .01066 | .00001 | .00524 | .04880 | .00000 | .02195 | .69393 | .03182 | .02474 | .12092 |
| 2700 | .00839 | .01567 | .01752 | .01387 | .00001 | .00603 | .04472 | .00000 | .02320 | .68756 | .03887 | .02693 | .11721 |
| 2750 | .00831 | .01750 | .01539 | .01773 | .00001 | .00680 | .04038 | .00001 | .02439 | .68055 | .04698 | .02892 | .11304 |
| 2800 | .00822 | .01920 | .01335 | .02229 | .00001 | .00751 | .03583 | .00001 | .02548 | .67292 | .05620 | .03059 | .10839 |
| 2850 | .00813 | .02074 | .01145 | .02753 | .00001 | .00811 | .03120 | .00001 | .02645 | .66473 | .06655 | .03186 | .10324 |
| 2900 | .00803 | .02208 | .00971 | .03340 | .00001 | .00854 | .02660 | .00002 | .02728 | .65609 | .07799 | .03263 | .09761 |
| 2950 | .00793 | .02322 | .00816 | .03979 | .00001 | .00878 | .02217 | .00003 | .02795 | .64710 | .09046 | .03285 | .09154 |
| 3000 | .00782 | .02416 | .00680 | .04657 | .00001 | .00880 | .01804 | .00003 | .02844 | .63793 | .10383 | .03247 | .08508 |

TABLE 18.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.016906; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00001 | .00000 | .73397 | .00000 | .00000 | .14767 |
| 950 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00002 | .00000 | .73397 | .00000 | .00000 | .14767 |
| 1000 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00003 | .00000 | .73396 | .00000 | .00000 | .14766 |
| 1050 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00005 | .00000 | .73395 | .00000 | .00000 | .14765 |
| 1100 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00008 | .00000 | .73393 | .00000 | .00000 | .14764 |
| 1150 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00012 | .00000 | .73391 | .00000 | .00000 | .14762 |
| 1200 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00017 | .00000 | .73389 | .00000 | .00000 | .14759 |
| 1250 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00025 | .00000 | .73385 | .00000 | .00000 | .14755 |
| 1300 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00000 | .00035 | .00000 | .73380 | .00000 | .00001 | .14750 |
| 1350 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07469 | .00000 | .00048 | .00000 | .73373 | .00000 | .00001 | .14743 |
| 1400 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07469 | .00000 | .00064 | .00000 | .73365 | .00000 | .00003 | .14735 |
| 1450 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07468 | .00000 | .00083 | .00000 | .73355 | .00000 | .00004 | .14724 |
| 1500 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07467 | .00000 | .00107 | .00000 | .73343 | .00000 | .00006 | .14712 |
| 1550 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07465 | .00000 | .00135 | .00000 | .73328 | .00000 | .00010 | .14697 |
| 1600 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07463 | .00000 | .00168 | .00001 | .73310 | .00001 | .00014 | .14679 |
| 1650 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07459 | .00000 | .00206 | .00001 | .73290 | .00001 | .00021 | .14658 |
| 1700 | .00880 | .00001 | .03484 | .00000 | .00000 | .00000 | .07454 | .00000 | .00250 | .00001 | .73266 | .00002 | .00029 | .14633 |
| 1750 | .00880 | .00001 | .03483 | .00000 | .00000 | .00001 | .07448 | .00000 | .00300 | .00001 | .73238 | .00003 | .00041 | .14604 |
| 1800 | .00880 | .00002 | .03482 | .00000 | .00000 | .00001 | .07440 | .00000 | .00356 | .00001 | .73206 | .00005 | .00055 | .14571 |
| 1850 | .00880 | .00003 | .03481 | .00000 | .00000 | .00002 | .07429 | .00000 | .00419 | .00001 | .73170 | .00007 | .00074 | .14534 |
| 1900 | .00880 | .00005 | .03478 | .00000 | .00000 | .00003 | .07416 | .00000 | .00488 | .00001 | .73128 | .00011 | .00098 | .14491 |
| 1950 | .00880 | .00008 | .03475 | .00001 | .00000 | .00004 | .07399 | .00000 | .00565 | .00001 | .73081 | .00017 | .00127 | .14443 |
| 2000 | .00880 | .00012 | .03470 | .00001 | .00000 | .00006 | .07378 | .00000 | .00648 | .00001 | .73027 | .00025 | .00163 | .14389 |
| 2050 | .00880 | .00018 | .03464 | .00002 | .00000 | .00008 | .07351 | .00000 | .00738 | .00001 | .72966 | .00037 | .00206 | .14329 |
| 2100 | .00879 | .00026 | .03454 | .00003 | .00000 | .00011 | .07320 | .00000 | .00835 | .00001 | .72898 | .00052 | .00258 | .14262 |
| 2150 | .00879 | .00038 | .03441 | .00005 | .00001 | .00016 | .07281 | .00000 | .00939 | .00001 | .72820 | .00073 | .00319 | .14187 |
| 2200 | .00879 | .00054 | .03424 | .00008 | .00001 | .00022 | .07234 | .00000 | .01049 | .00001 | .72732 | .00101 | .00390 | .14105 |
| 2250 | .00878 | .00076 | .03400 | .00013 | .00001 | .00030 | .07179 | .00000 | .01167 | .00001 | .72631 | .00137 | .00473 | .14015 |
| 2300 | .00877 | .00104 | .03370 | .00019 | .00001 | .00039 | .07113 | .00000 | .01290 | .00001 | .72518 | .00184 | .00568 | .13916 |
| 2350 | .00877 | .00140 | .03330 | .00028 | .00001 | .00052 | .07036 | .00000 | .01420 | .00001 | .72388 | .00244 | .00675 | .13808 |
| 2400 | .00876 | .00186 | .03281 | .00041 | .00001 | .00067 | .06946 | .00000 | .01555 | .00001 | .72241 | .00319 | .00796 | .13690 |
| 2450 | .00875 | .00243 | .03219 | .00059 | .00001 | .00086 | .06841 | .00000 | .01696 | .00001 | .72075 | .00413 | .00930 | .13563 |
| 2500 | .00873 | .00312 | .03144 | .00082 | .00001 | .00109 | .06720 | .00000 | .01841 | .00001 | .71886 | .00528 | .01078 | .13424 |
| 2550 | .00872 | .00395 | .03054 | .00114 | .00002 | .00136 | .06582 | .00000 | .01990 | .00001 | .71672 | .00668 | .01240 | .13274 |
| 2600 | .00870 | .00493 | .02949 | .00156 | .00002 | .00168 | .06425 | .00000 | .02143 | .00001 | .71430 | .00838 | .01414 | .13111 |
| 2650 | .00867 | .00605 | .02828 | .00211 | .00002 | .00205 | .06247 | .00000 | .02299 | .00001 | .71159 | .01041 | .01601 | .12934 |
| 2700 | .00865 | .00730 | .02692 | .00281 | .00002 | .00247 | .06049 | .00000 | .02456 | .00001 | .70856 | .01281 | .01799 | .12742 |
| 2750 | .00861 | .00868 | .02542 | .00369 | .00002 | .00295 | .05828 | .00000 | .02614 | .00001 | .70518 | .01564 | .02005 | .12532 |
| 2800 | .00858 | .01016 | .02380 | .00479 | .00002 | .00347 | .05584 | .00000 | .02771 | .00001 | .70146 | .01894 | .02217 | .12304 |
| 2850 | .00854 | .01171 | .02209 | .00615 | .00002 | .00404 | .05318 | .00000 | .02927 | .00001 | .69736 | .02274 | .02431 | .12055 |
| 2900 | .00850 | .01330 | .02033 | .00779 | .00003 | .00465 | .05031 | .00001 | .03080 | .00001 | .69290 | .02710 | .02645 | .11784 |
| 2950 | .00845 | .01489 | .01854 | .00976 | .00003 | .00528 | .04723 | .00001 | .03228 | .00001 | .68806 | .03205 | .02853 | .11488 |
| 3000 | .00839 | .01644 | .01678 | .01208 | .00003 | .00592 | .04398 | .00001 | .03371 | .00001 | .68285 | .03762 | .03052 | .11166 |

TABLE 18.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.016906; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A = 0.03)

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00001 | .00000 | .73397 | .00000 | .00000 | .00000 | .14767 |
| 950 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00002 | .00000 | .73397 | .00000 | .00000 | .00000 | .14767 |
| 1000 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00003 | .00000 | .73396 | .00000 | .00000 | .00000 | .14766 |
| 1050 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00005 | .00000 | .73395 | .00000 | .00000 | .00000 | .14765 |
| 1100 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00008 | .00001 | .73393 | .00000 | .00000 | .00000 | .14763 |
| 1150 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00012 | .00001 | .73391 | .00000 | .00000 | .00000 | .14761 |
| 1200 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00017 | .00001 | .73388 | .00000 | .00000 | .00000 | .14758 |
| 1250 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00025 | .00001 | .73385 | .00000 | .00000 | .00000 | .14754 |
| 1300 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00035 | .00001 | .73380 | .00000 | .00000 | .00000 | .14749 |
| 1350 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00048 | .00001 | .73373 | .00000 | .00000 | .00001 | .14743 |
| 1400 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00064 | .00001 | .73365 | .00000 | .00000 | .00001 | .14734 |
| 1450 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07469 | .00083 | .00001 | .73355 | .00000 | .00000 | .00002 | .14724 |
| 1500 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07468 | .00107 | .00001 | .73343 | .00000 | .00000 | .00004 | .14712 |
| 1550 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07467 | .00135 | .00002 | .73329 | .00000 | .00000 | .00005 | .14697 |
| 1600 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07466 | .00168 | .00002 | .73311 | .00000 | .00000 | .00008 | .14680 |
| 1650 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07464 | .00206 | .00002 | .73292 | .00000 | .00000 | .00012 | .14659 |
| 1700 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07461 | .00250 | .00002 | .73269 | .00000 | .00001 | .00017 | .14636 |
| 1750 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07458 | .00300 | .00002 | .73242 | .00000 | .00001 | .00023 | .14609 |
| 1800 | .00880 | .00001 | .03484 | .00000 | .00000 | .00000 | .07454 | .00357 | .00002 | .73212 | .00000 | .00001 | .00031 | .14578 |
| 1850 | .00880 | .00001 | .03483 | .00000 | .00000 | .00001 | .07448 | .00419 | .00002 | .73178 | .00000 | .00002 | .00042 | .14543 |
| 1900 | .00880 | .00002 | .03482 | .00000 | .00000 | .00001 | .07440 | .00489 | .00002 | .73140 | .00000 | .00004 | .00055 | .14504 |
| 1950 | .00880 | .00002 | .03481 | .00000 | .00001 | .00001 | .07431 | .00565 | .00003 | .73098 | .00000 | .00005 | .00072 | .14460 |
| 2000 | .00880 | .00004 | .03480 | .00000 | .00001 | .00002 | .07420 | .00648 | .00003 | .73051 | .00000 | .00008 | .00092 | .14412 |
| 2050 | .00880 | .00006 | .03477 | .00000 | .00001 | .00003 | .07406 | .00739 | .00003 | .72999 | .00000 | .00012 | .00117 | .14359 |
| 2100 | .00880 | .00008 | .03474 | .00001 | .00001 | .00004 | .07389 | .00836 | .00003 | .72941 | .00000 | .00017 | .00146 | .14300 |
| 2150 | .00880 | .00012 | .03470 | .00001 | .00001 | .00005 | .07369 | .00941 | .00003 | .72878 | .00000 | .00023 | .00181 | .14236 |
| 2200 | .00880 | .00017 | .03464 | .00001 | .00001 | .00007 | .07345 | .01052 | .00003 | .72809 | .00000 | .00032 | .00222 | .14166 |
| 2250 | .00879 | .00024 | .03457 | .00002 | .00001 | .00010 | .07317 | .01171 | .00003 | .72733 | .00000 | .00044 | .00269 | .14091 |
| 2300 | .00879 | .00033 | .03446 | .00003 | .00002 | .00013 | .07283 | .01296 | .00003 | .72650 | .00000 | .00058 | .00324 | .14009 |
| 2350 | .00879 | .00045 | .03433 | .00005 | .00002 | .00017 | .07244 | .01427 | .00004 | .72559 | .00000 | .00077 | .00386 | .13921 |
| 2400 | .00878 | .00061 | .03416 | .00007 | .00002 | .00022 | .07200 | .01565 | .00004 | .72459 | .00000 | .00101 | .00457 | .13827 |
| 2450 | .00878 | .00080 | .03395 | .00011 | .00002 | .00028 | .07148 | .01709 | .00004 | .72350 | .00000 | .00131 | .00536 | .13727 |
| 2500 | .00877 | .00105 | .03368 | .00015 | .00003 | .00036 | .07089 | .01859 | .00004 | .72231 | .00000 | .00168 | .00625 | .13619 |
| 2550 | .00877 | .00135 | .03335 | .00021 | .00003 | .00046 | .07022 | .02014 | .00004 | .72102 | .00000 | .00213 | .00723 | .13505 |
| 2600 | .00876 | .00172 | .03295 | .00029 | .00003 | .00057 | .06946 | .02173 | .00004 | .71960 | .00000 | .00268 | .00831 | .13384 |
| 2650 | .00875 | .00217 | .03247 | .00039 | .00004 | .00070 | .06861 | .02338 | .00004 | .71805 | .00000 | .00333 | .00949 | .13257 |
| 2700 | .00874 | .00270 | .03191 | .00052 | .00004 | .00086 | .06766 | .02506 | .00004 | .71636 | .00000 | .00411 | .01078 | .13122 |
| 2750 | .00873 | .00332 | .03124 | .00070 | .00004 | .00105 | .06659 | .02678 | .00004 | .71452 | .00000 | .00503 | .01216 | .12980 |
| 2800 | .00872 | .00403 | .03047 | .00091 | .00005 | .00126 | .06542 | .02852 | .00004 | .71252 | .00000 | .00611 | .01363 | .12830 |
| 2850 | .00870 | .00484 | .02960 | .00119 | .00005 | .00150 | .06412 | .03029 | .00004 | .71035 | .00000 | .00737 | .01520 | .12673 |
| 2900 | .00868 | .00575 | .02863 | .00152 | .00005 | .00178 | .06270 | .03208 | .00004 | .70800 | .00000 | .00883 | .01685 | .12508 |
| 2950 | .00866 | .00675 | .02755 | .00194 | .00006 | .00209 | .06115 | .03387 | .00004 | .70546 | .00001 | .01050 | .01858 | .12334 |
| 3000 | .00864 | .00784 | .02637 | .00245 | .00006 | .00243 | .05947 | .03567 | .00004 | .70273 | .00001 | .01241 | .02038 | .12150 |

TABLE 18.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.016906; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00001 | .00001 | .73397 | .00000 | .00000 | .00000 | .14767 |
| 950 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00002 | .00001 | .73396 | .00000 | .00000 | .00000 | .14766 |
| 1000 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00003 | .00001 | .73396 | .00000 | .00000 | .00000 | .14765 |
| 1050 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00005 | .00001 | .73395 | .00000 | .00000 | .00000 | .14764 |
| 1100 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00008 | .00001 | .73393 | .00000 | .00000 | .00000 | .14763 |
| 1150 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00012 | .00001 | .73391 | .00000 | .00000 | .00000 | .14760 |
| 1200 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00017 | .00002 | .73388 | .00000 | .00000 | .00000 | .14757 |
| 1250 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00025 | .00002 | .73385 | .00000 | .00000 | .00000 | .14753 |
| 1300 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00035 | .00002 | .73379 | .00000 | .00000 | .00000 | .14748 |
| 1350 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00048 | .00002 | .73373 | .00000 | .00000 | .00001 | .14741 |
| 1400 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07470 | .00064 | .00003 | .73365 | .00000 | .00000 | .00001 | .14733 |
| 1450 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07469 | .00083 | .00003 | .73355 | .00000 | .00000 | .00002 | .14723 |
| 1500 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07469 | .00107 | .00003 | .73343 | .00000 | .00000 | .00002 | .14710 |
| 1550 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07468 | .00135 | .00004 | .73329 | .00000 | .00000 | .00004 | .14696 |
| 1600 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07467 | .00168 | .00004 | .73312 | .00000 | .00000 | .00005 | .14678 |
| 1650 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07466 | .00206 | .00004 | .73292 | .00000 | .00000 | .00008 | .14658 |
| 1700 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07464 | .00250 | .00004 | .73269 | .00000 | .00000 | .00011 | .14635 |
| 1750 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07462 | .00300 | .00005 | .73244 | .00000 | .00000 | .00015 | .14608 |
| 1800 | .00880 | .00000 | .03484 | .00000 | .00000 | .00000 | .07459 | .00357 | .00005 | .73214 | .00000 | .00001 | .00021 | .14578 |
| 1850 | .00880 | .00000 | .03484 | .00000 | .00001 | .00000 | .07455 | .00419 | .00005 | .73181 | .00000 | .00001 | .00028 | .14544 |
| 1900 | .00880 | .00001 | .03483 | .00000 | .00001 | .00000 | .07450 | .00489 | .00006 | .73145 | .00000 | .00002 | .00037 | .14507 |
| 1950 | .00880 | .00001 | .03483 | .00000 | .00001 | .00001 | .07444 | .00565 | .00006 | .73104 | .00000 | .00002 | .00048 | .14465 |
| 2000 | .00880 | .00002 | .03482 | .00000 | .00001 | .00001 | .07437 | .00648 | .00006 | .73059 | .00000 | .00004 | .00062 | .14418 |
| 2050 | .00880 | .00003 | .03481 | .00000 | .00001 | .00001 | .07428 | .00739 | .00006 | .73009 | .00000 | .00005 | .00078 | .14368 |
| 2100 | .00880 | .00004 | .03480 | .00000 | .00001 | .00002 | .07417 | .00837 | .00007 | .72956 | .00000 | .00007 | .00098 | .14312 |
| 2150 | .00880 | .00005 | .03478 | .00000 | .00002 | .00002 | .07404 | .00941 | .00007 | .72897 | .00000 | .00010 | .00121 | .14252 |
| 2200 | .00880 | .00008 | .03475 | .00000 | .00002 | .00003 | .07388 | .01053 | .00007 | .72833 | .00000 | .00014 | .00149 | .14187 |
| 2250 | .00880 | .00011 | .03472 | .00001 | .00002 | .00004 | .07370 | .01172 | .00007 | .72764 | .00000 | .00019 | .00181 | .14117 |
| 2300 | .00880 | .00015 | .03467 | .00001 | .00002 | .00006 | .07349 | .01297 | .00008 | .72690 | .00000 | .00026 | .00217 | .14042 |
| 2350 | .00879 | .00020 | .03461 | .00002 | .00003 | .00008 | .07324 | .01430 | .00008 | .72610 | .00000 | .00035 | .00260 | .13961 |
| 2400 | .00879 | .00027 | .03453 | .00002 | .00003 | .00010 | .07295 | .01569 | .00008 | .72524 | .00001 | .00045 | .00308 | .13875 |
| 2450 | .00879 | .00036 | .03443 | .00003 | .00003 | .00013 | .07263 | .01714 | .00008 | .72432 | .00001 | .00059 | .00362 | .13784 |
| 2500 | .00879 | .00048 | .03431 | .00005 | .00004 | .00016 | .07225 | .01865 | .00009 | .72333 | .00001 | .00075 | .00422 | .13688 |
| 2550 | .00878 | .00062 | .03415 | .00006 | .00004 | .00021 | .07183 | .02021 | .00009 | .72227 | .00001 | .00096 | .00490 | .13586 |
| 2600 | .00878 | .00079 | .03396 | .00009 | .00005 | .00026 | .07136 | .02183 | .00009 | .72114 | .00001 | .00120 | .00564 | .13479 |
| 2650 | .00878 | .00100 | .03373 | .00012 | .00005 | .00032 | .07083 | .02350 | .00009 | .71993 | .00001 | .00150 | .00646 | .13367 |
| 2700 | .00877 | .00126 | .03346 | .00016 | .00006 | .00040 | .07024 | .02522 | .00009 | .71863 | .00001 | .00185 | .00736 | .13249 |
| 2750 | .00876 | .00156 | .03313 | .00021 | .00006 | .00049 | .06959 | .02698 | .00010 | .71725 | .00001 | .00226 | .00833 | .13126 |
| 2800 | .00876 | .00192 | .03274 | .00028 | .00007 | .00059 | .06886 | .02877 | .00010 | .71577 | .00001 | .00275 | .00938 | .12998 |
| 2850 | .00875 | .00234 | .03229 | .00036 | .00008 | .00071 | .06807 | .03060 | .00010 | .71420 | .00001 | .00332 | .01051 | .12865 |
| 2900 | .00874 | .00283 | .03177 | .00047 | .00008 | .00085 | .06720 | .03246 | .00010 | .71252 | .00001 | .00398 | .01172 | .12728 |
| 2950 | .00873 | .00338 | .03118 | .00060 | .00009 | .00100 | .06624 | .03434 | .00010 | .71073 | .00001 | .00474 | .01300 | .12585 |
| 3000 | .00872 | .00401 | .03051 | .00076 | .00009 | .00118 | .06521 | .03624 | .00010 | .70883 | .00001 | .00561 | .01435 | .12437 |

TABLE 18C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.016906; EQUIV.RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284;
WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00880 | .03484 | .07455 | .00000 | .00015 | .73397 | .14768 |
| 220 | .00880 | .03484 | .07228 | .00000 | .00242 | .73397 | .14768 |
| 240 | .00880 | .03484 | .04922 | .00000 | .02548 | .73397 | .14768 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00880 | .03484 | .07469 | .00000 | .00001 | .73397 | .14768 |
| 220 | .00880 | .03484 | .07446 | .00000 | .00024 | .73397 | .14768 |
| 240 | .00880 | .03484 | .07222 | .00000 | .00249 | .73397 | .14768 |
| 260 | .00880 | .03484 | .05654 | .00000 | .01816 | .73397 | .14768 |
| 280 | .00880 | .03484 | .00000 | .00000 | .07470 | .73397 | .14768 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00880 | .03484 | .07470 | .00000 | .00000 | .73397 | .14768 |
| 220 | .00880 | .03484 | .07468 | .00000 | .00002 | .73397 | .14768 |
| 240 | .00880 | .03484 | .07445 | .00000 | .00025 | .73397 | .14768 |
| 260 | .00880 | .03484 | .07292 | .00000 | .00178 | .73397 | .14768 |
| 280 | .00880 | .03484 | .00000 | .06560 | .00911 | .73397 | .14768 |
| 298 | .00880 | .03484 | .00000 | .04498 | .02972 | .73397 | .14768 |
| 300 | .00880 | .03484 | .00000 | .04142 | .03328 | .73397 | .14768 |
| 320 | .00880 | .03484 | .00000 | .00000 | .07470 | .73397 | .14768 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00880 | .03484 | .07470 | .00000 | .00000 | .73397 | .14768 |
| 220 | .00880 | .03484 | .07470 | .00000 | .00000 | .73397 | .14768 |
| 240 | .00880 | .03484 | .07468 | .00000 | .00002 | .73397 | .14768 |
| 260 | .00880 | .03484 | .07452 | .00000 | .00018 | .73397 | .14768 |
| 280 | .00880 | .03484 | .00000 | .07380 | .00090 | .73397 | .14768 |
| 298 | .00880 | .03484 | .00000 | .07181 | .00289 | .73397 | .14768 |
| 300 | .00880 | .03484 | .00000 | .07148 | .00322 | .73397 | .14768 |
| 320 | .00880 | .03484 | .00000 | .06504 | .00966 | .73397 | .14768 |
| 340 | .00880 | .03484 | .00000 | .04946 | .02524 | .73397 | .14768 |
| 360 | .00880 | .03484 | .00000 | .01516 | .05955 | .73397 | .14768 |
| 380 | .00880 | .03484 | .00000 | .00000 | .07470 | .73397 | .14768 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00880 | .03484 | .07470 | .00000 | .00000 | .73397 | .14768 |
| 220 | .00880 | .03484 | .07470 | .00000 | .00000 | .73397 | .14768 |
| 240 | .00880 | .03484 | .07470 | .00000 | .00000 | .73397 | .14768 |
| 260 | .00880 | .03484 | .07467 | .00000 | .00004 | .73397 | .14768 |
| 280 | .00880 | .03484 | .00000 | .07452 | .00018 | .73397 | .14768 |
| 298 | .00880 | .03484 | .00000 | .07413 | .00058 | .73397 | .14768 |
| 300 | .00880 | .03484 | .00000 | .07406 | .00064 | .73397 | .14768 |
| 320 | .00880 | .03484 | .00000 | .07279 | .00192 | .73397 | .14768 |
| 340 | .00880 | .03484 | .00000 | .06976 | .00494 | .73397 | .14768 |
| 360 | .00880 | .03484 | .00000 | .06338 | .01133 | .73397 | .14768 |
| 380 | .00880 | .03484 | .00000 | .05109 | .02361 | .73397 | .14768 |
| 400 | .00880 | .03484 | .00000 | .02907 | .04563 | .73397 | .14768 |
| 420 | .00880 | .03484 | .00000 | .00000 | .07470 | .73397 | .14768 |

TABLE 19.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.033812; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00868 | .00000 | .06838 | .00000 | .00000 | .10256 | .00000 | .00001 | .72335 | .00000 | .00000 | .09702 |
| 950 | .00868 | .00000 | .06838 | .00000 | .00000 | .10256 | .00000 | .00001 | .72335 | .00000 | .00000 | .09702 |
| 1000 | .00868 | .00000 | .06838 | .00000 | .00000 | .10256 | .00000 | .00002 | .72334 | .00000 | .00000 | .09702 |
| 1050 | .00868 | .00000 | .06838 | .00000 | .00000 | .10256 | .00000 | .00004 | .72333 | .00000 | .00000 | .09701 |
| 1100 | .00868 | .00000 | .06838 | .00000 | .00000 | .10256 | .00000 | .00006 | .72332 | .00000 | .00000 | .09700 |
| 1150 | .00868 | .00000 | .06838 | .00000 | .00000 | .10256 | .00000 | .00009 | .72331 | .00000 | .00000 | .09698 |
| 1200 | .00868 | .00000 | .06838 | .00000 | .00000 | .10255 | .00000 | .00014 | .72328 | .00000 | .00001 | .09695 |
| 1250 | .00868 | .00000 | .06838 | .00000 | .00000 | .10255 | .00000 | .00020 | .72325 | .00000 | .00002 | .09692 |
| 1300 | .00868 | .00000 | .06838 | .00000 | .00000 | .10254 | .00000 | .00028 | .72321 | .00000 | .00003 | .09688 |
| 1350 | .00868 | .00000 | .06838 | .00000 | .00000 | .10253 | .00000 | .00038 | .72315 | .00000 | .00005 | .09682 |
| 1400 | .00868 | .00000 | .06838 | .00000 | .00000 | .10251 | .00000 | .00051 | .72308 | .00000 | .00008 | .09675 |
| 1450 | .00868 | .00000 | .06838 | .00000 | .00000 | .10248 | .00000 | .00067 | .72299 | .00001 | .00014 | .09665 |
| 1500 | .00867 | .00001 | .06837 | .00000 | .00001 | .10244 | .00000 | .00086 | .72287 | .00001 | .00021 | .09654 |
| 1550 | .00867 | .00002 | .06836 | .00000 | .00001 | .10237 | .00000 | .00109 | .72273 | .00002 | .00032 | .09640 |
| 1600 | .00867 | .00004 | .06833 | .00000 | .00002 | .10228 | .00000 | .00135 | .72255 | .00004 | .00048 | .09623 |
| 1650 | .00867 | .00008 | .06828 | .00001 | .00004 | .10214 | .00000 | .00166 | .72232 | .00008 | .00069 | .09602 |
| 1700 | .00867 | .00015 | .06821 | .00001 | .00007 | .10196 | .00000 | .00201 | .72204 | .00014 | .00098 | .09578 |
| 1750 | .00867 | .00026 | .06808 | .00002 | .00011 | .10169 | .00000 | .00241 | .72167 | .00023 | .00135 | .09550 |
| 1800 | .00867 | .00045 | .06787 | .00005 | .00018 | .10134 | .00000 | .00286 | .72121 | .00037 | .00184 | .09518 |
| 1850 | .00866 | .00074 | .06755 | .00009 | .00028 | .10086 | .00000 | .00336 | .72060 | .00059 | .00246 | .09482 |
| 1900 | .00866 | .00118 | .06705 | .00016 | .00042 | .10021 | .00000 | .00391 | .71982 | .00091 | .00323 | .09444 |
| 1950 | .00865 | .00184 | .06633 | .00029 | .00063 | .09936 | .00000 | .00452 | .71879 | .00138 | .00419 | .09403 |
| 2000 | .00864 | .00279 | .06529 | .00049 | .00092 | .09825 | .00000 | .00518 | .71746 | .00203 | .00534 | .09362 |
| 2050 | .00862 | .00410 | .06384 | .00082 | .00131 | .09681 | .00000 | .00589 | .71572 | .00295 | .00673 | .09321 |
| 2100 | .00860 | .00587 | .06189 | .00133 | .00184 | .09496 | .00000 | .00666 | .71348 | .00421 | .00835 | .09281 |
| 2150 | .00857 | .00817 | .05937 | .00210 | .00251 | .09261 | .00000 | .00748 | .71063 | .00590 | .01023 | .09243 |
| 2200 | .00853 | .01102 | .05622 | .00324 | .00336 | .08968 | .00000 | .00836 | .70703 | .00815 | .01236 | .09205 |
| 2250 | .00848 | .01442 | .05244 | .00489 | .00438 | .08608 | .00000 | .00928 | .70258 | .01110 | .01473 | .09162 |
| 2300 | .00842 | .01830 | .04810 | .00720 | .00560 | .08173 | .00000 | .01023 | .69718 | .01489 | .01730 | .09106 |
| 2350 | .00835 | .02251 | .04332 | .01035 | .00697 | .07657 | .00000 | .01121 | .69072 | .01971 | .02002 | .09026 |
| 2400 | .00827 | .02687 | .03829 | .01455 | .00846 | .07059 | .00000 | .01220 | .68315 | .02573 | .02278 | .08909 |
| 2450 | .00817 | .03118 | .03320 | .01997 | .01000 | .06384 | .00000 | .01317 | .67446 | .03312 | .02545 | .08743 |
| 2500 | .00806 | .03524 | .02826 | .02678 | .01148 | .05643 | .00000 | .01410 | .66464 | .04202 | .02787 | .08512 |
| 2550 | .00793 | .03889 | .02362 | .03503 | .01276 | .04855 | .00000 | .01495 | .65379 | .05254 | .02985 | .08207 |
| 2600 | .00779 | .04202 | .01942 | .04468 | .01371 | .04049 | .00001 | .01569 | .64206 | .06471 | .03120 | .07821 |
| 2650 | .00765 | .04459 | .01572 | .05551 | .01419 | .03261 | .00001 | .01630 | .62970 | .07846 | .03176 | .07350 |
| 2700 | .00750 | .04659 | .01254 | .06715 | .01413 | .02526 | .00001 | .01674 | .61704 | .09362 | .03141 | .06800 |
| 2750 | .00735 | .04807 | .00988 | .07908 | .01352 | .01877 | .00002 | .01700 | .60448 | .10986 | .03015 | .06182 |
| 2800 | .00721 | .04911 | .00770 | .09070 | .01243 | .01338 | .00003 | .01705 | .59242 | .12676 | .02807 | .05513 |
| 2850 | .00707 | .04981 | .00594 | .10148 | .01102 | .00916 | .00004 | .01690 | .58123 | .14379 | .02538 | .04819 |
| 2900 | .00695 | .05024 | .00454 | .11103 | .00944 | .00605 | .00005 | .01655 | .57117 | .16039 | .02231 | .04128 |
| 2950 | .00684 | .05048 | .00345 | .11914 | .00787 | .00387 | .00007 | .01603 | .56241 | .17603 | .01914 | .03466 |
| 3000 | .00675 | .05059 | .00261 | .12581 | .00642 | .00241 | .00010 | .01537 | .55497 | .19030 | .01608 | .02858 |

TABLE 19.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.033812; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00001 | .72335 | .00000 | .00000 | .09702 |
| 950 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00001 | .72335 | .00000 | .00000 | .09702 |
| 1000 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00002 | .72334 | .00000 | .00000 | .09702 |
| 1050 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00004 | .72333 | .00000 | .00000 | .09701 |
| 1100 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00006 | .72332 | .00000 | .00000 | .09700 |
| 1150 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00009 | .72331 | .00000 | .00000 | .09698 |
| 1200 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00014 | .72328 | .00000 | .00000 | .09696 |
| 1250 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00000 | .00020 | .72325 | .00000 | .00001 | .09692 |
| 1300 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00000 | .00028 | .72321 | .00000 | .00002 | .09688 |
| 1350 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10254 | .00000 | .00038 | .72316 | .00000 | .00003 | .09683 |
| 1400 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10253 | .00000 | .00051 | .72309 | .00000 | .00005 | .09676 |
| 1450 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10252 | .00000 | .00067 | .72300 | .00000 | .00008 | .09667 |
| 1500 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10249 | .00000 | .00086 | .72290 | .00000 | .00012 | .09656 |
| 1550 | .00868 | .00001 | .06837 | .00000 | .00000 | .00000 | .10246 | .00000 | .00109 | .72277 | .00001 | .00018 | .09643 |
| 1600 | .00867 | .00001 | .06837 | .00000 | .00000 | .00001 | .10241 | .00000 | .00135 | .72262 | .00001 | .00027 | .09628 |
| 1650 | .00867 | .00003 | .06835 | .00000 | .00000 | .00001 | .10234 | .00000 | .00166 | .72243 | .00003 | .00039 | .09609 |
| 1700 | .00867 | .00005 | .06832 | .00000 | .00000 | .00002 | .10224 | .00000 | .00201 | .72221 | .00004 | .00055 | .09588 |
| 1750 | .00867 | .00008 | .06828 | .00000 | .00000 | .00003 | .10211 | .00000 | .00241 | .72194 | .00007 | .00076 | .09562 |
| 1800 | .00867 | .00014 | .06821 | .00001 | .00000 | .00006 | .10194 | .00000 | .00286 | .72162 | .00012 | .00104 | .09534 |
| 1850 | .00867 | .00023 | .06811 | .00002 | .00000 | .00009 | .10171 | .00000 | .00336 | .72123 | .00019 | .00139 | .09501 |
| 1900 | .00867 | .00038 | .06795 | .00003 | .00000 | .00013 | .10140 | .00000 | .00392 | .72076 | .00029 | .00183 | .09464 |
| 1950 | .00866 | .00059 | .06771 | .00005 | .00000 | .00020 | .10101 | .00000 | .00453 | .72019 | .00044 | .00238 | .09424 |
| 2000 | .00866 | .00091 | .06736 | .00009 | .00000 | .00030 | .10052 | .00000 | .00519 | .71949 | .00064 | .00304 | .09380 |
| 2050 | .00865 | .00136 | .06686 | .00015 | .00000 | .00043 | .09988 | .00000 | .00591 | .71864 | .00093 | .00384 | .09334 |
| 2100 | .00865 | .00199 | .06617 | .00024 | .00000 | .00061 | .09909 | .00000 | .00668 | .71760 | .00133 | .00480 | .09285 |
| 2150 | .00864 | .00284 | .06523 | .00038 | .00000 | .00084 | .09810 | .00000 | .00751 | .71631 | .00187 | .00592 | .09235 |
| 2200 | .00862 | .00397 | .06400 | .00060 | .00000 | .00115 | .09688 | .00000 | .00839 | .71474 | .00258 | .00722 | .09185 |
| 2250 | .00861 | .00543 | .06240 | .00092 | .00000 | .00154 | .09537 | .00000 | .00933 | .71283 | .00350 | .00871 | .09136 |
| 2300 | .00858 | .00727 | .06039 | .00137 | .00000 | .00203 | .09355 | .00000 | .01032 | .71050 | .00471 | .01041 | .09087 |
| 2350 | .00856 | .00951 | .05793 | .00201 | .00000 | .00263 | .09136 | .00000 | .01136 | .70771 | .00624 | .01230 | .09038 |
| 2400 | .00852 | .01216 | .05502 | .00289 | .00001 | .00335 | .08876 | .00000 | .01244 | .70439 | .00817 | .01440 | .08988 |
| 2450 | .00848 | .01518 | .05168 | .00409 | .00001 | .00420 | .08569 | .00000 | .01357 | .70050 | .01059 | .01667 | .08933 |
| 2500 | .00844 | .01853 | .04796 | .00569 | .00001 | .00518 | .08214 | .00000 | .01472 | .69597 | .01356 | .01911 | .08869 |
| 2550 | .00838 | .02211 | .04395 | .00777 | .00001 | .00627 | .07808 | .00000 | .01590 | .69079 | .01719 | .02166 | .08789 |
| 2600 | .00832 | .02581 | .03975 | .01043 | .00001 | .00747 | .07350 | .00000 | .01708 | .68493 | .02157 | .02427 | .08687 |
| 2650 | .00825 | .02951 | .03549 | .01377 | .00001 | .00873 | .06842 | .00000 | .01825 | .67838 | .02677 | .02687 | .08555 |
| 2700 | .00817 | .03309 | .03128 | .01788 | .00001 | .01002 | .06288 | .00000 | .01939 | .67116 | .03288 | .02937 | .08387 |
| 2750 | .00808 | .03643 | .02724 | .02284 | .00001 | .01128 | .05696 | .00001 | .02048 | .66329 | .03995 | .03167 | .08177 |
| 2800 | .00798 | .03947 | .02345 | .02869 | .00001 | .01244 | .05075 | .00001 | .02148 | .65480 | .04805 | .03366 | .07921 |
| 2850 | .00788 | .04213 | .01998 | .03543 | .00001 | .01343 | .04440 | .00001 | .02239 | .64579 | .05716 | .03522 | .07617 |
| 2900 | .00777 | .04440 | .01685 | .04301 | .00001 | .01417 | .03806 | .00002 | .02318 | .63634 | .06729 | .03625 | .07265 |
| 2950 | .00766 | .04627 | .01409 | .05131 | .00001 | .01460 | .03193 | .00002 | .02382 | .62660 | .07834 | .03668 | .06866 |
| 3000 | .00754 | .04776 | .01169 | .06016 | .00001 | .01469 | .02616 | .00003 | .02430 | .61672 | .09023 | .03645 | .06424 |

TABLE 19.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.033812; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00001 | .00000 | .72335 | .00000 | .00000 | .09702 |
| 950 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00001 | .00000 | .72335 | .00000 | .00000 | .09702 |
| 1000 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00002 | .00000 | .72334 | .00000 | .00000 | .09701 |
| 1050 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00004 | .00000 | .72333 | .00000 | .00000 | .09701 |
| 1100 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00006 | .00000 | .72332 | .00000 | .00000 | .09699 |
| 1150 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00009 | .00000 | .72331 | .00000 | .00000 | .09698 |
| 1200 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00014 | .00000 | .72328 | .00000 | .00000 | .09695 |
| 1250 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00000 | .00020 | .00000 | .72325 | .00000 | .00000 | .09692 |
| 1300 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00000 | .00028 | .00000 | .72321 | .00000 | .00001 | .09688 |
| 1350 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00000 | .00038 | .00000 | .72316 | .00000 | .00002 | .09683 |
| 1400 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00000 | .00051 | .00000 | .72309 | .00000 | .00003 | .09676 |
| 1450 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10254 | .00000 | .00067 | .00000 | .72301 | .00000 | .00004 | .09668 |
| 1500 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10252 | .00000 | .00086 | .00000 | .72291 | .00000 | .00007 | .09658 |
| 1550 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10250 | .00000 | .00109 | .00000 | .72279 | .00000 | .00010 | .09645 |
| 1600 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10248 | .00000 | .00135 | .00000 | .72265 | .00000 | .00015 | .09631 |
| 1650 | .00867 | .00001 | .06837 | .00000 | .00000 | .00000 | .10244 | .00000 | .00166 | .00000 | .72248 | .00001 | .00022 | .09613 |
| 1700 | .00867 | .00001 | .06836 | .00000 | .00000 | .00001 | .10239 | .00000 | .00201 | .00000 | .72228 | .00001 | .00031 | .09593 |
| 1750 | .00867 | .00003 | .06835 | .00000 | .00000 | .00001 | .10232 | .00000 | .00241 | .00000 | .72205 | .00002 | .00043 | .09570 |
| 1800 | .00867 | .00004 | .06833 | .00000 | .00000 | .00002 | .10223 | .00000 | .00286 | .00000 | .72178 | .00004 | .00058 | .09544 |
| 1850 | .00867 | .00007 | .06829 | .00000 | .00000 | .00003 | .10211 | .00000 | .00337 | .00000 | .72147 | .00006 | .00078 | .09514 |
| 1900 | .00867 | .00012 | .06824 | .00001 | .00000 | .00004 | .10196 | .00000 | .00392 | .00001 | .72111 | .00009 | .00103 | .09480 |
| 1950 | .00867 | .00019 | .06816 | .00001 | .00000 | .00006 | .10176 | .00000 | .00453 | .00001 | .72070 | .00014 | .00134 | .09443 |
| 2000 | .00867 | .00029 | .06804 | .00002 | .00000 | .00009 | .10152 | .00000 | .00520 | .00001 | .72022 | .00020 | .00172 | .09401 |
| 2050 | .00867 | .00044 | .06788 | .00003 | .00000 | .00014 | .10122 | .00000 | .00592 | .00001 | .71967 | .00030 | .00218 | .09356 |
| 2100 | .00866 | .00064 | .06765 | .00004 | .00000 | .00019 | .10084 | .00000 | .00670 | .00001 | .71903 | .00042 | .00272 | .09308 |
| 2150 | .00866 | .00093 | .06734 | .00007 | .00000 | .00027 | .10038 | .00000 | .00753 | .00001 | .71830 | .00059 | .00337 | .09256 |
| 2200 | .00866 | .00131 | .06691 | .00011 | .00001 | .00037 | .09983 | .00000 | .00842 | .00001 | .71744 | .00082 | .00412 | .09201 |
| 2250 | .00865 | .00183 | .06635 | .00017 | .00001 | .00051 | .09915 | .00000 | .00936 | .00001 | .71644 | .00111 | .00500 | .09144 |
| 2300 | .00864 | .00250 | .06561 | .00025 | .00001 | .00067 | .09835 | .00000 | .01035 | .00001 | .71527 | .00149 | .00600 | .09085 |
| 2350 | .00863 | .00336 | .06467 | .00037 | .00001 | .00089 | .09738 | .00000 | .01140 | .00001 | .71391 | .00197 | .00714 | .09026 |
| 2400 | .00862 | .00444 | .06349 | .00054 | .00001 | .00115 | .09625 | .00000 | .01250 | .00001 | .71233 | .00258 | .00842 | .08966 |
| 2450 | .00860 | .00577 | .06204 | .00077 | .00001 | .00147 | .09491 | .00000 | .01364 | .00001 | .71050 | .00334 | .00986 | .08906 |
| 2500 | .00859 | .00738 | .06030 | .00108 | .00001 | .00186 | .09336 | .00000 | .01484 | .00001 | .70839 | .00428 | .01145 | .08847 |
| 2550 | .00856 | .00927 | .05823 | .00150 | .00001 | .00233 | .09156 | .00000 | .01607 | .00001 | .70596 | .00544 | .01319 | .08787 |
| 2600 | .00854 | .01144 | .05586 | .00204 | .00001 | .00287 | .08950 | .00000 | .01735 | .00001 | .70320 | .00684 | .01508 | .08727 |
| 2650 | .00851 | .01389 | .05317 | .00275 | .00002 | .00349 | .08715 | .00000 | .01866 | .00001 | .70007 | .00852 | .01711 | .08665 |
| 2700 | .00847 | .01659 | .05021 | .00366 | .00002 | .00421 | .08450 | .00000 | .02000 | .00001 | .69655 | .01053 | .01927 | .08598 |
| 2750 | .00844 | .01948 | .04702 | .00481 | .00002 | .00500 | .08154 | .00000 | .02136 | .00001 | .69265 | .01290 | .02153 | .08524 |
| 2800 | .00839 | .02250 | .04365 | .00624 | .00002 | .00588 | .07826 | .00000 | .02274 | .00001 | .68835 | .01568 | .02388 | .08440 |
| 2850 | .00834 | .02560 | .04017 | .00799 | .00002 | .00682 | .07467 | .00000 | .02411 | .00001 | .68364 | .01892 | .02628 | .08342 |
| 2900 | .00829 | .02870 | .03665 | .01011 | .00002 | .00783 | .07078 | .00001 | .02547 | .00001 | .67855 | .02264 | .02868 | .08227 |
| 2950 | .00823 | .03173 | .03317 | .01265 | .00002 | .00887 | .06660 | .00001 | .02680 | .00001 | .67306 | .02690 | .03104 | .08091 |
| 3000 | .00817 | .03463 | .02978 | .01564 | .00002 | .00993 | .06217 | .00001 | .02808 | .00001 | .66721 | .03171 | .03331 | .07932 |

TABLE 19.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.033812; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00001 | .00000 | .72335 | .00000 | .00000 | .09702 |
| 950 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00001 | .00000 | .72335 | .00000 | .00000 | .09702 |
| 1000 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00002 | .00000 | .72334 | .00000 | .00000 | .09701 |
| 1050 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00004 | .00000 | .72333 | .00000 | .00000 | .09700 |
| 1100 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00006 | .00000 | .72332 | .00000 | .00000 | .09699 |
| 1150 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00009 | .00000 | .72331 | .00000 | .00000 | .09698 |
| 1200 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00014 | .00000 | .72328 | .00000 | .00000 | .09695 |
| 1250 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00020 | .00001 | .72325 | .00000 | .00000 | .09692 |
| 1300 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00028 | .00001 | .72321 | .00000 | .00001 | .09688 |
| 1350 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00038 | .00001 | .72316 | .00000 | .00001 | .09683 |
| 1400 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00051 | .00001 | .72309 | .00000 | .00001 | .09676 |
| 1450 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00067 | .00001 | .72301 | .00000 | .00002 | .09668 |
| 1500 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10254 | .00086 | .00001 | .72292 | .00000 | .00004 | .09658 |
| 1550 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10253 | .00109 | .00001 | .72280 | .00000 | .00006 | .09646 |
| 1600 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10251 | .00135 | .00001 | .72266 | .00000 | .00008 | .09632 |
| 1650 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10249 | .00166 | .00001 | .72250 | .00000 | .00012 | .09615 |
| 1700 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10246 | .00201 | .00001 | .72231 | .00000 | .00017 | .09596 |
| 1750 | .00867 | .00001 | .06837 | .00000 | .00000 | .00000 | .10243 | .00241 | .00001 | .72209 | .00001 | .00024 | .09574 |
| 1800 | .00867 | .00001 | .06836 | .00000 | .00000 | .00001 | .10238 | .00287 | .00001 | .72185 | .00001 | .00033 | .09549 |
| 1850 | .00867 | .00002 | .06835 | .00000 | .00000 | .00001 | .10232 | .00337 | .00002 | .72157 | .00002 | .00044 | .09521 |
| 1900 | .00867 | .00004 | .06833 | .00000 | .00000 | .00001 | .10223 | .00393 | .00002 | .72125 | .00003 | .00058 | .09489 |
| 1950 | .00867 | .00006 | .06831 | .00000 | .00000 | .00002 | .10213 | .00454 | .00002 | .72090 | .00004 | .00076 | .09454 |
| 2000 | .00867 | .00009 | .06827 | .00000 | .00001 | .00003 | .10201 | .00520 | .00002 | .72051 | .00006 | .00097 | .09416 |
| 2050 | .00867 | .00014 | .06822 | .00000 | .00001 | .00004 | .10185 | .00593 | .00002 | .72006 | .00009 | .00123 | .09374 |
| 2100 | .00867 | .00020 | .06814 | .00001 | .00001 | .00006 | .10166 | .00671 | .00002 | .71957 | .00013 | .00154 | .09328 |
| 2150 | .00867 | .00030 | .06804 | .00001 | .00001 | .00009 | .10143 | .00754 | .00002 | .71902 | .00019 | .00190 | .09278 |
| 2200 | .00867 | .00042 | .06790 | .00002 | .00001 | .00012 | .10116 | .00843 | .00002 | .71841 | .00026 | .00234 | .09225 |
| 2250 | .00866 | .00059 | .06771 | .00003 | .00001 | .00016 | .10083 | .00938 | .00002 | .71773 | .00035 | .00284 | .09168 |
| 2300 | .00866 | .00081 | .06746 | .00004 | .00001 | .00022 | .10044 | .01038 | .00002 | .71698 | .00047 | .00341 | .09108 |
| 2350 | .00866 | .00110 | .06714 | .00007 | .00002 | .00029 | .09998 | .01143 | .00002 | .71614 | .00062 | .00407 | .09046 |
| 2400 | .00865 | .00147 | .06673 | .00010 | .00002 | .00038 | .09945 | .01253 | .00002 | .71520 | .00082 | .00482 | .08981 |
| 2450 | .00865 | .00195 | .06622 | .00014 | .00002 | .00048 | .09883 | .01368 | .00002 | .71415 | .00106 | .00566 | .08914 |
| 2500 | .00864 | .00254 | .06557 | .00020 | .00002 | .00062 | .09812 | .01488 | .00002 | .71298 | .00135 | .00660 | .08845 |
| 2550 | .00863 | .00326 | .06478 | .00027 | .00002 | .00078 | .09730 | .01613 | .00003 | .71167 | .00172 | .00764 | .08776 |
| 2600 | .00862 | .00414 | .06383 | .00038 | .00003 | .00098 | .09636 | .01741 | .00003 | .71022 | .00216 | .00879 | .08706 |
| 2650 | .00861 | .00519 | .06269 | .00051 | .00003 | .00121 | .09529 | .01874 | .00003 | .70860 | .00269 | .01005 | .08636 |
| 2700 | .00860 | .00642 | .06135 | .00069 | .00003 | .00148 | .09408 | .02011 | .00003 | .70680 | .00332 | .01142 | .08566 |
| 2750 | .00858 | .00785 | .05980 | .00091 | .00004 | .00180 | .09273 | .02152 | .00003 | .70481 | .00407 | .01290 | .08496 |
| 2800 | .00856 | .00947 | .05804 | .00120 | .00004 | .00217 | .09122 | .02295 | .00003 | .70261 | .00496 | .01449 | .08427 |
| 2850 | .00854 | .01129 | .05606 | .00155 | .00004 | .00258 | .08953 | .02442 | .00003 | .70019 | .00599 | .01619 | .08357 |
| 2900 | .00852 | .01329 | .05388 | .00200 | .00005 | .00306 | .08767 | .02592 | .00003 | .69755 | .00719 | .01798 | .08287 |
| 2950 | .00850 | .01546 | .05151 | .00254 | .00005 | .00358 | .08563 | .02743 | .00003 | .69468 | .00857 | .01987 | .08215 |
| 3000 | .00847 | .01778 | .04897 | .00320 | .00005 | .00416 | .08341 | .02896 | .00003 | .69158 | .01016 | .02183 | .08139 |

TABLE 19.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.033812; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00001 | .00000 | .72335 | .00000 | .00000 | .00000 | .09702 |
| 950 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00001 | .00000 | .72335 | .00000 | .00000 | .00000 | .09702 |
| 1000 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00002 | .00001 | .72334 | .00000 | .00000 | .00000 | .09701 |
| 1050 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00004 | .00001 | .72333 | .00000 | .00000 | .00000 | .09700 |
| 1100 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10256 | .00006 | .00001 | .72332 | .00000 | .00000 | .00000 | .09699 |
| 1150 | .00868 | .00000 | .06839 | .00000 | .00000 | .00000 | .10256 | .00009 | .00001 | .72330 | .00000 | .00000 | .00000 | .09697 |
| 1200 | .00868 | .00000 | .06839 | .00000 | .00000 | .00000 | .10256 | .00014 | .00001 | .72328 | .00000 | .00000 | .00000 | .09695 |
| 1250 | .00868 | .00000 | .06839 | .00000 | .00000 | .00000 | .10256 | .00020 | .00001 | .72325 | .00000 | .00000 | .00000 | .09691 |
| 1300 | .00868 | .00000 | .06839 | .00000 | .00000 | .00000 | .10256 | .00028 | .00001 | .72321 | .00000 | .00000 | .00000 | .09687 |
| 1350 | .00868 | .00000 | .06839 | .00000 | .00000 | .00000 | .10256 | .00038 | .00002 | .72316 | .00000 | .00000 | .00001 | .09682 |
| 1400 | .00868 | .00000 | .06839 | .00000 | .00000 | .00000 | .10255 | .00051 | .00002 | .72309 | .00000 | .00000 | .00001 | .09675 |
| 1450 | .00868 | .00000 | .06839 | .00000 | .00000 | .00000 | .10255 | .00067 | .00002 | .72301 | .00000 | .00000 | .00002 | .09667 |
| 1500 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10255 | .00086 | .00002 | .72292 | .00000 | .00000 | .00003 | .09657 |
| 1550 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10254 | .00109 | .00002 | .72280 | .00000 | .00000 | .00004 | .09645 |
| 1600 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10253 | .00135 | .00002 | .72266 | .00000 | .00000 | .00006 | .09631 |
| 1650 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10252 | .00166 | .00003 | .72250 | .00000 | .00000 | .00008 | .09615 |
| 1700 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10250 | .00201 | .00003 | .72232 | .00000 | .00000 | .00012 | .09596 |
| 1750 | .00868 | .00000 | .06838 | .00000 | .00000 | .00000 | .10247 | .00241 | .00003 | .72211 | .00000 | .00000 | .00016 | .09574 |
| 1800 | .00868 | .00001 | .06838 | .00000 | .00000 | .00000 | .10244 | .00287 | .00003 | .72187 | .00000 | .00001 | .00022 | .09550 |
| 1850 | .00867 | .00001 | .06837 | .00000 | .00000 | .00000 | .10240 | .00337 | .00003 | .72160 | .00000 | .00001 | .00030 | .09523 |
| 1900 | .00867 | .00002 | .06836 | .00000 | .00001 | .00001 | .10235 | .00393 | .00004 | .72130 | .00000 | .00001 | .00039 | .09492 |
| 1950 | .00867 | .00003 | .06835 | .00000 | .00001 | .00001 | .10228 | .00454 | .00004 | .72097 | .00000 | .00002 | .00051 | .09458 |
| 2000 | .00867 | .00004 | .06833 | .00000 | .00001 | .00001 | .10220 | .00521 | .00004 | .72060 | .00000 | .00003 | .00065 | .09421 |
| 2050 | .00867 | .00006 | .06831 | .00000 | .00001 | .00002 | .10210 | .00593 | .00004 | .72019 | .00000 | .00004 | .00082 | .09380 |
| 2100 | .00867 | .00009 | .06827 | .00000 | .00001 | .00003 | .10198 | .00671 | .00004 | .71974 | .00000 | .00006 | .00103 | .09336 |
| 2150 | .00867 | .00013 | .06822 | .00000 | .00001 | .00004 | .10183 | .00755 | .00004 | .71925 | .00000 | .00008 | .00128 | .09288 |
| 2200 | .00867 | .00019 | .06816 | .00001 | .00002 | .00005 | .10166 | .00844 | .00005 | .71871 | .00000 | .00012 | .00157 | .09237 |
| 2250 | .00867 | .00026 | .06807 | .00001 | .00002 | .00007 | .10145 | .00939 | .00005 | .71813 | .00000 | .00016 | .00190 | .09182 |
| 2300 | .00867 | .00037 | .06796 | .00001 | .00002 | .00010 | .10121 | .01039 | .00005 | .71749 | .00000 | .00021 | .00229 | .09124 |
| 2350 | .00867 | .00050 | .06781 | .00002 | .00002 | .00013 | .10093 | .01145 | .00005 | .71679 | .00000 | .00028 | .00274 | .09062 |
| 2400 | .00866 | .00067 | .06762 | .00003 | .00003 | .00017 | .10060 | .01255 | .00005 | .71604 | .00000 | .00037 | .00324 | .08997 |
| 2450 | .00866 | .00089 | .06738 | .00004 | .00003 | .00022 | .10022 | .01371 | .00005 | .71521 | .00000 | .00047 | .00381 | .08930 |
| 2500 | .00866 | .00116 | .06708 | .00006 | .00003 | .00028 | .09979 | .01491 | .00006 | .71432 | .00001 | .00061 | .00445 | .08860 |
| 2550 | .00865 | .00150 | .06670 | .00008 | .00004 | .00036 | .09929 | .01616 | .00006 | .71334 | .00001 | .00077 | .00516 | .08788 |
| 2600 | .00865 | .00192 | .06624 | .00011 | .00004 | .00045 | .09873 | .01745 | .00006 | .71228 | .00001 | .00097 | .00595 | .08714 |
| 2650 | .00864 | .00243 | .06569 | .00016 | .00005 | .00056 | .09809 | .01878 | .00006 | .71113 | .00001 | .00120 | .00682 | .08639 |
| 2700 | .00864 | .00304 | .06502 | .00021 | .00005 | .00069 | .09738 | .02015 | .00006 | .70987 | .00001 | .00149 | .00777 | .08563 |
| 2750 | .00863 | .00377 | .06423 | .00028 | .00005 | .00084 | .09658 | .02156 | .00006 | .70850 | .00001 | .00182 | .00880 | .08486 |
| 2800 | .00862 | .00462 | .06331 | .00037 | .00006 | .00102 | .09569 | .02300 | .00006 | .70701 | .00001 | .00221 | .00992 | .08410 |
| 2850 | .00861 | .00561 | .06224 | .00048 | .00006 | .00122 | .09470 | .02448 | .00006 | .70540 | .00001 | .00267 | .01112 | .08333 |
| 2900 | .00860 | .00674 | .06101 | .00062 | .00007 | .00146 | .09360 | .02598 | .00006 | .70365 | .00001 | .00321 | .01241 | .08257 |
| 2950 | .00858 | .00802 | .05963 | .00079 | .00008 | .00173 | .09240 | .02751 | .00006 | .70176 | .00001 | .00382 | .01379 | .08181 |
| 3000 | .00857 | .00945 | .05808 | .00100 | .00008 | .00204 | .09108 | .02907 | .00007 | .69972 | .00001 | .00453 | .01524 | .08106 |

TABLE 19C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.033812; EQUIV.RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522;
WET AIR (W/A = 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00868 | .06838 | .10242 | .00000 | .00014 | .72335 | .09703 |
| 220 | .00868 | .06838 | .10021 | .00000 | .00235 | .72335 | .09703 |
| 240 | .00868 | .06838 | .07784 | .00000 | .02472 | .72335 | .09703 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00868 | .06838 | .10254 | .00000 | .00001 | .72335 | .09703 |
| 220 | .00868 | .06838 | .10233 | .00000 | .00023 | .72335 | .09703 |
| 240 | .00868 | .06838 | .10015 | .00000 | .00241 | .72335 | .09703 |
| 260 | .00868 | .06838 | .08494 | .00000 | .01761 | .72335 | .09703 |
| 280 | .00868 | .06838 | .00000 | .00565 | .09691 | .72335 | .09703 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00868 | .06838 | .10256 | .00000 | .00000 | .72335 | .09703 |
| 220 | .00868 | .06838 | .10254 | .00000 | .00002 | .72335 | .09703 |
| 240 | .00868 | .06838 | .10232 | .00000 | .00024 | .72335 | .09703 |
| 260 | .00868 | .06838 | .10083 | .00000 | .00173 | .72335 | .09703 |
| 280 | .00868 | .06838 | .00000 | .09373 | .00883 | .72335 | .09703 |
| 298 | .00868 | .06838 | .00000 | .07373 | .02882 | .72335 | .09703 |
| 300 | .00868 | .06838 | .00000 | .07028 | .03228 | .72335 | .09703 |
| 320 | .00868 | .06838 | .00000 | .00000 | .10256 | .72335 | .09703 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00868 | .06838 | .10256 | .00000 | .00000 | .72335 | .09703 |
| 220 | .00868 | .06838 | .10256 | .00000 | .00000 | .72335 | .09703 |
| 240 | .00868 | .06838 | .10254 | .00000 | .00002 | .72335 | .09703 |
| 260 | .00868 | .06838 | .10239 | .00000 | .00017 | .72335 | .09703 |
| 280 | .00868 | .06838 | .00000 | .10168 | .00088 | .72335 | .09703 |
| 298 | .00868 | .06838 | .00000 | .09976 | .00280 | .72335 | .09703 |
| 300 | .00868 | .06838 | .00000 | .09943 | .00313 | .72335 | .09703 |
| 320 | .00868 | .06838 | .00000 | .09319 | .00937 | .72335 | .09703 |
| 340 | .00868 | .06838 | .00000 | .07808 | .02448 | .72335 | .09703 |
| 360 | .00868 | .06838 | .00000 | .04480 | .05775 | .72335 | .09703 |
| 380 | .00868 | .06838 | .00000 | .00000 | .10256 | .72335 | .09703 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00868 | .06838 | .10256 | .00000 | .00000 | .72335 | .09703 |
| 220 | .00868 | .06838 | .10256 | .00000 | .00000 | .72335 | .09703 |
| 240 | .00868 | .06838 | .10255 | .00000 | .00000 | .72335 | .09703 |
| 260 | .00868 | .06838 | .10252 | .00000 | .00003 | .72335 | .09703 |
| 280 | .00868 | .06838 | .00000 | .10238 | .00017 | .72335 | .09703 |
| 298 | .00868 | .06838 | .00000 | .10200 | .00056 | .72335 | .09703 |
| 300 | .00868 | .06838 | .00000 | .10194 | .00062 | .72335 | .09703 |
| 320 | .00868 | .06838 | .00000 | .10070 | .00186 | .72335 | .09703 |
| 340 | .00868 | .06838 | .00000 | .09777 | .00479 | .72335 | .09703 |
| 360 | .00868 | .06838 | .00000 | .09157 | .01099 | .72335 | .09703 |
| 380 | .00868 | .06838 | .00000 | .07966 | .02290 | .72335 | .09703 |
| 400 | .00868 | .06838 | .00000 | .05831 | .04425 | .72335 | .09703 |
| 420 | .00868 | .06838 | .00000 | .02182 | .08074 | .72335 | .09703 |

TABLE 20.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.050718; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00855 | .00000 | .10097 | .00000 | .00000 | .12962 | .00000 | .00000 | .71303 | .00000 | .00000 | .04782 |
| 950 | .00855 | .00000 | .10097 | .00000 | .00000 | .12962 | .00000 | .00001 | .71303 | .00000 | .00000 | .04782 |
| 1000 | .00855 | .00000 | .10097 | .00000 | .00000 | .12962 | .00000 | .00002 | .71303 | .00000 | .00000 | .04781 |
| 1050 | .00855 | .00000 | .10097 | .00000 | .00000 | .12962 | .00000 | .00003 | .71302 | .00000 | .00000 | .04781 |
| 1100 | .00855 | .00000 | .10097 | .00000 | .00000 | .12962 | .00000 | .00004 | .71302 | .00000 | .00000 | .04780 |
| 1150 | .00855 | .00000 | .10097 | .00000 | .00000 | .12962 | .00000 | .00007 | .71300 | .00000 | .00000 | .04779 |
| 1200 | .00855 | .00000 | .10097 | .00000 | .00000 | .12962 | .00000 | .00010 | .71299 | .00000 | .00001 | .04777 |
| 1250 | .00855 | .00000 | .10097 | .00000 | .00000 | .12961 | .00000 | .00014 | .71296 | .00000 | .00001 | .04775 |
| 1300 | .00855 | .00000 | .10097 | .00000 | .00000 | .12961 | .00000 | .00020 | .71293 | .00000 | .00003 | .04772 |
| 1350 | .00855 | .00000 | .10097 | .00000 | .00000 | .12960 | .00000 | .00027 | .71289 | .00000 | .00005 | .04768 |
| 1400 | .00855 | .00000 | .10096 | .00000 | .00000 | .12958 | .00000 | .00036 | .71284 | .00000 | .00008 | .04762 |
| 1450 | .00855 | .00001 | .10095 | .00000 | .00001 | .12955 | .00000 | .00047 | .71277 | .00000 | .00013 | .04756 |
| 1500 | .00855 | .00002 | .10094 | .00000 | .00001 | .12950 | .00000 | .00060 | .71269 | .00001 | .00020 | .04748 |
| 1550 | .00855 | .00005 | .10091 | .00000 | .00002 | .12943 | .00000 | .00076 | .71257 | .00002 | .00030 | .04739 |
| 1600 | .00855 | .00009 | .10086 | .00000 | .00004 | .12933 | .00000 | .00094 | .71243 | .00003 | .00045 | .04728 |
| 1650 | .00855 | .00017 | .10076 | .00001 | .00007 | .12918 | .00000 | .00115 | .71223 | .00006 | .00065 | .04716 |
| 1700 | .00855 | .00031 | .10060 | .00002 | .00012 | .12897 | .00000 | .00140 | .71198 | .00010 | .00092 | .04704 |
| 1750 | .00854 | .00055 | .10034 | .00003 | .00020 | .12867 | .00000 | .00168 | .71163 | .00016 | .00127 | .04693 |
| 1800 | .00854 | .00094 | .09991 | .00006 | .00032 | .12825 | .00000 | .00199 | .71116 | .00026 | .00173 | .04684 |
| 1850 | .00854 | .00154 | .09924 | .00012 | .00050 | .12766 | .00000 | .00234 | .71051 | .00041 | .00232 | .04682 |
| 1900 | .00853 | .00246 | .09822 | .00022 | .00076 | .12686 | .00000 | .00274 | .70963 | .00064 | .00305 | .04689 |
| 1950 | .00852 | .00379 | .09675 | .00038 | .00113 | .12577 | .00000 | .00317 | .70844 | .00097 | .00396 | .04711 |
| 2000 | .00850 | .00567 | .09468 | .00065 | .00163 | .12433 | .00000 | .00366 | .70683 | .00145 | .00507 | .04752 |
| 2050 | .00848 | .00821 | .09187 | .00108 | .00231 | .12243 | .00000 | .00420 | .70470 | .00212 | .00641 | .04817 |
| 2100 | .00845 | .01151 | .08822 | .00175 | .00319 | .11997 | .00000 | .00481 | .70194 | .00306 | .00800 | .04909 |
| 2150 | .00841 | .01561 | .08368 | .00275 | .00429 | .11686 | .00000 | .00547 | .69842 | .00435 | .00986 | .05028 |
| 2200 | .00836 | .02047 | .07825 | .00420 | .00564 | .11299 | .00000 | .00621 | .69406 | .00611 | .01201 | .05170 |
| 2250 | .00830 | .02599 | .07204 | .00628 | .00723 | .10826 | .00000 | .00700 | .68875 | .00846 | .01442 | .05326 |
| 2300 | .00823 | .03197 | .06522 | .00915 | .00905 | .10260 | .00000 | .00786 | .68242 | .01156 | .01708 | .05485 |
| 2350 | .00815 | .03817 | .05803 | .01304 | .01106 | .09597 | .00000 | .00875 | .67503 | .01557 | .01992 | .05630 |
| 2400 | .00805 | .04434 | .05073 | .01816 | .01319 | .08835 | .00000 | .00968 | .66654 | .02066 | .02284 | .05745 |
| 2450 | .00794 | .05019 | .04358 | .02473 | .01534 | .07983 | .00000 | .01060 | .65694 | .02701 | .02570 | .05813 |
| 2500 | .00782 | .05552 | .03681 | .03292 | .01735 | .07054 | .00000 | .01149 | .64626 | .03475 | .02834 | .05819 |
| 2550 | .00769 | .06016 | .03058 | .04282 | .01907 | .06073 | .00000 | .01233 | .63460 | .04398 | .03055 | .05750 |
| 2600 | .00754 | .06400 | .02502 | .05437 | .02030 | .05073 | .00001 | .01307 | .62212 | .05474 | .03213 | .05597 |
| 2650 | .00739 | .06705 | .02017 | .06734 | .02089 | .04096 | .00001 | .01368 | .60908 | .06698 | .03289 | .05356 |
| 2700 | .00723 | .06932 | .01605 | .08132 | .02073 | .03185 | .00001 | .01415 | .59582 | .08050 | .03271 | .05029 |
| 2750 | .00708 | .07093 | .01261 | .09572 | .01981 | .02379 | .00002 | .01443 | .58276 | .09502 | .03157 | .04625 |
| 2800 | .00693 | .07199 | .00980 | .10986 | .01824 | .01706 | .00003 | .01453 | .57031 | .11012 | .02954 | .04161 |
| 2850 | .00679 | .07261 | .00755 | .12309 | .01621 | .01175 | .00004 | .01444 | .55885 | .12528 | .02682 | .03659 |
| 2900 | .00667 | .07294 | .00576 | .13492 | .01394 | .00779 | .00005 | .01416 | .54866 | .14000 | .02366 | .03145 |
| 2950 | .00656 | .07306 | .00437 | .14507 | .01167 | .00501 | .00007 | .01372 | .53987 | .15379 | .02036 | .02646 |
| 3000 | .00647 | .07305 | .00329 | .15348 | .00956 | .00314 | .00010 | .01316 | .53250 | .16629 | .01714 | .02182 |

TABLE 20.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.050718; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00000 | .71303 | .00000 | .00000 | .04782 |
| 950 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00001 | .71303 | .00000 | .00000 | .04782 |
| 1000 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00002 | .71303 | .00000 | .00000 | .04781 |
| 1050 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00003 | .71302 | .00000 | .00000 | .04781 |
| 1100 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00004 | .71302 | .00000 | .00000 | .04780 |
| 1150 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00007 | .71300 | .00000 | .00000 | .04779 |
| 1200 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00010 | .71299 | .00000 | .00000 | .04777 |
| 1250 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00014 | .71296 | .00000 | .00001 | .04775 |
| 1300 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12961 | .00000 | .00020 | .71294 | .00000 | .00002 | .04772 |
| 1350 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12961 | .00000 | .00027 | .71290 | .00000 | .00003 | .04768 |
| 1400 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12960 | .00000 | .00036 | .71285 | .00000 | .00004 | .04763 |
| 1450 | .00855 | .00000 | .10096 | .00000 | .00000 | .00000 | .12958 | .00000 | .00047 | .71279 | .00000 | .00007 | .04757 |
| 1500 | .00855 | .00001 | .10096 | .00000 | .00000 | .00000 | .12956 | .00000 | .00060 | .71271 | .00000 | .00011 | .04750 |
| 1550 | .00855 | .00001 | .10095 | .00000 | .00000 | .00001 | .12952 | .00000 | .00076 | .71262 | .00001 | .00017 | .04741 |
| 1600 | .00855 | .00003 | .10093 | .00000 | .00000 | .00001 | .12947 | .00000 | .00094 | .71250 | .00001 | .00025 | .04730 |
| 1650 | .00855 | .00005 | .10090 | .00000 | .00000 | .00002 | .12940 | .00000 | .00115 | .71236 | .00002 | .00037 | .04718 |
| 1700 | .00855 | .00010 | .10085 | .00000 | .00000 | .00004 | .12930 | .00000 | .00140 | .71218 | .00003 | .00052 | .04704 |
| 1750 | .00855 | .00018 | .10076 | .00001 | .00000 | .00006 | .12915 | .00000 | .00168 | .71196 | .00005 | .00072 | .04688 |
| 1800 | .00855 | .00030 | .10062 | .00001 | .00000 | .00010 | .12896 | .00000 | .00199 | .71169 | .00008 | .00098 | .04672 |
| 1850 | .00855 | .00049 | .10040 | .00002 | .00000 | .00016 | .12870 | .00000 | .00234 | .71134 | .00013 | .00131 | .04656 |
| 1900 | .00854 | .00080 | .10006 | .00004 | .00000 | .00024 | .12836 | .00000 | .00273 | .71090 | .00020 | .00172 | .04640 |
| 1950 | .00854 | .00124 | .09957 | .00007 | .00000 | .00037 | .12790 | .00000 | .00315 | .71034 | .00031 | .00224 | .04628 |
| 2000 | .00853 | .00190 | .09884 | .00012 | .00000 | .00054 | .12730 | .00000 | .00362 | .70962 | .00045 | .00287 | .04621 |
| 2050 | .00852 | .00282 | .09782 | .00020 | .00000 | .00077 | .12652 | .00000 | .00413 | .70870 | .00066 | .00363 | .04621 |
| 2100 | .00851 | .00410 | .09642 | .00032 | .00000 | .00109 | .12553 | .00000 | .00469 | .70753 | .00094 | .00454 | .04633 |
| 2150 | .00850 | .00579 | .09456 | .00051 | .00000 | .00150 | .12427 | .00000 | .00530 | .70604 | .00133 | .00561 | .04659 |
| 2200 | .00848 | .00799 | .09214 | .00080 | .00000 | .00203 | .12269 | .00000 | .00596 | .70417 | .00184 | .00687 | .04702 |
| 2250 | .00846 | .01075 | .08911 | .00121 | .00000 | .00270 | .12073 | .00000 | .00669 | .70187 | .00253 | .00833 | .04763 |
| 2300 | .00843 | .01409 | .08543 | .00180 | .00000 | .00351 | .11834 | .00000 | .00747 | .69905 | .00344 | .01000 | .04843 |
| 2350 | .00839 | .01801 | .08109 | .00263 | .00000 | .00449 | .11547 | .00000 | .00833 | .69568 | .00461 | .01189 | .04940 |
| 2400 | .00835 | .02245 | .07616 | .00376 | .00000 | .00564 | .11206 | .00000 | .00924 | .69171 | .00613 | .01400 | .05050 |
| 2450 | .00830 | .02732 | .07070 | .00527 | .00000 | .00697 | .10807 | .00000 | .01022 | .68711 | .00805 | .01633 | .05166 |
| 2500 | .00825 | .03248 | .06487 | .00727 | .00000 | .00845 | .10347 | .00000 | .01125 | .68185 | .01047 | .01884 | .05282 |
| 2550 | .00818 | .03779 | .05880 | .00984 | .00001 | .01008 | .09824 | .00000 | .01231 | .67592 | .01346 | .02150 | .05387 |
| 2600 | .00811 | .04307 | .05265 | .01312 | .00001 | .01182 | .09239 | .00000 | .01341 | .66932 | .01712 | .02424 | .05474 |
| 2650 | .00803 | .04818 | .04659 | .01721 | .00001 | .01363 | .08593 | .00000 | .01450 | .66206 | .02153 | .02701 | .05533 |
| 2700 | .00794 | .05297 | .04076 | .02220 | .00001 | .01545 | .07893 | .00000 | .01558 | .65414 | .02676 | .02969 | .05556 |
| 2750 | .00784 | .05733 | .03527 | .02820 | .00001 | .01720 | .07148 | .00001 | .01662 | .64561 | .03288 | .03219 | .05537 |
| 2800 | .00774 | .06117 | .03021 | .03526 | .00001 | .01879 | .06370 | .00001 | .01760 | .63650 | .03993 | .03438 | .05471 |
| 2850 | .00763 | .06446 | .02562 | .04337 | .00001 | .02012 | .05577 | .00001 | .01850 | .62691 | .04793 | .03614 | .05354 |
| 2900 | .00751 | .06718 | .02154 | .05248 | .00001 | .02109 | .04788 | .00002 | .01928 | .61692 | .05685 | .03738 | .05186 |
| 2950 | .00740 | .06936 | .01797 | .06246 | .00001 | .02164 | .04024 | .00002 | .01993 | .60668 | .06664 | .03798 | .04968 |
| 3000 | .00728 | .07102 | .01487 | .07311 | .00001 | .02170 | .03306 | .00003 | .02044 | .59635 | .07719 | .03790 | .04702 |

TABLE 20.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.050718; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A = 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00000 | .00000 | .71303 | .00000 | .00000 | .04782 |
| 950 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00001 | .00000 | .71303 | .00000 | .00000 | .04782 |
| 1000 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00002 | .00000 | .71303 | .00000 | .00000 | .04781 |
| 1050 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00003 | .00000 | .71302 | .00000 | .00000 | .04781 |
| 1100 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00004 | .00000 | .71302 | .00000 | .00000 | .04780 |
| 1150 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00007 | .00000 | .71300 | .00000 | .00000 | .04779 |
| 1200 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00010 | .00000 | .71299 | .00000 | .00000 | .04777 |
| 1250 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00014 | .00000 | .71297 | .00000 | .00000 | .04775 |
| 1300 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00020 | .00000 | .71294 | .00000 | .00001 | .04772 |
| 1350 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12961 | .00000 | .00027 | .00000 | .71290 | .00000 | .00001 | .04768 |
| 1400 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12961 | .00000 | .00036 | .00000 | .71285 | .00000 | .00002 | .04764 |
| 1450 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12960 | .00000 | .00047 | .00000 | .71280 | .00000 | .00004 | .04758 |
| 1500 | .00855 | .00000 | .10096 | .00000 | .00000 | .00000 | .12959 | .00000 | .00060 | .00000 | .71272 | .00000 | .00006 | .04751 |
| 1550 | .00855 | .00000 | .10096 | .00000 | .00000 | .00000 | .12957 | .00000 | .00076 | .00000 | .71264 | .00000 | .00010 | .04742 |
| 1600 | .00855 | .00001 | .10095 | .00000 | .00000 | .00000 | .12954 | .00000 | .00094 | .00000 | .71254 | .00000 | .00014 | .04732 |
| 1650 | .00855 | .00002 | .10094 | .00000 | .00000 | .00001 | .12950 | .00000 | .00115 | .00000 | .71241 | .00001 | .00021 | .04720 |
| 1700 | .00855 | .00003 | .10093 | .00000 | .00000 | .00001 | .12945 | .00000 | .00140 | .00000 | .71227 | .00001 | .00029 | .04706 |
| 1750 | .00855 | .00006 | .10090 | .00000 | .00000 | .00002 | .12938 | .00000 | .00168 | .00000 | .71209 | .00002 | .00040 | .04690 |
| 1800 | .00855 | .00009 | .10085 | .00000 | .00000 | .00003 | .12929 | .00000 | .00199 | .00000 | .71189 | .00003 | .00055 | .04673 |
| 1850 | .00855 | .00016 | .10078 | .00000 | .00000 | .00005 | .12916 | .00000 | .00234 | .00000 | .71165 | .00004 | .00074 | .04653 |
| 1900 | .00855 | .00025 | .10067 | .00001 | .00000 | .00008 | .12900 | .00000 | .00272 | .00000 | .71136 | .00006 | .00097 | .04633 |
| 1950 | .00855 | .00040 | .10051 | .00001 | .00000 | .00012 | .12879 | .00000 | .00315 | .00000 | .71101 | .00010 | .00126 | .04611 |
| 2000 | .00854 | .00061 | .10027 | .00002 | .00000 | .00017 | .12852 | .00000 | .00361 | .00000 | .71066 | .00014 | .00162 | .04589 |
| 2050 | .00854 | .00092 | .09993 | .00004 | .00000 | .00025 | .12817 | .00000 | .00411 | .00000 | .71011 | .00021 | .00205 | .04568 |
| 2100 | .00854 | .00135 | .09945 | .00006 | .00000 | .00035 | .12774 | .00000 | .00465 | .00000 | .70951 | .00029 | .00256 | .04549 |
| 2150 | .00853 | .00194 | .09880 | .00009 | .00000 | .00049 | .12720 | .00000 | .00523 | .00000 | .70879 | .00041 | .00317 | .04533 |
| 2200 | .00853 | .00274 | .09792 | .00015 | .00000 | .00068 | .12653 | .00000 | .00586 | .00000 | .70791 | .00057 | .00389 | .04522 |
| 2250 | .00852 | .00379 | .09677 | .00022 | .00000 | .00091 | .12571 | .00000 | .00653 | .00000 | .70686 | .00078 | .00472 | .04519 |
| 2300 | .00851 | .00514 | .09528 | .00033 | .00001 | .00121 | .12471 | .00000 | .00726 | .00000 | .70558 | .00105 | .00568 | .04525 |
| 2350 | .00849 | .00684 | .09342 | .00049 | .00001 | .00159 | .12350 | .00000 | .00803 | .00000 | .70405 | .00140 | .00677 | .04541 |
| 2400 | .00848 | .00893 | .09114 | .00071 | .00001 | .00204 | .12205 | .00000 | .00886 | .00000 | .70223 | .00184 | .00802 | .04570 |
| 2450 | .00845 | .01143 | .08839 | .00102 | .00001 | .00260 | .12034 | .00000 | .00974 | .00000 | .70008 | .00241 | .00942 | .04611 |
| 2500 | .00843 | .01435 | .08519 | .00143 | .00001 | .00325 | .11833 | .00000 | .01069 | .00000 | .69759 | .00311 | .01098 | .04665 |
| 2550 | .00840 | .01768 | .08152 | .00197 | .00001 | .00402 | .11599 | .00000 | .01170 | .00000 | .69471 | .00399 | .01271 | .04729 |
| 2600 | .00837 | .02139 | .07743 | .00267 | .00001 | .00490 | .11332 | .00000 | .01276 | .00000 | .69145 | .00507 | .01461 | .04803 |
| 2650 | .00833 | .02540 | .07297 | .00358 | .00001 | .00589 | .11027 | .00000 | .01388 | .00000 | .68777 | .00639 | .01667 | .04881 |
| 2700 | .00829 | .02967 | .06821 | .00473 | .00001 | .00700 | .10684 | .00000 | .01505 | .00000 | .68369 | .00800 | .01888 | .04961 |
| 2750 | .00824 | .03408 | .06325 | .00617 | .00001 | .00822 | .10303 | .00000 | .01626 | .00001 | .67921 | .00992 | .02122 | .05038 |
| 2800 | .00819 | .03856 | .05817 | .00794 | .00002 | .00954 | .09882 | .00000 | .01750 | .00001 | .67432 | .01220 | .02367 | .05106 |
| 2850 | .00814 | .04300 | .05307 | .01012 | .00002 | .01095 | .09423 | .00000 | .01876 | .00001 | .66904 | .01488 | .02618 | .05162 |
| 2900 | .00808 | .04731 | .04804 | .01273 | .00002 | .01242 | .08926 | .00001 | .02002 | .00001 | .66338 | .01800 | .02872 | .05200 |
| 2950 | .00801 | .05142 | .04317 | .01585 | .00002 | .01393 | .08396 | .00001 | .02127 | .00001 | .65736 | .02160 | .03123 | .05218 |
| 3000 | .00794 | .05526 | .03852 | .01951 | .00002 | .01545 | .07835 | .00001 | .02248 | .00001 | .65099 | .02570 | .03366 | .05212 |

TABLE 20.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.050718; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00000 | .71303 | .00000 | .00000 | .04782 |
| 950 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00001 | .00000 | .71303 | .00000 | .00000 | .04782 |
| 1000 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00002 | .00000 | .71303 | .00000 | .00000 | .04781 |
| 1050 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00003 | .00000 | .71302 | .00000 | .00000 | .04781 |
| 1100 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00004 | .00000 | .71302 | .00000 | .00000 | .04780 |
| 1150 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00007 | .00000 | .71300 | .00000 | .00000 | .04779 |
| 1200 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00010 | .00000 | .71299 | .00000 | .00000 | .04777 |
| 1250 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00014 | .00000 | .71297 | .00000 | .00000 | .04775 |
| 1300 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00020 | .00000 | .71294 | .00000 | .00000 | .04772 |
| 1350 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00027 | .00000 | .71290 | .00000 | .00001 | .04768 |
| 1400 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12961 | .00036 | .00000 | .71285 | .00000 | .00001 | .04764 |
| 1450 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12961 | .00047 | .00000 | .71280 | .00000 | .00002 | .04758 |
| 1500 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12960 | .00060 | .00000 | .71273 | .00000 | .00004 | .04751 |
| 1550 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12959 | .00076 | .00001 | .71265 | .00000 | .00005 | .04742 |
| 1600 | .00855 | .00000 | .10096 | .00000 | .00000 | .00000 | .12958 | .00094 | .00001 | .71255 | .00000 | .00008 | .04733 |
| 1650 | .00855 | .00001 | .10096 | .00000 | .00000 | .00000 | .12956 | .00116 | .00001 | .71243 | .00000 | .00012 | .04721 |
| 1700 | .00855 | .00001 | .10095 | .00000 | .00000 | .00000 | .12953 | .00140 | .00001 | .71230 | .00000 | .00016 | .04708 |
| 1750 | .00855 | .00002 | .10094 | .00000 | .00000 | .00001 | .12949 | .00168 | .00001 | .71215 | .00001 | .00023 | .04692 |
| 1800 | .00855 | .00003 | .10093 | .00000 | .00000 | .00001 | .12944 | .00199 | .00001 | .71197 | .00001 | .00031 | .04675 |
| 1850 | .00855 | .00005 | .10090 | .00000 | .00000 | .00002 | .12938 | .00234 | .00001 | .71176 | .00001 | .00041 | .04656 |
| 1900 | .00855 | .00008 | .10087 | .00000 | .00000 | .00002 | .12930 | .00272 | .00001 | .71153 | .00002 | .00055 | .04635 |
| 1950 | .00855 | .00013 | .10081 | .00000 | .00000 | .00004 | .12919 | .00315 | .00001 | .71127 | .00003 | .00071 | .04611 |
| 2000 | .00855 | .00019 | .10074 | .00000 | .00000 | .00005 | .12906 | .00361 | .00001 | .71096 | .00005 | .00091 | .04586 |
| 2050 | .00855 | .00029 | .10062 | .00001 | .00000 | .00008 | .12889 | .00411 | .00001 | .71062 | .00007 | .00115 | .04560 |
| 2100 | .00855 | .00043 | .10047 | .00001 | .00000 | .00011 | .12869 | .00464 | .00001 | .71022 | .00009 | .00144 | .04532 |
| 2150 | .00854 | .00062 | .10025 | .00002 | .00001 | .00016 | .12844 | .00522 | .00001 | .70977 | .00013 | .00179 | .04504 |
| 2200 | .00854 | .00089 | .09996 | .00003 | .00001 | .00022 | .12814 | .00584 | .00001 | .70925 | .00018 | .00219 | .04475 |
| 2250 | .00854 | .00124 | .09957 | .00004 | .00001 | .00030 | .12777 | .00649 | .00001 | .70866 | .00024 | .00266 | .04447 |
| 2300 | .00853 | .00171 | .09905 | .00006 | .00001 | .00040 | .12732 | .00719 | .00001 | .70797 | .00033 | .00321 | .04421 |
| 2350 | .00853 | .00232 | .09839 | .00009 | .00001 | .00052 | .12679 | .00792 | .00001 | .70718 | .00044 | .00383 | .04398 |
| 2400 | .00852 | .00309 | .09754 | .00013 | .00001 | .00068 | .12616 | .00870 | .00001 | .70626 | .00057 | .00453 | .04379 |
| 2450 | .00852 | .00406 | .09648 | .00019 | .00001 | .00088 | .12542 | .00952 | .00001 | .70521 | .00074 | .00533 | .04365 |
| 2500 | .00851 | .00525 | .09518 | .00026 | .00001 | .00112 | .12455 | .01038 | .00001 | .70399 | .00095 | .00623 | .04357 |
| 2550 | .00849 | .00669 | .09360 | .00037 | .00002 | .00141 | .12353 | .01129 | .00001 | .70259 | .00121 | .00723 | .04356 |
| 2600 | .00848 | .00841 | .09173 | .00051 | .00002 | .00175 | .12235 | .01225 | .00001 | .70099 | .00153 | .00834 | .04363 |
| 2650 | .00847 | .01041 | .08954 | .00068 | .00002 | .00216 | .12102 | .01326 | .00001 | .69918 | .00192 | .00956 | .04379 |
| 2700 | .00845 | .01271 | .08703 | .00092 | .00002 | .00263 | .11949 | .01432 | .00001 | .69713 | .00238 | .01090 | .04402 |
| 2750 | .00843 | .01529 | .08419 | .00121 | .00002 | .00317 | .11775 | .01543 | .00001 | .69484 | .00294 | .01236 | .04434 |
| 2800 | .00840 | .01815 | .08105 | .00158 | .00003 | .00378 | .11581 | .01660 | .00001 | .69230 | .00361 | .01394 | .04472 |
| 2850 | .00838 | .02127 | .07763 | .00204 | .00003 | .00446 | .11365 | .01781 | .00002 | .68951 | .00440 | .01564 | .04516 |
| 2900 | .00835 | .02459 | .07397 | .00261 | .00003 | .00523 | .11125 | .01908 | .00002 | .68646 | .00533 | .01745 | .04563 |
| 2950 | .00832 | .02809 | .07010 | .00331 | .00004 | .00606 | .10863 | .02038 | .00002 | .68316 | .00642 | .01937 | .04612 |
| 3000 | .00828 | .03170 | .06607 | .00414 | .00004 | .00697 | .10576 | .02172 | .00002 | .67962 | .00768 | .02139 | .04659 |

TABLE 20.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.050718; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00000 | .00000 | .71303 | .00000 | .00000 | .00000 | .04782 |
| 950 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00001 | .00000 | .71303 | .00000 | .00000 | .00000 | .04781 |
| 1000 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00002 | .00000 | .71303 | .00000 | .00000 | .00000 | .04781 |
| 1050 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00003 | .00000 | .71302 | .00000 | .00000 | .00000 | .04780 |
| 1100 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00004 | .00000 | .71301 | .00000 | .00000 | .00000 | .04780 |
| 1150 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00007 | .00000 | .71300 | .00000 | .00000 | .00000 | .04778 |
| 1200 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00010 | .00001 | .71299 | .00000 | .00000 | .00000 | .04777 |
| 1250 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00014 | .00001 | .71297 | .00000 | .00000 | .00000 | .04774 |
| 1300 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00020 | .00001 | .71294 | .00000 | .00000 | .00000 | .04772 |
| 1350 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00027 | .00001 | .71290 | .00000 | .00000 | .00001 | .04768 |
| 1400 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12962 | .00036 | .00001 | .71286 | .00000 | .00000 | .00001 | .04763 |
| 1450 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12961 | .00047 | .00001 | .71280 | .00000 | .00000 | .00002 | .04757 |
| 1500 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12961 | .00060 | .00001 | .71273 | .00000 | .00000 | .00002 | .04751 |
| 1550 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12960 | .00076 | .00001 | .71265 | .00000 | .00000 | .00004 | .04742 |
| 1600 | .00855 | .00000 | .10097 | .00000 | .00000 | .00000 | .12959 | .00094 | .00001 | .71255 | .00000 | .00000 | .00005 | .04733 |
| 1650 | .00855 | .00000 | .10096 | .00000 | .00000 | .00000 | .12958 | .00116 | .00001 | .71244 | .00000 | .00000 | .00008 | .04721 |
| 1700 | .00855 | .00000 | .10096 | .00000 | .00000 | .00000 | .12956 | .00140 | .00001 | .71231 | .00000 | .00000 | .00011 | .04708 |
| 1750 | .00855 | .00001 | .10096 | .00000 | .00000 | .00000 | .12954 | .00168 | .00001 | .71216 | .00000 | .00000 | .00015 | .04693 |
| 1800 | .00855 | .00001 | .10095 | .00000 | .00000 | .00000 | .12951 | .00199 | .00002 | .71199 | .00000 | .00000 | .00021 | .04676 |
| 1850 | .00855 | .00002 | .10094 | .00000 | .00000 | .00001 | .12946 | .00234 | .00002 | .71180 | .00000 | .00001 | .00028 | .04657 |
| 1900 | .00855 | .00004 | .10092 | .00000 | .00000 | .00001 | .12941 | .00273 | .00002 | .71159 | .00000 | .00001 | .00037 | .04636 |
| 1950 | .00855 | .00006 | .10090 | .00000 | .00000 | .00002 | .12934 | .00315 | .00002 | .71134 | .00000 | .00001 | .00048 | .04613 |
| 2000 | .00855 | .00009 | .10086 | .00000 | .00001 | .00002 | .12926 | .00361 | .00002 | .71107 | .00000 | .00002 | .00061 | .04588 |
| 2050 | .00855 | .00013 | .10081 | .00000 | .00001 | .00004 | .12916 | .00411 | .00002 | .71077 | .00000 | .00003 | .00077 | .04560 |
| 2100 | .00855 | .00019 | .10074 | .00000 | .00001 | .00005 | .12903 | .00464 | .00002 | .71044 | .00000 | .00004 | .00097 | .04531 |
| 2150 | .00855 | .00028 | .10064 | .00000 | .00001 | .00007 | .12888 | .00522 | .00002 | .71006 | .00000 | .00006 | .00120 | .04501 |
| 2200 | .00855 | .00040 | .10050 | .00001 | .00001 | .00010 | .12870 | .00583 | .00002 | .70965 | .00000 | .00008 | .00147 | .04469 |
| 2250 | .00854 | .00056 | .10032 | .00001 | .00001 | .00013 | .12848 | .00648 | .00002 | .70918 | .00000 | .00011 | .00178 | .04436 |
| 2300 | .00854 | .00077 | .10008 | .00002 | .00001 | .00018 | .12821 | .00717 | .00002 | .70866 | .00000 | .00015 | .00215 | .04402 |
| 2350 | .00854 | .00105 | .09977 | .00003 | .00002 | .00024 | .12790 | .00790 | .00002 | .70808 | .00000 | .00019 | .00257 | .04368 |
| 2400 | .00854 | .00141 | .09938 | .00004 | .00002 | .00031 | .12753 | .00866 | .00003 | .70744 | .00000 | .00025 | .00304 | .04335 |
| 2450 | .00853 | .00187 | .09887 | .00006 | .00002 | .00040 | .12711 | .00946 | .00003 | .70671 | .00000 | .00033 | .00358 | .04304 |
| 2500 | .00853 | .00245 | .09824 | .00008 | .00002 | .00051 | .12661 | .01029 | .00003 | .70589 | .00000 | .00042 | .00418 | .04274 |
| 2550 | .00852 | .00315 | .09747 | .00011 | .00002 | .00065 | .12603 | .01117 | .00003 | .70498 | .00000 | .00053 | .00485 | .04248 |
| 2600 | .00852 | .00402 | .09652 | .00015 | .00003 | .00082 | .12536 | .01208 | .00003 | .70395 | .00000 | .00067 | .00560 | .04225 |
| 2650 | .00851 | .00506 | .09538 | .00021 | .00003 | .00101 | .12460 | .01303 | .00003 | .70280 | .00000 | .00084 | .00642 | .04207 |
| 2700 | .00850 | .00629 | .09404 | .00028 | .00003 | .00125 | .12374 | .01402 | .00003 | .70151 | .00000 | .00104 | .00733 | .04194 |
| 2750 | .00849 | .00773 | .09247 | .00037 | .00004 | .00152 | .12275 | .01505 | .00003 | .70007 | .00001 | .00128 | .00832 | .04187 |
| 2800 | .00847 | .00939 | .09066 | .00049 | .00004 | .00183 | .12165 | .01613 | .00003 | .69847 | .00001 | .00156 | .00940 | .04186 |
| 2850 | .00846 | .01127 | .08861 | .00064 | .00004 | .00220 | .12041 | .01725 | .00003 | .69671 | .00001 | .00190 | .01056 | .04192 |
| 2900 | .00844 | .01337 | .08632 | .00082 | .00005 | .00260 | .11903 | .01842 | .00003 | .69477 | .00001 | .00229 | .01182 | .04203 |
| 2950 | .00843 | .01569 | .08378 | .00105 | .00005 | .00307 | .11750 | .01963 | .00003 | .69264 | .00001 | .00275 | .01318 | .04220 |
| 3000 | .00841 | .01822 | .08102 | .00133 | .00006 | .00358 | .11582 | .02089 | .00003 | .69034 | .00001 | .00328 | .01462 | .04242 |

TABLE 20C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.050718; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761;
WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00855 | .10097 | .12948 | .00000 | .00014 | .71304 | .04782 |
| 220 | .00855 | .10097 | .12735 | .00000 | .00228 | .71304 | .04782 |
| 240 | .00855 | .10097 | .10565 | .00000 | .02397 | .71304 | .04782 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00855 | .10097 | .12961 | .00000 | .00001 | .71304 | .04782 |
| 220 | .00855 | .10097 | .12939 | .00000 | .00023 | .71304 | .04782 |
| 240 | .00855 | .10097 | .12728 | .00000 | .00234 | .71304 | .04782 |
| 260 | .00855 | .10097 | .11254 | .00000 | .01708 | .71304 | .04782 |
| 280 | .00855 | .10097 | .00000 | .03564 | .09398 | .71304 | .04782 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00855 | .10097 | .12962 | .00000 | .00000 | .71304 | .04782 |
| 220 | .00855 | .10097 | .12960 | .00000 | .00002 | .71304 | .04782 |
| 240 | .00855 | .10097 | .12939 | .00000 | .00023 | .71304 | .04782 |
| 260 | .00855 | .10097 | .12794 | .00000 | .00168 | .71304 | .04782 |
| 280 | .00855 | .10097 | .00000 | .12106 | .00857 | .71304 | .04782 |
| 298 | .00855 | .10097 | .00000 | .10167 | .02796 | .71304 | .04782 |
| 300 | .00855 | .10097 | .00000 | .09832 | .03130 | .71304 | .04782 |
| 320 | .00855 | .10097 | .00000 | .02932 | .10030 | .71304 | .04782 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00855 | .10097 | .12962 | .00000 | .00000 | .71304 | .04782 |
| 220 | .00855 | .10097 | .12962 | .00000 | .00000 | .71304 | .04782 |
| 240 | .00855 | .10097 | .12960 | .00000 | .00002 | .71304 | .04782 |
| 260 | .00855 | .10097 | .12945 | .00000 | .00017 | .71304 | .04782 |
| 280 | .00855 | .10097 | .00000 | .12877 | .00085 | .71304 | .04782 |
| 298 | .00855 | .10097 | .00000 | .12690 | .00272 | .71304 | .04782 |
| 300 | .00855 | .10097 | .00000 | .12659 | .00303 | .71304 | .04782 |
| 320 | .00855 | .10097 | .00000 | .12053 | .00909 | .71304 | .04782 |
| 340 | .00855 | .10097 | .00000 | .10588 | .02374 | .71304 | .04782 |
| 360 | .00855 | .10097 | .00000 | .07361 | .05601 | .71304 | .04782 |
| 380 | .00855 | .10097 | .00000 | .00597 | .12365 | .71304 | .04782 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00855 | .10097 | .12962 | .00000 | .00000 | .71304 | .04782 |
| 220 | .00855 | .10097 | .12962 | .00000 | .00000 | .71304 | .04782 |
| 240 | .00855 | .10097 | .12962 | .00000 | .00000 | .71304 | .04782 |
| 260 | .00855 | .10097 | .12959 | .00000 | .00003 | .71304 | .04782 |
| 280 | .00855 | .10097 | .00000 | .12945 | .00017 | .71304 | .04782 |
| 298 | .00855 | .10097 | .00000 | .12908 | .00054 | .71304 | .04782 |
| 300 | .00855 | .10097 | .00000 | .12902 | .00060 | .71304 | .04782 |
| 320 | .00855 | .10097 | .00000 | .12782 | .00180 | .71304 | .04782 |
| 340 | .00855 | .10097 | .00000 | .12497 | .00465 | .71304 | .04782 |
| 360 | .00855 | .10097 | .00000 | .11897 | .01065 | .71304 | .04782 |
| 380 | .00855 | .10097 | .00000 | .10741 | .02221 | .71304 | .04782 |
| 400 | .00855 | .10097 | .00000 | .08670 | .04292 | .71304 | .04782 |
| 420 | .00855 | .10097 | .00000 | .05132 | .07830 | .71304 | .04782 |

TABLE 21.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.067624; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00843 | .00000 | .13264 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 950 | .00843 | .00000 | .13264 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1000 | .00843 | .00000 | .13264 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1050 | .00843 | .00000 | .13264 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1100 | .00843 | .00000 | .13263 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1150 | .00843 | .00000 | .13263 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1200 | .00843 | .00001 | .13263 | .00000 | .00001 | .15591 | .00000 | .00000 | .70300 | .00000 | .00000 | .00001 |
| 1250 | .00843 | .00002 | .13261 | .00000 | .00001 | .15591 | .00000 | .00000 | .70300 | .00000 | .00000 | .00001 |
| 1300 | .00843 | .00004 | .13259 | .00000 | .00003 | .15589 | .00000 | .00000 | .70298 | .00000 | .00000 | .00003 |
| 1350 | .00843 | .00007 | .13255 | .00000 | .00004 | .15586 | .00000 | .00001 | .70296 | .00000 | .00001 | .00005 |
| 1400 | .00843 | .00013 | .13249 | .00000 | .00007 | .15582 | .00000 | .00002 | .70293 | .00000 | .00002 | .00009 |
| 1450 | .00843 | .00024 | .13237 | .00000 | .00012 | .15576 | .00000 | .00003 | .70287 | .00000 | .00003 | .00016 |
| 1500 | .00843 | .00040 | .13219 | .00000 | .00018 | .15566 | .00000 | .00004 | .70277 | .00000 | .00006 | .00026 |
| 1550 | .00843 | .00065 | .13192 | .00001 | .00028 | .15552 | .00000 | .00007 | .70263 | .00000 | .00010 | .00041 |
| 1600 | .00843 | .00103 | .13150 | .00001 | .00041 | .15531 | .00000 | .00011 | .70241 | .00000 | .00017 | .00063 |
| 1650 | .00842 | .00159 | .13089 | .00002 | .00059 | .15501 | .00000 | .00016 | .70210 | .00001 | .00027 | .00094 |
| 1700 | .00842 | .00237 | .13003 | .00004 | .00083 | .15459 | .00000 | .00024 | .70166 | .00002 | .00042 | .00138 |
| 1750 | .00841 | .00346 | .12884 | .00008 | .00115 | .15403 | .00000 | .00034 | .70106 | .00003 | .00063 | .00198 |
| 1800 | .00840 | .00492 | .12724 | .00014 | .00156 | .15327 | .00000 | .00048 | .70023 | .00006 | .00093 | .00277 |
| 1850 | .00839 | .00683 | .12514 | .00024 | .00208 | .15226 | .00000 | .00066 | .69914 | .00012 | .00135 | .00379 |
| 1900 | .00837 | .00929 | .12243 | .00041 | .00274 | .15095 | .00000 | .00089 | .69771 | .00021 | .00191 | .00509 |
| 1950 | .00835 | .01237 | .11903 | .00068 | .00355 | .14926 | .00000 | .00119 | .69587 | .00037 | .00265 | .00669 |
| 2000 | .00833 | .01614 | .11485 | .00109 | .00454 | .14711 | .00000 | .00155 | .69354 | .00062 | .00360 | .00863 |
| 2050 | .00830 | .02063 | .10986 | .00171 | .00573 | .14441 | .00000 | .00198 | .69065 | .00101 | .00480 | .01091 |
| 2100 | .00826 | .02585 | .10402 | .00262 | .00715 | .14107 | .00000 | .00250 | .68711 | .00161 | .00629 | .01353 |
| 2150 | .00821 | .03175 | .09737 | .00393 | .00880 | .13699 | .00000 | .00309 | .68284 | .00249 | .00808 | .01645 |
| 2200 | .00815 | .03823 | .08999 | .00579 | .01071 | .13204 | .00000 | .00378 | .67775 | .00376 | .01019 | .01960 |
| 2250 | .00808 | .04514 | .08203 | .00837 | .01285 | .12616 | .00000 | .00453 | .67178 | .00555 | .01261 | .02289 |
| 2300 | .00801 | .05226 | .07369 | .01187 | .01522 | .11924 | .00000 | .00536 | .66486 | .00799 | .01531 | .02620 |
| 2350 | .00792 | .05935 | .06518 | .01652 | .01775 | .11126 | .00000 | .00624 | .65692 | .01125 | .01823 | .02938 |
| 2400 | .00781 | .06617 | .05675 | .02257 | .02036 | .10222 | .00000 | .00715 | .64794 | .01549 | .02127 | .03227 |
| 2450 | .00770 | .07248 | .04863 | .03024 | .02292 | .09219 | .00000 | .00807 | .63789 | .02087 | .02428 | .03472 |
| 2500 | .00757 | .07808 | .04103 | .03972 | .02525 | .08136 | .00000 | .00897 | .62682 | .02754 | .02710 | .03656 |
| 2550 | .00743 | .08283 | .03409 | .05109 | .02715 | .06999 | .00000 | .00982 | .61480 | .03560 | .02951 | .03768 |
| 2600 | .00728 | .08668 | .02790 | .06432 | .02841 | .05847 | .00001 | .01059 | .60200 | .04508 | .03130 | .03796 |
| 2650 | .00713 | .08961 | .02252 | .07914 | .02885 | .04725 | .00001 | .01124 | .58868 | .05594 | .03228 | .03736 |
| 2700 | .00697 | .09170 | .01793 | .09512 | .02836 | .03680 | .00001 | .01174 | .57520 | .06799 | .03231 | .03587 |
| 2750 | .00681 | .09307 | .01410 | .11161 | .02694 | .02756 | .00002 | .01207 | .56196 | .08094 | .03136 | .03356 |
| 2800 | .00666 | .09385 | .01096 | .12788 | .02472 | .01981 | .00003 | .01223 | .54941 | .09440 | .02948 | .03058 |
| 2850 | .00652 | .09421 | .00843 | .14320 | .02194 | .01369 | .00004 | .01219 | .53791 | .10787 | .02686 | .02712 |
| 2900 | .00640 | .09428 | .00643 | .15700 | .01888 | .00911 | .00005 | .01199 | .52774 | .12088 | .02378 | .02345 |
| 2950 | .00630 | .09416 | .00487 | .16893 | .01583 | .00587 | .00007 | .01164 | .51905 | .13300 | .02050 | .01979 |
| 3000 | .00621 | .09396 | .00367 | .17889 | .01299 | .00369 | .00010 | .01116 | .51181 | .14390 | .01729 | .01634 |

TABLE 21.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.067624; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 950 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1000 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1050 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1100 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1150 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1200 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1250 | .00843 | .00001 | .13263 | .00000 | .00000 | .00001 | .15591 | .00000 | .00000 | .70300 | .00000 | .00000 | .00001 |
| 1300 | .00843 | .00002 | .13262 | .00000 | .00000 | .00001 | .15591 | .00000 | .00000 | .70300 | .00000 | .00000 | .00001 |
| 1350 | .00843 | .00003 | .13260 | .00000 | .00000 | .00002 | .15590 | .00000 | .00001 | .70299 | .00000 | .00000 | .00002 |
| 1400 | .00843 | .00006 | .13257 | .00000 | .00000 | .00003 | .15588 | .00000 | .00001 | .70297 | .00000 | .00001 | .00004 |
| 1450 | .00843 | .00011 | .13251 | .00000 | .00000 | .00006 | .15585 | .00000 | .00002 | .70294 | .00000 | .00002 | .00007 |
| 1500 | .00843 | .00019 | .13243 | .00000 | .00000 | .00009 | .15580 | .00000 | .00003 | .70289 | .00000 | .00003 | .00012 |
| 1550 | .00843 | .00031 | .13230 | .00000 | .00000 | .00013 | .15573 | .00000 | .00005 | .70282 | .00000 | .00005 | .00018 |
| 1600 | .00843 | .00049 | .13210 | .00000 | .00000 | .00019 | .15563 | .00000 | .00007 | .70272 | .00000 | .00008 | .00028 |
| 1650 | .00843 | .00075 | .13181 | .00000 | .00000 | .00028 | .15550 | .00000 | .00011 | .70257 | .00000 | .00012 | .00043 |
| 1700 | .00842 | .00112 | .13140 | .00001 | .00000 | .00039 | .15530 | .00000 | .00016 | .70236 | .00000 | .00019 | .00063 |
| 1750 | .00842 | .00164 | .13084 | .00002 | .00000 | .00054 | .15504 | .00000 | .00023 | .70206 | .00001 | .00029 | .00090 |
| 1800 | .00842 | .00235 | .13007 | .00003 | .00000 | .00073 | .15469 | .00000 | .00033 | .70167 | .00001 | .00043 | .00127 |
| 1850 | .00841 | .00328 | .12905 | .00005 | .00000 | .00098 | .15423 | .00000 | .00045 | .70114 | .00003 | .00063 | .00175 |
| 1900 | .00840 | .00450 | .12771 | .00009 | .00000 | .00129 | .15364 | .00000 | .00061 | .70045 | .00005 | .00090 | .00236 |
| 1950 | .00840 | .00605 | .12601 | .00015 | .00000 | .00168 | .15287 | .00000 | .00081 | .69956 | .00008 | .00125 | .00314 |
| 2000 | .00838 | .00799 | .12389 | .00024 | .00000 | .00215 | .15190 | .00000 | .00107 | .69844 | .00013 | .00171 | .00410 |
| 2050 | .00837 | .01037 | .12127 | .00037 | .00000 | .00272 | .15069 | .00000 | .00138 | .69704 | .00022 | .00230 | .00526 |
| 2100 | .00835 | .01324 | .11811 | .00057 | .00000 | .00341 | .14919 | .00000 | .00176 | .69532 | .00036 | .00304 | .00665 |
| 2150 | .00833 | .01664 | .11436 | .00086 | .00000 | .00422 | .14736 | .00000 | .00221 | .69323 | .00056 | .00397 | .00827 |
| 2200 | .00830 | .02057 | .11001 | .00127 | .00000 | .00518 | .14514 | .00000 | .00274 | .69072 | .00086 | .00509 | .01012 |
| 2250 | .00827 | .02504 | .10504 | .00185 | .00000 | .00629 | .14248 | .00000 | .00335 | .68777 | .00128 | .00644 | .01220 |
| 2300 | .00823 | .03001 | .09948 | .00265 | .00000 | .00756 | .13932 | .00000 | .00404 | .68432 | .00188 | .00802 | .01448 |
| 2350 | .00819 | .03543 | .09338 | .00372 | .00000 | .00902 | .13562 | .00000 | .00482 | .68033 | .00270 | .00986 | .01693 |
| 2400 | .00814 | .04120 | .08683 | .00516 | .00000 | .01065 | .13131 | .00000 | .00567 | .67579 | .00381 | .01195 | .01949 |
| 2450 | .00808 | .04722 | .07993 | .00705 | .00000 | .01245 | .12636 | .00000 | .00660 | .67066 | .00527 | .01428 | .02209 |
| 2500 | .00802 | .05334 | .07282 | .00949 | .00000 | .01442 | .12073 | .00000 | .00759 | .66492 | .00715 | .01682 | .02468 |
| 2550 | .00795 | .05942 | .06564 | .01261 | .00000 | .01653 | .11441 | .00000 | .00863 | .65855 | .00956 | .01954 | .02715 |
| 2600 | .00787 | .06531 | .05854 | .01652 | .00000 | .01874 | .10739 | .00000 | .00970 | .65156 | .01255 | .02238 | .02943 |
| 2650 | .00779 | .07086 | .05165 | .02135 | .00000 | .02099 | .09972 | .00000 | .01078 | .64393 | .01623 | .02526 | .03144 |
| 2700 | .00770 | .07595 | .04511 | .02721 | .00001 | .02320 | .09146 | .00000 | .01186 | .63569 | .02065 | .02808 | .03310 |
| 2750 | .00760 | .08048 | .03900 | .03419 | .00001 | .02528 | .08272 | .00001 | .01290 | .62685 | .02589 | .03073 | .03434 |
| 2800 | .00749 | .08441 | .03340 | .04235 | .00001 | .02711 | .07366 | .00001 | .01389 | .61747 | .03200 | .03309 | .03513 |
| 2850 | .00738 | .08769 | .02835 | .05170 | .00001 | .02859 | .06445 | .00001 | .01481 | .60761 | .03897 | .03504 | .03541 |
| 2900 | .00726 | .09033 | .02385 | .06216 | .00001 | .02960 | .05532 | .00002 | .01562 | .59739 | .04681 | .03646 | .03517 |
| 2950 | .00714 | .09237 | .01991 | .07361 | .00001 | .03005 | .04651 | .00002 | .01632 | .58695 | .05546 | .03725 | .03440 |
| 3000 | .00702 | .09385 | .01650 | .08582 | .00001 | .02990 | .03824 | .00003 | .01687 | .57645 | .06481 | .03735 | .03315 |

TABLE 21.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.067624; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 950 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1000 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1050 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1100 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1150 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1200 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1250 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1300 | .00843 | .00001 | .13263 | .00000 | .00000 | .00001 | .15592 | .00000 | .00000 | .70300 | .00000 | .00000 | .00001 |
| 1350 | .00843 | .00002 | .13262 | .00000 | .00000 | .00001 | .15591 | .00000 | .00000 | .70300 | .00000 | .00000 | .00001 |
| 1400 | .00843 | .00003 | .13260 | .00000 | .00000 | .00002 | .15590 | .00000 | .00001 | .70299 | .00000 | .00000 | .00002 |
| 1450 | .00843 | .00005 | .13258 | .00000 | .00000 | .00003 | .15589 | .00000 | .00001 | .70298 | .00000 | .00001 | .00003 |
| 1500 | .00843 | .00009 | .13254 | .00000 | .00000 | .00004 | .15587 | .00000 | .00002 | .70295 | .00000 | .00001 | .00005 |
| 1550 | .00843 | .00015 | .13248 | .00000 | .00000 | .00006 | .15583 | .00000 | .00003 | .70292 | .00000 | .00002 | .00008 |
| 1600 | .00843 | .00023 | .13238 | .00000 | .00000 | .00009 | .15579 | .00000 | .00005 | .70287 | .00000 | .00004 | .00013 |
| 1650 | .00843 | .00035 | .13225 | .00000 | .00000 | .00013 | .15572 | .00000 | .00007 | .70279 | .00000 | .00006 | .00019 |
| 1700 | .00843 | .00053 | .13205 | .00000 | .00000 | .00018 | .15563 | .00000 | .00011 | .70269 | .00000 | .00009 | .00028 |
| 1750 | .00843 | .00078 | .13178 | .00000 | .00000 | .00026 | .15551 | .00000 | .00016 | .70254 | .00000 | .00014 | .00041 |
| 1800 | .00842 | .00112 | .13141 | .00001 | .00000 | .00035 | .15535 | .00000 | .00022 | .70235 | .00000 | .00020 | .00057 |
| 1850 | .00842 | .00156 | .13092 | .00001 | .00000 | .00046 | .15514 | .00000 | .00030 | .70209 | .00001 | .00029 | .00079 |
| 1900 | .00842 | .00215 | .13028 | .00002 | .00000 | .00061 | .15486 | .00000 | .00041 | .70175 | .00001 | .00042 | .00107 |
| 1950 | .00841 | .00291 | .12946 | .00003 | .00000 | .00079 | .15451 | .00000 | .00055 | .70131 | .00002 | .00058 | .00143 |
| 2000 | .00841 | .00387 | .12841 | .00005 | .00000 | .00102 | .15406 | .00000 | .00073 | .70075 | .00003 | .00080 | .00188 |
| 2050 | .00840 | .00506 | .12711 | .00008 | .00000 | .00129 | .15350 | .00000 | .00094 | .70006 | .00005 | .00108 | .00243 |
| 2100 | .00839 | .00652 | .12551 | .00012 | .00000 | .00162 | .15282 | .00000 | .00121 | .69920 | .00008 | .00143 | .00310 |
| 2150 | .00838 | .00828 | .12358 | .00019 | .00000 | .00201 | .15198 | .00000 | .00152 | .69816 | .00012 | .00188 | .00390 |
| 2200 | .00837 | .01037 | .12129 | .00028 | .00000 | .00246 | .15096 | .00000 | .00190 | .69691 | .00019 | .00243 | .00484 |
| 2250 | .00835 | .01283 | .11860 | .00040 | .00000 | .00300 | .14975 | .00000 | .00235 | .69542 | .00028 | .00310 | .00592 |
| 2300 | .00834 | .01566 | .11548 | .00058 | .00000 | .00362 | .14831 | .00000 | .00286 | .69366 | .00042 | .00390 | .00717 |
| 2350 | .00832 | .01888 | .11193 | .00082 | .00000 | .00433 | .14661 | .00000 | .00346 | .69162 | .00061 | .00486 | .00856 |
| 2400 | .00829 | .02249 | .10794 | .00113 | .00000 | .00515 | .14463 | .00000 | .00413 | .68928 | .00087 | .00598 | .01011 |
| 2450 | .00826 | .02647 | .10353 | .00156 | .00000 | .00607 | .14233 | .00000 | .00488 | .68660 | .00122 | .00728 | .01179 |
| 2500 | .00823 | .03081 | .09870 | .00211 | .00000 | .00711 | .13970 | .00000 | .00571 | .68358 | .00168 | .00877 | .01359 |
| 2550 | .00820 | .03544 | .09352 | .00282 | .00000 | .00827 | .13670 | .00000 | .00662 | .68021 | .00228 | .01044 | .01549 |
| 2600 | .00816 | .04032 | .08802 | .00373 | .00001 | .00955 | .13331 | .00000 | .00761 | .67647 | .00306 | .01231 | .01746 |
| 2650 | .00812 | .04539 | .08228 | .00488 | .00001 | .01096 | .12951 | .00000 | .00866 | .67236 | .00404 | .01436 | .01945 |
| 2700 | .00807 | .05055 | .07638 | .00631 | .00001 | .01249 | .12528 | .00000 | .00978 | .66787 | .00525 | .01658 | .02143 |
| 2750 | .00802 | .05572 | .07040 | .00808 | .00001 | .01413 | .12061 | .00000 | .01094 | .66302 | .00675 | .01895 | .02335 |
| 2800 | .00796 | .06082 | .06444 | .01025 | .00001 | .01588 | .11551 | .00000 | .01214 | .65780 | .00857 | .02144 | .02518 |
| 2850 | .00790 | .06575 | .05856 | .01287 | .00001 | .01771 | .10998 | .00000 | .01337 | .65221 | .01074 | .02402 | .02688 |
| 2900 | .00784 | .07045 | .05286 | .01599 | .00001 | .01959 | .10404 | .00001 | .01460 | .64627 | .01330 | .02665 | .02839 |
| 2950 | .00777 | .07484 | .04740 | .01968 | .00001 | .02149 | .09773 | .00001 | .01583 | .63998 | .01629 | .02927 | .02970 |
| 3000 | .00770 | .07887 | .04224 | .02400 | .00001 | .02337 | .09108 | .00001 | .01704 | .63336 | .01974 | .03181 | .03076 |

TABLE 21.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.067624; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 950 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1000 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1050 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1100 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1150 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1200 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1250 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1300 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1350 | .00843 | .00001 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70300 | .00000 | .00000 | .00000 |
| 1400 | .00843 | .00001 | .13262 | .00000 | .00000 | .00001 | .15591 | .00000 | .00000 | .70300 | .00000 | .00000 | .00001 |
| 1450 | .00843 | .00002 | .13261 | .00000 | .00000 | .00001 | .15591 | .00001 | .00000 | .70299 | .00000 | .00000 | .00001 |
| 1500 | .00843 | .00004 | .13259 | .00000 | .00000 | .00002 | .15590 | .00001 | .00000 | .70298 | .00000 | .00001 | .00002 |
| 1550 | .00843 | .00007 | .13256 | .00000 | .00000 | .00003 | .15588 | .00002 | .00000 | .70296 | .00000 | .00001 | .00004 |
| 1600 | .00843 | .00011 | .13252 | .00000 | .00000 | .00004 | .15586 | .00003 | .00000 | .70294 | .00000 | .00002 | .00006 |
| 1650 | .00843 | .00017 | .13245 | .00000 | .00000 | .00006 | .15583 | .00005 | .00000 | .70290 | .00000 | .00003 | .00009 |
| 1700 | .00843 | .00025 | .13236 | .00000 | .00000 | .00009 | .15579 | .00007 | .00000 | .70285 | .00000 | .00004 | .00013 |
| 1750 | .00843 | .00037 | .13223 | .00000 | .00000 | .00012 | .15573 | .00010 | .00000 | .70277 | .00000 | .00006 | .00018 |
| 1800 | .00843 | .00053 | .13205 | .00000 | .00000 | .00017 | .15565 | .00015 | .00000 | .70267 | .00000 | .00009 | .00025 |
| 1850 | .00843 | .00075 | .13182 | .00000 | .00000 | .00022 | .15555 | .00020 | .00000 | .70254 | .00000 | .00013 | .00035 |
| 1900 | .00843 | .00103 | .13151 | .00000 | .00000 | .00029 | .15542 | .00027 | .00000 | .70237 | .00000 | .00019 | .00048 |
| 1950 | .00842 | .00140 | .13111 | .00001 | .00000 | .00038 | .15526 | .00037 | .00000 | .70215 | .00000 | .00027 | .00064 |
| 2000 | .00842 | .00186 | .13060 | .00001 | .00000 | .00049 | .15505 | .00048 | .00000 | .70187 | .00001 | .00037 | .00084 |
| 2050 | .00842 | .00244 | .12997 | .00002 | .00000 | .00061 | .15479 | .00063 | .00000 | .70152 | .00001 | .00050 | .00109 |
| 2100 | .00841 | .00316 | .12919 | .00003 | .00000 | .00077 | .15447 | .00081 | .00000 | .70109 | .00002 | .00066 | .00139 |
| 2150 | .00841 | .00404 | .12823 | .00004 | .00000 | .00096 | .15408 | .00103 | .00000 | .70056 | .00003 | .00087 | .00176 |
| 2200 | .00840 | .00509 | .12708 | .00006 | .00000 | .00117 | .15361 | .00129 | .00000 | .69992 | .00004 | .00113 | .00220 |
| 2250 | .00839 | .00635 | .12571 | .00009 | .00000 | .00143 | .15304 | .00159 | .00000 | .69916 | .00006 | .00145 | .00272 |
| 2300 | .00839 | .00782 | .12411 | .00013 | .00000 | .00173 | .15238 | .00196 | .00000 | .69826 | .00009 | .00184 | .00332 |
| 2350 | .00838 | .00953 | .12224 | .00018 | .00000 | .00207 | .15159 | .00238 | .00000 | .69720 | .00013 | .00230 | .00401 |
| 2400 | .00836 | .01149 | .12009 | .00025 | .00000 | .00246 | .15067 | .00286 | .00000 | .69598 | .00019 | .00285 | .00480 |
| 2450 | .00835 | .01371 | .11766 | .00034 | .00000 | .00291 | .14960 | .00341 | .00000 | .69458 | .00027 | .00350 | .00568 |
| 2500 | .00834 | .01621 | .11492 | .00046 | .00000 | .00341 | .14837 | .00403 | .00000 | .69298 | .00037 | .00425 | .00666 |
| 2550 | .00832 | .01898 | .11187 | .00062 | .00000 | .00398 | .14697 | .00472 | .00000 | .69118 | .00051 | .00512 | .00773 |
| 2600 | .00830 | .02202 | .10852 | .00082 | .00001 | .00461 | .14538 | .00548 | .00000 | .68916 | .00069 | .00611 | .00890 |
| 2650 | .00828 | .02532 | .10488 | .00107 | .00001 | .00532 | .14358 | .00633 | .00000 | .68692 | .00092 | .00722 | .01015 |
| 2700 | .00825 | .02887 | .10095 | .00139 | .00001 | .00610 | .14157 | .00724 | .00000 | .68444 | .00122 | .00848 | .01147 |
| 2750 | .00823 | .03264 | .09676 | .00179 | .00001 | .00696 | .13933 | .00823 | .00000 | .68174 | .00158 | .00986 | .01286 |
| 2800 | .00820 | .03659 | .09235 | .00229 | .00001 | .00790 | .13684 | .00929 | .00000 | .67880 | .00204 | .01139 | .01429 |
| 2850 | .00817 | .04070 | .08775 | .00289 | .00001 | .00892 | .13411 | .01041 | .00001 | .67563 | .00260 | .01305 | .01575 |
| 2900 | .00813 | .04492 | .08300 | .00362 | .00002 | .01003 | .13112 | .01160 | .00001 | .67223 | .00328 | .01485 | .01721 |
| 2950 | .00810 | .04921 | .07814 | .00450 | .00002 | .01122 | .12786 | .01283 | .00001 | .66860 | .00409 | .01676 | .01867 |
| 3000 | .00806 | .05351 | .07324 | .00555 | .00002 | .01249 | .12434 | .01411 | .00001 | .66476 | .00505 | .01879 | .02009 |

TABLE 21.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.067624; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 950 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1000 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1050 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1100 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1150 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1200 | .00843 | .00000 | .13264 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1250 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1300 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1350 | .00843 | .00000 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70301 | .00000 | .00000 | .00000 |
| 1400 | .00843 | .00001 | .13263 | .00000 | .00000 | .00000 | .15592 | .00000 | .00000 | .70300 | .00000 | .00000 | .00000 |
| 1450 | .00843 | .00001 | .13262 | .00000 | .00000 | .00001 | .15591 | .00001 | .00000 | .70300 | .00000 | .00000 | .00001 |
| 1500 | .00843 | .00003 | .13261 | .00000 | .00000 | .00001 | .15591 | .00001 | .00000 | .70299 | .00000 | .00000 | .00001 |
| 1550 | .00843 | .00004 | .13259 | .00000 | .00000 | .00002 | .15590 | .00002 | .00000 | .70298 | .00000 | .00001 | .00002 |
| 1600 | .00843 | .00007 | .13256 | .00000 | .00000 | .00003 | .15588 | .00002 | .00000 | .70296 | .00000 | .00001 | .00003 |
| 1650 | .00843 | .00010 | .13252 | .00000 | .00000 | .00004 | .15587 | .00004 | .00000 | .70294 | .00000 | .00002 | .00005 |
| 1700 | .00843 | .00015 | .13247 | .00000 | .00000 | .00005 | .15584 | .00005 | .00000 | .70291 | .00000 | .00002 | .00007 |
| 1750 | .00843 | .00022 | .13239 | .00000 | .00000 | .00007 | .15581 | .00008 | .00000 | .70286 | .00000 | .00004 | .00010 |
| 1800 | .00843 | .00032 | .13229 | .00000 | .00000 | .00010 | .15576 | .00011 | .00000 | .70280 | .00000 | .00005 | .00014 |
| 1850 | .00843 | .00045 | .13215 | .00000 | .00000 | .00013 | .15570 | .00015 | .00000 | .70272 | .00000 | .00008 | .00020 |
| 1900 | .00843 | .00062 | .13196 | .00000 | .00000 | .00017 | .15563 | .00021 | .00000 | .70261 | .00000 | .00011 | .00027 |
| 1950 | .00843 | .00084 | .13172 | .00000 | .00000 | .00023 | .15553 | .00028 | .00000 | .70247 | .00000 | .00015 | .00036 |
| 2000 | .00843 | .00112 | .13142 | .00000 | .00000 | .00029 | .15540 | .00036 | .00000 | .70229 | .00000 | .00021 | .00047 |
| 2050 | .00842 | .00147 | .13103 | .00001 | .00000 | .00037 | .15525 | .00047 | .00000 | .70207 | .00000 | .00029 | .00061 |
| 2100 | .00842 | .00191 | .13056 | .00001 | .00000 | .00046 | .15506 | .00061 | .00000 | .70180 | .00001 | .00038 | .00078 |
| 2150 | .00842 | .00244 | .12998 | .00001 | .00000 | .00057 | .15483 | .00077 | .00000 | .70147 | .00001 | .00051 | .00099 |
| 2200 | .00841 | .00308 | .12928 | .00002 | .00000 | .00070 | .15456 | .00097 | .00000 | .70106 | .00001 | .00066 | .00124 |
| 2250 | .00841 | .00385 | .12844 | .00003 | .00000 | .00086 | .15422 | .00120 | .00000 | .70058 | .00002 | .00084 | .00154 |
| 2300 | .00840 | .00476 | .12745 | .00004 | .00000 | .00103 | .15383 | .00148 | .00000 | .70001 | .00003 | .00107 | .00189 |
| 2350 | .00840 | .00583 | .12629 | .00006 | .00000 | .00124 | .15336 | .00180 | .00000 | .69934 | .00004 | .00134 | .00229 |
| 2400 | .00839 | .00706 | .12494 | .00009 | .00000 | .00147 | .15282 | .00217 | .00000 | .69857 | .00006 | .00167 | .00275 |
| 2450 | .00838 | .00847 | .12340 | .00012 | .00000 | .00174 | .15220 | .00259 | .00000 | .69767 | .00009 | .00206 | .00327 |
| 2500 | .00837 | .01007 | .12165 | .00016 | .00000 | .00204 | .15147 | .00308 | .00000 | .69664 | .00013 | .00251 | .00386 |
| 2550 | .00836 | .01187 | .11968 | .00021 | .00000 | .00239 | .15064 | .00362 | .00000 | .69548 | .00017 | .00303 | .00452 |
| 2600 | .00835 | .01388 | .11748 | .00028 | .00001 | .00277 | .14970 | .00423 | .00000 | .69417 | .00024 | .00363 | .00525 |
| 2650 | .00834 | .01610 | .11505 | .00037 | .00001 | .00319 | .14864 | .00490 | .00000 | .69271 | .00032 | .00432 | .00604 |
| 2700 | .00832 | .01853 | .11239 | .00048 | .00001 | .00366 | .14745 | .00564 | .00000 | .69109 | .00042 | .00509 | .00690 |
| 2750 | .00831 | .02117 | .10949 | .00062 | .00001 | .00418 | .14611 | .00646 | .00001 | .68930 | .00055 | .00597 | .00782 |
| 2800 | .00829 | .02401 | .10636 | .00079 | .00001 | .00476 | .14463 | .00734 | .00001 | .68734 | .00072 | .00694 | .00880 |
| 2850 | .00827 | .02704 | .10302 | .00100 | .00002 | .00538 | .14300 | .00829 | .00001 | .68521 | .00092 | .00801 | .00984 |
| 2900 | .00825 | .03024 | .09948 | .00126 | .00002 | .00606 | .14120 | .00930 | .00001 | .68291 | .00117 | .00919 | .01091 |
| 2950 | .00822 | .03360 | .09575 | .00157 | .00002 | .00681 | .13923 | .01039 | .00001 | .68043 | .00147 | .01048 | .01202 |
| 3000 | .00820 | .03709 | .09187 | .00194 | .00003 | .00761 | .13709 | .01153 | .00001 | .67778 | .00183 | .01187 | .01316 |

TABLE 21C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.067624; EQUIV.RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000;
WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 |
|----------------------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | |
| 200 | .00843 | .13264 | .15579 | .00000 | .00013 | .70301 |
| 220 | .00843 | .13264 | .15372 | .00000 | .00221 | .70301 |
| 240 | .00843 | .13264 | .13268 | .00000 | .02325 | .70301 |
| PRESSURE = 0.10 ATM | | | | | | |
| 200 | .00843 | .13264 | .15591 | .00000 | .00001 | .70301 |
| 220 | .00843 | .13264 | .15570 | .00000 | .00022 | .70301 |
| 240 | .00843 | .13264 | .15365 | .00000 | .00227 | .70301 |
| 260 | .00843 | .13264 | .13936 | .00000 | .01657 | .70301 |
| 280 | .00843 | .13264 | .00000 | .06478 | .09114 | .70301 |
| PRESSURE = 1.00 ATM | | | | | | |
| 200 | .00843 | .13264 | .15592 | .00000 | .00000 | .70301 |
| 220 | .00843 | .13264 | .15590 | .00000 | .00002 | .70301 |
| 240 | .00843 | .13264 | .15570 | .00000 | .00023 | .70301 |
| 260 | .00843 | .13264 | .15429 | .00000 | .00163 | .70301 |
| 280 | .00843 | .13264 | .00000 | .14762 | .00831 | .70301 |
| 298 | .00843 | .13264 | .00000 | .12881 | .02711 | .70301 |
| 300 | .00843 | .13264 | .00000 | .12556 | .03036 | .70301 |
| 320 | .00843 | .13264 | .00000 | .05866 | .09727 | .70301 |
| PRESSURE = 10.00 ATM | | | | | | |
| 200 | .00843 | .13264 | .15592 | .00000 | .00000 | .70301 |
| 220 | .00843 | .13264 | .15592 | .00000 | .00000 | .70301 |
| 240 | .00843 | .13264 | .15590 | .00000 | .00002 | .70301 |
| 260 | .00843 | .13264 | .15576 | .00000 | .00016 | .70301 |
| 280 | .00843 | .13264 | .00000 | .15510 | .00082 | .70301 |
| 298 | .00843 | .13264 | .00000 | .15329 | .00263 | .70301 |
| 300 | .00843 | .13264 | .00000 | .15298 | .00294 | .70301 |
| 320 | .00843 | .13264 | .00000 | .14711 | .00881 | .70301 |
| 340 | .00843 | .13264 | .00000 | .13290 | .02303 | .70301 |
| 360 | .00843 | .13264 | .00000 | .10160 | .05432 | .70301 |
| 380 | .00843 | .13264 | .00000 | .03600 | .11992 | .70301 |
| PRESSURE = 50.00 ATM | | | | | | |
| 200 | .00843 | .13264 | .15592 | .00000 | .00000 | .70301 |
| 220 | .00843 | .13264 | .15592 | .00000 | .00000 | .70301 |
| 240 | .00843 | .13264 | .15592 | .00000 | .00000 | .70301 |
| 260 | .00843 | .13264 | .15589 | .00000 | .00003 | .70301 |
| 280 | .00843 | .13264 | .00000 | .15576 | .00016 | .70301 |
| 298 | .00843 | .13264 | .00000 | .15540 | .00053 | .70301 |
| 300 | .00843 | .13264 | .00000 | .15534 | .00059 | .70301 |
| 320 | .00843 | .13264 | .00000 | .15417 | .00175 | .70301 |
| 340 | .00843 | .13264 | .00000 | .15142 | .00451 | .70301 |
| 360 | .00843 | .13264 | .00000 | .14559 | .01033 | .70301 |
| 380 | .00843 | .13264 | .00000 | .13439 | .02154 | .70301 |
| 400 | .00843 | .13264 | .00000 | .11430 | .04162 | .70301 |
| 420 | .00843 | .13264 | .00000 | .07999 | .07594 | .70301 |

TABLE 22.1D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 210 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 220 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 230 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 240 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 250 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 260 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 270 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 280 | .00831 | .02325 | .00000 | .14018 | .00000 | .00001 | .13499 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 290 | .00831 | .02324 | .00000 | .14018 | .00000 | .00002 | .13499 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 298 | .00831 | .02324 | .00000 | .14018 | .00000 | .00002 | .13498 | .00000 | .00000 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 300 | .00831 | .02324 | .00000 | .14018 | .00000 | .00003 | .13498 | .00000 | .00000 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 310 | .00831 | .02324 | .00000 | .14019 | .00000 | .00005 | .13497 | .00000 | .00000 | .00000 | .69324 | .00000 | .00000 | .00000 |
| 320 | .00831 | .02323 | .00000 | .14019 | .00000 | .00008 | .13495 | .00000 | .00000 | .00000 | .69323 | .00000 | .00000 | .00000 |
| 330 | .00831 | .02321 | .00000 | .14020 | .00000 | .00012 | .13493 | .00000 | .00000 | .00000 | .69322 | .00000 | .00000 | .00000 |
| 340 | .00831 | .02320 | .00000 | .14021 | .00000 | .00019 | .13489 | .00000 | .00000 | .00000 | .69319 | .00000 | .00000 | .00000 |
| 350 | .00831 | .02317 | .00000 | .14023 | .00000 | .00030 | .13483 | .00000 | .00000 | .00000 | .69316 | .00000 | .00000 | .00000 |
| 360 | .00831 | .02313 | .00000 | .14026 | .00000 | .00044 | .13475 | .00000 | .00000 | .00000 | .69311 | .00000 | .00000 | .00000 |
| 370 | .00831 | .02308 | .00000 | .14029 | .00000 | .00065 | .13463 | .00000 | .00000 | .00000 | .69304 | .00000 | .00000 | .00000 |
| 380 | .00831 | .02300 | .00000 | .14034 | .00000 | .00093 | .13447 | .00000 | .00000 | .00000 | .69294 | .00000 | .00000 | .00000 |
| 390 | .00831 | .02291 | .00000 | .14041 | .00000 | .00130 | .13426 | .00000 | .00000 | .00000 | .69281 | .00000 | .00000 | .00000 |
| 400 | .00831 | .02277 | .00000 | .14050 | .00000 | .00180 | .13397 | .00000 | .00000 | .00000 | .69264 | .00000 | .00000 | .00000 |
| 410 | .00830 | .02260 | .00000 | .14062 | .00000 | .00245 | .13360 | .00000 | .00000 | .00000 | .69241 | .00000 | .00000 | .00000 |
| 420 | .00830 | .02238 | .00000 | .14077 | .00000 | .00329 | .13313 | .00000 | .00000 | .00000 | .69212 | .00000 | .00000 | .00000 |
| 430 | .00830 | .02210 | .00001 | .14096 | .00000 | .00435 | .13253 | .00000 | .00001 | .00000 | .69175 | .00000 | .00000 | .00000 |
| 440 | .00829 | .02176 | .00001 | .14119 | .00000 | .00568 | .13178 | .00000 | .00001 | .00000 | .69129 | .00000 | .00000 | .00000 |
| 450 | .00828 | .02133 | .00002 | .14148 | .00000 | .00731 | .13085 | .00000 | .00001 | .00000 | .69072 | .00000 | .00000 | .00000 |
| 460 | .00828 | .02081 | .00003 | .14183 | .00000 | .00929 | .12974 | .00000 | .00001 | .00000 | .69003 | .00000 | .00000 | .00000 |
| 470 | .00827 | .02018 | .00005 | .14224 | .00000 | .01166 | .12840 | .00000 | .00001 | .00000 | .68920 | .00000 | .00000 | .00000 |
| 480 | .00825 | .01944 | .00008 | .14272 | .00000 | .01446 | .12682 | .00000 | .00001 | .00000 | .68822 | .00000 | .00000 | .00000 |
| 490 | .00824 | .01858 | .00012 | .14327 | .00000 | .01772 | .12499 | .00000 | .00001 | .00000 | .68708 | .00000 | .00000 | .00000 |
| 500 | .00822 | .01759 | .00018 | .14389 | .00000 | .02144 | .12290 | .00000 | .00001 | .00000 | .68576 | .00000 | .00000 | .00000 |
| 510 | .00821 | .01646 | .00027 | .14457 | .00000 | .02565 | .12056 | .00000 | .00001 | .00000 | .68427 | .00000 | .00000 | .00000 |
| 520 | .00819 | .01521 | .00039 | .14531 | .00000 | .03031 | .11796 | .00000 | .00001 | .00000 | .68262 | .00000 | .00000 | .00000 |
| 530 | .00817 | .01384 | .00056 | .14609 | .00000 | .03539 | .11515 | .00000 | .00001 | .00000 | .68080 | .00000 | .00000 | .00000 |
| 540 | .00814 | .01236 | .00079 | .14688 | .00000 | .04081 | .11217 | .00000 | .00001 | .00000 | .67884 | .00000 | .00000 | .00000 |
| 550 | .00812 | .01080 | .00109 | .14765 | .00000 | .04647 | .10909 | .00000 | .00001 | .00000 | .67677 | .00000 | .00000 | .00000 |
| 560 | .00809 | .00919 | .00147 | .14837 | .00000 | .05224 | .10599 | .00000 | .00001 | .00000 | .67464 | .00000 | .00000 | .00000 |
| 570 | .00807 | .00758 | .00196 | .14900 | .00000 | .05793 | .10296 | .00000 | .00001 | .00000 | .67250 | .00000 | .00000 | .00000 |
| 580 | .00804 | .00601 | .00255 | .14949 | .00000 | .06334 | .10015 | .00000 | .00001 | .00000 | .67042 | .00000 | .00000 | .00000 |
| 590 | .00802 | .00455 | .00323 | .14980 | .00000 | .06822 | .09768 | .00000 | .00001 | .00000 | .66849 | .00000 | .00000 | .00000 |

TABLE 22.1D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00800 | .00327 | .00400 | .14992 | .00000 | .07235 | .09566 | .00000 | .00001 | .00000 | .66679 | .00000 | .00000 | .00000 |
| 610 | .00798 | .00222 | .00481 | .14982 | .00000 | .07554 | .09421 | .00000 | .00001 | .00000 | .66541 | .00000 | .00000 | .00000 |
| 620 | .00797 | .00143 | .00564 | .14954 | .00000 | .07774 | .09332 | .00000 | .00001 | .00000 | .66436 | .00000 | .00000 | .00000 |
| 630 | .00796 | .00088 | .00647 | .14909 | .00000 | .07901 | .09295 | .00000 | .00000 | .00000 | .66363 | .00000 | .00000 | .00000 |
| 640 | .00795 | .00053 | .00727 | .14853 | .00000 | .07956 | .09299 | .00000 | .00000 | .00000 | .66316 | .00000 | .00000 | .00000 |
| 650 | .00795 | .00031 | .00807 | .14788 | .00000 | .07960 | .09331 | .00000 | .00000 | .00000 | .66287 | .00000 | .00000 | .00000 |
| 660 | .00795 | .00018 | .00886 | .14718 | .00000 | .07930 | .09382 | .00000 | .00000 | .00000 | .66270 | .00000 | .00000 | .00000 |
| 670 | .00795 | .00011 | .00965 | .14644 | .00000 | .07880 | .09446 | .00000 | .00000 | .00000 | .66260 | .00000 | .00000 | .00000 |
| 680 | .00795 | .00006 | .01046 | .14567 | .00000 | .07816 | .09516 | .00000 | .00000 | .00000 | .66254 | .00000 | .00000 | .00000 |
| 690 | .00795 | .00004 | .01127 | .14487 | .00000 | .07745 | .09592 | .00000 | .00000 | .00000 | .66251 | .00000 | .00000 | .00000 |
| 700 | .00795 | .00002 | .01209 | .14406 | .00000 | .07668 | .09671 | .00000 | .00000 | .00000 | .66249 | .00000 | .00000 | .00000 |
| 710 | .00795 | .00001 | .01293 | .14323 | .00000 | .07588 | .09753 | .00000 | .00000 | .00000 | .66248 | .00000 | .00000 | .00000 |
| 720 | .00795 | .00001 | .01377 | .14238 | .00000 | .07505 | .09836 | .00000 | .00000 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 730 | .00795 | .00000 | .01463 | .14153 | .00000 | .07421 | .09921 | .00000 | .00000 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 740 | .00795 | .00000 | .01549 | .14067 | .00000 | .07336 | .10007 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 750 | .00795 | .00000 | .01636 | .13981 | .00000 | .07249 | .10093 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 760 | .00795 | .00000 | .01723 | .13894 | .00000 | .07163 | .10180 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 770 | .00795 | .00000 | .01810 | .13806 | .00000 | .07076 | .10267 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 780 | .00795 | .00000 | .01897 | .13719 | .00000 | .06988 | .10354 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 790 | .00795 | .00000 | .01984 | .13632 | .00000 | .06901 | .10442 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 800 | .00795 | .00000 | .02071 | .13545 | .00000 | .06815 | .10528 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 810 | .00795 | .00000 | .02158 | .13459 | .00000 | .06728 | .10615 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 820 | .00795 | .00000 | .02244 | .13373 | .00000 | .06642 | .10701 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 830 | .00795 | .00000 | .02329 | .13287 | .00000 | .06557 | .10786 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 840 | .00795 | .00000 | .02414 | .13203 | .00000 | .06472 | .10871 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 850 | .00795 | .00000 | .02497 | .13119 | .00000 | .06388 | .10955 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 860 | .00795 | .00000 | .02580 | .13036 | .00000 | .06306 | .11038 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 870 | .00795 | .00000 | .02662 | .12954 | .00000 | .06223 | .11120 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 880 | .00795 | .00000 | .02743 | .12873 | .00000 | .06142 | .11201 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 890 | .00795 | .00000 | .02823 | .12793 | .00000 | .06063 | .11281 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 900 | .00795 | .00000 | .02902 | .12714 | .00000 | .05984 | .11359 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 910 | .00795 | .00000 | .02980 | .12636 | .00000 | .05906 | .11437 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 920 | .00795 | .00000 | .03057 | .12560 | .00000 | .05829 | .11514 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 930 | .00795 | .00000 | .03132 | .12484 | .00000 | .05754 | .11589 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 940 | .00795 | .00000 | .03206 | .12410 | .00000 | .05680 | .11663 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 950 | .00795 | .00000 | .03279 | .12337 | .00000 | .05607 | .11736 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 960 | .00795 | .00000 | .03351 | .12265 | .00000 | .05535 | .11808 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 970 | .00795 | .00000 | .03421 | .12195 | .00000 | .05464 | .11879 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 980 | .00795 | .00000 | .03491 | .12126 | .00000 | .05395 | .11948 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 990 | .00795 | .00000 | .03559 | .12058 | .00000 | .05327 | .12016 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |

TABLE 22.1D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00795 | .00000 | .03625 | .11991 | .00000 | .05260 | .12083 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1050 | .00795 | .00000 | .03941 | .11675 | .00000 | .04945 | .12398 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1100 | .00795 | .00000 | .04227 | .11390 | .00000 | .04659 | .12684 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1150 | .00795 | .00000 | .04485 | .11131 | .00000 | .04401 | .12942 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1200 | .00795 | .00000 | .04718 | .10898 | .00000 | .04168 | .13175 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1250 | .00795 | .00000 | .04929 | .10688 | .00000 | .03957 | .13386 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1300 | .00795 | .00000 | .05118 | .10498 | .00000 | .03767 | .13576 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1350 | .00795 | .00000 | .05290 | .10326 | .00000 | .03596 | .13747 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1400 | .00795 | .00000 | .05445 | .10171 | .00001 | .03440 | .13902 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1450 | .00795 | .00000 | .05586 | .10031 | .00002 | .03299 | .14043 | .00000 | .00000 | .00000 | .66245 | .00000 | .00000 | .00000 |
| 1500 | .00795 | .00000 | .05713 | .09903 | .00003 | .03171 | .14170 | .00000 | .00000 | .00000 | .66245 | .00000 | .00000 | .00000 |
| 1550 | .00794 | .00000 | .05829 | .09787 | .00005 | .03054 | .14285 | .00000 | .00000 | .00000 | .66244 | .00000 | .00001 | .00000 |
| 1600 | .00794 | .00000 | .05935 | .09681 | .00009 | .02947 | .14389 | .00000 | .00000 | .00000 | .66242 | .00000 | .00002 | .00000 |
| 1650 | .00794 | .00000 | .06031 | .09584 | .00015 | .02849 | .14483 | .00000 | .00000 | .00000 | .66239 | .00000 | .00004 | .00000 |
| 1700 | .00794 | .00000 | .06118 | .09496 | .00024 | .02758 | .14566 | .00000 | .00000 | .00001 | .66235 | .00000 | .00007 | .00000 |
| 1750 | .00794 | .00000 | .06198 | .09414 | .00038 | .02675 | .14639 | .00000 | .00000 | .00001 | .66228 | .00000 | .00012 | .00000 |
| 1800 | .00794 | .00000 | .06272 | .09338 | .00057 | .02597 | .14699 | .00000 | .00000 | .00003 | .66217 | .00000 | .00022 | .00001 |
| 1850 | .00794 | .00000 | .06341 | .09265 | .00085 | .02526 | .14744 | .00000 | .00000 | .00005 | .66199 | .00001 | .00038 | .00002 |
| 1900 | .00794 | .00000 | .06409 | .09191 | .00124 | .02461 | .14771 | .00000 | .00000 | .00009 | .66171 | .00002 | .00062 | .00006 |
| 1950 | .00793 | .00000 | .06481 | .09110 | .00177 | .02403 | .14772 | .00000 | .00000 | .00017 | .66127 | .00005 | .00101 | .00014 |
| 2000 | .00792 | .00000 | .06566 | .09010 | .00248 | .02357 | .14737 | .00000 | .00000 | .00029 | .66058 | .00012 | .00158 | .00032 |
| 2050 | .00791 | .00000 | .06678 | .08874 | .00344 | .02329 | .14650 | .00000 | .00000 | .00048 | .65950 | .00025 | .00242 | .00068 |
| 2100 | .00789 | .00000 | .06840 | .08676 | .00473 | .02328 | .14489 | .00000 | .00000 | .00077 | .65784 | .00051 | .00358 | .00134 |
| 2150 | .00787 | .00000 | .07074 | .08389 | .00645 | .02364 | .14231 | .00000 | .00000 | .00117 | .65539 | .00096 | .00512 | .00246 |
| 2200 | .00783 | .00000 | .07395 | .07993 | .00876 | .02446 | .13852 | .00000 | .00000 | .00170 | .65192 | .00173 | .00707 | .00413 |
| 2250 | .00778 | .00000 | .07804 | .07483 | .01185 | .02576 | .13338 | .00000 | .00000 | .00235 | .64730 | .00293 | .00942 | .00637 |
| 2300 | .00771 | .00000 | .08281 | .06876 | .01595 | .02749 | .12681 | .00000 | .00000 | .00310 | .64145 | .00470 | .01211 | .00908 |
| 2350 | .00763 | .00000 | .08801 | .06199 | .02132 | .02956 | .11882 | .00000 | .00000 | .00393 | .63434 | .00721 | .01509 | .01209 |
| 2400 | .00754 | .00000 | .09328 | .05486 | .02820 | .03181 | .10949 | .00000 | .00000 | .00482 | .62599 | .01062 | .01823 | .01517 |
| 2450 | .00743 | .00000 | .09832 | .04766 | .03685 | .03405 | .09895 | .00000 | .00000 | .00573 | .61641 | .01508 | .02138 | .01812 |
| 2500 | .00730 | .00000 | .10288 | .04069 | .04746 | .03606 | .08746 | .00000 | .00000 | .00664 | .60569 | .02073 | .02437 | .02071 |
| 2550 | .00717 | .00000 | .10675 | .03415 | .06012 | .03759 | .07533 | .00000 | .00000 | .00750 | .59394 | .02768 | .02699 | .02277 |
| 2600 | .00702 | .00000 | .10983 | .02820 | .07476 | .03839 | .06301 | .00001 | .00000 | .00830 | .58137 | .03596 | .02902 | .02415 |
| 2650 | .00687 | .00000 | .11209 | .02292 | .09114 | .03826 | .05099 | .00001 | .00000 | .00898 | .56824 | .04552 | .03025 | .02474 |
| 2700 | .00671 | .00000 | .11359 | .01835 | .10878 | .03709 | .03978 | .00001 | .00000 | .00953 | .55493 | .05619 | .03054 | .02450 |
| 2750 | .00656 | .00000 | .11441 | .01449 | .12702 | .03489 | .02984 | .00002 | .00000 | .00991 | .54186 | .06769 | .02984 | .02347 |
| 2800 | .00641 | .00000 | .11472 | .01130 | .14506 | .03181 | .02150 | .00003 | .00000 | .01012 | .52948 | .07962 | .02820 | .02175 |
| 2850 | .00628 | .00000 | .11465 | .00870 | .16214 | .02812 | .01489 | .00004 | .00000 | .01016 | .51816 | .09153 | .02581 | .01953 |
| 2900 | .00616 | .00000 | .11434 | .00664 | .17761 | .02416 | .00993 | .00005 | .00000 | .01002 | .50819 | .10297 | .02291 | .01701 |
| 2950 | .00605 | .00000 | .11392 | .00503 | .19107 | .02025 | .00642 | .00007 | .00000 | .00975 | .49968 | .11354 | .01980 | .01442 |
| 3000 | .00597 | .00000 | .11346 | .00378 | .20239 | .01663 | .00404 | .00010 | .00000 | .00936 | .49265 | .12298 | .01671 | .01193 |

TABLE 22.2D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO $\bar{\nu}$ 1.250; CHEM. EQUIV. RATIO = 1.2239; P $\bar{\nu}$ 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 210 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 220 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 230 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 240 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 250 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 260 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 270 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 280 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 290 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 298 | .00831 | .02325 | .00000 | .14018 | .00000 | .00001 | .13499 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 300 | .00831 | .02325 | .00000 | .14018 | .00000 | .00001 | .13499 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 310 | .00831 | .02324 | .00000 | .14018 | .00000 | .00001 | .13499 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 320 | .00831 | .02324 | .00000 | .14018 | .00000 | .00002 | .13498 | .00000 | .00000 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 330 | .00831 | .02324 | .00000 | .14019 | .00000 | .00004 | .13498 | .00000 | .00000 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 340 | .00831 | .02323 | .00000 | .14019 | .00000 | .00006 | .13496 | .00000 | .00000 | .00000 | .69324 | .00000 | .00000 | .00000 |
| 350 | .00831 | .02322 | .00000 | .14020 | .00000 | .00009 | .13494 | .00000 | .00000 | .00000 | .69323 | .00000 | .00000 | .00000 |
| 360 | .00831 | .02321 | .00000 | .14020 | .00000 | .00014 | .13492 | .00000 | .00000 | .00000 | .69321 | .00000 | .00000 | .00000 |
| 370 | .00831 | .02319 | .00000 | .14022 | .00000 | .00020 | .13488 | .00000 | .00000 | .00000 | .69319 | .00000 | .00000 | .00000 |
| 380 | .00831 | .02317 | .00000 | .14023 | .00000 | .00029 | .13483 | .00000 | .00001 | .00000 | .69316 | .00000 | .00000 | .00000 |
| 390 | .00831 | .02314 | .00000 | .14025 | .00000 | .00041 | .13476 | .00000 | .00001 | .00000 | .69312 | .00000 | .00000 | .00000 |
| 400 | .00831 | .02309 | .00000 | .14028 | .00000 | .00057 | .13467 | .00000 | .00001 | .00000 | .69306 | .00000 | .00000 | .00000 |
| 410 | .00831 | .02304 | .00000 | .14032 | .00000 | .00078 | .13455 | .00000 | .00001 | .00000 | .69299 | .00000 | .00000 | .00000 |
| 420 | .00831 | .02297 | .00000 | .14037 | .00000 | .00105 | .13440 | .00000 | .00001 | .00000 | .69289 | .00000 | .00000 | .00000 |
| 430 | .00831 | .02288 | .00000 | .14043 | .00000 | .00140 | .13420 | .00000 | .00001 | .00000 | .69277 | .00000 | .00000 | .00000 |
| 440 | .00831 | .02276 | .00000 | .14051 | .00000 | .00183 | .13395 | .00000 | .00001 | .00000 | .69262 | .00000 | .00000 | .00000 |
| 450 | .00830 | .02262 | .00001 | .14060 | .00000 | .00237 | .13365 | .00000 | .00001 | .00000 | .69243 | .00000 | .00000 | .00000 |
| 460 | .00830 | .02244 | .00001 | .14072 | .00000 | .00304 | .13327 | .00000 | .00001 | .00000 | .69220 | .00000 | .00000 | .00000 |
| 470 | .00830 | .02223 | .00002 | .14086 | .00000 | .00385 | .13281 | .00000 | .00001 | .00000 | .69192 | .00000 | .00000 | .00000 |
| 480 | .00829 | .02197 | .00003 | .14103 | .00000 | .00483 | .13226 | .00000 | .00001 | .00000 | .69157 | .00000 | .00000 | .00000 |
| 490 | .00829 | .02166 | .00004 | .14123 | .00000 | .00599 | .13160 | .00000 | .00002 | .00000 | .69116 | .00000 | .00000 | .00000 |
| 500 | .00828 | .02130 | .00006 | .14146 | .00000 | .00737 | .13083 | .00000 | .00002 | .00000 | .69068 | .00000 | .00000 | .00000 |
| 510 | .00828 | .02087 | .00009 | .14173 | .00000 | .00898 | .12993 | .00000 | .00002 | .00000 | .69011 | .00000 | .00000 | .00000 |
| 520 | .00827 | .02037 | .00013 | .14203 | .00000 | .01084 | .12889 | .00000 | .00002 | .00000 | .68945 | .00000 | .00000 | .00000 |
| 530 | .00826 | .01980 | .00018 | .14237 | .00000 | .01297 | .12770 | .00000 | .00002 | .00000 | .68870 | .00000 | .00000 | .00000 |
| 540 | .00825 | .01915 | .00026 | .14274 | .00000 | .01539 | .12636 | .00000 | .00002 | .00000 | .68783 | .00000 | .00000 | .00000 |
| 550 | .00824 | .01841 | .00036 | .14315 | .00000 | .01810 | .12487 | .00000 | .00002 | .00000 | .68685 | .00000 | .00000 | .00000 |
| 560 | .00822 | .01758 | .00050 | .14358 | .00000 | .02112 | .12321 | .00000 | .00002 | .00000 | .68576 | .00000 | .00000 | .00000 |
| 570 | .00821 | .01667 | .00068 | .14403 | .00000 | .02443 | .12141 | .00000 | .00002 | .00000 | .68455 | .00000 | .00000 | .00000 |
| 580 | .00819 | .01567 | .00091 | .14448 | .00000 | .02804 | .11947 | .00000 | .00002 | .00000 | .68322 | .00000 | .00000 | .00000 |
| 590 | .00818 | .01457 | .00122 | .14493 | .00000 | .03190 | .11740 | .00000 | .00002 | .00000 | .68177 | .00000 | .00000 | .00000 |

TABLE 22.2D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00816 | .01340 | .00160 | .14535 | .00000 | .03600 | .11524 | .00000 | .00002 | .00000 | .68022 | .00000 | .00000 | .00000 |
| 610 | .00814 | .01215 | .00208 | .14573 | .00000 | .04029 | .11302 | .00000 | .00002 | .00000 | .67857 | .00000 | .00000 | .00000 |
| 620 | .00812 | .01085 | .00267 | .14604 | .00000 | .04470 | .11077 | .00000 | .00002 | .00000 | .67684 | .00000 | .00000 | .00000 |
| 630 | .00810 | .00950 | .00338 | .14626 | .00000 | .04914 | .10856 | .00000 | .00002 | .00000 | .67505 | .00000 | .00000 | .00000 |
| 640 | .00807 | .00813 | .00421 | .14636 | .00000 | .05353 | .10643 | .00000 | .00002 | .00000 | .67324 | .00000 | .00000 | .00000 |
| 650 | .00805 | .00678 | .00518 | .14633 | .00000 | .05775 | .10445 | .00000 | .00002 | .00000 | .67144 | .00000 | .00000 | .00000 |
| 660 | .00803 | .00547 | .00625 | .14615 | .00000 | .06166 | .10270 | .00000 | .00002 | .00000 | .66972 | .00000 | .00000 | .00000 |
| 670 | .00801 | .00427 | .00741 | .14582 | .00000 | .06511 | .10124 | .00000 | .00002 | .00000 | .66812 | .00000 | .00000 | .00000 |
| 680 | .00800 | .00320 | .00862 | .14534 | .00000 | .06799 | .10013 | .00000 | .00002 | .00000 | .66670 | .00000 | .00000 | .00000 |
| 690 | .00798 | .00230 | .00985 | .14474 | .00000 | .07019 | .09941 | .00000 | .00002 | .00000 | .66551 | .00000 | .00000 | .00000 |
| 700 | .00797 | .00159 | .01104 | .14403 | .00000 | .07171 | .09907 | .00000 | .00001 | .00000 | .66457 | .00000 | .00000 | .00000 |
| 710 | .00796 | .00107 | .01218 | .14325 | .00000 | .07258 | .09907 | .00000 | .00001 | .00000 | .66388 | .00000 | .00000 | .00000 |
| 720 | .00796 | .00070 | .01325 | .14243 | .00000 | .07292 | .09934 | .00000 | .00001 | .00000 | .66339 | .00000 | .00000 | .00000 |
| 730 | .00795 | .00045 | .01428 | .14158 | .00000 | .07285 | .09983 | .00000 | .00001 | .00000 | .66306 | .00000 | .00000 | .00000 |
| 740 | .00795 | .00029 | .01525 | .14071 | .00000 | .07249 | .10045 | .00000 | .00001 | .00000 | .66284 | .00000 | .00000 | .00000 |
| 750 | .00795 | .00018 | .01620 | .13984 | .00000 | .07195 | .10117 | .00000 | .00001 | .00000 | .66270 | .00000 | .00000 | .00000 |
| 760 | .00795 | .00012 | .01712 | .13896 | .00000 | .07128 | .10195 | .00000 | .00001 | .00000 | .66262 | .00000 | .00000 | .00000 |
| 770 | .00795 | .00008 | .01803 | .13808 | .00000 | .07053 | .10276 | .00000 | .00001 | .00000 | .66256 | .00000 | .00000 | .00000 |
| 780 | .00795 | .00005 | .01892 | .13721 | .00000 | .06974 | .10360 | .00000 | .00001 | .00000 | .66253 | .00000 | .00000 | .00000 |
| 790 | .00795 | .00003 | .01981 | .13633 | .00000 | .06892 | .10445 | .00000 | .00000 | .00000 | .66250 | .00000 | .00000 | .00000 |
| 800 | .00795 | .00002 | .02069 | .13546 | .00000 | .06808 | .10531 | .00000 | .00000 | .00000 | .66249 | .00000 | .00000 | .00000 |
| 810 | .00795 | .00001 | .02156 | .13459 | .00000 | .06724 | .10616 | .00000 | .00000 | .00000 | .66248 | .00000 | .00000 | .00000 |
| 820 | .00795 | .00001 | .02243 | .13373 | .00000 | .06639 | .10702 | .00000 | .00000 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 830 | .00795 | .00001 | .02328 | .13288 | .00000 | .06555 | .10787 | .00000 | .00000 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 840 | .00795 | .00000 | .02413 | .13203 | .00000 | .06471 | .10871 | .00000 | .00000 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 850 | .00795 | .00000 | .02497 | .13119 | .00000 | .06388 | .10955 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 860 | .00795 | .00000 | .02580 | .13036 | .00000 | .06305 | .11038 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 870 | .00795 | .00000 | .02662 | .12954 | .00000 | .06223 | .11120 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 880 | .00795 | .00000 | .02743 | .12873 | .00000 | .06142 | .11201 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 890 | .00795 | .00000 | .02823 | .12793 | .00000 | .06062 | .11281 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 900 | .00795 | .00000 | .02902 | .12714 | .00000 | .05983 | .11359 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 910 | .00795 | .00000 | .02980 | .12636 | .00000 | .05906 | .11437 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 920 | .00795 | .00000 | .03057 | .12560 | .00000 | .05829 | .11514 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 930 | .00795 | .00000 | .03132 | .12484 | .00000 | .05754 | .11589 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 940 | .00795 | .00000 | .03206 | .12410 | .00000 | .05680 | .11663 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 950 | .00795 | .00000 | .03279 | .12337 | .00000 | .05607 | .11736 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 960 | .00795 | .00000 | .03351 | .12265 | .00000 | .05535 | .11808 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 970 | .00795 | .00000 | .03421 | .12195 | .00000 | .05464 | .11879 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 980 | .00795 | .00000 | .03491 | .12126 | .00000 | .05395 | .11948 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 990 | .00795 | .00000 | .03559 | .12058 | .00000 | .05327 | .12016 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |

TABLE 22.2D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00795 | .00000 | .03625 | .11991 | .00000 | .05260 | .12083 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1050 | .00795 | .00000 | .03941 | .11675 | .00000 | .04945 | .12398 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1100 | .00795 | .00000 | .04227 | .11390 | .00000 | .04659 | .12684 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1150 | .00795 | .00000 | .04485 | .11131 | .00000 | .04401 | .12942 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1200 | .00795 | .00000 | .04718 | .10898 | .00000 | .04168 | .13175 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1250 | .00795 | .00000 | .04929 | .10688 | .00000 | .03957 | .13386 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1300 | .00795 | .00000 | .05118 | .10498 | .00000 | .03767 | .13576 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1350 | .00795 | .00000 | .05290 | .10326 | .00000 | .03596 | .13747 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1400 | .00795 | .00000 | .05445 | .10171 | .00000 | .03441 | .13902 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1450 | .00795 | .00000 | .05586 | .10030 | .00001 | .03300 | .14043 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1500 | .00795 | .00000 | .05714 | .09903 | .00001 | .03172 | .14171 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1550 | .00795 | .00000 | .05830 | .09786 | .00002 | .03055 | .14287 | .00000 | .00000 | .00000 | .66245 | .00000 | .00000 | .00000 |
| 1600 | .00795 | .00000 | .05936 | .09680 | .00003 | .02949 | .14392 | .00000 | .00000 | .00000 | .66245 | .00000 | .00001 | .00000 |
| 1650 | .00794 | .00000 | .06033 | .09583 | .00005 | .02851 | .14488 | .00000 | .00000 | .00000 | .66244 | .00000 | .00001 | .00000 |
| 1700 | .00794 | .00000 | .06121 | .09495 | .00008 | .02762 | .14575 | .00000 | .00000 | .00000 | .66243 | .00000 | .00002 | .00000 |
| 1750 | .00794 | .00000 | .06202 | .09413 | .00012 | .02680 | .14654 | .00000 | .00000 | .00000 | .66240 | .00000 | .00004 | .00000 |
| 1800 | .00794 | .00000 | .06276 | .09338 | .00018 | .02604 | .14725 | .00000 | .00000 | .00001 | .66237 | .00000 | .00007 | .00000 |
| 1850 | .00794 | .00000 | .06345 | .09268 | .00027 | .02534 | .14786 | .00000 | .00000 | .00002 | .66232 | .00000 | .00012 | .00000 |
| 1900 | .00794 | .00000 | .06409 | .09202 | .00039 | .02469 | .14839 | .00000 | .00000 | .00003 | .66223 | .00000 | .00020 | .00001 |
| 1950 | .00794 | .00000 | .06469 | .09139 | .00056 | .02409 | .14882 | .00000 | .00000 | .00005 | .66211 | .00001 | .00032 | .00001 |
| 2000 | .00794 | .00000 | .06528 | .09077 | .00078 | .02354 | .14911 | .00000 | .00000 | .00009 | .66193 | .00001 | .00051 | .00003 |
| 2050 | .00794 | .00000 | .06588 | .09011 | .00108 | .02305 | .14925 | .00000 | .00000 | .00016 | .66165 | .00003 | .00078 | .00007 |
| 2100 | .00793 | .00000 | .06654 | .08936 | .00147 | .02264 | .14918 | .00000 | .00000 | .00026 | .66123 | .00005 | .00118 | .00015 |
| 2150 | .00793 | .00000 | .06733 | .08845 | .00198 | .02232 | .14882 | .00000 | .00000 | .00041 | .66061 | .00011 | .00174 | .00030 |
| 2200 | .00792 | .00000 | .06834 | .08725 | .00263 | .02213 | .14809 | .00000 | .00000 | .00064 | .65971 | .00020 | .00251 | .00058 |
| 2250 | .00790 | .00000 | .06970 | .08562 | .00347 | .02214 | .14685 | .00000 | .00000 | .00096 | .65840 | .00037 | .00354 | .00105 |
| 2300 | .00788 | .00000 | .07155 | .08339 | .00455 | .02239 | .14498 | .00000 | .00000 | .00139 | .65657 | .00066 | .00485 | .00179 |
| 2350 | .00786 | .00000 | .07400 | .08042 | .00594 | .02295 | .14233 | .00000 | .00000 | .00195 | .65408 | .00111 | .00649 | .00288 |
| 2400 | .00782 | .00000 | .07709 | .07665 | .00772 | .02385 | .13881 | .00000 | .00000 | .00263 | .65086 | .00180 | .00844 | .00434 |
| 2450 | .00778 | .00000 | .08075 | .07213 | .01000 | .02509 | .13435 | .00000 | .00000 | .00342 | .64684 | .00278 | .01069 | .00615 |
| 2500 | .00773 | .00000 | .08487 | .06698 | .01290 | .02664 | .12894 | .00000 | .00000 | .00431 | .64202 | .00414 | .01322 | .00825 |
| 2550 | .00766 | .00000 | .08926 | .06138 | .01654 | .02845 | .12259 | .00000 | .00000 | .00528 | .63639 | .00595 | .01596 | .01052 |
| 2600 | .00759 | .00000 | .09372 | .05553 | .02106 | .03045 | .11535 | .00000 | .00000 | .00630 | .62998 | .00830 | .01886 | .01286 |
| 2650 | .00751 | .00000 | .09806 | .04962 | .02657 | .03253 | .10728 | .00000 | .00000 | .00736 | .62281 | .01126 | .02183 | .01515 |
| 2700 | .00743 | .00000 | .10213 | .04382 | .03322 | .03459 | .09850 | .00000 | .00000 | .00842 | .61492 | .01492 | .02477 | .01727 |
| 2750 | .00733 | .00000 | .10579 | .03827 | .04108 | .03650 | .08916 | .00001 | .00000 | .00947 | .60636 | .01933 | .02756 | .01914 |
| 2800 | .00723 | .00000 | .10895 | .03306 | .05022 | .03813 | .07943 | .00001 | .00000 | .01048 | .59720 | .02454 | .03009 | .02066 |
| 2850 | .00712 | .00000 | .11157 | .02828 | .06064 | .03934 | .06954 | .00001 | .00000 | .01142 | .58753 | .03056 | .03223 | .02177 |
| 2900 | .00700 | .00000 | .11361 | .02396 | .07227 | .04000 | .05972 | .00002 | .00000 | .01227 | .57746 | .03739 | .03385 | .02244 |
| 2950 | .00688 | .00000 | .11511 | .02012 | .08496 | .04003 | .05024 | .00002 | .00000 | .01301 | .56716 | .04497 | .03486 | .02262 |
| 3000 | .00676 | .00000 | .11610 | .01676 | .09848 | .03937 | .04135 | .00003 | .00000 | .01361 | .55679 | .05321 | .03519 | .02234 |

TABLE 22.3D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 210 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 220 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 230 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 240 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 250 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 260 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 270 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 280 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 290 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 298 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 300 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 310 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 320 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00001 | .13499 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 330 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00001 | .13499 | .00000 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 340 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00002 | .13498 | .00000 | .00001 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 350 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00003 | .13498 | .00000 | .00001 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 360 | .00831 | .02323 | .00000 | .14019 | .00000 | .00000 | .00004 | .13497 | .00000 | .00001 | .00000 | .69324 | .00000 | .00000 | .00000 |
| 370 | .00831 | .02323 | .00000 | .14019 | .00000 | .00000 | .00006 | .13496 | .00000 | .00001 | .00000 | .69324 | .00000 | .00000 | .00000 |
| 380 | .00831 | .02322 | .00000 | .14020 | .00000 | .00000 | .00009 | .13494 | .00000 | .00001 | .00000 | .69323 | .00000 | .00000 | .00000 |
| 390 | .00831 | .02321 | .00000 | .14021 | .00000 | .00000 | .00013 | .13492 | .00000 | .00001 | .00000 | .69321 | .00000 | .00000 | .00000 |
| 400 | .00831 | .02320 | .00000 | .14021 | .00000 | .00000 | .00018 | .13489 | .00000 | .00001 | .00000 | .69319 | .00000 | .00000 | .00000 |
| 410 | .00831 | .02318 | .00000 | .14023 | .00000 | .00000 | .00025 | .13485 | .00000 | .00001 | .00000 | .69317 | .00000 | .00000 | .00000 |
| 420 | .00831 | .02315 | .00000 | .14024 | .00000 | .00000 | .00033 | .13480 | .00000 | .00002 | .00000 | .69314 | .00000 | .00000 | .00000 |
| 430 | .00831 | .02312 | .00000 | .14026 | .00000 | .00000 | .00044 | .13474 | .00000 | .00002 | .00000 | .69310 | .00000 | .00000 | .00000 |
| 440 | .00831 | .02309 | .00000 | .14029 | .00000 | .00000 | .00058 | .13466 | .00000 | .00002 | .00000 | .69305 | .00000 | .00000 | .00000 |
| 450 | .00831 | .02304 | .00000 | .14032 | .00000 | .00000 | .00076 | .13456 | .00000 | .00002 | .00000 | .69299 | .00000 | .00000 | .00000 |
| 460 | .00831 | .02298 | .00000 | .14036 | .00000 | .00000 | .00097 | .13443 | .00000 | .00002 | .00000 | .69292 | .00000 | .00000 | .00000 |
| 470 | .00831 | .02291 | .00001 | .14041 | .00000 | .00000 | .00124 | .13428 | .00000 | .00002 | .00000 | .69282 | .00000 | .00000 | .00000 |
| 480 | .00831 | .02283 | .00001 | .14046 | .00000 | .00000 | .00155 | .13410 | .00000 | .00003 | .00000 | .69271 | .00000 | .00000 | .00000 |
| 490 | .00831 | .02273 | .00001 | .14053 | .00000 | .00000 | .00194 | .13388 | .00000 | .00003 | .00000 | .69258 | .00000 | .00000 | .00000 |
| 500 | .00830 | .02260 | .00002 | .14061 | .00000 | .00000 | .00239 | .13363 | .00000 | .00003 | .00000 | .69241 | .00000 | .00000 | .00000 |
| 510 | .00830 | .02246 | .00003 | .14070 | .00000 | .00000 | .00293 | .13332 | .00000 | .00003 | .00000 | .69222 | .00000 | .00000 | .00000 |
| 520 | .00830 | .02229 | .00004 | .14080 | .00000 | .00000 | .00357 | .13297 | .00000 | .00004 | .00000 | .69200 | .00000 | .00000 | .00000 |
| 530 | .00830 | .02209 | .00006 | .14092 | .00000 | .00000 | .00431 | .13255 | .00000 | .00004 | .00000 | .69174 | .00000 | .00000 | .00000 |
| 540 | .00829 | .02186 | .00008 | .14105 | .00000 | .00000 | .00516 | .13208 | .00000 | .00004 | .00000 | .69143 | .00000 | .00000 | .00000 |
| 550 | .00829 | .02160 | .00011 | .14121 | .00000 | .00000 | .00614 | .13154 | .00000 | .00004 | .00000 | .69108 | .00000 | .00000 | .00000 |
| 560 | .00828 | .02129 | .00016 | .14137 | .00000 | .00000 | .00725 | .13092 | .00000 | .00004 | .00000 | .69068 | .00000 | .00000 | .00000 |
| 570 | .00828 | .02095 | .00022 | .14155 | .00000 | .00000 | .00851 | .13023 | .00000 | .00005 | .00000 | .69022 | .00000 | .00000 | .00000 |
| 580 | .00827 | .02056 | .00029 | .14174 | .00000 | .00000 | .00993 | .12946 | .00000 | .00005 | .00000 | .68970 | .00000 | .00000 | .00000 |
| 590 | .00827 | .02012 | .00039 | .14195 | .00000 | .00000 | .01150 | .12860 | .00000 | .00005 | .00000 | .68912 | .00000 | .00000 | .00000 |

TABLE 22.3D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00826 | .01962 | .00052 | .14216 | .00000 | .00000 | .01326 | .12766 | .00000 | .00005 | .00000 | .68847 | .00000 | .00000 | .00000 |
| 610 | .00825 | .01908 | .00068 | .14237 | .00000 | .00000 | .01518 | .12664 | .00000 | .00006 | .00000 | .68774 | .00000 | .00000 | .00000 |
| 620 | .00824 | .01847 | .00089 | .14258 | .00000 | .00000 | .01729 | .12553 | .00000 | .00006 | .00000 | .68694 | .00000 | .00000 | .00000 |
| 630 | .00823 | .01780 | .00115 | .14278 | .00000 | .00000 | .01958 | .12434 | .00000 | .00006 | .00000 | .68606 | .00000 | .00000 | .00000 |
| 640 | .00822 | .01707 | .00147 | .14297 | .00000 | .00000 | .02204 | .12308 | .00000 | .00006 | .00000 | .68509 | .00000 | .00000 | .00000 |
| 650 | .00820 | .01628 | .00186 | .14312 | .00000 | .00000 | .02468 | .12175 | .00000 | .00006 | .00000 | .68404 | .00000 | .00000 | .00000 |
| 660 | .00819 | .01542 | .00233 | .14324 | .00000 | .00000 | .02749 | .12036 | .00000 | .00006 | .00000 | .68291 | .00000 | .00000 | .00000 |
| 670 | .00818 | .01450 | .00290 | .14330 | .00000 | .00000 | .03044 | .11894 | .00000 | .00006 | .00000 | .68169 | .00000 | .00000 | .00000 |
| 680 | .00816 | .01352 | .00357 | .14330 | .00000 | .00000 | .03351 | .11748 | .00000 | .00006 | .00000 | .68039 | .00000 | .00000 | .00000 |
| 690 | .00814 | .01248 | .00436 | .14323 | .00000 | .00000 | .03669 | .11602 | .00000 | .00006 | .00000 | .67901 | .00000 | .00000 | .00000 |
| 700 | .00813 | .01139 | .00528 | .14306 | .00000 | .00000 | .03994 | .11457 | .00000 | .00006 | .00000 | .67757 | .00000 | .00000 | .00000 |
| 710 | .00811 | .01026 | .00633 | .14279 | .00000 | .00000 | .04322 | .11317 | .00000 | .00006 | .00000 | .67607 | .00000 | .00000 | .00000 |
| 720 | .00809 | .00910 | .00750 | .14241 | .00000 | .00000 | .04647 | .11183 | .00000 | .00006 | .00000 | .67453 | .00000 | .00000 | .00000 |
| 730 | .00807 | .00794 | .00880 | .14191 | .00000 | .00000 | .04964 | .11059 | .00000 | .00006 | .00000 | .67298 | .00000 | .00000 | .00000 |
| 740 | .00805 | .00678 | .01021 | .14130 | .00000 | .00000 | .05266 | .10949 | .00000 | .00006 | .00000 | .67145 | .00000 | .00000 | .00000 |
| 750 | .00804 | .00566 | .01170 | .14058 | .00000 | .00000 | .05545 | .10855 | .00000 | .00006 | .00000 | .66997 | .00000 | .00000 | .00000 |
| 760 | .00802 | .00461 | .01324 | .13977 | .00000 | .00000 | .05794 | .10781 | .00000 | .00005 | .00000 | .66857 | .00000 | .00000 | .00000 |
| 770 | .00800 | .00365 | .01479 | .13887 | .00000 | .00000 | .06006 | .10728 | .00000 | .00005 | .00000 | .66730 | .00000 | .00000 | .00000 |
| 780 | .00799 | .00281 | .01631 | .13793 | .00000 | .00000 | .06174 | .10698 | .00000 | .00005 | .00000 | .66619 | .00000 | .00000 | .00000 |
| 790 | .00798 | .00211 | .01777 | .13695 | .00000 | .00000 | .06298 | .10691 | .00000 | .00004 | .00000 | .66526 | .00000 | .00000 | .00000 |
| 800 | .00797 | .00154 | .01914 | .13597 | .00000 | .00000 | .06378 | .10705 | .00000 | .00004 | .00000 | .66451 | .00000 | .00000 | .00000 |
| 810 | .00796 | .00110 | .02041 | .13500 | .00000 | .00000 | .06418 | .10738 | .00000 | .00004 | .00000 | .66393 | .00000 | .00000 | .00000 |
| 820 | .00796 | .00078 | .02159 | .13405 | .00000 | .00000 | .06425 | .10785 | .00000 | .00003 | .00000 | .66350 | .00000 | .00000 | .00000 |
| 830 | .00795 | .00054 | .02268 | .13312 | .00000 | .00000 | .06406 | .10843 | .00000 | .00003 | .00000 | .66318 | .00000 | .00000 | .00000 |
| 840 | .00795 | .00038 | .02370 | .13221 | .00000 | .00000 | .06368 | .10909 | .00000 | .00003 | .00000 | .66296 | .00000 | .00000 | .00000 |
| 850 | .00795 | .00026 | .02466 | .13133 | .00000 | .00000 | .06317 | .10980 | .00000 | .00002 | .00000 | .66281 | .00000 | .00000 | .00000 |
| 860 | .00795 | .00018 | .02558 | .13046 | .00000 | .00000 | .06256 | .11055 | .00000 | .00002 | .00000 | .66270 | .00000 | .00000 | .00000 |
| 870 | .00795 | .00013 | .02646 | .12962 | .00000 | .00000 | .06189 | .11131 | .00000 | .00002 | .00000 | .66263 | .00000 | .00000 | .00000 |
| 880 | .00795 | .00009 | .02732 | .12879 | .00000 | .00000 | .06118 | .11208 | .00000 | .00002 | .00000 | .66258 | .00000 | .00000 | .00000 |
| 890 | .00795 | .00006 | .02815 | .12797 | .00000 | .00000 | .06045 | .11286 | .00000 | .00002 | .00000 | .66254 | .00000 | .00000 | .00000 |
| 900 | .00795 | .00004 | .02896 | .12717 | .00000 | .00000 | .05971 | .11363 | .00000 | .00001 | .00000 | .66252 | .00000 | .00000 | .00000 |
| 910 | .00795 | .00003 | .02976 | .12639 | .00000 | .00000 | .05897 | .11439 | .00000 | .00001 | .00000 | .66250 | .00000 | .00000 | .00000 |
| 920 | .00795 | .00002 | .03053 | .12562 | .00000 | .00000 | .05823 | .11515 | .00000 | .00001 | .00000 | .66249 | .00000 | .00000 | .00000 |
| 930 | .00795 | .00002 | .03130 | .12486 | .00000 | .00000 | .05749 | .11590 | .00000 | .00001 | .00000 | .66248 | .00000 | .00000 | .00000 |
| 940 | .00795 | .00001 | .03204 | .12411 | .00000 | .00000 | .05676 | .11664 | .00000 | .00001 | .00000 | .66248 | .00000 | .00000 | .00000 |
| 950 | .00795 | .00001 | .03278 | .12338 | .00000 | .00000 | .05604 | .11737 | .00000 | .00001 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 960 | .00795 | .00001 | .03350 | .12266 | .00000 | .00000 | .05533 | .11808 | .00000 | .00001 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 970 | .00795 | .00000 | .03421 | .12196 | .00000 | .00000 | .05463 | .11879 | .00000 | .00001 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 980 | .00795 | .00000 | .03490 | .12126 | .00000 | .00000 | .05394 | .11948 | .00000 | .00001 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 990 | .00795 | .00000 | .03558 | .12058 | .00000 | .00000 | .05326 | .12016 | .00000 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |

TABLE 22.3D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00795 | .00000 | .03625 | .11991 | .00000 | .00000 | .05259 | .12083 | .00000 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1050 | .00795 | .00000 | .03941 | .11676 | .00000 | .00000 | .04944 | .12398 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1100 | .00795 | .00000 | .04227 | .11390 | .00000 | .00000 | .04659 | .12684 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1150 | .00795 | .00000 | .04485 | .11131 | .00000 | .00000 | .04401 | .12942 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1200 | .00795 | .00000 | .04718 | .10898 | .00000 | .00000 | .04168 | .13175 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1250 | .00795 | .00000 | .04928 | .10688 | .00000 | .00000 | .03957 | .13386 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1300 | .00795 | .00000 | .05118 | .10498 | .00000 | .00000 | .03767 | .13576 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1350 | .00795 | .00000 | .05290 | .10326 | .00000 | .00000 | .03596 | .13747 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1400 | .00795 | .00000 | .05445 | .10171 | .00000 | .00000 | .03441 | .13902 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1450 | .00795 | .00000 | .05586 | .10030 | .00000 | .00000 | .03300 | .14043 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1500 | .00795 | .00000 | .05714 | .09902 | .00000 | .00000 | .03172 | .14171 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1550 | .00795 | .00000 | .05830 | .09786 | .00001 | .00000 | .03055 | .14287 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1600 | .00795 | .00000 | .05936 | .09680 | .00001 | .00000 | .02949 | .14393 | .00000 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1650 | .00795 | .00000 | .06033 | .09583 | .00002 | .00000 | .02852 | .14490 | .00000 | .00000 | .00000 | .66245 | .00000 | .00000 | .00000 |
| 1700 | .00795 | .00000 | .06122 | .09494 | .00002 | .00000 | .02763 | .14578 | .00000 | .00000 | .00000 | .66245 | .00000 | .00001 | .00000 |
| 1750 | .00795 | .00000 | .06203 | .09413 | .00004 | .00000 | .02681 | .14659 | .00000 | .00000 | .00000 | .66244 | .00000 | .00001 | .00000 |
| 1800 | .00794 | .00000 | .06278 | .09338 | .00006 | .00000 | .02606 | .14732 | .00000 | .00000 | .00000 | .66243 | .00000 | .00002 | .00000 |
| 1850 | .00794 | .00000 | .06347 | .09268 | .00009 | .00000 | .02536 | .14799 | .00000 | .00000 | .00001 | .66242 | .00000 | .00004 | .00000 |
| 1900 | .00794 | .00000 | .06411 | .09204 | .00012 | .00000 | .02472 | .14860 | .00000 | .00000 | .00001 | .66239 | .00000 | .00006 | .00000 |
| 1950 | .00794 | .00000 | .06470 | .09144 | .00018 | .00000 | .02413 | .14914 | .00000 | .00000 | .00002 | .66235 | .00000 | .00010 | .00000 |
| 2000 | .00794 | .00000 | .06525 | .09088 | .00025 | .00000 | .02358 | .14961 | .00000 | .00000 | .00003 | .66230 | .00000 | .00016 | .00000 |
| 2050 | .00794 | .00000 | .06578 | .09034 | .00034 | .00000 | .02307 | .15000 | .00000 | .00000 | .00005 | .66222 | .00000 | .00025 | .00001 |
| 2100 | .00794 | .00000 | .06628 | .08981 | .00047 | .00000 | .02261 | .15032 | .00000 | .00000 | .00008 | .66210 | .00001 | .00038 | .00002 |
| 2150 | .00794 | .00000 | .06678 | .08927 | .00062 | .00000 | .02219 | .15053 | .00000 | .00000 | .00013 | .66193 | .00001 | .00056 | .00003 |
| 2200 | .00794 | .00000 | .06731 | .08870 | .00083 | .00000 | .02181 | .15063 | .00000 | .00000 | .00021 | .66169 | .00002 | .00081 | .00006 |
| 2250 | .00793 | .00000 | .06788 | .08806 | .00108 | .00000 | .02149 | .15057 | .00000 | .00000 | .00032 | .66135 | .00004 | .00116 | .00012 |
| 2300 | .00793 | .00000 | .06854 | .08731 | .00140 | .00000 | .02124 | .15032 | .00000 | .00000 | .00048 | .66086 | .00007 | .00163 | .00021 |
| 2350 | .00792 | .00000 | .06934 | .08637 | .00180 | .00000 | .02108 | .14982 | .00000 | .00000 | .00071 | .66019 | .00013 | .00225 | .00038 |
| 2400 | .00791 | .00000 | .07036 | .08517 | .00229 | .00000 | .02104 | .14902 | .00000 | .00000 | .00102 | .65927 | .00022 | .00305 | .00064 |
| 2450 | .00790 | .00000 | .07168 | .08361 | .00290 | .00000 | .02114 | .14784 | .00000 | .00000 | .00142 | .65804 | .00036 | .00405 | .00105 |
| 2500 | .00788 | .00000 | .07336 | .08161 | .00366 | .00000 | .02143 | .14619 | .00000 | .00000 | .00194 | .65641 | .00058 | .00528 | .00164 |
| 2550 | .00786 | .00000 | .07546 | .07909 | .00459 | .00000 | .02194 | .14403 | .00000 | .00000 | .00258 | .65434 | .00091 | .00675 | .00244 |
| 2600 | .00784 | .00000 | .07800 | .07603 | .00575 | .00000 | .02267 | .14129 | .00000 | .00000 | .00334 | .65177 | .00137 | .00847 | .00348 |
| 2650 | .00781 | .00000 | .08095 | .07246 | .00716 | .00000 | .02365 | .13794 | .00000 | .00000 | .00420 | .64868 | .00199 | .01041 | .00474 |
| 2700 | .00777 | .00000 | .08424 | .06843 | .00890 | .00000 | .02485 | .13397 | .00000 | .00000 | .00517 | .64508 | .00282 | .01257 | .00619 |
| 2750 | .00772 | .00000 | .08778 | .06405 | .01102 | .00000 | .02626 | .12939 | .00000 | .00000 | .00621 | .64096 | .00390 | .01491 | .00779 |
| 2800 | .00768 | .00000 | .09145 | .05942 | .01357 | .00000 | .02784 | .12421 | .00000 | .00000 | .00732 | .63635 | .00525 | .01741 | .00947 |
| 2850 | .00762 | .00000 | .09515 | .05466 | .01663 | .00001 | .02957 | .11847 | .00000 | .00000 | .00848 | .63127 | .00693 | .02003 | .01118 |
| 2900 | .00756 | .00000 | .09877 | .04988 | .02024 | .00001 | .03139 | .11221 | .00001 | .00000 | .00967 | .62574 | .00895 | .02271 | .01286 |
| 2950 | .00750 | .00000 | .10222 | .04517 | .02449 | .00001 | .03325 | .10549 | .00001 | .00000 | .01087 | .61979 | .01137 | .02540 | .01445 |
| 3000 | .00743 | .00000 | .10542 | .04061 | .02940 | .00001 | .03509 | .09836 | .00001 | .00000 | .01206 | .61345 | .01420 | .02804 | .01591 |

TABLE 22.4D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 210 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 220 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 230 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 240 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 250 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 260 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 270 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 280 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 290 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 298 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 300 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 310 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 320 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 330 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 340 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00001 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 350 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00001 | .13499 | .00001 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 360 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00001 | .13498 | .00001 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 370 | .00831 | .02324 | .00000 | .14019 | .00000 | .00000 | .00002 | .13498 | .00001 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 380 | .00831 | .02323 | .00000 | .14019 | .00000 | .00000 | .00003 | .13497 | .00002 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 390 | .00831 | .02323 | .00000 | .14019 | .00000 | .00000 | .00004 | .13496 | .00002 | .00000 | .69324 | .00000 | .00000 | .00000 |
| 400 | .00831 | .02322 | .00000 | .14020 | .00000 | .00000 | .00006 | .13495 | .00002 | .00000 | .69323 | .00000 | .00000 | .00000 |
| 410 | .00831 | .02322 | .00000 | .14020 | .00000 | .00000 | .00008 | .13494 | .00002 | .00000 | .69323 | .00000 | .00000 | .00000 |
| 420 | .00831 | .02321 | .00000 | .14021 | .00000 | .00000 | .00011 | .13492 | .00003 | .00000 | .69322 | .00000 | .00000 | .00000 |
| 430 | .00831 | .02320 | .00000 | .14021 | .00000 | .00000 | .00014 | .13490 | .00003 | .00000 | .69320 | .00000 | .00000 | .00000 |
| 440 | .00831 | .02319 | .00000 | .14022 | .00000 | .00000 | .00018 | .13487 | .00003 | .00000 | .69319 | .00000 | .00000 | .00000 |
| 450 | .00831 | .02317 | .00000 | .14023 | .00000 | .00000 | .00024 | .13484 | .00004 | .00000 | .69317 | .00000 | .00000 | .00000 |
| 460 | .00831 | .02315 | .00000 | .14025 | .00000 | .00000 | .00031 | .13480 | .00004 | .00000 | .69314 | .00000 | .00000 | .00000 |
| 470 | .00831 | .02313 | .00000 | .14026 | .00000 | .00000 | .00039 | .13475 | .00004 | .00000 | .69311 | .00000 | .00000 | .00000 |
| 480 | .00831 | .02310 | .00000 | .14028 | .00000 | .00000 | .00049 | .13469 | .00005 | .00000 | .69307 | .00000 | .00000 | .00000 |
| 490 | .00831 | .02307 | .00000 | .14031 | .00000 | .00000 | .00062 | .13461 | .00005 | .00000 | .69303 | .00000 | .00000 | .00000 |
| 500 | .00831 | .02303 | .00001 | .14033 | .00000 | .00000 | .00076 | .13453 | .00006 | .00000 | .69298 | .00000 | .00000 | .00000 |
| 510 | .00831 | .02298 | .00001 | .14036 | .00000 | .00000 | .00094 | .13443 | .00006 | .00000 | .69291 | .00000 | .00000 | .00000 |
| 520 | .00831 | .02292 | .00001 | .14040 | .00000 | .00000 | .00114 | .13431 | .00006 | .00000 | .69284 | .00000 | .00000 | .00000 |
| 530 | .00831 | .02286 | .00002 | .14044 | .00000 | .00000 | .00138 | .13417 | .00007 | .00000 | .69275 | .00000 | .00000 | .00000 |
| 540 | .00831 | .02278 | .00003 | .14049 | .00000 | .00000 | .00166 | .13401 | .00007 | .00000 | .69265 | .00000 | .00000 | .00000 |
| 550 | .00831 | .02269 | .00004 | .14054 | .00000 | .00000 | .00198 | .13383 | .00008 | .00000 | .69254 | .00000 | .00000 | .00000 |
| 560 | .00830 | .02259 | .00005 | .14059 | .00000 | .00000 | .00235 | .13363 | .00008 | .00000 | .69240 | .00000 | .00000 | .00000 |
| 570 | .00830 | .02247 | .00007 | .14066 | .00000 | .00000 | .00278 | .13339 | .00009 | .00000 | .69225 | .00000 | .00000 | .00000 |
| 580 | .00830 | .02234 | .00009 | .14072 | .00000 | .00000 | .00326 | .13313 | .00009 | .00000 | .69207 | .00000 | .00000 | .00000 |
| 590 | .00830 | .02219 | .00012 | .14080 | .00000 | .00000 | .00380 | .13283 | .00010 | .00000 | .69187 | .00000 | .00000 | .00000 |

TABLE 22.4D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00830 | .02201 | .00017 | .14088 | .00000 | .00000 | .00440 | .13250 | .00010 | .00000 | .69164 | .00000 | .00000 | .00000 |
| 610 | .00829 | .02182 | .00022 | .14096 | .00000 | .00000 | .00508 | .13213 | .00011 | .00000 | .69139 | .00000 | .00000 | .00000 |
| 620 | .00829 | .02160 | .00028 | .14104 | .00000 | .00000 | .00584 | .13173 | .00011 | .00000 | .69110 | .00000 | .00000 | .00000 |
| 630 | .00829 | .02136 | .00037 | .14113 | .00000 | .00000 | .00668 | .13128 | .00012 | .00000 | .69078 | .00000 | .00000 | .00000 |
| 640 | .00828 | .02109 | .00047 | .14121 | .00000 | .00000 | .00760 | .13080 | .00012 | .00000 | .69042 | .00000 | .00000 | .00000 |
| 650 | .00828 | .02079 | .00060 | .14129 | .00000 | .00000 | .00861 | .13028 | .00013 | .00000 | .69003 | .00000 | .00000 | .00000 |
| 660 | .00827 | .02046 | .00075 | .14136 | .00000 | .00000 | .00972 | .12972 | .00013 | .00000 | .68959 | .00000 | .00000 | .00000 |
| 670 | .00827 | .02010 | .00094 | .14142 | .00000 | .00000 | .01092 | .12912 | .00013 | .00000 | .68911 | .00000 | .00000 | .00000 |
| 680 | .00826 | .01969 | .00118 | .14147 | .00000 | .00000 | .01221 | .12848 | .00014 | .00000 | .68857 | .00000 | .00000 | .00000 |
| 690 | .00825 | .01925 | .00145 | .14149 | .00000 | .00000 | .01361 | .12780 | .00014 | .00000 | .68799 | .00000 | .00000 | .00000 |
| 700 | .00824 | .01877 | .00178 | .14149 | .00000 | .00000 | .01511 | .12709 | .00015 | .00000 | .68736 | .00000 | .00000 | .00000 |
| 710 | .00824 | .01825 | .00217 | .14146 | .00000 | .00000 | .01672 | .12635 | .00015 | .00000 | .68667 | .00000 | .00000 | .00000 |
| 720 | .00823 | .01768 | .00263 | .14140 | .00000 | .00000 | .01842 | .12558 | .00015 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 730 | .00822 | .01707 | .00316 | .14128 | .00000 | .00000 | .02022 | .12478 | .00016 | .00000 | .68511 | .00000 | .00000 | .00000 |
| 740 | .00821 | .01641 | .00378 | .14112 | .00000 | .00000 | .02211 | .12397 | .00016 | .00000 | .68423 | .00000 | .00000 | .00000 |
| 750 | .00820 | .01571 | .00449 | .14090 | .00000 | .00000 | .02410 | .12315 | .00016 | .00000 | .68330 | .00000 | .00000 | .00000 |
| 760 | .00818 | .01496 | .00530 | .14060 | .00000 | .00000 | .02616 | .12233 | .00016 | .00000 | .68230 | .00000 | .00000 | .00000 |
| 770 | .00817 | .01416 | .00621 | .14024 | .00000 | .00000 | .02830 | .12151 | .00016 | .00000 | .68124 | .00000 | .00000 | .00000 |
| 780 | .00816 | .01331 | .00724 | .13980 | .00000 | .00000 | .03050 | .12070 | .00016 | .00000 | .68013 | .00000 | .00000 | .00000 |
| 790 | .00814 | .01243 | .00837 | .13927 | .00000 | .00000 | .03274 | .11992 | .00016 | .00000 | .67896 | .00000 | .00000 | .00000 |
| 800 | .00813 | .01151 | .00962 | .13865 | .00000 | .00000 | .03502 | .11917 | .00016 | .00000 | .67773 | .00000 | .00000 | .00000 |
| 810 | .00811 | .01056 | .01098 | .13795 | .00000 | .00000 | .03730 | .11847 | .00016 | .00000 | .67647 | .00000 | .00000 | .00000 |
| 820 | .00810 | .00958 | .01245 | .13715 | .00000 | .00000 | .03956 | .11782 | .00016 | .00000 | .67518 | .00000 | .00000 | .00000 |
| 830 | .00808 | .00860 | .01400 | .13628 | .00000 | .00000 | .04177 | .11723 | .00016 | .00000 | .67388 | .00000 | .00000 | .00000 |
| 840 | .00807 | .00761 | .01563 | .13532 | .00000 | .00000 | .04391 | .11673 | .00016 | .00000 | .67257 | .00000 | .00000 | .00000 |
| 850 | .00805 | .00665 | .01731 | .13431 | .00000 | .00000 | .04593 | .11631 | .00015 | .00000 | .67129 | .00000 | .00000 | .00000 |
| 860 | .00804 | .00571 | .01902 | .13324 | .00000 | .00000 | .04780 | .11600 | .00015 | .00000 | .67005 | .00000 | .00000 | .00000 |
| 870 | .00802 | .00483 | .02073 | .13213 | .00000 | .00000 | .04948 | .11579 | .00014 | .00000 | .66888 | .00000 | .00000 | .00000 |
| 880 | .00801 | .00401 | .02241 | .13101 | .00000 | .00000 | .05093 | .11569 | .00014 | .00000 | .66779 | .00000 | .00000 | .00000 |
| 890 | .00800 | .00327 | .02404 | .12990 | .00000 | .00000 | .05215 | .11571 | .00013 | .00000 | .66681 | .00000 | .00000 | .00000 |
| 900 | .00799 | .00262 | .02558 | .12880 | .00000 | .00000 | .05310 | .11584 | .00012 | .00000 | .66595 | .00000 | .00000 | .00000 |
| 910 | .00798 | .00206 | .02703 | .12774 | .00000 | .00000 | .05378 | .11608 | .00012 | .00000 | .66521 | .00000 | .00000 | .00000 |
| 920 | .00797 | .00160 | .02837 | .12671 | .00000 | .00000 | .05422 | .11642 | .00011 | .00000 | .66460 | .00000 | .00000 | .00000 |
| 930 | .00797 | .00123 | .02960 | .12574 | .00000 | .00000 | .05443 | .11684 | .00010 | .00000 | .66410 | .00000 | .00000 | .00000 |
| 940 | .00796 | .00093 | .03072 | .12481 | .00000 | .00000 | .05444 | .11733 | .00009 | .00000 | .66371 | .00000 | .00000 | .00000 |
| 950 | .00796 | .00070 | .03176 | .12393 | .00000 | .00000 | .05429 | .11786 | .00009 | .00000 | .66341 | .00000 | .00000 | .00000 |
| 960 | .00795 | .00053 | .03272 | .12310 | .00000 | .00000 | .05401 | .11844 | .00008 | .00000 | .66317 | .00000 | .00000 | .00000 |
| 970 | .00795 | .00039 | .03361 | .12230 | .00000 | .00000 | .05364 | .11904 | .00007 | .00000 | .66299 | .00000 | .00000 | .00000 |
| 980 | .00795 | .00029 | .03444 | .12153 | .00000 | .00000 | .05319 | .11966 | .00007 | .00000 | .66286 | .00000 | .00000 | .00000 |
| 990 | .00795 | .00022 | .03523 | .12079 | .00000 | .00000 | .05270 | .12029 | .00006 | .00000 | .66276 | .00000 | .00000 | .00000 |

TABLE 22.4D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO \square 1.700; F/A = 0.084530; EQUIV. RATIO \square 1.250; CHEM. EQUIV. RATIO \square 1.2239; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00795 | .00017 | .03598 | .12008 | .00000 | .00000 | .05217 | .12091 | .00006 | .00000 | .66269 | .00000 | .00000 | .00000 |
| 1050 | .00795 | .00004 | .03933 | .11682 | .00000 | .00000 | .04932 | .12399 | .00004 | .00000 | .66252 | .00000 | .00000 | .00000 |
| 1100 | .00795 | .00001 | .04224 | .11392 | .00000 | .00000 | .04654 | .12683 | .00003 | .00000 | .66248 | .00000 | .00000 | .00000 |
| 1150 | .00795 | .00000 | .04484 | .11133 | .00000 | .00000 | .04398 | .12942 | .00002 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 1200 | .00795 | .00000 | .04717 | .10899 | .00000 | .00000 | .04166 | .13175 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1250 | .00795 | .00000 | .04928 | .10689 | .00000 | .00000 | .03956 | .13385 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1300 | .00795 | .00000 | .05118 | .10499 | .00000 | .00000 | .03767 | .13575 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1350 | .00795 | .00000 | .05290 | .10327 | .00000 | .00000 | .03595 | .13747 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1400 | .00795 | .00000 | .05445 | .10171 | .00000 | .00000 | .03440 | .13902 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1450 | .00795 | .00000 | .05586 | .10031 | .00000 | .00000 | .03300 | .14043 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1500 | .00795 | .00000 | .05714 | .09903 | .00000 | .00000 | .03172 | .14171 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1550 | .00795 | .00000 | .05830 | .09786 | .00000 | .00000 | .03055 | .14287 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1600 | .00795 | .00000 | .05936 | .09680 | .00000 | .00000 | .02949 | .14394 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1650 | .00795 | .00000 | .06033 | .09583 | .00000 | .00000 | .02852 | .14490 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1700 | .00795 | .00000 | .06122 | .09494 | .00001 | .00000 | .02763 | .14579 | .00000 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1750 | .00795 | .00000 | .06204 | .09413 | .00001 | .00000 | .02682 | .14660 | .00000 | .00000 | .66245 | .00000 | .00000 | .00000 |
| 1800 | .00795 | .00000 | .06279 | .09338 | .00002 | .00000 | .02607 | .14735 | .00000 | .00000 | .66245 | .00000 | .00001 | .00000 |
| 1850 | .00795 | .00000 | .06348 | .09268 | .00003 | .00000 | .02537 | .14803 | .00000 | .00000 | .66245 | .00000 | .00001 | .00000 |
| 1900 | .00794 | .00000 | .06411 | .09205 | .00004 | .00000 | .02474 | .14866 | .00000 | .00000 | .66244 | .00000 | .00002 | .00000 |
| 1950 | .00794 | .00000 | .06470 | .09145 | .00006 | .00000 | .02414 | .14923 | .00000 | .00001 | .66243 | .00000 | .00003 | .00000 |
| 2000 | .00794 | .00000 | .06525 | .09090 | .00008 | .00000 | .02360 | .14976 | .00000 | .00001 | .66241 | .00000 | .00005 | .00000 |
| 2050 | .00794 | .00000 | .06576 | .09039 | .00011 | .00000 | .02309 | .15023 | .00000 | .00002 | .66238 | .00000 | .00008 | .00000 |
| 2100 | .00794 | .00000 | .06624 | .08990 | .00015 | .00000 | .02262 | .15065 | .00000 | .00003 | .66235 | .00000 | .00012 | .00000 |
| 2150 | .00794 | .00000 | .06669 | .08944 | .00020 | .00000 | .02219 | .15102 | .00000 | .00004 | .66230 | .00000 | .00018 | .00000 |
| 2200 | .00794 | .00000 | .06713 | .08899 | .00026 | .00000 | .02178 | .15133 | .00000 | .00007 | .66223 | .00000 | .00026 | .00001 |
| 2250 | .00794 | .00000 | .06755 | .08855 | .00034 | .00000 | .02141 | .15159 | .00000 | .00010 | .66213 | .00000 | .00037 | .00001 |
| 2300 | .00794 | .00000 | .06798 | .08810 | .00044 | .00000 | .02108 | .15177 | .00000 | .00016 | .66199 | .00001 | .00052 | .00002 |
| 2350 | .00794 | .00000 | .06841 | .08762 | .00057 | .00000 | .02078 | .15186 | .00000 | .00023 | .66181 | .00001 | .00073 | .00004 |
| 2400 | .00794 | .00000 | .06888 | .08711 | .00072 | .00000 | .02052 | .15186 | .00000 | .00034 | .66155 | .00002 | .00100 | .00007 |
| 2450 | .00793 | .00000 | .06940 | .08652 | .00090 | .00000 | .02030 | .15174 | .00000 | .00048 | .66121 | .00004 | .00134 | .00012 |
| 2500 | .00793 | .00000 | .07000 | .08584 | .00112 | .00000 | .02015 | .15147 | .00000 | .00068 | .66076 | .00006 | .00179 | .00020 |
| 2550 | .00792 | .00000 | .07072 | .08501 | .00139 | .00000 | .02006 | .15103 | .00000 | .00094 | .66016 | .00010 | .00234 | .00032 |
| 2600 | .00792 | .00000 | .07159 | .08400 | .00171 | .00000 | .02005 | .15037 | .00000 | .00128 | .65939 | .00016 | .00303 | .00050 |
| 2650 | .00791 | .00000 | .07267 | .08274 | .00209 | .00000 | .02014 | .14947 | .00000 | .00170 | .65840 | .00025 | .00386 | .00077 |
| 2700 | .00789 | .00000 | .07397 | .08120 | .00255 | .00000 | .02035 | .14828 | .00000 | .00223 | .65715 | .00038 | .00486 | .00113 |
| 2750 | .00788 | .00000 | .07555 | .07934 | .00309 | .00000 | .02070 | .14676 | .00000 | .00286 | .65562 | .00056 | .00603 | .00161 |
| 2800 | .00786 | .00000 | .07742 | .07712 | .00374 | .00000 | .02119 | .14489 | .00000 | .00360 | .65378 | .00081 | .00736 | .00223 |
| 2850 | .00784 | .00000 | .07958 | .07455 | .00452 | .00000 | .02183 | .14264 | .00000 | .00444 | .65161 | .00113 | .00887 | .00297 |
| 2900 | .00782 | .00000 | .08200 | .07165 | .00544 | .00001 | .02264 | .14001 | .00000 | .00539 | .64910 | .00155 | .01055 | .00385 |
| 2950 | .00779 | .00000 | .08465 | .06845 | .00652 | .00001 | .02359 | .13698 | .00000 | .00642 | .64627 | .00208 | .01238 | .00484 |
| 3000 | .00776 | .00000 | .08748 | .06501 | .00780 | .00001 | .02470 | .13357 | .00000 | .00753 | .64311 | .00274 | .01435 | .00592 |

TABLE 22.5D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 210 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 220 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 230 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 240 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 250 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 260 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 270 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 280 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00000 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 290 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13500 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 298 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 300 | .00831 | .02325 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 310 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 320 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 330 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 340 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00001 | .00000 | .69326 | .00000 | .00000 | .00000 |
| 350 | .00831 | .02324 | .00000 | .14018 | .00000 | .00000 | .00000 | .13499 | .00002 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 360 | .00831 | .02324 | .00000 | .14019 | .00000 | .00000 | .00001 | .13498 | .00002 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 370 | .00831 | .02324 | .00000 | .14019 | .00000 | .00000 | .00001 | .13498 | .00002 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 380 | .00831 | .02323 | .00000 | .14019 | .00000 | .00000 | .00001 | .13497 | .00003 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 390 | .00831 | .02323 | .00000 | .14019 | .00000 | .00000 | .00002 | .13497 | .00003 | .00000 | .69325 | .00000 | .00000 | .00000 |
| 400 | .00831 | .02323 | .00000 | .14020 | .00000 | .00000 | .00003 | .13496 | .00003 | .00000 | .69324 | .00000 | .00000 | .00000 |
| 410 | .00831 | .02322 | .00000 | .14020 | .00000 | .00000 | .00004 | .13495 | .00004 | .00000 | .69324 | .00000 | .00000 | .00000 |
| 420 | .00831 | .02322 | .00000 | .14020 | .00000 | .00000 | .00005 | .13494 | .00004 | .00000 | .69323 | .00000 | .00000 | .00000 |
| 430 | .00831 | .02321 | .00000 | .14021 | .00000 | .00000 | .00006 | .13493 | .00005 | .00000 | .69322 | .00000 | .00000 | .00000 |
| 440 | .00831 | .02321 | .00000 | .14021 | .00000 | .00000 | .00008 | .13492 | .00005 | .00000 | .69322 | .00000 | .00000 | .00000 |
| 450 | .00831 | .02320 | .00000 | .14022 | .00000 | .00000 | .00011 | .13490 | .00006 | .00000 | .69321 | .00000 | .00000 | .00000 |
| 460 | .00831 | .02319 | .00000 | .14023 | .00000 | .00000 | .00014 | .13488 | .00006 | .00000 | .69319 | .00000 | .00000 | .00000 |
| 470 | .00831 | .02318 | .00000 | .14024 | .00000 | .00000 | .00018 | .13485 | .00007 | .00000 | .69318 | .00000 | .00000 | .00000 |
| 480 | .00831 | .02316 | .00000 | .14025 | .00000 | .00000 | .00022 | .13482 | .00007 | .00000 | .69316 | .00000 | .00000 | .00000 |
| 490 | .00831 | .02315 | .00000 | .14026 | .00000 | .00000 | .00028 | .13479 | .00008 | .00000 | .69314 | .00000 | .00000 | .00000 |
| 500 | .00831 | .02313 | .00000 | .14027 | .00000 | .00000 | .00034 | .13475 | .00008 | .00000 | .69311 | .00000 | .00000 | .00000 |
| 510 | .00831 | .02310 | .00000 | .14029 | .00000 | .00000 | .00042 | .13470 | .00009 | .00000 | .69308 | .00000 | .00000 | .00000 |
| 520 | .00831 | .02308 | .00001 | .14030 | .00000 | .00000 | .00051 | .13464 | .00010 | .00000 | .69305 | .00000 | .00000 | .00000 |
| 530 | .00831 | .02304 | .00001 | .14032 | .00000 | .00000 | .00062 | .13458 | .00010 | .00000 | .69301 | .00000 | .00000 | .00000 |
| 540 | .00831 | .02301 | .00001 | .14035 | .00000 | .00000 | .00075 | .13450 | .00011 | .00000 | .69296 | .00000 | .00000 | .00000 |
| 550 | .00831 | .02297 | .00002 | .14037 | .00000 | .00000 | .00089 | .13442 | .00012 | .00000 | .69291 | .00000 | .00000 | .00000 |
| 560 | .00831 | .02292 | .00002 | .14040 | .00000 | .00000 | .00106 | .13432 | .00013 | .00000 | .69285 | .00000 | .00000 | .00000 |
| 570 | .00831 | .02286 | .00003 | .14043 | .00000 | .00000 | .00125 | .13421 | .00013 | .00000 | .69277 | .00000 | .00000 | .00000 |
| 580 | .00831 | .02280 | .00004 | .14046 | .00000 | .00000 | .00147 | .13408 | .00014 | .00000 | .69269 | .00000 | .00000 | .00000 |
| 590 | .00831 | .02273 | .00006 | .14050 | .00000 | .00000 | .00172 | .13394 | .00015 | .00000 | .69260 | .00000 | .00000 | .00000 |

TABLE 22.5D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00831 | .02265 | .00007 | .14054 | .00000 | .00000 | .00199 | .13379 | .00016 | .00000 | .69249 | .00000 | .00000 | .00000 |
| 610 | .00830 | .02256 | .00010 | .14058 | .00000 | .00000 | .00231 | .13361 | .00016 | .00000 | .69237 | .00000 | .00000 | .00000 |
| 620 | .00830 | .02246 | .00013 | .14062 | .00000 | .00000 | .00266 | .13342 | .00017 | .00000 | .69224 | .00000 | .00000 | .00000 |
| 630 | .00830 | .02234 | .00016 | .14066 | .00000 | .00000 | .00304 | .13321 | .00018 | .00000 | .69209 | .00000 | .00000 | .00000 |
| 640 | .00830 | .02221 | .00021 | .14071 | .00000 | .00000 | .00347 | .13298 | .00019 | .00000 | .69192 | .00000 | .00000 | .00000 |
| 650 | .00830 | .02207 | .00027 | .14075 | .00000 | .00000 | .00395 | .13273 | .00020 | .00000 | .69174 | .00000 | .00000 | .00000 |
| 660 | .00830 | .02191 | .00034 | .14079 | .00000 | .00000 | .00447 | .13246 | .00020 | .00000 | .69153 | .00000 | .00000 | .00000 |
| 670 | .00829 | .02174 | .00042 | .14082 | .00000 | .00000 | .00504 | .13217 | .00021 | .00000 | .69130 | .00000 | .00000 | .00000 |
| 680 | .00829 | .02155 | .00053 | .14085 | .00000 | .00000 | .00567 | .13186 | .00022 | .00000 | .69104 | .00000 | .00000 | .00000 |
| 690 | .00829 | .02133 | .00065 | .14087 | .00000 | .00000 | .00634 | .13152 | .00023 | .00000 | .69076 | .00000 | .00000 | .00000 |
| 700 | .00828 | .02110 | .00080 | .14089 | .00000 | .00000 | .00708 | .13116 | .00023 | .00000 | .69045 | .00000 | .00000 | .00000 |
| 710 | .00828 | .02084 | .00098 | .14089 | .00000 | .00000 | .00787 | .13079 | .00024 | .00000 | .69011 | .00000 | .00000 | .00000 |
| 720 | .00827 | .02056 | .00119 | .14087 | .00000 | .00000 | .00872 | .13039 | .00025 | .00000 | .68974 | .00000 | .00000 | .00000 |
| 730 | .00827 | .02025 | .00144 | .14083 | .00000 | .00000 | .00964 | .12997 | .00026 | .00000 | .68934 | .00000 | .00000 | .00000 |
| 740 | .00826 | .01992 | .00173 | .14077 | .00000 | .00000 | .01062 | .12954 | .00026 | .00000 | .68889 | .00000 | .00000 | .00000 |
| 750 | .00826 | .01956 | .00207 | .14069 | .00000 | .00000 | .01166 | .12909 | .00027 | .00000 | .68841 | .00000 | .00000 | .00000 |
| 760 | .00825 | .01916 | .00246 | .14057 | .00000 | .00000 | .01276 | .12862 | .00028 | .00000 | .68789 | .00000 | .00000 | .00000 |
| 770 | .00825 | .01874 | .00290 | .14042 | .00000 | .00000 | .01394 | .12814 | .00028 | .00000 | .68733 | .00000 | .00000 | .00000 |
| 780 | .00824 | .01828 | .00341 | .14022 | .00000 | .00000 | .01517 | .12766 | .00029 | .00000 | .68672 | .00000 | .00000 | .00000 |
| 790 | .00823 | .01779 | .00399 | .13999 | .00000 | .00000 | .01647 | .12717 | .00029 | .00000 | .68607 | .00000 | .00000 | .00000 |
| 800 | .00822 | .01726 | .00465 | .13970 | .00000 | .00000 | .01783 | .12667 | .00030 | .00000 | .68537 | .00000 | .00000 | .00000 |
| 810 | .00821 | .01669 | .00538 | .13935 | .00000 | .00000 | .01925 | .12618 | .00030 | .00000 | .68462 | .00000 | .00000 | .00000 |
| 820 | .00820 | .01609 | .00619 | .13895 | .00000 | .00000 | .02073 | .12569 | .00031 | .00000 | .68383 | .00000 | .00000 | .00000 |
| 830 | .00819 | .01545 | .00710 | .13849 | .00000 | .00000 | .02226 | .12521 | .00031 | .00000 | .68298 | .00000 | .00000 | .00000 |
| 840 | .00818 | .01478 | .00810 | .13796 | .00000 | .00000 | .02384 | .12475 | .00031 | .00000 | .68209 | .00000 | .00000 | .00000 |
| 850 | .00817 | .01407 | .00919 | .13735 | .00000 | .00000 | .02547 | .12429 | .00032 | .00000 | .68115 | .00000 | .00000 | .00000 |
| 860 | .00816 | .01332 | .01037 | .13668 | .00000 | .00000 | .02712 | .12387 | .00032 | .00000 | .68016 | .00000 | .00000 | .00000 |
| 870 | .00815 | .01255 | .01165 | .13594 | .00000 | .00000 | .02881 | .12346 | .00032 | .00000 | .67914 | .00000 | .00000 | .00000 |
| 880 | .00813 | .01174 | .01301 | .13512 | .00000 | .00000 | .03050 | .12309 | .00032 | .00000 | .67807 | .00000 | .00000 | .00000 |
| 890 | .00812 | .01092 | .01446 | .13424 | .00000 | .00000 | .03221 | .12275 | .00032 | .00000 | .67698 | .00000 | .00000 | .00000 |
| 900 | .00811 | .01008 | .01599 | .13329 | .00000 | .00000 | .03390 | .12245 | .00032 | .00000 | .67586 | .00000 | .00000 | .00000 |
| 910 | .00809 | .00922 | .01759 | .13228 | .00000 | .00000 | .03557 | .12219 | .00031 | .00000 | .67473 | .00000 | .00000 | .00000 |
| 920 | .00808 | .00837 | .01923 | .13122 | .00000 | .00000 | .03720 | .12199 | .00031 | .00000 | .67360 | .00000 | .00000 | .00000 |
| 930 | .00807 | .00752 | .02092 | .13012 | .00000 | .00000 | .03876 | .12183 | .00030 | .00000 | .67247 | .00000 | .00000 | .00000 |
| 940 | .00805 | .00669 | .02263 | .12898 | .00000 | .00000 | .04025 | .12173 | .00030 | .00000 | .67137 | .00000 | .00000 | .00000 |
| 950 | .00804 | .00588 | .02433 | .12783 | .00000 | .00000 | .04164 | .12169 | .00029 | .00000 | .67030 | .00000 | .00000 | .00000 |
| 960 | .00803 | .00511 | .02602 | .12667 | .00000 | .00000 | .04290 | .12171 | .00028 | .00000 | .66928 | .00000 | .00000 | .00000 |
| 970 | .00802 | .00439 | .02767 | .12552 | .00000 | .00000 | .04403 | .12179 | .00027 | .00000 | .66832 | .00000 | .00000 | .00000 |
| 980 | .00801 | .00372 | .02926 | .12438 | .00000 | .00000 | .04500 | .12193 | .00026 | .00000 | .66743 | .00000 | .00000 | .00000 |
| 990 | .00800 | .00312 | .03078 | .12328 | .00000 | .00000 | .04581 | .12213 | .00025 | .00000 | .66663 | .00000 | .00000 | .00000 |

TABLE 22.5D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00799 | .00258 | .03221 | .12222 | .00000 | .00000 | .04645 | .12240 | .00024 | .00000 | .66592 | .00000 | .00000 | .00000 |
| 1050 | .00796 | .00087 | .03792 | .11768 | .00000 | .00000 | .04736 | .12439 | .00018 | .00000 | .66364 | .00000 | .00000 | .00000 |
| 1100 | .00795 | .00026 | .04176 | .11424 | .00000 | .00000 | .04591 | .12691 | .00013 | .00000 | .66283 | .00000 | .00000 | .00000 |
| 1150 | .00795 | .00008 | .04466 | .11146 | .00000 | .00000 | .04376 | .12942 | .00009 | .00000 | .66258 | .00000 | .00000 | .00000 |
| 1200 | .00795 | .00003 | .04710 | .10906 | .00000 | .00000 | .04157 | .13173 | .00007 | .00000 | .66251 | .00000 | .00000 | .00000 |
| 1250 | .00795 | .00001 | .04924 | .10693 | .00000 | .00000 | .03951 | .13384 | .00005 | .00000 | .66248 | .00000 | .00000 | .00000 |
| 1300 | .00795 | .00000 | .05115 | .10501 | .00000 | .00000 | .03764 | .13574 | .00004 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 1350 | .00795 | .00000 | .05288 | .10329 | .00000 | .00000 | .03593 | .13746 | .00003 | .00000 | .66247 | .00000 | .00000 | .00000 |
| 1400 | .00795 | .00000 | .05444 | .10173 | .00000 | .00000 | .03439 | .13901 | .00002 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1450 | .00795 | .00000 | .05585 | .10032 | .00000 | .00000 | .03298 | .14042 | .00002 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1500 | .00795 | .00000 | .05713 | .09904 | .00000 | .00000 | .03171 | .14170 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1550 | .00795 | .00000 | .05830 | .09787 | .00000 | .00000 | .03055 | .14287 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1600 | .00795 | .00000 | .05936 | .09681 | .00000 | .00000 | .02949 | .14393 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1650 | .00795 | .00000 | .06033 | .09584 | .00000 | .00000 | .02852 | .14490 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1700 | .00795 | .00000 | .06122 | .09495 | .00000 | .00000 | .02763 | .14579 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1750 | .00795 | .00000 | .06203 | .09413 | .00001 | .00000 | .02681 | .14660 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1800 | .00795 | .00000 | .06278 | .09338 | .00001 | .00000 | .02606 | .14735 | .00001 | .00000 | .66246 | .00000 | .00000 | .00000 |
| 1850 | .00795 | .00000 | .06348 | .09269 | .00001 | .00000 | .02537 | .14804 | .00000 | .00000 | .66245 | .00000 | .00001 | .00000 |
| 1900 | .00795 | .00000 | .06411 | .09205 | .00002 | .00000 | .02474 | .14867 | .00000 | .00000 | .66245 | .00000 | .00001 | .00000 |
| 1950 | .00795 | .00000 | .06470 | .09146 | .00003 | .00000 | .02415 | .14926 | .00000 | .00000 | .66245 | .00000 | .00001 | .00000 |
| 2000 | .00794 | .00000 | .06525 | .09091 | .00004 | .00000 | .02360 | .14979 | .00000 | .00000 | .66244 | .00000 | .00002 | .00000 |
| 2050 | .00794 | .00000 | .06576 | .09040 | .00005 | .00000 | .02309 | .15028 | .00000 | .00001 | .66243 | .00000 | .00004 | .00000 |
| 2100 | .00794 | .00000 | .06623 | .08992 | .00007 | .00000 | .02262 | .15073 | .00000 | .00001 | .66241 | .00000 | .00005 | .00000 |
| 2150 | .00794 | .00000 | .06668 | .08947 | .00009 | .00000 | .02219 | .15114 | .00000 | .00002 | .66239 | .00000 | .00008 | .00000 |
| 2200 | .00794 | .00000 | .06709 | .08905 | .00012 | .00000 | .02178 | .15151 | .00000 | .00003 | .66236 | .00000 | .00012 | .00000 |
| 2250 | .00794 | .00000 | .06749 | .08864 | .00015 | .00000 | .02141 | .15183 | .00000 | .00005 | .66231 | .00000 | .00017 | .00000 |
| 2300 | .00794 | .00000 | .06787 | .08825 | .00020 | .00000 | .02106 | .15211 | .00000 | .00007 | .66226 | .00000 | .00023 | .00000 |
| 2350 | .00794 | .00000 | .06825 | .08786 | .00025 | .00000 | .02074 | .15234 | .00000 | .00010 | .66218 | .00000 | .00033 | .00001 |
| 2400 | .00794 | .00000 | .06862 | .08747 | .00032 | .00000 | .02044 | .15252 | .00000 | .00015 | .66207 | .00000 | .00045 | .00001 |
| 2450 | .00794 | .00000 | .06900 | .08706 | .00040 | .00000 | .02018 | .15263 | .00000 | .00022 | .66192 | .00001 | .00061 | .00002 |
| 2500 | .00794 | .00000 | .06940 | .08663 | .00050 | .00000 | .01995 | .15268 | .00000 | .00031 | .66173 | .00001 | .00081 | .00004 |
| 2550 | .00794 | .00000 | .06982 | .08616 | .00062 | .00000 | .01975 | .15264 | .00000 | .00043 | .66148 | .00002 | .00107 | .00007 |
| 2600 | .00793 | .00000 | .07030 | .08563 | .00076 | .00000 | .01959 | .15251 | .00000 | .00059 | .66116 | .00003 | .00139 | .00011 |
| 2650 | .00793 | .00000 | .07085 | .08501 | .00092 | .00000 | .01947 | .15226 | .00000 | .00080 | .66075 | .00005 | .00179 | .00017 |
| 2700 | .00792 | .00000 | .07148 | .08428 | .00111 | .00000 | .01941 | .15188 | .00000 | .00107 | .66022 | .00008 | .00228 | .00026 |
| 2750 | .00792 | .00000 | .07224 | .08341 | .00134 | .00000 | .01941 | .15134 | .00000 | .00141 | .65955 | .00012 | .00287 | .00039 |
| 2800 | .00791 | .00000 | .07313 | .08237 | .00161 | .00000 | .01948 | .15062 | .00000 | .00183 | .65873 | .00018 | .00357 | .00057 |
| 2850 | .00790 | .00000 | .07420 | .08112 | .00192 | .00000 | .01963 | .14970 | .00000 | .00233 | .65772 | .00026 | .00439 | .00081 |
| 2900 | .00789 | .00000 | .07546 | .07965 | .00228 | .00000 | .01988 | .14856 | .00000 | .00293 | .65651 | .00037 | .00534 | .00112 |
| 2950 | .00788 | .00000 | .07693 | .07792 | .00270 | .00000 | .02024 | .14717 | .00000 | .00362 | .65507 | .00052 | .00642 | .00152 |
| 3000 | .00786 | .00000 | .07861 | .07594 | .00319 | .00001 | .02070 | .14552 | .00000 | .00441 | .65340 | .00071 | .00764 | .00200 |

TABLE 22.1E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17331 | .00012 | .00000 | .66246 |
| 220 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17139 | .00204 | .00000 | .66246 |
| 240 | .00795 | .04442 | .00001 | .00000 | .11174 | .00000 | .15188 | .02154 | .00000 | .66247 |
| 260 | .00796 | .04285 | .00083 | .00000 | .11275 | .00000 | .00000 | .17206 | .00000 | .66355 |
| 280 | .00797 | .04183 | .00136 | .00000 | .11340 | .00000 | .00000 | .17118 | .00000 | .66426 |
| 298 | .00798 | .04061 | .00199 | .00000 | .11418 | .00002 | .00000 | .17012 | .00000 | .66510 |
| 300 | .00798 | .04047 | .00207 | .00000 | .11427 | .00002 | .00000 | .17000 | .00000 | .66520 |
| 320 | .00799 | .03879 | .00294 | .00000 | .11536 | .00005 | .00000 | .16852 | .00000 | .66635 |
| 340 | .00801 | .03680 | .00396 | .00000 | .11665 | .00014 | .00000 | .16675 | .00000 | .66770 |
| 360 | .00803 | .03454 | .00508 | .00000 | .11813 | .00034 | .00000 | .16468 | .00000 | .66920 |
| 380 | .00805 | .03205 | .00628 | .00000 | .11979 | .00075 | .00000 | .16230 | .00000 | .67078 |
| 400 | .00806 | .02936 | .00749 | .00000 | .12166 | .00152 | .00000 | .15953 | .00000 | .67238 |
| 420 | .00808 | .02649 | .00864 | .00000 | .12373 | .00286 | .00000 | .15628 | .00000 | .67390 |
| 440 | .00810 | .02344 | .00965 | .00001 | .12608 | .00507 | .00000 | .15240 | .00000 | .67525 |
| 460 | .00811 | .02023 | .01044 | .00002 | .12873 | .00846 | .00000 | .14770 | .00001 | .67629 |
| 480 | .00812 | .01684 | .01091 | .00006 | .13176 | .01340 | .00000 | .14198 | .00001 | .67692 |
| 500 | .00812 | .01325 | .01100 | .00015 | .13521 | .02017 | .00000 | .13507 | .00001 | .67703 |
| 520 | .00811 | .00944 | .01065 | .00033 | .13907 | .02893 | .00000 | .12688 | .00001 | .67657 |
| 540 | .00810 | .00535 | .00989 | .00071 | .14330 | .03963 | .00000 | .11744 | .00001 | .67557 |
| 560 | .00809 | .00091 | .00880 | .00145 | .14776 | .05194 | .00000 | .10693 | .00001 | .67413 |
| 580 | .00804 | .00000 | .00601 | .00255 | .14949 | .06334 | .00000 | .10015 | .00001 | .67042 |
| 600 | .00800 | .00000 | .00327 | .00400 | .14992 | .07235 | .00000 | .09566 | .00001 | .66679 |
| 620 | .00797 | .00000 | .00143 | .00564 | .14954 | .07774 | .00000 | .09332 | .00001 | .66436 |
| 640 | .00795 | .00000 | .00053 | .00727 | .14853 | .07956 | .00000 | .09299 | .00000 | .66316 |
| 660 | .00795 | .00000 | .00018 | .00886 | .14718 | .07930 | .00000 | .09382 | .00000 | .66270 |
| 680 | .00795 | .00000 | .00006 | .01046 | .14567 | .07816 | .00000 | .09516 | .00000 | .66254 |
| 700 | .00795 | .00000 | .00002 | .01209 | .14406 | .07668 | .00000 | .09671 | .00000 | .66249 |
| 720 | .00795 | .00000 | .00001 | .01377 | .14238 | .07505 | .00000 | .09836 | .00000 | .66247 |
| 740 | .00795 | .00000 | .00000 | .01549 | .14067 | .07336 | .00000 | .10007 | .00000 | .66246 |
| 760 | .00795 | .00000 | .00000 | .01723 | .13894 | .07163 | .00000 | .10180 | .00000 | .66246 |
| 780 | .00795 | .00000 | .00000 | .01897 | .13719 | .06988 | .00000 | .10354 | .00000 | .66246 |
| 800 | .00795 | .00000 | .00000 | .02071 | .13545 | .06815 | .00000 | .10528 | .00000 | .66246 |

TABLE 22.2E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17342 | .00000 | .00001 | .00000 | .66246 |
| 220 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17323 | .00000 | .00020 | .00000 | .66246 |
| 240 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17133 | .00000 | .00210 | .00000 | .66246 |
| 260 | .00795 | .04442 | .00001 | .00000 | .11174 | .00000 | .15807 | .00000 | .01535 | .00000 | .66247 |
| 280 | .00795 | .04379 | .00034 | .00000 | .11215 | .00000 | .00000 | .08829 | .08458 | .00000 | .66291 |
| 298 | .00798 | .04061 | .00199 | .00000 | .11418 | .00000 | .00000 | .00000 | .17013 | .00000 | .66510 |
| 300 | .00798 | .04048 | .00207 | .00000 | .11427 | .00001 | .00000 | .00000 | .17001 | .00000 | .66520 |
| 320 | .00799 | .03880 | .00294 | .00000 | .11534 | .00002 | .00000 | .00000 | .16855 | .00000 | .66636 |
| 340 | .00801 | .03683 | .00396 | .00000 | .11661 | .00005 | .00000 | .00000 | .16683 | .00000 | .66771 |
| 360 | .00803 | .03462 | .00510 | .00000 | .11803 | .00011 | .00000 | .00000 | .16489 | .00000 | .66922 |
| 380 | .00805 | .03222 | .00632 | .00000 | .11959 | .00024 | .00000 | .00000 | .16273 | .00000 | .67084 |
| 400 | .00807 | .02968 | .00759 | .00000 | .12127 | .00048 | .00000 | .00000 | .16039 | .00001 | .67252 |
| 420 | .00809 | .02703 | .00886 | .00000 | .12304 | .00092 | .00000 | .00000 | .15786 | .00001 | .67420 |
| 440 | .00811 | .02432 | .01009 | .00000 | .12490 | .00164 | .00000 | .00000 | .15510 | .00001 | .67583 |
| 460 | .00812 | .02157 | .01123 | .00001 | .12687 | .00277 | .00000 | .00000 | .15208 | .00001 | .67734 |
| 480 | .00814 | .01879 | .01223 | .00002 | .12895 | .00448 | .00000 | .00000 | .14871 | .00001 | .67867 |
| 500 | .00815 | .01599 | .01305 | .00005 | .13116 | .00694 | .00000 | .00000 | .14490 | .00002 | .67975 |
| 520 | .00816 | .01318 | .01362 | .00010 | .13352 | .01033 | .00000 | .00000 | .14057 | .00002 | .68050 |
| 540 | .00817 | .01034 | .01390 | .00022 | .13605 | .01482 | .00000 | .00000 | .13562 | .00002 | .68087 |
| 560 | .00817 | .00745 | .01385 | .00044 | .13875 | .02053 | .00000 | .00000 | .12997 | .00002 | .68082 |
| 580 | .00816 | .00446 | .01348 | .00085 | .14159 | .02754 | .00000 | .00000 | .12358 | .00002 | .68032 |
| 600 | .00815 | .00130 | .01278 | .00157 | .14451 | .03580 | .00000 | .00000 | .11647 | .00002 | .67940 |
| 620 | .00812 | .00000 | .01085 | .00267 | .14604 | .04470 | .00000 | .00000 | .11077 | .00002 | .67684 |
| 640 | .00807 | .00000 | .00813 | .00421 | .14636 | .05353 | .00000 | .00000 | .10643 | .00002 | .67324 |
| 660 | .00803 | .00000 | .00547 | .00625 | .14615 | .06166 | .00000 | .00000 | .10270 | .00002 | .66972 |
| 680 | .00800 | .00000 | .00320 | .00862 | .14534 | .06799 | .00000 | .00000 | .10013 | .00002 | .66670 |
| 700 | .00797 | .00000 | .00159 | .01104 | .14403 | .07171 | .00000 | .00000 | .09907 | .00001 | .66457 |
| 720 | .00796 | .00000 | .00070 | .01325 | .14243 | .07292 | .00000 | .00000 | .09934 | .00001 | .66339 |
| 740 | .00795 | .00000 | .00029 | .01525 | .14071 | .07249 | .00000 | .00000 | .10045 | .00001 | .66284 |
| 760 | .00795 | .00000 | .00012 | .01712 | .13896 | .07128 | .00000 | .00000 | .10195 | .00001 | .66262 |
| 780 | .00795 | .00000 | .00005 | .01892 | .13721 | .06974 | .00000 | .00000 | .10360 | .00001 | .66253 |
| 800 | .00795 | .00000 | .00002 | .02069 | .13546 | .06808 | .00000 | .00000 | .10531 | .00000 | .66249 |

TABLE 22.3E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO $\bar{\nu}$ 1.700; F/A = 0.084530; EQUIV. RATIO $\bar{\nu}$ 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17343 | .00000 | .00000 | .00000 | .66246 |
| 220 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17341 | .00000 | .00002 | .00000 | .66246 |
| 240 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17322 | .00000 | .00021 | .00000 | .66246 |
| 260 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17192 | .00000 | .00151 | .00000 | .66246 |
| 280 | .00795 | .04442 | .00000 | .00000 | .11174 | .00000 | .00000 | .16573 | .00770 | .00000 | .66246 |
| 298 | .00795 | .04434 | .00004 | .00000 | .11179 | .00000 | .00000 | .14823 | .02513 | .00000 | .66252 |
| 300 | .00795 | .04432 | .00006 | .00000 | .11181 | .00000 | .00000 | .14520 | .02814 | .00000 | .66254 |
| 320 | .00796 | .04277 | .00087 | .00000 | .11280 | .00000 | .00000 | .08151 | .09049 | .00000 | .66361 |
| 340 | .00801 | .03685 | .00396 | .00000 | .11659 | .00001 | .00000 | .00000 | .16686 | .00000 | .66771 |
| 360 | .00803 | .03465 | .00511 | .00000 | .11800 | .00003 | .00000 | .00000 | .16495 | .00001 | .66923 |
| 380 | .00805 | .03227 | .00634 | .00000 | .11953 | .00008 | .00000 | .00000 | .16287 | .00001 | .67086 |
| 400 | .00807 | .02978 | .00762 | .00000 | .12115 | .00015 | .00000 | .00000 | .16066 | .00001 | .67256 |
| 420 | .00809 | .02720 | .00893 | .00000 | .12282 | .00029 | .00000 | .00000 | .15836 | .00001 | .67430 |
| 440 | .00811 | .02460 | .01023 | .00000 | .12453 | .00052 | .00000 | .00000 | .15597 | .00002 | .67602 |
| 460 | .00813 | .02199 | .01150 | .00000 | .12626 | .00089 | .00000 | .00000 | .15351 | .00002 | .67770 |
| 480 | .00815 | .01942 | .01270 | .00001 | .12801 | .00144 | .00000 | .00000 | .15096 | .00002 | .67929 |
| 500 | .00816 | .01688 | .01381 | .00001 | .12978 | .00226 | .00000 | .00000 | .14830 | .00003 | .68076 |
| 520 | .00818 | .01439 | .01481 | .00003 | .13156 | .00340 | .00000 | .00000 | .14551 | .00003 | .68208 |
| 540 | .00819 | .01196 | .01566 | .00007 | .13337 | .00497 | .00000 | .00000 | .14253 | .00004 | .68321 |
| 560 | .00821 | .00959 | .01634 | .00014 | .13521 | .00704 | .00000 | .00000 | .13933 | .00004 | .68411 |
| 580 | .00821 | .00726 | .01682 | .00026 | .13708 | .00972 | .00000 | .00000 | .13585 | .00005 | .68475 |
| 600 | .00822 | .00496 | .01709 | .00048 | .13898 | .01306 | .00000 | .00000 | .13205 | .00005 | .68511 |
| 620 | .00822 | .00266 | .01713 | .00086 | .14088 | .01715 | .00000 | .00000 | .12789 | .00006 | .68516 |
| 640 | .00821 | .00030 | .01693 | .00146 | .14278 | .02202 | .00000 | .00000 | .12335 | .00006 | .68490 |
| 660 | .00819 | .00000 | .01542 | .00233 | .14324 | .02749 | .00000 | .00000 | .12036 | .00006 | .68291 |
| 680 | .00816 | .00000 | .01352 | .00357 | .14330 | .03351 | .00000 | .00000 | .11748 | .00006 | .68039 |
| 700 | .00813 | .00000 | .01139 | .00528 | .14306 | .03994 | .00000 | .00000 | .11457 | .00006 | .67757 |
| 720 | .00809 | .00000 | .00910 | .00750 | .14241 | .04647 | .00000 | .00000 | .11183 | .00006 | .67453 |
| 740 | .00805 | .00000 | .00678 | .01021 | .14130 | .05266 | .00000 | .00000 | .10949 | .00006 | .67145 |
| 760 | .00802 | .00000 | .00461 | .01324 | .13977 | .05794 | .00000 | .00000 | .10781 | .00005 | .66857 |
| 780 | .00799 | .00000 | .00281 | .01631 | .13793 | .06174 | .00000 | .00000 | .10698 | .00005 | .66619 |
| 800 | .00797 | .00000 | .00154 | .01914 | .13597 | .06378 | .00000 | .00000 | .10705 | .00004 | .66451 |

TABLE 22.4E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A = 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17343 | .00000 | .00000 | .00000 | .66246 |
| 220 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17343 | .00000 | .00000 | .00000 | .66246 |
| 240 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17341 | .00000 | .00002 | .00000 | .66246 |
| 260 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17328 | .00000 | .00015 | .00000 | .66246 |
| 280 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .00000 | .17267 | .00076 | .00000 | .66246 |
| 298 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .00000 | .17099 | .00244 | .00000 | .66246 |
| 300 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .00000 | .17071 | .00272 | .00000 | .66246 |
| 320 | .00795 | .04442 | .00001 | .00000 | .11174 | .00000 | .00000 | .16525 | .00817 | .00000 | .66247 |
| 340 | .00795 | .04430 | .00007 | .00000 | .11182 | .00000 | .00000 | .15197 | .02134 | .00000 | .66255 |
| 360 | .00795 | .04347 | .00050 | .00000 | .11235 | .00000 | .00000 | .12215 | .05045 | .00000 | .66313 |
| 380 | .00800 | .03842 | .00314 | .00000 | .11559 | .00002 | .00000 | .05550 | .11271 | .00001 | .66662 |
| 400 | .00807 | .02980 | .00763 | .00000 | .12111 | .00005 | .00000 | .00000 | .16074 | .00002 | .67258 |
| 420 | .00809 | .02725 | .00895 | .00000 | .12276 | .00009 | .00000 | .00000 | .15851 | .00002 | .67433 |
| 440 | .00811 | .02468 | .01028 | .00000 | .12442 | .00017 | .00000 | .00000 | .15624 | .00003 | .67608 |
| 460 | .00813 | .02213 | .01158 | .00000 | .12608 | .00028 | .00000 | .00000 | .15395 | .00004 | .67781 |
| 480 | .00815 | .01961 | .01285 | .00000 | .12772 | .00046 | .00000 | .00000 | .15167 | .00004 | .67949 |
| 500 | .00817 | .01715 | .01406 | .00000 | .12934 | .00072 | .00000 | .00000 | .14939 | .00005 | .68110 |
| 520 | .00819 | .01477 | .01521 | .00001 | .13093 | .00109 | .00000 | .00000 | .14712 | .00006 | .68262 |
| 540 | .00820 | .01247 | .01627 | .00002 | .13249 | .00160 | .00000 | .00000 | .14483 | .00007 | .68403 |
| 560 | .00822 | .01025 | .01725 | .00004 | .13403 | .00229 | .00000 | .00000 | .14253 | .00008 | .68532 |
| 580 | .00823 | .00811 | .01811 | .00008 | .13553 | .00319 | .00000 | .00000 | .14018 | .00009 | .68647 |
| 600 | .00825 | .00605 | .01887 | .00015 | .13700 | .00434 | .00000 | .00000 | .13777 | .00010 | .68748 |
| 620 | .00826 | .00406 | .01950 | .00027 | .13844 | .00578 | .00000 | .00000 | .13527 | .00011 | .68831 |
| 640 | .00826 | .00213 | .01999 | .00046 | .13985 | .00756 | .00000 | .00000 | .13266 | .00012 | .68897 |
| 660 | .00827 | .00023 | .02034 | .00075 | .14121 | .00971 | .00000 | .00000 | .12992 | .00013 | .68943 |
| 680 | .00826 | .00000 | .01969 | .00118 | .14147 | .01221 | .00000 | .00000 | .12848 | .00014 | .68857 |
| 700 | .00824 | .00000 | .01877 | .00178 | .14149 | .01511 | .00000 | .00000 | .12709 | .00015 | .68736 |
| 720 | .00823 | .00000 | .01768 | .00263 | .14140 | .01842 | .00000 | .00000 | .12558 | .00015 | .68592 |
| 740 | .00821 | .00000 | .01641 | .00378 | .14112 | .02211 | .00000 | .00000 | .12397 | .00016 | .68423 |
| 760 | .00818 | .00000 | .01496 | .00530 | .14060 | .02616 | .00000 | .00000 | .12233 | .00016 | .68230 |
| 780 | .00816 | .00000 | .01331 | .00724 | .13980 | .03050 | .00000 | .00000 | .12070 | .00016 | .68013 |
| 800 | .00813 | .00000 | .01151 | .00962 | .13865 | .03502 | .00000 | .00000 | .11917 | .00016 | .67773 |

TABLE 22.5E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 1.700; F/A = 0.084530; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A = 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17343 | .00000 | .00000 | .00000 | .66246 |
| 220 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17343 | .00000 | .00000 | .00000 | .66246 |
| 240 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17343 | .00000 | .00000 | .00000 | .66246 |
| 260 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .17340 | .00000 | .00003 | .00000 | .66246 |
| 280 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .00000 | .17328 | .00015 | .00000 | .66246 |
| 298 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .00000 | .17294 | .00049 | .00000 | .66246 |
| 300 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .00000 | .17289 | .00054 | .00000 | .66246 |
| 320 | .00795 | .04443 | .00000 | .00000 | .11173 | .00000 | .00000 | .17181 | .00162 | .00000 | .66246 |
| 340 | .00795 | .04442 | .00000 | .00000 | .11174 | .00000 | .00000 | .16925 | .00418 | .00000 | .66246 |
| 360 | .00795 | .04439 | .00002 | .00000 | .11176 | .00000 | .00000 | .16383 | .00957 | .00000 | .66248 |
| 380 | .00795 | .04423 | .00010 | .00000 | .11186 | .00000 | .00000 | .15330 | .01996 | .00000 | .66260 |
| 400 | .00795 | .04352 | .00048 | .00000 | .11232 | .00000 | .00000 | .13398 | .03865 | .00000 | .66309 |
| 420 | .00798 | .04072 | .00193 | .00000 | .11412 | .00002 | .00000 | .09922 | .07099 | .00001 | .66502 |
| 440 | .00806 | .03090 | .00705 | .00000 | .12042 | .00006 | .00000 | .03437 | .12730 | .00003 | .67181 |
| 460 | .00813 | .02216 | .01160 | .00000 | .12604 | .00013 | .00000 | .00000 | .15405 | .00005 | .67784 |
| 480 | .00815 | .01966 | .01288 | .00000 | .12766 | .00021 | .00000 | .00000 | .15184 | .00007 | .67954 |
| 500 | .00817 | .01722 | .01412 | .00000 | .12924 | .00032 | .00000 | .00000 | .14966 | .00008 | .68119 |
| 520 | .00819 | .01486 | .01531 | .00000 | .13078 | .00049 | .00000 | .00000 | .14751 | .00009 | .68276 |
| 540 | .00821 | .01259 | .01643 | .00001 | .13228 | .00072 | .00000 | .00000 | .14541 | .00011 | .68425 |
| 560 | .00822 | .01041 | .01748 | .00002 | .13373 | .00103 | .00000 | .00000 | .14334 | .00012 | .68564 |
| 580 | .00824 | .00832 | .01846 | .00004 | .13514 | .00144 | .00000 | .00000 | .14130 | .00014 | .68694 |
| 600 | .00825 | .00632 | .01935 | .00007 | .13649 | .00196 | .00000 | .00000 | .13927 | .00015 | .68813 |
| 620 | .00827 | .00440 | .02016 | .00012 | .13780 | .00263 | .00000 | .00000 | .13724 | .00017 | .68920 |
| 640 | .00828 | .00256 | .02088 | .00020 | .13907 | .00346 | .00000 | .00000 | .13521 | .00019 | .69016 |
| 660 | .00829 | .00079 | .02151 | .00033 | .14029 | .00446 | .00000 | .00000 | .13315 | .00020 | .69099 |
| 680 | .00829 | .00000 | .02155 | .00053 | .14085 | .00567 | .00000 | .00000 | .13186 | .00022 | .69104 |
| 700 | .00828 | .00000 | .02110 | .00080 | .14089 | .00708 | .00000 | .00000 | .13116 | .00023 | .69045 |
| 720 | .00827 | .00000 | .02056 | .00119 | .14087 | .00872 | .00000 | .00000 | .13039 | .00025 | .68974 |
| 740 | .00826 | .00000 | .01992 | .00173 | .14077 | .01062 | .00000 | .00000 | .12954 | .00026 | .68889 |
| 760 | .00825 | .00000 | .01916 | .00246 | .14057 | .01276 | .00000 | .00000 | .12862 | .00028 | .68789 |
| 780 | .00824 | .00000 | .01828 | .00341 | .14022 | .01517 | .00000 | .00000 | .12766 | .00029 | .68672 |
| 800 | .00822 | .00000 | .01726 | .00465 | .13970 | .01783 | .00000 | .00000 | .12667 | .00030 | .68537 |

TABLE 23.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016415; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00879 | .00000 | .03306 | .00000 | .00000 | .07802 | .00000 | .00001 | .73270 | .00000 | .00000 | .14742 |
| 950 | .00879 | .00000 | .03306 | .00000 | .00000 | .07802 | .00000 | .00002 | .73270 | .00000 | .00000 | .14741 |
| 1000 | .00879 | .00000 | .03306 | .00000 | .00000 | .07802 | .00000 | .00003 | .73269 | .00000 | .00000 | .14741 |
| 1050 | .00879 | .00000 | .03306 | .00000 | .00000 | .07802 | .00000 | .00005 | .73268 | .00000 | .00000 | .14740 |
| 1100 | .00879 | .00000 | .03306 | .00000 | .00000 | .07802 | .00000 | .00008 | .73267 | .00000 | .00000 | .14738 |
| 1150 | .00879 | .00000 | .03306 | .00000 | .00000 | .07802 | .00000 | .00012 | .73265 | .00000 | .00000 | .14736 |
| 1200 | .00879 | .00000 | .03306 | .00000 | .00000 | .07802 | .00000 | .00017 | .73262 | .00000 | .00001 | .14733 |
| 1250 | .00879 | .00000 | .03306 | .00000 | .00000 | .07801 | .00000 | .00025 | .73258 | .00000 | .00002 | .14729 |
| 1300 | .00879 | .00000 | .03306 | .00000 | .00000 | .07801 | .00000 | .00035 | .73253 | .00000 | .00003 | .14724 |
| 1350 | .00879 | .00000 | .03306 | .00000 | .00000 | .07800 | .00000 | .00048 | .73246 | .00000 | .00005 | .14717 |
| 1400 | .00879 | .00000 | .03306 | .00000 | .00000 | .07798 | .00000 | .00064 | .73237 | .00000 | .00008 | .14708 |
| 1450 | .00879 | .00000 | .03306 | .00000 | .00000 | .07795 | .00000 | .00083 | .73226 | .00001 | .00013 | .14697 |
| 1500 | .00879 | .00000 | .03305 | .00000 | .00000 | .07791 | .00000 | .00107 | .73213 | .00002 | .00020 | .14682 |
| 1550 | .00879 | .00001 | .03305 | .00000 | .00001 | .07785 | .00000 | .00135 | .73196 | .00003 | .00031 | .14665 |
| 1600 | .00879 | .00002 | .03304 | .00000 | .00001 | .07776 | .00000 | .00168 | .73175 | .00006 | .00046 | .14643 |
| 1650 | .00879 | .00003 | .03302 | .00000 | .00002 | .07764 | .00000 | .00206 | .73150 | .00010 | .00067 | .14617 |
| 1700 | .00878 | .00006 | .03299 | .00001 | .00004 | .07747 | .00000 | .00250 | .73118 | .00017 | .00094 | .14585 |
| 1750 | .00878 | .00010 | .03294 | .00002 | .00007 | .07725 | .00000 | .00299 | .73079 | .00028 | .00131 | .14546 |
| 1800 | .00878 | .00018 | .03286 | .00004 | .00011 | .07694 | .00000 | .00355 | .73031 | .00046 | .00178 | .14500 |
| 1850 | .00878 | .00029 | .03273 | .00007 | .00017 | .07653 | .00000 | .00417 | .72971 | .00073 | .00238 | .14444 |
| 1900 | .00877 | .00046 | .03254 | .00013 | .00026 | .07599 | .00000 | .00486 | .72896 | .00112 | .00313 | .14378 |
| 1950 | .00877 | .00073 | .03225 | .00022 | .00039 | .07530 | .00000 | .00561 | .72801 | .00170 | .00405 | .14299 |
| 2000 | .00876 | .00110 | .03184 | .00038 | .00057 | .07440 | .00000 | .00642 | .72681 | .00251 | .00516 | .14206 |
| 2050 | .00874 | .00163 | .03126 | .00064 | .00081 | .07325 | .00000 | .00729 | .72529 | .00363 | .00649 | .14096 |
| 2100 | .00873 | .00236 | .03047 | .00104 | .00113 | .07179 | .00000 | .00823 | .72338 | .00516 | .00804 | .13967 |
| 2150 | .00870 | .00331 | .02943 | .00165 | .00155 | .06997 | .00000 | .00922 | .72097 | .00722 | .00983 | .13816 |
| 2200 | .00867 | .00453 | .02810 | .00255 | .00208 | .06771 | .00000 | .01025 | .71795 | .00993 | .01185 | .13638 |
| 2250 | .00863 | .00601 | .02647 | .00386 | .00273 | .06495 | .00000 | .01132 | .71422 | .01344 | .01408 | .13428 |
| 2300 | .00859 | .00776 | .02454 | .00570 | .00351 | .06163 | .00000 | .01242 | .70965 | .01792 | .01648 | .13180 |
| 2350 | .00853 | .00972 | .02236 | .00822 | .00440 | .05769 | .00000 | .01353 | .70415 | .02355 | .01900 | .12886 |
| 2400 | .00845 | .01182 | .01998 | .01159 | .00537 | .05313 | .00000 | .01462 | .69760 | .03052 | .02153 | .12537 |
| 2450 | .00837 | .01397 | .01752 | .01596 | .00638 | .04797 | .00000 | .01569 | .68997 | .03900 | .02394 | .12123 |
| 2500 | .00827 | .01606 | .01505 | .02144 | .00736 | .04230 | .00000 | .01669 | .68122 | .04913 | .02610 | .11637 |
| 2550 | .00816 | .01800 | .01269 | .02809 | .00821 | .03627 | .00000 | .01759 | .67142 | .06103 | .02781 | .11072 |
| 2600 | .00803 | .01971 | .01051 | .03586 | .00883 | .03011 | .00001 | .01838 | .66069 | .07471 | .02891 | .10424 |
| 2650 | .00790 | .02116 | .00856 | .04454 | .00914 | .02411 | .00001 | .01901 | .64925 | .09011 | .02926 | .09695 |
| 2700 | .00776 | .02233 | .00687 | .05381 | .00907 | .01854 | .00001 | .01946 | .63741 | .10704 | .02878 | .08891 |
| 2750 | .00762 | .02323 | .00544 | .06322 | .00864 | .01367 | .00002 | .01970 | .62553 | .12518 | .02747 | .08027 |
| 2800 | .00748 | .02389 | .00426 | .07230 | .00790 | .00967 | .00003 | .01973 | .61400 | .14408 | .02544 | .07123 |
| 2850 | .00735 | .02436 | .00330 | .08062 | .00695 | .00656 | .00004 | .01953 | .60316 | .16317 | .02288 | .06206 |
| 2900 | .00723 | .02467 | .00253 | .08792 | .00592 | .00430 | .00005 | .01913 | .59328 | .18186 | .02003 | .05307 |
| 2950 | .00712 | .02487 | .00193 | .09406 | .00491 | .00273 | .00008 | .01853 | .58453 | .19957 | .01713 | .04455 |
| 3000 | .00703 | .02498 | .00146 | .09907 | .00398 | .00170 | .00010 | .01777 | .57699 | .21581 | .01436 | .03675 |

TABLE 23.2B - EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016415; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00001 | .73270 | .00000 | .00000 | .14742 |
| 950 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00002 | .73270 | .00000 | .00000 | .14741 |
| 1000 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00003 | .73269 | .00000 | .00000 | .14741 |
| 1050 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00005 | .73268 | .00000 | .00000 | .14740 |
| 1100 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00008 | .73267 | .00000 | .00000 | .14738 |
| 1150 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00012 | .73265 | .00000 | .00000 | .14736 |
| 1200 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00017 | .73262 | .00000 | .00000 | .14733 |
| 1250 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00025 | .73258 | .00000 | .00001 | .14729 |
| 1300 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07801 | .00000 | .00035 | .73253 | .00000 | .00002 | .14724 |
| 1350 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07801 | .00000 | .00048 | .73246 | .00000 | .00003 | .14718 |
| 1400 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07800 | .00000 | .00064 | .73238 | .00000 | .00005 | .14709 |
| 1450 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07798 | .00000 | .00083 | .73228 | .00000 | .00007 | .14698 |
| 1500 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07796 | .00000 | .00107 | .73215 | .00000 | .00012 | .14685 |
| 1550 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07793 | .00000 | .00135 | .73200 | .00001 | .00018 | .14669 |
| 1600 | .00879 | .00001 | .03305 | .00000 | .00000 | .00000 | .07788 | .00000 | .00168 | .73181 | .00002 | .00026 | .14650 |
| 1650 | .00879 | .00001 | .03305 | .00000 | .00000 | .00001 | .07782 | .00000 | .00206 | .73159 | .00003 | .00038 | .14627 |
| 1700 | .00879 | .00002 | .03304 | .00000 | .00000 | .00001 | .07773 | .00000 | .00250 | .73133 | .00005 | .00053 | .14600 |
| 1750 | .00879 | .00003 | .03302 | .00000 | .00000 | .00002 | .07761 | .00000 | .00300 | .73102 | .00009 | .00074 | .14568 |
| 1800 | .00878 | .00006 | .03299 | .00001 | .00000 | .00003 | .07745 | .00000 | .00356 | .73066 | .00015 | .00101 | .14531 |
| 1850 | .00878 | .00009 | .03295 | .00001 | .00000 | .00005 | .07725 | .00000 | .00418 | .73023 | .00023 | .00135 | .14488 |
| 1900 | .00878 | .00015 | .03289 | .00002 | .00000 | .00008 | .07698 | .00000 | .00487 | .72972 | .00036 | .00177 | .14437 |
| 1950 | .00878 | .00023 | .03279 | .00004 | .00000 | .00012 | .07664 | .00000 | .00563 | .72912 | .00054 | .00230 | .14379 |
| 2000 | .00877 | .00036 | .03266 | .00007 | .00000 | .00018 | .07622 | .00000 | .00645 | .72842 | .00080 | .00294 | .14313 |
| 2050 | .00877 | .00053 | .03246 | .00012 | .00000 | .00026 | .07569 | .00000 | .00734 | .72758 | .00115 | .00372 | .14237 |
| 2100 | .00876 | .00078 | .03219 | .00019 | .00000 | .00037 | .07503 | .00000 | .00830 | .72658 | .00164 | .00464 | .14151 |
| 2150 | .00876 | .00112 | .03182 | .00030 | .00000 | .00052 | .07421 | .00000 | .00932 | .72539 | .00230 | .00572 | .14054 |
| 2200 | .00875 | .00158 | .03132 | .00047 | .00000 | .00070 | .07322 | .00000 | .01041 | .72397 | .00317 | .00697 | .13943 |
| 2250 | .00873 | .00217 | .03068 | .00072 | .00000 | .00094 | .07202 | .00000 | .01155 | .72228 | .00431 | .00840 | .13819 |
| 2300 | .00871 | .00293 | .02986 | .00107 | .00000 | .00125 | .07058 | .00000 | .01275 | .72027 | .00577 | .01001 | .13679 |
| 2350 | .00869 | .00387 | .02884 | .00158 | .00001 | .00162 | .06887 | .00000 | .01399 | .71787 | .00763 | .01181 | .13521 |
| 2400 | .00867 | .00501 | .02760 | .00228 | .00001 | .00207 | .06685 | .00000 | .01527 | .71505 | .00996 | .01379 | .13344 |
| 2450 | .00864 | .00633 | .02615 | .00322 | .00001 | .00261 | .06449 | .00000 | .01659 | .71174 | .01284 | .01593 | .13144 |
| 2500 | .00860 | .00784 | .02450 | .00449 | .00001 | .00322 | .06176 | .00000 | .01792 | .70789 | .01637 | .01820 | .12918 |
| 2550 | .00855 | .00950 | .02267 | .00614 | .00001 | .00392 | .05865 | .00000 | .01926 | .70346 | .02064 | .02056 | .12663 |
| 2600 | .00850 | .01127 | .02071 | .00827 | .00001 | .00469 | .05515 | .00000 | .02059 | .69839 | .02574 | .02297 | .12372 |
| 2650 | .00844 | .01308 | .01866 | .01094 | .00001 | .00551 | .05127 | .00000 | .02188 | .69266 | .03176 | .02534 | .12043 |
| 2700 | .00837 | .01489 | .01660 | .01424 | .00001 | .00635 | .04704 | .00000 | .02313 | .68627 | .03878 | .02759 | .11672 |
| 2750 | .00829 | .01662 | .01458 | .01822 | .00001 | .00718 | .04251 | .00001 | .02431 | .67922 | .04687 | .02964 | .11255 |
| 2800 | .00821 | .01823 | .01264 | .02291 | .00001 | .00793 | .03778 | .00001 | .02539 | .67154 | .05608 | .03137 | .10789 |
| 2850 | .00811 | .01968 | .01084 | .02832 | .00001 | .00858 | .03294 | .00001 | .02636 | .66329 | .06640 | .03270 | .10276 |
| 2900 | .00801 | .02095 | .00920 | .03438 | .00001 | .00906 | .02814 | .00002 | .02718 | .65457 | .07781 | .03352 | .09715 |
| 2950 | .00791 | .02203 | .00773 | .04101 | .00001 | .00933 | .02349 | .00003 | .02785 | .64549 | .09025 | .03377 | .09111 |
| 3000 | .00780 | .02291 | .00644 | .04804 | .00001 | .00937 | .01915 | .00003 | .02833 | .63621 | .10359 | .03342 | .08468 |

TABLE 23.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016415; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00001 | .00000 | .73270 | .00000 | .00000 | .14742 |
| 950 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00002 | .00000 | .73270 | .00000 | .00000 | .14741 |
| 1000 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00003 | .00000 | .73269 | .00000 | .00000 | .14741 |
| 1050 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00005 | .00000 | .73268 | .00000 | .00000 | .14740 |
| 1100 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00008 | .00000 | .73267 | .00000 | .00000 | .14738 |
| 1150 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00012 | .00000 | .73265 | .00000 | .00000 | .14736 |
| 1200 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00017 | .00000 | .73262 | .00000 | .00000 | .14733 |
| 1250 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00025 | .00000 | .73258 | .00000 | .00000 | .14729 |
| 1300 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00000 | .00035 | .00000 | .73253 | .00000 | .00001 | .14724 |
| 1350 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07801 | .00000 | .00048 | .00000 | .73247 | .00000 | .00002 | .14718 |
| 1400 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07801 | .00000 | .00064 | .00000 | .73238 | .00000 | .00003 | .14709 |
| 1450 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07800 | .00000 | .00083 | .00000 | .73228 | .00000 | .00004 | .14699 |
| 1500 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07799 | .00000 | .00107 | .00000 | .73216 | .00000 | .00006 | .14687 |
| 1550 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07797 | .00000 | .00135 | .00000 | .73201 | .00000 | .00010 | .14671 |
| 1600 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07794 | .00000 | .00168 | .00001 | .73184 | .00001 | .00015 | .14653 |
| 1650 | .00879 | .00000 | .03305 | .00000 | .00000 | .00000 | .07791 | .00000 | .00206 | .00001 | .73163 | .00001 | .00021 | .14632 |
| 1700 | .00879 | .00001 | .03305 | .00000 | .00000 | .00000 | .07786 | .00000 | .00250 | .00001 | .73139 | .00002 | .00030 | .14608 |
| 1750 | .00879 | .00001 | .03305 | .00000 | .00000 | .00001 | .07780 | .00000 | .00300 | .00001 | .73112 | .00003 | .00042 | .14579 |
| 1800 | .00879 | .00002 | .03304 | .00000 | .00000 | .00001 | .07771 | .00000 | .00356 | .00001 | .73080 | .00005 | .00057 | .14546 |
| 1850 | .00879 | .00003 | .03302 | .00000 | .00000 | .00002 | .07760 | .00000 | .00418 | .00001 | .73043 | .00007 | .00076 | .14508 |
| 1900 | .00878 | .00005 | .03300 | .00000 | .00000 | .00003 | .07747 | .00000 | .00488 | .00001 | .73002 | .00011 | .00100 | .14466 |
| 1950 | .00878 | .00007 | .03297 | .00001 | .00000 | .00004 | .07729 | .00000 | .00564 | .00001 | .72954 | .00017 | .00130 | .14417 |
| 2000 | .00878 | .00011 | .03293 | .00001 | .00000 | .00006 | .07707 | .00000 | .00647 | .00001 | .72901 | .00025 | .00167 | .14363 |
| 2050 | .00878 | .00017 | .03286 | .00002 | .00000 | .00008 | .07680 | .00000 | .00736 | .00001 | .72840 | .00037 | .00211 | .14303 |
| 2100 | .00878 | .00025 | .03277 | .00003 | .00001 | .00012 | .07648 | .00000 | .00833 | .00001 | .72771 | .00052 | .00264 | .14235 |
| 2150 | .00877 | .00036 | .03265 | .00005 | .00001 | .00017 | .07608 | .00000 | .00937 | .00001 | .72693 | .00073 | .00326 | .14160 |
| 2200 | .00877 | .00051 | .03248 | .00008 | .00001 | .00023 | .07560 | .00000 | .01047 | .00001 | .72605 | .00101 | .00399 | .14078 |
| 2250 | .00877 | .00072 | .03226 | .00013 | .00001 | .00031 | .07503 | .00000 | .01164 | .00001 | .72505 | .00137 | .00483 | .13987 |
| 2300 | .00876 | .00098 | .03197 | .00020 | .00001 | .00041 | .07436 | .00000 | .01288 | .00001 | .72391 | .00184 | .00580 | .13887 |
| 2350 | .00875 | .00133 | .03160 | .00029 | .00001 | .00054 | .07356 | .00000 | .01417 | .00001 | .72262 | .00244 | .00690 | .13778 |
| 2400 | .00874 | .00176 | .03113 | .00042 | .00001 | .00070 | .07263 | .00000 | .01552 | .00001 | .72116 | .00319 | .00813 | .13659 |
| 2450 | .00873 | .00231 | .03054 | .00060 | .00001 | .00090 | .07156 | .00000 | .01692 | .00001 | .71949 | .00412 | .00950 | .13530 |
| 2500 | .00872 | .00297 | .02983 | .00084 | .00001 | .00114 | .07031 | .00000 | .01837 | .00001 | .71761 | .00527 | .01102 | .13390 |
| 2550 | .00870 | .00376 | .02897 | .00117 | .00002 | .00143 | .06889 | .00000 | .01986 | .00001 | .71547 | .00667 | .01267 | .13238 |
| 2600 | .00868 | .00468 | .02797 | .00160 | .00002 | .00176 | .06727 | .00000 | .02138 | .00001 | .71306 | .00837 | .01446 | .13073 |
| 2650 | .00866 | .00575 | .02682 | .00216 | .00002 | .00215 | .06544 | .00000 | .02293 | .00001 | .71036 | .01039 | .01637 | .12894 |
| 2700 | .00863 | .00694 | .02553 | .00288 | .00002 | .00260 | .06338 | .00000 | .02450 | .00001 | .70733 | .01279 | .01840 | .12700 |
| 2750 | .00860 | .00825 | .02410 | .00378 | .00002 | .00310 | .06110 | .00000 | .02607 | .00001 | .70396 | .01561 | .02051 | .12488 |
| 2800 | .00856 | .00965 | .02257 | .00491 | .00002 | .00365 | .05858 | .00000 | .02764 | .00001 | .70024 | .01890 | .02268 | .12258 |
| 2850 | .00852 | .01113 | .02094 | .00630 | .00002 | .00425 | .05582 | .00000 | .02919 | .00001 | .69614 | .02270 | .02488 | .12007 |
| 2900 | .00848 | .01263 | .01927 | .00799 | .00003 | .00489 | .05284 | .00001 | .03071 | .00001 | .69167 | .02704 | .02708 | .11734 |
| 2950 | .00843 | .01414 | .01758 | .01002 | .00003 | .00556 | .04965 | .00001 | .03218 | .00001 | .68682 | .03198 | .02922 | .11437 |
| 3000 | .00838 | .01562 | .01590 | .01241 | .00003 | .00625 | .04627 | .00001 | .03360 | .00001 | .68160 | .03753 | .03126 | .11114 |

TABLE 23.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016415; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00001 | .00000 | .73270 | .00000 | .00000 | .00000 | .14742 |
| 950 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00002 | .00000 | .73270 | .00000 | .00000 | .00000 | .14741 |
| 1000 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00003 | .00000 | .73269 | .00000 | .00000 | .00000 | .14740 |
| 1050 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00005 | .00000 | .73268 | .00000 | .00000 | .00000 | .14739 |
| 1100 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00008 | .00001 | .73267 | .00000 | .00000 | .00000 | .14738 |
| 1150 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00012 | .00001 | .73265 | .00000 | .00000 | .00000 | .14736 |
| 1200 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00017 | .00001 | .73262 | .00000 | .00000 | .00000 | .14733 |
| 1250 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00025 | .00001 | .73258 | .00000 | .00000 | .00000 | .14729 |
| 1300 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00035 | .00001 | .73253 | .00000 | .00000 | .00000 | .14724 |
| 1350 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00048 | .00001 | .73247 | .00000 | .00000 | .00001 | .14717 |
| 1400 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07801 | .00064 | .00001 | .73239 | .00000 | .00000 | .00001 | .14709 |
| 1450 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07801 | .00083 | .00001 | .73229 | .00000 | .00000 | .00002 | .14699 |
| 1500 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07800 | .00107 | .00001 | .73217 | .00000 | .00000 | .00004 | .14686 |
| 1550 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07799 | .00135 | .00002 | .73202 | .00000 | .00000 | .00006 | .14672 |
| 1600 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07798 | .00168 | .00002 | .73185 | .00000 | .00000 | .00008 | .14654 |
| 1650 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07796 | .00206 | .00002 | .73165 | .00000 | .00000 | .00012 | .14634 |
| 1700 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07793 | .00250 | .00002 | .73142 | .00000 | .00001 | .00017 | .14610 |
| 1750 | .00879 | .00000 | .03305 | .00000 | .00000 | .00000 | .07790 | .00300 | .00002 | .73116 | .00000 | .00001 | .00023 | .14583 |
| 1800 | .00879 | .00001 | .03305 | .00000 | .00000 | .00000 | .07785 | .00356 | .00002 | .73086 | .00000 | .00001 | .00032 | .14552 |
| 1850 | .00879 | .00001 | .03305 | .00000 | .00000 | .00001 | .07779 | .00419 | .00002 | .73052 | .00000 | .00002 | .00043 | .14518 |
| 1900 | .00879 | .00001 | .03304 | .00000 | .00000 | .00001 | .07772 | .00488 | .00002 | .73014 | .00000 | .00004 | .00056 | .14479 |
| 1950 | .00879 | .00002 | .03303 | .00000 | .00001 | .00001 | .07762 | .00564 | .00003 | .72972 | .00000 | .00005 | .00073 | .14435 |
| 2000 | .00879 | .00004 | .03301 | .00000 | .00001 | .00002 | .07751 | .00647 | .00003 | .72925 | .00000 | .00008 | .00094 | .14386 |
| 2050 | .00878 | .00005 | .03299 | .00000 | .00001 | .00003 | .07736 | .00737 | .00003 | .72873 | .00000 | .00012 | .00119 | .14333 |
| 2100 | .00878 | .00008 | .03296 | .00001 | .00001 | .00004 | .07719 | .00835 | .00003 | .72815 | .00000 | .00017 | .00149 | .14274 |
| 2150 | .00878 | .00012 | .03292 | .00001 | .00001 | .00005 | .07698 | .00939 | .00003 | .72752 | .00000 | .00023 | .00185 | .14210 |
| 2200 | .00878 | .00016 | .03287 | .00002 | .00001 | .00007 | .07674 | .01050 | .00003 | .72683 | .00000 | .00032 | .00226 | .14140 |
| 2250 | .00878 | .00023 | .03279 | .00002 | .00001 | .00010 | .07645 | .01168 | .00003 | .72607 | .00000 | .00043 | .00275 | .14065 |
| 2300 | .00878 | .00032 | .03270 | .00004 | .00002 | .00013 | .07611 | .01293 | .00003 | .72524 | .00000 | .00058 | .00331 | .13983 |
| 2350 | .00877 | .00043 | .03257 | .00005 | .00002 | .00018 | .07571 | .01425 | .00004 | .72433 | .00000 | .00077 | .00394 | .13894 |
| 2400 | .00877 | .00058 | .03241 | .00008 | .00002 | .00023 | .07525 | .01562 | .00004 | .72333 | .00000 | .00101 | .00467 | .13800 |
| 2450 | .00876 | .00076 | .03221 | .00011 | .00002 | .00030 | .07472 | .01706 | .00004 | .72224 | .00000 | .00131 | .00548 | .13698 |
| 2500 | .00876 | .00100 | .03196 | .00015 | .00003 | .00038 | .07411 | .01855 | .00004 | .72106 | .00000 | .00168 | .00639 | .13590 |
| 2550 | .00875 | .00129 | .03164 | .00021 | .00003 | .00048 | .07342 | .02010 | .00004 | .71976 | .00000 | .00213 | .00739 | .13476 |
| 2600 | .00875 | .00164 | .03126 | .00029 | .00003 | .00060 | .07264 | .02169 | .00004 | .71835 | .00000 | .00267 | .00850 | .13354 |
| 2650 | .00874 | .00206 | .03081 | .00040 | .00004 | .00074 | .07177 | .02333 | .00004 | .71680 | .00000 | .00333 | .00970 | .13225 |
| 2700 | .00873 | .00256 | .03027 | .00054 | .00004 | .00090 | .07078 | .02501 | .00004 | .71512 | .00000 | .00411 | .01101 | .13089 |
| 2750 | .00872 | .00315 | .02964 | .00071 | .00004 | .00110 | .06969 | .02672 | .00004 | .71328 | .00000 | .00503 | .01243 | .12945 |
| 2800 | .00870 | .00383 | .02891 | .00093 | .00005 | .00132 | .06848 | .02846 | .00004 | .71129 | .00000 | .00611 | .01394 | .12794 |
| 2850 | .00869 | .00460 | .02808 | .00121 | .00005 | .00158 | .06714 | .03022 | .00004 | .70912 | .00000 | .00736 | .01554 | .12635 |
| 2900 | .00867 | .00546 | .02715 | .00156 | .00005 | .00187 | .06568 | .03200 | .00004 | .70678 | .00000 | .00881 | .01724 | .12468 |
| 2950 | .00865 | .00641 | .02613 | .00199 | .00006 | .00219 | .06408 | .03378 | .00004 | .70425 | .00001 | .01048 | .01901 | .12292 |
| 3000 | .00863 | .00744 | .02501 | .00251 | .00006 | .00255 | .06234 | .03557 | .00004 | .70152 | .00001 | .01239 | .02085 | .12107 |

TABLE 23.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016415; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A = 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00001 | .00001 | .73270 | .00000 | .00000 | .00000 | .14741 |
| 950 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00002 | .00001 | .73270 | .00000 | .00000 | .00000 | .14741 |
| 1000 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00003 | .00001 | .73269 | .00000 | .00000 | .00000 | .14740 |
| 1050 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00005 | .00001 | .73268 | .00000 | .00000 | .00000 | .14739 |
| 1100 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00008 | .00001 | .73267 | .00000 | .00000 | .00000 | .14737 |
| 1150 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00012 | .00001 | .73265 | .00000 | .00000 | .00000 | .14735 |
| 1200 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00017 | .00002 | .73262 | .00000 | .00000 | .00000 | .14732 |
| 1250 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00025 | .00002 | .73258 | .00000 | .00000 | .00000 | .14728 |
| 1300 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00035 | .00002 | .73253 | .00000 | .00000 | .00000 | .14723 |
| 1350 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00048 | .00002 | .73247 | .00000 | .00000 | .00001 | .14716 |
| 1400 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07802 | .00064 | .00003 | .73238 | .00000 | .00000 | .00001 | .14708 |
| 1450 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07801 | .00083 | .00003 | .73229 | .00000 | .00000 | .00002 | .14697 |
| 1500 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07801 | .00107 | .00003 | .73217 | .00000 | .00000 | .00002 | .14685 |
| 1550 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07800 | .00135 | .00004 | .73202 | .00000 | .00000 | .00004 | .14670 |
| 1600 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07799 | .00168 | .00004 | .73185 | .00000 | .00000 | .00006 | .14653 |
| 1650 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07798 | .00206 | .00004 | .73166 | .00000 | .00000 | .00008 | .14633 |
| 1700 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07796 | .00250 | .00004 | .73143 | .00000 | .00000 | .00011 | .14610 |
| 1750 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07794 | .00300 | .00005 | .73117 | .00000 | .00000 | .00016 | .14583 |
| 1800 | .00879 | .00000 | .03306 | .00000 | .00000 | .00000 | .07791 | .00356 | .00005 | .73088 | .00000 | .00001 | .00021 | .14553 |
| 1850 | .00879 | .00000 | .03305 | .00000 | .00001 | .00000 | .07787 | .00419 | .00005 | .73055 | .00000 | .00001 | .00029 | .14519 |
| 1900 | .00879 | .00001 | .03305 | .00000 | .00001 | .00000 | .07782 | .00488 | .00006 | .73018 | .00000 | .00002 | .00038 | .14481 |
| 1950 | .00879 | .00001 | .03305 | .00000 | .00001 | .00001 | .07776 | .00564 | .00006 | .72978 | .00000 | .00002 | .00049 | .14439 |
| 2000 | .00879 | .00002 | .03304 | .00000 | .00001 | .00001 | .07768 | .00647 | .00006 | .72933 | .00000 | .00004 | .00063 | .14393 |
| 2050 | .00879 | .00002 | .03303 | .00000 | .00001 | .00001 | .07759 | .00738 | .00006 | .72883 | .00000 | .00005 | .00080 | .14342 |
| 2100 | .00879 | .00004 | .03302 | .00000 | .00001 | .00002 | .07748 | .00835 | .00007 | .72829 | .00000 | .00007 | .00100 | .14287 |
| 2150 | .00878 | .00005 | .03300 | .00000 | .00002 | .00002 | .07734 | .00940 | .00007 | .72771 | .00000 | .00010 | .00124 | .14227 |
| 2200 | .00878 | .00007 | .03297 | .00000 | .00002 | .00003 | .07718 | .01051 | .00007 | .72707 | .00000 | .00014 | .00152 | .14161 |
| 2250 | .00878 | .00010 | .03294 | .00001 | .00002 | .00004 | .07699 | .01170 | .00007 | .72638 | .00000 | .00019 | .00184 | .14091 |
| 2300 | .00878 | .00014 | .03289 | .00001 | .00002 | .00006 | .07678 | .01295 | .00008 | .72564 | .00000 | .00026 | .00222 | .14016 |
| 2350 | .00878 | .00019 | .03283 | .00002 | .00003 | .00008 | .07652 | .01427 | .00008 | .72484 | .00000 | .00035 | .00265 | .13935 |
| 2400 | .00878 | .00026 | .03276 | .00002 | .00003 | .00010 | .07623 | .01566 | .00008 | .72398 | .00001 | .00045 | .00314 | .13849 |
| 2450 | .00878 | .00035 | .03267 | .00003 | .00004 | .00013 | .07589 | .01711 | .00008 | .72306 | .00001 | .00059 | .00370 | .13758 |
| 2500 | .00877 | .00045 | .03255 | .00005 | .00004 | .00017 | .07551 | .01861 | .00009 | .72207 | .00001 | .00075 | .00432 | .13661 |
| 2550 | .00877 | .00059 | .03240 | .00006 | .00004 | .00022 | .07508 | .02018 | .00009 | .72102 | .00001 | .00096 | .00501 | .13559 |
| 2600 | .00877 | .00075 | .03222 | .00009 | .00005 | .00027 | .07460 | .02179 | .00009 | .71988 | .00001 | .00120 | .00577 | .13451 |
| 2650 | .00876 | .00095 | .03201 | .00012 | .00005 | .00034 | .07405 | .02346 | .00009 | .71867 | .00001 | .00149 | .00661 | .13338 |
| 2700 | .00876 | .00120 | .03174 | .00016 | .00006 | .00042 | .07345 | .02517 | .00009 | .71738 | .00001 | .00185 | .00752 | .13220 |
| 2750 | .00875 | .00149 | .03143 | .00022 | .00007 | .00051 | .07277 | .02692 | .00009 | .71600 | .00001 | .00226 | .00852 | .13096 |
| 2800 | .00874 | .00183 | .03106 | .00029 | .00007 | .00062 | .07203 | .02871 | .00010 | .71453 | .00001 | .00275 | .00959 | .12967 |
| 2850 | .00873 | .00223 | .03063 | .00037 | .00008 | .00074 | .07121 | .03054 | .00010 | .71296 | .00001 | .00332 | .01075 | .12833 |
| 2900 | .00873 | .00269 | .03014 | .00048 | .00008 | .00089 | .07031 | .03239 | .00010 | .71128 | .00001 | .00398 | .01198 | .12694 |
| 2950 | .00872 | .00321 | .02958 | .00062 | .00009 | .00105 | .06933 | .03426 | .00010 | .70950 | .00001 | .00474 | .01329 | .12550 |
| 3000 | .00870 | .00381 | .02894 | .00078 | .00010 | .00123 | .06827 | .03616 | .00010 | .70761 | .00001 | .00561 | .01468 | .12401 |

TABLE 23C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.016415; EQUIV.RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284;
WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00879 | .03306 | .07787 | .00000 | .00015 | .73271 | .14742 |
| 220 | .00879 | .03306 | .07561 | .00000 | .00241 | .73271 | .14742 |
| 240 | .00879 | .03306 | .05263 | .00000 | .02539 | .73271 | .14742 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00879 | .03306 | .07801 | .00000 | .00001 | .73271 | .14742 |
| 220 | .00879 | .03306 | .07778 | .00000 | .00024 | .73271 | .14742 |
| 240 | .00879 | .03306 | .07554 | .00000 | .00248 | .73271 | .14742 |
| 260 | .00879 | .03306 | .05993 | .00000 | .01810 | .73271 | .14742 |
| 280 | .00879 | .03306 | .00000 | .00000 | .07802 | .73271 | .14742 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00879 | .03306 | .07802 | .00000 | .00000 | .73271 | .14742 |
| 220 | .00879 | .03306 | .07800 | .00000 | .00002 | .73271 | .14742 |
| 240 | .00879 | .03306 | .07777 | .00000 | .00025 | .73271 | .14742 |
| 260 | .00879 | .03306 | .07624 | .00000 | .00178 | .73271 | .14742 |
| 280 | .00879 | .03306 | .00000 | .06895 | .00907 | .73271 | .14742 |
| 298 | .00879 | .03306 | .00000 | .04841 | .02961 | .73271 | .14742 |
| 300 | .00879 | .03306 | .00000 | .04486 | .03316 | .73271 | .14742 |
| 320 | .00879 | .03306 | .00000 | .00000 | .07802 | .73271 | .14742 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00879 | .03306 | .07802 | .00000 | .00000 | .73271 | .14742 |
| 220 | .00879 | .03306 | .07802 | .00000 | .00000 | .73271 | .14742 |
| 240 | .00879 | .03306 | .07800 | .00000 | .00002 | .73271 | .14742 |
| 260 | .00879 | .03306 | .07784 | .00000 | .00018 | .73271 | .14742 |
| 280 | .00879 | .03306 | .00000 | .07712 | .00090 | .73271 | .14742 |
| 298 | .00879 | .03306 | .00000 | .07514 | .00288 | .73271 | .14742 |
| 300 | .00879 | .03306 | .00000 | .07481 | .00321 | .73271 | .14742 |
| 320 | .00879 | .03306 | .00000 | .06840 | .00963 | .73271 | .14742 |
| 340 | .00879 | .03306 | .00000 | .05287 | .02515 | .73271 | .14742 |
| 360 | .00879 | .03306 | .00000 | .01869 | .05933 | .73271 | .14742 |
| 380 | .00879 | .03306 | .00000 | .00000 | .07802 | .73271 | .14742 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00879 | .03306 | .07802 | .00000 | .00000 | .73271 | .14742 |
| 220 | .00879 | .03306 | .07802 | .00000 | .00000 | .73271 | .14742 |
| 240 | .00879 | .03306 | .07802 | .00000 | .00000 | .73271 | .14742 |
| 260 | .00879 | .03306 | .07799 | .00000 | .00004 | .73271 | .14742 |
| 280 | .00879 | .03306 | .00000 | .07784 | .00018 | .73271 | .14742 |
| 298 | .00879 | .03306 | .00000 | .07745 | .00057 | .73271 | .14742 |
| 300 | .00879 | .03306 | .00000 | .07738 | .00064 | .73271 | .14742 |
| 320 | .00879 | .03306 | .00000 | .07611 | .00191 | .73271 | .14742 |
| 340 | .00879 | .03306 | .00000 | .07310 | .00492 | .73271 | .14742 |
| 360 | .00879 | .03306 | .00000 | .06674 | .01129 | .73271 | .14742 |
| 380 | .00879 | .03306 | .00000 | .05450 | .02352 | .73271 | .14742 |
| 400 | .00879 | .03306 | .00000 | .03256 | .04546 | .73271 | .14742 |
| 420 | .00879 | .03306 | .00000 | .00000 | .07802 | .73271 | .14742 |

TABLE 24.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.032829; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 1.01325 KPA (0.01 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00865 | .00000 | .06476 | .00000 | .00000 | .10900 | .00000 | .00001 | .72090 | .00000 | .00000 | .09670 |
| 950 | .00865 | .00000 | .06476 | .00000 | .00000 | .10900 | .00000 | .00001 | .72089 | .00000 | .00000 | .09669 |
| 1000 | .00865 | .00000 | .06476 | .00000 | .00000 | .10900 | .00000 | .00002 | .72089 | .00000 | .00000 | .09669 |
| 1050 | .00865 | .00000 | .06476 | .00000 | .00000 | .10900 | .00000 | .00004 | .72088 | .00000 | .00000 | .09668 |
| 1100 | .00865 | .00000 | .06476 | .00000 | .00000 | .10900 | .00000 | .00006 | .72087 | .00000 | .00000 | .09667 |
| 1150 | .00865 | .00000 | .06476 | .00000 | .00000 | .10899 | .00000 | .00009 | .72085 | .00000 | .00000 | .09665 |
| 1200 | .00865 | .00000 | .06476 | .00000 | .00000 | .10899 | .00000 | .00014 | .72083 | .00000 | .00001 | .09663 |
| 1250 | .00865 | .00000 | .06476 | .00000 | .00000 | .10899 | .00000 | .00020 | .72080 | .00000 | .00002 | .09659 |
| 1300 | .00865 | .00000 | .06476 | .00000 | .00000 | .10898 | .00000 | .00028 | .72075 | .00000 | .00003 | .09655 |
| 1350 | .00865 | .00000 | .06476 | .00000 | .00000 | .10897 | .00000 | .00038 | .72070 | .00000 | .00005 | .09649 |
| 1400 | .00865 | .00000 | .06476 | .00000 | .00000 | .10895 | .00000 | .00051 | .72063 | .00000 | .00009 | .09642 |
| 1450 | .00865 | .00000 | .06475 | .00000 | .00000 | .10892 | .00000 | .00067 | .72054 | .00001 | .00014 | .09633 |
| 1500 | .00865 | .00001 | .06475 | .00000 | .00001 | .10887 | .00000 | .00086 | .72042 | .00001 | .00022 | .09621 |
| 1550 | .00865 | .00002 | .06473 | .00000 | .00001 | .10881 | .00000 | .00108 | .72028 | .00002 | .00033 | .09607 |
| 1600 | .00864 | .00004 | .06471 | .00000 | .00002 | .10871 | .00000 | .00135 | .72010 | .00004 | .00049 | .09589 |
| 1650 | .00864 | .00008 | .06466 | .00001 | .00004 | .10857 | .00000 | .00165 | .71987 | .00008 | .00071 | .09569 |
| 1700 | .00864 | .00014 | .06459 | .00001 | .00007 | .10837 | .00000 | .00200 | .71958 | .00014 | .00101 | .09544 |
| 1750 | .00864 | .00025 | .06447 | .00002 | .00012 | .10810 | .00000 | .00240 | .71922 | .00023 | .00139 | .09516 |
| 1800 | .00864 | .00042 | .06427 | .00005 | .00019 | .10773 | .00000 | .00285 | .71875 | .00037 | .00190 | .09483 |
| 1850 | .00863 | .00070 | .06396 | .00009 | .00029 | .10723 | .00000 | .00335 | .71815 | .00059 | .00253 | .09447 |
| 1900 | .00863 | .00112 | .06350 | .00017 | .00045 | .10656 | .00000 | .00390 | .71737 | .00091 | .00333 | .09407 |
| 1950 | .00862 | .00175 | .06281 | .00030 | .00067 | .10567 | .00000 | .00450 | .71635 | .00137 | .00431 | .09365 |
| 2000 | .00861 | .00264 | .06182 | .00051 | .00098 | .10451 | .00000 | .00516 | .71502 | .00203 | .00551 | .09322 |
| 2050 | .00859 | .00389 | .06045 | .00084 | .00140 | .10300 | .00000 | .00587 | .71329 | .00295 | .00693 | .09279 |
| 2100 | .00857 | .00557 | .05860 | .00137 | .00196 | .10106 | .00000 | .00663 | .71106 | .00420 | .00860 | .09236 |
| 2150 | .00854 | .00775 | .05620 | .00217 | .00268 | .09861 | .00000 | .00745 | .70822 | .00589 | .01054 | .09195 |
| 2200 | .00850 | .01046 | .05321 | .00335 | .00358 | .09554 | .00000 | .00832 | .70464 | .00813 | .01274 | .09152 |
| 2250 | .00845 | .01369 | .04962 | .00505 | .00469 | .09176 | .00000 | .00923 | .70020 | .01106 | .01518 | .09105 |
| 2300 | .00839 | .01737 | .04550 | .00745 | .00599 | .08719 | .00000 | .01018 | .69480 | .01484 | .01784 | .09044 |
| 2350 | .00832 | .02136 | .04097 | .01072 | .00747 | .08176 | .00000 | .01115 | .68833 | .01964 | .02065 | .08961 |
| 2400 | .00824 | .02550 | .03620 | .01507 | .00908 | .07547 | .00000 | .01213 | .68074 | .02563 | .02351 | .08842 |
| 2450 | .00814 | .02958 | .03137 | .02071 | .01075 | .06835 | .00000 | .01309 | .67199 | .03299 | .02628 | .08674 |
| 2500 | .00802 | .03342 | .02669 | .02778 | .01236 | .06051 | .00000 | .01401 | .66209 | .04186 | .02881 | .08445 |
| 2550 | .00790 | .03686 | .02230 | .03638 | .01377 | .05217 | .00000 | .01486 | .65112 | .05233 | .03089 | .08142 |
| 2600 | .00776 | .03980 | .01832 | .04646 | .01482 | .04361 | .00001 | .01560 | .63923 | .06446 | .03232 | .07760 |
| 2650 | .00761 | .04220 | .01482 | .05780 | .01539 | .03522 | .00001 | .01620 | .62667 | .07817 | .03295 | .07296 |
| 2700 | .00746 | .04406 | .01182 | .07002 | .01537 | .02736 | .00001 | .01664 | .61378 | .09329 | .03264 | .06754 |
| 2750 | .00731 | .04543 | .00931 | .08258 | .01475 | .02041 | .00002 | .01689 | .60097 | .10951 | .03139 | .06143 |
| 2800 | .00716 | .04639 | .00725 | .09487 | .01361 | .01460 | .00003 | .01695 | .58865 | .12640 | .02928 | .05482 |
| 2850 | .00702 | .04701 | .00559 | .10632 | .01209 | .01003 | .00004 | .01679 | .57721 | .14342 | .02652 | .04795 |
| 2900 | .00690 | .04739 | .00428 | .11650 | .01040 | .00664 | .00005 | .01645 | .56692 | .16002 | .02336 | .04109 |
| 2950 | .00679 | .04759 | .00325 | .12517 | .00869 | .00426 | .00007 | .01594 | .55796 | .17568 | .02007 | .03452 |
| 3000 | .00669 | .04767 | .00246 | .13232 | .00711 | .00267 | .00010 | .01528 | .55036 | .18997 | .01688 | .02848 |

TABLE 24.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.032829; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00001 | .72090 | .00000 | .00000 | .09670 |
| 950 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00001 | .72089 | .00000 | .00000 | .09669 |
| 1000 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00002 | .72089 | .00000 | .00000 | .09669 |
| 1050 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00004 | .72088 | .00000 | .00000 | .09668 |
| 1100 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00006 | .72087 | .00000 | .00000 | .09667 |
| 1150 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00009 | .72085 | .00000 | .00000 | .09665 |
| 1200 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00000 | .00014 | .72083 | .00000 | .00000 | .09663 |
| 1250 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00000 | .00020 | .72080 | .00000 | .00001 | .09659 |
| 1300 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00000 | .00028 | .72076 | .00000 | .00002 | .09655 |
| 1350 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10898 | .00000 | .00038 | .72070 | .00000 | .00003 | .09650 |
| 1400 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10897 | .00000 | .00051 | .72063 | .00000 | .00005 | .09643 |
| 1450 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10895 | .00000 | .00067 | .72055 | .00000 | .00008 | .09634 |
| 1500 | .00865 | .00000 | .06475 | .00000 | .00000 | .00000 | .10893 | .00000 | .00086 | .72045 | .00000 | .00012 | .09623 |
| 1550 | .00865 | .00001 | .06475 | .00000 | .00000 | .00000 | .10889 | .00000 | .00108 | .72032 | .00001 | .00019 | .09610 |
| 1600 | .00865 | .00001 | .06474 | .00000 | .00000 | .00001 | .10884 | .00000 | .00135 | .72016 | .00001 | .00028 | .09595 |
| 1650 | .00864 | .00002 | .06473 | .00000 | .00000 | .00001 | .10877 | .00000 | .00165 | .71998 | .00003 | .00040 | .09576 |
| 1700 | .00864 | .00004 | .06470 | .00000 | .00000 | .00002 | .10867 | .00000 | .00201 | .71975 | .00004 | .00057 | .09555 |
| 1750 | .00864 | .00008 | .06466 | .00000 | .00000 | .00004 | .10853 | .00000 | .00240 | .71949 | .00007 | .00079 | .09529 |
| 1800 | .00864 | .00013 | .06460 | .00001 | .00000 | .00006 | .10835 | .00000 | .00285 | .71916 | .00012 | .00107 | .09500 |
| 1850 | .00864 | .00022 | .06450 | .00002 | .00000 | .00009 | .10811 | .00000 | .00335 | .71878 | .00019 | .00143 | .09467 |
| 1900 | .00864 | .00036 | .06434 | .00003 | .00000 | .00014 | .10780 | .00000 | .00391 | .71831 | .00029 | .00189 | .09430 |
| 1950 | .00864 | .00056 | .06412 | .00005 | .00000 | .00022 | .10739 | .00000 | .00451 | .71774 | .00043 | .00245 | .09389 |
| 2000 | .00863 | .00086 | .06378 | .00009 | .00000 | .00032 | .10688 | .00000 | .00517 | .71704 | .00064 | .00313 | .09345 |
| 2050 | .00862 | .00129 | .06331 | .00015 | .00000 | .00046 | .10622 | .00000 | .00589 | .71620 | .00093 | .00396 | .09297 |
| 2100 | .00862 | .00188 | .06266 | .00025 | .00000 | .00065 | .10539 | .00000 | .00666 | .71516 | .00133 | .00494 | .09247 |
| 2150 | .00861 | .00269 | .06177 | .00040 | .00000 | .00090 | .10436 | .00000 | .00748 | .71388 | .00186 | .00610 | .09195 |
| 2200 | .00859 | .00377 | .06059 | .00062 | .00000 | .00122 | .10308 | .00000 | .00836 | .71232 | .00257 | .00744 | .09143 |
| 2250 | .00858 | .00516 | .05908 | .00095 | .00000 | .00164 | .10151 | .00000 | .00929 | .71041 | .00350 | .00898 | .09091 |
| 2300 | .00855 | .00690 | .05717 | .00142 | .00000 | .00216 | .09960 | .00000 | .01027 | .70810 | .00469 | .01072 | .09039 |
| 2350 | .00853 | .00903 | .05484 | .00208 | .00000 | .00281 | .09731 | .00000 | .01131 | .70533 | .00622 | .01268 | .08987 |
| 2400 | .00849 | .01154 | .05208 | .00299 | .00001 | .00358 | .09458 | .00000 | .01238 | .70203 | .00815 | .01484 | .08933 |
| 2450 | .00845 | .01442 | .04891 | .00423 | .00001 | .00449 | .09137 | .00000 | .01350 | .69814 | .01055 | .01719 | .08874 |
| 2500 | .00841 | .01760 | .04537 | .00588 | .00001 | .00554 | .08764 | .00000 | .01465 | .69363 | .01352 | .01970 | .08805 |
| 2550 | .00835 | .02099 | .04156 | .00804 | .00001 | .00672 | .08337 | .00000 | .01581 | .68846 | .01713 | .02234 | .08721 |
| 2600 | .00829 | .02450 | .03758 | .01080 | .00001 | .00801 | .07855 | .00000 | .01698 | .68259 | .02148 | .02504 | .08616 |
| 2650 | .00822 | .02801 | .03354 | .01427 | .00001 | .00938 | .07320 | .00000 | .01814 | .67603 | .02665 | .02773 | .08482 |
| 2700 | .00814 | .03139 | .02955 | .01855 | .00001 | .01078 | .06735 | .00000 | .01927 | .66877 | .03273 | .03033 | .08313 |
| 2750 | .00805 | .03456 | .02572 | .02371 | .00001 | .01215 | .06108 | .00001 | .02035 | .66083 | .03978 | .03273 | .08104 |
| 2800 | .00795 | .03742 | .02213 | .02980 | .00001 | .01342 | .05451 | .00001 | .02135 | .65227 | .04783 | .03480 | .07850 |
| 2850 | .00785 | .03993 | .01885 | .03683 | .00001 | .01451 | .04777 | .00001 | .02225 | .64315 | .05691 | .03645 | .07549 |
| 2900 | .00774 | .04206 | .01589 | .04475 | .00001 | .01534 | .04103 | .00002 | .02302 | .63357 | .06699 | .03756 | .07201 |
| 2950 | .00762 | .04381 | .01328 | .05345 | .00001 | .01584 | .03449 | .00002 | .02366 | .62367 | .07801 | .03805 | .06808 |
| 3000 | .00750 | .04519 | .01102 | .06273 | .00001 | .01597 | .02833 | .00003 | .02414 | .61362 | .08986 | .03786 | .06372 |

TABLE 24.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.032829; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00001 | .00000 | .72090 | .00000 | .00000 | .09669 |
| 950 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00001 | .00000 | .72089 | .00000 | .00000 | .09669 |
| 1000 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00002 | .00000 | .72089 | .00000 | .00000 | .09669 |
| 1050 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00004 | .00000 | .72088 | .00000 | .00000 | .09668 |
| 1100 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00006 | .00000 | .72087 | .00000 | .00000 | .09667 |
| 1150 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00009 | .00000 | .72085 | .00000 | .00000 | .09665 |
| 1200 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00000 | .00014 | .00000 | .72083 | .00000 | .00000 | .09663 |
| 1250 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00000 | .00020 | .00000 | .72080 | .00000 | .00001 | .09659 |
| 1300 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00000 | .00028 | .00000 | .72076 | .00000 | .00001 | .09655 |
| 1350 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00000 | .00038 | .00000 | .72070 | .00000 | .00002 | .09650 |
| 1400 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10898 | .00000 | .00051 | .00000 | .72064 | .00000 | .00003 | .09643 |
| 1450 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10897 | .00000 | .00067 | .00000 | .72056 | .00000 | .00004 | .09635 |
| 1500 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10896 | .00000 | .00086 | .00000 | .72046 | .00000 | .00007 | .09625 |
| 1550 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10894 | .00000 | .00108 | .00000 | .72034 | .00000 | .00010 | .09612 |
| 1600 | .00865 | .00000 | .06475 | .00000 | .00000 | .00000 | .10891 | .00000 | .00135 | .00000 | .72019 | .00000 | .00016 | .09598 |
| 1650 | .00865 | .00001 | .06475 | .00000 | .00000 | .00000 | .10887 | .00000 | .00165 | .00000 | .72002 | .00001 | .00023 | .09581 |
| 1700 | .00865 | .00001 | .06474 | .00000 | .00000 | .00001 | .10882 | .00000 | .00201 | .00000 | .71983 | .00001 | .00032 | .09561 |
| 1750 | .00864 | .00002 | .06473 | .00000 | .00000 | .00001 | .10875 | .00000 | .00241 | .00000 | .71959 | .00002 | .00044 | .09537 |
| 1800 | .00864 | .00004 | .06470 | .00000 | .00000 | .00002 | .10865 | .00000 | .00285 | .00000 | .71933 | .00004 | .00060 | .09511 |
| 1850 | .00864 | .00007 | .06467 | .00000 | .00000 | .00003 | .10853 | .00000 | .00336 | .00000 | .71902 | .00006 | .00081 | .09481 |
| 1900 | .00864 | .00011 | .06462 | .00001 | .00000 | .00005 | .10837 | .00000 | .00391 | .00001 | .71866 | .00009 | .00106 | .09447 |
| 1950 | .00864 | .00018 | .06455 | .00001 | .00000 | .00007 | .10817 | .00000 | .00452 | .00001 | .71825 | .00014 | .00138 | .09409 |
| 2000 | .00864 | .00027 | .06444 | .00002 | .00000 | .00010 | .10792 | .00000 | .00518 | .00001 | .71777 | .00020 | .00177 | .09368 |
| 2050 | .00864 | .00041 | .06428 | .00003 | .00000 | .00015 | .10760 | .00000 | .00590 | .00001 | .71722 | .00030 | .00224 | .09322 |
| 2100 | .00863 | .00061 | .06406 | .00004 | .00000 | .00021 | .10722 | .00000 | .00667 | .00001 | .71659 | .00042 | .00280 | .09273 |
| 2150 | .00863 | .00088 | .06377 | .00007 | .00001 | .00029 | .10674 | .00000 | .00750 | .00001 | .71585 | .00059 | .00347 | .09220 |
| 2200 | .00863 | .00124 | .06336 | .00011 | .00001 | .00040 | .10616 | .00000 | .00839 | .00001 | .71500 | .00081 | .00425 | .09165 |
| 2250 | .00862 | .00173 | .06283 | .00017 | .00001 | .00054 | .10546 | .00000 | .00932 | .00001 | .71400 | .00111 | .00515 | .09106 |
| 2300 | .00861 | .00237 | .06213 | .00026 | .00001 | .00072 | .10462 | .00000 | .01031 | .00001 | .71284 | .00148 | .00618 | .09046 |
| 2350 | .00860 | .00319 | .06124 | .00038 | .00001 | .00095 | .10361 | .00000 | .01135 | .00001 | .71149 | .00197 | .00736 | .08985 |
| 2400 | .00859 | .00422 | .06012 | .00055 | .00001 | .00123 | .10243 | .00000 | .01245 | .00001 | .70992 | .00258 | .00868 | .08923 |
| 2450 | .00857 | .00548 | .05874 | .00079 | .00001 | .00157 | .10104 | .00000 | .01358 | .00001 | .70810 | .00333 | .01016 | .08860 |
| 2500 | .00856 | .00700 | .05708 | .00111 | .00001 | .00199 | .09941 | .00000 | .01477 | .00001 | .70601 | .00427 | .01180 | .08798 |
| 2550 | .00853 | .00880 | .05513 | .00155 | .00001 | .00248 | .09753 | .00000 | .01600 | .00001 | .70360 | .00542 | .01359 | .08735 |
| 2600 | .00851 | .01087 | .05287 | .00211 | .00002 | .00307 | .09537 | .00000 | .01726 | .00001 | .70085 | .00681 | .01554 | .08672 |
| 2650 | .00848 | .01319 | .05032 | .00285 | .00002 | .00374 | .09291 | .00000 | .01857 | .00001 | .69773 | .00849 | .01764 | .08606 |
| 2700 | .00845 | .01575 | .04751 | .00379 | .00002 | .00450 | .09013 | .00000 | .01990 | .00001 | .69424 | .01049 | .01986 | .08535 |
| 2750 | .00841 | .01850 | .04447 | .00498 | .00002 | .00536 | .08703 | .00000 | .02125 | .00001 | .69035 | .01285 | .02220 | .08458 |
| 2800 | .00836 | .02137 | .04128 | .00646 | .00002 | .00630 | .08358 | .00000 | .02261 | .00001 | .68606 | .01562 | .02463 | .08370 |
| 2850 | .00832 | .02431 | .03798 | .00828 | .00002 | .00733 | .07981 | .00000 | .02396 | .00001 | .68137 | .01883 | .02710 | .08269 |
| 2900 | .00826 | .02725 | .03464 | .01048 | .00002 | .00841 | .07570 | .00001 | .02531 | .00001 | .67627 | .02254 | .02959 | .08151 |
| 2950 | .00820 | .03012 | .03134 | .01312 | .00002 | .00954 | .07130 | .00001 | .02662 | .00001 | .67077 | .02677 | .03204 | .08014 |
| 3000 | .00814 | .03286 | .02812 | .01623 | .00003 | .01070 | .06662 | .00001 | .02789 | .00001 | .66490 | .03155 | .03439 | .07855 |

TABLE 24.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.032829; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00001 | .00000 | .72090 | .00000 | .00000 | .09669 |
| 950 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00001 | .00000 | .72089 | .00000 | .00000 | .09669 |
| 1000 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00002 | .00000 | .72089 | .00000 | .00000 | .09668 |
| 1050 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00004 | .00000 | .72088 | .00000 | .00000 | .09668 |
| 1100 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00006 | .00000 | .72087 | .00000 | .00000 | .09666 |
| 1150 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00009 | .00000 | .72085 | .00000 | .00000 | .09665 |
| 1200 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00014 | .00000 | .72083 | .00000 | .00000 | .09662 |
| 1250 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00020 | .00001 | .72080 | .00000 | .00000 | .09659 |
| 1300 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00028 | .00001 | .72076 | .00000 | .00001 | .09655 |
| 1350 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00038 | .00001 | .72071 | .00000 | .00001 | .09650 |
| 1400 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00051 | .00001 | .72064 | .00000 | .00002 | .09643 |
| 1450 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10898 | .00067 | .00001 | .72056 | .00000 | .00002 | .09635 |
| 1500 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10898 | .00086 | .00001 | .72046 | .00000 | .00004 | .09625 |
| 1550 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10897 | .00108 | .00001 | .72035 | .00000 | .00006 | .09613 |
| 1600 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10895 | .00135 | .00001 | .72021 | .00000 | .00009 | .09599 |
| 1650 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10893 | .00165 | .00001 | .72005 | .00000 | .00013 | .09582 |
| 1700 | .00865 | .00000 | .06475 | .00000 | .00000 | .00000 | .10890 | .00201 | .00001 | .71986 | .00000 | .00018 | .09563 |
| 1750 | .00865 | .00001 | .06475 | .00000 | .00000 | .00000 | .10886 | .00241 | .00001 | .71964 | .00001 | .00025 | .09541 |
| 1800 | .00865 | .00001 | .06474 | .00000 | .00000 | .00001 | .10881 | .00286 | .00001 | .71940 | .00001 | .00034 | .09516 |
| 1850 | .00864 | .00002 | .06473 | .00000 | .00000 | .00001 | .10874 | .00336 | .00002 | .71912 | .00002 | .00045 | .09488 |
| 1900 | .00864 | .00004 | .06471 | .00000 | .00000 | .00001 | .10866 | .00391 | .00002 | .71880 | .00003 | .00060 | .09457 |
| 1950 | .00864 | .00006 | .06469 | .00000 | .00000 | .00002 | .10856 | .00452 | .00002 | .71845 | .00004 | .00078 | .09422 |
| 2000 | .00864 | .00009 | .06465 | .00000 | .00001 | .00003 | .10842 | .00519 | .00002 | .71806 | .00006 | .00100 | .09383 |
| 2050 | .00864 | .00013 | .06460 | .00000 | .00001 | .00005 | .10826 | .00591 | .00002 | .71762 | .00009 | .00127 | .09340 |
| 2100 | .00864 | .00019 | .06453 | .00001 | .00001 | .00007 | .10807 | .00668 | .00002 | .71712 | .00013 | .00158 | .09294 |
| 2150 | .00864 | .00028 | .06443 | .00001 | .00001 | .00009 | .10783 | .00752 | .00002 | .71658 | .00019 | .00196 | .09244 |
| 2200 | .00864 | .00040 | .06430 | .00002 | .00001 | .00013 | .10754 | .00840 | .00002 | .71597 | .00026 | .00241 | .09191 |
| 2250 | .00864 | .00056 | .06412 | .00003 | .00001 | .00017 | .10720 | .00935 | .00002 | .71529 | .00035 | .00292 | .09134 |
| 2300 | .00863 | .00077 | .06388 | .00005 | .00001 | .00023 | .10680 | .01034 | .00002 | .71454 | .00047 | .00351 | .09073 |
| 2350 | .00863 | .00105 | .06358 | .00007 | .00002 | .00031 | .10633 | .01139 | .00002 | .71370 | .00062 | .00419 | .09010 |
| 2400 | .00862 | .00140 | .06319 | .00010 | .00002 | .00040 | .10577 | .01249 | .00002 | .71276 | .00082 | .00496 | .08944 |
| 2450 | .00862 | .00185 | .06270 | .00014 | .00002 | .00052 | .10513 | .01363 | .00002 | .71172 | .00106 | .00583 | .08876 |
| 2500 | .00861 | .00241 | .06209 | .00020 | .00002 | .00066 | .10438 | .01482 | .00002 | .71056 | .00135 | .00680 | .08806 |
| 2550 | .00860 | .00310 | .06134 | .00028 | .00003 | .00083 | .10353 | .01606 | .00003 | .70926 | .00171 | .00787 | .08735 |
| 2600 | .00859 | .00393 | .06043 | .00039 | .00003 | .00104 | .10255 | .01734 | .00003 | .70782 | .00215 | .00906 | .08663 |
| 2650 | .00858 | .00493 | .05935 | .00053 | .00003 | .00129 | .10144 | .01866 | .00003 | .70621 | .00268 | .01036 | .08591 |
| 2700 | .00857 | .00610 | .05808 | .00071 | .00003 | .00158 | .10018 | .02002 | .00003 | .70442 | .00331 | .01177 | .08519 |
| 2750 | .00855 | .00745 | .05661 | .00094 | .00004 | .00192 | .99877 | .02142 | .00003 | .70244 | .00406 | .01330 | .08446 |
| 2800 | .00854 | .00899 | .05494 | .00124 | .00004 | .00232 | .99718 | .02284 | .00003 | .70026 | .00494 | .01494 | .08374 |
| 2850 | .00852 | .01072 | .05306 | .00161 | .00004 | .00276 | .99542 | .02430 | .00003 | .69786 | .00597 | .01668 | .08302 |
| 2900 | .00849 | .01262 | .05099 | .00207 | .00005 | .00327 | .99348 | .02578 | .00003 | .69524 | .00716 | .01853 | .08228 |
| 2950 | .00847 | .01469 | .04874 | .00263 | .00005 | .00383 | .99134 | .02728 | .00003 | .69239 | .00854 | .02048 | .08153 |
| 3000 | .00844 | .01689 | .04633 | .00331 | .00005 | .00446 | .98900 | .02880 | .00003 | .68931 | .01012 | .02251 | .08074 |

TABLE 24.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.032829; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00001 | .00000 | .72090 | .00000 | .00000 | .00000 | .09669 |
| 950 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00001 | .00000 | .72089 | .00000 | .00000 | .00000 | .09669 |
| 1000 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00002 | .00001 | .72089 | .00000 | .00000 | .00000 | .09668 |
| 1050 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00004 | .00001 | .72088 | .00000 | .00000 | .00000 | .09667 |
| 1100 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00006 | .00001 | .72087 | .00000 | .00000 | .00000 | .09666 |
| 1150 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00009 | .00001 | .72085 | .00000 | .00000 | .00000 | .09664 |
| 1200 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00014 | .00001 | .72083 | .00000 | .00000 | .00000 | .09662 |
| 1250 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00020 | .00001 | .72080 | .00000 | .00000 | .00000 | .09658 |
| 1300 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10900 | .00028 | .00001 | .72076 | .00000 | .00000 | .00000 | .09654 |
| 1350 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00038 | .00002 | .72070 | .00000 | .00000 | .00001 | .09649 |
| 1400 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00051 | .00002 | .72064 | .00000 | .00000 | .00001 | .09642 |
| 1450 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10899 | .00067 | .00002 | .72056 | .00000 | .00000 | .00002 | .09634 |
| 1500 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10898 | .00086 | .00002 | .72046 | .00000 | .00000 | .00003 | .09624 |
| 1550 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10898 | .00108 | .00002 | .72035 | .00000 | .00000 | .00004 | .09612 |
| 1600 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10897 | .00135 | .00002 | .72021 | .00000 | .00000 | .00006 | .09598 |
| 1650 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10895 | .00165 | .00003 | .72005 | .00000 | .00000 | .00008 | .09582 |
| 1700 | .00865 | .00000 | .06476 | .00000 | .00000 | .00000 | .10893 | .00201 | .00003 | .71987 | .00000 | .00000 | .00012 | .09563 |
| 1750 | .00865 | .00000 | .06475 | .00000 | .00000 | .00000 | .10891 | .00241 | .00003 | .71966 | .00000 | .00000 | .00017 | .09542 |
| 1800 | .00865 | .00001 | .06475 | .00000 | .00000 | .00000 | .10887 | .00286 | .00003 | .71942 | .00000 | .00001 | .00023 | .09518 |
| 1850 | .00865 | .00001 | .06475 | .00000 | .00000 | .00000 | .10883 | .00336 | .00003 | .71915 | .00000 | .00001 | .00030 | .09490 |
| 1900 | .00865 | .00002 | .06474 | .00000 | .00001 | .00001 | .10878 | .00391 | .00004 | .71885 | .00000 | .00001 | .00040 | .09460 |
| 1950 | .00864 | .00003 | .06473 | .00000 | .00001 | .00001 | .10871 | .00452 | .00004 | .71852 | .00000 | .00002 | .00052 | .09426 |
| 2000 | .00864 | .00004 | .06471 | .00000 | .00001 | .00001 | .10862 | .00519 | .00004 | .71815 | .00000 | .00003 | .00067 | .09388 |
| 2050 | .00864 | .00006 | .06468 | .00000 | .00001 | .00002 | .10852 | .00591 | .00004 | .71774 | .00000 | .00004 | .00085 | .09348 |
| 2100 | .00864 | .00009 | .06465 | .00000 | .00001 | .00003 | .10839 | .00669 | .00004 | .71729 | .00000 | .00006 | .00106 | .09303 |
| 2150 | .00864 | .00013 | .06461 | .00000 | .00001 | .00004 | .10824 | .00752 | .00004 | .71680 | .00000 | .00008 | .00132 | .09255 |
| 2200 | .00864 | .00018 | .06454 | .00001 | .00002 | .00006 | .10806 | .00841 | .00005 | .71627 | .00000 | .00012 | .00161 | .09204 |
| 2250 | .00864 | .00025 | .06446 | .00001 | .00002 | .00008 | .10785 | .00936 | .00005 | .71568 | .00000 | .00016 | .00196 | .09149 |
| 2300 | .00864 | .00035 | .06436 | .00001 | .00002 | .00010 | .10760 | .01035 | .00005 | .71505 | .00000 | .00021 | .00236 | .09090 |
| 2350 | .00864 | .00047 | .06421 | .00002 | .00002 | .00014 | .10730 | .01140 | .00005 | .71435 | .00000 | .00028 | .00282 | .09028 |
| 2400 | .00863 | .00063 | .06403 | .00003 | .00003 | .00018 | .10696 | .01251 | .00005 | .71360 | .00000 | .00036 | .00334 | .08963 |
| 2450 | .00863 | .00084 | .06381 | .00004 | .00003 | .00023 | .10657 | .01366 | .00005 | .71278 | .00000 | .00047 | .00393 | .08895 |
| 2500 | .00863 | .00110 | .06352 | .00006 | .00003 | .00030 | .10612 | .01485 | .00006 | .71189 | .00000 | .00061 | .00459 | .08825 |
| 2550 | .00862 | .00142 | .06316 | .00009 | .00004 | .00038 | .10561 | .01610 | .00006 | .71091 | .00001 | .00077 | .00532 | .08752 |
| 2600 | .00862 | .00182 | .06273 | .00012 | .00004 | .00048 | .10502 | .01738 | .00006 | .70986 | .00001 | .00096 | .00613 | .08677 |
| 2650 | .00861 | .00231 | .06220 | .00016 | .00005 | .00059 | .10436 | .01871 | .00006 | .70871 | .00001 | .00120 | .00703 | .08601 |
| 2700 | .00861 | .00289 | .06157 | .00022 | .00005 | .00073 | .10362 | .02007 | .00006 | .70746 | .00001 | .00148 | .00801 | .08523 |
| 2750 | .00860 | .00358 | .06082 | .00029 | .00006 | .00090 | .10279 | .02147 | .00006 | .70610 | .00001 | .00182 | .00907 | .08445 |
| 2800 | .00859 | .00439 | .05994 | .00038 | .00006 | .00109 | .10186 | .02290 | .00006 | .70463 | .00001 | .00221 | .01022 | .08367 |
| 2850 | .00858 | .00533 | .05892 | .00049 | .00007 | .00131 | .10082 | .02437 | .00006 | .70303 | .00001 | .00267 | .01146 | .08281 |
| 2900 | .00857 | .00640 | .05776 | .00064 | .00007 | .00156 | .09968 | .02586 | .00006 | .70129 | .00001 | .00320 | .01279 | .08210 |
| 2950 | .00855 | .00762 | .05645 | .00082 | .00008 | .00185 | .09842 | .02738 | .00006 | .69942 | .00001 | .00381 | .01421 | .08132 |
| 3000 | .00854 | .00897 | .05498 | .00104 | .00008 | .00218 | .09705 | .02893 | .00006 | .69740 | .00001 | .00452 | .01571 | .08054 |

TABLE 24C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.032829; EQUIV.RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522;
 WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00865 | .06476 | .10885 | .00000 | .00014 | .72090 | .09670 |
| 220 | .00865 | .06476 | .10667 | .00000 | .00233 | .72090 | .09670 |
| 240 | .00865 | .06476 | .08446 | .00000 | .02454 | .72090 | .09670 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00865 | .06476 | .10898 | .00000 | .00001 | .72090 | .09670 |
| 220 | .00865 | .06476 | .10876 | .00000 | .00023 | .72090 | .09670 |
| 240 | .00865 | .06476 | .10660 | .00000 | .00239 | .72090 | .09670 |
| 260 | .00865 | .06476 | .09151 | .00000 | .01749 | .72090 | .09670 |
| 280 | .00865 | .06476 | .00000 | .01279 | .09621 | .72090 | .09670 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00865 | .06476 | .10900 | .00000 | .00000 | .72090 | .09670 |
| 220 | .00865 | .06476 | .10897 | .00000 | .00002 | .72090 | .09670 |
| 240 | .00865 | .06476 | .10876 | .00000 | .00024 | .72090 | .09670 |
| 260 | .00865 | .06476 | .10728 | .00000 | .00172 | .72090 | .09670 |
| 280 | .00865 | .06476 | .00000 | .10023 | .00877 | .72090 | .09670 |
| 298 | .00865 | .06476 | .00000 | .08038 | .02862 | .72090 | .09670 |
| 300 | .00865 | .06476 | .00000 | .07695 | .03205 | .72090 | .09670 |
| 320 | .00865 | .06476 | .00000 | .00632 | .10267 | .72090 | .09670 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00865 | .06476 | .10900 | .00000 | .00000 | .72090 | .09670 |
| 220 | .00865 | .06476 | .10899 | .00000 | .00000 | .72090 | .09670 |
| 240 | .00865 | .06476 | .10897 | .00000 | .00002 | .72090 | .09670 |
| 260 | .00865 | .06476 | .10883 | .00000 | .00017 | .72090 | .09670 |
| 280 | .00865 | .06476 | .00000 | .10813 | .00087 | .72090 | .09670 |
| 298 | .00865 | .06476 | .00000 | .10622 | .00278 | .72090 | .09670 |
| 300 | .00865 | .06476 | .00000 | .10589 | .00310 | .72090 | .09670 |
| 320 | .00865 | .06476 | .00000 | .09969 | .00930 | .72090 | .09670 |
| 340 | .00865 | .06476 | .00000 | .08469 | .02431 | .72090 | .09670 |
| 360 | .00865 | .06476 | .00000 | .05166 | .05734 | .72090 | .09670 |
| 380 | .00865 | .06476 | .00000 | .00000 | .10900 | .72090 | .09670 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00865 | .06476 | .10900 | .00000 | .00000 | .72090 | .09670 |
| 220 | .00865 | .06476 | .10900 | .00000 | .00000 | .72090 | .09670 |
| 240 | .00865 | .06476 | .10899 | .00000 | .00000 | .72090 | .09670 |
| 260 | .00865 | .06476 | .10896 | .00000 | .00003 | .72090 | .09670 |
| 280 | .00865 | .06476 | .00000 | .10882 | .00017 | .72090 | .09670 |
| 298 | .00865 | .06476 | .00000 | .10844 | .00055 | .72090 | .09670 |
| 300 | .00865 | .06476 | .00000 | .10838 | .00062 | .72090 | .09670 |
| 320 | .00865 | .06476 | .00000 | .10715 | .00185 | .72090 | .09670 |
| 340 | .00865 | .06476 | .00000 | .10424 | .00476 | .72090 | .09670 |
| 360 | .00865 | .06476 | .00000 | .09809 | .01091 | .72090 | .09670 |
| 380 | .00865 | .06476 | .00000 | .08626 | .02273 | .72090 | .09670 |
| 400 | .00865 | .06476 | .00000 | .06506 | .04394 | .72090 | .09670 |
| 420 | .00865 | .06476 | .00000 | .02884 | .08016 | .72090 | .09670 |

TABLE 25.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.049244; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00851 | .00000 | .09545 | .00000 | .00000 | .13899 | .00000 | .00000 | .70946 | .00000 | .00000 | .04758 |
| 950 | .00851 | .00000 | .09545 | .00000 | .00000 | .13899 | .00000 | .00001 | .70946 | .00000 | .00000 | .04758 |
| 1000 | .00851 | .00000 | .09545 | .00000 | .00000 | .13899 | .00000 | .00002 | .70946 | .00000 | .00000 | .04757 |
| 1050 | .00851 | .00000 | .09545 | .00000 | .00000 | .13899 | .00000 | .00003 | .70945 | .00000 | .00000 | .04757 |
| 1100 | .00851 | .00000 | .09545 | .00000 | .00000 | .13899 | .00000 | .00004 | .70944 | .00000 | .00000 | .04756 |
| 1150 | .00851 | .00000 | .09545 | .00000 | .00000 | .13899 | .00000 | .00007 | .70943 | .00000 | .00000 | .04755 |
| 1200 | .00851 | .00000 | .09545 | .00000 | .00000 | .13899 | .00000 | .00010 | .70942 | .00000 | .00001 | .04753 |
| 1250 | .00851 | .00000 | .09545 | .00000 | .00000 | .13898 | .00000 | .00014 | .70939 | .00000 | .00002 | .04751 |
| 1300 | .00851 | .00000 | .09545 | .00000 | .00000 | .13897 | .00000 | .00020 | .70936 | .00000 | .00003 | .04748 |
| 1350 | .00851 | .00000 | .09545 | .00000 | .00000 | .13896 | .00000 | .00027 | .70932 | .00000 | .00005 | .04744 |
| 1400 | .00851 | .00000 | .09545 | .00000 | .00000 | .13894 | .00000 | .00036 | .70927 | .00000 | .00008 | .04739 |
| 1450 | .00851 | .00001 | .09544 | .00000 | .00001 | .13891 | .00000 | .00046 | .70920 | .00000 | .00013 | .04732 |
| 1500 | .00851 | .00002 | .09543 | .00000 | .00001 | .13886 | .00000 | .00060 | .70912 | .00001 | .00021 | .04724 |
| 1550 | .00851 | .00004 | .09540 | .00000 | .00002 | .13879 | .00000 | .00075 | .70900 | .00002 | .00031 | .04715 |
| 1600 | .00851 | .00009 | .09535 | .00000 | .00004 | .13869 | .00000 | .00094 | .70886 | .00003 | .00046 | .04704 |
| 1650 | .00851 | .00016 | .09526 | .00001 | .00007 | .13853 | .00000 | .00115 | .70866 | .00006 | .00067 | .04692 |
| 1700 | .00850 | .00030 | .09511 | .00002 | .00013 | .13831 | .00000 | .00139 | .70841 | .00010 | .00095 | .04679 |
| 1750 | .00850 | .00052 | .09485 | .00003 | .00021 | .13799 | .00000 | .00167 | .70806 | .00016 | .00132 | .04668 |
| 1800 | .00850 | .00089 | .09445 | .00007 | .00034 | .13755 | .00000 | .00198 | .70759 | .00026 | .00179 | .04658 |
| 1850 | .00849 | .00146 | .09381 | .00012 | .00053 | .13693 | .00000 | .00233 | .70695 | .00041 | .00240 | .04655 |
| 1900 | .00848 | .00233 | .09285 | .00023 | .00082 | .13609 | .00000 | .00272 | .70608 | .00064 | .00316 | .04660 |
| 1950 | .00847 | .00360 | .09146 | .00040 | .00121 | .13494 | .00000 | .00316 | .70490 | .00097 | .00410 | .04680 |
| 2000 | .00846 | .00538 | .08949 | .00068 | .00176 | .13342 | .00000 | .00364 | .70331 | .00144 | .00525 | .04718 |
| 2050 | .00843 | .00779 | .08683 | .00113 | .00249 | .13141 | .00000 | .00418 | .70120 | .00211 | .00663 | .04779 |
| 2100 | .00841 | .01093 | .08337 | .00182 | .00344 | .12882 | .00000 | .00477 | .69847 | .00305 | .00827 | .04866 |
| 2150 | .00837 | .01482 | .07905 | .00285 | .00463 | .12552 | .00000 | .00543 | .69498 | .00433 | .01020 | .04980 |
| 2200 | .00832 | .01944 | .07390 | .00437 | .00609 | .12142 | .00000 | .00616 | .69065 | .00608 | .01241 | .05116 |
| 2250 | .00826 | .02467 | .06801 | .00653 | .00782 | .11641 | .00000 | .00695 | .68536 | .00841 | .01491 | .05266 |
| 2300 | .00819 | .03034 | .06154 | .00952 | .00980 | .11040 | .00000 | .00779 | .67905 | .01149 | .01767 | .05420 |
| 2350 | .00811 | .03622 | .05473 | .01357 | .01199 | .10335 | .00000 | .00868 | .67166 | .01547 | .02061 | .05561 |
| 2400 | .00801 | .04205 | .04782 | .01892 | .01431 | .09526 | .00000 | .00959 | .66313 | .02053 | .02364 | .05673 |
| 2450 | .00790 | .04757 | .04105 | .02578 | .01666 | .08618 | .00000 | .01050 | .65347 | .02684 | .02662 | .05741 |
| 2500 | .00778 | .05259 | .03465 | .03434 | .01888 | .07628 | .00000 | .01139 | .64268 | .03454 | .02938 | .05749 |
| 2550 | .00764 | .05693 | .02877 | .04470 | .02078 | .06580 | .00000 | .01222 | .63087 | .04373 | .03171 | .05685 |
| 2600 | .00749 | .06052 | .02353 | .05681 | .02217 | .05510 | .00001 | .01296 | .61818 | .05445 | .03339 | .05538 |
| 2650 | .00734 | .06333 | .01896 | .07045 | .02286 | .04462 | .00001 | .01357 | .60489 | .06666 | .03424 | .05305 |
| 2700 | .00718 | .06542 | .01508 | .08519 | .02275 | .03481 | .00001 | .01404 | .59134 | .08017 | .03413 | .04988 |
| 2750 | .00702 | .06687 | .01185 | .10043 | .02181 | .02610 | .00002 | .01432 | .57795 | .09469 | .03301 | .04593 |
| 2800 | .00686 | .06780 | .00921 | .11545 | .02015 | .01878 | .00003 | .01442 | .56516 | .10980 | .03096 | .04137 |
| 2850 | .00672 | .06833 | .00708 | .12957 | .01796 | .01299 | .00004 | .01433 | .55337 | .12500 | .02817 | .03642 |
| 2900 | .00660 | .06858 | .00541 | .14226 | .01550 | .00865 | .00005 | .01406 | .54287 | .13977 | .02491 | .03135 |
| 2950 | .00648 | .06864 | .00410 | .15318 | .01301 | .00558 | .00007 | .01363 | .53381 | .15361 | .02147 | .02639 |
| 3000 | .00639 | .06859 | .00309 | .16227 | .01069 | .00351 | .00010 | .01307 | .52622 | .16618 | .01811 | .02179 |

TABLE 25.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.049244; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00000 | .70946 | .00000 | .00000 | .04758 |
| 950 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00001 | .70946 | .00000 | .00000 | .04758 |
| 1000 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00002 | .70946 | .00000 | .00000 | .04757 |
| 1050 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00003 | .70945 | .00000 | .00000 | .04757 |
| 1100 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00004 | .70944 | .00000 | .00000 | .04756 |
| 1150 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00007 | .70943 | .00000 | .00000 | .04755 |
| 1200 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00010 | .70942 | .00000 | .00000 | .04753 |
| 1250 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00000 | .00014 | .70939 | .00000 | .00001 | .04751 |
| 1300 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00000 | .00020 | .70936 | .00000 | .00002 | .04748 |
| 1350 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13897 | .00000 | .00027 | .70933 | .00000 | .00003 | .04744 |
| 1400 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13896 | .00000 | .00036 | .70928 | .00000 | .00005 | .04739 |
| 1450 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13895 | .00000 | .00046 | .70922 | .00000 | .00007 | .04733 |
| 1500 | .00851 | .00001 | .09544 | .00000 | .00000 | .00000 | .13892 | .00000 | .00060 | .70914 | .00000 | .00012 | .04726 |
| 1550 | .00851 | .00001 | .09543 | .00000 | .00000 | .00001 | .13889 | .00000 | .00075 | .70905 | .00001 | .00018 | .04717 |
| 1600 | .00851 | .00003 | .09542 | .00000 | .00000 | .00001 | .13883 | .00000 | .00094 | .70893 | .00001 | .00026 | .04706 |
| 1650 | .00851 | .00005 | .09539 | .00000 | .00000 | .00002 | .13876 | .00000 | .00115 | .70879 | .00002 | .00038 | .04693 |
| 1700 | .00851 | .00009 | .09534 | .00000 | .00000 | .00004 | .13865 | .00000 | .00139 | .70861 | .00003 | .00054 | .04679 |
| 1750 | .00851 | .00017 | .09526 | .00001 | .00000 | .00007 | .13850 | .00000 | .00167 | .70840 | .00005 | .00074 | .04664 |
| 1800 | .00850 | .00028 | .09512 | .00001 | .00000 | .00011 | .13830 | .00000 | .00198 | .70812 | .00008 | .00101 | .04647 |
| 1850 | .00850 | .00047 | .09491 | .00002 | .00000 | .00017 | .13803 | .00000 | .00233 | .70778 | .00013 | .00135 | .04630 |
| 1900 | .00850 | .00075 | .09460 | .00004 | .00000 | .00026 | .13767 | .00000 | .00271 | .70734 | .00020 | .00178 | .04615 |
| 1950 | .00850 | .00118 | .09412 | .00007 | .00000 | .00039 | .13718 | .00000 | .00313 | .70678 | .00030 | .00231 | .04601 |
| 2000 | .00849 | .00180 | .09344 | .00012 | .00000 | .00058 | .13656 | .00000 | .00360 | .70607 | .00045 | .00297 | .04593 |
| 2050 | .00848 | .00268 | .09247 | .00021 | .00000 | .00083 | .13574 | .00000 | .00411 | .70516 | .00066 | .00375 | .04592 |
| 2100 | .00847 | .00389 | .09115 | .00034 | .00000 | .00117 | .13469 | .00000 | .00466 | .70400 | .00094 | .00469 | .04601 |
| 2150 | .00846 | .00550 | .08938 | .00053 | .00000 | .00162 | .13336 | .00000 | .00526 | .70253 | .00132 | .00580 | .04624 |
| 2200 | .00844 | .00759 | .08709 | .00083 | .00000 | .00219 | .13169 | .00000 | .00592 | .70069 | .00184 | .00710 | .04663 |
| 2250 | .00842 | .01020 | .08421 | .00126 | .00000 | .00291 | .12963 | .00000 | .00664 | .69840 | .00252 | .00861 | .04720 |
| 2300 | .00839 | .01338 | .08071 | .00187 | .00000 | .00379 | .12710 | .00000 | .00742 | .69562 | .00342 | .01034 | .04795 |
| 2350 | .00835 | .01710 | .07660 | .00273 | .00000 | .00485 | .12407 | .00000 | .00826 | .69229 | .00459 | .01229 | .04887 |
| 2400 | .00831 | .02132 | .07191 | .00391 | .00000 | .00610 | .12045 | .00000 | .00917 | .68835 | .00609 | .01448 | .04991 |
| 2450 | .00826 | .02594 | .06674 | .00548 | .00000 | .00754 | .11623 | .00000 | .01013 | .68377 | .00800 | .01688 | .05102 |
| 2500 | .00820 | .03085 | .06120 | .00756 | .00000 | .00915 | .11135 | .00000 | .01115 | .67854 | .01040 | .01948 | .05212 |
| 2550 | .00814 | .03588 | .05544 | .01025 | .00001 | .01093 | .10580 | .00000 | .01220 | .67262 | .01337 | .02223 | .05314 |
| 2600 | .00807 | .04088 | .04962 | .01367 | .00001 | .01283 | .09957 | .00000 | .01328 | .66602 | .01700 | .02508 | .05397 |
| 2650 | .00799 | .04571 | .04389 | .01793 | .00001 | .01481 | .09270 | .00000 | .01436 | .65873 | .02137 | .02795 | .05454 |
| 2700 | .00790 | .05022 | .03837 | .02316 | .00001 | .01681 | .08524 | .00000 | .01543 | .65077 | .02657 | .03074 | .05478 |
| 2750 | .00780 | .05432 | .03319 | .02943 | .00001 | .01873 | .07729 | .00001 | .01646 | .64216 | .03265 | .03335 | .05460 |
| 2800 | .00770 | .05792 | .02841 | .03681 | .00001 | .02049 | .06899 | .00001 | .01744 | .63295 | .03966 | .03565 | .05397 |
| 2850 | .00758 | .06099 | .02409 | .04531 | .00001 | .02196 | .06050 | .00001 | .01832 | .62321 | .04762 | .03752 | .05286 |
| 2900 | .00747 | .06352 | .02025 | .05487 | .00001 | .02307 | .05204 | .00002 | .01910 | .61305 | .05651 | .03885 | .05124 |
| 2950 | .00735 | .06553 | .01688 | .06537 | .00001 | .02370 | .04384 | .00002 | .01976 | .60261 | .06627 | .03953 | .04913 |
| 3000 | .00722 | .06705 | .01397 | .07660 | .00001 | .02382 | .03611 | .00003 | .02026 | .59206 | .07681 | .03951 | .04655 |

TABLE 25.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.049244; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00000 | .00000 | .70946 | .00000 | .00000 | .04758 |
| 950 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00001 | .00000 | .70946 | .00000 | .00000 | .04758 |
| 1000 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00002 | .00000 | .70946 | .00000 | .00000 | .04757 |
| 1050 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00003 | .00000 | .70945 | .00000 | .00000 | .04757 |
| 1100 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00004 | .00000 | .70944 | .00000 | .00000 | .04756 |
| 1150 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00007 | .00000 | .70943 | .00000 | .00000 | .04755 |
| 1200 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00010 | .00000 | .70942 | .00000 | .00000 | .04753 |
| 1250 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00014 | .00000 | .70939 | .00000 | .00000 | .04751 |
| 1300 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00000 | .00020 | .00000 | .70937 | .00000 | .00001 | .04748 |
| 1350 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00000 | .00027 | .00000 | .70933 | .00000 | .00002 | .04744 |
| 1400 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00000 | .00036 | .00000 | .70928 | .00000 | .00003 | .04740 |
| 1450 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13897 | .00000 | .00046 | .00000 | .70922 | .00000 | .00004 | .04734 |
| 1500 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13895 | .00000 | .00060 | .00000 | .70915 | .00000 | .00007 | .04727 |
| 1550 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13893 | .00000 | .00075 | .00000 | .70907 | .00000 | .00010 | .04718 |
| 1600 | .00851 | .00001 | .09544 | .00000 | .00000 | .00000 | .13891 | .00000 | .00094 | .00000 | .70897 | .00000 | .00015 | .04708 |
| 1650 | .00851 | .00002 | .09543 | .00000 | .00000 | .00001 | .13887 | .00000 | .00115 | .00000 | .70884 | .00001 | .00021 | .04696 |
| 1700 | .00851 | .00003 | .09541 | .00000 | .00000 | .00001 | .13881 | .00000 | .00139 | .00000 | .70870 | .00001 | .00030 | .04682 |
| 1750 | .00851 | .00005 | .09539 | .00000 | .00000 | .00002 | .13874 | .00000 | .00167 | .00000 | .70852 | .00002 | .00042 | .04666 |
| 1800 | .00851 | .00009 | .09534 | .00000 | .00000 | .00003 | .13864 | .00000 | .00198 | .00000 | .70832 | .00003 | .00057 | .04649 |
| 1850 | .00851 | .00015 | .09528 | .00000 | .00000 | .00005 | .13851 | .00000 | .00233 | .00000 | .70808 | .00004 | .00076 | .04629 |
| 1900 | .00851 | .00024 | .09517 | .00001 | .00000 | .00008 | .13834 | .00000 | .00271 | .00000 | .70779 | .00006 | .00100 | .04608 |
| 1950 | .00850 | .00038 | .09502 | .00001 | .00000 | .00013 | .13812 | .00000 | .00313 | .00000 | .70745 | .00010 | .00130 | .04586 |
| 2000 | .00850 | .00058 | .09479 | .00002 | .00000 | .00018 | .13783 | .00000 | .00359 | .00000 | .70704 | .00014 | .00167 | .04564 |
| 2050 | .00850 | .00087 | .09447 | .00004 | .00000 | .00027 | .13747 | .00000 | .00409 | .00000 | .70655 | .00021 | .00212 | .04542 |
| 2100 | .00849 | .00128 | .09402 | .00006 | .00000 | .00038 | .13702 | .00000 | .00463 | .00000 | .70596 | .00029 | .00265 | .04522 |
| 2150 | .00849 | .00184 | .09340 | .00010 | .00000 | .00053 | .13645 | .00000 | .00521 | .00000 | .70524 | .00041 | .00328 | .04505 |
| 2200 | .00848 | .00260 | .09256 | .00015 | .00000 | .00073 | .13575 | .00000 | .00583 | .00000 | .70438 | .00057 | .00402 | .04493 |
| 2250 | .00847 | .00359 | .09147 | .00023 | .00000 | .00098 | .13489 | .00000 | .00650 | .00000 | .70333 | .00078 | .00488 | .04487 |
| 2300 | .00846 | .00488 | .09007 | .00035 | .00001 | .00130 | .13383 | .00000 | .00721 | .00000 | .70207 | .00105 | .00587 | .04490 |
| 2350 | .00845 | .00649 | .08830 | .00051 | .00001 | .00171 | .13256 | .00000 | .00798 | .00000 | .70056 | .00139 | .00700 | .04504 |
| 2400 | .00843 | .00848 | .08613 | .00074 | .00001 | .00220 | .13103 | .00000 | .00880 | .00000 | .69876 | .00183 | .00829 | .04529 |
| 2450 | .00841 | .01085 | .08353 | .00106 | .00001 | .00280 | .12923 | .00000 | .00967 | .00000 | .69665 | .00239 | .00974 | .04566 |
| 2500 | .00839 | .01363 | .08048 | .00148 | .00001 | .00351 | .12710 | .00000 | .01061 | .00000 | .69418 | .00309 | .01135 | .04615 |
| 2550 | .00836 | .01680 | .07700 | .00204 | .00001 | .00434 | .12464 | .00000 | .01160 | .00000 | .69134 | .00397 | .01314 | .04675 |
| 2600 | .00833 | .02032 | .07311 | .00278 | .00001 | .00529 | .12181 | .00000 | .01265 | .00000 | .68811 | .00504 | .01510 | .04744 |
| 2650 | .00829 | .02414 | .06888 | .00372 | .00001 | .00638 | .11858 | .00000 | .01376 | .00000 | .68447 | .00635 | .01723 | .04818 |
| 2700 | .00825 | .02819 | .06436 | .00492 | .00001 | .00758 | .11495 | .00000 | .01491 | .00000 | .68042 | .00794 | .01952 | .04893 |
| 2750 | .00820 | .03238 | .05965 | .00642 | .00001 | .00891 | .11090 | .00000 | .01611 | .00000 | .67596 | .00985 | .02194 | .04965 |
| 2800 | .00815 | .03662 | .05483 | .00828 | .00002 | .01035 | .10644 | .00000 | .01733 | .00001 | .67110 | .01211 | .02447 | .05029 |
| 2850 | .00810 | .04083 | .05000 | .01054 | .00002 | .01189 | .10155 | .00000 | .01857 | .00001 | .66583 | .01477 | .02707 | .05082 |
| 2900 | .00804 | .04491 | .04524 | .01328 | .00002 | .01350 | .09627 | .00001 | .01981 | .00001 | .66017 | .01786 | .02970 | .05118 |
| 2950 | .00797 | .04879 | .04063 | .01653 | .00002 | .01516 | .09062 | .00001 | .02104 | .00001 | .65413 | .02143 | .03232 | .05135 |
| 3000 | .00790 | .05241 | .03624 | .02036 | .00002 | .01682 | .08464 | .00001 | .02225 | .00001 | .64772 | .02549 | .03485 | .05129 |

TABLE 25.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.049244; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00000 | .70946 | .00000 | .00000 | .04758 |
| 950 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00001 | .00000 | .70946 | .00000 | .00000 | .04758 |
| 1000 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00002 | .00000 | .70946 | .00000 | .00000 | .04757 |
| 1050 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00003 | .00000 | .70945 | .00000 | .00000 | .04757 |
| 1100 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00004 | .00000 | .70944 | .00000 | .00000 | .04756 |
| 1150 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00007 | .00000 | .70943 | .00000 | .00000 | .04755 |
| 1200 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00010 | .00000 | .70942 | .00000 | .00000 | .04753 |
| 1250 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00014 | .00000 | .70939 | .00000 | .00000 | .04751 |
| 1300 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00020 | .00000 | .70937 | .00000 | .00000 | .04748 |
| 1350 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00027 | .00000 | .70933 | .00000 | .00001 | .04744 |
| 1400 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00036 | .00000 | .70928 | .00000 | .00001 | .04740 |
| 1450 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00046 | .00000 | .70923 | .00000 | .00002 | .04734 |
| 1500 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13897 | .00060 | .00000 | .70916 | .00000 | .00004 | .04727 |
| 1550 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13896 | .00075 | .00000 | .70908 | .00000 | .00006 | .04719 |
| 1600 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13894 | .00094 | .00001 | .70898 | .00000 | .00008 | .04709 |
| 1650 | .00851 | .00001 | .09545 | .00000 | .00000 | .00000 | .13892 | .00115 | .00001 | .70887 | .00000 | .00012 | .04697 |
| 1700 | .00851 | .00001 | .09544 | .00000 | .00000 | .00000 | .13889 | .00139 | .00001 | .70873 | .00000 | .00017 | .04684 |
| 1750 | .00851 | .00002 | .09543 | .00000 | .00000 | .00001 | .13885 | .00167 | .00001 | .70858 | .00001 | .00024 | .04669 |
| 1800 | .00851 | .00003 | .09542 | .00000 | .00000 | .00001 | .13880 | .00198 | .00001 | .70840 | .00001 | .00032 | .04651 |
| 1850 | .00851 | .00005 | .09539 | .00000 | .00000 | .00002 | .13874 | .00233 | .00001 | .70820 | .00001 | .00043 | .04632 |
| 1900 | .00851 | .00008 | .09536 | .00000 | .00000 | .00003 | .13865 | .00271 | .00001 | .70796 | .00002 | .00057 | .04611 |
| 1950 | .00851 | .00012 | .09531 | .00000 | .00000 | .00004 | .13854 | .00313 | .00001 | .70770 | .00003 | .00073 | .04587 |
| 2000 | .00851 | .00018 | .09523 | .00000 | .00000 | .00006 | .13840 | .00359 | .00001 | .70740 | .00004 | .00094 | .04562 |
| 2050 | .00850 | .00028 | .09513 | .00001 | .00000 | .00009 | .13823 | .00409 | .00001 | .70706 | .00007 | .00119 | .04535 |
| 2100 | .00850 | .00041 | .09498 | .00001 | .00001 | .00012 | .13802 | .00462 | .00001 | .70666 | .00009 | .00149 | .04507 |
| 2150 | .00850 | .00059 | .09477 | .00002 | .00001 | .00017 | .13776 | .00519 | .00001 | .70621 | .00013 | .00185 | .04479 |
| 2200 | .00850 | .00084 | .09450 | .00003 | .00001 | .00023 | .13744 | .00581 | .00001 | .70570 | .00018 | .00227 | .04449 |
| 2250 | .00850 | .00118 | .09412 | .00004 | .00001 | .00032 | .13705 | .00646 | .00001 | .70511 | .00024 | .00275 | .04421 |
| 2300 | .00849 | .00162 | .09364 | .00006 | .00001 | .00043 | .13658 | .00715 | .00001 | .70443 | .00033 | .00332 | .04394 |
| 2350 | .00849 | .00220 | .09301 | .00009 | .00001 | .00056 | .13603 | .00787 | .00001 | .70364 | .00043 | .00396 | .04370 |
| 2400 | .00848 | .00293 | .09220 | .00014 | .00001 | .00073 | .13537 | .00864 | .00001 | .70274 | .00057 | .00469 | .04349 |
| 2450 | .00847 | .00385 | .09120 | .00019 | .00001 | .00095 | .13459 | .00946 | .00001 | .70169 | .00074 | .00551 | .04333 |
| 2500 | .00846 | .00498 | .08996 | .00027 | .00002 | .00121 | .13367 | .01031 | .00001 | .70049 | .00095 | .00644 | .04322 |
| 2550 | .00845 | .00635 | .08847 | .00038 | .00002 | .00152 | .13261 | .01121 | .00001 | .69911 | .00121 | .00747 | .04319 |
| 2600 | .00844 | .00798 | .08669 | .00052 | .00002 | .00189 | .13137 | .01216 | .00001 | .69754 | .00152 | .00862 | .04323 |
| 2650 | .00842 | .00988 | .08461 | .00071 | .00002 | .00233 | .12996 | .01316 | .00001 | .69575 | .00191 | .00988 | .04336 |
| 2700 | .00841 | .01207 | .08223 | .00095 | .00002 | .00284 | .12834 | .01421 | .00001 | .69373 | .00237 | .01127 | .04356 |
| 2750 | .00839 | .01453 | .07954 | .00126 | .00003 | .00342 | .12652 | .01531 | .00001 | .69147 | .00293 | .01277 | .04384 |
| 2800 | .00836 | .01725 | .07655 | .00164 | .00003 | .00409 | .12446 | .01646 | .00001 | .68897 | .00359 | .01440 | .04418 |
| 2850 | .00834 | .02021 | .07330 | .00212 | .00003 | .00483 | .12218 | .01766 | .00001 | .68621 | .00437 | .01616 | .04457 |
| 2900 | .00831 | .02337 | .06982 | .00272 | .00003 | .00566 | .11965 | .01890 | .00002 | .68319 | .00530 | .01803 | .04500 |
| 2950 | .00828 | .02670 | .06614 | .00344 | .00004 | .00657 | .11687 | .02018 | .00002 | .67993 | .00637 | .02002 | .04544 |
| 3000 | .00824 | .03013 | .06232 | .00432 | .00004 | .00756 | .11383 | .02150 | .00002 | .67642 | .00762 | .02210 | .04588 |

TABLE 25.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.049244; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00000 | .00000 | .70946 | .00000 | .00000 | .00000 | .04758 |
| 950 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00001 | .00000 | .70946 | .00000 | .00000 | .00000 | .04758 |
| 1000 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00002 | .00000 | .70946 | .00000 | .00000 | .00000 | .04757 |
| 1050 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00003 | .00000 | .70945 | .00000 | .00000 | .00000 | .04757 |
| 1100 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00004 | .00000 | .70944 | .00000 | .00000 | .00000 | .04756 |
| 1150 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00007 | .00000 | .70943 | .00000 | .00000 | .00000 | .04754 |
| 1200 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00010 | .00001 | .70942 | .00000 | .00000 | .00000 | .04753 |
| 1250 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00014 | .00001 | .70939 | .00000 | .00000 | .00000 | .04751 |
| 1300 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00020 | .00001 | .70937 | .00000 | .00000 | .00000 | .04748 |
| 1350 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13899 | .00027 | .00001 | .70933 | .00000 | .00000 | .00001 | .04744 |
| 1400 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00036 | .00001 | .70928 | .00000 | .00000 | .00001 | .04739 |
| 1450 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00046 | .00001 | .70923 | .00000 | .00000 | .00002 | .04734 |
| 1500 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13898 | .00060 | .00001 | .70916 | .00000 | .00000 | .00002 | .04727 |
| 1550 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13897 | .00075 | .00001 | .70908 | .00000 | .00000 | .00004 | .04718 |
| 1600 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13896 | .00094 | .00001 | .70898 | .00000 | .00000 | .00006 | .04709 |
| 1650 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13895 | .00115 | .00001 | .70887 | .00000 | .00000 | .00008 | .04697 |
| 1700 | .00851 | .00000 | .09545 | .00000 | .00000 | .00000 | .13893 | .00139 | .00001 | .70874 | .00000 | .00000 | .00011 | .04684 |
| 1750 | .00851 | .00001 | .09544 | .00000 | .00000 | .00000 | .13890 | .00167 | .00001 | .70860 | .00000 | .00000 | .00016 | .04669 |
| 1800 | .00851 | .00001 | .09544 | .00000 | .00000 | .00000 | .13887 | .00198 | .00002 | .70843 | .00000 | .00000 | .00021 | .04652 |
| 1850 | .00851 | .00002 | .09543 | .00000 | .00000 | .00001 | .13883 | .00233 | .00002 | .70824 | .00000 | .00001 | .00029 | .04633 |
| 1900 | .00851 | .00003 | .09541 | .00000 | .00000 | .00001 | .13877 | .00271 | .00002 | .70802 | .00000 | .00001 | .00038 | .04612 |
| 1950 | .00851 | .00005 | .09539 | .00000 | .00000 | .00002 | .13870 | .00313 | .00002 | .70778 | .00000 | .00001 | .00049 | .04589 |
| 2000 | .00851 | .00008 | .09535 | .00000 | .00001 | .00003 | .13862 | .00359 | .00002 | .70751 | .00000 | .00002 | .00063 | .04564 |
| 2050 | .00851 | .00012 | .09530 | .00000 | .00001 | .00004 | .13851 | .00409 | .00002 | .70721 | .00000 | .00003 | .00080 | .04537 |
| 2100 | .00851 | .00018 | .09523 | .00000 | .00001 | .00005 | .13838 | .00462 | .00002 | .70687 | .00000 | .00004 | .00100 | .04508 |
| 2150 | .00850 | .00027 | .09514 | .00001 | .00001 | .00008 | .13822 | .00519 | .00002 | .70650 | .00000 | .00006 | .00124 | .04477 |
| 2200 | .00850 | .00038 | .09501 | .00001 | .00001 | .00011 | .13802 | .00580 | .00002 | .70609 | .00000 | .00008 | .00152 | .04444 |
| 2250 | .00850 | .00053 | .09484 | .00001 | .00001 | .00014 | .13779 | .00645 | .00002 | .70563 | .00000 | .00011 | .00185 | .04411 |
| 2300 | .00850 | .00073 | .09462 | .00002 | .00001 | .00019 | .13752 | .00713 | .00002 | .70511 | .00000 | .00015 | .00222 | .04377 |
| 2350 | .00850 | .00100 | .09432 | .00003 | .00002 | .00025 | .13719 | .00786 | .00002 | .70454 | .00000 | .00019 | .00265 | .04342 |
| 2400 | .00849 | .00134 | .09395 | .00004 | .00002 | .00033 | .13681 | .00861 | .00003 | .70389 | .00000 | .00025 | .00315 | .04309 |
| 2450 | .00849 | .00177 | .09347 | .00006 | .00002 | .00043 | .13636 | .00940 | .00003 | .70317 | .00000 | .00033 | .00370 | .04276 |
| 2500 | .00849 | .00232 | .09287 | .00008 | .00002 | .00055 | .13584 | .01023 | .00003 | .70237 | .00000 | .00042 | .00432 | .04246 |
| 2550 | .00848 | .00299 | .09213 | .00012 | .00002 | .00070 | .13523 | .01110 | .00003 | .70146 | .00000 | .00053 | .00502 | .04218 |
| 2600 | .00847 | .00381 | .09124 | .00016 | .00003 | .00088 | .13453 | .01200 | .00003 | .70045 | .00000 | .00067 | .00579 | .04193 |
| 2650 | .00847 | .00480 | .09016 | .00022 | .00003 | .00109 | .13374 | .01294 | .00003 | .69931 | .00000 | .00084 | .00664 | .04173 |
| 2700 | .00846 | .00597 | .08888 | .00029 | .00003 | .00134 | .13282 | .01393 | .00003 | .69804 | .00000 | .00104 | .00758 | .04158 |
| 2750 | .00844 | .00734 | .08740 | .00039 | .00004 | .00164 | .13179 | .01495 | .00003 | .69662 | .00001 | .00127 | .00860 | .04149 |
| 2800 | .00843 | .00891 | .08568 | .00051 | .00004 | .00198 | .13063 | .01601 | .00003 | .69505 | .00001 | .00155 | .00971 | .04145 |
| 2850 | .00842 | .01070 | .08373 | .00067 | .00004 | .00237 | .12932 | .01712 | .00003 | .69331 | .00001 | .00189 | .01092 | .04148 |
| 2900 | .00840 | .01270 | .08155 | .00086 | .00005 | .00281 | .12787 | .01827 | .00003 | .69139 | .00001 | .00228 | .01222 | .04156 |
| 2950 | .00838 | .01491 | .07914 | .00109 | .00005 | .00331 | .12625 | .01947 | .00003 | .68930 | .00001 | .00273 | .01362 | .04169 |
| 3000 | .00836 | .01732 | .07651 | .00138 | .00006 | .00387 | .12448 | .02070 | .00003 | .68703 | .00001 | .00326 | .01511 | .04188 |

TABLE 25C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.049244; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761;
WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00851 | .09545 | .13885 | .00000 | .00014 | .70947 | .04758 |
| 220 | .00851 | .09545 | .13674 | .00000 | .00225 | .70947 | .04758 |
| 240 | .00851 | .09545 | .11528 | .00000 | .02371 | .70947 | .04758 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00851 | .09545 | .13898 | .00000 | .00001 | .70947 | .04758 |
| 220 | .00851 | .09545 | .13877 | .00000 | .00022 | .70947 | .04758 |
| 240 | .00851 | .09545 | .13668 | .00000 | .00231 | .70947 | .04758 |
| 260 | .00851 | .09545 | .12209 | .00000 | .01690 | .70947 | .04758 |
| 280 | .00851 | .09545 | .00000 | .04602 | .09297 | .70947 | .04758 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00851 | .09545 | .13899 | .00000 | .00000 | .70947 | .04758 |
| 220 | .00851 | .09545 | .13897 | .00000 | .00002 | .70947 | .04758 |
| 240 | .00851 | .09545 | .13876 | .00000 | .00023 | .70947 | .04758 |
| 260 | .00851 | .09545 | .13733 | .00000 | .00166 | .70947 | .04758 |
| 280 | .00851 | .09545 | .00000 | .13052 | .00847 | .70947 | .04758 |
| 298 | .00851 | .09545 | .00000 | .11133 | .02765 | .70947 | .04758 |
| 300 | .00851 | .09545 | .00000 | .10802 | .03097 | .70947 | .04758 |
| 320 | .00851 | .09545 | .00000 | .03977 | .09922 | .70947 | .04758 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00851 | .09545 | .13899 | .00000 | .00000 | .70947 | .04758 |
| 220 | .00851 | .09545 | .13899 | .00000 | .00000 | .70947 | .04758 |
| 240 | .00851 | .09545 | .13897 | .00000 | .00002 | .70947 | .04758 |
| 260 | .00851 | .09545 | .13882 | .00000 | .00017 | .70947 | .04758 |
| 280 | .00851 | .09545 | .00000 | .13815 | .00084 | .70947 | .04758 |
| 298 | .00851 | .09545 | .00000 | .13630 | .00269 | .70947 | .04758 |
| 300 | .00851 | .09545 | .00000 | .13599 | .00300 | .70947 | .04758 |
| 320 | .00851 | .09545 | .00000 | .13000 | .00899 | .70947 | .04758 |
| 340 | .00851 | .09545 | .00000 | .11550 | .02349 | .70947 | .04758 |
| 360 | .00851 | .09545 | .00000 | .08358 | .05541 | .70947 | .04758 |
| 380 | .00851 | .09545 | .00000 | .01667 | .12232 | .70947 | .04758 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00851 | .09545 | .13899 | .00000 | .00000 | .70947 | .04758 |
| 220 | .00851 | .09545 | .13899 | .00000 | .00000 | .70947 | .04758 |
| 240 | .00851 | .09545 | .13898 | .00000 | .00000 | .70947 | .04758 |
| 260 | .00851 | .09545 | .13896 | .00000 | .00003 | .70947 | .04758 |
| 280 | .00851 | .09545 | .00000 | .13882 | .00017 | .70947 | .04758 |
| 298 | .00851 | .09545 | .00000 | .13845 | .00054 | .70947 | .04758 |
| 300 | .00851 | .09545 | .00000 | .13839 | .00060 | .70947 | .04758 |
| 320 | .00851 | .09545 | .00000 | .13721 | .00178 | .70947 | .04758 |
| 340 | .00851 | .09545 | .00000 | .13439 | .00460 | .70947 | .04758 |
| 360 | .00851 | .09545 | .00000 | .12845 | .01054 | .70947 | .04758 |
| 380 | .00851 | .09545 | .00000 | .11702 | .02197 | .70947 | .04758 |
| 400 | .00851 | .09545 | .00000 | .09653 | .04246 | .70947 | .04758 |
| 420 | .00851 | .09545 | .00000 | .06153 | .07746 | .70947 | .04758 |

TABLE 26.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.065658; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1.01325 KPA (0.01 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00838 | .00000 | .12519 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 950 | .00838 | .00000 | .12519 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1000 | .00838 | .00000 | .12519 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1050 | .00838 | .00000 | .12519 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1100 | .00838 | .00000 | .12519 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1150 | .00838 | .00000 | .12519 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1200 | .00838 | .00001 | .12518 | .00000 | .00001 | .16804 | .00000 | .00000 | .69838 | .00000 | .00000 | .00001 |
| 1250 | .00838 | .00002 | .12517 | .00000 | .00001 | .16803 | .00000 | .00000 | .69838 | .00000 | .00000 | .00001 |
| 1300 | .00838 | .00004 | .12515 | .00000 | .00003 | .16801 | .00000 | .00000 | .69836 | .00000 | .00000 | .00003 |
| 1350 | .00838 | .00007 | .12511 | .00000 | .00005 | .16798 | .00000 | .00001 | .69834 | .00000 | .00001 | .00005 |
| 1400 | .00838 | .00013 | .12505 | .00000 | .00008 | .16794 | .00000 | .00002 | .69831 | .00000 | .00002 | .00009 |
| 1450 | .00837 | .00022 | .12494 | .00000 | .00013 | .16787 | .00000 | .00003 | .69825 | .00000 | .00003 | .00015 |
| 1500 | .00837 | .00038 | .12477 | .00000 | .00020 | .16776 | .00000 | .00004 | .69815 | .00000 | .00006 | .00025 |
| 1550 | .00837 | .00062 | .12451 | .00001 | .00030 | .16761 | .00000 | .00007 | .69801 | .00000 | .00010 | .00040 |
| 1600 | .00837 | .00098 | .12411 | .00001 | .00044 | .16738 | .00000 | .00011 | .69780 | .00000 | .00017 | .00062 |
| 1650 | .00837 | .00151 | .12353 | .00002 | .00064 | .16706 | .00000 | .00016 | .69750 | .00001 | .00028 | .00093 |
| 1700 | .00836 | .00226 | .12271 | .00004 | .00090 | .16662 | .00000 | .00024 | .69706 | .00002 | .00043 | .00136 |
| 1750 | .00836 | .00329 | .12158 | .00008 | .00125 | .16601 | .00000 | .00034 | .69647 | .00003 | .00065 | .00194 |
| 1800 | .00835 | .00468 | .12006 | .00015 | .00169 | .16519 | .00000 | .00047 | .69566 | .00006 | .00097 | .00271 |
| 1850 | .00833 | .00651 | .11806 | .00025 | .00226 | .16412 | .00000 | .00065 | .69458 | .00012 | .00140 | .00372 |
| 1900 | .00832 | .00885 | .11548 | .00043 | .00298 | .16271 | .00000 | .00088 | .69317 | .00021 | .00198 | .00499 |
| 1950 | .00830 | .01179 | .11224 | .00071 | .00387 | .16091 | .00000 | .00117 | .69136 | .00036 | .00274 | .00655 |
| 2000 | .00827 | .01538 | .10828 | .00114 | .00495 | .15861 | .00000 | .00152 | .68907 | .00061 | .00372 | .00845 |
| 2050 | .00824 | .01966 | .10353 | .00178 | .00625 | .15573 | .00000 | .00195 | .68622 | .00100 | .00496 | .01068 |
| 2100 | .00820 | .02462 | .09798 | .00273 | .00779 | .15216 | .00000 | .00246 | .68272 | .00159 | .00649 | .01324 |
| 2150 | .00816 | .03022 | .09167 | .00411 | .00960 | .14780 | .00000 | .00305 | .67849 | .00246 | .00834 | .01610 |
| 2200 | .00810 | .03637 | .08468 | .00605 | .01168 | .14252 | .00000 | .00372 | .67344 | .00372 | .01053 | .01918 |
| 2250 | .00803 | .04290 | .07715 | .00874 | .01403 | .13624 | .00000 | .00447 | .66750 | .00549 | .01303 | .02241 |
| 2300 | .00795 | .04963 | .06926 | .01240 | .01662 | .12885 | .00000 | .00529 | .66059 | .00791 | .01583 | .02567 |
| 2350 | .00786 | .05631 | .06123 | .01726 | .01939 | .12032 | .00000 | .00616 | .65265 | .01114 | .01886 | .02880 |
| 2400 | .00776 | .06272 | .05329 | .02359 | .02225 | .11066 | .00000 | .00706 | .64363 | .01534 | .02202 | .03167 |
| 2450 | .00765 | .06862 | .04565 | .03162 | .02506 | .09994 | .00000 | .00797 | .63351 | .02069 | .02517 | .03412 |
| 2500 | .00752 | .07384 | .03850 | .04155 | .02763 | .08834 | .00000 | .00887 | .62230 | .02733 | .02812 | .03600 |
| 2550 | .00738 | .07825 | .03198 | .05348 | .02975 | .07615 | .00000 | .00972 | .61010 | .03536 | .03067 | .03716 |
| 2600 | .00722 | .08179 | .02618 | .06737 | .03117 | .06377 | .00001 | .01048 | .59707 | .04482 | .03259 | .03752 |
| 2650 | .00706 | .08446 | .02112 | .08298 | .03171 | .05169 | .00001 | .01113 | .58346 | .05567 | .03368 | .03701 |
| 2700 | .00690 | .08634 | .01682 | .09984 | .03125 | .04040 | .00001 | .01164 | .56965 | .06774 | .03380 | .03561 |
| 2750 | .00674 | .08752 | .01322 | .11732 | .02976 | .03037 | .00002 | .01198 | .55604 | .08074 | .03288 | .03339 |
| 2800 | .00659 | .08816 | .01028 | .13463 | .02740 | .02193 | .00003 | .01214 | .54310 | .09426 | .03099 | .03049 |
| 2850 | .00644 | .08840 | .00791 | .15102 | .02440 | .01522 | .00004 | .01211 | .53121 | .10783 | .02832 | .02710 |
| 2900 | .00632 | .08838 | .00603 | .16584 | .02107 | .01017 | .00005 | .01192 | .52068 | .12094 | .02513 | .02347 |
| 2950 | .00621 | .08820 | .00457 | .17872 | .01772 | .00658 | .00007 | .01157 | .51166 | .13317 | .02172 | .01984 |
| 3000 | .00611 | .08794 | .00344 | .18951 | .01458 | .00415 | .00010 | .01110 | .50415 | .14418 | .01835 | .01640 |

TABLE 26.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.065658; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 950 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1000 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1050 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1100 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1150 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1200 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1250 | .00838 | .00001 | .12518 | .00000 | .00000 | .00001 | .16804 | .00000 | .00000 | .69838 | .00000 | .00000 | .00001 |
| 1300 | .00838 | .00002 | .12517 | .00000 | .00000 | .00001 | .16803 | .00000 | .00000 | .69838 | .00000 | .00000 | .00001 |
| 1350 | .00838 | .00003 | .12515 | .00000 | .00000 | .00002 | .16802 | .00000 | .00001 | .69837 | .00000 | .00000 | .00002 |
| 1400 | .00838 | .00006 | .12512 | .00000 | .00000 | .00004 | .16800 | .00000 | .00001 | .69835 | .00000 | .00001 | .00004 |
| 1450 | .00838 | .00011 | .12507 | .00000 | .00000 | .00006 | .16796 | .00000 | .00002 | .69832 | .00000 | .00002 | .00007 |
| 1500 | .00837 | .00018 | .12499 | .00000 | .00000 | .00009 | .16791 | .00000 | .00003 | .69827 | .00000 | .00003 | .00011 |
| 1550 | .00837 | .00029 | .12487 | .00000 | .00000 | .00014 | .16784 | .00000 | .00005 | .69821 | .00000 | .00005 | .00018 |
| 1600 | .00837 | .00046 | .12468 | .00000 | .00000 | .00021 | .16774 | .00000 | .00007 | .69810 | .00000 | .00008 | .00028 |
| 1650 | .00837 | .00071 | .12441 | .00000 | .00000 | .00030 | .16759 | .00000 | .00011 | .69796 | .00000 | .00013 | .00042 |
| 1700 | .00837 | .00107 | .12402 | .00001 | .00000 | .00042 | .16738 | .00000 | .00016 | .69775 | .00000 | .00020 | .00062 |
| 1750 | .00837 | .00156 | .12348 | .00002 | .00000 | .00059 | .16710 | .00000 | .00023 | .69746 | .00001 | .00030 | .00089 |
| 1800 | .00836 | .00223 | .12275 | .00003 | .00000 | .00080 | .16673 | .00000 | .00032 | .69707 | .00001 | .00045 | .00125 |
| 1850 | .00836 | .00313 | .12177 | .00006 | .00000 | .00107 | .16624 | .00000 | .00044 | .69655 | .00003 | .00065 | .00171 |
| 1900 | .00835 | .00429 | .12051 | .00009 | .00000 | .00141 | .16560 | .00000 | .00060 | .69587 | .00005 | .00093 | .00232 |
| 1950 | .00834 | .00577 | .11889 | .00015 | .00000 | .00183 | .16478 | .00000 | .00080 | .69500 | .00008 | .00129 | .00307 |
| 2000 | .00833 | .00762 | .11686 | .00025 | .00000 | .00234 | .16374 | .00000 | .00105 | .69390 | .00013 | .00177 | .00401 |
| 2050 | .00831 | .00989 | .11437 | .00039 | .00000 | .00297 | .16245 | .00000 | .00136 | .69252 | .00022 | .00237 | .00514 |
| 2100 | .00830 | .01263 | .11136 | .00060 | .00000 | .00372 | .16085 | .00000 | .00173 | .69083 | .00035 | .00314 | .00650 |
| 2150 | .00827 | .01587 | .10779 | .00090 | .00000 | .00461 | .15889 | .00000 | .00218 | .68877 | .00055 | .00409 | .00807 |
| 2200 | .00825 | .01961 | .10365 | .00133 | .00000 | .00565 | .15652 | .00000 | .00270 | .68631 | .00084 | .00525 | .00988 |
| 2250 | .00822 | .02387 | .09893 | .00193 | .00000 | .00687 | .15368 | .00000 | .00330 | .68339 | .00127 | .00664 | .01191 |
| 2300 | .00818 | .02860 | .09365 | .00277 | .00000 | .00826 | .15031 | .00000 | .00398 | .67999 | .00186 | .00828 | .01413 |
| 2350 | .00814 | .03374 | .08787 | .00389 | .00000 | .00985 | .14635 | .00000 | .00475 | .67605 | .00267 | .01018 | .01652 |
| 2400 | .00809 | .03922 | .08166 | .00539 | .00000 | .01163 | .14176 | .00000 | .00559 | .67154 | .00376 | .01234 | .01902 |
| 2450 | .00803 | .04492 | .07513 | .00737 | .00000 | .01361 | .13647 | .00000 | .00650 | .66645 | .00520 | .01475 | .02157 |
| 2500 | .00797 | .05071 | .06840 | .00993 | .00000 | .01577 | .13046 | .00000 | .00748 | .66073 | .00707 | .01738 | .02410 |
| 2550 | .00790 | .05644 | .06162 | .01319 | .00000 | .01808 | .12370 | .00000 | .00850 | .65438 | .00945 | .02021 | .02653 |
| 2600 | .00782 | .06197 | .05493 | .01728 | .00000 | .02051 | .11620 | .00000 | .00956 | .64738 | .01241 | .02315 | .02878 |
| 2650 | .00774 | .06718 | .04845 | .02233 | .00000 | .02298 | .10799 | .00000 | .01063 | .63972 | .01605 | .02615 | .03078 |
| 2700 | .00764 | .07194 | .04230 | .02847 | .00001 | .02541 | .09915 | .00000 | .01170 | .63141 | .02045 | .02909 | .03244 |
| 2750 | .00754 | .07616 | .03656 | .03579 | .00001 | .02770 | .08979 | .00001 | .01274 | .62248 | .02565 | .03186 | .03371 |
| 2800 | .00743 | .07980 | .03131 | .04435 | .00001 | .02972 | .08007 | .00001 | .01372 | .61297 | .03172 | .03435 | .03453 |
| 2850 | .00732 | .08283 | .02657 | .05415 | .00001 | .03137 | .07018 | .00001 | .01464 | .60295 | .03868 | .03642 | .03487 |
| 2900 | .00720 | .08524 | .02236 | .06515 | .00001 | .03251 | .06037 | .00002 | .01546 | .59254 | .04650 | .03795 | .03470 |
| 2950 | .00708 | .08709 | .01867 | .07720 | .00001 | .03306 | .05087 | .00002 | .01615 | .58186 | .05514 | .03884 | .03401 |
| 3000 | .00695 | .08841 | .01547 | .09009 | .00001 | .03294 | .04194 | .00003 | .01671 | .57111 | .06450 | .03902 | .03283 |

TABLE 26.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.065658; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 950 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1000 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1050 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1100 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1150 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1200 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1250 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1300 | .00838 | .00001 | .12518 | .00000 | .00000 | .00001 | .16804 | .00000 | .00000 | .69838 | .00000 | .00000 | .00001 |
| 1350 | .00838 | .00002 | .12517 | .00000 | .00000 | .00001 | .16803 | .00000 | .00000 | .69838 | .00000 | .00000 | .00001 |
| 1400 | .00838 | .00003 | .12516 | .00000 | .00000 | .00002 | .16802 | .00000 | .00001 | .69837 | .00000 | .00000 | .00002 |
| 1450 | .00838 | .00005 | .12513 | .00000 | .00000 | .00003 | .16801 | .00000 | .00001 | .69835 | .00000 | .00001 | .00003 |
| 1500 | .00838 | .00008 | .12510 | .00000 | .00000 | .00004 | .16798 | .00000 | .00002 | .69833 | .00000 | .00001 | .00005 |
| 1550 | .00838 | .00014 | .12504 | .00000 | .00000 | .00007 | .16795 | .00000 | .00003 | .69830 | .00000 | .00002 | .00008 |
| 1600 | .00837 | .00022 | .12495 | .00000 | .00000 | .00010 | .16790 | .00000 | .00005 | .69825 | .00000 | .00004 | .00013 |
| 1650 | .00837 | .00034 | .12482 | .00000 | .00000 | .00014 | .16783 | .00000 | .00007 | .69817 | .00000 | .00006 | .00019 |
| 1700 | .00837 | .00051 | .12464 | .00000 | .00000 | .00020 | .16773 | .00000 | .00011 | .69807 | .00000 | .00009 | .00028 |
| 1750 | .00837 | .00074 | .12438 | .00000 | .00000 | .00028 | .16760 | .00000 | .00015 | .69793 | .00000 | .00014 | .00040 |
| 1800 | .00837 | .00106 | .12403 | .00001 | .00000 | .00038 | .16743 | .00000 | .00022 | .69774 | .00000 | .00021 | .00056 |
| 1850 | .00837 | .00149 | .12356 | .00001 | .00000 | .00051 | .16720 | .00000 | .00030 | .69748 | .00001 | .00030 | .00077 |
| 1900 | .00836 | .00205 | .12295 | .00002 | .00000 | .00067 | .16691 | .00000 | .00041 | .69715 | .00001 | .00043 | .00105 |
| 1950 | .00836 | .00278 | .12216 | .00003 | .00000 | .00087 | .16653 | .00000 | .00054 | .69672 | .00002 | .00060 | .00140 |
| 2000 | .00835 | .00369 | .12117 | .00005 | .00000 | .00111 | .16605 | .00000 | .00071 | .69617 | .00003 | .00082 | .00184 |
| 2050 | .00835 | .00483 | .11992 | .00008 | .00000 | .00141 | .16545 | .00000 | .00093 | .69549 | .00005 | .00111 | .00237 |
| 2100 | .00834 | .00622 | .11840 | .00013 | .00000 | .00176 | .16472 | .00000 | .00119 | .69465 | .00008 | .00148 | .00303 |
| 2150 | .00833 | .00791 | .11656 | .00020 | .00000 | .00219 | .16383 | .00000 | .00150 | .69363 | .00012 | .00194 | .00380 |
| 2200 | .00832 | .00991 | .11438 | .00029 | .00000 | .00269 | .16274 | .00000 | .00187 | .69240 | .00018 | .00250 | .00472 |
| 2250 | .00830 | .01225 | .11181 | .00042 | .00000 | .00328 | .16145 | .00000 | .00231 | .69094 | .00028 | .00320 | .00577 |
| 2300 | .00828 | .01495 | .10884 | .00060 | .00000 | .00395 | .15991 | .00000 | .00282 | .68921 | .00041 | .00403 | .00698 |
| 2350 | .00826 | .01803 | .10546 | .00085 | .00000 | .00474 | .15809 | .00000 | .00340 | .68721 | .00060 | .00502 | .00834 |
| 2400 | .00824 | .02147 | .10167 | .00119 | .00000 | .00563 | .15598 | .00000 | .00406 | .68490 | .00086 | .00617 | .00984 |
| 2450 | .00821 | .02526 | .09747 | .00163 | .00000 | .00664 | .15353 | .00000 | .00480 | .68227 | .00120 | .00751 | .01148 |
| 2500 | .00818 | .02939 | .09288 | .00220 | .00000 | .00778 | .15072 | .00000 | .00562 | .67929 | .00166 | .00905 | .01323 |
| 2550 | .00815 | .03379 | .08796 | .00295 | .00000 | .00905 | .14752 | .00000 | .00651 | .67596 | .00225 | .01077 | .01508 |
| 2600 | .00811 | .03843 | .08275 | .00390 | .00001 | .01045 | .14390 | .00000 | .00748 | .67226 | .00302 | .01270 | .01699 |
| 2650 | .00807 | .04323 | .07731 | .00510 | .00001 | .01200 | .13984 | .00000 | .00852 | .66819 | .00398 | .01482 | .01893 |
| 2700 | .00802 | .04811 | .07173 | .00661 | .00001 | .01368 | .13533 | .00000 | .00962 | .66375 | .00518 | .01711 | .02086 |
| 2750 | .00797 | .05300 | .06608 | .00846 | .00001 | .01548 | .13035 | .00000 | .01076 | .65892 | .00666 | .01957 | .02274 |
| 2800 | .00791 | .05780 | .06045 | .01073 | .00001 | .01740 | .12489 | .00000 | .01195 | .65372 | .00846 | .02215 | .02453 |
| 2850 | .00785 | .06245 | .05491 | .01347 | .00001 | .01940 | .11898 | .00000 | .01315 | .64814 | .01060 | .02483 | .02620 |
| 2900 | .00779 | .06686 | .04954 | .01674 | .00001 | .02147 | .11263 | .00001 | .01437 | .64219 | .01314 | .02756 | .02769 |
| 2950 | .00772 | .07097 | .04441 | .02061 | .00001 | .02356 | .10587 | .00001 | .01559 | .63587 | .01610 | .03028 | .02899 |
| 3000 | .00765 | .07473 | .03956 | .02513 | .00002 | .02563 | .09875 | .00001 | .01679 | .62921 | .01952 | .03294 | .03006 |

TABLE 26.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.065658; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 950 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1000 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1050 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1100 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1150 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1200 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1250 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1300 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69838 | .00000 | .00000 | .00000 |
| 1350 | .00838 | .00001 | .12518 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69838 | .00000 | .00000 | .00000 |
| 1400 | .00838 | .00001 | .12517 | .00000 | .00000 | .00001 | .16803 | .00000 | .00000 | .69838 | .00000 | .00000 | .00001 |
| 1450 | .00838 | .00002 | .12516 | .00000 | .00000 | .00001 | .16803 | .00001 | .00000 | .69837 | .00000 | .00000 | .00001 |
| 1500 | .00838 | .00004 | .12515 | .00000 | .00000 | .00002 | .16802 | .00001 | .00000 | .69836 | .00000 | .00001 | .00002 |
| 1550 | .00838 | .00007 | .12512 | .00000 | .00000 | .00003 | .16800 | .00002 | .00000 | .69834 | .00000 | .00001 | .00004 |
| 1600 | .00838 | .00010 | .12508 | .00000 | .00000 | .00005 | .16798 | .00003 | .00000 | .69832 | .00000 | .00002 | .00006 |
| 1650 | .00838 | .00016 | .12501 | .00000 | .00000 | .00007 | .16794 | .00005 | .00000 | .69828 | .00000 | .00003 | .00008 |
| 1700 | .00837 | .00024 | .12493 | .00000 | .00000 | .00010 | .16790 | .00007 | .00000 | .69823 | .00000 | .00004 | .00012 |
| 1750 | .00837 | .00035 | .12480 | .00000 | .00000 | .00013 | .16784 | .00010 | .00000 | .69816 | .00000 | .00006 | .00018 |
| 1800 | .00837 | .00051 | .12464 | .00000 | .00000 | .00018 | .16776 | .00014 | .00000 | .69806 | .00000 | .00010 | .00025 |
| 1850 | .00837 | .00071 | .12441 | .00000 | .00000 | .00024 | .16765 | .00020 | .00000 | .69793 | .00000 | .00014 | .00034 |
| 1900 | .00837 | .00098 | .12412 | .00000 | .00000 | .00032 | .16751 | .00027 | .00000 | .69776 | .00000 | .00020 | .00047 |
| 1950 | .00837 | .00133 | .12374 | .00001 | .00000 | .00041 | .16733 | .00036 | .00000 | .69754 | .00000 | .00028 | .00062 |
| 2000 | .00837 | .00178 | .12325 | .00001 | .00000 | .00053 | .16711 | .00048 | .00000 | .69727 | .00001 | .00038 | .00082 |
| 2050 | .00836 | .00233 | .12265 | .00002 | .00000 | .00067 | .16683 | .00062 | .00000 | .69693 | .00001 | .00051 | .00106 |
| 2100 | .00836 | .00302 | .12190 | .00003 | .00000 | .00084 | .16649 | .00080 | .00000 | .69650 | .00002 | .00068 | .00136 |
| 2150 | .00835 | .00386 | .12099 | .00004 | .00000 | .00104 | .16607 | .00101 | .00000 | .69598 | .00003 | .00090 | .00172 |
| 2200 | .00835 | .00487 | .11989 | .00006 | .00000 | .00128 | .16557 | .00127 | .00000 | .69536 | .00004 | .00117 | .00215 |
| 2250 | .00834 | .00607 | .11859 | .00009 | .00000 | .00156 | .16497 | .00157 | .00000 | .69461 | .00006 | .00150 | .00265 |
| 2300 | .00833 | .00747 | .11705 | .00013 | .00000 | .00189 | .16425 | .00192 | .00000 | .69373 | .00009 | .00189 | .00323 |
| 2350 | .00832 | .00911 | .11527 | .00019 | .00000 | .00226 | .16341 | .00234 | .00000 | .69269 | .00013 | .00237 | .00390 |
| 2400 | .00831 | .01098 | .11323 | .00026 | .00000 | .00269 | .16243 | .00281 | .00000 | .69150 | .00019 | .00294 | .00467 |
| 2450 | .00830 | .01311 | .11090 | .00036 | .00000 | .00318 | .16130 | .00335 | .00000 | .69012 | .00026 | .00361 | .00552 |
| 2500 | .00828 | .01549 | .10829 | .00048 | .00000 | .00373 | .15999 | .00396 | .00000 | .68855 | .00037 | .00438 | .00647 |
| 2550 | .00826 | .01814 | .10539 | .00065 | .00000 | .00435 | .15849 | .00464 | .00000 | .68678 | .00050 | .00528 | .00751 |
| 2600 | .00825 | .02104 | .10220 | .00086 | .00001 | .00505 | .15680 | .00539 | .00000 | .68480 | .00068 | .00630 | .00864 |
| 2650 | .00822 | .02419 | .09873 | .00112 | .00001 | .00582 | .15488 | .00621 | .00000 | .68259 | .00091 | .00745 | .00986 |
| 2700 | .00820 | .02757 | .09499 | .00146 | .00001 | .00668 | .15273 | .00711 | .00000 | .68016 | .00120 | .00874 | .01114 |
| 2750 | .00817 | .03116 | .09101 | .00188 | .00001 | .00762 | .15034 | .00809 | .00000 | .67750 | .00156 | .01017 | .01248 |
| 2800 | .00815 | .03492 | .08682 | .00239 | .00001 | .00865 | .14769 | .00912 | .00000 | .67461 | .00201 | .01175 | .01387 |
| 2850 | .00811 | .03883 | .08246 | .00302 | .00001 | .00978 | .14478 | .01023 | .00001 | .67148 | .00256 | .01346 | .01528 |
| 2900 | .00808 | .04283 | .07795 | .00379 | .00002 | .01099 | .14158 | .01139 | .00001 | .66812 | .00323 | .01531 | .01670 |
| 2950 | .00805 | .04689 | .07336 | .00471 | .00002 | .01230 | .13811 | .01260 | .00001 | .66453 | .00402 | .01729 | .01812 |
| 3000 | .00801 | .05097 | .06871 | .00581 | .00002 | .01369 | .13435 | .01385 | .00001 | .66072 | .00497 | .01939 | .01950 |

TABLE 26.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.065658; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 950 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1000 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1050 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1100 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1150 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1200 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16805 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1250 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1300 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69839 | .00000 | .00000 | .00000 |
| 1350 | .00838 | .00000 | .12519 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69838 | .00000 | .00000 | .00000 |
| 1400 | .00838 | .00001 | .12518 | .00000 | .00000 | .00000 | .16804 | .00000 | .00000 | .69838 | .00000 | .00000 | .00000 |
| 1450 | .00838 | .00001 | .12517 | .00000 | .00000 | .00001 | .16803 | .00001 | .00000 | .69838 | .00000 | .00000 | .00001 |
| 1500 | .00838 | .00002 | .12516 | .00000 | .00000 | .00001 | .16803 | .00001 | .00000 | .69837 | .00000 | .00000 | .00001 |
| 1550 | .00838 | .00004 | .12515 | .00000 | .00000 | .00002 | .16802 | .00002 | .00000 | .69836 | .00000 | .00001 | .00002 |
| 1600 | .00838 | .00006 | .12512 | .00000 | .00000 | .00003 | .16800 | .00002 | .00000 | .69834 | .00000 | .00001 | .00003 |
| 1650 | .00838 | .00010 | .12508 | .00000 | .00000 | .00004 | .16799 | .00004 | .00000 | .69832 | .00000 | .00002 | .00005 |
| 1700 | .00838 | .00014 | .12503 | .00000 | .00000 | .00006 | .16796 | .00005 | .00000 | .69829 | .00000 | .00002 | .00007 |
| 1750 | .00837 | .00021 | .12496 | .00000 | .00000 | .00008 | .16792 | .00008 | .00000 | .69824 | .00000 | .00004 | .00010 |
| 1800 | .00837 | .00030 | .12486 | .00000 | .00000 | .00011 | .16787 | .00011 | .00000 | .69818 | .00000 | .00006 | .00014 |
| 1850 | .00837 | .00043 | .12472 | .00000 | .00000 | .00014 | .16781 | .00015 | .00000 | .69810 | .00000 | .00008 | .00019 |
| 1900 | .00837 | .00059 | .12455 | .00000 | .00000 | .00019 | .16773 | .00020 | .00000 | .69799 | .00000 | .00011 | .00026 |
| 1950 | .00837 | .00080 | .12432 | .00000 | .00000 | .00025 | .16762 | .00027 | .00000 | .69786 | .00000 | .00016 | .00035 |
| 2000 | .00837 | .00107 | .12403 | .00000 | .00000 | .00032 | .16749 | .00036 | .00000 | .69769 | .00000 | .00022 | .00046 |
| 2050 | .00837 | .00141 | .12366 | .00001 | .00000 | .00040 | .16733 | .00047 | .00000 | .69747 | .00000 | .00030 | .00060 |
| 2100 | .00837 | .00182 | .12321 | .00001 | .00000 | .00050 | .16712 | .00060 | .00000 | .69720 | .00001 | .00040 | .00076 |
| 2150 | .00836 | .00233 | .12265 | .00001 | .00000 | .00063 | .16688 | .00076 | .00000 | .69687 | .00001 | .00052 | .00097 |
| 2200 | .00836 | .00295 | .12198 | .00002 | .00000 | .00077 | .16658 | .00095 | .00000 | .69648 | .00001 | .00068 | .00121 |
| 2250 | .00835 | .00369 | .12118 | .00003 | .00000 | .00094 | .16623 | .00118 | .00000 | .69601 | .00002 | .00087 | .00150 |
| 2300 | .00835 | .00456 | .12024 | .00005 | .00000 | .00113 | .16581 | .00145 | .00000 | .69545 | .00003 | .00110 | .00184 |
| 2350 | .00834 | .00557 | .11913 | .00006 | .00000 | .00136 | .16531 | .00177 | .00000 | .69480 | .00004 | .00139 | .00223 |
| 2400 | .00834 | .00675 | .11785 | .00009 | .00000 | .00161 | .16473 | .00213 | .00000 | .69403 | .00006 | .00172 | .00267 |
| 2450 | .00833 | .00810 | .11638 | .00012 | .00000 | .00191 | .16406 | .00255 | .00000 | .69315 | .00009 | .00212 | .00318 |
| 2500 | .00832 | .00963 | .11471 | .00017 | .00000 | .00224 | .16329 | .00302 | .00000 | .69215 | .00012 | .00258 | .00375 |
| 2550 | .00831 | .01136 | .11283 | .00022 | .00001 | .00261 | .16241 | .00355 | .00000 | .69101 | .00017 | .00312 | .00439 |
| 2600 | .00830 | .01328 | .11073 | .00030 | .00001 | .00303 | .16141 | .00415 | .00000 | .68973 | .00023 | .00374 | .00509 |
| 2650 | .00828 | .01560 | .10841 | .00039 | .00001 | .00349 | .16028 | .00481 | .00000 | .68829 | .00031 | .00445 | .00586 |
| 2700 | .00827 | .01773 | .10586 | .00051 | .00001 | .00401 | .15901 | .00554 | .00000 | .68670 | .00042 | .00525 | .00669 |
| 2750 | .00825 | .02025 | .10310 | .00065 | .00001 | .00458 | .15759 | .00634 | .00001 | .68494 | .00054 | .00615 | .00759 |
| 2800 | .00824 | .02296 | .10012 | .00083 | .00001 | .00521 | .15601 | .00720 | .00001 | .68302 | .00071 | .00715 | .00853 |
| 2850 | .00822 | .02585 | .09694 | .00105 | .00002 | .00590 | .15426 | .00813 | .00001 | .68093 | .00090 | .00826 | .00953 |
| 2900 | .00819 | .02890 | .09357 | .00132 | .00002 | .00665 | .15235 | .00913 | .00001 | .67866 | .00115 | .00947 | .01057 |
| 2950 | .00817 | .03210 | .09003 | .00164 | .00002 | .00746 | .15025 | .01019 | .00001 | .67623 | .00144 | .01080 | .01165 |
| 3000 | .00815 | .03542 | .08634 | .00203 | .00003 | .00834 | .14796 | .01131 | .00001 | .67363 | .00180 | .01223 | .01275 |

TABLE 26C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.065658; EQUIV.RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000;
 WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 |
|----------------------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | |
| 200 | .00838 | .12519 | .16791 | .00000 | .00013 | .69839 |
| 220 | .00838 | .12519 | .16587 | .00000 | .00218 | .69839 |
| 240 | .00838 | .12519 | .14513 | .00000 | .02291 | .69839 |
| PRESSURE = 0.10 ATM | | | | | | |
| 200 | .00838 | .12519 | .16803 | .00000 | .00001 | .69839 |
| 220 | .00838 | .12519 | .16783 | .00000 | .00022 | .69839 |
| 240 | .00838 | .12519 | .16581 | .00000 | .00224 | .69839 |
| 260 | .00838 | .12519 | .15172 | .00000 | .01633 | .69839 |
| 280 | .00838 | .12519 | .00000 | .07821 | .08983 | .69839 |
| PRESSURE = 1.00 ATM | | | | | | |
| 200 | .00838 | .12519 | .16804 | .00000 | .00000 | .69839 |
| 220 | .00838 | .12519 | .16802 | .00000 | .00002 | .69839 |
| 240 | .00838 | .12519 | .16782 | .00000 | .00022 | .69839 |
| 260 | .00838 | .12519 | .16644 | .00000 | .00160 | .69839 |
| 280 | .00838 | .12519 | .00000 | .15986 | .00819 | .69839 |
| 298 | .00838 | .12519 | .00000 | .14132 | .02672 | .69839 |
| 300 | .00838 | .12519 | .00000 | .13812 | .02992 | .69839 |
| 320 | .00838 | .12519 | .00000 | .07218 | .09587 | .69839 |
| PRESSURE = 10.00 ATM | | | | | | |
| 200 | .00838 | .12519 | .16805 | .00000 | .00000 | .69839 |
| 220 | .00838 | .12519 | .16804 | .00000 | .00000 | .69839 |
| 240 | .00838 | .12519 | .16802 | .00000 | .00002 | .69839 |
| 260 | .00838 | .12519 | .16789 | .00000 | .00016 | .69839 |
| 280 | .00838 | .12519 | .00000 | .16723 | .00081 | .69839 |
| 298 | .00838 | .12519 | .00000 | .16545 | .00260 | .69839 |
| 300 | .00838 | .12519 | .00000 | .16515 | .00290 | .69839 |
| 320 | .00838 | .12519 | .00000 | .15936 | .00869 | .69839 |
| 340 | .00838 | .12519 | .00000 | .14535 | .02270 | .69839 |
| 360 | .00838 | .12519 | .00000 | .11451 | .05354 | .69839 |
| 380 | .00838 | .12519 | .00000 | .04985 | .11820 | .69839 |
| PRESSURE = 50.00 ATM | | | | | | |
| 200 | .00838 | .12519 | .16805 | .00000 | .00000 | .69839 |
| 220 | .00838 | .12519 | .16804 | .00000 | .00000 | .69839 |
| 240 | .00838 | .12519 | .16804 | .00000 | .00000 | .69839 |
| 260 | .00838 | .12519 | .16801 | .00000 | .00003 | .69839 |
| 280 | .00838 | .12519 | .00000 | .16788 | .00016 | .69839 |
| 298 | .00838 | .12519 | .00000 | .16753 | .00052 | .69839 |
| 300 | .00838 | .12519 | .00000 | .16747 | .00058 | .69839 |
| 320 | .00838 | .12519 | .00000 | .16632 | .00172 | .69839 |
| 340 | .00838 | .12519 | .00000 | .16360 | .00444 | .69839 |
| 360 | .00838 | .12519 | .00000 | .15786 | .01018 | .69839 |
| 380 | .00838 | .12519 | .00000 | .14682 | .02123 | .69839 |
| 400 | .00838 | .12519 | .00000 | .12702 | .04102 | .69839 |
| 420 | .00838 | .12519 | .00000 | .09320 | .07484 | .69839 |

TABLE 27.1D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 210 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 220 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 230 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 240 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 250 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 260 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 270 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 280 | .00825 | .02306 | .00000 | .13095 | .00000 | .00001 | .15008 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 290 | .00825 | .02305 | .00000 | .13096 | .00000 | .00002 | .15008 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 298 | .00825 | .02305 | .00000 | .13096 | .00000 | .00003 | .15007 | .00000 | .00000 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 300 | .00825 | .02305 | .00000 | .13096 | .00000 | .00003 | .15007 | .00000 | .00000 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 310 | .00825 | .02305 | .00000 | .13096 | .00000 | .00005 | .15006 | .00000 | .00000 | .00000 | .68763 | .00000 | .00000 | .00000 |
| 320 | .00825 | .02304 | .00000 | .13097 | .00000 | .00008 | .15004 | .00000 | .00000 | .00000 | .68762 | .00000 | .00000 | .00000 |
| 330 | .00825 | .02302 | .00000 | .13098 | .00000 | .00013 | .15001 | .00000 | .00000 | .00000 | .68761 | .00000 | .00000 | .00000 |
| 340 | .00825 | .02300 | .00000 | .13099 | .00000 | .00021 | .14997 | .00000 | .00000 | .00000 | .68758 | .00000 | .00000 | .00000 |
| 350 | .00825 | .02298 | .00000 | .13101 | .00000 | .00032 | .14991 | .00000 | .00000 | .00000 | .68754 | .00000 | .00000 | .00000 |
| 360 | .00825 | .02293 | .00000 | .13104 | .00000 | .00047 | .14982 | .00000 | .00000 | .00000 | .68749 | .00000 | .00000 | .00000 |
| 370 | .00824 | .02288 | .00000 | .13108 | .00000 | .00069 | .14969 | .00000 | .00000 | .00000 | .68741 | .00000 | .00000 | .00000 |
| 380 | .00824 | .02280 | .00000 | .13114 | .00000 | .00099 | .14952 | .00000 | .00000 | .00000 | .68731 | .00000 | .00000 | .00000 |
| 390 | .00824 | .02269 | .00000 | .13121 | .00000 | .00139 | .14929 | .00000 | .00000 | .00000 | .68717 | .00000 | .00000 | .00000 |
| 400 | .00824 | .02255 | .00000 | .13131 | .00000 | .00193 | .14898 | .00000 | .00000 | .00000 | .68699 | .00000 | .00000 | .00000 |
| 410 | .00824 | .02237 | .00000 | .13144 | .00000 | .00263 | .14858 | .00000 | .00000 | .00000 | .68675 | .00000 | .00000 | .00000 |
| 420 | .00823 | .02214 | .00000 | .13160 | .00000 | .00352 | .14806 | .00000 | .00001 | .00000 | .68644 | .00000 | .00000 | .00000 |
| 430 | .00823 | .02184 | .00001 | .13181 | .00000 | .00465 | .14741 | .00000 | .00001 | .00000 | .68605 | .00000 | .00000 | .00000 |
| 440 | .00822 | .02147 | .00001 | .13207 | .00000 | .00607 | .14660 | .00000 | .00001 | .00000 | .68556 | .00000 | .00000 | .00000 |
| 450 | .00822 | .02101 | .00002 | .13238 | .00000 | .00781 | .14560 | .00000 | .00001 | .00000 | .68496 | .00000 | .00000 | .00000 |
| 460 | .00821 | .02045 | .00003 | .13276 | .00000 | .00992 | .14439 | .00000 | .00001 | .00000 | .68423 | .00000 | .00000 | .00000 |
| 470 | .00820 | .01979 | .00005 | .13321 | .00000 | .01245 | .14295 | .00000 | .00001 | .00000 | .68335 | .00000 | .00000 | .00000 |
| 480 | .00818 | .01900 | .00007 | .13374 | .00000 | .01542 | .14124 | .00000 | .00001 | .00000 | .68232 | .00000 | .00000 | .00000 |
| 490 | .00817 | .01809 | .00011 | .13435 | .00000 | .01888 | .13927 | .00000 | .00001 | .00000 | .68112 | .00000 | .00000 | .00000 |
| 500 | .00815 | .01704 | .00016 | .13503 | .00000 | .02282 | .13703 | .00000 | .00001 | .00000 | .67975 | .00000 | .00000 | .00000 |
| 510 | .00813 | .01586 | .00024 | .13579 | .00000 | .02726 | .13451 | .00000 | .00001 | .00000 | .67819 | .00000 | .00000 | .00000 |
| 520 | .00811 | .01455 | .00035 | .13661 | .00000 | .03217 | .13173 | .00000 | .00001 | .00000 | .67647 | .00000 | .00000 | .00000 |
| 530 | .00809 | .01312 | .00050 | .13747 | .00000 | .03749 | .12874 | .00000 | .00001 | .00000 | .67459 | .00000 | .00000 | .00000 |
| 540 | .00807 | .01159 | .00070 | .13834 | .00000 | .04313 | .12558 | .00000 | .00001 | .00000 | .67258 | .00000 | .00000 | .00000 |
| 550 | .00804 | .00999 | .00096 | .13921 | .00000 | .04898 | .12233 | .00000 | .00001 | .00000 | .67048 | .00000 | .00000 | .00000 |
| 560 | .00802 | .00837 | .00130 | .14002 | .00000 | .05487 | .11908 | .00000 | .00001 | .00000 | .66834 | .00000 | .00000 | .00000 |
| 570 | .00799 | .00676 | .00172 | .14074 | .00000 | .06060 | .11596 | .00000 | .00001 | .00000 | .66622 | .00000 | .00000 | .00000 |
| 580 | .00797 | .00523 | .00222 | .14131 | .00000 | .06594 | .11311 | .00000 | .00001 | .00000 | .66421 | .00000 | .00000 | .00000 |
| 590 | .00794 | .00385 | .00279 | .14171 | .00000 | .07063 | .11065 | .00000 | .00001 | .00000 | .66240 | .00000 | .00000 | .00000 |

TABLE 27.1D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00793 | .00269 | .00343 | .14190 | .00000 | .07446 | .10872 | .00000 | .00001 | .00000 | .66087 | .00000 | .00000 | .00000 |
| 610 | .00791 | .00178 | .00409 | .14188 | .00000 | .07729 | .10738 | .00000 | .00001 | .00000 | .65967 | .00000 | .00000 | .00000 |
| 620 | .00790 | .00112 | .00476 | .14167 | .00000 | .07913 | .10661 | .00000 | .00001 | .00000 | .65880 | .00000 | .00000 | .00000 |
| 630 | .00789 | .00068 | .00544 | .14131 | .00000 | .08014 | .10631 | .00000 | .00000 | .00000 | .65823 | .00000 | .00000 | .00000 |
| 640 | .00789 | .00040 | .00610 | .14084 | .00000 | .08053 | .10637 | .00000 | .00000 | .00000 | .65786 | .00000 | .00000 | .00000 |
| 650 | .00789 | .00024 | .00677 | .14028 | .00000 | .08050 | .10668 | .00000 | .00000 | .00000 | .65765 | .00000 | .00000 | .00000 |
| 660 | .00789 | .00014 | .00745 | .13968 | .00000 | .08019 | .10714 | .00000 | .00000 | .00000 | .65752 | .00000 | .00000 | .00000 |
| 670 | .00789 | .00008 | .00813 | .13903 | .00000 | .07973 | .10770 | .00000 | .00000 | .00000 | .65744 | .00000 | .00000 | .00000 |
| 680 | .00788 | .00005 | .00883 | .13835 | .00000 | .07915 | .10833 | .00000 | .00000 | .00000 | .65740 | .00000 | .00000 | .00000 |
| 690 | .00788 | .00003 | .00955 | .13765 | .00000 | .07851 | .10900 | .00000 | .00000 | .00000 | .65737 | .00000 | .00000 | .00000 |
| 700 | .00788 | .00002 | .01028 | .13693 | .00000 | .07782 | .10971 | .00000 | .00000 | .00000 | .65736 | .00000 | .00000 | .00000 |
| 710 | .00788 | .00001 | .01103 | .13618 | .00000 | .07710 | .11044 | .00000 | .00000 | .00000 | .65735 | .00000 | .00000 | .00000 |
| 720 | .00788 | .00001 | .01179 | .13543 | .00000 | .07635 | .11119 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 730 | .00788 | .00000 | .01256 | .13466 | .00000 | .07559 | .11196 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 740 | .00788 | .00000 | .01335 | .13387 | .00000 | .07482 | .11274 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 750 | .00788 | .00000 | .01414 | .13308 | .00000 | .07403 | .11353 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 760 | .00788 | .00000 | .01493 | .13229 | .00000 | .07323 | .11432 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 770 | .00788 | .00000 | .01574 | .13148 | .00000 | .07243 | .11512 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 780 | .00788 | .00000 | .01654 | .13068 | .00000 | .07163 | .11593 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 790 | .00788 | .00000 | .01735 | .12987 | .00000 | .07082 | .11674 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 800 | .00788 | .00000 | .01816 | .12906 | .00000 | .07001 | .11755 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 810 | .00788 | .00000 | .01897 | .12825 | .00000 | .06920 | .11835 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 820 | .00788 | .00000 | .01977 | .12745 | .00000 | .06840 | .11916 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 830 | .00788 | .00000 | .02058 | .12665 | .00000 | .06760 | .11996 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 840 | .00788 | .00000 | .02137 | .12585 | .00000 | .06680 | .12076 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 850 | .00788 | .00000 | .02217 | .12506 | .00000 | .06600 | .12155 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 860 | .00788 | .00000 | .02295 | .12427 | .00000 | .06522 | .12234 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 870 | .00788 | .00000 | .02373 | .12349 | .00000 | .06444 | .12312 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 880 | .00788 | .00000 | .02451 | .12272 | .00000 | .06367 | .12389 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 890 | .00788 | .00000 | .02527 | .12195 | .00000 | .06290 | .12466 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 900 | .00788 | .00000 | .02603 | .12120 | .00000 | .06215 | .12541 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 910 | .00788 | .00000 | .02677 | .12045 | .00000 | .06140 | .12616 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 920 | .00788 | .00000 | .02751 | .11971 | .00000 | .06066 | .12690 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 930 | .00788 | .00000 | .02824 | .11899 | .00000 | .05994 | .12762 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 940 | .00788 | .00000 | .02895 | .11827 | .00000 | .05922 | .12834 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 950 | .00788 | .00000 | .02966 | .11756 | .00000 | .05851 | .12905 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 960 | .00788 | .00000 | .03035 | .11687 | .00000 | .05782 | .12974 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 970 | .00788 | .00000 | .03104 | .11618 | .00000 | .05713 | .13043 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 980 | .00788 | .00000 | .03171 | .11551 | .00000 | .05646 | .13110 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 990 | .00788 | .00000 | .03238 | .11485 | .00000 | .05580 | .13176 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |

TABLE 27.1D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00788 | .00000 | .03303 | .11419 | .00000 | .05514 | .13241 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1050 | .00788 | .00000 | .03612 | .11110 | .00000 | .05205 | .13551 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1100 | .00788 | .00000 | .03894 | .10828 | .00000 | .04923 | .13832 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1150 | .00788 | .00000 | .04150 | .10572 | .00000 | .04667 | .14089 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1200 | .00788 | .00000 | .04382 | .10340 | .00000 | .04435 | .14321 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1250 | .00788 | .00000 | .04593 | .10129 | .00000 | .04224 | .14532 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1300 | .00788 | .00000 | .04784 | .09939 | .00000 | .04033 | .14722 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1350 | .00788 | .00000 | .04957 | .09766 | .00000 | .03860 | .14895 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1400 | .00788 | .00000 | .05114 | .09608 | .00001 | .03703 | .15052 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1450 | .00788 | .00000 | .05256 | .09466 | .00002 | .03560 | .15195 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1500 | .00788 | .00000 | .05386 | .09336 | .00003 | .03429 | .15324 | .00000 | .00000 | .00000 | .65732 | .00000 | .00000 | .00000 |
| 1550 | .00788 | .00000 | .05504 | .09217 | .00006 | .03310 | .15442 | .00000 | .00000 | .00000 | .65731 | .00000 | .00001 | .00000 |
| 1600 | .00788 | .00000 | .05612 | .09109 | .00010 | .03201 | .15548 | .00000 | .00000 | .00000 | .65730 | .00000 | .00002 | .00000 |
| 1650 | .00788 | .00000 | .05711 | .09010 | .00016 | .03100 | .15644 | .00000 | .00000 | .00000 | .65727 | .00000 | .00004 | .00000 |
| 1700 | .00788 | .00000 | .05801 | .08919 | .00025 | .03007 | .15730 | .00000 | .00000 | .00001 | .65722 | .00000 | .00007 | .00000 |
| 1750 | .00788 | .00000 | .05883 | .08835 | .00040 | .02921 | .15804 | .00000 | .00000 | .00001 | .65715 | .00000 | .00013 | .00000 |
| 1800 | .00788 | .00000 | .05959 | .08757 | .00060 | .02840 | .15866 | .00000 | .00000 | .00003 | .65703 | .00000 | .00023 | .00001 |
| 1850 | .00788 | .00000 | .06030 | .08682 | .00089 | .02766 | .15913 | .00000 | .00000 | .00005 | .65685 | .00001 | .00039 | .00002 |
| 1900 | .00788 | .00000 | .06100 | .08606 | .00130 | .02699 | .15940 | .00000 | .00000 | .00009 | .65657 | .00002 | .00064 | .00006 |
| 1950 | .00787 | .00000 | .06172 | .08525 | .00185 | .02639 | .15940 | .00000 | .00000 | .00017 | .65612 | .00005 | .00104 | .00014 |
| 2000 | .00786 | .00000 | .06256 | .08427 | .00260 | .02591 | .15902 | .00000 | .00000 | .00028 | .65543 | .00012 | .00163 | .00031 |
| 2050 | .00785 | .00000 | .06365 | .08296 | .00361 | .02562 | .15810 | .00000 | .00000 | .00047 | .65435 | .00025 | .00249 | .00065 |
| 2100 | .00783 | .00000 | .06518 | .08109 | .00496 | .02562 | .15640 | .00000 | .00000 | .00075 | .65270 | .00050 | .00368 | .00129 |
| 2150 | .00781 | .00000 | .06737 | .07840 | .00676 | .02601 | .15367 | .00000 | .00000 | .00115 | .65025 | .00095 | .00527 | .00237 |
| 2200 | .00777 | .00000 | .07036 | .07469 | .00918 | .02690 | .14966 | .00000 | .00000 | .00166 | .64681 | .00170 | .00728 | .00399 |
| 2250 | .00772 | .00000 | .07415 | .06994 | .01242 | .02831 | .14420 | .00000 | .00000 | .00230 | .64221 | .00288 | .00971 | .00617 |
| 2300 | .00765 | .00000 | .07858 | .06428 | .01672 | .03019 | .13721 | .00000 | .00000 | .00304 | .63637 | .00464 | .01251 | .00882 |
| 2350 | .00757 | .00000 | .08339 | .05797 | .02233 | .03244 | .12869 | .00000 | .00000 | .00387 | .62925 | .00712 | .01560 | .01177 |
| 2400 | .00747 | .00000 | .08827 | .05131 | .02954 | .03489 | .11872 | .00000 | .00000 | .00474 | .62085 | .01050 | .01887 | .01483 |
| 2450 | .00736 | .00000 | .09292 | .04460 | .03860 | .03735 | .10746 | .00000 | .00000 | .00565 | .61119 | .01493 | .02217 | .01777 |
| 2500 | .00724 | .00000 | .09710 | .03809 | .04971 | .03956 | .09516 | .00000 | .00000 | .00656 | .60033 | .02056 | .02532 | .02038 |
| 2550 | .00710 | .00000 | .10062 | .03199 | .06298 | .04125 | .08215 | .00000 | .00000 | .00742 | .58839 | .02750 | .02810 | .02249 |
| 2600 | .00695 | .00000 | .10340 | .02643 | .07836 | .04218 | .06890 | .00001 | .00000 | .00822 | .57556 | .03579 | .03027 | .02393 |
| 2650 | .00680 | .00000 | .10541 | .02149 | .09560 | .04210 | .05594 | .00001 | .00000 | .00891 | .56212 | .04539 | .03164 | .02460 |
| 2700 | .00663 | .00000 | .10668 | .01722 | .11423 | .04090 | .04381 | .00001 | .00000 | .00946 | .54845 | .05612 | .03203 | .02444 |
| 2750 | .00648 | .00000 | .10732 | .01360 | .13356 | .03857 | .03301 | .00002 | .00000 | .00986 | .53499 | .06772 | .03139 | .02349 |
| 2800 | .00632 | .00000 | .10748 | .01060 | .15276 | .03528 | .02390 | .00003 | .00000 | .01007 | .52218 | .07978 | .02976 | .02184 |
| 2850 | .00618 | .00000 | .10728 | .00817 | .17103 | .03129 | .01662 | .00004 | .00000 | .01011 | .51044 | .09184 | .02732 | .01966 |
| 2900 | .00606 | .00000 | .10688 | .00624 | .18766 | .02698 | .01114 | .00005 | .00000 | .00999 | .50006 | .10345 | .02432 | .01717 |
| 2950 | .00595 | .00000 | .10638 | .00472 | .20221 | .02268 | .00723 | .00007 | .00000 | .00972 | .49119 | .11420 | .02107 | .01459 |
| 3000 | .00586 | .00000 | .10586 | .00356 | .21449 | .01867 | .00456 | .00010 | .00000 | .00934 | .48383 | .12381 | .01783 | .01210 |

TABLE 27.2D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 210 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 220 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 230 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 240 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 250 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 260 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 270 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 280 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 290 | .00825 | .02306 | .00000 | .13095 | .00000 | .00001 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 298 | .00825 | .02306 | .00000 | .13095 | .00000 | .00001 | .15008 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 300 | .00825 | .02306 | .00000 | .13095 | .00000 | .00001 | .15008 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 310 | .00825 | .02305 | .00000 | .13096 | .00000 | .00002 | .15008 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 320 | .00825 | .02305 | .00000 | .13096 | .00000 | .00003 | .15007 | .00000 | .00000 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 330 | .00825 | .02305 | .00000 | .13096 | .00000 | .00004 | .15006 | .00000 | .00000 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 340 | .00825 | .02304 | .00000 | .13097 | .00000 | .00007 | .15005 | .00000 | .00000 | .00000 | .68763 | .00000 | .00000 | .00000 |
| 350 | .00825 | .02303 | .00000 | .13097 | .00000 | .00010 | .15003 | .00000 | .00000 | .00000 | .68762 | .00000 | .00000 | .00000 |
| 360 | .00825 | .02302 | .00000 | .13098 | .00000 | .00015 | .15000 | .00000 | .00000 | .00000 | .68760 | .00000 | .00000 | .00000 |
| 370 | .00825 | .02300 | .00000 | .13099 | .00000 | .00022 | .14996 | .00000 | .00001 | .00000 | .68758 | .00000 | .00000 | .00000 |
| 380 | .00825 | .02298 | .00000 | .13101 | .00000 | .00031 | .14990 | .00000 | .00001 | .00000 | .68754 | .00000 | .00000 | .00000 |
| 390 | .00825 | .02294 | .00000 | .13104 | .00000 | .00044 | .14983 | .00000 | .00001 | .00000 | .68750 | .00000 | .00000 | .00000 |
| 400 | .00824 | .02290 | .00000 | .13107 | .00000 | .00061 | .14973 | .00000 | .00001 | .00000 | .68744 | .00000 | .00000 | .00000 |
| 410 | .00824 | .02284 | .00000 | .13111 | .00000 | .00084 | .14960 | .00000 | .00001 | .00000 | .68736 | .00000 | .00000 | .00000 |
| 420 | .00824 | .02276 | .00000 | .13116 | .00000 | .00113 | .14943 | .00000 | .00001 | .00000 | .68726 | .00000 | .00000 | .00000 |
| 430 | .00824 | .02266 | .00000 | .13123 | .00000 | .00150 | .14922 | .00000 | .00001 | .00000 | .68713 | .00000 | .00000 | .00000 |
| 440 | .00824 | .02254 | .00000 | .13132 | .00000 | .00196 | .14895 | .00000 | .00001 | .00000 | .68697 | .00000 | .00000 | .00000 |
| 450 | .00824 | .02239 | .00001 | .13142 | .00000 | .00254 | .14862 | .00000 | .00001 | .00000 | .68677 | .00000 | .00000 | .00000 |
| 460 | .00823 | .02220 | .00001 | .13155 | .00000 | .00325 | .14821 | .00000 | .00001 | .00000 | .68653 | .00000 | .00000 | .00000 |
| 470 | .00823 | .02197 | .00001 | .13171 | .00000 | .00412 | .14772 | .00000 | .00001 | .00000 | .68623 | .00000 | .00000 | .00000 |
| 480 | .00823 | .02170 | .00002 | .13189 | .00000 | .00516 | .14712 | .00000 | .00002 | .00000 | .68586 | .00000 | .00000 | .00000 |
| 490 | .00822 | .02137 | .00003 | .13211 | .00000 | .00641 | .14641 | .00000 | .00002 | .00000 | .68543 | .00000 | .00000 | .00000 |
| 500 | .00821 | .02098 | .00005 | .13237 | .00000 | .00788 | .14557 | .00000 | .00002 | .00000 | .68492 | .00000 | .00000 | .00000 |
| 510 | .00821 | .02052 | .00008 | .13267 | .00000 | .00959 | .14459 | .00000 | .00002 | .00000 | .68432 | .00000 | .00000 | .00000 |
| 520 | .00820 | .02000 | .00011 | .13300 | .00000 | .01157 | .14347 | .00000 | .00002 | .00000 | .68363 | .00000 | .00000 | .00000 |
| 530 | .00819 | .01939 | .00016 | .13338 | .00000 | .01384 | .14218 | .00000 | .00002 | .00000 | .68283 | .00000 | .00000 | .00000 |
| 540 | .00818 | .01870 | .00023 | .13380 | .00000 | .01641 | .14074 | .00000 | .00002 | .00000 | .68192 | .00000 | .00000 | .00000 |
| 550 | .00817 | .01792 | .00032 | .13426 | .00000 | .01929 | .13912 | .00000 | .00002 | .00000 | .68090 | .00000 | .00000 | .00000 |
| 560 | .00815 | .01705 | .00044 | .13475 | .00000 | .02248 | .13733 | .00000 | .00002 | .00000 | .67976 | .00000 | .00000 | .00000 |
| 570 | .00814 | .01610 | .00061 | .13526 | .00000 | .02598 | .13539 | .00000 | .00002 | .00000 | .67850 | .00000 | .00000 | .00000 |
| 580 | .00812 | .01505 | .00082 | .13579 | .00000 | .02978 | .13330 | .00000 | .00003 | .00000 | .67712 | .00000 | .00000 | .00000 |
| 590 | .00810 | .01392 | .00109 | .13632 | .00000 | .03384 | .13107 | .00000 | .00003 | .00000 | .67564 | .00000 | .00000 | .00000 |

TABLE 27.2D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00808 | .01271 | .00143 | .13683 | .00000 | .03812 | .12875 | .00000 | .00003 | .00000 | .67404 | .00000 | .00000 | .00000 |
| 610 | .00806 | .01143 | .00185 | .13731 | .00000 | .04258 | .12637 | .00000 | .00003 | .00000 | .67237 | .00000 | .00000 | .00000 |
| 620 | .00804 | .01010 | .00237 | .13773 | .00000 | .04714 | .12397 | .00000 | .00003 | .00000 | .67062 | .00000 | .00000 | .00000 |
| 630 | .00802 | .00875 | .00299 | .13806 | .00000 | .05170 | .12162 | .00000 | .00002 | .00000 | .66884 | .00000 | .00000 | .00000 |
| 640 | .00800 | .00739 | .00372 | .13829 | .00000 | .05615 | .11937 | .00000 | .00002 | .00000 | .66706 | .00000 | .00000 | .00000 |
| 650 | .00798 | .00607 | .00456 | .13839 | .00000 | .06037 | .11729 | .00000 | .00002 | .00000 | .66532 | .00000 | .00000 | .00000 |
| 660 | .00796 | .00482 | .00548 | .13834 | .00000 | .06422 | .11547 | .00000 | .00002 | .00000 | .66368 | .00000 | .00000 | .00000 |
| 670 | .00794 | .00369 | .00647 | .13815 | .00000 | .06755 | .11398 | .00000 | .00002 | .00000 | .66220 | .00000 | .00000 | .00000 |
| 680 | .00793 | .00272 | .00750 | .13781 | .00000 | .07025 | .11287 | .00000 | .00002 | .00000 | .66092 | .00000 | .00000 | .00000 |
| 690 | .00791 | .00193 | .00853 | .13734 | .00000 | .07226 | .11215 | .00000 | .00002 | .00000 | .65987 | .00000 | .00000 | .00000 |
| 700 | .00790 | .00132 | .00953 | .13676 | .00000 | .07358 | .11181 | .00000 | .00002 | .00000 | .65907 | .00000 | .00000 | .00000 |
| 710 | .00790 | .00088 | .01050 | .13611 | .00000 | .07431 | .11181 | .00000 | .00001 | .00000 | .65849 | .00000 | .00000 | .00000 |
| 720 | .00789 | .00057 | .01142 | .13540 | .00000 | .07455 | .11206 | .00000 | .00001 | .00000 | .65809 | .00000 | .00000 | .00000 |
| 730 | .00789 | .00037 | .01231 | .13465 | .00000 | .07444 | .11251 | .00000 | .00001 | .00000 | .65782 | .00000 | .00000 | .00000 |
| 740 | .00789 | .00024 | .01318 | .13388 | .00000 | .07408 | .11308 | .00000 | .00001 | .00000 | .65765 | .00000 | .00000 | .00000 |
| 750 | .00789 | .00015 | .01402 | .13309 | .00000 | .07356 | .11374 | .00000 | .00001 | .00000 | .65754 | .00000 | .00000 | .00000 |
| 760 | .00789 | .00010 | .01486 | .13230 | .00000 | .07293 | .11446 | .00000 | .00001 | .00000 | .65747 | .00000 | .00000 | .00000 |
| 770 | .00788 | .00006 | .01568 | .13149 | .00000 | .07224 | .11521 | .00000 | .00001 | .00000 | .65742 | .00000 | .00000 | .00000 |
| 780 | .00788 | .00004 | .01651 | .13069 | .00000 | .07150 | .11598 | .00000 | .00001 | .00000 | .65739 | .00000 | .00000 | .00000 |
| 790 | .00788 | .00003 | .01733 | .12988 | .00000 | .07074 | .11677 | .00000 | .00001 | .00000 | .65737 | .00000 | .00000 | .00000 |
| 800 | .00788 | .00002 | .01814 | .12907 | .00000 | .06996 | .11757 | .00000 | .00000 | .00000 | .65736 | .00000 | .00000 | .00000 |
| 810 | .00788 | .00001 | .01896 | .12826 | .00000 | .06917 | .11837 | .00000 | .00000 | .00000 | .65735 | .00000 | .00000 | .00000 |
| 820 | .00788 | .00001 | .01976 | .12745 | .00000 | .06837 | .11917 | .00000 | .00000 | .00000 | .65735 | .00000 | .00000 | .00000 |
| 830 | .00788 | .00001 | .02057 | .12665 | .00000 | .06758 | .11997 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 840 | .00788 | .00000 | .02137 | .12585 | .00000 | .06679 | .12076 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 850 | .00788 | .00000 | .02216 | .12506 | .00000 | .06600 | .12156 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 860 | .00788 | .00000 | .02295 | .12427 | .00000 | .06521 | .12234 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 870 | .00788 | .00000 | .02373 | .12349 | .00000 | .06443 | .12312 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 880 | .00788 | .00000 | .02450 | .12272 | .00000 | .06366 | .12389 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 890 | .00788 | .00000 | .02527 | .12195 | .00000 | .06290 | .12466 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 900 | .00788 | .00000 | .02602 | .12120 | .00000 | .06214 | .12541 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 910 | .00788 | .00000 | .02677 | .12045 | .00000 | .06140 | .12616 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 920 | .00788 | .00000 | .02751 | .11971 | .00000 | .06066 | .12690 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 930 | .00788 | .00000 | .02824 | .11899 | .00000 | .05993 | .12762 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 940 | .00788 | .00000 | .02895 | .11827 | .00000 | .05922 | .12834 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 950 | .00788 | .00000 | .02966 | .11756 | .00000 | .05851 | .12905 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 960 | .00788 | .00000 | .03035 | .11687 | .00000 | .05782 | .12974 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 970 | .00788 | .00000 | .03104 | .11618 | .00000 | .05713 | .13043 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 980 | .00788 | .00000 | .03171 | .11551 | .00000 | .05646 | .13110 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 990 | .00788 | .00000 | .03238 | .11485 | .00000 | .05580 | .13176 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |

TABLE 27.2D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00788 | .00000 | .03303 | .11419 | .00000 | .05514 | .13241 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1050 | .00788 | .00000 | .03612 | .11110 | .00000 | .05205 | .13551 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1100 | .00788 | .00000 | .03894 | .10828 | .00000 | .04923 | .13832 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1150 | .00788 | .00000 | .04150 | .10572 | .00000 | .04667 | .14089 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1200 | .00788 | .00000 | .04382 | .10340 | .00000 | .04435 | .14321 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1250 | .00788 | .00000 | .04593 | .10129 | .00000 | .04224 | .14532 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1300 | .00788 | .00000 | .04784 | .09939 | .00000 | .04033 | .14722 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1350 | .00788 | .00000 | .04957 | .09765 | .00000 | .03860 | .14895 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1400 | .00788 | .00000 | .05114 | .09608 | .00000 | .03703 | .15052 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1450 | .00788 | .00000 | .05257 | .09466 | .00001 | .03560 | .15195 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1500 | .00788 | .00000 | .05387 | .09335 | .00001 | .03430 | .15325 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1550 | .00788 | .00000 | .05505 | .09217 | .00002 | .03311 | .15443 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1600 | .00788 | .00000 | .05614 | .09108 | .00003 | .03202 | .15551 | .00000 | .00000 | .00000 | .65732 | .00000 | .00001 | .00000 |
| 1650 | .00788 | .00000 | .05713 | .09009 | .00005 | .03102 | .15650 | .00000 | .00000 | .00000 | .65732 | .00000 | .00001 | .00000 |
| 1700 | .00788 | .00000 | .05804 | .08918 | .00008 | .03010 | .15739 | .00000 | .00000 | .00000 | .65730 | .00000 | .00002 | .00000 |
| 1750 | .00788 | .00000 | .05887 | .08834 | .00013 | .02926 | .15820 | .00000 | .00000 | .00000 | .65728 | .00000 | .00004 | .00000 |
| 1800 | .00788 | .00000 | .05964 | .08757 | .00019 | .02847 | .15893 | .00000 | .00000 | .00001 | .65724 | .00000 | .00007 | .00000 |
| 1850 | .00788 | .00000 | .06034 | .08685 | .00028 | .02775 | .15957 | .00000 | .00000 | .00002 | .65719 | .00000 | .00012 | .00000 |
| 1900 | .00788 | .00000 | .06100 | .08617 | .00041 | .02708 | .16011 | .00000 | .00000 | .00003 | .65710 | .00000 | .00020 | .00001 |
| 1950 | .00788 | .00000 | .06163 | .08552 | .00059 | .02646 | .16055 | .00000 | .00000 | .00005 | .65698 | .00001 | .00033 | .00001 |
| 2000 | .00788 | .00000 | .06223 | .08488 | .00082 | .02589 | .16085 | .00000 | .00000 | .00009 | .65679 | .00001 | .00052 | .00003 |
| 2050 | .00787 | .00000 | .06284 | .08421 | .00114 | .02538 | .16099 | .00000 | .00000 | .00015 | .65651 | .00003 | .00080 | .00007 |
| 2100 | .00787 | .00000 | .06350 | .08347 | .00155 | .02495 | .16091 | .00000 | .00000 | .00025 | .65609 | .00005 | .00121 | .00014 |
| 2150 | .00786 | .00000 | .06427 | .08258 | .00208 | .02462 | .16053 | .00000 | .00000 | .00040 | .65547 | .00010 | .00179 | .00029 |
| 2200 | .00785 | .00000 | .06525 | .08143 | .00277 | .02443 | .15976 | .00000 | .00000 | .00062 | .65457 | .00020 | .00258 | .00055 |
| 2250 | .00784 | .00000 | .06654 | .07988 | .00365 | .02444 | .15845 | .00000 | .00000 | .00093 | .65327 | .00037 | .00363 | .00100 |
| 2300 | .00782 | .00000 | .06827 | .07778 | .00478 | .02472 | .15647 | .00000 | .00000 | .00136 | .65145 | .00065 | .00498 | .00171 |
| 2350 | .00780 | .00000 | .07056 | .07501 | .00624 | .02533 | .15367 | .00000 | .00000 | .00190 | .64900 | .00109 | .00667 | .00275 |
| 2400 | .00776 | .00000 | .07342 | .07150 | .00811 | .02631 | .14993 | .00000 | .00000 | .00256 | .64580 | .00176 | .00868 | .00416 |
| 2450 | .00772 | .00000 | .07682 | .06730 | .01050 | .02765 | .14520 | .00000 | .00000 | .00334 | .64182 | .00272 | .01101 | .00592 |
| 2500 | .00767 | .00000 | .08063 | .06251 | .01354 | .02934 | .13944 | .00000 | .00000 | .00422 | .63701 | .00406 | .01362 | .00796 |
| 2550 | .00760 | .00000 | .08469 | .05730 | .01735 | .03131 | .13268 | .00000 | .00000 | .00517 | .63139 | .00585 | .01647 | .01018 |
| 2600 | .00753 | .00000 | .08881 | .05185 | .02208 | .03348 | .12495 | .00000 | .00000 | .00619 | .62496 | .00818 | .01948 | .01249 |
| 2650 | .00745 | .00000 | .09282 | .04635 | .02786 | .03575 | .11633 | .00000 | .00000 | .00723 | .61776 | .01112 | .02258 | .01475 |
| 2700 | .00736 | .00000 | .09656 | .04095 | .03482 | .03800 | .10694 | .00000 | .00000 | .00829 | .60980 | .01475 | .02565 | .01687 |
| 2750 | .00727 | .00000 | .09991 | .03577 | .04306 | .04009 | .09694 | .00001 | .00000 | .00933 | .60114 | .01913 | .02859 | .01875 |
| 2800 | .00716 | .00000 | .10279 | .03092 | .05264 | .04188 | .08651 | .00001 | .00000 | .01034 | .59185 | .02433 | .03127 | .02030 |
| 2850 | .00705 | .00000 | .10515 | .02647 | .06357 | .04323 | .07588 | .00001 | .00000 | .01128 | .58200 | .03035 | .03355 | .02146 |
| 2900 | .00693 | .00000 | .10697 | .02244 | .07579 | .04400 | .06532 | .00002 | .00000 | .01214 | .57172 | .03718 | .03531 | .02219 |
| 2950 | .00681 | .00000 | .10828 | .01885 | .08914 | .04408 | .05509 | .00002 | .00000 | .01289 | .56117 | .04479 | .03643 | .02244 |
| 3000 | .00668 | .00000 | .10911 | .01571 | .10341 | .04341 | .04547 | .00003 | .00000 | .01350 | .55052 | .05307 | .03685 | .02223 |

TABLE 27.3D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 210 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 220 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 230 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 240 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 250 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 260 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 270 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 280 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 290 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 298 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 300 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 310 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00001 | .15008 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 320 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00001 | .15008 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 330 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00001 | .15008 | .00000 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 340 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00002 | .15007 | .00000 | .00001 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 350 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00003 | .15007 | .00000 | .00001 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 360 | .00825 | .02304 | .00000 | .13096 | .00000 | .00000 | .00005 | .15006 | .00000 | .00001 | .00000 | .68763 | .00000 | .00000 | .00000 |
| 370 | .00825 | .02304 | .00000 | .13097 | .00000 | .00000 | .00007 | .15004 | .00000 | .00001 | .00000 | .68763 | .00000 | .00000 | .00000 |
| 380 | .00825 | .02303 | .00000 | .13097 | .00000 | .00000 | .00010 | .15002 | .00000 | .00001 | .00000 | .68761 | .00000 | .00000 | .00000 |
| 390 | .00825 | .02302 | .00000 | .13098 | .00000 | .00000 | .00014 | .15000 | .00000 | .00001 | .00000 | .68760 | .00000 | .00000 | .00000 |
| 400 | .00825 | .02300 | .00000 | .13099 | .00000 | .00000 | .00019 | .14997 | .00000 | .00001 | .00000 | .68758 | .00000 | .00000 | .00000 |
| 410 | .00825 | .02298 | .00000 | .13101 | .00000 | .00000 | .00027 | .14993 | .00000 | .00002 | .00000 | .68756 | .00000 | .00000 | .00000 |
| 420 | .00825 | .02296 | .00000 | .13102 | .00000 | .00000 | .00036 | .14987 | .00000 | .00002 | .00000 | .68752 | .00000 | .00000 | .00000 |
| 430 | .00825 | .02293 | .00000 | .13105 | .00000 | .00000 | .00048 | .14980 | .00000 | .00002 | .00000 | .68748 | .00000 | .00000 | .00000 |
| 440 | .00824 | .02289 | .00000 | .13107 | .00000 | .00000 | .00062 | .14972 | .00000 | .00002 | .00000 | .68743 | .00000 | .00000 | .00000 |
| 450 | .00824 | .02284 | .00000 | .13111 | .00000 | .00000 | .00081 | .14961 | .00000 | .00002 | .00000 | .68737 | .00000 | .00000 | .00000 |
| 460 | .00824 | .02278 | .00000 | .13115 | .00000 | .00000 | .00104 | .14947 | .00000 | .00003 | .00000 | .68729 | .00000 | .00000 | .00000 |
| 470 | .00824 | .02270 | .00000 | .13120 | .00000 | .00000 | .00132 | .14931 | .00000 | .00003 | .00000 | .68719 | .00000 | .00000 | .00000 |
| 480 | .00824 | .02261 | .00001 | .13126 | .00000 | .00000 | .00166 | .14912 | .00000 | .00003 | .00000 | .68707 | .00000 | .00000 | .00000 |
| 490 | .00824 | .02250 | .00001 | .13134 | .00000 | .00000 | .00207 | .14888 | .00000 | .00003 | .00000 | .68693 | .00000 | .00000 | .00000 |
| 500 | .00824 | .02237 | .00002 | .13142 | .00000 | .00000 | .00256 | .14860 | .00000 | .00003 | .00000 | .68675 | .00000 | .00000 | .00000 |
| 510 | .00823 | .02222 | .00002 | .13153 | .00000 | .00000 | .00314 | .14827 | .00000 | .00004 | .00000 | .68655 | .00000 | .00000 | .00000 |
| 520 | .00823 | .02204 | .00004 | .13164 | .00000 | .00000 | .00382 | .14788 | .00000 | .00004 | .00000 | .68631 | .00000 | .00000 | .00000 |
| 530 | .00823 | .02183 | .00005 | .13178 | .00000 | .00000 | .00460 | .14743 | .00000 | .00004 | .00000 | .68604 | .00000 | .00000 | .00000 |
| 540 | .00822 | .02158 | .00007 | .13193 | .00000 | .00000 | .00551 | .14692 | .00000 | .00004 | .00000 | .68572 | .00000 | .00000 | .00000 |
| 550 | .00822 | .02130 | .00010 | .13210 | .00000 | .00000 | .00656 | .14633 | .00000 | .00005 | .00000 | .68535 | .00000 | .00000 | .00000 |
| 560 | .00821 | .02098 | .00014 | .13229 | .00000 | .00000 | .00775 | .14566 | .00000 | .00005 | .00000 | .68492 | .00000 | .00000 | .00000 |
| 570 | .00821 | .02061 | .00019 | .13249 | .00000 | .00000 | .00909 | .14491 | .00000 | .00005 | .00000 | .68444 | .00000 | .00000 | .00000 |
| 580 | .00820 | .02020 | .00026 | .13271 | .00000 | .00000 | .01060 | .14407 | .00000 | .00005 | .00000 | .68390 | .00000 | .00000 | .00000 |
| 590 | .00820 | .01974 | .00035 | .13295 | .00000 | .00000 | .01228 | .14314 | .00000 | .00006 | .00000 | .68329 | .00000 | .00000 | .00000 |

TABLE 27.3D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00819 | .01922 | .00047 | .13320 | .00000 | .00000 | .01414 | .14211 | .00000 | .00006 | .00000 | .68261 | .00000 | .00000 | .00000 |
| 610 | .00818 | .01864 | .00061 | .13346 | .00000 | .00000 | .01619 | .14100 | .00000 | .00006 | .00000 | .68186 | .00000 | .00000 | .00000 |
| 620 | .00817 | .01801 | .00080 | .13373 | .00000 | .00000 | .01842 | .13979 | .00000 | .00006 | .00000 | .68102 | .00000 | .00000 | .00000 |
| 630 | .00816 | .01731 | .00103 | .13399 | .00000 | .00000 | .02085 | .13849 | .00000 | .00006 | .00000 | .68011 | .00000 | .00000 | .00000 |
| 640 | .00815 | .01656 | .00131 | .13423 | .00000 | .00000 | .02346 | .13711 | .00000 | .00007 | .00000 | .67911 | .00000 | .00000 | .00000 |
| 650 | .00813 | .01574 | .00166 | .13446 | .00000 | .00000 | .02624 | .13566 | .00000 | .00007 | .00000 | .67804 | .00000 | .00000 | .00000 |
| 660 | .00812 | .01485 | .00209 | .13466 | .00000 | .00000 | .02919 | .13414 | .00000 | .00007 | .00000 | .67688 | .00000 | .00000 | .00000 |
| 670 | .00810 | .01391 | .00259 | .13482 | .00000 | .00000 | .03229 | .13258 | .00000 | .00007 | .00000 | .67564 | .00000 | .00000 | .00000 |
| 680 | .00809 | .01291 | .00320 | .13493 | .00000 | .00000 | .03551 | .13098 | .00000 | .00007 | .00000 | .67432 | .00000 | .00000 | .00000 |
| 690 | .00807 | .01186 | .00390 | .13496 | .00000 | .00000 | .03883 | .12937 | .00000 | .00007 | .00000 | .67294 | .00000 | .00000 | .00000 |
| 700 | .00805 | .01076 | .00472 | .13492 | .00000 | .00000 | .04220 | .12778 | .00000 | .00007 | .00000 | .67150 | .00000 | .00000 | .00000 |
| 710 | .00804 | .00964 | .00565 | .13478 | .00000 | .00000 | .04558 | .12623 | .00000 | .00007 | .00000 | .67002 | .00000 | .00000 | .00000 |
| 720 | .00802 | .00849 | .00669 | .13455 | .00000 | .00000 | .04892 | .12475 | .00000 | .00007 | .00000 | .66851 | .00000 | .00000 | .00000 |
| 730 | .00800 | .00735 | .00784 | .13421 | .00000 | .00000 | .05215 | .12338 | .00000 | .00006 | .00000 | .66700 | .00000 | .00000 | .00000 |
| 740 | .00798 | .00622 | .00908 | .13376 | .00000 | .00000 | .05520 | .12216 | .00000 | .00006 | .00000 | .66553 | .00000 | .00000 | .00000 |
| 750 | .00797 | .00515 | .01039 | .13320 | .00000 | .00000 | .05800 | .12111 | .00000 | .00006 | .00000 | .66412 | .00000 | .00000 | .00000 |
| 760 | .00795 | .00416 | .01174 | .13255 | .00000 | .00000 | .06045 | .12028 | .00000 | .00006 | .00000 | .66281 | .00000 | .00000 | .00000 |
| 770 | .00794 | .00327 | .01310 | .13183 | .00000 | .00000 | .06251 | .11967 | .00000 | .00005 | .00000 | .66164 | .00000 | .00000 | .00000 |
| 780 | .00792 | .00250 | .01443 | .13104 | .00000 | .00000 | .06413 | .11931 | .00000 | .00005 | .00000 | .66063 | .00000 | .00000 | .00000 |
| 790 | .00791 | .00186 | .01571 | .13021 | .00000 | .00000 | .06529 | .11919 | .00000 | .00005 | .00000 | .65979 | .00000 | .00000 | .00000 |
| 800 | .00791 | .00135 | .01691 | .12936 | .00000 | .00000 | .06602 | .11928 | .00000 | .00004 | .00000 | .65912 | .00000 | .00000 | .00000 |
| 810 | .00790 | .00097 | .01804 | .12850 | .00000 | .00000 | .06637 | .11956 | .00000 | .00004 | .00000 | .65862 | .00000 | .00000 | .00000 |
| 820 | .00789 | .00068 | .01910 | .12765 | .00000 | .00000 | .06641 | .11999 | .00000 | .00003 | .00000 | .65824 | .00000 | .00000 | .00000 |
| 830 | .00789 | .00048 | .02009 | .12680 | .00000 | .00000 | .06621 | .12053 | .00000 | .00003 | .00000 | .65797 | .00000 | .00000 | .00000 |
| 840 | .00789 | .00033 | .02102 | .12597 | .00000 | .00000 | .06584 | .12114 | .00000 | .00003 | .00000 | .65778 | .00000 | .00000 | .00000 |
| 850 | .00789 | .00023 | .02191 | .12515 | .00000 | .00000 | .06534 | .12181 | .00000 | .00003 | .00000 | .65764 | .00000 | .00000 | .00000 |
| 860 | .00789 | .00016 | .02277 | .12434 | .00000 | .00000 | .06475 | .12251 | .00000 | .00002 | .00000 | .65755 | .00000 | .00000 | .00000 |
| 870 | .00789 | .00011 | .02360 | .12354 | .00000 | .00000 | .06411 | .12324 | .00000 | .00002 | .00000 | .65749 | .00000 | .00000 | .00000 |
| 880 | .00789 | .00008 | .02441 | .12276 | .00000 | .00000 | .06343 | .12397 | .00000 | .00002 | .00000 | .65744 | .00000 | .00000 | .00000 |
| 890 | .00788 | .00006 | .02520 | .12199 | .00000 | .00000 | .06274 | .12471 | .00000 | .00002 | .00000 | .65741 | .00000 | .00000 | .00000 |
| 900 | .00788 | .00004 | .02597 | .12122 | .00000 | .00000 | .06203 | .12545 | .00000 | .00002 | .00000 | .65739 | .00000 | .00000 | .00000 |
| 910 | .00788 | .00003 | .02673 | .12047 | .00000 | .00000 | .06131 | .12618 | .00000 | .00001 | .00000 | .65738 | .00000 | .00000 | .00000 |
| 920 | .00788 | .00002 | .02748 | .11973 | .00000 | .00000 | .06060 | .12691 | .00000 | .00001 | .00000 | .65736 | .00000 | .00000 | .00000 |
| 930 | .00788 | .00001 | .02821 | .11900 | .00000 | .00000 | .05989 | .12763 | .00000 | .00001 | .00000 | .65736 | .00000 | .00000 | .00000 |
| 940 | .00788 | .00001 | .02894 | .11828 | .00000 | .00000 | .05918 | .12835 | .00000 | .00001 | .00000 | .65735 | .00000 | .00000 | .00000 |
| 950 | .00788 | .00001 | .02965 | .11757 | .00000 | .00000 | .05848 | .12905 | .00000 | .00001 | .00000 | .65735 | .00000 | .00000 | .00000 |
| 960 | .00788 | .00001 | .03034 | .11687 | .00000 | .00000 | .05779 | .12974 | .00000 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 970 | .00788 | .00000 | .03103 | .11619 | .00000 | .00000 | .05711 | .13043 | .00000 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 980 | .00788 | .00000 | .03171 | .11551 | .00000 | .00000 | .05644 | .13110 | .00000 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 990 | .00788 | .00000 | .03237 | .11485 | .00000 | .00000 | .05578 | .13176 | .00000 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |

TABLE 27.3D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00788 | .00000 | .03302 | .11420 | .00000 | .00000 | .05513 | .13241 | .00000 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1050 | .00788 | .00000 | .03612 | .11111 | .00000 | .00000 | .05205 | .13550 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1100 | .00788 | .00000 | .03894 | .10828 | .00000 | .00000 | .04923 | .13832 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1150 | .00788 | .00000 | .04150 | .10572 | .00000 | .00000 | .04667 | .14089 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1200 | .00788 | .00000 | .04382 | .10340 | .00000 | .00000 | .04435 | .14321 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1250 | .00788 | .00000 | .04593 | .10129 | .00000 | .00000 | .04224 | .14531 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1300 | .00788 | .00000 | .04784 | .09939 | .00000 | .00000 | .04033 | .14722 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1350 | .00788 | .00000 | .04957 | .09766 | .00000 | .00000 | .03860 | .14895 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1400 | .00788 | .00000 | .05114 | .09608 | .00000 | .00000 | .03703 | .15052 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1450 | .00788 | .00000 | .05257 | .09466 | .00000 | .00000 | .03560 | .15195 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1500 | .00788 | .00000 | .05387 | .09335 | .00000 | .00000 | .03430 | .15325 | .00000 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1550 | .00788 | .00000 | .05505 | .09217 | .00001 | .00000 | .03311 | .15444 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1600 | .00788 | .00000 | .05614 | .09108 | .00001 | .00000 | .03203 | .15552 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1650 | .00788 | .00000 | .05713 | .09009 | .00002 | .00000 | .03103 | .15651 | .00000 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1700 | .00788 | .00000 | .05804 | .08917 | .00003 | .00000 | .03012 | .15742 | .00000 | .00000 | .00000 | .65733 | .00000 | .00001 | .00000 |
| 1750 | .00788 | .00000 | .05888 | .08834 | .00004 | .00000 | .02928 | .15825 | .00000 | .00000 | .00000 | .65732 | .00000 | .00001 | .00000 |
| 1800 | .00788 | .00000 | .05965 | .08756 | .00006 | .00000 | .02850 | .15901 | .00000 | .00000 | .00000 | .65731 | .00000 | .00002 | .00000 |
| 1850 | .00788 | .00000 | .06036 | .08685 | .00009 | .00000 | .02778 | .15970 | .00000 | .00000 | .00001 | .65729 | .00000 | .00004 | .00000 |
| 1900 | .00788 | .00000 | .06102 | .08618 | .00013 | .00000 | .02712 | .16032 | .00000 | .00000 | .00001 | .65726 | .00000 | .00006 | .00000 |
| 1950 | .00788 | .00000 | .06164 | .08556 | .00019 | .00000 | .02650 | .16088 | .00000 | .00000 | .00002 | .65723 | .00000 | .00010 | .00000 |
| 2000 | .00788 | .00000 | .06221 | .08498 | .00026 | .00000 | .02593 | .16137 | .00000 | .00000 | .00003 | .65717 | .00000 | .00017 | .00000 |
| 2050 | .00788 | .00000 | .06275 | .08442 | .00036 | .00000 | .02541 | .16178 | .00000 | .00000 | .00005 | .65709 | .00000 | .00026 | .00001 |
| 2100 | .00788 | .00000 | .06327 | .08388 | .00049 | .00000 | .02492 | .16211 | .00000 | .00000 | .00008 | .65697 | .00001 | .00039 | .00001 |
| 2150 | .00788 | .00000 | .06379 | .08333 | .00066 | .00000 | .02448 | .16233 | .00000 | .00000 | .00013 | .65680 | .00001 | .00057 | .00003 |
| 2200 | .00788 | .00000 | .06432 | .08275 | .00087 | .00000 | .02409 | .16242 | .00000 | .00000 | .00020 | .65656 | .00002 | .00084 | .00006 |
| 2250 | .00787 | .00000 | .06489 | .08212 | .00114 | .00000 | .02376 | .16236 | .00000 | .00000 | .00031 | .65621 | .00004 | .00119 | .00011 |
| 2300 | .00787 | .00000 | .06554 | .08138 | .00147 | .00000 | .02350 | .16210 | .00000 | .00000 | .00047 | .65573 | .00007 | .00167 | .00020 |
| 2350 | .00786 | .00000 | .06632 | .08047 | .00189 | .00000 | .02333 | .16157 | .00000 | .00000 | .00069 | .65507 | .00012 | .00231 | .00036 |
| 2400 | .00785 | .00000 | .06729 | .07933 | .00241 | .00000 | .02330 | .16073 | .00000 | .00000 | .00099 | .65416 | .00021 | .00313 | .00061 |
| 2450 | .00784 | .00000 | .06853 | .07786 | .00306 | .00000 | .02342 | .15948 | .00000 | .00000 | .00138 | .65293 | .00035 | .00416 | .00100 |
| 2500 | .00782 | .00000 | .07011 | .07598 | .00385 | .00000 | .02374 | .15774 | .00000 | .00000 | .00189 | .65133 | .00057 | .00542 | .00156 |
| 2550 | .00780 | .00000 | .07206 | .07364 | .00483 | .00000 | .02428 | .15545 | .00000 | .00000 | .00251 | .64928 | .00088 | .00693 | .00232 |
| 2600 | .00778 | .00000 | .07442 | .07080 | .00604 | .00000 | .02508 | .15255 | .00000 | .00000 | .00324 | .64675 | .00133 | .00869 | .00332 |
| 2650 | .00774 | .00000 | .07715 | .06748 | .00753 | .00000 | .02614 | .14900 | .00000 | .00000 | .00409 | .64370 | .00195 | .01069 | .00453 |
| 2700 | .00771 | .00000 | .08020 | .06374 | .00936 | .00000 | .02745 | .14478 | .00000 | .00000 | .00503 | .64013 | .00276 | .01292 | .00593 |
| 2750 | .00766 | .00000 | .08347 | .05966 | .01158 | .00000 | .02898 | .13990 | .00000 | .00000 | .00606 | .63604 | .00382 | .01535 | .00747 |
| 2800 | .00762 | .00000 | .08686 | .05536 | .01425 | .00001 | .03071 | .13438 | .00000 | .00000 | .00716 | .63144 | .00515 | .01794 | .00911 |
| 2850 | .00756 | .00000 | .09027 | .05094 | .01745 | .00001 | .03259 | .12826 | .00000 | .00000 | .00830 | .62636 | .00680 | .02065 | .01079 |
| 2900 | .00750 | .00000 | .09361 | .04650 | .02125 | .00001 | .03458 | .12157 | .00001 | .00000 | .00947 | .62082 | .00881 | .02344 | .01244 |
| 2950 | .00744 | .00000 | .09678 | .04212 | .02569 | .00001 | .03661 | .11438 | .00001 | .00000 | .01066 | .61484 | .01120 | .02625 | .01402 |
| 3000 | .00737 | .00000 | .09972 | .03789 | .03084 | .00001 | .03861 | .10676 | .00001 | .00000 | .01185 | .60845 | .01401 | .02901 | .01548 |

TABLE 27.4D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 210 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 220 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 230 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 240 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 250 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 260 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 270 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 280 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 290 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 298 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 300 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 310 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 320 | .00825 | .02306 | .00000 | .13096 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 330 | .00825 | .02306 | .00000 | .13096 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 340 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00001 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 350 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00001 | .15008 | .00001 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 360 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00002 | .15007 | .00001 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 370 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00002 | .15006 | .00002 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 380 | .00825 | .02304 | .00000 | .13097 | .00000 | .00000 | .00003 | .15006 | .00002 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 390 | .00825 | .02304 | .00000 | .13097 | .00000 | .00000 | .00004 | .15005 | .00002 | .00000 | .68763 | .00000 | .00000 | .00000 |
| 400 | .00825 | .02303 | .00000 | .13097 | .00000 | .00000 | .00006 | .15004 | .00002 | .00000 | .68762 | .00000 | .00000 | .00000 |
| 410 | .00825 | .02303 | .00000 | .13098 | .00000 | .00000 | .00008 | .15002 | .00003 | .00000 | .68761 | .00000 | .00000 | .00000 |
| 420 | .00825 | .02302 | .00000 | .13098 | .00000 | .00000 | .00011 | .15000 | .00003 | .00000 | .68760 | .00000 | .00000 | .00000 |
| 430 | .00825 | .02301 | .00000 | .13099 | .00000 | .00000 | .00015 | .14998 | .00003 | .00000 | .68759 | .00000 | .00000 | .00000 |
| 440 | .00825 | .02299 | .00000 | .13100 | .00000 | .00000 | .00020 | .14995 | .00004 | .00000 | .68757 | .00000 | .00000 | .00000 |
| 450 | .00825 | .02298 | .00000 | .13102 | .00000 | .00000 | .00026 | .14991 | .00004 | .00000 | .68755 | .00000 | .00000 | .00000 |
| 460 | .00825 | .02296 | .00000 | .13103 | .00000 | .00000 | .00033 | .14987 | .00004 | .00000 | .68752 | .00000 | .00000 | .00000 |
| 470 | .00825 | .02293 | .00000 | .13105 | .00000 | .00000 | .00042 | .14981 | .00005 | .00000 | .68749 | .00000 | .00000 | .00000 |
| 480 | .00825 | .02290 | .00000 | .13107 | .00000 | .00000 | .00053 | .14975 | .00005 | .00000 | .68745 | .00000 | .00000 | .00000 |
| 490 | .00824 | .02286 | .00000 | .13109 | .00000 | .00000 | .00066 | .14967 | .00006 | .00000 | .68741 | .00000 | .00000 | .00000 |
| 500 | .00824 | .02282 | .00001 | .13112 | .00000 | .00000 | .00082 | .14958 | .00006 | .00000 | .68735 | .00000 | .00000 | .00000 |
| 510 | .00824 | .02277 | .00001 | .13116 | .00000 | .00000 | .00100 | .14947 | .00007 | .00000 | .68728 | .00000 | .00000 | .00000 |
| 520 | .00824 | .02271 | .00001 | .13120 | .00000 | .00000 | .00122 | .14934 | .00007 | .00000 | .68720 | .00000 | .00000 | .00000 |
| 530 | .00824 | .02264 | .00002 | .13124 | .00000 | .00000 | .00148 | .14919 | .00008 | .00000 | .68711 | .00000 | .00000 | .00000 |
| 540 | .00824 | .02256 | .00002 | .13129 | .00000 | .00000 | .00178 | .14902 | .00008 | .00000 | .68701 | .00000 | .00000 | .00000 |
| 550 | .00824 | .02246 | .00003 | .13135 | .00000 | .00000 | .00212 | .14882 | .00009 | .00000 | .68688 | .00000 | .00000 | .00000 |
| 560 | .00824 | .02236 | .00004 | .13142 | .00000 | .00000 | .00252 | .14860 | .00009 | .00000 | .68674 | .00000 | .00000 | .00000 |
| 570 | .00824 | .02223 | .00006 | .13149 | .00000 | .00000 | .00297 | .14834 | .00010 | .00000 | .68658 | .00000 | .00000 | .00000 |
| 580 | .00823 | .02209 | .00008 | .13157 | .00000 | .00000 | .00348 | .14805 | .00010 | .00000 | .68639 | .00000 | .00000 | .00000 |
| 590 | .00823 | .02193 | .00011 | .13165 | .00000 | .00000 | .00406 | .14773 | .00011 | .00000 | .68618 | .00000 | .00000 | .00000 |

TABLE 27.4D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00823 | .02175 | .00015 | .13175 | .00000 | .00000 | .00471 | .14736 | .00011 | .00000 | .68594 | .00000 | .00000 | .00000 |
| 610 | .00822 | .02154 | .00020 | .13184 | .00000 | .00000 | .00544 | .14696 | .00012 | .00000 | .68568 | .00000 | .00000 | .00000 |
| 620 | .00822 | .02131 | .00025 | .13195 | .00000 | .00000 | .00624 | .14652 | .00012 | .00000 | .68538 | .00000 | .00000 | .00000 |
| 630 | .00822 | .02106 | .00033 | .13205 | .00000 | .00000 | .00714 | .14603 | .00013 | .00000 | .68504 | .00000 | .00000 | .00000 |
| 640 | .00821 | .02078 | .00042 | .13216 | .00000 | .00000 | .00812 | .14551 | .00013 | .00000 | .68467 | .00000 | .00000 | .00000 |
| 650 | .00821 | .02046 | .00054 | .13227 | .00000 | .00000 | .00920 | .14493 | .00014 | .00000 | .68426 | .00000 | .00000 | .00000 |
| 660 | .00820 | .02012 | .00068 | .13237 | .00000 | .00000 | .01037 | .14431 | .00014 | .00000 | .68381 | .00000 | .00000 | .00000 |
| 670 | .00820 | .01974 | .00085 | .13247 | .00000 | .00000 | .01165 | .14365 | .00015 | .00000 | .68331 | .00000 | .00000 | .00000 |
| 680 | .00819 | .01932 | .00106 | .13256 | .00000 | .00000 | .01303 | .14294 | .00015 | .00000 | .68276 | .00000 | .00000 | .00000 |
| 690 | .00818 | .01886 | .00130 | .13263 | .00000 | .00000 | .01452 | .14218 | .00016 | .00000 | .68216 | .00000 | .00000 | .00000 |
| 700 | .00817 | .01837 | .00160 | .13268 | .00000 | .00000 | .01611 | .14139 | .00016 | .00000 | .68151 | .00000 | .00000 | .00000 |
| 710 | .00817 | .01783 | .00195 | .13271 | .00000 | .00000 | .01781 | .14056 | .00016 | .00000 | .68080 | .00000 | .00000 | .00000 |
| 720 | .00816 | .01725 | .00236 | .13271 | .00000 | .00000 | .01961 | .13970 | .00017 | .00000 | .68004 | .00000 | .00000 | .00000 |
| 730 | .00815 | .01663 | .00284 | .13267 | .00000 | .00000 | .02152 | .13880 | .00017 | .00000 | .67922 | .00000 | .00000 | .00000 |
| 740 | .00814 | .01596 | .00340 | .13259 | .00000 | .00000 | .02352 | .13789 | .00017 | .00000 | .67834 | .00000 | .00000 | .00000 |
| 750 | .00813 | .01524 | .00404 | .13246 | .00000 | .00000 | .02561 | .13695 | .00017 | .00000 | .67740 | .00000 | .00000 | .00000 |
| 760 | .00811 | .01448 | .00476 | .13227 | .00000 | .00000 | .02779 | .13601 | .00018 | .00000 | .67640 | .00000 | .00000 | .00000 |
| 770 | .00810 | .01368 | .00558 | .13201 | .00000 | .00000 | .03003 | .13507 | .00018 | .00000 | .67535 | .00000 | .00000 | .00000 |
| 780 | .00809 | .01284 | .00650 | .13169 | .00000 | .00000 | .03234 | .13413 | .00018 | .00000 | .67424 | .00000 | .00000 | .00000 |
| 790 | .00807 | .01195 | .00753 | .13129 | .00000 | .00000 | .03468 | .13322 | .00018 | .00000 | .67308 | .00000 | .00000 | .00000 |
| 800 | .00806 | .01104 | .00865 | .13081 | .00000 | .00000 | .03705 | .13233 | .00018 | .00000 | .67188 | .00000 | .00000 | .00000 |
| 810 | .00804 | .01010 | .00988 | .13024 | .00000 | .00000 | .03942 | .13149 | .00018 | .00000 | .67064 | .00000 | .00000 | .00000 |
| 820 | .00803 | .00914 | .01119 | .12960 | .00000 | .00000 | .04177 | .13070 | .00017 | .00000 | .66939 | .00000 | .00000 | .00000 |
| 830 | .00801 | .00818 | .01259 | .12888 | .00000 | .00000 | .04405 | .12999 | .00017 | .00000 | .66812 | .00000 | .00000 | .00000 |
| 840 | .00800 | .00722 | .01406 | .12809 | .00000 | .00000 | .04625 | .12935 | .00017 | .00000 | .66686 | .00000 | .00000 | .00000 |
| 850 | .00798 | .00629 | .01558 | .12723 | .00000 | .00000 | .04832 | .12881 | .00016 | .00000 | .66563 | .00000 | .00000 | .00000 |
| 860 | .00797 | .00539 | .01712 | .12632 | .00000 | .00000 | .05022 | .12837 | .00016 | .00000 | .66445 | .00000 | .00000 | .00000 |
| 870 | .00796 | .00454 | .01867 | .12537 | .00000 | .00000 | .05192 | .12806 | .00015 | .00000 | .66333 | .00000 | .00000 | .00000 |
| 880 | .00794 | .00376 | .02019 | .12440 | .00000 | .00000 | .05339 | .12786 | .00015 | .00000 | .66231 | .00000 | .00000 | .00000 |
| 890 | .00793 | .00306 | .02166 | .12342 | .00000 | .00000 | .05461 | .12779 | .00014 | .00000 | .66138 | .00000 | .00000 | .00000 |
| 900 | .00792 | .00245 | .02306 | .12245 | .00000 | .00000 | .05556 | .12785 | .00013 | .00000 | .66058 | .00000 | .00000 | .00000 |
| 910 | .00792 | .00193 | .02438 | .12150 | .00000 | .00000 | .05624 | .12802 | .00012 | .00000 | .65989 | .00000 | .00000 | .00000 |
| 920 | .00791 | .00150 | .02560 | .12058 | .00000 | .00000 | .05668 | .12830 | .00011 | .00000 | .65932 | .00000 | .00000 | .00000 |
| 930 | .00790 | .00115 | .02674 | .11969 | .00000 | .00000 | .05688 | .12866 | .00011 | .00000 | .65887 | .00000 | .00000 | .00000 |
| 940 | .00790 | .00087 | .02779 | .11883 | .00000 | .00000 | .05690 | .12911 | .00010 | .00000 | .65850 | .00000 | .00000 | .00000 |
| 950 | .00789 | .00066 | .02876 | .11801 | .00000 | .00000 | .05676 | .12960 | .00009 | .00000 | .65822 | .00000 | .00000 | .00000 |
| 960 | .00789 | .00050 | .02966 | .11723 | .00000 | .00000 | .05649 | .13015 | .00008 | .00000 | .65800 | .00000 | .00000 | .00000 |
| 970 | .00789 | .00037 | .03050 | .11647 | .00000 | .00000 | .05613 | .13072 | .00008 | .00000 | .65784 | .00000 | .00000 | .00000 |
| 980 | .00789 | .00028 | .03130 | .11574 | .00000 | .00000 | .05570 | .13131 | .00007 | .00000 | .65772 | .00000 | .00000 | .00000 |
| 990 | .00789 | .00021 | .03205 | .11503 | .00000 | .00000 | .05522 | .13191 | .00007 | .00000 | .65762 | .00000 | .00000 | .00000 |

TABLE 27.4D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A = 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00789 | .00016 | .03278 | .11434 | .00000 | .00000 | .05470 | .13252 | .00006 | .00000 | .65755 | .00000 | .00000 | .00000 |
| 1050 | .00788 | .00004 | .03604 | .11116 | .00000 | .00000 | .05192 | .13552 | .00004 | .00000 | .65740 | .00000 | .00000 | .00000 |
| 1100 | .00788 | .00001 | .03891 | .10831 | .00000 | .00000 | .04918 | .13832 | .00003 | .00000 | .65736 | .00000 | .00000 | .00000 |
| 1150 | .00788 | .00000 | .04149 | .10574 | .00000 | .00000 | .04665 | .14088 | .00002 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1200 | .00788 | .00000 | .04381 | .10341 | .00000 | .00000 | .04433 | .14320 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1250 | .00788 | .00000 | .04592 | .10130 | .00000 | .00000 | .04223 | .14531 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1300 | .00788 | .00000 | .04783 | .09939 | .00000 | .00000 | .04033 | .14722 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1350 | .00788 | .00000 | .04956 | .09766 | .00000 | .00000 | .03860 | .14895 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1400 | .00788 | .00000 | .05114 | .09609 | .00000 | .00000 | .03703 | .15052 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1450 | .00788 | .00000 | .05256 | .09466 | .00000 | .00000 | .03560 | .15195 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1500 | .00788 | .00000 | .05387 | .09336 | .00000 | .00000 | .03430 | .15325 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1550 | .00788 | .00000 | .05505 | .09217 | .00000 | .00000 | .03311 | .15444 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1600 | .00788 | .00000 | .05614 | .09108 | .00000 | .00000 | .03203 | .15553 | .00000 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1650 | .00788 | .00000 | .05713 | .09009 | .00001 | .00000 | .03103 | .15652 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1700 | .00788 | .00000 | .05805 | .08917 | .00001 | .00000 | .03012 | .15743 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1750 | .00788 | .00000 | .05889 | .08833 | .00001 | .00000 | .02928 | .15827 | .00000 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1800 | .00788 | .00000 | .05966 | .08756 | .00002 | .00000 | .02851 | .15904 | .00000 | .00000 | .65733 | .00000 | .00001 | .00000 |
| 1850 | .00788 | .00000 | .06037 | .08685 | .00003 | .00000 | .02779 | .15974 | .00000 | .00000 | .65732 | .00000 | .00001 | .00000 |
| 1900 | .00788 | .00000 | .06103 | .08619 | .00004 | .00000 | .02713 | .16039 | .00000 | .00000 | .65731 | .00000 | .00002 | .00000 |
| 1950 | .00788 | .00000 | .06164 | .08557 | .00006 | .00000 | .02652 | .16098 | .00000 | .00001 | .65730 | .00000 | .00003 | .00000 |
| 2000 | .00788 | .00000 | .06221 | .08500 | .00008 | .00000 | .02595 | .16153 | .00000 | .00001 | .65728 | .00000 | .00005 | .00000 |
| 2050 | .00788 | .00000 | .06274 | .08447 | .00011 | .00000 | .02542 | .16202 | .00000 | .00002 | .65726 | .00000 | .00008 | .00000 |
| 2100 | .00788 | .00000 | .06324 | .08396 | .00015 | .00000 | .02493 | .16246 | .00000 | .00003 | .65722 | .00000 | .00012 | .00000 |
| 2150 | .00788 | .00000 | .06371 | .08348 | .00021 | .00000 | .02448 | .16284 | .00000 | .00004 | .65717 | .00000 | .00018 | .00000 |
| 2200 | .00788 | .00000 | .06416 | .08302 | .00027 | .00000 | .02406 | .16317 | .00000 | .00006 | .65710 | .00000 | .00027 | .00001 |
| 2250 | .00788 | .00000 | .06459 | .08256 | .00036 | .00000 | .02368 | .16343 | .00000 | .00010 | .65700 | .00000 | .00038 | .00001 |
| 2300 | .00788 | .00000 | .06503 | .08210 | .00046 | .00000 | .02333 | .16362 | .00000 | .00015 | .65686 | .00001 | .00054 | .00002 |
| 2350 | .00788 | .00000 | .06547 | .08163 | .00059 | .00000 | .02301 | .16372 | .00000 | .00022 | .65668 | .00001 | .00075 | .00004 |
| 2400 | .00787 | .00000 | .06594 | .08111 | .00075 | .00000 | .02274 | .16372 | .00000 | .00033 | .65643 | .00002 | .00102 | .00007 |
| 2450 | .00787 | .00000 | .06646 | .08053 | .00095 | .00000 | .02252 | .16359 | .00000 | .00047 | .65609 | .00004 | .00137 | .00011 |
| 2500 | .00787 | .00000 | .06705 | .07987 | .00118 | .00000 | .02236 | .16330 | .00000 | .00066 | .65564 | .00006 | .00183 | .00019 |
| 2550 | .00786 | .00000 | .06774 | .07907 | .00146 | .00000 | .02227 | .16284 | .00000 | .00091 | .65505 | .00010 | .00240 | .00030 |
| 2600 | .00785 | .00000 | .06857 | .07810 | .00180 | .00000 | .02227 | .16214 | .00000 | .00123 | .65428 | .00016 | .00310 | .00048 |
| 2650 | .00785 | .00000 | .06958 | .07692 | .00220 | .00000 | .02237 | .16119 | .00000 | .00165 | .65331 | .00025 | .00395 | .00072 |
| 2700 | .00783 | .00000 | .07081 | .07548 | .00269 | .00000 | .02261 | .15993 | .00000 | .00216 | .65209 | .00037 | .00497 | .00107 |
| 2750 | .00782 | .00000 | .07228 | .07374 | .00326 | .00000 | .02298 | .15833 | .00000 | .00277 | .65058 | .00055 | .00617 | .00152 |
| 2800 | .00780 | .00000 | .07402 | .07168 | .00394 | .00000 | .02352 | .15635 | .00000 | .00348 | .64877 | .00078 | .00754 | .00210 |
| 2850 | .00778 | .00000 | .07602 | .06929 | .00476 | .00000 | .02422 | .15397 | .00000 | .00431 | .64664 | .00110 | .00909 | .00282 |
| 2900 | .00776 | .00000 | .07826 | .06660 | .00572 | .00001 | .02510 | .15118 | .00000 | .00523 | .64417 | .00151 | .01082 | .00365 |
| 2950 | .00773 | .00000 | .08071 | .06363 | .00686 | .00001 | .02614 | .14796 | .00000 | .00624 | .64137 | .00203 | .01271 | .00460 |
| 3000 | .00770 | .00000 | .08333 | .06044 | .00821 | .00001 | .02734 | .14434 | .00000 | .00733 | .63825 | .00267 | .01474 | .00564 |

TABLE 27.5D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 210 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 220 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 230 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 240 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 250 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 260 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 270 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 280 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15009 | .00000 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 290 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 298 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 300 | .00825 | .02306 | .00000 | .13095 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 310 | .00825 | .02306 | .00000 | .13096 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 320 | .00825 | .02306 | .00000 | .13096 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 330 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00000 | .15008 | .00001 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 340 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00000 | .15008 | .00002 | .00000 | .68765 | .00000 | .00000 | .00000 |
| 350 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00000 | .15007 | .00002 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 360 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00001 | .15007 | .00002 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 370 | .00825 | .02305 | .00000 | .13096 | .00000 | .00000 | .00001 | .15007 | .00002 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 380 | .00825 | .02305 | .00000 | .13097 | .00000 | .00000 | .00001 | .15006 | .00003 | .00000 | .68764 | .00000 | .00000 | .00000 |
| 390 | .00825 | .02304 | .00000 | .13097 | .00000 | .00000 | .00002 | .15005 | .00003 | .00000 | .68763 | .00000 | .00000 | .00000 |
| 400 | .00825 | .02304 | .00000 | .13097 | .00000 | .00000 | .00003 | .15005 | .00004 | .00000 | .68763 | .00000 | .00000 | .00000 |
| 410 | .00825 | .02303 | .00000 | .13098 | .00000 | .00000 | .00004 | .15004 | .00004 | .00000 | .68763 | .00000 | .00000 | .00000 |
| 420 | .00825 | .02303 | .00000 | .13098 | .00000 | .00000 | .00005 | .15003 | .00005 | .00000 | .68762 | .00000 | .00000 | .00000 |
| 430 | .00825 | .02302 | .00000 | .13098 | .00000 | .00000 | .00007 | .15001 | .00005 | .00000 | .68761 | .00000 | .00000 | .00000 |
| 440 | .00825 | .02302 | .00000 | .13099 | .00000 | .00000 | .00009 | .15000 | .00006 | .00000 | .68760 | .00000 | .00000 | .00000 |
| 450 | .00825 | .02301 | .00000 | .13100 | .00000 | .00000 | .00011 | .14998 | .00006 | .00000 | .68759 | .00000 | .00000 | .00000 |
| 460 | .00825 | .02300 | .00000 | .13101 | .00000 | .00000 | .00015 | .14996 | .00007 | .00000 | .68758 | .00000 | .00000 | .00000 |
| 470 | .00825 | .02298 | .00000 | .13102 | .00000 | .00000 | .00019 | .14993 | .00007 | .00000 | .68756 | .00000 | .00000 | .00000 |
| 480 | .00825 | .02297 | .00000 | .13103 | .00000 | .00000 | .00024 | .14990 | .00008 | .00000 | .68754 | .00000 | .00000 | .00000 |
| 490 | .00825 | .02295 | .00000 | .13104 | .00000 | .00000 | .00030 | .14986 | .00009 | .00000 | .68752 | .00000 | .00000 | .00000 |
| 500 | .00825 | .02293 | .00000 | .13106 | .00000 | .00000 | .00037 | .14981 | .00009 | .00000 | .68750 | .00000 | .00000 | .00000 |
| 510 | .00825 | .02290 | .00000 | .13107 | .00000 | .00000 | .00045 | .14976 | .00010 | .00000 | .68746 | .00000 | .00000 | .00000 |
| 520 | .00825 | .02288 | .00001 | .13109 | .00000 | .00000 | .00055 | .14970 | .00011 | .00000 | .68743 | .00000 | .00000 | .00000 |
| 530 | .00824 | .02284 | .00001 | .13112 | .00000 | .00000 | .00066 | .14963 | .00011 | .00000 | .68738 | .00000 | .00000 | .00000 |
| 540 | .00824 | .02280 | .00001 | .13114 | .00000 | .00000 | .00080 | .14955 | .00012 | .00000 | .68733 | .00000 | .00000 | .00000 |
| 550 | .00824 | .02276 | .00001 | .13117 | .00000 | .00000 | .00095 | .14945 | .00013 | .00000 | .68728 | .00000 | .00000 | .00000 |
| 560 | .00824 | .02271 | .00002 | .13120 | .00000 | .00000 | .00113 | .14935 | .00014 | .00000 | .68721 | .00000 | .00000 | .00000 |
| 570 | .00824 | .02265 | .00003 | .13124 | .00000 | .00000 | .00134 | .14923 | .00015 | .00000 | .68713 | .00000 | .00000 | .00000 |
| 580 | .00824 | .02258 | .00004 | .13127 | .00000 | .00000 | .00157 | .14909 | .00015 | .00000 | .68705 | .00000 | .00000 | .00000 |
| 590 | .00824 | .02251 | .00005 | .13132 | .00000 | .00000 | .00184 | .14894 | .00016 | .00000 | .68695 | .00000 | .00000 | .00000 |

TABLE 27.5D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00824 | .02242 | .00007 | .13136 | .00000 | .00000 | .00213 | .14877 | .00017 | .00000 | .68684 | .00000 | .00000 | .00000 |
| 610 | .00824 | .02232 | .00009 | .13141 | .00000 | .00000 | .00247 | .14858 | .00018 | .00000 | .68671 | .00000 | .00000 | .00000 |
| 620 | .00824 | .02222 | .00011 | .13146 | .00000 | .00000 | .00284 | .14837 | .00019 | .00000 | .68657 | .00000 | .00000 | .00000 |
| 630 | .00823 | .02210 | .00015 | .13151 | .00000 | .00000 | .00326 | .14814 | .00020 | .00000 | .68642 | .00000 | .00000 | .00000 |
| 640 | .00823 | .02196 | .00019 | .13157 | .00000 | .00000 | .00372 | .14789 | .00021 | .00000 | .68624 | .00000 | .00000 | .00000 |
| 650 | .00823 | .02181 | .00024 | .13162 | .00000 | .00000 | .00422 | .14761 | .00022 | .00000 | .68605 | .00000 | .00000 | .00000 |
| 660 | .00823 | .02165 | .00030 | .13168 | .00000 | .00000 | .00478 | .14731 | .00022 | .00000 | .68583 | .00000 | .00000 | .00000 |
| 670 | .00822 | .02146 | .00038 | .13173 | .00000 | .00000 | .00539 | .14699 | .00023 | .00000 | .68559 | .00000 | .00000 | .00000 |
| 680 | .00822 | .02126 | .00048 | .13178 | .00000 | .00000 | .00606 | .14664 | .00024 | .00000 | .68533 | .00000 | .00000 | .00000 |
| 690 | .00822 | .02104 | .00059 | .13182 | .00000 | .00000 | .00678 | .14626 | .00025 | .00000 | .68504 | .00000 | .00000 | .00000 |
| 700 | .00821 | .02080 | .00072 | .13186 | .00000 | .00000 | .00756 | .14587 | .00026 | .00000 | .68472 | .00000 | .00000 | .00000 |
| 710 | .00821 | .02053 | .00088 | .13189 | .00000 | .00000 | .00841 | .14544 | .00027 | .00000 | .68437 | .00000 | .00000 | .00000 |
| 720 | .00821 | .02024 | .00107 | .13191 | .00000 | .00000 | .00931 | .14499 | .00027 | .00000 | .68399 | .00000 | .00000 | .00000 |
| 730 | .00820 | .01993 | .00130 | .13191 | .00000 | .00000 | .01029 | .14452 | .00028 | .00000 | .68358 | .00000 | .00000 | .00000 |
| 740 | .00819 | .01958 | .00156 | .13189 | .00000 | .00000 | .01133 | .14403 | .00029 | .00000 | .68313 | .00000 | .00000 | .00000 |
| 750 | .00819 | .01921 | .00186 | .13185 | .00000 | .00000 | .01244 | .14352 | .00030 | .00000 | .68264 | .00000 | .00000 | .00000 |
| 760 | .00818 | .01881 | .00221 | .13178 | .00000 | .00000 | .01361 | .14298 | .00030 | .00000 | .68211 | .00000 | .00000 | .00000 |
| 770 | .00818 | .01838 | .00261 | .13169 | .00000 | .00000 | .01486 | .14244 | .00031 | .00000 | .68154 | .00000 | .00000 | .00000 |
| 780 | .00817 | .01791 | .00307 | .13156 | .00000 | .00000 | .01617 | .14187 | .00032 | .00000 | .68093 | .00000 | .00000 | .00000 |
| 790 | .00816 | .01741 | .00359 | .13139 | .00000 | .00000 | .01755 | .14130 | .00032 | .00000 | .68028 | .00000 | .00000 | .00000 |
| 800 | .00815 | .01688 | .00418 | .13118 | .00000 | .00000 | .01899 | .14071 | .00033 | .00000 | .67958 | .00000 | .00000 | .00000 |
| 810 | .00814 | .01631 | .00484 | .13092 | .00000 | .00000 | .02049 | .14013 | .00033 | .00000 | .67883 | .00000 | .00000 | .00000 |
| 820 | .00813 | .01571 | .00558 | .13061 | .00000 | .00000 | .02205 | .13954 | .00034 | .00000 | .67804 | .00000 | .00000 | .00000 |
| 830 | .00812 | .01507 | .00640 | .13024 | .00000 | .00000 | .02367 | .13896 | .00034 | .00000 | .67720 | .00000 | .00000 | .00000 |
| 840 | .00811 | .01440 | .00730 | .12982 | .00000 | .00000 | .02533 | .13838 | .00034 | .00000 | .67632 | .00000 | .00000 | .00000 |
| 850 | .00810 | .01369 | .00828 | .12933 | .00000 | .00000 | .02704 | .13781 | .00034 | .00000 | .67539 | .00000 | .00000 | .00000 |
| 860 | .00809 | .01296 | .00936 | .12877 | .00000 | .00000 | .02878 | .13727 | .00035 | .00000 | .67443 | .00000 | .00000 | .00000 |
| 870 | .00808 | .01219 | .01051 | .12816 | .00000 | .00000 | .03055 | .13674 | .00035 | .00000 | .67342 | .00000 | .00000 | .00000 |
| 880 | .00807 | .01140 | .01175 | .12747 | .00000 | .00000 | .03233 | .13625 | .00035 | .00000 | .67238 | .00000 | .00000 | .00000 |
| 890 | .00805 | .01059 | .01307 | .12673 | .00000 | .00000 | .03411 | .13579 | .00034 | .00000 | .67132 | .00000 | .00000 | .00000 |
| 900 | .00804 | .00977 | .01446 | .12592 | .00000 | .00000 | .03588 | .13536 | .00034 | .00000 | .67023 | .00000 | .00000 | .00000 |
| 910 | .00803 | .00894 | .01591 | .12505 | .00000 | .00000 | .03761 | .13498 | .00034 | .00000 | .66914 | .00000 | .00000 | .00000 |
| 920 | .00801 | .00810 | .01742 | .12414 | .00000 | .00000 | .03931 | .13465 | .00033 | .00000 | .66804 | .00000 | .00000 | .00000 |
| 930 | .00800 | .00727 | .01896 | .12318 | .00000 | .00000 | .04093 | .13437 | .00033 | .00000 | .66695 | .00000 | .00000 | .00000 |
| 940 | .00799 | .00647 | .02052 | .12218 | .00000 | .00000 | .04247 | .13416 | .00032 | .00000 | .66589 | .00000 | .00000 | .00000 |
| 950 | .00798 | .00568 | .02209 | .12117 | .00000 | .00000 | .04391 | .13400 | .00031 | .00000 | .66486 | .00000 | .00000 | .00000 |
| 960 | .00796 | .00494 | .02364 | .12014 | .00000 | .00000 | .04521 | .13392 | .00031 | .00000 | .66388 | .00000 | .00000 | .00000 |
| 970 | .00795 | .00424 | .02516 | .11911 | .00000 | .00000 | .04638 | .13390 | .00030 | .00000 | .66296 | .00000 | .00000 | .00000 |
| 980 | .00794 | .00360 | .02663 | .11809 | .00000 | .00000 | .04738 | .13396 | .00028 | .00000 | .66211 | .00000 | .00000 | .00000 |
| 990 | .00793 | .00302 | .02804 | .11710 | .00000 | .00000 | .04822 | .13408 | .00027 | .00000 | .66134 | .00000 | .00000 | .00000 |

TABLE 27.5D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO $\bar{\nu}$ 1.250; CHEM. EQUIV. RATIO $\bar{\nu}$ 1.2239; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00793 | .00250 | .02936 | .11613 | .00000 | .00000 | .04889 | .13427 | .00026 | .00000 | .66066 | .00000 | .00000 | .00000 |
| 1050 | .00790 | .00085 | .03474 | .11191 | .00000 | .00000 | .04990 | .13602 | .00020 | .00000 | .65849 | .00000 | .00000 | .00000 |
| 1100 | .00789 | .00026 | .03846 | .10860 | .00000 | .00000 | .04852 | .13843 | .00014 | .00000 | .65770 | .00000 | .00000 | .00000 |
| 1150 | .00789 | .00008 | .04131 | .10586 | .00000 | .00000 | .04640 | .14089 | .00010 | .00000 | .65746 | .00000 | .00000 | .00000 |
| 1200 | .00788 | .00003 | .04374 | .10347 | .00000 | .00000 | .04422 | .14319 | .00007 | .00000 | .65738 | .00000 | .00000 | .00000 |
| 1250 | .00788 | .00001 | .04588 | .10134 | .00000 | .00000 | .04217 | .14530 | .00005 | .00000 | .65736 | .00000 | .00000 | .00000 |
| 1300 | .00788 | .00000 | .04781 | .09942 | .00000 | .00000 | .04029 | .14721 | .00004 | .00000 | .65735 | .00000 | .00000 | .00000 |
| 1350 | .00788 | .00000 | .04955 | .09768 | .00000 | .00000 | .03857 | .14894 | .00003 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1400 | .00788 | .00000 | .05112 | .09610 | .00000 | .00000 | .03701 | .15051 | .00003 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1450 | .00788 | .00000 | .05255 | .09467 | .00000 | .00000 | .03559 | .15194 | .00002 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1500 | .00788 | .00000 | .05386 | .09337 | .00000 | .00000 | .03429 | .15325 | .00002 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1550 | .00788 | .00000 | .05505 | .09218 | .00000 | .00000 | .03310 | .15444 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1600 | .00788 | .00000 | .05613 | .09109 | .00000 | .00000 | .03202 | .15552 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1650 | .00788 | .00000 | .05713 | .09009 | .00000 | .00000 | .03103 | .15652 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1700 | .00788 | .00000 | .05804 | .08918 | .00000 | .00000 | .03012 | .15743 | .00001 | .00000 | .65734 | .00000 | .00000 | .00000 |
| 1750 | .00788 | .00000 | .05888 | .08834 | .00001 | .00000 | .02928 | .15827 | .00001 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1800 | .00788 | .00000 | .05966 | .08757 | .00001 | .00000 | .02850 | .15904 | .00001 | .00000 | .65733 | .00000 | .00000 | .00000 |
| 1850 | .00788 | .00000 | .06037 | .08685 | .00001 | .00000 | .02779 | .15975 | .00001 | .00000 | .65733 | .00000 | .00001 | .00000 |
| 1900 | .00788 | .00000 | .06103 | .08619 | .00002 | .00000 | .02713 | .16040 | .00000 | .00000 | .65733 | .00000 | .00001 | .00000 |
| 1950 | .00788 | .00000 | .06164 | .08558 | .00003 | .00000 | .02652 | .16101 | .00000 | .00000 | .65732 | .00000 | .00001 | .00000 |
| 2000 | .00788 | .00000 | .06221 | .08501 | .00004 | .00000 | .02595 | .16156 | .00000 | .00000 | .65731 | .00000 | .00002 | .00000 |
| 2050 | .00788 | .00000 | .06274 | .08448 | .00005 | .00000 | .02543 | .16207 | .00000 | .00001 | .65730 | .00000 | .00004 | .00000 |
| 2100 | .00788 | .00000 | .06323 | .08398 | .00007 | .00000 | .02494 | .16254 | .00000 | .00001 | .65729 | .00000 | .00005 | .00000 |
| 2150 | .00788 | .00000 | .06369 | .08352 | .00009 | .00000 | .02448 | .16297 | .00000 | .00002 | .65726 | .00000 | .00008 | .00000 |
| 2200 | .00788 | .00000 | .06413 | .08308 | .00012 | .00000 | .02406 | .16335 | .00000 | .00003 | .65723 | .00000 | .00012 | .00000 |
| 2250 | .00788 | .00000 | .06454 | .08265 | .00016 | .00000 | .02367 | .16369 | .00000 | .00004 | .65719 | .00000 | .00017 | .00000 |
| 2300 | .00788 | .00000 | .06494 | .08225 | .00021 | .00000 | .02330 | .16398 | .00000 | .00007 | .65713 | .00000 | .00024 | .00000 |
| 2350 | .00788 | .00000 | .06532 | .08185 | .00027 | .00000 | .02297 | .16422 | .00000 | .00010 | .65705 | .00000 | .00033 | .00001 |
| 2400 | .00788 | .00000 | .06570 | .08145 | .00034 | .00000 | .02266 | .16441 | .00000 | .00015 | .65694 | .00000 | .00046 | .00001 |
| 2450 | .00788 | .00000 | .06609 | .08103 | .00042 | .00000 | .02239 | .16453 | .00000 | .00021 | .65680 | .00001 | .00062 | .00002 |
| 2500 | .00788 | .00000 | .06649 | .08060 | .00053 | .00000 | .02214 | .16457 | .00000 | .00030 | .65661 | .00001 | .00083 | .00004 |
| 2550 | .00787 | .00000 | .06692 | .08013 | .00065 | .00000 | .02193 | .16453 | .00000 | .00042 | .65636 | .00002 | .00109 | .00006 |
| 2600 | .00787 | .00000 | .06739 | .07961 | .00080 | .00000 | .02177 | .16439 | .00000 | .00057 | .65604 | .00003 | .00142 | .00010 |
| 2650 | .00787 | .00000 | .06792 | .07901 | .00097 | .00000 | .02165 | .16413 | .00000 | .00078 | .65563 | .00005 | .00183 | .00016 |
| 2700 | .00786 | .00000 | .06854 | .07830 | .00117 | .00000 | .02159 | .16373 | .00000 | .00104 | .65511 | .00008 | .00233 | .00024 |
| 2750 | .00786 | .00000 | .06925 | .07748 | .00141 | .00000 | .02160 | .16316 | .00000 | .00136 | .65446 | .00012 | .00293 | .00037 |
| 2800 | .00785 | .00000 | .07010 | .07649 | .00169 | .00000 | .02168 | .16241 | .00000 | .00176 | .65365 | .00018 | .00365 | .00053 |
| 2850 | .00784 | .00000 | .07111 | .07532 | .00202 | .00000 | .02185 | .16144 | .00000 | .00225 | .65266 | .00026 | .00449 | .00076 |
| 2900 | .00783 | .00000 | .07228 | .07394 | .00240 | .00000 | .02213 | .16023 | .00000 | .00283 | .65147 | .00036 | .00546 | .00106 |
| 2950 | .00782 | .00000 | .07365 | .07234 | .00285 | .00000 | .02251 | .15876 | .00000 | .00350 | .65007 | .00051 | .00657 | .00143 |
| 3000 | .00780 | .00000 | .07521 | .07050 | .00337 | .00001 | .02302 | .15701 | .00000 | .00427 | .64843 | .00069 | .00782 | .00188 |

TABLE 27.1E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO $\bar{\nu}$ 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18744 | .00012 | .00000 | .65734 |
| 220 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18555 | .00201 | .00000 | .65734 |
| 240 | .00788 | .04407 | .00001 | .00000 | .10314 | .00000 | .16638 | .02116 | .00000 | .65735 |
| 260 | .00790 | .04213 | .00102 | .00000 | .10437 | .00000 | .00188 | .18402 | .00000 | .65868 |
| 280 | .00791 | .04082 | .00171 | .00000 | .10520 | .00001 | .00000 | .18478 | .00000 | .65958 |
| 298 | .00792 | .03931 | .00250 | .00000 | .10616 | .00002 | .00000 | .18348 | .00000 | .66062 |
| 300 | .00792 | .03913 | .00259 | .00000 | .10626 | .00002 | .00000 | .18334 | .00000 | .66074 |
| 320 | .00794 | .03706 | .00366 | .00000 | .10758 | .00006 | .00000 | .18155 | .00000 | .66215 |
| 340 | .00796 | .03464 | .00490 | .00000 | .10912 | .00016 | .00000 | .17944 | .00000 | .66377 |
| 360 | .00798 | .03193 | .00626 | .00000 | .11088 | .00038 | .00000 | .17701 | .00000 | .66556 |
| 380 | .00800 | .02898 | .00768 | .00000 | .11282 | .00083 | .00000 | .17424 | .00000 | .66744 |
| 400 | .00803 | .02583 | .00911 | .00000 | .11497 | .00168 | .00000 | .17107 | .00000 | .66931 |
| 420 | .00805 | .02252 | .01045 | .00000 | .11732 | .00316 | .00000 | .16741 | .00000 | .67108 |
| 440 | .00807 | .01908 | .01162 | .00001 | .11994 | .00557 | .00000 | .16310 | .00001 | .67261 |
| 460 | .00808 | .01551 | .01251 | .00002 | .12286 | .00928 | .00000 | .15794 | .00001 | .67378 |
| 480 | .00809 | .01183 | .01302 | .00006 | .12615 | .01467 | .00000 | .15173 | .00001 | .67445 |
| 500 | .00809 | .00801 | .01306 | .00014 | .12985 | .02204 | .00000 | .14428 | .00001 | .67451 |
| 520 | .00808 | .00403 | .01261 | .00033 | .13397 | .03157 | .00000 | .13549 | .00001 | .67391 |
| 540 | .00807 | .00000 | .01159 | .00070 | .13834 | .04313 | .00000 | .12558 | .00001 | .67258 |
| 560 | .00802 | .00000 | .00837 | .00130 | .14002 | .05487 | .00000 | .11908 | .00001 | .66834 |
| 580 | .00797 | .00000 | .00523 | .00222 | .14131 | .06594 | .00000 | .11311 | .00001 | .66421 |
| 600 | .00793 | .00000 | .00269 | .00343 | .14190 | .07446 | .00000 | .10872 | .00001 | .66087 |
| 620 | .00790 | .00000 | .00112 | .00476 | .14167 | .07913 | .00000 | .10661 | .00001 | .65880 |
| 640 | .00789 | .00000 | .00040 | .00610 | .14084 | .08053 | .00000 | .10637 | .00000 | .65786 |
| 660 | .00789 | .00000 | .00014 | .00745 | .13968 | .08019 | .00000 | .10714 | .00000 | .65752 |
| 680 | .00788 | .00000 | .00005 | .00883 | .13835 | .07915 | .00000 | .10833 | .00000 | .65740 |
| 700 | .00788 | .00000 | .00002 | .01028 | .13693 | .07782 | .00000 | .10971 | .00000 | .65736 |
| 720 | .00788 | .00000 | .00001 | .01179 | .13543 | .07635 | .00000 | .11119 | .00000 | .65734 |
| 740 | .00788 | .00000 | .00000 | .01335 | .13387 | .07482 | .00000 | .11274 | .00000 | .65734 |
| 760 | .00788 | .00000 | .00000 | .01493 | .13229 | .07323 | .00000 | .11432 | .00000 | .65734 |
| 780 | .00788 | .00000 | .00000 | .01654 | .13068 | .07163 | .00000 | .11593 | .00000 | .65734 |
| 800 | .00788 | .00000 | .00000 | .01816 | .12906 | .07001 | .00000 | .11755 | .00000 | .65734 |

TABLE 27.2E -- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18755 | .00000 | .00001 | .00000 | .65734 |
| 220 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18736 | .00000 | .00020 | .00000 | .65734 |
| 240 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18549 | .00000 | .00206 | .00000 | .65734 |
| 260 | .00788 | .04407 | .00001 | .00000 | .10314 | .00000 | .17247 | .00000 | .01508 | .00000 | .65735 |
| 280 | .00789 | .04341 | .00035 | .00000 | .10356 | .00000 | .00000 | .10389 | .08310 | .00000 | .65780 |
| 298 | .00792 | .03931 | .00250 | .00000 | .10615 | .00001 | .00000 | .00000 | .18350 | .00000 | .66062 |
| 300 | .00792 | .03914 | .00259 | .00000 | .10626 | .00001 | .00000 | .00000 | .18335 | .00000 | .66074 |
| 320 | .00794 | .03708 | .00366 | .00000 | .10756 | .00002 | .00000 | .00000 | .18159 | .00000 | .66215 |
| 340 | .00796 | .03468 | .00490 | .00000 | .10908 | .00005 | .00000 | .00000 | .17954 | .00000 | .66378 |
| 360 | .00798 | .03202 | .00628 | .00000 | .11077 | .00012 | .00000 | .00000 | .17723 | .00000 | .66559 |
| 380 | .00801 | .02915 | .00774 | .00000 | .11261 | .00026 | .00000 | .00000 | .17471 | .00000 | .66751 |
| 400 | .00803 | .02615 | .00924 | .00000 | .11456 | .00054 | .00000 | .00000 | .17200 | .00001 | .66949 |
| 420 | .00805 | .02306 | .01073 | .00000 | .11659 | .00101 | .00000 | .00000 | .16910 | .00001 | .67144 |
| 440 | .00808 | .01993 | .01216 | .00000 | .11871 | .00180 | .00000 | .00000 | .16599 | .00001 | .67332 |
| 460 | .00810 | .01679 | .01347 | .00001 | .12092 | .00304 | .00000 | .00000 | .16261 | .00001 | .67505 |
| 480 | .00811 | .01367 | .01461 | .00002 | .12322 | .00491 | .00000 | .00000 | .15888 | .00002 | .67655 |
| 500 | .00813 | .01057 | .01553 | .00004 | .12565 | .00759 | .00000 | .00000 | .15472 | .00002 | .67775 |
| 520 | .00814 | .00751 | .01615 | .00010 | .12822 | .01128 | .00000 | .00000 | .15002 | .00002 | .67857 |
| 540 | .00814 | .00447 | .01643 | .00022 | .13094 | .01616 | .00000 | .00000 | .14468 | .00002 | .67894 |
| 560 | .00814 | .00144 | .01634 | .00044 | .13383 | .02237 | .00000 | .00000 | .13862 | .00002 | .67882 |
| 580 | .00812 | .00000 | .01505 | .00082 | .13579 | .02978 | .00000 | .00000 | .13330 | .00003 | .67712 |
| 600 | .00808 | .00000 | .01271 | .00143 | .13683 | .03812 | .00000 | .00000 | .12875 | .00003 | .67404 |
| 620 | .00804 | .00000 | .01010 | .00237 | .13773 | .04714 | .00000 | .00000 | .12397 | .00003 | .67062 |
| 640 | .00800 | .00000 | .00739 | .00372 | .13829 | .05615 | .00000 | .00000 | .11937 | .00002 | .66706 |
| 660 | .00796 | .00000 | .00482 | .00548 | .13834 | .06422 | .00000 | .00000 | .11547 | .00002 | .66368 |
| 680 | .00793 | .00000 | .00272 | .00750 | .13781 | .07025 | .00000 | .00000 | .11287 | .00002 | .66092 |
| 700 | .00790 | .00000 | .00132 | .00953 | .13676 | .07358 | .00000 | .00000 | .11181 | .00002 | .65907 |
| 720 | .00789 | .00000 | .00057 | .01142 | .13540 | .07455 | .00000 | .00000 | .11206 | .00001 | .65809 |
| 740 | .00789 | .00000 | .00024 | .01318 | .13388 | .07408 | .00000 | .00000 | .11308 | .00001 | .65765 |
| 760 | .00789 | .00000 | .00010 | .01486 | .13230 | .07293 | .00000 | .00000 | .11446 | .00001 | .65747 |
| 780 | .00788 | .00000 | .00004 | .01651 | .13069 | .07150 | .00000 | .00000 | .11598 | .00001 | .65739 |
| 800 | .00788 | .00000 | .00002 | .01814 | .12907 | .06996 | .00000 | .00000 | .11757 | .00000 | .65736 |

TABLE 27.3E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18756 | .00000 | .00000 | .00000 | .65734 |
| 220 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18754 | .00000 | .00002 | .00000 | .65734 |
| 240 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18735 | .00000 | .00021 | .00000 | .65734 |
| 260 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18608 | .00000 | .00148 | .00000 | .65734 |
| 280 | .00788 | .04408 | .00000 | .00000 | .10314 | .00000 | .00000 | .17999 | .00756 | .00000 | .65734 |
| 298 | .00788 | .04400 | .00005 | .00000 | .10319 | .00000 | .00000 | .16280 | .02468 | .00000 | .65740 |
| 300 | .00788 | .04397 | .00006 | .00000 | .10321 | .00000 | .00000 | .15982 | .02764 | .00000 | .65742 |
| 320 | .00790 | .04235 | .00091 | .00000 | .10423 | .00000 | .00000 | .09717 | .08891 | .00000 | .65853 |
| 340 | .00796 | .03469 | .00491 | .00000 | .10907 | .00002 | .00000 | .00000 | .17956 | .00000 | .66379 |
| 360 | .00798 | .03204 | .00629 | .00000 | .11074 | .00004 | .00000 | .00000 | .17730 | .00001 | .66560 |
| 380 | .00801 | .02921 | .00776 | .00000 | .11254 | .00008 | .00000 | .00000 | .17486 | .00001 | .66754 |
| 400 | .00803 | .02625 | .00928 | .00000 | .11443 | .00017 | .00000 | .00000 | .17229 | .00001 | .66954 |
| 420 | .00805 | .02323 | .01082 | .00000 | .11636 | .00032 | .00000 | .00000 | .16964 | .00001 | .67156 |
| 440 | .00808 | .02020 | .01234 | .00000 | .11832 | .00057 | .00000 | .00000 | .16692 | .00002 | .67356 |
| 460 | .00810 | .01720 | .01380 | .00000 | .12029 | .00097 | .00000 | .00000 | .16413 | .00002 | .67548 |
| 480 | .00812 | .01425 | .01518 | .00001 | .12226 | .00158 | .00000 | .00000 | .16128 | .00003 | .67730 |
| 500 | .00814 | .01138 | .01644 | .00001 | .12423 | .00247 | .00000 | .00000 | .15833 | .00003 | .67896 |
| 520 | .00816 | .00860 | .01757 | .00003 | .12620 | .00372 | .00000 | .00000 | .15524 | .00004 | .68044 |
| 540 | .00818 | .00590 | .01852 | .00007 | .12819 | .00542 | .00000 | .00000 | .15199 | .00004 | .68169 |
| 560 | .00819 | .00330 | .01927 | .00014 | .13020 | .00768 | .00000 | .00000 | .14850 | .00005 | .68268 |
| 580 | .00820 | .00078 | .01980 | .00026 | .13222 | .01057 | .00000 | .00000 | .14475 | .00005 | .68337 |
| 600 | .00819 | .00000 | .01922 | .00047 | .13320 | .01414 | .00000 | .00000 | .14211 | .00006 | .68261 |
| 620 | .00817 | .00000 | .01801 | .00080 | .13373 | .01842 | .00000 | .00000 | .13979 | .00006 | .68102 |
| 640 | .00815 | .00000 | .01656 | .00131 | .13423 | .02346 | .00000 | .00000 | .13711 | .00007 | .67911 |
| 660 | .00812 | .00000 | .01485 | .00209 | .13466 | .02919 | .00000 | .00000 | .13414 | .00007 | .67688 |
| 680 | .00809 | .00000 | .01291 | .00320 | .13493 | .03551 | .00000 | .00000 | .13098 | .00007 | .67432 |
| 700 | .00805 | .00000 | .01076 | .00472 | .13492 | .04220 | .00000 | .00000 | .12778 | .00007 | .67150 |
| 720 | .00802 | .00000 | .00849 | .00669 | .13455 | .04892 | .00000 | .00000 | .12475 | .00007 | .66851 |
| 740 | .00798 | .00000 | .00622 | .00908 | .13376 | .05520 | .00000 | .00000 | .12216 | .00006 | .66553 |
| 760 | .00795 | .00000 | .00416 | .01174 | .13255 | .06045 | .00000 | .00000 | .12028 | .00006 | .66281 |
| 780 | .00792 | .00000 | .00250 | .01443 | .13104 | .06413 | .00000 | .00000 | .11931 | .00005 | .66063 |
| 800 | .00791 | .00000 | .00135 | .01691 | .12936 | .06602 | .00000 | .00000 | .11928 | .00004 | .65912 |

TABLE 27.4E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18756 | .00000 | .00000 | .00000 | .65734 |
| 220 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18756 | .00000 | .00000 | .00000 | .65734 |
| 240 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18754 | .00000 | .00002 | .00000 | .65734 |
| 260 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18741 | .00000 | .00015 | .00000 | .65734 |
| 280 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .00000 | .18681 | .00075 | .00000 | .65734 |
| 298 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .00000 | .18516 | .00240 | .00000 | .65734 |
| 300 | .00788 | .04408 | .00000 | .00000 | .10314 | .00000 | .00000 | .18488 | .00268 | .00000 | .65734 |
| 320 | .00788 | .04407 | .00001 | .00000 | .10314 | .00000 | .00000 | .17952 | .00802 | .00000 | .65735 |
| 340 | .00788 | .04395 | .00007 | .00000 | .10322 | .00000 | .00000 | .16647 | .02097 | .00000 | .65743 |
| 360 | .00789 | .04308 | .00052 | .00000 | .10377 | .00000 | .00000 | .13713 | .04957 | .00000 | .65803 |
| 380 | .00794 | .03781 | .00327 | .00000 | .10710 | .00002 | .00000 | .07140 | .11081 | .00001 | .66164 |
| 400 | .00803 | .02628 | .00929 | .00000 | .11439 | .00005 | .00000 | .00000 | .17238 | .00002 | .66956 |
| 420 | .00805 | .02328 | .01085 | .00000 | .11629 | .00010 | .00000 | .00000 | .16980 | .00003 | .67160 |
| 440 | .00808 | .02028 | .01239 | .00000 | .11820 | .00018 | .00000 | .00000 | .16720 | .00003 | .67363 |
| 460 | .00810 | .01733 | .01390 | .00000 | .12009 | .00031 | .00000 | .00000 | .16461 | .00004 | .67562 |
| 480 | .00813 | .01443 | .01536 | .00000 | .12196 | .00050 | .00000 | .00000 | .16203 | .00005 | .67754 |
| 500 | .00815 | .01163 | .01675 | .00000 | .12378 | .00079 | .00000 | .00000 | .15948 | .00006 | .67936 |
| 520 | .00817 | .00893 | .01805 | .00001 | .12556 | .00119 | .00000 | .00000 | .15695 | .00007 | .68108 |
| 540 | .00819 | .00633 | .01925 | .00002 | .12729 | .00175 | .00000 | .00000 | .15442 | .00008 | .68266 |
| 560 | .00821 | .00385 | .02035 | .00004 | .12898 | .00249 | .00000 | .00000 | .15188 | .00009 | .68410 |
| 580 | .00822 | .00148 | .02132 | .00008 | .13064 | .00347 | .00000 | .00000 | .14931 | .00010 | .68538 |
| 600 | .00823 | .00000 | .02175 | .00015 | .13175 | .00471 | .00000 | .00000 | .14736 | .00011 | .68594 |
| 620 | .00822 | .00000 | .02131 | .00025 | .13195 | .00624 | .00000 | .00000 | .14652 | .00012 | .68538 |
| 640 | .00821 | .00000 | .02078 | .00042 | .13216 | .00812 | .00000 | .00000 | .14551 | .00013 | .68467 |
| 660 | .00820 | .00000 | .02012 | .00068 | .13237 | .01037 | .00000 | .00000 | .14431 | .00014 | .68381 |
| 680 | .00819 | .00000 | .01932 | .00106 | .13256 | .01303 | .00000 | .00000 | .14294 | .00015 | .68276 |
| 700 | .00817 | .00000 | .01837 | .00160 | .13268 | .01611 | .00000 | .00000 | .14139 | .00016 | .68151 |
| 720 | .00816 | .00000 | .01725 | .00236 | .13271 | .01961 | .00000 | .00000 | .13970 | .00017 | .68004 |
| 740 | .00814 | .00000 | .01596 | .00340 | .13259 | .02352 | .00000 | .00000 | .13789 | .00017 | .67834 |
| 760 | .00811 | .00000 | .01448 | .00476 | .13227 | .02779 | .00000 | .00000 | .13601 | .00018 | .67640 |
| 780 | .00809 | .00000 | .01284 | .00650 | .13169 | .03234 | .00000 | .00000 | .13413 | .00018 | .67424 |
| 800 | .00806 | .00000 | .01104 | .00865 | .13081 | .03705 | .00000 | .00000 | .13233 | .00018 | .67188 |

TABLE 27.5E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.000; F/A = 0.082073; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A = 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18756 | .00000 | .00000 | .00000 | .65734 |
| 220 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18756 | .00000 | .00000 | .00000 | .65734 |
| 240 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18755 | .00000 | .00000 | .00000 | .65734 |
| 260 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .18753 | .00000 | .00003 | .00000 | .65734 |
| 280 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .00000 | .18741 | .00015 | .00000 | .65734 |
| 298 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .00000 | .18708 | .00048 | .00000 | .65734 |
| 300 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .00000 | .18702 | .00053 | .00000 | .65734 |
| 320 | .00788 | .04409 | .00000 | .00000 | .10314 | .00000 | .00000 | .18597 | .00159 | .00000 | .65734 |
| 340 | .00788 | .04408 | .00000 | .00000 | .10314 | .00000 | .00000 | .18345 | .00410 | .00000 | .65734 |
| 360 | .00788 | .04405 | .00002 | .00000 | .10316 | .00000 | .00000 | .17812 | .00941 | .00000 | .65736 |
| 380 | .00789 | .04388 | .00011 | .00000 | .10327 | .00000 | .00000 | .16777 | .01961 | .00000 | .65748 |
| 400 | .00789 | .04313 | .00050 | .00000 | .10374 | .00001 | .00000 | .14876 | .03798 | .00000 | .65799 |
| 420 | .00792 | .04021 | .00202 | .00000 | .10559 | .00002 | .00000 | .11448 | .06977 | .00001 | .65999 |
| 440 | .00800 | .03001 | .00734 | .00000 | .11204 | .00006 | .00000 | .05028 | .12526 | .00003 | .66699 |
| 460 | .00810 | .01735 | .01392 | .00000 | .12005 | .00014 | .00000 | .00000 | .16471 | .00006 | .67565 |
| 480 | .00813 | .01448 | .01540 | .00000 | .12189 | .00023 | .00000 | .00000 | .16221 | .00007 | .67760 |
| 500 | .00815 | .01169 | .01682 | .00000 | .12368 | .00035 | .00000 | .00000 | .15976 | .00009 | .67946 |
| 520 | .00817 | .00901 | .01817 | .00000 | .12540 | .00053 | .00000 | .00000 | .15737 | .00010 | .68124 |
| 540 | .00819 | .00644 | .01944 | .00001 | .12708 | .00079 | .00000 | .00000 | .15503 | .00012 | .68291 |
| 560 | .00821 | .00398 | .02063 | .00002 | .12869 | .00112 | .00000 | .00000 | .15274 | .00014 | .68448 |
| 580 | .00823 | .00164 | .02172 | .00004 | .13024 | .00157 | .00000 | .00000 | .15049 | .00015 | .68592 |
| 600 | .00824 | .00000 | .02242 | .00007 | .13136 | .00213 | .00000 | .00000 | .14877 | .00017 | .68684 |
| 620 | .00824 | .00000 | .02222 | .00011 | .13146 | .00284 | .00000 | .00000 | .14837 | .00019 | .68657 |
| 640 | .00823 | .00000 | .02196 | .00019 | .13157 | .00372 | .00000 | .00000 | .14789 | .00021 | .68624 |
| 660 | .00823 | .00000 | .02165 | .00030 | .13168 | .00478 | .00000 | .00000 | .14731 | .00022 | .68583 |
| 680 | .00822 | .00000 | .02126 | .00048 | .13178 | .00606 | .00000 | .00000 | .14664 | .00024 | .68533 |
| 700 | .00821 | .00000 | .02080 | .00072 | .13186 | .00756 | .00000 | .00000 | .14587 | .00026 | .68472 |
| 720 | .00821 | .00000 | .02024 | .00107 | .13191 | .00931 | .00000 | .00000 | .14499 | .00027 | .68399 |
| 740 | .00819 | .00000 | .01958 | .00156 | .13189 | .01133 | .00000 | .00000 | .14403 | .00029 | .68313 |
| 760 | .00818 | .00000 | .01881 | .00221 | .13178 | .01361 | .00000 | .00000 | .14298 | .00030 | .68211 |
| 780 | .00817 | .00000 | .01791 | .00307 | .13156 | .01617 | .00000 | .00000 | .14187 | .00032 | .68093 |
| 800 | .00815 | .00000 | .01688 | .00418 | .13118 | .01899 | .00000 | .00000 | .14071 | .00033 | .67958 |

TABLE 28.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016261; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00878 | .00000 | .03251 | .00000 | .00000 | .07905 | .00000 | .00001 | .73231 | .00000 | .00000 | .14734 |
| 950 | .00878 | .00000 | .03251 | .00000 | .00000 | .07905 | .00000 | .00002 | .73231 | .00000 | .00000 | .14734 |
| 1000 | .00878 | .00000 | .03251 | .00000 | .00000 | .07905 | .00000 | .00003 | .73230 | .00000 | .00000 | .14733 |
| 1050 | .00878 | .00000 | .03251 | .00000 | .00000 | .07905 | .00000 | .00005 | .73229 | .00000 | .00000 | .14732 |
| 1100 | .00878 | .00000 | .03251 | .00000 | .00000 | .07905 | .00000 | .00008 | .73228 | .00000 | .00000 | .14730 |
| 1150 | .00878 | .00000 | .03251 | .00000 | .00000 | .07905 | .00000 | .00012 | .73226 | .00000 | .00000 | .14728 |
| 1200 | .00878 | .00000 | .03251 | .00000 | .00000 | .07905 | .00000 | .00017 | .73223 | .00000 | .00001 | .14725 |
| 1250 | .00878 | .00000 | .03251 | .00000 | .00000 | .07905 | .00000 | .00025 | .73219 | .00000 | .00002 | .14721 |
| 1300 | .00878 | .00000 | .03251 | .00000 | .00000 | .07904 | .00000 | .00035 | .73213 | .00000 | .00003 | .14716 |
| 1350 | .00878 | .00000 | .03250 | .00000 | .00000 | .07903 | .00000 | .00048 | .73207 | .00000 | .00005 | .14709 |
| 1400 | .00878 | .00000 | .03250 | .00000 | .00000 | .07901 | .00000 | .00064 | .73198 | .00000 | .00008 | .14700 |
| 1450 | .00878 | .00000 | .03250 | .00000 | .00000 | .07898 | .00000 | .00083 | .73187 | .00001 | .00013 | .14689 |
| 1500 | .00878 | .00000 | .03250 | .00000 | .00000 | .07894 | .00000 | .00107 | .73173 | .00002 | .00021 | .14675 |
| 1550 | .00878 | .00001 | .03249 | .00000 | .00001 | .07888 | .00000 | .00135 | .73157 | .00003 | .00031 | .14657 |
| 1600 | .00878 | .00002 | .03248 | .00000 | .00001 | .07879 | .00000 | .00168 | .73136 | .00006 | .00046 | .14635 |
| 1650 | .00878 | .00003 | .03247 | .00000 | .00002 | .07867 | .00000 | .00206 | .73110 | .00010 | .00067 | .14609 |
| 1700 | .00878 | .00006 | .03244 | .00001 | .00004 | .07850 | .00000 | .00250 | .73079 | .00017 | .00095 | .14577 |
| 1750 | .00878 | .00010 | .03239 | .00002 | .00007 | .07827 | .00000 | .00299 | .73040 | .00028 | .00132 | .14538 |
| 1800 | .00878 | .00017 | .03231 | .00004 | .00011 | .07796 | .00000 | .00355 | .72992 | .00046 | .00179 | .14491 |
| 1850 | .00877 | .00028 | .03218 | .00007 | .00017 | .07755 | .00000 | .00417 | .72932 | .00073 | .00240 | .14436 |
| 1900 | .00877 | .00046 | .03199 | .00013 | .00026 | .07701 | .00000 | .00485 | .72857 | .00112 | .00315 | .14369 |
| 1950 | .00876 | .00071 | .03171 | .00023 | .00039 | .07631 | .00000 | .00560 | .72762 | .00170 | .00407 | .14290 |
| 2000 | .00875 | .00108 | .03130 | .00039 | .00057 | .07540 | .00000 | .00642 | .72642 | .00251 | .00520 | .14197 |
| 2050 | .00874 | .00161 | .03073 | .00065 | .00082 | .07424 | .00000 | .00729 | .72490 | .00363 | .00653 | .14087 |
| 2100 | .00872 | .00232 | .02996 | .00105 | .00115 | .07277 | .00000 | .00822 | .72299 | .00516 | .00809 | .13957 |
| 2150 | .00870 | .00326 | .02893 | .00166 | .00157 | .07093 | .00000 | .00921 | .72057 | .00722 | .00989 | .13805 |
| 2200 | .00867 | .00445 | .02763 | .00257 | .00211 | .06865 | .00000 | .01024 | .71756 | .00992 | .01193 | .13626 |
| 2250 | .00863 | .00591 | .02602 | .00389 | .00277 | .06587 | .00000 | .01131 | .71383 | .01343 | .01417 | .13416 |
| 2300 | .00858 | .00763 | .02413 | .00574 | .00356 | .06251 | .00000 | .01241 | .70926 | .01791 | .01660 | .13167 |
| 2350 | .00852 | .00956 | .02198 | .00828 | .00446 | .05853 | .00000 | .01352 | .70375 | .02354 | .01913 | .12872 |
| 2400 | .00845 | .01163 | .01964 | .01168 | .00545 | .05392 | .00000 | .01461 | .69720 | .03051 | .02168 | .12523 |
| 2450 | .00836 | .01374 | .01722 | .01608 | .00648 | .04870 | .00000 | .01567 | .68955 | .03898 | .02412 | .12109 |
| 2500 | .00827 | .01579 | .01480 | .02161 | .00748 | .04296 | .00000 | .01667 | .68079 | .04910 | .02629 | .11623 |
| 2550 | .00815 | .01770 | .01248 | .02833 | .00835 | .03686 | .00000 | .01758 | .67097 | .06099 | .02802 | .11058 |
| 2600 | .00803 | .01938 | .01033 | .03617 | .00898 | .03062 | .00001 | .01836 | .66021 | .07466 | .02915 | .10411 |
| 2650 | .00789 | .02080 | .00842 | .04494 | .00930 | .02453 | .00001 | .01899 | .64873 | .09005 | .02951 | .09682 |
| 2700 | .00775 | .02195 | .00675 | .05431 | .00925 | .01888 | .00001 | .01944 | .63685 | .10698 | .02903 | .08880 |
| 2750 | .00761 | .02283 | .00535 | .06384 | .00881 | .01393 | .00002 | .01968 | .62493 | .12511 | .02772 | .08017 |
| 2800 | .00747 | .02348 | .00418 | .07303 | .00806 | .00986 | .00003 | .01971 | .61335 | .14400 | .02568 | .07115 |
| 2850 | .00734 | .02394 | .00324 | .08147 | .00710 | .00670 | .00004 | .01951 | .60247 | .16309 | .02311 | .06200 |
| 2900 | .00722 | .02424 | .00249 | .08888 | .00605 | .00439 | .00005 | .01910 | .59255 | .18177 | .02024 | .05302 |
| 2950 | .00711 | .02443 | .00189 | .09511 | .00502 | .00279 | .00008 | .01851 | .58377 | .19947 | .01731 | .04451 |
| 3000 | .00702 | .02454 | .00144 | .10019 | .00407 | .00173 | .00010 | .01775 | .57620 | .21571 | .01451 | .03672 |

TABLE 28.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016261; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00001 | .73231 | .00000 | .00000 | .14734 |
| 950 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00002 | .73231 | .00000 | .00000 | .14734 |
| 1000 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00003 | .73230 | .00000 | .00000 | .14733 |
| 1050 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00005 | .73229 | .00000 | .00000 | .14732 |
| 1100 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00008 | .73228 | .00000 | .00000 | .14730 |
| 1150 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00012 | .73226 | .00000 | .00000 | .14728 |
| 1200 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00017 | .73223 | .00000 | .00000 | .14725 |
| 1250 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00025 | .73219 | .00000 | .00001 | .14722 |
| 1300 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00035 | .73214 | .00000 | .00002 | .14716 |
| 1350 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07904 | .00000 | .00048 | .73207 | .00000 | .00003 | .14710 |
| 1400 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07903 | .00000 | .00064 | .73199 | .00000 | .00005 | .14701 |
| 1450 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07901 | .00000 | .00083 | .73188 | .00000 | .00007 | .14690 |
| 1500 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07899 | .00000 | .00107 | .73176 | .00000 | .00012 | .14677 |
| 1550 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07896 | .00000 | .00135 | .73160 | .00001 | .00018 | .14661 |
| 1600 | .00878 | .00001 | .03250 | .00000 | .00000 | .00000 | .07891 | .00000 | .00168 | .73142 | .00002 | .00026 | .14642 |
| 1650 | .00878 | .00001 | .03249 | .00000 | .00000 | .00001 | .07885 | .00000 | .00206 | .73120 | .00003 | .00038 | .14619 |
| 1700 | .00878 | .00002 | .03248 | .00000 | .00000 | .00001 | .07876 | .00000 | .00250 | .73094 | .00005 | .00054 | .14592 |
| 1750 | .00878 | .00003 | .03246 | .00000 | .00000 | .00002 | .07864 | .00000 | .00299 | .73063 | .00009 | .00074 | .14560 |
| 1800 | .00878 | .00005 | .03244 | .00001 | .00000 | .00003 | .07848 | .00000 | .00355 | .73026 | .00015 | .00101 | .14523 |
| 1850 | .00878 | .00009 | .03240 | .00001 | .00000 | .00005 | .07827 | .00000 | .00418 | .72983 | .00023 | .00135 | .14479 |
| 1900 | .00878 | .00015 | .03234 | .00002 | .00000 | .00008 | .07801 | .00000 | .00487 | .72933 | .00036 | .00178 | .14429 |
| 1950 | .00877 | .00023 | .03224 | .00004 | .00000 | .00013 | .07767 | .00000 | .00562 | .72873 | .00054 | .00232 | .14371 |
| 2000 | .00877 | .00035 | .03211 | .00007 | .00000 | .00019 | .07724 | .00000 | .00645 | .72802 | .00080 | .00296 | .14305 |
| 2050 | .00877 | .00053 | .03192 | .00012 | .00000 | .00027 | .07670 | .00000 | .00734 | .72718 | .00115 | .00374 | .14229 |
| 2100 | .00876 | .00077 | .03165 | .00019 | .00000 | .00038 | .07603 | .00000 | .00830 | .72619 | .00164 | .00467 | .14142 |
| 2150 | .00875 | .00110 | .03128 | .00030 | .00000 | .00052 | .07521 | .00000 | .00932 | .72500 | .00230 | .00575 | .14044 |
| 2200 | .00874 | .00155 | .03080 | .00047 | .00000 | .00071 | .07421 | .00000 | .01040 | .72358 | .00317 | .00701 | .13934 |
| 2250 | .00873 | .00214 | .03016 | .00072 | .00000 | .00096 | .07300 | .00000 | .01154 | .72189 | .00431 | .00845 | .13809 |
| 2300 | .00871 | .00288 | .02935 | .00108 | .00000 | .00126 | .07155 | .00000 | .01274 | .71987 | .00577 | .01008 | .13668 |
| 2350 | .00869 | .00381 | .02835 | .00159 | .00001 | .00164 | .06982 | .00000 | .01398 | .71749 | .00763 | .01189 | .13510 |
| 2400 | .00866 | .00492 | .02714 | .00229 | .00001 | .00210 | .06778 | .00000 | .01526 | .71467 | .00995 | .01388 | .13333 |
| 2450 | .00863 | .00623 | .02571 | .00325 | .00001 | .00264 | .06540 | .00000 | .01658 | .71136 | .01284 | .01604 | .13132 |
| 2500 | .00859 | .00772 | .02409 | .00452 | .00001 | .00327 | .06264 | .00000 | .01791 | .70751 | .01636 | .01833 | .12905 |
| 2550 | .00855 | .00935 | .02229 | .00619 | .00001 | .00398 | .05950 | .00000 | .01924 | .70307 | .02063 | .02071 | .12649 |
| 2600 | .00849 | .01108 | .02036 | .00833 | .00001 | .00477 | .05596 | .00000 | .02057 | .69800 | .02572 | .02313 | .12358 |
| 2650 | .00843 | .01287 | .01835 | .01103 | .00001 | .00560 | .05203 | .00000 | .02186 | .69227 | .03174 | .02552 | .12028 |
| 2700 | .00836 | .01464 | .01632 | .01435 | .00001 | .00646 | .04776 | .00000 | .02311 | .68587 | .03876 | .02779 | .11657 |
| 2750 | .00829 | .01634 | .01433 | .01837 | .00001 | .00729 | .04318 | .00001 | .02429 | .67881 | .04684 | .02986 | .11239 |
| 2800 | .00820 | .01793 | .01242 | .02310 | .00001 | .00807 | .03839 | .00001 | .02537 | .67111 | .05604 | .03161 | .10774 |
| 2850 | .00811 | .01936 | .01065 | .02856 | .00001 | .00873 | .03349 | .00001 | .02633 | .66284 | .06635 | .03295 | .10261 |
| 2900 | .00801 | .02060 | .00904 | .03469 | .00001 | .00922 | .02862 | .00002 | .02715 | .65410 | .07775 | .03379 | .09701 |
| 2950 | .00790 | .02166 | .00759 | .04138 | .00001 | .00950 | .02391 | .00003 | .02782 | .64499 | .09018 | .03405 | .09098 |
| 3000 | .00779 | .02252 | .00632 | .04849 | .00001 | .00954 | .01950 | .00003 | .02830 | .63569 | .10352 | .03371 | .08456 |

TABLE 28.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016261; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00001 | .00000 | .73231 | .00000 | .00000 | .14734 |
| 950 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00002 | .00000 | .73231 | .00000 | .00000 | .14733 |
| 1000 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00003 | .00000 | .73230 | .00000 | .00000 | .14733 |
| 1050 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00005 | .00000 | .73229 | .00000 | .00000 | .14732 |
| 1100 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00008 | .00000 | .73228 | .00000 | .00000 | .14730 |
| 1150 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00012 | .00000 | .73226 | .00000 | .00000 | .14728 |
| 1200 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00017 | .00000 | .73223 | .00000 | .00000 | .14725 |
| 1250 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00025 | .00000 | .73219 | .00000 | .00000 | .14721 |
| 1300 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00035 | .00000 | .73214 | .00000 | .00001 | .14716 |
| 1350 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00000 | .00048 | .00000 | .73207 | .00000 | .00002 | .14710 |
| 1400 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07904 | .00000 | .00064 | .00000 | .73199 | .00000 | .00003 | .14701 |
| 1450 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07903 | .00000 | .00083 | .00000 | .73189 | .00000 | .00004 | .14691 |
| 1500 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07902 | .00000 | .00107 | .00000 | .73177 | .00000 | .00007 | .14679 |
| 1550 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07900 | .00000 | .00135 | .00000 | .73162 | .00000 | .00010 | .14664 |
| 1600 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07898 | .00000 | .00168 | .00001 | .73145 | .00001 | .00015 | .14646 |
| 1650 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07894 | .00000 | .00206 | .00001 | .73124 | .00001 | .00021 | .14624 |
| 1700 | .00878 | .00001 | .03250 | .00000 | .00000 | .00000 | .07889 | .00000 | .00250 | .00001 | .73100 | .00002 | .00030 | .14600 |
| 1750 | .00878 | .00001 | .03249 | .00000 | .00000 | .00001 | .07883 | .00000 | .00300 | .00001 | .73072 | .00003 | .00042 | .14571 |
| 1800 | .00878 | .00002 | .03248 | .00000 | .00000 | .00001 | .07874 | .00000 | .00356 | .00001 | .73040 | .00005 | .00057 | .14538 |
| 1850 | .00878 | .00003 | .03247 | .00000 | .00000 | .00002 | .07863 | .00000 | .00418 | .00001 | .73004 | .00007 | .00076 | .14500 |
| 1900 | .00878 | .00005 | .03245 | .00000 | .00000 | .00003 | .07849 | .00000 | .00487 | .00001 | .72962 | .00011 | .00101 | .14458 |
| 1950 | .00878 | .00007 | .03242 | .00001 | .00000 | .00004 | .07832 | .00000 | .00563 | .00001 | .72915 | .00017 | .00131 | .14409 |
| 2000 | .00878 | .00011 | .03237 | .00001 | .00000 | .00006 | .07810 | .00000 | .00646 | .00001 | .72861 | .00025 | .00168 | .14355 |
| 2050 | .00878 | .00017 | .03231 | .00002 | .00000 | .00009 | .07783 | .00000 | .00736 | .00001 | .72801 | .00037 | .00212 | .14294 |
| 2100 | .00877 | .00025 | .03222 | .00003 | .00001 | .00012 | .07750 | .00000 | .00833 | .00001 | .72732 | .00052 | .00265 | .14227 |
| 2150 | .00877 | .00036 | .03210 | .00005 | .00001 | .00017 | .07710 | .00000 | .00936 | .00001 | .72654 | .00073 | .00328 | .14152 |
| 2200 | .00877 | .00051 | .03194 | .00009 | .00001 | .00023 | .07661 | .00000 | .01047 | .00001 | .72566 | .00101 | .00402 | .14069 |
| 2250 | .00876 | .00071 | .03172 | .00013 | .00001 | .00031 | .07604 | .00000 | .01164 | .00001 | .72466 | .00137 | .00487 | .13978 |
| 2300 | .00875 | .00097 | .03143 | .00020 | .00001 | .00042 | .07536 | .00000 | .01287 | .00001 | .72352 | .00184 | .00584 | .13878 |
| 2350 | .00875 | .00131 | .03107 | .00029 | .00001 | .00055 | .07456 | .00000 | .01416 | .00001 | .72223 | .00243 | .00694 | .13769 |
| 2400 | .00874 | .00174 | .03060 | .00042 | .00001 | .00071 | .07362 | .00000 | .01551 | .00001 | .72077 | .00318 | .00818 | .13650 |
| 2450 | .00873 | .00227 | .03003 | .00060 | .00001 | .00091 | .07253 | .00000 | .01691 | .00001 | .71910 | .00412 | .00957 | .13520 |
| 2500 | .00871 | .00292 | .02933 | .00085 | .00001 | .00116 | .07128 | .00000 | .01836 | .00001 | .71722 | .00527 | .01109 | .13379 |
| 2550 | .00870 | .00369 | .02849 | .00118 | .00002 | .00145 | .06984 | .00000 | .01985 | .00001 | .71508 | .00667 | .01276 | .13227 |
| 2600 | .00868 | .00461 | .02750 | .00161 | .00002 | .00179 | .06821 | .00000 | .02137 | .00001 | .71268 | .00836 | .01456 | .13061 |
| 2650 | .00865 | .00565 | .02637 | .00218 | .00002 | .00218 | .06636 | .00000 | .02291 | .00001 | .70997 | .01039 | .01648 | .12882 |
| 2700 | .00863 | .00683 | .02510 | .00290 | .00002 | .00263 | .06428 | .00000 | .02448 | .00001 | .70695 | .01279 | .01852 | .12687 |
| 2750 | .00859 | .00811 | .02369 | .00381 | .00002 | .00314 | .06198 | .00000 | .02605 | .00001 | .70358 | .01561 | .02065 | .12475 |
| 2800 | .00856 | .00950 | .02218 | .00495 | .00002 | .00371 | .05943 | .00000 | .02761 | .00001 | .69986 | .01889 | .02284 | .12244 |
| 2850 | .00852 | .01094 | .02059 | .00635 | .00002 | .00432 | .05665 | .00000 | .02916 | .00001 | .69576 | .02268 | .02506 | .11992 |
| 2900 | .00848 | .01243 | .01894 | .00806 | .00003 | .00497 | .05363 | .00001 | .03068 | .00001 | .69129 | .02702 | .02727 | .11719 |
| 2950 | .00843 | .01391 | .01727 | .01010 | .00003 | .00565 | .05041 | .00001 | .03215 | .00001 | .68644 | .03195 | .02943 | .11421 |
| 3000 | .00837 | .01536 | .01562 | .01251 | .00003 | .00635 | .04699 | .00001 | .03356 | .00001 | .68121 | .03750 | .03149 | .11098 |

TABLE 28.4B - EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016261; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00001 | .00000 | .73231 | .00000 | .00000 | .00000 | .14734 |
| 950 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00002 | .00000 | .73231 | .00000 | .00000 | .00000 | .14733 |
| 1000 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00003 | .00000 | .73230 | .00000 | .00000 | .00000 | .14733 |
| 1050 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00005 | .00000 | .73229 | .00000 | .00000 | .00000 | .14732 |
| 1100 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00008 | .00001 | .73228 | .00000 | .00000 | .00000 | .14730 |
| 1150 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00012 | .00001 | .73225 | .00000 | .00000 | .00000 | .14728 |
| 1200 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00017 | .00001 | .73223 | .00000 | .00000 | .00000 | .14725 |
| 1250 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00025 | .00001 | .73219 | .00000 | .00000 | .00000 | .14721 |
| 1300 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00035 | .00001 | .73214 | .00000 | .00000 | .00000 | .14716 |
| 1350 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00048 | .00001 | .73207 | .00000 | .00000 | .00001 | .14709 |
| 1400 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00064 | .00001 | .73199 | .00000 | .00000 | .00001 | .14701 |
| 1450 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07904 | .00083 | .00001 | .73189 | .00000 | .00000 | .00002 | .14691 |
| 1500 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07903 | .00107 | .00001 | .73177 | .00000 | .00000 | .00004 | .14679 |
| 1550 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07902 | .00135 | .00002 | .73163 | .00000 | .00000 | .00006 | .14664 |
| 1600 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07901 | .00168 | .00002 | .73146 | .00000 | .00000 | .00008 | .14646 |
| 1650 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07899 | .00206 | .00002 | .73126 | .00000 | .00000 | .00012 | .14626 |
| 1700 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07896 | .00250 | .00002 | .73103 | .00000 | .00001 | .00017 | .14602 |
| 1750 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07893 | .00300 | .00002 | .73077 | .00000 | .00001 | .00024 | .14575 |
| 1800 | .00878 | .00001 | .03250 | .00000 | .00000 | .00000 | .07888 | .00356 | .00002 | .73047 | .00000 | .00001 | .00032 | .14545 |
| 1850 | .00878 | .00001 | .03249 | .00000 | .00000 | .00001 | .07882 | .00418 | .00002 | .73013 | .00000 | .00002 | .00043 | .14510 |
| 1900 | .00878 | .00001 | .03249 | .00000 | .00000 | .00001 | .07875 | .00488 | .00002 | .72975 | .00000 | .00004 | .00057 | .14471 |
| 1950 | .00878 | .00002 | .03248 | .00000 | .00001 | .00001 | .07865 | .00564 | .00003 | .72932 | .00000 | .00005 | .00074 | .14427 |
| 2000 | .00878 | .00004 | .03246 | .00000 | .00001 | .00002 | .07853 | .00647 | .00003 | .72885 | .00000 | .00008 | .00095 | .14379 |
| 2050 | .00878 | .00005 | .03244 | .00000 | .00001 | .00003 | .07839 | .00737 | .00003 | .72833 | .00000 | .00012 | .00120 | .14325 |
| 2100 | .00878 | .00008 | .03241 | .00001 | .00001 | .00004 | .07822 | .00834 | .00003 | .72776 | .00000 | .00017 | .00150 | .14266 |
| 2150 | .00878 | .00011 | .03237 | .00001 | .00001 | .00005 | .07801 | .00938 | .00003 | .72713 | .00000 | .00023 | .00186 | .14202 |
| 2200 | .00878 | .00016 | .03232 | .00002 | .00001 | .00007 | .07776 | .01050 | .00003 | .72643 | .00000 | .00032 | .00228 | .14132 |
| 2250 | .00877 | .00023 | .03224 | .00002 | .00001 | .00010 | .07747 | .01168 | .00003 | .72567 | .00000 | .00043 | .00277 | .14056 |
| 2300 | .00877 | .00031 | .03215 | .00004 | .00002 | .00013 | .07712 | .01293 | .00003 | .72484 | .00000 | .00058 | .00333 | .13974 |
| 2350 | .00877 | .00042 | .03203 | .00005 | .00002 | .00018 | .07672 | .01424 | .00004 | .72393 | .00000 | .00077 | .00397 | .13886 |
| 2400 | .00876 | .00057 | .03187 | .00008 | .00002 | .00023 | .07626 | .01561 | .00004 | .72294 | .00000 | .00101 | .00470 | .13791 |
| 2450 | .00876 | .00075 | .03167 | .00011 | .00002 | .00030 | .07572 | .01705 | .00004 | .72185 | .00000 | .00131 | .00551 | .13690 |
| 2500 | .00875 | .00098 | .03142 | .00015 | .00003 | .00038 | .07511 | .01854 | .00004 | .72067 | .00000 | .00168 | .00643 | .13581 |
| 2550 | .00875 | .00126 | .03111 | .00022 | .00003 | .00048 | .07442 | .02008 | .00004 | .71937 | .00000 | .00213 | .00744 | .13466 |
| 2600 | .00874 | .00161 | .03074 | .00030 | .00003 | .00060 | .07363 | .02168 | .00004 | .71796 | .00000 | .00267 | .00855 | .13344 |
| 2650 | .00873 | .00203 | .03029 | .00040 | .00004 | .00075 | .07275 | .02331 | .00004 | .71641 | .00000 | .00333 | .00977 | .13215 |
| 2700 | .00872 | .00252 | .02976 | .00054 | .00004 | .00092 | .07176 | .02499 | .00004 | .71473 | .00000 | .00411 | .01109 | .13079 |
| 2750 | .00871 | .00310 | .02914 | .00072 | .00004 | .00111 | .07065 | .02670 | .00004 | .71290 | .00000 | .00503 | .01251 | .12935 |
| 2800 | .00870 | .00377 | .02842 | .00094 | .00005 | .00134 | .06943 | .02844 | .00004 | .71091 | .00000 | .00610 | .01403 | .12783 |
| 2850 | .00868 | .00452 | .02761 | .00122 | .00005 | .00160 | .06808 | .03020 | .00004 | .70874 | .00000 | .00736 | .01565 | .12624 |
| 2900 | .00866 | .00537 | .02669 | .00157 | .00005 | .00189 | .06660 | .03197 | .00004 | .70640 | .00000 | .00881 | .01735 | .12456 |
| 2950 | .00864 | .00631 | .02569 | .00200 | .00006 | .00222 | .06499 | .03376 | .00004 | .70387 | .00001 | .01048 | .01914 | .12280 |
| 3000 | .00862 | .00732 | .02459 | .00252 | .00006 | .00259 | .06323 | .03554 | .00004 | .70115 | .00001 | .01238 | .02099 | .12094 |

TABLE 28.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016261; EQUIV. RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A = 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00001 | .00001 | .73231 | .00000 | .00000 | .00000 | .14733 |
| 950 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00002 | .00001 | .73231 | .00000 | .00000 | .00000 | .14733 |
| 1000 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00003 | .00001 | .73230 | .00000 | .00000 | .00000 | .14732 |
| 1050 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00005 | .00001 | .73229 | .00000 | .00000 | .00000 | .14731 |
| 1100 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00008 | .00001 | .73227 | .00000 | .00000 | .00000 | .14729 |
| 1150 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00012 | .00001 | .73225 | .00000 | .00000 | .00000 | .14727 |
| 1200 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00017 | .00002 | .73223 | .00000 | .00000 | .00000 | .14724 |
| 1250 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00025 | .00002 | .73219 | .00000 | .00000 | .00000 | .14720 |
| 1300 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00035 | .00002 | .73214 | .00000 | .00000 | .00000 | .14715 |
| 1350 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00048 | .00002 | .73207 | .00000 | .00000 | .00001 | .14708 |
| 1400 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00064 | .00003 | .73199 | .00000 | .00000 | .00001 | .14700 |
| 1450 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07905 | .00083 | .00003 | .73189 | .00000 | .00000 | .00002 | .14690 |
| 1500 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07904 | .00107 | .00003 | .73177 | .00000 | .00000 | .00002 | .14677 |
| 1550 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07903 | .00135 | .00004 | .73163 | .00000 | .00000 | .00004 | .14663 |
| 1600 | .00878 | .00000 | .03251 | .00000 | .00000 | .00000 | .07903 | .00168 | .00004 | .73146 | .00000 | .00000 | .00006 | .14645 |
| 1650 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07901 | .00206 | .00004 | .73126 | .00000 | .00000 | .00008 | .14625 |
| 1700 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07899 | .00250 | .00004 | .73104 | .00000 | .00000 | .00011 | .14602 |
| 1750 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07897 | .00300 | .00005 | .73078 | .00000 | .00000 | .00016 | .14575 |
| 1800 | .00878 | .00000 | .03250 | .00000 | .00000 | .00000 | .07894 | .00356 | .00005 | .73049 | .00000 | .00001 | .00021 | .14545 |
| 1850 | .00878 | .00000 | .03250 | .00000 | .00001 | .00000 | .07890 | .00418 | .00005 | .73016 | .00000 | .00001 | .00029 | .14511 |
| 1900 | .00878 | .00001 | .03250 | .00000 | .00001 | .00000 | .07885 | .00488 | .00006 | .72979 | .00000 | .00002 | .00038 | .14474 |
| 1950 | .00878 | .00001 | .03249 | .00000 | .00001 | .00001 | .07879 | .00564 | .00006 | .72938 | .00000 | .00002 | .00049 | .14432 |
| 2000 | .00878 | .00002 | .03248 | .00000 | .00001 | .00001 | .07871 | .00647 | .00006 | .72893 | .00000 | .00004 | .00063 | .14385 |
| 2050 | .00878 | .00002 | .03247 | .00000 | .00001 | .00001 | .07862 | .00737 | .00006 | .72844 | .00000 | .00005 | .00080 | .14334 |
| 2100 | .00878 | .00004 | .03246 | .00000 | .00001 | .00002 | .07850 | .00835 | .00007 | .72790 | .00000 | .00007 | .00101 | .14279 |
| 2150 | .00878 | .00005 | .03244 | .00000 | .00002 | .00002 | .07837 | .00939 | .00007 | .72732 | .00000 | .00010 | .00125 | .14219 |
| 2200 | .00878 | .00007 | .03242 | .00000 | .00002 | .00003 | .07821 | .01051 | .00007 | .72668 | .00000 | .00014 | .00153 | .14153 |
| 2250 | .00878 | .00010 | .03238 | .00001 | .00002 | .00005 | .07802 | .01169 | .00007 | .72599 | .00000 | .00019 | .00186 | .14083 |
| 2300 | .00878 | .00014 | .03234 | .00001 | .00002 | .00006 | .07780 | .01294 | .00008 | .72525 | .00000 | .00026 | .00224 | .14008 |
| 2350 | .00877 | .00019 | .03228 | .00002 | .00003 | .00008 | .07754 | .01426 | .00008 | .72445 | .00000 | .00035 | .00267 | .13927 |
| 2400 | .00877 | .00026 | .03221 | .00002 | .00003 | .00011 | .07725 | .01565 | .00008 | .72359 | .00001 | .00045 | .00316 | .13841 |
| 2450 | .00877 | .00034 | .03212 | .00003 | .00004 | .00014 | .07691 | .01710 | .00008 | .72267 | .00001 | .00059 | .00372 | .13749 |
| 2500 | .00877 | .00045 | .03200 | .00005 | .00004 | .00017 | .07653 | .01860 | .00009 | .72168 | .00001 | .00075 | .00434 | .13652 |
| 2550 | .00876 | .00058 | .03186 | .00007 | .00004 | .00022 | .07609 | .02016 | .00009 | .72063 | .00001 | .00095 | .00504 | .13550 |
| 2600 | .00876 | .00074 | .03168 | .00009 | .00005 | .00028 | .07560 | .02178 | .00009 | .71949 | .00001 | .00120 | .00581 | .13442 |
| 2650 | .00876 | .00094 | .03147 | .00012 | .00006 | .00034 | .07505 | .02344 | .00009 | .71828 | .00001 | .00149 | .00665 | .13329 |
| 2700 | .00875 | .00118 | .03121 | .00016 | .00006 | .00042 | .07444 | .02516 | .00009 | .71699 | .00001 | .00185 | .00757 | .13211 |
| 2750 | .00874 | .00146 | .03090 | .00022 | .00007 | .00052 | .07376 | .02691 | .00009 | .71561 | .00001 | .00226 | .00857 | .13087 |
| 2800 | .00874 | .00180 | .03054 | .00029 | .00007 | .00063 | .07301 | .02870 | .00010 | .71414 | .00001 | .00275 | .00966 | .12958 |
| 2850 | .00873 | .00219 | .03012 | .00038 | .00008 | .00075 | .07219 | .03052 | .00010 | .71257 | .00001 | .00332 | .01082 | .12823 |
| 2900 | .00872 | .00264 | .02963 | .00048 | .00008 | .00090 | .07128 | .03237 | .00010 | .71090 | .00001 | .00398 | .01206 | .12684 |
| 2950 | .00871 | .00316 | .02908 | .00062 | .00009 | .00106 | .07030 | .03424 | .00010 | .70912 | .00001 | .00474 | .01338 | .12539 |
| 3000 | .00870 | .00374 | .02845 | .00079 | .00010 | .00125 | .06922 | .03613 | .00010 | .70723 | .00001 | .00560 | .01478 | .12390 |

TABLE 28C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.016261; EQUIV.RATIO = 0.250; CHEM. EQUIV. RATIO = 0.3284;
WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00878 | .03251 | .07891 | .00000 | .00015 | .73231 | .14734 |
| 220 | .00878 | .03251 | .07665 | .00000 | .00241 | .73231 | .14734 |
| 240 | .00878 | .03251 | .05369 | .00000 | .02536 | .73231 | .14734 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00878 | .03251 | .07904 | .00000 | .00001 | .73231 | .14734 |
| 220 | .00878 | .03251 | .07881 | .00000 | .00024 | .73231 | .14734 |
| 240 | .00878 | .03251 | .07658 | .00000 | .00248 | .73231 | .14734 |
| 260 | .00878 | .03251 | .06098 | .00000 | .01808 | .73231 | .14734 |
| 280 | .00878 | .03251 | .00000 | .00000 | .07905 | .73231 | .14734 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00878 | .03251 | .07905 | .00000 | .00000 | .73231 | .14734 |
| 220 | .00878 | .03251 | .07903 | .00000 | .00002 | .73231 | .14734 |
| 240 | .00878 | .03251 | .07881 | .00000 | .00025 | .73231 | .14734 |
| 260 | .00878 | .03251 | .07728 | .00000 | .00178 | .73231 | .14734 |
| 280 | .00878 | .03251 | .00000 | .06999 | .00906 | .73231 | .14734 |
| 298 | .00878 | .03251 | .00000 | .04947 | .02958 | .73231 | .14734 |
| 300 | .00878 | .03251 | .00000 | .04593 | .03312 | .73231 | .14734 |
| 320 | .00878 | .03251 | .00000 | .00000 | .07905 | .73231 | .14734 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00878 | .03251 | .07905 | .00000 | .00000 | .73231 | .14734 |
| 220 | .00878 | .03251 | .07905 | .00000 | .00000 | .73231 | .14734 |
| 240 | .00878 | .03251 | .07903 | .00000 | .00002 | .73231 | .14734 |
| 260 | .00878 | .03251 | .07888 | .00000 | .00018 | .73231 | .14734 |
| 280 | .00878 | .03251 | .00000 | .07816 | .00090 | .73231 | .14734 |
| 298 | .00878 | .03251 | .00000 | .07618 | .00287 | .73231 | .14734 |
| 300 | .00878 | .03251 | .00000 | .07585 | .00321 | .73231 | .14734 |
| 320 | .00878 | .03251 | .00000 | .06944 | .00962 | .73231 | .14734 |
| 340 | .00878 | .03251 | .00000 | .05393 | .02512 | .73231 | .14734 |
| 360 | .00878 | .03251 | .00000 | .01979 | .05927 | .73231 | .14734 |
| 380 | .00878 | .03251 | .00000 | .00000 | .07905 | .73231 | .14734 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00878 | .03251 | .07905 | .00000 | .00000 | .73231 | .14734 |
| 220 | .00878 | .03251 | .07905 | .00000 | .00000 | .73231 | .14734 |
| 240 | .00878 | .03251 | .07905 | .00000 | .00000 | .73231 | .14734 |
| 260 | .00878 | .03251 | .07902 | .00000 | .00004 | .73231 | .14734 |
| 280 | .00878 | .03251 | .00000 | .07887 | .00018 | .73231 | .14734 |
| 298 | .00878 | .03251 | .00000 | .07848 | .00057 | .73231 | .14734 |
| 300 | .00878 | .03251 | .00000 | .07841 | .00064 | .73231 | .14734 |
| 320 | .00878 | .03251 | .00000 | .07715 | .00191 | .73231 | .14734 |
| 340 | .00878 | .03251 | .00000 | .07414 | .00492 | .73231 | .14734 |
| 360 | .00878 | .03251 | .00000 | .06778 | .01127 | .73231 | .14734 |
| 380 | .00878 | .03251 | .00000 | .05556 | .02350 | .73231 | .14734 |
| 400 | .00878 | .03251 | .00000 | .03364 | .04541 | .73231 | .14734 |
| 420 | .00878 | .03251 | .00000 | .00000 | .07905 | .73231 | .14734 |

TABLE 29.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.032523; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00864 | .00000 | .06364 | .00000 | .00000 | .11099 | .00000 | .00001 | .72013 | .00000 | .00000 | .09659 |
| 950 | .00864 | .00000 | .06364 | .00000 | .00000 | .11099 | .00000 | .00001 | .72013 | .00000 | .00000 | .09659 |
| 1000 | .00864 | .00000 | .06364 | .00000 | .00000 | .11099 | .00000 | .00002 | .72013 | .00000 | .00000 | .09658 |
| 1050 | .00864 | .00000 | .06364 | .00000 | .00000 | .11099 | .00000 | .00004 | .72012 | .00000 | .00000 | .09658 |
| 1100 | .00864 | .00000 | .06364 | .00000 | .00000 | .11099 | .00000 | .00006 | .72011 | .00000 | .00000 | .09656 |
| 1150 | .00864 | .00000 | .06364 | .00000 | .00000 | .11099 | .00000 | .00009 | .72009 | .00000 | .00000 | .09655 |
| 1200 | .00864 | .00000 | .06364 | .00000 | .00000 | .11099 | .00000 | .00014 | .72007 | .00000 | .00001 | .09652 |
| 1250 | .00864 | .00000 | .06364 | .00000 | .00000 | .11098 | .00000 | .00020 | .72003 | .00000 | .00002 | .09649 |
| 1300 | .00864 | .00000 | .06363 | .00000 | .00000 | .11098 | .00000 | .00028 | .71999 | .00000 | .00003 | .09645 |
| 1350 | .00864 | .00000 | .06363 | .00000 | .00000 | .11097 | .00000 | .00038 | .71994 | .00000 | .00005 | .09639 |
| 1400 | .00864 | .00000 | .06363 | .00000 | .00000 | .11095 | .00000 | .00051 | .71987 | .00000 | .00009 | .09632 |
| 1450 | .00864 | .00000 | .06363 | .00000 | .00000 | .11092 | .00000 | .00067 | .71977 | .00001 | .00014 | .09622 |
| 1500 | .00864 | .00001 | .06362 | .00000 | .00001 | .11087 | .00000 | .00086 | .71966 | .00001 | .00022 | .09611 |
| 1550 | .00864 | .00002 | .06361 | .00000 | .00001 | .11080 | .00000 | .00108 | .71952 | .00002 | .00033 | .09597 |
| 1600 | .00864 | .00004 | .06358 | .00000 | .00002 | .11070 | .00000 | .00135 | .71934 | .00004 | .00050 | .09579 |
| 1650 | .00863 | .00008 | .06354 | .00001 | .00004 | .11056 | .00000 | .00165 | .71911 | .00008 | .00072 | .09558 |
| 1700 | .00863 | .00014 | .06347 | .00001 | .00007 | .11036 | .00000 | .00200 | .71882 | .00014 | .00101 | .09534 |
| 1750 | .00863 | .00025 | .06335 | .00003 | .00012 | .11009 | .00000 | .00240 | .71846 | .00023 | .00141 | .09505 |
| 1800 | .00863 | .00042 | .06315 | .00005 | .00019 | .10971 | .00000 | .00285 | .71799 | .00037 | .00191 | .09473 |
| 1850 | .00862 | .00069 | .06285 | .00009 | .00030 | .10920 | .00000 | .00334 | .71739 | .00059 | .00256 | .09436 |
| 1900 | .00862 | .00110 | .06239 | .00017 | .00046 | .10853 | .00000 | .00389 | .71661 | .00091 | .00336 | .09396 |
| 1950 | .00861 | .00172 | .06172 | .00030 | .00068 | .10763 | .00000 | .00450 | .71559 | .00137 | .00435 | .09354 |
| 2000 | .00860 | .00260 | .06074 | .00051 | .00100 | .10645 | .00000 | .00515 | .71426 | .00203 | .00556 | .09310 |
| 2050 | .00858 | .00383 | .05939 | .00085 | .00143 | .10492 | .00000 | .00586 | .71254 | .00294 | .00699 | .09266 |
| 2100 | .00856 | .00548 | .05758 | .00138 | .00200 | .10296 | .00000 | .00663 | .71031 | .00420 | .00868 | .09223 |
| 2150 | .00853 | .00762 | .05522 | .00219 | .00273 | .10047 | .00000 | .00744 | .70747 | .00588 | .01063 | .09180 |
| 2200 | .00849 | .01029 | .05228 | .00339 | .00366 | .09736 | .00000 | .00831 | .70390 | .00812 | .01285 | .09136 |
| 2250 | .00844 | .01346 | .04875 | .00511 | .00478 | .09352 | .00000 | .00922 | .69946 | .01105 | .01532 | .09087 |
| 2300 | .00839 | .01708 | .04470 | .00752 | .00611 | .08888 | .00000 | .01016 | .69406 | .01483 | .01801 | .09026 |
| 2350 | .00831 | .02101 | .04024 | .01083 | .00763 | .08337 | .00000 | .01113 | .68760 | .01962 | .02084 | .08941 |
| 2400 | .00823 | .02507 | .03555 | .01523 | .00928 | .07698 | .00000 | .01211 | .68000 | .02560 | .02373 | .08821 |
| 2450 | .00813 | .02908 | .03081 | .02093 | .01098 | .06975 | .00000 | .01307 | .67123 | .03295 | .02654 | .08653 |
| 2500 | .00802 | .03285 | .02620 | .02809 | .01263 | .06178 | .00000 | .01399 | .66130 | .04180 | .02909 | .08424 |
| 2550 | .00789 | .03623 | .02189 | .03679 | .01408 | .05329 | .00000 | .01483 | .65029 | .05227 | .03120 | .08122 |
| 2600 | .00775 | .03912 | .01798 | .04700 | .01517 | .04459 | .00001 | .01557 | .63836 | .06438 | .03266 | .07742 |
| 2650 | .00760 | .04146 | .01454 | .05849 | .01576 | .03603 | .00001 | .01617 | .62574 | .07808 | .03330 | .07280 |
| 2700 | .00745 | .04328 | .01160 | .07089 | .01575 | .02802 | .00001 | .01661 | .61278 | .09319 | .03301 | .06739 |
| 2750 | .00730 | .04462 | .00914 | .08365 | .01513 | .02092 | .00002 | .01686 | .59989 | .10941 | .03176 | .06131 |
| 2800 | .00715 | .04555 | .00711 | .09615 | .01397 | .01498 | .00003 | .01691 | .58749 | .12629 | .02965 | .05472 |
| 2850 | .00701 | .04615 | .00549 | .10780 | .01243 | .01030 | .00004 | .01676 | .57597 | .14331 | .02687 | .04787 |
| 2900 | .00688 | .04651 | .00420 | .11817 | .01070 | .00683 | .00005 | .01642 | .56562 | .15991 | .02367 | .04103 |
| 2950 | .00677 | .04670 | .00319 | .12702 | .00895 | .00438 | .00007 | .01591 | .55660 | .17558 | .02035 | .03448 |
| 3000 | .00668 | .04678 | .00241 | .13432 | .00732 | .00274 | .00010 | .01525 | .54895 | .18987 | .01713 | .02845 |

TABLE 29.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.032523; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00001 | .72013 | .00000 | .00000 | .09659 |
| 950 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00001 | .72013 | .00000 | .00000 | .09659 |
| 1000 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00002 | .72013 | .00000 | .00000 | .09658 |
| 1050 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00004 | .72012 | .00000 | .00000 | .09658 |
| 1100 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00006 | .72011 | .00000 | .00000 | .09656 |
| 1150 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00009 | .72009 | .00000 | .00000 | .09655 |
| 1200 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00014 | .72007 | .00000 | .00000 | .09652 |
| 1250 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00020 | .72004 | .00000 | .00001 | .09649 |
| 1300 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11098 | .00000 | .00028 | .71999 | .00000 | .00002 | .09645 |
| 1350 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11098 | .00000 | .00038 | .71994 | .00000 | .00003 | .09640 |
| 1400 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11097 | .00000 | .00051 | .71987 | .00000 | .00005 | .09633 |
| 1450 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11095 | .00000 | .00067 | .71979 | .00000 | .00008 | .09624 |
| 1500 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11093 | .00000 | .00086 | .71968 | .00000 | .00012 | .09613 |
| 1550 | .00864 | .00001 | .06363 | .00000 | .00000 | .00000 | .11089 | .00000 | .00108 | .71956 | .00001 | .00019 | .09600 |
| 1600 | .00864 | .00001 | .06362 | .00000 | .00000 | .00001 | .11084 | .00000 | .00135 | .71940 | .00001 | .00028 | .09585 |
| 1650 | .00864 | .00002 | .06360 | .00000 | .00000 | .00001 | .11076 | .00000 | .00165 | .71922 | .00003 | .00040 | .09566 |
| 1700 | .00864 | .00004 | .06358 | .00000 | .00000 | .00002 | .11066 | .00000 | .00200 | .71899 | .00004 | .00057 | .09544 |
| 1750 | .00863 | .00008 | .06354 | .00000 | .00000 | .00004 | .11052 | .00000 | .00240 | .71872 | .00007 | .00079 | .09519 |
| 1800 | .00863 | .00013 | .06348 | .00001 | .00000 | .00006 | .11034 | .00000 | .00285 | .71840 | .00012 | .00108 | .09490 |
| 1850 | .00863 | .00022 | .06338 | .00002 | .00000 | .00010 | .11010 | .00000 | .00335 | .71801 | .00019 | .00144 | .09457 |
| 1900 | .00863 | .00035 | .06323 | .00003 | .00000 | .00015 | .10978 | .00000 | .00390 | .71755 | .00029 | .00190 | .09419 |
| 1950 | .00863 | .00055 | .06300 | .00005 | .00000 | .00022 | .10937 | .00000 | .00451 | .71698 | .00043 | .00247 | .09378 |
| 2000 | .00862 | .00085 | .06268 | .00009 | .00000 | .00032 | .10885 | .00000 | .00517 | .71628 | .00064 | .00316 | .09334 |
| 2050 | .00862 | .00127 | .06221 | .00015 | .00000 | .00047 | .10818 | .00000 | .00588 | .71544 | .00093 | .00399 | .09286 |
| 2100 | .00861 | .00185 | .06157 | .00025 | .00000 | .00066 | .10734 | .00000 | .00665 | .71440 | .00133 | .00499 | .09235 |
| 2150 | .00860 | .00265 | .06070 | .00040 | .00000 | .00091 | .10630 | .00000 | .00747 | .71313 | .00186 | .00615 | .09183 |
| 2200 | .00858 | .00371 | .05954 | .00063 | .00000 | .00125 | .10500 | .00000 | .00835 | .71157 | .00257 | .00750 | .09130 |
| 2250 | .00857 | .00507 | .05805 | .00095 | .00000 | .00167 | .10341 | .00000 | .00928 | .70967 | .00349 | .00906 | .09077 |
| 2300 | .00855 | .00679 | .05617 | .00143 | .00000 | .00221 | .10148 | .00000 | .01026 | .70736 | .00469 | .01082 | .09024 |
| 2350 | .00852 | .00888 | .05388 | .00210 | .00000 | .00286 | .09916 | .00000 | .01129 | .70459 | .00621 | .01279 | .08971 |
| 2400 | .00849 | .01135 | .05117 | .00302 | .00001 | .00365 | .09639 | .00000 | .01236 | .70130 | .00814 | .01497 | .08915 |
| 2450 | .00845 | .01418 | .04805 | .00428 | .00001 | .00458 | .09313 | .00000 | .01348 | .69742 | .01054 | .01734 | .08855 |
| 2500 | .00840 | .01730 | .04457 | .00594 | .00001 | .00566 | .08935 | .00000 | .01462 | .69291 | .01350 | .01988 | .08785 |
| 2550 | .00834 | .02065 | .04082 | .00812 | .00001 | .00686 | .08502 | .00000 | .01578 | .68774 | .01711 | .02254 | .08700 |
| 2600 | .00828 | .02410 | .03691 | .01092 | .00001 | .00818 | .08012 | .00000 | .01695 | .68187 | .02145 | .02527 | .08594 |
| 2650 | .00821 | .02754 | .03293 | .01442 | .00001 | .00958 | .07468 | .00000 | .01811 | .67530 | .02662 | .02800 | .08459 |
| 2700 | .00813 | .03087 | .02901 | .01875 | .00001 | .01102 | .06874 | .00000 | .01923 | .66803 | .03269 | .03062 | .08290 |
| 2750 | .00804 | .03397 | .02525 | .02397 | .00001 | .01242 | .06237 | .00001 | .02031 | .66008 | .03972 | .03304 | .08081 |
| 2800 | .00794 | .03678 | .02173 | .03014 | .00001 | .01373 | .05568 | .00001 | .02130 | .65149 | .04776 | .03515 | .07828 |
| 2850 | .00784 | .03924 | .01850 | .03726 | .00001 | .01485 | .04882 | .00001 | .02220 | .64233 | .05683 | .03682 | .07528 |
| 2900 | .00773 | .04133 | .01560 | .04528 | .00001 | .01571 | .04196 | .00002 | .02298 | .63272 | .06690 | .03795 | .07182 |
| 2950 | .00761 | .04304 | .01303 | .05410 | .00001 | .01623 | .03529 | .00002 | .02361 | .62277 | .07791 | .03846 | .06790 |
| 3000 | .00749 | .04440 | .01081 | .06352 | .00001 | .01638 | .02901 | .00003 | .02409 | .61267 | .08975 | .03828 | .06357 |

TABLE 29.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.032523; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00001 | .00000 | .72013 | .00000 | .00000 | .09659 |
| 950 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00001 | .00000 | .72013 | .00000 | .00000 | .09659 |
| 1000 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00002 | .00000 | .72013 | .00000 | .00000 | .09658 |
| 1050 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00004 | .00000 | .72012 | .00000 | .00000 | .09658 |
| 1100 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00006 | .00000 | .72011 | .00000 | .00000 | .09656 |
| 1150 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00009 | .00000 | .72009 | .00000 | .00000 | .09655 |
| 1200 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00014 | .00000 | .72007 | .00000 | .00000 | .09652 |
| 1250 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00020 | .00000 | .72004 | .00000 | .00001 | .09649 |
| 1300 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00000 | .00028 | .00000 | .72000 | .00000 | .00001 | .09645 |
| 1350 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11098 | .00000 | .00038 | .00000 | .71994 | .00000 | .00002 | .09640 |
| 1400 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11098 | .00000 | .00051 | .00000 | .71988 | .00000 | .00003 | .09633 |
| 1450 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11097 | .00000 | .00067 | .00000 | .71980 | .00000 | .00004 | .09625 |
| 1500 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11096 | .00000 | .00086 | .00000 | .71970 | .00000 | .00007 | .09615 |
| 1550 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11094 | .00000 | .00108 | .00000 | .71958 | .00000 | .00011 | .09602 |
| 1600 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11091 | .00000 | .00135 | .00000 | .71943 | .00000 | .00016 | .09588 |
| 1650 | .00864 | .00001 | .06362 | .00000 | .00000 | .00000 | .11087 | .00000 | .00165 | .00000 | .71926 | .00001 | .00023 | .09570 |
| 1700 | .00864 | .00001 | .06362 | .00000 | .00000 | .00001 | .11081 | .00000 | .00200 | .00000 | .71907 | .00001 | .00032 | .09550 |
| 1750 | .00864 | .00002 | .06360 | .00000 | .00000 | .00001 | .11074 | .00000 | .00240 | .00000 | .71883 | .00002 | .00045 | .09527 |
| 1800 | .00864 | .00004 | .06358 | .00000 | .00000 | .00002 | .11065 | .00000 | .00285 | .00000 | .71857 | .00004 | .00061 | .09501 |
| 1850 | .00863 | .00007 | .06355 | .00000 | .00000 | .00003 | .11052 | .00000 | .00335 | .00000 | .71826 | .00006 | .00081 | .09470 |
| 1900 | .00863 | .00011 | .06350 | .00001 | .00000 | .00005 | .11036 | .00000 | .00391 | .00001 | .71790 | .00009 | .00107 | .09437 |
| 1950 | .00863 | .00018 | .06343 | .00001 | .00000 | .00007 | .11016 | .00000 | .00451 | .00001 | .71749 | .00014 | .00139 | .09399 |
| 2000 | .00863 | .00027 | .06332 | .00002 | .00000 | .00010 | .10990 | .00000 | .00518 | .00001 | .71701 | .00020 | .00179 | .09357 |
| 2050 | .00863 | .00041 | .06317 | .00003 | .00000 | .00015 | .10959 | .00000 | .00589 | .00001 | .71646 | .00030 | .00226 | .09311 |
| 2100 | .00863 | .00060 | .06295 | .00005 | .00000 | .00021 | .10919 | .00000 | .00667 | .00001 | .71583 | .00042 | .00283 | .09262 |
| 2150 | .00862 | .00086 | .06266 | .00007 | .00001 | .00030 | .10871 | .00000 | .00749 | .00001 | .71509 | .00059 | .00350 | .09209 |
| 2200 | .00862 | .00122 | .06226 | .00011 | .00001 | .00041 | .10812 | .00000 | .00838 | .00001 | .71424 | .00081 | .00428 | .09153 |
| 2250 | .00861 | .00170 | .06173 | .00017 | .00001 | .00055 | .10741 | .00000 | .00931 | .00001 | .71324 | .00111 | .00519 | .09095 |
| 2300 | .00860 | .00233 | .06105 | .00026 | .00001 | .00073 | .10656 | .00000 | .01030 | .00001 | .71209 | .00148 | .00624 | .09034 |
| 2350 | .00859 | .00314 | .06017 | .00038 | .00001 | .00096 | .10555 | .00000 | .01134 | .00001 | .71074 | .00197 | .00742 | .08972 |
| 2400 | .00858 | .00415 | .05907 | .00056 | .00001 | .00125 | .10435 | .00000 | .01243 | .00001 | .70918 | .00257 | .00876 | .08909 |
| 2450 | .00857 | .00539 | .05772 | .00080 | .00001 | .00160 | .10294 | .00000 | .01357 | .00001 | .70736 | .00333 | .01025 | .08846 |
| 2500 | .00855 | .00689 | .05609 | .00113 | .00001 | .00203 | .10129 | .00000 | .01475 | .00001 | .70527 | .00427 | .01190 | .08783 |
| 2550 | .00853 | .00865 | .05416 | .00156 | .00001 | .00253 | .09938 | .00000 | .01597 | .00001 | .70286 | .00542 | .01371 | .08719 |
| 2600 | .00850 | .01069 | .05194 | .00213 | .00002 | .00313 | .09719 | .00000 | .01724 | .00001 | .70012 | .00681 | .01568 | .08655 |
| 2650 | .00847 | .01298 | .04944 | .00288 | .00002 | .00381 | .09470 | .00000 | .01854 | .00001 | .69701 | .00848 | .01779 | .08587 |
| 2700 | .00844 | .01549 | .04667 | .00383 | .00002 | .00460 | .09188 | .00000 | .01986 | .00001 | .69353 | .01048 | .02004 | .08516 |
| 2750 | .00840 | .01819 | .04369 | .00503 | .00002 | .00547 | .08873 | .00000 | .02121 | .00001 | .68964 | .01283 | .02240 | .08437 |
| 2800 | .00836 | .02102 | .04054 | .00653 | .00002 | .00644 | .08524 | .00000 | .02256 | .00001 | .68536 | .01560 | .02485 | .08348 |
| 2850 | .00831 | .02391 | .03730 | .00836 | .00002 | .00748 | .08140 | .00000 | .02392 | .00001 | .68066 | .01881 | .02736 | .08246 |
| 2900 | .00825 | .02680 | .03402 | .01059 | .00002 | .00859 | .07723 | .00001 | .02526 | .00001 | .67556 | .02251 | .02987 | .08128 |
| 2950 | .00820 | .02962 | .03077 | .01326 | .00002 | .00975 | .07276 | .00001 | .02657 | .00001 | .67006 | .02673 | .03234 | .07990 |
| 3000 | .00813 | .03231 | .02761 | .01641 | .00003 | .01094 | .06800 | .00001 | .02784 | .00001 | .66418 | .03150 | .03472 | .07831 |

TABLE 29.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.032523; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00001 | .00000 | .72013 | .00000 | .00000 | .09659 |
| 950 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00001 | .00000 | .72013 | .00000 | .00000 | .09659 |
| 1000 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00002 | .00000 | .72013 | .00000 | .00000 | .09658 |
| 1050 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00004 | .00000 | .72012 | .00000 | .00000 | .09657 |
| 1100 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00006 | .00000 | .72011 | .00000 | .00000 | .09656 |
| 1150 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00009 | .00000 | .72009 | .00000 | .00000 | .09654 |
| 1200 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00014 | .00000 | .72007 | .00000 | .00000 | .09652 |
| 1250 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00020 | .00001 | .72004 | .00000 | .00000 | .09649 |
| 1300 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00028 | .00001 | .72000 | .00000 | .00001 | .09645 |
| 1350 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00038 | .00001 | .71994 | .00000 | .00001 | .09639 |
| 1400 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00051 | .00001 | .71988 | .00000 | .00002 | .09633 |
| 1450 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11098 | .00067 | .00001 | .71980 | .00000 | .00002 | .09625 |
| 1500 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11097 | .00086 | .00001 | .71970 | .00000 | .00004 | .09615 |
| 1550 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11096 | .00108 | .00001 | .71958 | .00000 | .00006 | .09603 |
| 1600 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11095 | .00135 | .00001 | .71945 | .00000 | .00009 | .09589 |
| 1650 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11092 | .00165 | .00001 | .71929 | .00000 | .00013 | .09572 |
| 1700 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11089 | .00200 | .00001 | .71910 | .00000 | .00018 | .09553 |
| 1750 | .00864 | .00001 | .06362 | .00000 | .00000 | .00000 | .11086 | .00240 | .00001 | .71888 | .00001 | .00025 | .09531 |
| 1800 | .00864 | .00001 | .06362 | .00000 | .00000 | .00001 | .11080 | .00285 | .00001 | .71864 | .00001 | .00034 | .09506 |
| 1850 | .00864 | .00002 | .06361 | .00000 | .00000 | .00001 | .11074 | .00335 | .00002 | .71836 | .00002 | .00046 | .09478 |
| 1900 | .00864 | .00004 | .06359 | .00000 | .00000 | .00001 | .11065 | .00391 | .00002 | .71804 | .00003 | .00060 | .09447 |
| 1950 | .00863 | .00006 | .06356 | .00000 | .00000 | .00002 | .11055 | .00452 | .00002 | .71769 | .00004 | .00079 | .09411 |
| 2000 | .00863 | .00009 | .06353 | .00000 | .00001 | .00003 | .11042 | .00518 | .00002 | .71730 | .00006 | .00101 | .09373 |
| 2050 | .00863 | .00013 | .06348 | .00000 | .00001 | .00005 | .11025 | .00590 | .00002 | .71686 | .00009 | .00128 | .09330 |
| 2100 | .00863 | .00019 | .06341 | .00001 | .00001 | .00007 | .11005 | .00668 | .00002 | .71637 | .00013 | .00160 | .09284 |
| 2150 | .00863 | .00028 | .06331 | .00001 | .00001 | .00009 | .10981 | .00751 | .00002 | .71582 | .00019 | .00198 | .09234 |
| 2200 | .00863 | .00039 | .06318 | .00002 | .00001 | .00013 | .10952 | .00839 | .00002 | .71521 | .00026 | .00243 | .09180 |
| 2250 | .00863 | .00055 | .06300 | .00003 | .00001 | .00018 | .10918 | .00934 | .00002 | .71453 | .00035 | .00295 | .09123 |
| 2300 | .00862 | .00076 | .06277 | .00005 | .00001 | .00024 | .10877 | .01033 | .00002 | .71378 | .00047 | .00355 | .09063 |
| 2350 | .00862 | .00103 | .06248 | .00007 | .00002 | .00031 | .10829 | .01138 | .00002 | .71294 | .00062 | .00423 | .08999 |
| 2400 | .00861 | .00138 | .06209 | .00010 | .00002 | .00041 | .10773 | .01247 | .00002 | .71201 | .00081 | .00501 | .08933 |
| 2450 | .00861 | .00182 | .06161 | .00014 | .00002 | .00053 | .10708 | .01362 | .00002 | .71097 | .00105 | .00588 | .08864 |
| 2500 | .00860 | .00237 | .06101 | .00021 | .00002 | .00067 | .10633 | .01481 | .00002 | .70981 | .00135 | .00686 | .08794 |
| 2550 | .00859 | .00304 | .06027 | .00029 | .00003 | .00085 | .10546 | .01604 | .00003 | .70851 | .00171 | .00794 | .08722 |
| 2600 | .00858 | .00386 | .05938 | .00039 | .00003 | .00106 | .10447 | .01732 | .00003 | .70707 | .00215 | .00914 | .08650 |
| 2650 | .00857 | .00484 | .05832 | .00053 | .00003 | .00132 | .10335 | .01864 | .00003 | .70547 | .00268 | .01045 | .08577 |
| 2700 | .00856 | .00599 | .05707 | .00072 | .00003 | .00162 | .10207 | .01999 | .00003 | .70368 | .00331 | .01188 | .08504 |
| 2750 | .00854 | .00733 | .05563 | .00095 | .00004 | .00196 | .10064 | .02139 | .00003 | .70171 | .00406 | .01342 | .08431 |
| 2800 | .00853 | .00884 | .05398 | .00125 | .00004 | .00236 | .09903 | .02281 | .00003 | .69953 | .00494 | .01507 | .08358 |
| 2850 | .00851 | .01054 | .05213 | .00162 | .00004 | .00282 | .09725 | .02426 | .00003 | .69714 | .00596 | .01683 | .08285 |
| 2900 | .00848 | .01242 | .05010 | .00209 | .00005 | .00334 | .09528 | .02574 | .00003 | .69453 | .00715 | .01870 | .08210 |
| 2950 | .00846 | .01445 | .04788 | .00266 | .00005 | .00391 | .09311 | .02724 | .00003 | .69169 | .00853 | .02067 | .08134 |
| 3000 | .00843 | .01661 | .04551 | .00335 | .00005 | .00455 | .09074 | .02875 | .00003 | .68861 | .01010 | .02272 | .08054 |

TABLE 29.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.032523; EQUIV. RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H02 | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00001 | .00000 | .72013 | .00000 | .00000 | .00000 | .09659 |
| 950 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00001 | .00000 | .72013 | .00000 | .00000 | .00000 | .09658 |
| 1000 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00002 | .00001 | .72013 | .00000 | .00000 | .00000 | .09658 |
| 1050 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00004 | .00001 | .72012 | .00000 | .00000 | .00000 | .09657 |
| 1100 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00006 | .00001 | .72011 | .00000 | .00000 | .00000 | .09656 |
| 1150 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00009 | .00001 | .72009 | .00000 | .00000 | .00000 | .09654 |
| 1200 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00014 | .00001 | .72007 | .00000 | .00000 | .00000 | .09651 |
| 1250 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00020 | .00001 | .72004 | .00000 | .00000 | .00000 | .09648 |
| 1300 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00028 | .00001 | .72000 | .00000 | .00000 | .00000 | .09644 |
| 1350 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00038 | .00002 | .71994 | .00000 | .00000 | .00001 | .09639 |
| 1400 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00051 | .00002 | .71988 | .00000 | .00000 | .00001 | .09632 |
| 1450 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11099 | .00067 | .00002 | .71980 | .00000 | .00000 | .00002 | .09624 |
| 1500 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11098 | .00086 | .00002 | .71970 | .00000 | .00000 | .00003 | .09614 |
| 1550 | .00864 | .00000 | .06364 | .00000 | .00000 | .00000 | .11097 | .00108 | .00002 | .71959 | .00000 | .00000 | .00004 | .09602 |
| 1600 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11096 | .00135 | .00002 | .71945 | .00000 | .00000 | .00006 | .09588 |
| 1650 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11095 | .00165 | .00003 | .71929 | .00000 | .00000 | .00009 | .09572 |
| 1700 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11093 | .00200 | .00003 | .71911 | .00000 | .00000 | .00012 | .09553 |
| 1750 | .00864 | .00000 | .06363 | .00000 | .00000 | .00000 | .11090 | .00240 | .00003 | .71890 | .00000 | .00000 | .00017 | .09532 |
| 1800 | .00864 | .00001 | .06363 | .00000 | .00000 | .00000 | .11087 | .00285 | .00003 | .71866 | .00000 | .00001 | .00023 | .09507 |
| 1850 | .00864 | .00001 | .06362 | .00000 | .00000 | .00000 | .11083 | .00335 | .00003 | .71839 | .00000 | .00001 | .00031 | .09480 |
| 1900 | .00864 | .00002 | .06361 | .00000 | .00001 | .00001 | .11077 | .00391 | .00004 | .71809 | .00000 | .00001 | .00040 | .09450 |
| 1950 | .00864 | .00002 | .06360 | .00000 | .00001 | .00001 | .11070 | .00452 | .00004 | .71776 | .00000 | .00002 | .00053 | .09416 |
| 2000 | .00864 | .00004 | .06359 | .00000 | .00001 | .00001 | .11062 | .00518 | .00004 | .71739 | .00000 | .00003 | .00067 | .09378 |
| 2050 | .00863 | .00006 | .06356 | .00000 | .00001 | .00002 | .11051 | .00590 | .00004 | .71698 | .00000 | .00004 | .00085 | .09338 |
| 2100 | .00863 | .00009 | .06353 | .00000 | .00001 | .00003 | .11038 | .00668 | .00004 | .71654 | .00000 | .00006 | .00107 | .09293 |
| 2150 | .00863 | .00012 | .06348 | .00000 | .00001 | .00004 | .11023 | .00751 | .00004 | .71605 | .00000 | .00008 | .00133 | .09245 |
| 2200 | .00863 | .00018 | .06342 | .00001 | .00002 | .00006 | .11005 | .00840 | .00005 | .71551 | .00000 | .00012 | .00163 | .09194 |
| 2250 | .00863 | .00025 | .06334 | .00001 | .00002 | .00008 | .10983 | .00935 | .00005 | .71493 | .00000 | .00016 | .00198 | .09138 |
| 2300 | .00863 | .00034 | .06324 | .00001 | .00002 | .00011 | .10958 | .01034 | .00005 | .71429 | .00000 | .00021 | .00238 | .09080 |
| 2350 | .00863 | .00046 | .06310 | .00002 | .00002 | .00014 | .10928 | .01139 | .00005 | .71360 | .00000 | .00028 | .00284 | .09018 |
| 2400 | .00862 | .00062 | .06292 | .00003 | .00003 | .00018 | .10894 | .01249 | .00005 | .71284 | .00000 | .00036 | .00337 | .08952 |
| 2450 | .00862 | .00083 | .06270 | .00004 | .00003 | .00024 | .10854 | .01364 | .00005 | .71202 | .00000 | .00047 | .00396 | .08884 |
| 2500 | .00862 | .00108 | .06242 | .00006 | .00003 | .00031 | .10809 | .01484 | .00006 | .71113 | .00000 | .00060 | .00463 | .08814 |
| 2550 | .00861 | .00140 | .06207 | .00009 | .00004 | .00039 | .10757 | .01608 | .00006 | .71016 | .00001 | .00077 | .00537 | .08740 |
| 2600 | .00861 | .00179 | .06164 | .00012 | .00004 | .00049 | .10697 | .01736 | .00006 | .70911 | .00001 | .00096 | .00619 | .08665 |
| 2650 | .00860 | .00227 | .06112 | .00016 | .00005 | .00061 | .10631 | .01868 | .00006 | .70796 | .00001 | .00120 | .00709 | .08589 |
| 2700 | .00860 | .00284 | .06050 | .00022 | .00005 | .00075 | .10555 | .02005 | .00006 | .70671 | .00001 | .00148 | .00808 | .08511 |
| 2750 | .00859 | .00352 | .05976 | .00029 | .00006 | .00091 | .10471 | .02144 | .00006 | .70536 | .00001 | .00181 | .00915 | .08432 |
| 2800 | .00858 | .00432 | .05890 | .00038 | .00006 | .00111 | .10377 | .02287 | .00006 | .70389 | .00001 | .00221 | .01031 | .08353 |
| 2850 | .00857 | .00524 | .05790 | .00050 | .00007 | .00133 | .10272 | .02434 | .00006 | .70229 | .00001 | .00266 | .01157 | .08274 |
| 2900 | .00856 | .00630 | .05675 | .00064 | .00007 | .00159 | .10157 | .02583 | .00006 | .70056 | .00001 | .00320 | .01291 | .08195 |
| 2950 | .00854 | .00749 | .05546 | .00082 | .00008 | .00189 | .10030 | .02734 | .00006 | .69869 | .00001 | .00381 | .01434 | .08117 |
| 3000 | .00853 | .00882 | .05402 | .00105 | .00008 | .00222 | .09890 | .02888 | .00006 | .69667 | .00001 | .00451 | .01585 | .08038 |

TABLE 29C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.032523; EQUIV.RATIO = 0.500; CHEM. EQUIV. RATIO = 0.5522;
WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00864 | .06364 | .11085 | .00000 | .00014 | .72014 | .09660 |
| 220 | .00864 | .06364 | .10867 | .00000 | .00232 | .72014 | .09660 |
| 240 | .00864 | .06364 | .08651 | .00000 | .02448 | .72014 | .09660 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00864 | .06364 | .11098 | .00000 | .00001 | .72014 | .09660 |
| 220 | .00864 | .06364 | .11076 | .00000 | .00023 | .72014 | .09660 |
| 240 | .00864 | .06364 | .10860 | .00000 | .00239 | .72014 | .09660 |
| 260 | .00864 | .06364 | .09354 | .00000 | .01745 | .72014 | .09660 |
| 280 | .00864 | .06364 | .00000 | .01500 | .09599 | .72014 | .09660 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00864 | .06364 | .11099 | .00000 | .00000 | .72014 | .09660 |
| 220 | .00864 | .06364 | .11097 | .00000 | .00002 | .72014 | .09660 |
| 240 | .00864 | .06364 | .11075 | .00000 | .00024 | .72014 | .09660 |
| 260 | .00864 | .06364 | .10928 | .00000 | .00171 | .72014 | .09660 |
| 280 | .00864 | .06364 | .00000 | .10224 | .00875 | .72014 | .09660 |
| 298 | .00864 | .06364 | .00000 | .08244 | .02855 | .72014 | .09660 |
| 300 | .00864 | .06364 | .00000 | .07902 | .03197 | .72014 | .09660 |
| 320 | .00864 | .06364 | .00000 | .00855 | .10244 | .72014 | .09660 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00864 | .06364 | .11099 | .00000 | .00000 | .72014 | .09660 |
| 220 | .00864 | .06364 | .11099 | .00000 | .00000 | .72014 | .09660 |
| 240 | .00864 | .06364 | .11097 | .00000 | .00002 | .72014 | .09660 |
| 260 | .00864 | .06364 | .11082 | .00000 | .00017 | .72014 | .09660 |
| 280 | .00864 | .06364 | .00000 | .11013 | .00087 | .72014 | .09660 |
| 298 | .00864 | .06364 | .00000 | .10822 | .00278 | .72014 | .09660 |
| 300 | .00864 | .06364 | .00000 | .10790 | .00310 | .72014 | .09660 |
| 320 | .00864 | .06364 | .00000 | .10171 | .00928 | .72014 | .09660 |
| 340 | .00864 | .06364 | .00000 | .08674 | .02425 | .72014 | .09660 |
| 360 | .00864 | .06364 | .00000 | .05378 | .05721 | .72014 | .09660 |
| 380 | .00864 | .06364 | .00000 | .00000 | .11099 | .72014 | .09660 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00864 | .06364 | .11099 | .00000 | .00000 | .72014 | .09660 |
| 220 | .00864 | .06364 | .11099 | .00000 | .00000 | .72014 | .09660 |
| 240 | .00864 | .06364 | .11099 | .00000 | .00000 | .72014 | .09660 |
| 260 | .00864 | .06364 | .11096 | .00000 | .00003 | .72014 | .09660 |
| 280 | .00864 | .06364 | .00000 | .11082 | .00017 | .72014 | .09660 |
| 298 | .00864 | .06364 | .00000 | .11044 | .00055 | .72014 | .09660 |
| 300 | .00864 | .06364 | .00000 | .11038 | .00062 | .72014 | .09660 |
| 320 | .00864 | .06364 | .00000 | .10915 | .00184 | .72014 | .09660 |
| 340 | .00864 | .06364 | .00000 | .10625 | .00475 | .72014 | .09660 |
| 360 | .00864 | .06364 | .00000 | .10011 | .01088 | .72014 | .09660 |
| 380 | .00864 | .06364 | .00000 | .08831 | .02268 | .72014 | .09660 |
| 400 | .00864 | .06364 | .00000 | .06716 | .04384 | .72014 | .09660 |
| 420 | .00864 | .06364 | .00000 | .03102 | .07998 | .72014 | .09660 |

TABLE 30.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.048785; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00850 | .00000 | .09375 | .00000 | .00000 | .14189 | .00000 | .00000 | .70836 | .00000 | .00000 | .04751 |
| 950 | .00850 | .00000 | .09375 | .00000 | .00000 | .14189 | .00000 | .00001 | .70836 | .00000 | .00000 | .04750 |
| 1000 | .00850 | .00000 | .09375 | .00000 | .00000 | .14189 | .00000 | .00002 | .70835 | .00000 | .00000 | .04750 |
| 1050 | .00850 | .00000 | .09375 | .00000 | .00000 | .14189 | .00000 | .00003 | .70835 | .00000 | .00000 | .04749 |
| 1100 | .00850 | .00000 | .09375 | .00000 | .00000 | .14189 | .00000 | .00004 | .70834 | .00000 | .00000 | .04749 |
| 1150 | .00850 | .00000 | .09375 | .00000 | .00000 | .14189 | .00000 | .00007 | .70833 | .00000 | .00000 | .04747 |
| 1200 | .00850 | .00000 | .09375 | .00000 | .00000 | .14188 | .00000 | .00010 | .70831 | .00000 | .00001 | .04746 |
| 1250 | .00850 | .00000 | .09375 | .00000 | .00000 | .14188 | .00000 | .00014 | .70829 | .00000 | .00002 | .04743 |
| 1300 | .00850 | .00000 | .09375 | .00000 | .00000 | .14187 | .00000 | .00020 | .70826 | .00000 | .00003 | .04740 |
| 1350 | .00850 | .00000 | .09374 | .00000 | .00000 | .14186 | .00000 | .00027 | .70822 | .00000 | .00005 | .04736 |
| 1400 | .00850 | .00000 | .09374 | .00000 | .00000 | .14184 | .00000 | .00035 | .70817 | .00000 | .00008 | .04731 |
| 1450 | .00850 | .00001 | .09373 | .00000 | .00001 | .14181 | .00000 | .00046 | .70810 | .00000 | .00013 | .04725 |
| 1500 | .00850 | .00002 | .09372 | .00000 | .00001 | .14176 | .00000 | .00060 | .70801 | .00001 | .00021 | .04717 |
| 1550 | .00849 | .00004 | .09369 | .00000 | .00002 | .14169 | .00000 | .00075 | .70790 | .00002 | .00032 | .04707 |
| 1600 | .00849 | .00009 | .09364 | .00000 | .00004 | .14158 | .00000 | .00093 | .70775 | .00003 | .00047 | .04696 |
| 1650 | .00849 | .00016 | .09356 | .00001 | .00008 | .14142 | .00000 | .00115 | .70756 | .00006 | .00068 | .04684 |
| 1700 | .00849 | .00029 | .09341 | .00002 | .00013 | .14120 | .00000 | .00139 | .70730 | .00010 | .00096 | .04672 |
| 1750 | .00849 | .00051 | .09316 | .00003 | .00022 | .14088 | .00000 | .00167 | .70696 | .00016 | .00133 | .04660 |
| 1800 | .00849 | .00087 | .09276 | .00007 | .00035 | .14043 | .00000 | .00198 | .70649 | .00026 | .00181 | .04650 |
| 1850 | .00848 | .00144 | .09213 | .00013 | .00055 | .13980 | .00000 | .00233 | .70585 | .00041 | .00242 | .04646 |
| 1900 | .00847 | .00229 | .09119 | .00023 | .00083 | .13894 | .00000 | .00272 | .70498 | .00064 | .00319 | .04651 |
| 1950 | .00846 | .00353 | .08982 | .00040 | .00124 | .13778 | .00000 | .00315 | .70380 | .00097 | .00414 | .04670 |
| 2000 | .00844 | .00529 | .08789 | .00069 | .00180 | .13623 | .00000 | .00363 | .70222 | .00144 | .00530 | .04707 |
| 2050 | .00842 | .00766 | .08527 | .00114 | .00255 | .13419 | .00000 | .00417 | .70012 | .00211 | .00670 | .04767 |
| 2100 | .00839 | .01074 | .08187 | .00184 | .00352 | .13155 | .00000 | .00476 | .69739 | .00304 | .00836 | .04853 |
| 2150 | .00836 | .01457 | .07762 | .00289 | .00474 | .12820 | .00000 | .00542 | .69392 | .00433 | .01030 | .04965 |
| 2200 | .00831 | .01911 | .07256 | .00442 | .00623 | .12403 | .00000 | .00614 | .68959 | .00607 | .01254 | .05099 |
| 2250 | .00825 | .02426 | .06676 | .00660 | .00800 | .11893 | .00000 | .00693 | .68432 | .00840 | .01506 | .05248 |
| 2300 | .00818 | .02984 | .06041 | .00964 | .01003 | .11282 | .00000 | .00777 | .67801 | .01147 | .01784 | .05400 |
| 2350 | .00809 | .03562 | .05371 | .01374 | .01228 | .10564 | .00000 | .00866 | .67062 | .01544 | .02081 | .05539 |
| 2400 | .00800 | .04134 | .04692 | .01915 | .01466 | .09740 | .00000 | .00957 | .66208 | .02049 | .02388 | .05651 |
| 2450 | .00789 | .04676 | .04027 | .02610 | .01708 | .08815 | .00000 | .01048 | .65240 | .02679 | .02690 | .05719 |
| 2500 | .00776 | .05168 | .03399 | .03477 | .01936 | .07806 | .00000 | .01136 | .64158 | .03447 | .02969 | .05728 |
| 2550 | .00763 | .05593 | .02822 | .04527 | .02132 | .06738 | .00000 | .01219 | .62972 | .04365 | .03206 | .05665 |
| 2600 | .00748 | .05944 | .02307 | .05755 | .02275 | .05646 | .00001 | .01292 | .61697 | .05437 | .03377 | .05520 |
| 2650 | .00732 | .06219 | .01859 | .07140 | .02348 | .04576 | .00001 | .01354 | .60360 | .06656 | .03465 | .05290 |
| 2700 | .00716 | .06422 | .01479 | .08637 | .02338 | .03573 | .00001 | .01400 | .58996 | .08007 | .03456 | .04975 |
| 2750 | .00700 | .06562 | .01162 | .10186 | .02243 | .02682 | .00002 | .01429 | .57647 | .09459 | .03344 | .04583 |
| 2800 | .00685 | .06652 | .00902 | .11715 | .02074 | .01932 | .00003 | .01439 | .56359 | .10971 | .03138 | .04130 |
| 2850 | .00670 | .06702 | .00694 | .13154 | .01851 | .01337 | .00004 | .01430 | .55170 | .12492 | .02858 | .03637 |
| 2900 | .00657 | .06725 | .00530 | .14448 | .01599 | .00892 | .00005 | .01403 | .54110 | .13970 | .02529 | .03131 |
| 2950 | .00646 | .06729 | .00402 | .15565 | .01344 | .00576 | .00007 | .01360 | .53196 | .15356 | .02181 | .02638 |
| 3000 | .00637 | .06723 | .00303 | .16494 | .01104 | .00362 | .00010 | .01304 | .52430 | .16614 | .01840 | .02178 |

TABLE 30.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.048785; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00000 | .70836 | .00000 | .00000 | .04751 |
| 950 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00001 | .70836 | .00000 | .00000 | .04750 |
| 1000 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00002 | .70835 | .00000 | .00000 | .04750 |
| 1050 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00003 | .70835 | .00000 | .00000 | .04749 |
| 1100 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00004 | .70834 | .00000 | .00000 | .04749 |
| 1150 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00007 | .70833 | .00000 | .00000 | .04747 |
| 1200 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00010 | .70831 | .00000 | .00000 | .04746 |
| 1250 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00000 | .00014 | .70829 | .00000 | .00001 | .04744 |
| 1300 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00000 | .00020 | .70826 | .00000 | .00002 | .04741 |
| 1350 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14187 | .00000 | .00027 | .70822 | .00000 | .00003 | .04737 |
| 1400 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14186 | .00000 | .00035 | .70817 | .00000 | .00005 | .04732 |
| 1450 | .00850 | .00000 | .09374 | .00000 | .00000 | .00000 | .14185 | .00000 | .00046 | .70811 | .00000 | .00007 | .04726 |
| 1500 | .00850 | .00001 | .09374 | .00000 | .00000 | .00000 | .14182 | .00000 | .00060 | .70804 | .00000 | .00012 | .04718 |
| 1550 | .00850 | .00001 | .09373 | .00000 | .00000 | .00001 | .14178 | .00000 | .00075 | .70794 | .00001 | .00018 | .04709 |
| 1600 | .00849 | .00003 | .09371 | .00000 | .00000 | .00001 | .14173 | .00000 | .00093 | .70783 | .00001 | .00026 | .04699 |
| 1650 | .00849 | .00005 | .09368 | .00000 | .00000 | .00002 | .14165 | .00000 | .00115 | .70769 | .00002 | .00038 | .04686 |
| 1700 | .00849 | .00009 | .09363 | .00000 | .00000 | .00004 | .14154 | .00000 | .00139 | .70751 | .00003 | .00054 | .04672 |
| 1750 | .00849 | .00016 | .09355 | .00001 | .00000 | .00007 | .14139 | .00000 | .00167 | .70729 | .00005 | .00075 | .04656 |
| 1800 | .00849 | .00028 | .09342 | .00001 | .00000 | .00011 | .14119 | .00000 | .00198 | .70702 | .00008 | .00102 | .04640 |
| 1850 | .00849 | .00046 | .09322 | .00002 | .00000 | .00017 | .14091 | .00000 | .00232 | .70667 | .00013 | .00137 | .04623 |
| 1900 | .00849 | .00074 | .09290 | .00004 | .00000 | .00027 | .14055 | .00000 | .00271 | .70624 | .00020 | .00180 | .04607 |
| 1950 | .00848 | .00116 | .09244 | .00007 | .00000 | .00040 | .14006 | .00000 | .00313 | .70568 | .00030 | .00234 | .04593 |
| 2000 | .00848 | .00177 | .09177 | .00012 | .00000 | .00059 | .13942 | .00000 | .00359 | .70497 | .00045 | .00299 | .04584 |
| 2050 | .00847 | .00263 | .09082 | .00021 | .00000 | .00085 | .13859 | .00000 | .00410 | .70407 | .00065 | .00379 | .04582 |
| 2100 | .00846 | .00382 | .08951 | .00034 | .00000 | .00120 | .13753 | .00000 | .00465 | .70291 | .00094 | .00474 | .04591 |
| 2150 | .00844 | .00541 | .08777 | .00054 | .00000 | .00165 | .13618 | .00000 | .00525 | .70144 | .00132 | .00586 | .04613 |
| 2200 | .00843 | .00746 | .08552 | .00084 | .00000 | .00224 | .13448 | .00000 | .00591 | .69961 | .00183 | .00717 | .04651 |
| 2250 | .00840 | .01003 | .08269 | .00127 | .00000 | .00297 | .13238 | .00000 | .00662 | .69733 | .00252 | .00870 | .04707 |
| 2300 | .00837 | .01316 | .07925 | .00189 | .00000 | .00388 | .12982 | .00000 | .00740 | .69456 | .00341 | .01044 | .04780 |
| 2350 | .00834 | .01682 | .07521 | .00276 | .00000 | .00497 | .12673 | .00000 | .00824 | .69124 | .00458 | .01241 | .04870 |
| 2400 | .00830 | .02097 | .07060 | .00395 | .00000 | .00625 | .12305 | .00000 | .00914 | .68731 | .00608 | .01462 | .04973 |
| 2450 | .00825 | .02552 | .06551 | .00555 | .00000 | .00772 | .11875 | .00000 | .01010 | .68274 | .00799 | .01705 | .05082 |
| 2500 | .00819 | .03034 | .06006 | .00765 | .00001 | .00937 | .11379 | .00000 | .01111 | .67752 | .01038 | .01967 | .05191 |
| 2550 | .00813 | .03528 | .05441 | .01037 | .00001 | .01119 | .10813 | .00000 | .01216 | .67160 | .01334 | .02245 | .05291 |
| 2600 | .00806 | .04020 | .04869 | .01384 | .00001 | .01315 | .10180 | .00000 | .01324 | .66500 | .01696 | .02533 | .05374 |
| 2650 | .00797 | .04494 | .04305 | .01816 | .00001 | .01518 | .09480 | .00000 | .01432 | .65771 | .02133 | .02823 | .05430 |
| 2700 | .00788 | .04937 | .03764 | .02345 | .00001 | .01723 | .08720 | .00000 | .01539 | .64973 | .02651 | .03106 | .05453 |
| 2750 | .00779 | .05339 | .03255 | .02980 | .00001 | .01921 | .07909 | .00001 | .01641 | .64110 | .03258 | .03370 | .05437 |
| 2800 | .00768 | .05692 | .02786 | .03729 | .00001 | .02102 | .07062 | .00001 | .01738 | .63185 | .03958 | .03604 | .05375 |
| 2850 | .00757 | .05992 | .02362 | .04590 | .00001 | .02254 | .06197 | .00001 | .01827 | .62207 | .04753 | .03794 | .05265 |
| 2900 | .00745 | .06239 | .01985 | .05560 | .00001 | .02368 | .05334 | .00002 | .01905 | .61186 | .05641 | .03929 | .05105 |
| 2950 | .00733 | .06434 | .01655 | .06625 | .00001 | .02435 | .04495 | .00002 | .01970 | .60136 | .06616 | .04000 | .04896 |
| 3000 | .00721 | .06583 | .01369 | .07766 | .00001 | .02448 | .03705 | .00003 | .02021 | .59074 | .07669 | .03999 | .04641 |

TABLE 30.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.048785; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00000 | .00000 | .70836 | .00000 | .00000 | .04751 |
| 950 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00001 | .00000 | .70836 | .00000 | .00000 | .04750 |
| 1000 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00002 | .00000 | .70835 | .00000 | .00000 | .04750 |
| 1050 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00003 | .00000 | .70835 | .00000 | .00000 | .04749 |
| 1100 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00004 | .00000 | .70834 | .00000 | .00000 | .04749 |
| 1150 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00007 | .00000 | .70833 | .00000 | .00000 | .04747 |
| 1200 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00010 | .00000 | .70831 | .00000 | .00000 | .04746 |
| 1250 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00014 | .00000 | .70829 | .00000 | .00000 | .04744 |
| 1300 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00000 | .00020 | .00000 | .70826 | .00000 | .00001 | .04741 |
| 1350 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00000 | .00027 | .00000 | .70822 | .00000 | .00002 | .04737 |
| 1400 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14187 | .00000 | .00035 | .00000 | .70818 | .00000 | .00003 | .04732 |
| 1450 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14187 | .00000 | .00046 | .00000 | .70812 | .00000 | .00004 | .04726 |
| 1500 | .00850 | .00000 | .09374 | .00000 | .00000 | .00000 | .14185 | .00000 | .00060 | .00000 | .70805 | .00000 | .00007 | .04719 |
| 1550 | .00850 | .00000 | .09374 | .00000 | .00000 | .00000 | .14183 | .00000 | .00075 | .00000 | .70796 | .00000 | .00010 | .04711 |
| 1600 | .00850 | .00001 | .09374 | .00000 | .00000 | .00000 | .14180 | .00000 | .00093 | .00000 | .70786 | .00000 | .00015 | .04700 |
| 1650 | .00850 | .00002 | .09373 | .00000 | .00000 | .00001 | .14176 | .00000 | .00115 | .00000 | .70774 | .00001 | .00021 | .04688 |
| 1700 | .00849 | .00003 | .09371 | .00000 | .00000 | .00001 | .14171 | .00000 | .00139 | .00000 | .70759 | .00001 | .00030 | .04675 |
| 1750 | .00849 | .00005 | .09368 | .00000 | .00000 | .00002 | .14163 | .00000 | .00167 | .00000 | .70742 | .00002 | .00042 | .04659 |
| 1800 | .00849 | .00009 | .09364 | .00000 | .00000 | .00004 | .14153 | .00000 | .00198 | .00000 | .70722 | .00003 | .00057 | .04641 |
| 1850 | .00849 | .00015 | .09357 | .00000 | .00000 | .00006 | .14140 | .00000 | .00232 | .00000 | .70697 | .00004 | .00077 | .04622 |
| 1900 | .00849 | .00024 | .09347 | .00001 | .00000 | .00009 | .14123 | .00000 | .00271 | .00000 | .70669 | .00006 | .00101 | .04601 |
| 1950 | .00849 | .00037 | .09332 | .00001 | .00000 | .00013 | .14100 | .00000 | .00313 | .00000 | .70635 | .00010 | .00132 | .04579 |
| 2000 | .00849 | .00057 | .09310 | .00002 | .00000 | .00019 | .14072 | .00000 | .00358 | .00000 | .70594 | .00014 | .00169 | .04556 |
| 2050 | .00849 | .00085 | .09278 | .00004 | .00000 | .00027 | .14035 | .00000 | .00408 | .00000 | .70545 | .00021 | .00214 | .04534 |
| 2100 | .00848 | .00126 | .09233 | .00006 | .00000 | .00039 | .13989 | .00000 | .00462 | .00000 | .70486 | .00029 | .00268 | .04514 |
| 2150 | .00848 | .00181 | .09172 | .00010 | .00000 | .00054 | .13932 | .00000 | .00520 | .00000 | .70415 | .00041 | .00331 | .04496 |
| 2200 | .00847 | .00255 | .09091 | .00015 | .00000 | .00074 | .13860 | .00000 | .00582 | .00000 | .70328 | .00057 | .00406 | .04484 |
| 2250 | .00846 | .00353 | .08983 | .00023 | .00000 | .00100 | .13773 | .00000 | .00648 | .00000 | .70224 | .00078 | .00493 | .04477 |
| 2300 | .00845 | .00480 | .08845 | .00035 | .00001 | .00133 | .13666 | .00000 | .00720 | .00000 | .70098 | .00104 | .00593 | .04480 |
| 2350 | .00844 | .00639 | .08671 | .00052 | .00001 | .00175 | .13536 | .00000 | .00796 | .00000 | .69948 | .00139 | .00707 | .04492 |
| 2400 | .00842 | .00834 | .08458 | .00075 | .00001 | .00225 | .13381 | .00000 | .00878 | .00000 | .69769 | .00183 | .00837 | .04516 |
| 2450 | .00840 | .01067 | .08202 | .00107 | .00001 | .00287 | .13198 | .00000 | .00965 | .00000 | .69558 | .00239 | .00983 | .04552 |
| 2500 | .00838 | .01341 | .07903 | .00150 | .00001 | .00359 | .12982 | .00000 | .01058 | .00000 | .69313 | .00309 | .01146 | .04600 |
| 2550 | .00835 | .01652 | .07560 | .00207 | .00001 | .00444 | .12732 | .00000 | .01157 | .00000 | .69030 | .00396 | .01327 | .04659 |
| 2600 | .00832 | .01999 | .07178 | .00281 | .00001 | .00542 | .12443 | .00000 | .01262 | .00000 | .68708 | .00503 | .01525 | .04726 |
| 2650 | .00828 | .02374 | .06762 | .00376 | .00001 | .00653 | .12116 | .00000 | .01372 | .00000 | .68345 | .00634 | .01740 | .04798 |
| 2700 | .00824 | .02773 | .06318 | .00498 | .00001 | .00777 | .11746 | .00000 | .01487 | .00000 | .67941 | .00792 | .01971 | .04872 |
| 2750 | .00819 | .03185 | .05854 | .00650 | .00001 | .00913 | .11334 | .00000 | .01606 | .00000 | .67496 | .00982 | .02215 | .04942 |
| 2800 | .00814 | .03602 | .05381 | .00838 | .00002 | .01061 | .10880 | .00000 | .01728 | .00001 | .67010 | .01208 | .02471 | .05006 |
| 2850 | .00808 | .04015 | .04906 | .01067 | .00002 | .01219 | .10382 | .00000 | .01851 | .00001 | .66484 | .01473 | .02734 | .05057 |
| 2900 | .00802 | .04416 | .04438 | .01344 | .00002 | .01384 | .09845 | .00001 | .01975 | .00001 | .65918 | .01782 | .03000 | .05093 |
| 2950 | .00796 | .04797 | .03985 | .01674 | .00002 | .01554 | .09269 | .00001 | .02098 | .00001 | .65313 | .02137 | .03264 | .05109 |
| 3000 | .00789 | .05152 | .03554 | .02062 | .00002 | .01725 | .08659 | .00001 | .02217 | .00001 | .64671 | .02543 | .03520 | .05103 |

TABLE 30.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.048785; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 1013.25 KPA (10.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00000 | .70836 | .00000 | .00000 | .04751 |
| 950 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00001 | .00000 | .70836 | .00000 | .00000 | .04750 |
| 1000 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00002 | .00000 | .70835 | .00000 | .00000 | .04750 |
| 1050 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00003 | .00000 | .70835 | .00000 | .00000 | .04749 |
| 1100 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00004 | .00000 | .70834 | .00000 | .00000 | .04748 |
| 1150 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00007 | .00000 | .70833 | .00000 | .00000 | .04747 |
| 1200 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00010 | .00000 | .70831 | .00000 | .00000 | .04746 |
| 1250 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00014 | .00000 | .70829 | .00000 | .00000 | .04743 |
| 1300 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00020 | .00000 | .70826 | .00000 | .00000 | .04741 |
| 1350 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00027 | .00000 | .70823 | .00000 | .00001 | .04737 |
| 1400 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00035 | .00000 | .70818 | .00000 | .00001 | .04732 |
| 1450 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00046 | .00000 | .70812 | .00000 | .00002 | .04727 |
| 1500 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14187 | .00060 | .00000 | .70806 | .00000 | .00004 | .04720 |
| 1550 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14186 | .00075 | .00000 | .70797 | .00000 | .00006 | .04711 |
| 1600 | .00850 | .00000 | .09374 | .00000 | .00000 | .00000 | .14184 | .00093 | .00001 | .70788 | .00000 | .00008 | .04701 |
| 1650 | .00850 | .00001 | .09374 | .00000 | .00000 | .00000 | .14182 | .00115 | .00001 | .70776 | .00000 | .00012 | .04690 |
| 1700 | .00850 | .00001 | .09373 | .00000 | .00000 | .00000 | .14179 | .00139 | .00001 | .70763 | .00000 | .00017 | .04677 |
| 1750 | .00850 | .00002 | .09372 | .00000 | .00000 | .00001 | .14175 | .00167 | .00001 | .70747 | .00001 | .00024 | .04661 |
| 1800 | .00849 | .00003 | .09371 | .00000 | .00000 | .00001 | .14170 | .00198 | .00001 | .70730 | .00001 | .00032 | .04644 |
| 1850 | .00849 | .00005 | .09369 | .00000 | .00000 | .00002 | .14163 | .00232 | .00001 | .70709 | .00001 | .00043 | .04625 |
| 1900 | .00849 | .00007 | .09365 | .00000 | .00000 | .00003 | .14155 | .00271 | .00001 | .70686 | .00002 | .00057 | .04603 |
| 1950 | .00849 | .00012 | .09360 | .00000 | .00000 | .00004 | .14143 | .00313 | .00001 | .70660 | .00003 | .00074 | .04580 |
| 2000 | .00849 | .00018 | .09353 | .00000 | .00000 | .00006 | .14130 | .00358 | .00001 | .70630 | .00004 | .00095 | .04555 |
| 2050 | .00849 | .00027 | .09343 | .00001 | .00000 | .00009 | .14112 | .00408 | .00001 | .70595 | .00007 | .00121 | .04528 |
| 2100 | .00849 | .00040 | .09328 | .00001 | .00001 | .00012 | .14090 | .00461 | .00001 | .70556 | .00009 | .00151 | .04500 |
| 2150 | .00849 | .00058 | .09308 | .00002 | .00001 | .00017 | .14064 | .00518 | .00001 | .70511 | .00013 | .00187 | .04471 |
| 2200 | .00849 | .00083 | .09281 | .00003 | .00001 | .00024 | .14032 | .00580 | .00001 | .70460 | .00018 | .00229 | .04442 |
| 2250 | .00848 | .00116 | .09244 | .00004 | .00001 | .00032 | .13992 | .00644 | .00001 | .70401 | .00024 | .00278 | .04413 |
| 2300 | .00848 | .00159 | .09196 | .00006 | .00001 | .00044 | .13945 | .00713 | .00001 | .70333 | .00033 | .00335 | .04386 |
| 2350 | .00847 | .00216 | .09134 | .00009 | .00001 | .00058 | .13889 | .00786 | .00001 | .70255 | .00043 | .00400 | .04361 |
| 2400 | .00847 | .00288 | .09055 | .00014 | .00001 | .00075 | .13822 | .00863 | .00001 | .70165 | .00057 | .00474 | .04339 |
| 2450 | .00846 | .00378 | .08956 | .00020 | .00001 | .00097 | .13742 | .00944 | .00001 | .70061 | .00074 | .00557 | .04323 |
| 2500 | .00845 | .00490 | .08835 | .00028 | .00002 | .00123 | .13650 | .01029 | .00001 | .69941 | .00095 | .00650 | .04312 |
| 2550 | .00844 | .00624 | .08688 | .00039 | .00002 | .00155 | .13541 | .01119 | .00001 | .69804 | .00120 | .00755 | .04308 |
| 2600 | .00843 | .00785 | .08513 | .00053 | .00002 | .00193 | .13416 | .01214 | .00001 | .69647 | .00152 | .00870 | .04311 |
| 2650 | .00841 | .00972 | .08309 | .00072 | .00002 | .00238 | .13272 | .01313 | .00001 | .69469 | .00190 | .00998 | .04322 |
| 2700 | .00839 | .01187 | .08074 | .00096 | .00002 | .00290 | .13108 | .01417 | .00001 | .69268 | .00237 | .01138 | .04341 |
| 2750 | .00837 | .01429 | .07810 | .00127 | .00003 | .00350 | .12923 | .01527 | .00001 | .69043 | .00292 | .01290 | .04368 |
| 2800 | .00835 | .01697 | .07516 | .00166 | .00003 | .00418 | .12714 | .01641 | .00001 | .68793 | .00358 | .01455 | .04401 |
| 2850 | .00832 | .01988 | .07197 | .00215 | .00003 | .00494 | .12482 | .01761 | .00001 | .68519 | .00436 | .01632 | .04439 |
| 2900 | .00829 | .02299 | .06854 | .00275 | .00003 | .00579 | .12225 | .01885 | .00002 | .68219 | .00528 | .01821 | .04481 |
| 2950 | .00826 | .02626 | .06492 | .00348 | .00004 | .00673 | .11942 | .02012 | .00002 | .67893 | .00636 | .02021 | .04524 |
| 3000 | .00823 | .02964 | .06117 | .00437 | .00004 | .00775 | .11633 | .02144 | .00002 | .67543 | .00761 | .02232 | .04566 |

TABLE 30.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.048785; EQUIV. RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | N2O | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00000 | .00000 | .70836 | .00000 | .00000 | .00000 | .04750 |
| 950 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00001 | .00000 | .70836 | .00000 | .00000 | .00000 | .04750 |
| 1000 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00002 | .00000 | .70835 | .00000 | .00000 | .00000 | .04750 |
| 1050 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00003 | .00000 | .70835 | .00000 | .00000 | .00000 | .04749 |
| 1100 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00004 | .00000 | .70834 | .00000 | .00000 | .00000 | .04748 |
| 1150 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00007 | .00000 | .70833 | .00000 | .00000 | .00000 | .04747 |
| 1200 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00010 | .00001 | .70831 | .00000 | .00000 | .00000 | .04745 |
| 1250 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00014 | .00001 | .70829 | .00000 | .00000 | .00000 | .04743 |
| 1300 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00020 | .00001 | .70826 | .00000 | .00000 | .00000 | .04740 |
| 1350 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14189 | .00027 | .00001 | .70823 | .00000 | .00000 | .00001 | .04737 |
| 1400 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00035 | .00001 | .70818 | .00000 | .00000 | .00001 | .04732 |
| 1450 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00046 | .00001 | .70812 | .00000 | .00000 | .00002 | .04726 |
| 1500 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14188 | .00060 | .00001 | .70806 | .00000 | .00000 | .00002 | .04719 |
| 1550 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14187 | .00075 | .00001 | .70798 | .00000 | .00000 | .00004 | .04711 |
| 1600 | .00850 | .00000 | .09375 | .00000 | .00000 | .00000 | .14186 | .00093 | .00001 | .70788 | .00000 | .00000 | .00006 | .04701 |
| 1650 | .00850 | .00000 | .09374 | .00000 | .00000 | .00000 | .14184 | .00115 | .00001 | .70777 | .00000 | .00000 | .00008 | .04690 |
| 1700 | .00850 | .00000 | .09374 | .00000 | .00000 | .00000 | .14183 | .00139 | .00001 | .70764 | .00000 | .00000 | .00011 | .04677 |
| 1750 | .00850 | .00001 | .09374 | .00000 | .00000 | .00000 | .14180 | .00167 | .00001 | .70749 | .00000 | .00000 | .00016 | .04662 |
| 1800 | .00850 | .00001 | .09373 | .00000 | .00000 | .00000 | .14177 | .00198 | .00002 | .70732 | .00000 | .00000 | .00022 | .04645 |
| 1850 | .00850 | .00002 | .09372 | .00000 | .00000 | .00001 | .14172 | .00232 | .00002 | .70713 | .00000 | .00001 | .00029 | .04626 |
| 1900 | .00849 | .00003 | .09370 | .00000 | .00000 | .00001 | .14167 | .00271 | .00002 | .70692 | .00000 | .00001 | .00038 | .04605 |
| 1950 | .00849 | .00005 | .09368 | .00000 | .00000 | .00002 | .14160 | .00313 | .00002 | .70668 | .00000 | .00001 | .00050 | .04582 |
| 2000 | .00849 | .00008 | .09365 | .00000 | .00001 | .00003 | .14151 | .00358 | .00002 | .70641 | .00000 | .00002 | .00064 | .04557 |
| 2050 | .00849 | .00012 | .09360 | .00000 | .00001 | .00004 | .14140 | .00408 | .00002 | .70611 | .00000 | .00003 | .00081 | .04529 |
| 2100 | .00849 | .00018 | .09353 | .00000 | .00001 | .00006 | .14127 | .00461 | .00002 | .70577 | .00000 | .00004 | .00101 | .04500 |
| 2150 | .00849 | .00026 | .09344 | .00001 | .00001 | .00008 | .14111 | .00518 | .00002 | .70540 | .00000 | .00006 | .00125 | .04469 |
| 2200 | .00849 | .00037 | .09331 | .00001 | .00001 | .00011 | .14091 | .00579 | .00002 | .70499 | .00000 | .00008 | .00153 | .04437 |
| 2250 | .00849 | .00052 | .09315 | .00001 | .00001 | .00015 | .14068 | .00644 | .00002 | .70453 | .00000 | .00011 | .00186 | .04403 |
| 2300 | .00849 | .00072 | .09292 | .00002 | .00001 | .00020 | .14040 | .00712 | .00002 | .70401 | .00000 | .00015 | .00224 | .04369 |
| 2350 | .00848 | .00098 | .09264 | .00003 | .00002 | .00026 | .14007 | .00784 | .00002 | .70344 | .00000 | .00019 | .00268 | .04335 |
| 2400 | .00848 | .00132 | .09226 | .00004 | .00002 | .00034 | .13968 | .00860 | .00002 | .70280 | .00000 | .00025 | .00318 | .04301 |
| 2450 | .00848 | .00174 | .09179 | .00006 | .00002 | .00044 | .13922 | .00939 | .00003 | .70208 | .00000 | .00033 | .00374 | .04268 |
| 2500 | .00847 | .00228 | .09121 | .00008 | .00002 | .00057 | .13869 | .01022 | .00003 | .70128 | .00000 | .00042 | .00436 | .04237 |
| 2550 | .00847 | .00294 | .09048 | .00012 | .00003 | .00072 | .13808 | .01108 | .00003 | .70038 | .00000 | .00053 | .00507 | .04208 |
| 2600 | .00846 | .00375 | .08960 | .00016 | .00003 | .00090 | .13737 | .01198 | .00003 | .69936 | .00000 | .00067 | .00585 | .04184 |
| 2650 | .00845 | .00472 | .08854 | .00022 | .00003 | .00112 | .13656 | .01292 | .00003 | .69823 | .00000 | .00084 | .00671 | .04163 |
| 2700 | .00844 | .00587 | .08729 | .00030 | .00003 | .00137 | .13564 | .01390 | .00003 | .69697 | .00000 | .00103 | .00765 | .04147 |
| 2750 | .00843 | .00722 | .08583 | .00039 | .00004 | .00168 | .13459 | .01491 | .00003 | .69556 | .00000 | .00127 | .00868 | .04137 |
| 2800 | .00842 | .00877 | .08414 | .00052 | .00004 | .00202 | .13341 | .01598 | .00003 | .69399 | .00001 | .00155 | .00981 | .04133 |
| 2850 | .00841 | .01053 | .08222 | .00067 | .00005 | .00242 | .13208 | .01708 | .00003 | .69226 | .00001 | .00188 | .01103 | .04134 |
| 2900 | .00839 | .01250 | .08008 | .00087 | .00005 | .00288 | .13060 | .01823 | .00003 | .69035 | .00001 | .00227 | .01234 | .04141 |
| 2950 | .00837 | .01467 | .07771 | .00111 | .00005 | .00339 | .12897 | .01942 | .00003 | .68827 | .00001 | .00273 | .01375 | .04154 |
| 3000 | .00835 | .01704 | .07512 | .00140 | .00006 | .00396 | .12716 | .02065 | .00003 | .68600 | .00001 | .00325 | .01525 | .04171 |

TABLE 30C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.048785; EQUIV.RATIO = 0.750; CHEM. EQUIV. RATIO = 0.7761;
WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 | O2 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | | |
| 200 | .00850 | .09375 | .14175 | .00000 | .00014 | .70836 | .04751 |
| 220 | .00850 | .09375 | .13964 | .00000 | .00224 | .70836 | .04751 |
| 240 | .00850 | .09375 | .11825 | .00000 | .02363 | .70836 | .04751 |
| PRESSURE = 0.10 ATM | | | | | | | |
| 200 | .00850 | .09375 | .14187 | .00000 | .00001 | .70836 | .04751 |
| 220 | .00850 | .09375 | .14166 | .00000 | .00022 | .70836 | .04751 |
| 240 | .00850 | .09375 | .13958 | .00000 | .00231 | .70836 | .04751 |
| 260 | .00850 | .09375 | .12505 | .00000 | .01684 | .70836 | .04751 |
| 280 | .00850 | .09375 | .00000 | .04923 | .09266 | .70836 | .04751 |
| PRESSURE = 1.00 ATM | | | | | | | |
| 200 | .00850 | .09375 | .14189 | .00000 | .00000 | .70836 | .04751 |
| 220 | .00850 | .09375 | .14187 | .00000 | .00002 | .70836 | .04751 |
| 240 | .00850 | .09375 | .14166 | .00000 | .00023 | .70836 | .04751 |
| 260 | .00850 | .09375 | .14023 | .00000 | .00165 | .70836 | .04751 |
| 280 | .00850 | .09375 | .00000 | .13344 | .00845 | .70836 | .04751 |
| 298 | .00850 | .09375 | .00000 | .11433 | .02756 | .70836 | .04751 |
| 300 | .00850 | .09375 | .00000 | .11103 | .03086 | .70836 | .04751 |
| 320 | .00850 | .09375 | .00000 | .04301 | .09888 | .70836 | .04751 |
| PRESSURE = 10.00 ATM | | | | | | | |
| 200 | .00850 | .09375 | .14189 | .00000 | .00000 | .70836 | .04751 |
| 220 | .00850 | .09375 | .14189 | .00000 | .00000 | .70836 | .04751 |
| 240 | .00850 | .09375 | .14187 | .00000 | .00002 | .70836 | .04751 |
| 260 | .00850 | .09375 | .14172 | .00000 | .00017 | .70836 | .04751 |
| 280 | .00850 | .09375 | .00000 | .14105 | .00084 | .70836 | .04751 |
| 298 | .00850 | .09375 | .00000 | .13921 | .00268 | .70836 | .04751 |
| 300 | .00850 | .09375 | .00000 | .13890 | .00299 | .70836 | .04751 |
| 320 | .00850 | .09375 | .00000 | .13293 | .00896 | .70836 | .04751 |
| 340 | .00850 | .09375 | .00000 | .11848 | .02341 | .70836 | .04751 |
| 360 | .00850 | .09375 | .00000 | .08667 | .05522 | .70836 | .04751 |
| 380 | .00850 | .09375 | .00000 | .01998 | .12191 | .70836 | .04751 |
| PRESSURE = 50.00 ATM | | | | | | | |
| 200 | .00850 | .09375 | .14189 | .00000 | .00000 | .70836 | .04751 |
| 220 | .00850 | .09375 | .14189 | .00000 | .00000 | .70836 | .04751 |
| 240 | .00850 | .09375 | .14188 | .00000 | .00000 | .70836 | .04751 |
| 260 | .00850 | .09375 | .14186 | .00000 | .00003 | .70836 | .04751 |
| 280 | .00850 | .09375 | .00000 | .14172 | .00017 | .70836 | .04751 |
| 298 | .00850 | .09375 | .00000 | .14135 | .00053 | .70836 | .04751 |
| 300 | .00850 | .09375 | .00000 | .14129 | .00060 | .70836 | .04751 |
| 320 | .00850 | .09375 | .00000 | .14011 | .00178 | .70836 | .04751 |
| 340 | .00850 | .09375 | .00000 | .13731 | .00458 | .70836 | .04751 |
| 360 | .00850 | .09375 | .00000 | .13138 | .01050 | .70836 | .04751 |
| 380 | .00850 | .09375 | .00000 | .11999 | .02189 | .70836 | .04751 |
| 400 | .00850 | .09375 | .00000 | .09957 | .04231 | .70836 | .04751 |
| 420 | .00850 | .09375 | .00000 | .06469 | .07720 | .70836 | .04751 |

TABLE 31.1B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.065046; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00836 | .00000 | .12289 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 950 | .00836 | .00000 | .12289 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1000 | .00836 | .00000 | .12289 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1050 | .00836 | .00000 | .12289 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1100 | .00836 | .00000 | .12289 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1150 | .00836 | .00000 | .12289 | .00000 | .00000 | .17178 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1200 | .00836 | .00001 | .12288 | .00000 | .00001 | .17178 | .00000 | .00000 | .69696 | .00000 | .00000 | .00001 |
| 1250 | .00836 | .00002 | .12287 | .00000 | .00002 | .17177 | .00000 | .00000 | .69695 | .00000 | .00000 | .00001 |
| 1300 | .00836 | .00003 | .12285 | .00000 | .00003 | .17175 | .00000 | .00000 | .69694 | .00000 | .00000 | .00003 |
| 1350 | .00836 | .00007 | .12282 | .00000 | .00005 | .17173 | .00000 | .00001 | .69692 | .00000 | .00001 | .00005 |
| 1400 | .00836 | .00012 | .12275 | .00000 | .00008 | .17168 | .00000 | .00002 | .69688 | .00000 | .00002 | .00009 |
| 1450 | .00836 | .00022 | .12265 | .00000 | .00013 | .17161 | .00000 | .00003 | .69682 | .00000 | .00003 | .00015 |
| 1500 | .00836 | .00037 | .12248 | .00000 | .00020 | .17150 | .00000 | .00004 | .69673 | .00000 | .00006 | .00025 |
| 1550 | .00835 | .00061 | .12222 | .00001 | .00031 | .17134 | .00000 | .00007 | .69659 | .00000 | .00011 | .00040 |
| 1600 | .00835 | .00097 | .12183 | .00001 | .00045 | .17111 | .00000 | .00011 | .69638 | .00000 | .00017 | .00062 |
| 1650 | .00835 | .00149 | .12126 | .00002 | .00065 | .17078 | .00000 | .00016 | .69607 | .00001 | .00028 | .00092 |
| 1700 | .00834 | .00222 | .12046 | .00004 | .00092 | .17033 | .00000 | .00023 | .69564 | .00002 | .00043 | .00135 |
| 1750 | .00834 | .00324 | .11934 | .00008 | .00128 | .16971 | .00000 | .00034 | .69505 | .00003 | .00066 | .00193 |
| 1800 | .00833 | .00461 | .11784 | .00015 | .00174 | .16888 | .00000 | .00047 | .69424 | .00006 | .00097 | .00270 |
| 1850 | .00832 | .00641 | .11587 | .00026 | .00232 | .16778 | .00000 | .00065 | .69317 | .00012 | .00141 | .00369 |
| 1900 | .00830 | .00872 | .11334 | .00044 | .00306 | .16635 | .00000 | .00088 | .69177 | .00021 | .00199 | .00495 |
| 1950 | .00828 | .01161 | .11015 | .00072 | .00396 | .16450 | .00000 | .00116 | .68997 | .00036 | .00276 | .00651 |
| 2000 | .00826 | .01514 | .10625 | .00115 | .00507 | .16216 | .00000 | .00152 | .68769 | .00061 | .00376 | .00839 |
| 2050 | .00823 | .01935 | .10157 | .00181 | .00641 | .15923 | .00000 | .00194 | .68485 | .00100 | .00501 | .01061 |
| 2100 | .00819 | .02424 | .09612 | .00277 | .00799 | .15559 | .00000 | .00245 | .68136 | .00158 | .00656 | .01315 |
| 2150 | .00814 | .02975 | .08992 | .00416 | .00985 | .15114 | .00000 | .00304 | .67715 | .00246 | .00842 | .01599 |
| 2200 | .00808 | .03579 | .08305 | .00613 | .01199 | .14576 | .00000 | .00371 | .67211 | .00371 | .01063 | .01905 |
| 2250 | .00802 | .04221 | .07565 | .00886 | .01440 | .13935 | .00000 | .00445 | .66618 | .00547 | .01316 | .02226 |
| 2300 | .00794 | .04881 | .06790 | .01256 | .01705 | .13182 | .00000 | .00527 | .65928 | .00788 | .01599 | .02550 |
| 2350 | .00785 | .05537 | .06002 | .01749 | .01990 | .12312 | .00000 | .00613 | .65133 | .01110 | .01905 | .02863 |
| 2400 | .00775 | .06165 | .05223 | .02390 | .02284 | .11326 | .00000 | .00703 | .64230 | .01530 | .02225 | .03149 |
| 2450 | .00763 | .06743 | .04474 | .03204 | .02573 | .10233 | .00000 | .00794 | .63216 | .02064 | .02544 | .03394 |
| 2500 | .00750 | .07253 | .03773 | .04210 | .02838 | .09049 | .00000 | .00884 | .62092 | .02726 | .02843 | .03582 |
| 2550 | .00736 | .07684 | .03134 | .05420 | .03055 | .07805 | .00000 | .00968 | .60866 | .03528 | .03102 | .03701 |
| 2600 | .00721 | .08028 | .02565 | .06829 | .03203 | .06542 | .00001 | .01045 | .59556 | .04474 | .03298 | .03739 |
| 2650 | .00705 | .08288 | .02070 | .08413 | .03260 | .05307 | .00001 | .01110 | .58187 | .05559 | .03410 | .03690 |
| 2700 | .00688 | .08469 | .01648 | .10127 | .03215 | .04152 | .00001 | .01161 | .56795 | .06767 | .03424 | .03553 |
| 2750 | .00672 | .08582 | .01296 | .11904 | .03065 | .03125 | .00002 | .01195 | .55423 | .08068 | .03334 | .03334 |
| 2800 | .00656 | .08642 | .01007 | .13667 | .02824 | .02259 | .00003 | .01211 | .54117 | .09423 | .03145 | .03046 |
| 2850 | .00642 | .08663 | .00775 | .15338 | .02516 | .01569 | .00004 | .01209 | .52917 | .10782 | .02876 | .02710 |
| 2900 | .00629 | .08658 | .00591 | .16851 | .02175 | .01051 | .00005 | .01189 | .51853 | .12096 | .02554 | .02348 |
| 2950 | .00618 | .08637 | .00447 | .18167 | .01831 | .00681 | .00007 | .01155 | .50941 | .13322 | .02208 | .01985 |
| 3000 | .00609 | .08610 | .00337 | .19272 | .01508 | .00429 | .00010 | .01108 | .50181 | .14427 | .01867 | .01642 |

TABLE 31.2B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.065046; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 950 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1000 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1050 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1100 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1150 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1200 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17178 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1250 | .00836 | .00001 | .12288 | .00000 | .00000 | .00001 | .17178 | .00000 | .00000 | .69696 | .00000 | .00000 | .00001 |
| 1300 | .00836 | .00002 | .12287 | .00000 | .00000 | .00001 | .17177 | .00000 | .00000 | .69695 | .00000 | .00000 | .00001 |
| 1350 | .00836 | .00003 | .12286 | .00000 | .00000 | .00002 | .17176 | .00000 | .00001 | .69694 | .00000 | .00000 | .00002 |
| 1400 | .00836 | .00006 | .12283 | .00000 | .00000 | .00004 | .17174 | .00000 | .00001 | .69692 | .00000 | .00001 | .00004 |
| 1450 | .00836 | .00010 | .12278 | .00000 | .00000 | .00006 | .17170 | .00000 | .00002 | .69689 | .00000 | .00002 | .00007 |
| 1500 | .00836 | .00018 | .12270 | .00000 | .00000 | .00010 | .17165 | .00000 | .00003 | .69685 | .00000 | .00003 | .00011 |
| 1550 | .00836 | .00029 | .12257 | .00000 | .00000 | .00014 | .17158 | .00000 | .00005 | .69678 | .00000 | .00005 | .00018 |
| 1600 | .00836 | .00046 | .12239 | .00000 | .00000 | .00021 | .17147 | .00000 | .00007 | .69668 | .00000 | .00008 | .00028 |
| 1650 | .00835 | .00070 | .12212 | .00001 | .00000 | .00031 | .17132 | .00000 | .00011 | .69653 | .00000 | .00013 | .00042 |
| 1700 | .00835 | .00105 | .12174 | .00001 | .00000 | .00043 | .17111 | .00000 | .00016 | .69632 | .00000 | .00020 | .00062 |
| 1750 | .00835 | .00154 | .12121 | .00002 | .00000 | .00060 | .17083 | .00000 | .00023 | .69604 | .00001 | .00031 | .00088 |
| 1800 | .00835 | .00220 | .12049 | .00003 | .00000 | .00082 | .17044 | .00000 | .00032 | .69565 | .00001 | .00045 | .00124 |
| 1850 | .00834 | .00308 | .11953 | .00006 | .00000 | .00110 | .16994 | .00000 | .00044 | .69513 | .00003 | .00066 | .00170 |
| 1900 | .00833 | .00422 | .11828 | .00009 | .00000 | .00144 | .16929 | .00000 | .00060 | .69446 | .00004 | .00093 | .00230 |
| 1950 | .00832 | .00568 | .11669 | .00016 | .00000 | .00188 | .16845 | .00000 | .00080 | .69359 | .00008 | .00130 | .00305 |
| 2000 | .00831 | .00750 | .11469 | .00025 | .00000 | .00240 | .16740 | .00000 | .00105 | .69250 | .00013 | .00178 | .00398 |
| 2050 | .00830 | .00974 | .11224 | .00039 | .00000 | .00305 | .16608 | .00000 | .00136 | .69113 | .00022 | .00240 | .00511 |
| 2100 | .00828 | .01244 | .10927 | .00060 | .00000 | .00382 | .16444 | .00000 | .00173 | .68944 | .00035 | .00317 | .00645 |
| 2150 | .00826 | .01563 | .10577 | .00091 | .00000 | .00473 | .16245 | .00000 | .00217 | .68740 | .00055 | .00413 | .00801 |
| 2200 | .00823 | .01932 | .10169 | .00135 | .00000 | .00580 | .16003 | .00000 | .00268 | .68494 | .00084 | .00530 | .00981 |
| 2250 | .00820 | .02350 | .09705 | .00196 | .00000 | .00705 | .15714 | .00000 | .00328 | .68204 | .00126 | .00671 | .01182 |
| 2300 | .00816 | .02816 | .09185 | .00280 | .00000 | .00848 | .15370 | .00000 | .00396 | .67865 | .00185 | .00836 | .01402 |
| 2350 | .00812 | .03322 | .08617 | .00394 | .00000 | .01011 | .14967 | .00000 | .00472 | .67472 | .00266 | .01028 | .01639 |
| 2400 | .00807 | .03860 | .08006 | .00546 | .00000 | .01194 | .14498 | .00000 | .00556 | .67023 | .00375 | .01245 | .01887 |
| 2450 | .00802 | .04420 | .07365 | .00747 | .00000 | .01398 | .13959 | .00000 | .00647 | .66515 | .00518 | .01489 | .02141 |
| 2500 | .00795 | .04988 | .06705 | .01006 | .00000 | .01619 | .13346 | .00000 | .00744 | .65944 | .00704 | .01755 | .02392 |
| 2550 | .00788 | .05551 | .06039 | .01336 | .00000 | .01857 | .12657 | .00000 | .00846 | .65309 | .00941 | .02040 | .02634 |
| 2600 | .00781 | .06094 | .05382 | .01751 | .00000 | .02106 | .11892 | .00000 | .00952 | .64609 | .01237 | .02338 | .02858 |
| 2650 | .00772 | .06603 | .04747 | .02263 | .00000 | .02360 | .11055 | .00000 | .01059 | .63842 | .01600 | .02641 | .03057 |
| 2700 | .00763 | .07069 | .04144 | .02885 | .00001 | .02610 | .10153 | .00000 | .01165 | .63010 | .02038 | .02939 | .03224 |
| 2750 | .00753 | .07482 | .03582 | .03627 | .00001 | .02845 | .09197 | .00001 | .01269 | .62114 | .02558 | .03220 | .03352 |
| 2800 | .00742 | .07838 | .03067 | .04495 | .00001 | .03054 | .08205 | .00001 | .01367 | .61159 | .03164 | .03473 | .03435 |
| 2850 | .00730 | .08132 | .02603 | .05490 | .00001 | .03224 | .07196 | .00001 | .01459 | .60152 | .03859 | .03684 | .03470 |
| 2900 | .00718 | .08367 | .02190 | .06606 | .00001 | .03342 | .06193 | .00002 | .01540 | .59105 | .04640 | .03840 | .03455 |
| 2950 | .00706 | .08546 | .01828 | .07829 | .00001 | .03400 | .05222 | .00002 | .01610 | .58031 | .05504 | .03932 | .03389 |
| 3000 | .00693 | .08673 | .01515 | .09137 | .00001 | .03389 | .04308 | .00003 | .01667 | .56947 | .06441 | .03952 | .03273 |

TABLE 31.3B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.065046; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 101.325 KPA (1.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | N | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 950 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1000 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1050 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1100 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1150 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1200 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1250 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17178 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1300 | .00836 | .00001 | .12288 | .00000 | .00000 | .00001 | .17178 | .00000 | .00000 | .69696 | .00000 | .00000 | .00001 |
| 1350 | .00836 | .00001 | .12287 | .00000 | .00000 | .00001 | .17177 | .00000 | .00000 | .69695 | .00000 | .00000 | .00001 |
| 1400 | .00836 | .00003 | .12286 | .00000 | .00000 | .00002 | .17176 | .00000 | .00001 | .69694 | .00000 | .00000 | .00002 |
| 1450 | .00836 | .00005 | .12284 | .00000 | .00000 | .00003 | .17175 | .00000 | .00001 | .69693 | .00000 | .00001 | .00003 |
| 1500 | .00836 | .00008 | .12280 | .00000 | .00000 | .00004 | .17173 | .00000 | .00002 | .69690 | .00000 | .00001 | .00005 |
| 1550 | .00836 | .00014 | .12274 | .00000 | .00000 | .00007 | .17169 | .00000 | .00003 | .69687 | .00000 | .00002 | .00008 |
| 1600 | .00836 | .00022 | .12265 | .00000 | .00000 | .00010 | .17164 | .00000 | .00005 | .69682 | .00000 | .00004 | .00013 |
| 1650 | .00836 | .00033 | .12253 | .00000 | .00000 | .00015 | .17157 | .00000 | .00007 | .69675 | .00000 | .00006 | .00019 |
| 1700 | .00836 | .00050 | .12235 | .00000 | .00000 | .00021 | .17147 | .00000 | .00011 | .69665 | .00000 | .00009 | .00028 |
| 1750 | .00835 | .00073 | .12209 | .00000 | .00000 | .00028 | .17134 | .00000 | .00015 | .69650 | .00000 | .00014 | .00040 |
| 1800 | .00835 | .00105 | .12175 | .00001 | .00000 | .00039 | .17116 | .00000 | .00022 | .69631 | .00000 | .00021 | .00056 |
| 1850 | .00835 | .00147 | .12129 | .00001 | .00000 | .00052 | .17093 | .00000 | .00030 | .69606 | .00001 | .00030 | .00077 |
| 1900 | .00835 | .00202 | .12069 | .00002 | .00000 | .00068 | .17062 | .00000 | .00040 | .69573 | .00001 | .00043 | .00104 |
| 1950 | .00834 | .00273 | .11991 | .00003 | .00000 | .00089 | .17024 | .00000 | .00054 | .69530 | .00002 | .00060 | .00139 |
| 2000 | .00834 | .00364 | .11893 | .00005 | .00000 | .00114 | .16975 | .00000 | .00071 | .69476 | .00003 | .00083 | .00182 |
| 2050 | .00833 | .00476 | .11771 | .00009 | .00000 | .00144 | .16915 | .00000 | .00092 | .69408 | .00005 | .00112 | .00236 |
| 2100 | .00832 | .00613 | .11621 | .00013 | .00000 | .00181 | .16840 | .00000 | .00118 | .69325 | .00008 | .00149 | .00300 |
| 2150 | .00831 | .00779 | .11440 | .00020 | .00000 | .00225 | .16748 | .00000 | .00149 | .69223 | .00012 | .00195 | .00377 |
| 2200 | .00830 | .00976 | .11224 | .00029 | .00000 | .00276 | .16638 | .00000 | .00186 | .69101 | .00018 | .00253 | .00468 |
| 2250 | .00828 | .01207 | .10972 | .00043 | .00000 | .00336 | .16506 | .00000 | .00230 | .68955 | .00028 | .00323 | .00573 |
| 2300 | .00827 | .01473 | .10680 | .00061 | .00000 | .00406 | .16349 | .00000 | .00280 | .68784 | .00041 | .00406 | .00692 |
| 2350 | .00825 | .01776 | .10347 | .00086 | .00000 | .00486 | .16164 | .00000 | .00338 | .68585 | .00060 | .00506 | .00827 |
| 2400 | .00822 | .02115 | .09973 | .00120 | .00000 | .00578 | .15949 | .00000 | .00404 | .68355 | .00085 | .00623 | .00976 |
| 2450 | .00820 | .02488 | .09560 | .00165 | .00000 | .00682 | .15699 | .00000 | .00477 | .68093 | .00119 | .00758 | .01138 |
| 2500 | .00816 | .02894 | .09109 | .00223 | .00000 | .00799 | .15413 | .00000 | .00559 | .67797 | .00165 | .00913 | .01312 |
| 2550 | .00813 | .03328 | .08625 | .00299 | .00000 | .00929 | .15086 | .00000 | .00648 | .67465 | .00224 | .01087 | .01495 |
| 2600 | .00809 | .03784 | .08113 | .00395 | .00001 | .01074 | .14717 | .00000 | .00744 | .67097 | .00300 | .01282 | .01684 |
| 2650 | .00805 | .04255 | .07579 | .00517 | .00001 | .01232 | .14304 | .00000 | .00848 | .66691 | .00396 | .01495 | .01877 |
| 2700 | .00800 | .04735 | .07030 | .00669 | .00001 | .01405 | .13843 | .00000 | .00957 | .66247 | .00516 | .01727 | .02068 |
| 2750 | .00795 | .05215 | .06475 | .00858 | .00001 | .01590 | .13335 | .00000 | .01071 | .65766 | .00664 | .01975 | .02255 |
| 2800 | .00790 | .05687 | .05922 | .01087 | .00001 | .01787 | .12779 | .00000 | .01189 | .65246 | .00842 | .02236 | .02433 |
| 2850 | .00784 | .06142 | .05379 | .01365 | .00001 | .01993 | .12176 | .00000 | .01309 | .64688 | .01056 | .02507 | .02599 |
| 2900 | .00777 | .06574 | .04853 | .01697 | .00001 | .02206 | .11528 | .00001 | .01431 | .64093 | .01309 | .02782 | .02748 |
| 2950 | .00770 | .06977 | .04350 | .02089 | .00001 | .02421 | .10838 | .00001 | .01552 | .63461 | .01604 | .03058 | .02878 |
| 3000 | .00763 | .07345 | .03875 | .02547 | .00002 | .02634 | .10112 | .00001 | .01671 | .62793 | .01945 | .03327 | .02985 |

TABLE 31.4B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.065046; EQUIV. RATIO $\bar{\nu}$ 1.000; CHEM. EQUIV. RATIO = 1.0000; P $\bar{\nu}$ 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | HO2 | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 950 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1000 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1050 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1100 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1150 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1200 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1250 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1300 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1350 | .00836 | .00001 | .12288 | .00000 | .00000 | .00000 | .17178 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1400 | .00836 | .00001 | .12288 | .00000 | .00000 | .00001 | .17178 | .00000 | .00000 | .69695 | .00000 | .00000 | .00001 |
| 1450 | .00836 | .00002 | .12286 | .00000 | .00000 | .00001 | .17177 | .00001 | .00000 | .69694 | .00000 | .00000 | .00001 |
| 1500 | .00836 | .00004 | .12285 | .00000 | .00000 | .00002 | .17176 | .00001 | .00000 | .69693 | .00000 | .00001 | .00002 |
| 1550 | .00836 | .00006 | .12282 | .00000 | .00000 | .00003 | .17174 | .00002 | .00000 | .69692 | .00000 | .00001 | .00004 |
| 1600 | .00836 | .00010 | .12278 | .00000 | .00000 | .00005 | .17172 | .00003 | .00000 | .69689 | .00000 | .00002 | .00006 |
| 1650 | .00836 | .00016 | .12272 | .00000 | .00000 | .00007 | .17169 | .00005 | .00000 | .69685 | .00000 | .00003 | .00008 |
| 1700 | .00836 | .00024 | .12263 | .00000 | .00000 | .00010 | .17164 | .00007 | .00000 | .69680 | .00000 | .00004 | .00012 |
| 1750 | .00836 | .00035 | .12251 | .00000 | .00000 | .00014 | .17158 | .00010 | .00000 | .69673 | .00000 | .00006 | .00018 |
| 1800 | .00836 | .00050 | .12235 | .00000 | .00000 | .00018 | .17149 | .00014 | .00000 | .69663 | .00000 | .00010 | .00025 |
| 1850 | .00835 | .00070 | .12212 | .00000 | .00000 | .00025 | .17138 | .00020 | .00000 | .69651 | .00000 | .00014 | .00034 |
| 1900 | .00835 | .00097 | .12183 | .00000 | .00000 | .00033 | .17124 | .00027 | .00000 | .69634 | .00000 | .00020 | .00046 |
| 1950 | .00835 | .00131 | .12146 | .00001 | .00000 | .00042 | .17106 | .00036 | .00000 | .69612 | .00000 | .00028 | .00062 |
| 2000 | .00835 | .00175 | .12098 | .00001 | .00000 | .00054 | .17083 | .00048 | .00000 | .69585 | .00001 | .00038 | .00081 |
| 2050 | .00835 | .00230 | .12039 | .00002 | .00000 | .00069 | .17055 | .00062 | .00000 | .69551 | .00001 | .00052 | .00106 |
| 2100 | .00834 | .00298 | .11965 | .00003 | .00000 | .00086 | .17020 | .00079 | .00000 | .69509 | .00002 | .00069 | .00135 |
| 2150 | .00834 | .00380 | .11875 | .00004 | .00000 | .00107 | .16978 | .00101 | .00000 | .69457 | .00003 | .00091 | .00171 |
| 2200 | .00833 | .00480 | .11767 | .00006 | .00000 | .00132 | .16926 | .00126 | .00000 | .69395 | .00004 | .00118 | .00213 |
| 2250 | .00832 | .00598 | .11639 | .00009 | .00000 | .00160 | .16865 | .00156 | .00000 | .69321 | .00006 | .00151 | .00263 |
| 2300 | .00831 | .00737 | .11488 | .00013 | .00000 | .00194 | .16792 | .00191 | .00000 | .69233 | .00009 | .00191 | .00321 |
| 2350 | .00831 | .00898 | .11312 | .00019 | .00000 | .00232 | .16707 | .00232 | .00000 | .69130 | .00013 | .00239 | .00387 |
| 2400 | .00829 | .01082 | .11111 | .00026 | .00000 | .00276 | .16607 | .00279 | .00000 | .69011 | .00019 | .00297 | .00462 |
| 2450 | .00828 | .01292 | .10882 | .00036 | .00000 | .00327 | .16491 | .00333 | .00000 | .68874 | .00026 | .00364 | .00547 |
| 2500 | .00827 | .01527 | .10625 | .00049 | .00000 | .00383 | .16357 | .00393 | .00000 | .68719 | .00036 | .00442 | .00641 |
| 2550 | .00825 | .01787 | .10339 | .00066 | .00000 | .00447 | .16205 | .00461 | .00000 | .68543 | .00050 | .00532 | .00745 |
| 2600 | .00823 | .02073 | .10025 | .00087 | .00001 | .00519 | .16032 | .00536 | .00000 | .68345 | .00068 | .00635 | .00856 |
| 2650 | .00821 | .02384 | .09683 | .00114 | .00001 | .00598 | .15837 | .00618 | .00000 | .68126 | .00090 | .00751 | .00976 |
| 2700 | .00818 | .02716 | .09316 | .00148 | .00001 | .00686 | .15618 | .00707 | .00000 | .67884 | .00119 | .00882 | .01104 |
| 2750 | .00816 | .03070 | .08924 | .00190 | .00001 | .00783 | .15374 | .00804 | .00000 | .67619 | .00155 | .01026 | .01236 |
| 2800 | .00813 | .03440 | .08512 | .00243 | .00001 | .00889 | .15104 | .00907 | .00000 | .67331 | .00200 | .01185 | .01374 |
| 2850 | .00810 | .03824 | .08083 | .00306 | .00002 | .01004 | .14807 | .01017 | .00000 | .67019 | .00255 | .01358 | .01514 |
| 2900 | .00807 | .04218 | .07640 | .00384 | .00002 | .01129 | .14482 | .01132 | .00001 | .66685 | .00321 | .01545 | .01655 |
| 2950 | .00803 | .04617 | .07189 | .00477 | .00002 | .01264 | .14127 | .01253 | .00001 | .66327 | .00401 | .01745 | .01795 |
| 3000 | .00799 | .05017 | .06733 | .00589 | .00002 | .01407 | .13744 | .01378 | .00001 | .65947 | .00495 | .01956 | .01932 |

TABLE 31.5B .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.065046; EQUIV. RATIO = 1.000; CHEM. EQUIV. RATIO = 1.0000; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CO | CO2 | H | H2O | H2 | H2O | NO | NO2 | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 900 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 950 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1000 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1050 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1100 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1150 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1200 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1250 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1300 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1350 | .00836 | .00000 | .12289 | .00000 | .00000 | .00000 | .17179 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1400 | .00836 | .00001 | .12288 | .00000 | .00000 | .00000 | .17178 | .00000 | .00000 | .69696 | .00000 | .00000 | .00000 |
| 1450 | .00836 | .00001 | .12288 | .00000 | .00000 | .00001 | .17178 | .00001 | .00000 | .69695 | .00000 | .00000 | .00001 |
| 1500 | .00836 | .00002 | .12286 | .00000 | .00000 | .00001 | .17177 | .00001 | .00000 | .69694 | .00000 | .00000 | .00001 |
| 1550 | .00836 | .00004 | .12285 | .00000 | .00000 | .00002 | .17176 | .00002 | .00000 | .69693 | .00000 | .00001 | .00002 |
| 1600 | .00836 | .00006 | .12282 | .00000 | .00000 | .00003 | .17175 | .00002 | .00000 | .69692 | .00000 | .00001 | .00003 |
| 1650 | .00836 | .00009 | .12279 | .00000 | .00000 | .00004 | .17173 | .00004 | .00000 | .69689 | .00000 | .00002 | .00005 |
| 1700 | .00836 | .00014 | .12273 | .00000 | .00000 | .00006 | .17170 | .00005 | .00000 | .69686 | .00000 | .00002 | .00007 |
| 1750 | .00836 | .00021 | .12266 | .00000 | .00000 | .00008 | .17166 | .00008 | .00000 | .69682 | .00000 | .00004 | .00010 |
| 1800 | .00836 | .00030 | .12256 | .00000 | .00000 | .00011 | .17161 | .00011 | .00000 | .69676 | .00000 | .00006 | .00014 |
| 1850 | .00836 | .00042 | .12243 | .00000 | .00000 | .00015 | .17155 | .00015 | .00000 | .69667 | .00000 | .00008 | .00019 |
| 1900 | .00836 | .00058 | .12226 | .00000 | .00000 | .00019 | .17146 | .00020 | .00000 | .69657 | .00000 | .00012 | .00026 |
| 1950 | .00835 | .00079 | .12203 | .00000 | .00000 | .00025 | .17136 | .00027 | .00000 | .69643 | .00000 | .00016 | .00035 |
| 2000 | .00835 | .00105 | .12175 | .00000 | .00000 | .00033 | .17122 | .00036 | .00000 | .69626 | .00000 | .00022 | .00046 |
| 2050 | .00835 | .00138 | .12139 | .00001 | .00000 | .00041 | .17105 | .00046 | .00000 | .69605 | .00000 | .00030 | .00059 |
| 2100 | .00835 | .00180 | .12094 | .00001 | .00000 | .00052 | .17085 | .00059 | .00000 | .69578 | .00001 | .00040 | .00076 |
| 2150 | .00835 | .00230 | .12039 | .00002 | .00000 | .00064 | .17060 | .00075 | .00000 | .69546 | .00001 | .00053 | .00096 |
| 2200 | .00834 | .00291 | .11973 | .00002 | .00000 | .00079 | .17030 | .00095 | .00000 | .69507 | .00001 | .00068 | .00120 |
| 2250 | .00834 | .00363 | .11894 | .00003 | .00000 | .00096 | .16993 | .00117 | .00000 | .69460 | .00002 | .00088 | .00149 |
| 2300 | .00833 | .00449 | .11801 | .00005 | .00000 | .00116 | .16951 | .00144 | .00000 | .69404 | .00003 | .00111 | .00182 |
| 2350 | .00833 | .00549 | .11692 | .00007 | .00000 | .00139 | .16900 | .00176 | .00000 | .69339 | .00004 | .00140 | .00221 |
| 2400 | .00832 | .00666 | .11566 | .00009 | .00000 | .00166 | .16841 | .00212 | .00000 | .69263 | .00006 | .00174 | .00265 |
| 2450 | .00831 | .00799 | .11421 | .00012 | .00000 | .00196 | .16773 | .00253 | .00000 | .69176 | .00009 | .00214 | .00315 |
| 2500 | .00830 | .00950 | .11256 | .00017 | .00000 | .00230 | .16694 | .00300 | .00000 | .69076 | .00012 | .00261 | .00372 |
| 2550 | .00829 | .01120 | .11071 | .00023 | .00001 | .00268 | .16605 | .00353 | .00000 | .68963 | .00017 | .00315 | .00435 |
| 2600 | .00828 | .01309 | .10864 | .00030 | .00001 | .00311 | .16502 | .00413 | .00000 | .68836 | .00023 | .00378 | .00505 |
| 2650 | .00827 | .01518 | .10636 | .00039 | .00001 | .00359 | .16387 | .00478 | .00000 | .68693 | .00031 | .00449 | .00581 |
| 2700 | .00825 | .01747 | .10385 | .00051 | .00001 | .00412 | .16258 | .00551 | .00000 | .68535 | .00041 | .00530 | .00663 |
| 2750 | .00824 | .01996 | .10113 | .00066 | .00001 | .00471 | .16113 | .00630 | .00001 | .68360 | .00054 | .00620 | .00751 |
| 2800 | .00822 | .02263 | .09820 | .00084 | .00001 | .00535 | .15952 | .00716 | .00001 | .68169 | .00070 | .00721 | .00845 |
| 2850 | .00820 | .02547 | .09507 | .00106 | .00002 | .00606 | .15774 | .00809 | .00001 | .67961 | .00090 | .00833 | .00944 |
| 2900 | .00818 | .02848 | .09175 | .00134 | .00002 | .00683 | .15579 | .00908 | .00001 | .67736 | .00114 | .00956 | .01047 |
| 2950 | .00816 | .03163 | .08827 | .00166 | .00002 | .00767 | .15365 | .01013 | .00001 | .67493 | .00144 | .01089 | .01153 |
| 3000 | .00813 | .03490 | .08464 | .00206 | .00003 | .00857 | .15132 | .01124 | .00001 | .67234 | .00179 | .01234 | .01262 |

TABLE 31C .- LOW TEMPERATURE EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A \square 0.065046; EQUIV.RATIO = 1.000; CHEM. EQUIV. RATIO \square 1.0000;
 WET AIR (W/A= 0.03)

| T K | AR | CO2 | H2O(S) | H2O(L) | H2O | N2 |
|------------------------------|--------|--------|--------|--------|--------|--------|
| PRESSURE = 0.01 ATM | | | | | | |
| 200 | .00836 | .12289 | .17166 | .00000 | .00013 | .69696 |
| 220 | .00836 | .12289 | .16962 | .00000 | .00217 | .69696 |
| 240 | .00836 | .12289 | .14898 | .00000 | .02281 | .69696 |
| PRESSURE = 0.10 ATM | | | | | | |
| 200 | .00836 | .12289 | .17178 | .00000 | .00001 | .69696 |
| 220 | .00836 | .12289 | .17157 | .00000 | .00022 | .69696 |
| 240 | .00836 | .12289 | .16956 | .00000 | .00223 | .69696 |
| 260 | .00836 | .12289 | .15553 | .00000 | .01626 | .69696 |
| 280 | .00836 | .12289 | .00000 | .08236 | .08943 | .69696 |
| PRESSURE \square 1.00 ATM | | | | | | |
| 200 | .00836 | .12289 | .17179 | .00000 | .00000 | .69696 |
| 220 | .00836 | .12289 | .17177 | .00000 | .00002 | .69696 |
| 240 | .00836 | .12289 | .17157 | .00000 | .00022 | .69696 |
| 260 | .00836 | .12289 | .17019 | .00000 | .00160 | .69696 |
| 280 | .00836 | .12289 | .00000 | .16364 | .00815 | .69696 |
| 298 | .00836 | .12289 | .00000 | .14519 | .02660 | .69696 |
| 300 | .00836 | .12289 | .00000 | .14200 | .02979 | .69696 |
| 320 | .00836 | .12289 | .00000 | .07635 | .09544 | .69696 |
| PRESSURE \square 10.00 ATM | | | | | | |
| 200 | .00836 | .12289 | .17179 | .00000 | .00000 | .69696 |
| 220 | .00836 | .12289 | .17179 | .00000 | .00000 | .69696 |
| 240 | .00836 | .12289 | .17177 | .00000 | .00002 | .69696 |
| 260 | .00836 | .12289 | .17163 | .00000 | .00016 | .69696 |
| 280 | .00836 | .12289 | .00000 | .17098 | .00081 | .69696 |
| 298 | .00836 | .12289 | .00000 | .16920 | .00259 | .69696 |
| 300 | .00836 | .12289 | .00000 | .16890 | .00289 | .69696 |
| 320 | .00836 | .12289 | .00000 | .16314 | .00865 | .69696 |
| 340 | .00836 | .12289 | .00000 | .14919 | .02259 | .69696 |
| 360 | .00836 | .12289 | .00000 | .11849 | .05330 | .69696 |
| 380 | .00836 | .12289 | .00000 | .05413 | .11766 | .69696 |
| PRESSURE = 50.00 ATM | | | | | | |
| 200 | .00836 | .12289 | .17179 | .00000 | .00000 | .69696 |
| 220 | .00836 | .12289 | .17179 | .00000 | .00000 | .69696 |
| 240 | .00836 | .12289 | .17178 | .00000 | .00000 | .69696 |
| 260 | .00836 | .12289 | .17176 | .00000 | .00003 | .69696 |
| 280 | .00836 | .12289 | .00000 | .17163 | .00016 | .69696 |
| 298 | .00836 | .12289 | .00000 | .17127 | .00052 | .69696 |
| 300 | .00836 | .12289 | .00000 | .17121 | .00058 | .69696 |
| 320 | .00836 | .12289 | .00000 | .17007 | .00172 | .69696 |
| 340 | .00836 | .12289 | .00000 | .16737 | .00442 | .69696 |
| 360 | .00836 | .12289 | .00000 | .16165 | .01014 | .69696 |
| 380 | .00836 | .12289 | .00000 | .15066 | .02113 | .69696 |
| 400 | .00836 | .12289 | .00000 | .13095 | .04084 | .69696 |
| 420 | .00836 | .12289 | .00000 | .09728 | .07451 | .69696 |

TABLE 32.1D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 210 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 220 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 230 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 240 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 250 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 260 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 270 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 280 | .00823 | .02300 | .00000 | .12811 | .00000 | .00001 | .15473 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 290 | .00823 | .02300 | .00000 | .12811 | .00000 | .00002 | .15473 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 298 | .00823 | .02299 | .00000 | .12811 | .00000 | .00003 | .15472 | .00000 | .00000 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 300 | .00823 | .02299 | .00000 | .12811 | .00000 | .00003 | .15472 | .00000 | .00000 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 310 | .00823 | .02299 | .00000 | .12812 | .00000 | .00005 | .15471 | .00000 | .00000 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 320 | .00823 | .02298 | .00000 | .12812 | .00000 | .00008 | .15469 | .00000 | .00000 | .00000 | .68589 | .00000 | .00000 | .00000 |
| 330 | .00823 | .02297 | .00000 | .12813 | .00000 | .00014 | .15466 | .00000 | .00000 | .00000 | .68588 | .00000 | .00000 | .00000 |
| 340 | .00823 | .02295 | .00000 | .12815 | .00000 | .00021 | .15462 | .00000 | .00000 | .00000 | .68585 | .00000 | .00000 | .00000 |
| 350 | .00823 | .02292 | .00000 | .12817 | .00000 | .00032 | .15455 | .00000 | .00000 | .00000 | .68581 | .00000 | .00000 | .00000 |
| 360 | .00822 | .02287 | .00000 | .12820 | .00000 | .00048 | .15446 | .00000 | .00000 | .00000 | .68576 | .00000 | .00000 | .00000 |
| 370 | .00822 | .02282 | .00000 | .12824 | .00000 | .00071 | .15433 | .00000 | .00000 | .00000 | .68568 | .00000 | .00000 | .00000 |
| 380 | .00822 | .02274 | .00000 | .12830 | .00000 | .00101 | .15415 | .00000 | .00000 | .00000 | .68558 | .00000 | .00000 | .00000 |
| 390 | .00822 | .02263 | .00000 | .12837 | .00000 | .00142 | .15392 | .00000 | .00000 | .00000 | .68543 | .00000 | .00000 | .00000 |
| 400 | .00822 | .02249 | .00000 | .12848 | .00000 | .00197 | .15360 | .00000 | .00000 | .00000 | .68525 | .00000 | .00000 | .00000 |
| 410 | .00822 | .02230 | .00000 | .12861 | .00000 | .00268 | .15319 | .00000 | .00000 | .00000 | .68500 | .00000 | .00000 | .00000 |
| 420 | .00821 | .02206 | .00000 | .12878 | .00000 | .00359 | .15266 | .00000 | .00001 | .00000 | .68469 | .00000 | .00000 | .00000 |
| 430 | .00821 | .02176 | .00001 | .12899 | .00000 | .00475 | .15200 | .00000 | .00001 | .00000 | .68429 | .00000 | .00000 | .00000 |
| 440 | .00820 | .02138 | .00001 | .12925 | .00000 | .00619 | .15117 | .00000 | .00001 | .00000 | .68379 | .00000 | .00000 | .00000 |
| 450 | .00819 | .02091 | .00002 | .12958 | .00000 | .00797 | .15014 | .00000 | .00001 | .00000 | .68318 | .00000 | .00000 | .00000 |
| 460 | .00818 | .02035 | .00003 | .12997 | .00000 | .01012 | .14890 | .00000 | .00001 | .00000 | .68244 | .00000 | .00000 | .00000 |
| 470 | .00817 | .01967 | .00004 | .13044 | .00000 | .01269 | .14743 | .00000 | .00001 | .00000 | .68155 | .00000 | .00000 | .00000 |
| 480 | .00816 | .01887 | .00007 | .13098 | .00000 | .01572 | .14569 | .00000 | .00001 | .00000 | .68051 | .00000 | .00000 | .00000 |
| 490 | .00815 | .01794 | .00011 | .13160 | .00000 | .01923 | .14367 | .00000 | .00001 | .00000 | .67929 | .00000 | .00000 | .00000 |
| 500 | .00813 | .01688 | .00016 | .13231 | .00000 | .02325 | .14138 | .00000 | .00001 | .00000 | .67789 | .00000 | .00000 | .00000 |
| 510 | .00811 | .01568 | .00023 | .13308 | .00000 | .02775 | .13881 | .00000 | .00001 | .00000 | .67632 | .00000 | .00000 | .00000 |
| 520 | .00809 | .01435 | .00034 | .13392 | .00000 | .03273 | .13598 | .00000 | .00001 | .00000 | .67458 | .00000 | .00000 | .00000 |
| 530 | .00807 | .01290 | .00048 | .13481 | .00000 | .03812 | .13293 | .00000 | .00001 | .00000 | .67268 | .00000 | .00000 | .00000 |
| 540 | .00804 | .01136 | .00068 | .13571 | .00000 | .04382 | .12972 | .00000 | .00001 | .00000 | .67066 | .00000 | .00000 | .00000 |
| 550 | .00802 | .00975 | .00093 | .13660 | .00000 | .04972 | .12642 | .00000 | .00001 | .00000 | .66855 | .00000 | .00000 | .00000 |
| 560 | .00799 | .00812 | .00125 | .13744 | .00000 | .05564 | .12314 | .00000 | .00001 | .00000 | .66641 | .00000 | .00000 | .00000 |
| 570 | .00797 | .00652 | .00165 | .13818 | .00000 | .06137 | .12000 | .00000 | .00001 | .00000 | .66431 | .00000 | .00000 | .00000 |
| 580 | .00794 | .00501 | .00213 | .13878 | .00000 | .06668 | .11714 | .00000 | .00001 | .00000 | .66232 | .00000 | .00000 | .00000 |
| 590 | .00792 | .00366 | .00267 | .13919 | .00000 | .07129 | .11470 | .00000 | .00001 | .00000 | .66055 | .00000 | .00000 | .00000 |

TABLE 32.1D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00790 | .00253 | .00327 | .13940 | .00000 | .07502 | .11280 | .00000 | .00001 | .00000 | .65907 | .00000 | .00000 | .00000 |
| 610 | .00789 | .00166 | .00389 | .13940 | .00000 | .07773 | .11150 | .00000 | .00001 | .00000 | .65793 | .00000 | .00000 | .00000 |
| 620 | .00788 | .00103 | .00453 | .13921 | .00000 | .07947 | .11076 | .00000 | .00001 | .00000 | .65711 | .00000 | .00000 | .00000 |
| 630 | .00787 | .00062 | .00516 | .13886 | .00000 | .08041 | .11049 | .00000 | .00000 | .00000 | .65658 | .00000 | .00000 | .00000 |
| 640 | .00787 | .00037 | .00579 | .13842 | .00000 | .08076 | .11056 | .00000 | .00000 | .00000 | .65624 | .00000 | .00000 | .00000 |
| 650 | .00787 | .00022 | .00642 | .13789 | .00000 | .08071 | .11085 | .00000 | .00000 | .00000 | .65604 | .00000 | .00000 | .00000 |
| 660 | .00787 | .00013 | .00707 | .13731 | .00000 | .08041 | .11130 | .00000 | .00000 | .00000 | .65592 | .00000 | .00000 | .00000 |
| 670 | .00787 | .00007 | .00772 | .13669 | .00000 | .07995 | .11184 | .00000 | .00000 | .00000 | .65585 | .00000 | .00000 | .00000 |
| 680 | .00787 | .00004 | .00839 | .13604 | .00000 | .07939 | .11245 | .00000 | .00000 | .00000 | .65581 | .00000 | .00000 | .00000 |
| 690 | .00787 | .00003 | .00908 | .13536 | .00000 | .07877 | .11310 | .00000 | .00000 | .00000 | .65579 | .00000 | .00000 | .00000 |
| 700 | .00787 | .00002 | .00979 | .13467 | .00000 | .07811 | .11378 | .00000 | .00000 | .00000 | .65578 | .00000 | .00000 | .00000 |
| 710 | .00786 | .00001 | .01051 | .13395 | .00000 | .07741 | .11448 | .00000 | .00000 | .00000 | .65577 | .00000 | .00000 | .00000 |
| 720 | .00786 | .00001 | .01124 | .13322 | .00000 | .07669 | .11521 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 730 | .00786 | .00000 | .01199 | .13247 | .00000 | .07595 | .11595 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 740 | .00786 | .00000 | .01275 | .13171 | .00000 | .07520 | .11671 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 750 | .00786 | .00000 | .01352 | .13095 | .00000 | .07444 | .11747 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 760 | .00786 | .00000 | .01429 | .13017 | .00000 | .07366 | .11825 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 770 | .00786 | .00000 | .01507 | .12939 | .00000 | .07288 | .11903 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 780 | .00786 | .00000 | .01586 | .12861 | .00000 | .07210 | .11981 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 790 | .00786 | .00000 | .01665 | .12782 | .00000 | .07131 | .12060 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 800 | .00786 | .00000 | .01743 | .12703 | .00000 | .07052 | .12139 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 810 | .00786 | .00000 | .01822 | .12624 | .00000 | .06974 | .12218 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 820 | .00786 | .00000 | .01901 | .12545 | .00000 | .06895 | .12297 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 830 | .00786 | .00000 | .01980 | .12467 | .00000 | .06816 | .12375 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 840 | .00786 | .00000 | .02058 | .12388 | .00000 | .06738 | .12453 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 850 | .00786 | .00000 | .02136 | .12311 | .00000 | .06660 | .12531 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 860 | .00786 | .00000 | .02213 | .12233 | .00000 | .06583 | .12608 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 870 | .00786 | .00000 | .02290 | .12157 | .00000 | .06506 | .12685 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 880 | .00786 | .00000 | .02366 | .12081 | .00000 | .06430 | .12761 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 890 | .00786 | .00000 | .02441 | .12006 | .00000 | .06355 | .12836 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 900 | .00786 | .00000 | .02515 | .11931 | .00000 | .06281 | .12911 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 910 | .00786 | .00000 | .02589 | .11858 | .00000 | .06207 | .12984 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 920 | .00786 | .00000 | .02662 | .11785 | .00000 | .06134 | .13057 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 930 | .00786 | .00000 | .02733 | .11713 | .00000 | .06063 | .13129 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 940 | .00786 | .00000 | .02804 | .11642 | .00000 | .05992 | .13199 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 950 | .00786 | .00000 | .02874 | .11573 | .00000 | .05922 | .13269 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 960 | .00786 | .00000 | .02943 | .11504 | .00000 | .05853 | .13338 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 970 | .00786 | .00000 | .03010 | .11436 | .00000 | .05786 | .13406 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 980 | .00786 | .00000 | .03077 | .11370 | .00000 | .05719 | .13472 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 990 | .00786 | .00000 | .03143 | .11304 | .00000 | .05653 | .13538 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |

TABLE 32.1D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00786 | .00000 | .03207 | .11239 | .00000 | .05589 | .13603 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1050 | .00786 | .00000 | .03514 | .10933 | .00000 | .05282 | .13909 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1100 | .00786 | .00000 | .03794 | .10652 | .00000 | .05002 | .14189 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1150 | .00786 | .00000 | .04049 | .10397 | .00000 | .04747 | .14444 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1200 | .00786 | .00000 | .04281 | .10166 | .00000 | .04515 | .14676 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1250 | .00786 | .00000 | .04491 | .09956 | .00000 | .04305 | .14886 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1300 | .00786 | .00000 | .04682 | .09765 | .00000 | .04114 | .15077 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1350 | .00786 | .00000 | .04855 | .09592 | .00000 | .03941 | .15250 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1400 | .00786 | .00000 | .05012 | .09434 | .00001 | .03784 | .15407 | .00000 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1450 | .00786 | .00000 | .05155 | .09291 | .00002 | .03640 | .15550 | .00000 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1500 | .00786 | .00000 | .05285 | .09161 | .00003 | .03509 | .15680 | .00000 | .00000 | .00000 | .65574 | .00000 | .00000 | .00000 |
| 1550 | .00786 | .00000 | .05404 | .09042 | .00006 | .03389 | .15798 | .00000 | .00000 | .00000 | .65573 | .00000 | .00001 | .00000 |
| 1600 | .00786 | .00000 | .05512 | .08933 | .00010 | .03279 | .15905 | .00000 | .00000 | .00000 | .65572 | .00000 | .00002 | .00000 |
| 1650 | .00786 | .00000 | .05611 | .08833 | .00016 | .03178 | .16002 | .00000 | .00000 | .00000 | .65569 | .00000 | .00004 | .00000 |
| 1700 | .00786 | .00000 | .05702 | .08742 | .00026 | .03084 | .16088 | .00000 | .00000 | .00001 | .65564 | .00000 | .00007 | .00000 |
| 1750 | .00786 | .00000 | .05785 | .08658 | .00040 | .02997 | .16162 | .00000 | .00000 | .00001 | .65557 | .00000 | .00013 | .00000 |
| 1800 | .00786 | .00000 | .05861 | .08579 | .00061 | .02916 | .16225 | .00000 | .00000 | .00003 | .65545 | .00000 | .00023 | .00001 |
| 1850 | .00786 | .00000 | .05933 | .08503 | .00090 | .02842 | .16272 | .00000 | .00000 | .00005 | .65527 | .00001 | .00039 | .00002 |
| 1900 | .00786 | .00000 | .06003 | .08428 | .00131 | .02773 | .16299 | .00000 | .00000 | .00009 | .65498 | .00002 | .00065 | .00006 |
| 1950 | .00785 | .00000 | .06075 | .08346 | .00188 | .02713 | .16299 | .00000 | .00000 | .00016 | .65454 | .00005 | .00105 | .00014 |
| 2000 | .00784 | .00000 | .06159 | .08249 | .00264 | .02665 | .16260 | .00000 | .00000 | .00028 | .65384 | .00012 | .00164 | .00031 |
| 2050 | .00783 | .00000 | .06266 | .08119 | .00366 | .02636 | .16166 | .00000 | .00000 | .00047 | .65276 | .00025 | .00251 | .00065 |
| 2100 | .00781 | .00000 | .06417 | .07935 | .00503 | .02636 | .15994 | .00000 | .00000 | .00075 | .65111 | .00049 | .00371 | .00128 |
| 2150 | .00779 | .00000 | .06631 | .07672 | .00686 | .02676 | .15716 | .00000 | .00000 | .00114 | .64867 | .00094 | .00531 | .00234 |
| 2200 | .00775 | .00000 | .06924 | .07309 | .00931 | .02767 | .15308 | .00000 | .00000 | .00165 | .64523 | .00169 | .00735 | .00394 |
| 2250 | .00770 | .00000 | .07294 | .06845 | .01260 | .02911 | .14752 | .00000 | .00000 | .00229 | .64064 | .00286 | .00980 | .00610 |
| 2300 | .00763 | .00000 | .07727 | .06292 | .01695 | .03104 | .14040 | .00000 | .00000 | .00302 | .63480 | .00461 | .01262 | .00874 |
| 2350 | .00755 | .00000 | .08196 | .05674 | .02264 | .03334 | .13173 | .00000 | .00000 | .00384 | .62768 | .00709 | .01575 | .01168 |
| 2400 | .00746 | .00000 | .08671 | .05023 | .02994 | .03586 | .12157 | .00000 | .00000 | .00472 | .61927 | .01046 | .01906 | .01472 |
| 2450 | .00734 | .00000 | .09124 | .04367 | .03912 | .03837 | .11008 | .00000 | .00000 | .00563 | .60958 | .01489 | .02241 | .01766 |
| 2500 | .00722 | .00000 | .09531 | .03730 | .05039 | .04064 | .09753 | .00000 | .00000 | .00653 | .59868 | .02051 | .02560 | .02028 |
| 2550 | .00708 | .00000 | .09874 | .03133 | .06384 | .04239 | .08426 | .00000 | .00000 | .00740 | .58669 | .02745 | .02843 | .02240 |
| 2600 | .00693 | .00000 | .10143 | .02588 | .07945 | .04335 | .07073 | .00001 | .00000 | .00819 | .57379 | .03574 | .03065 | .02386 |
| 2650 | .00677 | .00000 | .10335 | .02105 | .09695 | .04329 | .05747 | .00001 | .00000 | .00889 | .56026 | .04535 | .03206 | .02455 |
| 2700 | .00661 | .00000 | .10456 | .01687 | .11587 | .04208 | .04506 | .00001 | .00000 | .00944 | .54648 | .05610 | .03248 | .02442 |
| 2750 | .00645 | .00000 | .10516 | .01333 | .13552 | .03972 | .03399 | .00002 | .00000 | .00984 | .53290 | .06773 | .03186 | .02350 |
| 2800 | .00630 | .00000 | .10527 | .01039 | .15508 | .03635 | .02464 | .00003 | .00000 | .01006 | .51996 | .07983 | .03023 | .02187 |
| 2850 | .00615 | .00000 | .10504 | .00801 | .17370 | .03228 | .01717 | .00004 | .00000 | .01010 | .50809 | .09194 | .02777 | .01970 |
| 2900 | .00603 | .00000 | .10461 | .00611 | .19069 | .02785 | .01152 | .00005 | .00000 | .00998 | .49759 | .10360 | .02475 | .01722 |
| 2950 | .00592 | .00000 | .10409 | .00463 | .20556 | .02344 | .00748 | .00007 | .00000 | .00971 | .48861 | .11440 | .02146 | .01464 |
| 3000 | .00583 | .00000 | .10355 | .00348 | .21813 | .01931 | .00473 | .00010 | .00000 | .00933 | .48116 | .12406 | .01817 | .01214 |

TABLE 32.2D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 210 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 220 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 230 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 240 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 250 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 260 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 270 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 280 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 290 | .00823 | .02300 | .00000 | .12811 | .00000 | .00001 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 298 | .00823 | .02300 | .00000 | .12811 | .00000 | .00001 | .15473 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 300 | .00823 | .02300 | .00000 | .12811 | .00000 | .00001 | .15473 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 310 | .00823 | .02300 | .00000 | .12811 | .00000 | .00002 | .15473 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 320 | .00823 | .02299 | .00000 | .12811 | .00000 | .00003 | .15472 | .00000 | .00000 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 330 | .00823 | .02299 | .00000 | .12812 | .00000 | .00004 | .15471 | .00000 | .00000 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 340 | .00823 | .02298 | .00000 | .12812 | .00000 | .00007 | .15470 | .00000 | .00000 | .00000 | .68590 | .00000 | .00000 | .00000 |
| 350 | .00823 | .02297 | .00000 | .12813 | .00000 | .00010 | .15468 | .00000 | .00000 | .00000 | .68589 | .00000 | .00000 | .00000 |
| 360 | .00823 | .02296 | .00000 | .12814 | .00000 | .00015 | .15465 | .00000 | .00000 | .00000 | .68587 | .00000 | .00000 | .00000 |
| 370 | .00823 | .02294 | .00000 | .12815 | .00000 | .00022 | .15461 | .00000 | .00001 | .00000 | .68585 | .00000 | .00000 | .00000 |
| 380 | .00823 | .02292 | .00000 | .12817 | .00000 | .00032 | .15455 | .00000 | .00001 | .00000 | .68581 | .00000 | .00000 | .00000 |
| 390 | .00822 | .02288 | .00000 | .12820 | .00000 | .00045 | .15447 | .00000 | .00001 | .00000 | .68577 | .00000 | .00000 | .00000 |
| 400 | .00822 | .02283 | .00000 | .12823 | .00000 | .00063 | .15437 | .00000 | .00001 | .00000 | .68571 | .00000 | .00000 | .00000 |
| 410 | .00822 | .02277 | .00000 | .12827 | .00000 | .00085 | .15424 | .00000 | .00001 | .00000 | .68563 | .00000 | .00000 | .00000 |
| 420 | .00822 | .02270 | .00000 | .12833 | .00000 | .00115 | .15407 | .00000 | .00001 | .00000 | .68553 | .00000 | .00000 | .00000 |
| 430 | .00822 | .02260 | .00000 | .12840 | .00000 | .00153 | .15385 | .00000 | .00001 | .00000 | .68540 | .00000 | .00000 | .00000 |
| 440 | .00822 | .02247 | .00000 | .12848 | .00000 | .00200 | .15358 | .00000 | .00001 | .00000 | .68523 | .00000 | .00000 | .00000 |
| 450 | .00822 | .02232 | .00001 | .12859 | .00000 | .00259 | .15324 | .00000 | .00001 | .00000 | .68503 | .00000 | .00000 | .00000 |
| 460 | .00821 | .02213 | .00001 | .12872 | .00000 | .00332 | .15282 | .00000 | .00001 | .00000 | .68478 | .00000 | .00000 | .00000 |
| 470 | .00821 | .02189 | .00001 | .12888 | .00000 | .00420 | .15231 | .00000 | .00002 | .00000 | .68447 | .00000 | .00000 | .00000 |
| 480 | .00820 | .02161 | .00002 | .12908 | .00000 | .00527 | .15170 | .00000 | .00002 | .00000 | .68410 | .00000 | .00000 | .00000 |
| 490 | .00820 | .02128 | .00003 | .12930 | .00000 | .00653 | .15097 | .00000 | .00002 | .00000 | .68367 | .00000 | .00000 | .00000 |
| 500 | .00819 | .02088 | .00005 | .12957 | .00000 | .00803 | .15011 | .00000 | .00002 | .00000 | .68315 | .00000 | .00000 | .00000 |
| 510 | .00819 | .02042 | .00007 | .12987 | .00000 | .00978 | .14911 | .00000 | .00002 | .00000 | .68254 | .00000 | .00000 | .00000 |
| 520 | .00818 | .01988 | .00011 | .13022 | .00000 | .01180 | .14796 | .00000 | .00002 | .00000 | .68183 | .00000 | .00000 | .00000 |
| 530 | .00817 | .01926 | .00016 | .13061 | .00000 | .01411 | .14665 | .00000 | .00002 | .00000 | .68102 | .00000 | .00000 | .00000 |
| 540 | .00816 | .01856 | .00022 | .13105 | .00000 | .01672 | .14516 | .00000 | .00002 | .00000 | .68011 | .00000 | .00000 | .00000 |
| 550 | .00814 | .01777 | .00031 | .13152 | .00000 | .01965 | .14351 | .00000 | .00002 | .00000 | .67907 | .00000 | .00000 | .00000 |
| 560 | .00813 | .01689 | .00043 | .13203 | .00000 | .02290 | .14168 | .00000 | .00002 | .00000 | .67792 | .00000 | .00000 | .00000 |
| 570 | .00812 | .01592 | .00059 | .13256 | .00000 | .02645 | .13970 | .00000 | .00003 | .00000 | .67664 | .00000 | .00000 | .00000 |
| 580 | .00810 | .01486 | .00079 | .13311 | .00000 | .03030 | .13756 | .00000 | .00003 | .00000 | .67525 | .00000 | .00000 | .00000 |
| 590 | .00808 | .01372 | .00105 | .13366 | .00000 | .03442 | .13529 | .00000 | .00003 | .00000 | .67375 | .00000 | .00000 | .00000 |

TABLE 32.2D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00806 | .01249 | .00138 | .13420 | .00000 | .03876 | .13292 | .00000 | .00003 | .00000 | .67215 | .00000 | .00000 | .00000 |
| 610 | .00804 | .01121 | .00179 | .13471 | .00000 | .04327 | .13050 | .00000 | .00003 | .00000 | .67046 | .00000 | .00000 | .00000 |
| 620 | .00802 | .00988 | .00229 | .13516 | .00000 | .04786 | .12805 | .00000 | .00003 | .00000 | .66872 | .00000 | .00000 | .00000 |
| 630 | .00800 | .00852 | .00289 | .13552 | .00000 | .05245 | .12566 | .00000 | .00003 | .00000 | .66694 | .00000 | .00000 | .00000 |
| 640 | .00798 | .00717 | .00359 | .13578 | .00000 | .05692 | .12338 | .00000 | .00002 | .00000 | .66517 | .00000 | .00000 | .00000 |
| 650 | .00796 | .00586 | .00438 | .13592 | .00000 | .06113 | .12128 | .00000 | .00002 | .00000 | .66345 | .00000 | .00000 | .00000 |
| 660 | .00794 | .00463 | .00526 | .13591 | .00000 | .06495 | .11945 | .00000 | .00002 | .00000 | .66184 | .00000 | .00000 | .00000 |
| 670 | .00792 | .00353 | .00621 | .13575 | .00000 | .06823 | .11795 | .00000 | .00002 | .00000 | .66039 | .00000 | .00000 | .00000 |
| 680 | .00791 | .00258 | .00718 | .13545 | .00000 | .07087 | .11684 | .00000 | .00002 | .00000 | .65915 | .00000 | .00000 | .00000 |
| 690 | .00789 | .00182 | .00816 | .13502 | .00000 | .07282 | .11613 | .00000 | .00002 | .00000 | .65815 | .00000 | .00000 | .00000 |
| 700 | .00788 | .00124 | .00911 | .13448 | .00000 | .07408 | .11580 | .00000 | .00002 | .00000 | .65739 | .00000 | .00000 | .00000 |
| 710 | .00788 | .00082 | .01003 | .13385 | .00000 | .07477 | .11580 | .00000 | .00001 | .00000 | .65684 | .00000 | .00000 | .00000 |
| 720 | .00787 | .00054 | .01091 | .13318 | .00000 | .07498 | .11605 | .00000 | .00001 | .00000 | .65646 | .00000 | .00000 | .00000 |
| 730 | .00787 | .00035 | .01176 | .13246 | .00000 | .07486 | .11648 | .00000 | .00001 | .00000 | .65621 | .00000 | .00000 | .00000 |
| 740 | .00787 | .00022 | .01259 | .13171 | .00000 | .07450 | .11704 | .00000 | .00001 | .00000 | .65605 | .00000 | .00000 | .00000 |
| 750 | .00787 | .00014 | .01341 | .13095 | .00000 | .07399 | .11768 | .00000 | .00001 | .00000 | .65594 | .00000 | .00000 | .00000 |
| 760 | .00787 | .00009 | .01422 | .13018 | .00000 | .07338 | .11838 | .00000 | .00001 | .00000 | .65588 | .00000 | .00000 | .00000 |
| 770 | .00787 | .00006 | .01502 | .12940 | .00000 | .07270 | .11911 | .00000 | .00001 | .00000 | .65584 | .00000 | .00000 | .00000 |
| 780 | .00787 | .00004 | .01582 | .12861 | .00000 | .07198 | .11986 | .00000 | .00001 | .00000 | .65581 | .00000 | .00000 | .00000 |
| 790 | .00787 | .00003 | .01662 | .12782 | .00000 | .07123 | .12063 | .00000 | .00001 | .00000 | .65579 | .00000 | .00000 | .00000 |
| 800 | .00787 | .00002 | .01742 | .12703 | .00000 | .07047 | .12141 | .00000 | .00000 | .00000 | .65578 | .00000 | .00000 | .00000 |
| 810 | .00787 | .00001 | .01821 | .12624 | .00000 | .06970 | .12219 | .00000 | .00000 | .00000 | .65577 | .00000 | .00000 | .00000 |
| 820 | .00786 | .00001 | .01900 | .12546 | .00000 | .06892 | .12298 | .00000 | .00000 | .00000 | .65577 | .00000 | .00000 | .00000 |
| 830 | .00786 | .00000 | .01979 | .12467 | .00000 | .06814 | .12376 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 840 | .00786 | .00000 | .02058 | .12389 | .00000 | .06737 | .12454 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 850 | .00786 | .00000 | .02135 | .12311 | .00000 | .06659 | .12531 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 860 | .00786 | .00000 | .02213 | .12234 | .00000 | .06582 | .12609 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 870 | .00786 | .00000 | .02290 | .12157 | .00000 | .06506 | .12685 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 880 | .00786 | .00000 | .02366 | .12081 | .00000 | .06430 | .12761 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 890 | .00786 | .00000 | .02441 | .12006 | .00000 | .06355 | .12836 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 900 | .00786 | .00000 | .02515 | .11931 | .00000 | .06280 | .12911 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 910 | .00786 | .00000 | .02589 | .11858 | .00000 | .06207 | .12984 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 920 | .00786 | .00000 | .02661 | .11785 | .00000 | .06134 | .13057 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 930 | .00786 | .00000 | .02733 | .11713 | .00000 | .06063 | .13129 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 940 | .00786 | .00000 | .02804 | .11643 | .00000 | .05992 | .13199 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 950 | .00786 | .00000 | .02874 | .11573 | .00000 | .05922 | .13269 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 960 | .00786 | .00000 | .02942 | .11504 | .00000 | .05853 | .13338 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 970 | .00786 | .00000 | .03010 | .11436 | .00000 | .05786 | .13406 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 980 | .00786 | .00000 | .03077 | .11370 | .00000 | .05719 | .13472 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 990 | .00786 | .00000 | .03143 | .11304 | .00000 | .05653 | .13538 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |

TABLE 32.2D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00786 | .00000 | .03207 | .11239 | .00000 | .05589 | .13602 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1050 | .00786 | .00000 | .03514 | .10933 | .00000 | .05282 | .13909 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1100 | .00786 | .00000 | .03794 | .10653 | .00000 | .05002 | .14189 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1150 | .00786 | .00000 | .04049 | .10397 | .00000 | .04747 | .14444 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1200 | .00786 | .00000 | .04281 | .10166 | .00000 | .04515 | .14676 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1250 | .00786 | .00000 | .04491 | .09956 | .00000 | .04305 | .14886 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1300 | .00786 | .00000 | .04682 | .09765 | .00000 | .04114 | .15077 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1350 | .00786 | .00000 | .04855 | .09592 | .00000 | .03941 | .15250 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1400 | .00786 | .00000 | .05012 | .09434 | .00000 | .03784 | .15407 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1450 | .00786 | .00000 | .05155 | .09291 | .00001 | .03640 | .15551 | .00000 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1500 | .00786 | .00000 | .05286 | .09161 | .00001 | .03510 | .15681 | .00000 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1550 | .00786 | .00000 | .05405 | .09041 | .00002 | .03390 | .15800 | .00000 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1600 | .00786 | .00000 | .05514 | .08932 | .00003 | .03281 | .15908 | .00000 | .00000 | .00000 | .65574 | .00000 | .00001 | .00000 |
| 1650 | .00786 | .00000 | .05613 | .08833 | .00005 | .03180 | .16007 | .00000 | .00000 | .00000 | .65574 | .00000 | .00001 | .00000 |
| 1700 | .00786 | .00000 | .05705 | .08741 | .00008 | .03088 | .16097 | .00000 | .00000 | .00000 | .65572 | .00000 | .00002 | .00000 |
| 1750 | .00786 | .00000 | .05789 | .08656 | .00013 | .03003 | .16179 | .00000 | .00000 | .00000 | .65570 | .00000 | .00004 | .00000 |
| 1800 | .00786 | .00000 | .05866 | .08578 | .00019 | .02924 | .16252 | .00000 | .00000 | .00001 | .65566 | .00000 | .00007 | .00000 |
| 1850 | .00786 | .00000 | .05938 | .08506 | .00029 | .02851 | .16316 | .00000 | .00000 | .00002 | .65561 | .00000 | .00012 | .00000 |
| 1900 | .00786 | .00000 | .06004 | .08438 | .00042 | .02783 | .16371 | .00000 | .00000 | .00003 | .65552 | .00000 | .00021 | .00001 |
| 1950 | .00786 | .00000 | .06067 | .08372 | .00059 | .02720 | .16415 | .00000 | .00000 | .00005 | .65540 | .00001 | .00033 | .00001 |
| 2000 | .00786 | .00000 | .06128 | .08308 | .00083 | .02663 | .16446 | .00000 | .00000 | .00009 | .65521 | .00001 | .00053 | .00003 |
| 2050 | .00786 | .00000 | .06189 | .08241 | .00115 | .02611 | .16460 | .00000 | .00000 | .00015 | .65493 | .00003 | .00081 | .00007 |
| 2100 | .00785 | .00000 | .06255 | .08167 | .00157 | .02568 | .16451 | .00000 | .00000 | .00025 | .65451 | .00005 | .00122 | .00014 |
| 2150 | .00784 | .00000 | .06331 | .08078 | .00211 | .02534 | .16413 | .00000 | .00000 | .00040 | .65389 | .00010 | .00180 | .00028 |
| 2200 | .00784 | .00000 | .06428 | .07965 | .00281 | .02515 | .16334 | .00000 | .00000 | .00062 | .65299 | .00020 | .00260 | .00054 |
| 2250 | .00782 | .00000 | .06555 | .07813 | .00370 | .02517 | .16201 | .00000 | .00000 | .00093 | .65169 | .00036 | .00366 | .00098 |
| 2300 | .00780 | .00000 | .06725 | .07607 | .00485 | .02546 | .16000 | .00000 | .00000 | .00134 | .64988 | .00064 | .00502 | .00169 |
| 2350 | .00778 | .00000 | .06948 | .07336 | .00633 | .02608 | .15715 | .00000 | .00000 | .00188 | .64743 | .00108 | .00672 | .00272 |
| 2400 | .00774 | .00000 | .07228 | .06993 | .00823 | .02708 | .15335 | .00000 | .00000 | .00254 | .64424 | .00175 | .00875 | .00411 |
| 2450 | .00770 | .00000 | .07559 | .06582 | .01065 | .02846 | .14853 | .00000 | .00000 | .00332 | .64027 | .00271 | .01110 | .00585 |
| 2500 | .00765 | .00000 | .07931 | .06114 | .01373 | .03018 | .14267 | .00000 | .00000 | .00419 | .63547 | .00404 | .01374 | .00787 |
| 2550 | .00758 | .00000 | .08327 | .05605 | .01760 | .03220 | .13578 | .00000 | .00000 | .00514 | .62985 | .00582 | .01662 | .01008 |
| 2600 | .00751 | .00000 | .08729 | .05073 | .02239 | .03443 | .12790 | .00000 | .00000 | .00615 | .62342 | .00814 | .01967 | .01237 |
| 2650 | .00743 | .00000 | .09119 | .04535 | .02825 | .03675 | .11911 | .00000 | .00000 | .00719 | .61621 | .01107 | .02280 | .01463 |
| 2700 | .00734 | .00000 | .09483 | .04007 | .03530 | .03906 | .10954 | .00000 | .00000 | .00825 | .60823 | .01469 | .02592 | .01675 |
| 2750 | .00725 | .00000 | .09809 | .03501 | .04365 | .04121 | .09933 | .00001 | .00000 | .00929 | .59954 | .01907 | .02890 | .01863 |
| 2800 | .00714 | .00000 | .10089 | .03027 | .05337 | .04305 | .08869 | .00001 | .00000 | .01030 | .59020 | .02426 | .03162 | .02020 |
| 2850 | .00703 | .00000 | .10317 | .02591 | .06445 | .04444 | .07784 | .00001 | .00000 | .01124 | .58030 | .03028 | .03394 | .02137 |
| 2900 | .00691 | .00000 | .10493 | .02197 | .07685 | .04524 | .06705 | .00002 | .00000 | .01210 | .56997 | .03712 | .03574 | .02211 |
| 2950 | .00679 | .00000 | .10618 | .01846 | .09040 | .04533 | .05659 | .00002 | .00000 | .01285 | .55934 | .04474 | .03690 | .02239 |
| 3000 | .00666 | .00000 | .10696 | .01539 | .10489 | .04466 | .04675 | .00003 | .00000 | .01347 | .54861 | .05303 | .03735 | .02219 |

TABLE 32.3D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 210 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 220 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 230 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 240 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 250 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 260 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 270 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 280 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 290 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 298 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 300 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 310 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00001 | .15473 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 320 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00001 | .15473 | .00000 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 330 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00001 | .15473 | .00000 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 340 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00002 | .15472 | .00000 | .00001 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 350 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00003 | .15472 | .00000 | .00001 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 360 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00005 | .15471 | .00000 | .00001 | .00000 | .68590 | .00000 | .00000 | .00000 |
| 370 | .00823 | .02298 | .00000 | .12813 | .00000 | .00000 | .00007 | .15469 | .00000 | .00001 | .00000 | .68590 | .00000 | .00000 | .00000 |
| 380 | .00823 | .02297 | .00000 | .12813 | .00000 | .00000 | .00010 | .15467 | .00000 | .00001 | .00000 | .68589 | .00000 | .00000 | .00000 |
| 390 | .00823 | .02296 | .00000 | .12814 | .00000 | .00000 | .00014 | .15465 | .00000 | .00001 | .00000 | .68587 | .00000 | .00000 | .00000 |
| 400 | .00823 | .02294 | .00000 | .12815 | .00000 | .00000 | .00020 | .15462 | .00000 | .00001 | .00000 | .68585 | .00000 | .00000 | .00000 |
| 410 | .00823 | .02292 | .00000 | .12817 | .00000 | .00000 | .00027 | .15457 | .00000 | .00002 | .00000 | .68583 | .00000 | .00000 | .00000 |
| 420 | .00823 | .02290 | .00000 | .12818 | .00000 | .00000 | .00037 | .15452 | .00000 | .00002 | .00000 | .68579 | .00000 | .00000 | .00000 |
| 430 | .00822 | .02287 | .00000 | .12821 | .00000 | .00000 | .00049 | .15445 | .00000 | .00002 | .00000 | .68575 | .00000 | .00000 | .00000 |
| 440 | .00822 | .02283 | .00000 | .12824 | .00000 | .00000 | .00064 | .15436 | .00000 | .00002 | .00000 | .68570 | .00000 | .00000 | .00000 |
| 450 | .00822 | .02278 | .00000 | .12827 | .00000 | .00000 | .00083 | .15425 | .00000 | .00002 | .00000 | .68563 | .00000 | .00000 | .00000 |
| 460 | .00822 | .02271 | .00000 | .12831 | .00000 | .00000 | .00106 | .15411 | .00000 | .00003 | .00000 | .68555 | .00000 | .00000 | .00000 |
| 470 | .00822 | .02264 | .00000 | .12837 | .00000 | .00000 | .00135 | .15394 | .00000 | .00003 | .00000 | .68545 | .00000 | .00000 | .00000 |
| 480 | .00822 | .02254 | .00001 | .12843 | .00000 | .00000 | .00170 | .15374 | .00000 | .00003 | .00000 | .68533 | .00000 | .00000 | .00000 |
| 490 | .00822 | .02243 | .00001 | .12851 | .00000 | .00000 | .00211 | .15350 | .00000 | .00003 | .00000 | .68518 | .00000 | .00000 | .00000 |
| 500 | .00822 | .02230 | .00002 | .12860 | .00000 | .00000 | .00261 | .15321 | .00000 | .00004 | .00000 | .68501 | .00000 | .00000 | .00000 |
| 510 | .00821 | .02214 | .00002 | .12870 | .00000 | .00000 | .00320 | .15287 | .00000 | .00004 | .00000 | .68480 | .00000 | .00000 | .00000 |
| 520 | .00821 | .02196 | .00003 | .12882 | .00000 | .00000 | .00389 | .15248 | .00000 | .00004 | .00000 | .68456 | .00000 | .00000 | .00000 |
| 530 | .00821 | .02174 | .00005 | .12896 | .00000 | .00000 | .00470 | .15202 | .00000 | .00004 | .00000 | .68428 | .00000 | .00000 | .00000 |
| 540 | .00820 | .02150 | .00007 | .12912 | .00000 | .00000 | .00562 | .15149 | .00000 | .00005 | .00000 | .68396 | .00000 | .00000 | .00000 |
| 550 | .00820 | .02121 | .00010 | .12929 | .00000 | .00000 | .00669 | .15089 | .00000 | .00005 | .00000 | .68358 | .00000 | .00000 | .00000 |
| 560 | .00819 | .02088 | .00014 | .12949 | .00000 | .00000 | .00790 | .15020 | .00000 | .00005 | .00000 | .68315 | .00000 | .00000 | .00000 |
| 570 | .00819 | .02051 | .00019 | .12970 | .00000 | .00000 | .00927 | .14943 | .00000 | .00005 | .00000 | .68266 | .00000 | .00000 | .00000 |
| 580 | .00818 | .02009 | .00025 | .12993 | .00000 | .00000 | .01080 | .14857 | .00000 | .00006 | .00000 | .68211 | .00000 | .00000 | .00000 |
| 590 | .00817 | .01962 | .00034 | .13018 | .00000 | .00000 | .01252 | .14762 | .00000 | .00006 | .00000 | .68149 | .00000 | .00000 | .00000 |

TABLE 32.3D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00817 | .01909 | .00045 | .13044 | .00000 | .00000 | .01441 | .14657 | .00000 | .00006 | .00000 | .68081 | .00000 | .00000 | .00000 |
| 610 | .00816 | .01851 | .00059 | .13072 | .00000 | .00000 | .01650 | .14542 | .00000 | .00006 | .00000 | .68004 | .00000 | .00000 | .00000 |
| 620 | .00815 | .01787 | .00077 | .13100 | .00000 | .00000 | .01877 | .14418 | .00000 | .00006 | .00000 | .67920 | .00000 | .00000 | .00000 |
| 630 | .00814 | .01716 | .00100 | .13127 | .00000 | .00000 | .02124 | .14285 | .00000 | .00007 | .00000 | .67828 | .00000 | .00000 | .00000 |
| 640 | .00812 | .01640 | .00127 | .13154 | .00000 | .00000 | .02389 | .14144 | .00000 | .00007 | .00000 | .67727 | .00000 | .00000 | .00000 |
| 650 | .00811 | .01557 | .00161 | .13179 | .00000 | .00000 | .02671 | .13995 | .00000 | .00007 | .00000 | .67619 | .00000 | .00000 | .00000 |
| 660 | .00810 | .01468 | .00202 | .13202 | .00000 | .00000 | .02971 | .13839 | .00000 | .00007 | .00000 | .67502 | .00000 | .00000 | .00000 |
| 670 | .00808 | .01373 | .00251 | .13220 | .00000 | .00000 | .03285 | .13678 | .00000 | .00007 | .00000 | .67377 | .00000 | .00000 | .00000 |
| 680 | .00807 | .01272 | .00309 | .13234 | .00000 | .00000 | .03611 | .13515 | .00000 | .00007 | .00000 | .67246 | .00000 | .00000 | .00000 |
| 690 | .00805 | .01167 | .00377 | .13241 | .00000 | .00000 | .03947 | .13350 | .00000 | .00007 | .00000 | .67107 | .00000 | .00000 | .00000 |
| 700 | .00803 | .01057 | .00456 | .13240 | .00000 | .00000 | .04288 | .13186 | .00000 | .00007 | .00000 | .66963 | .00000 | .00000 | .00000 |
| 710 | .00801 | .00944 | .00545 | .13230 | .00000 | .00000 | .04629 | .13027 | .00000 | .00007 | .00000 | .66815 | .00000 | .00000 | .00000 |
| 720 | .00800 | .00830 | .00646 | .13211 | .00000 | .00000 | .04965 | .12875 | .00000 | .00007 | .00000 | .66666 | .00000 | .00000 | .00000 |
| 730 | .00798 | .00717 | .00757 | .13181 | .00000 | .00000 | .05290 | .12735 | .00000 | .00006 | .00000 | .66517 | .00000 | .00000 | .00000 |
| 740 | .00796 | .00606 | .00876 | .13141 | .00000 | .00000 | .05595 | .12609 | .00000 | .00006 | .00000 | .66371 | .00000 | .00000 | .00000 |
| 750 | .00794 | .00500 | .01002 | .13090 | .00000 | .00000 | .05874 | .12502 | .00000 | .00006 | .00000 | .66232 | .00000 | .00000 | .00000 |
| 760 | .00793 | .00402 | .01131 | .13030 | .00000 | .00000 | .06118 | .12416 | .00000 | .00006 | .00000 | .66104 | .00000 | .00000 | .00000 |
| 770 | .00791 | .00315 | .01262 | .12961 | .00000 | .00000 | .06322 | .12354 | .00000 | .00005 | .00000 | .65990 | .00000 | .00000 | .00000 |
| 780 | .00790 | .00240 | .01389 | .12887 | .00000 | .00000 | .06481 | .12316 | .00000 | .00005 | .00000 | .65892 | .00000 | .00000 | .00000 |
| 790 | .00789 | .00179 | .01512 | .12808 | .00000 | .00000 | .06594 | .12302 | .00000 | .00005 | .00000 | .65811 | .00000 | .00000 | .00000 |
| 800 | .00789 | .00130 | .01628 | .12727 | .00000 | .00000 | .06665 | .12311 | .00000 | .00004 | .00000 | .65747 | .00000 | .00000 | .00000 |
| 810 | .00788 | .00093 | .01736 | .12644 | .00000 | .00000 | .06699 | .12337 | .00000 | .00004 | .00000 | .65698 | .00000 | .00000 | .00000 |
| 820 | .00788 | .00066 | .01838 | .12562 | .00000 | .00000 | .06702 | .12379 | .00000 | .00003 | .00000 | .65662 | .00000 | .00000 | .00000 |
| 830 | .00787 | .00046 | .01934 | .12480 | .00000 | .00000 | .06682 | .12431 | .00000 | .00003 | .00000 | .65636 | .00000 | .00000 | .00000 |
| 840 | .00787 | .00032 | .02025 | .12399 | .00000 | .00000 | .06645 | .12491 | .00000 | .00003 | .00000 | .65618 | .00000 | .00000 | .00000 |
| 850 | .00787 | .00022 | .02112 | .12319 | .00000 | .00000 | .06595 | .12557 | .00000 | .00003 | .00000 | .65605 | .00000 | .00000 | .00000 |
| 860 | .00787 | .00016 | .02196 | .12240 | .00000 | .00000 | .06538 | .12626 | .00000 | .00002 | .00000 | .65596 | .00000 | .00000 | .00000 |
| 870 | .00787 | .00011 | .02277 | .12162 | .00000 | .00000 | .06474 | .12697 | .00000 | .00002 | .00000 | .65590 | .00000 | .00000 | .00000 |
| 880 | .00787 | .00008 | .02357 | .12085 | .00000 | .00000 | .06408 | .12769 | .00000 | .00002 | .00000 | .65586 | .00000 | .00000 | .00000 |
| 890 | .00787 | .00005 | .02434 | .12009 | .00000 | .00000 | .06339 | .12842 | .00000 | .00002 | .00000 | .65583 | .00000 | .00000 | .00000 |
| 900 | .00787 | .00004 | .02510 | .11934 | .00000 | .00000 | .06269 | .12914 | .00000 | .00002 | .00000 | .65581 | .00000 | .00000 | .00000 |
| 910 | .00787 | .00003 | .02585 | .11860 | .00000 | .00000 | .06198 | .12987 | .00000 | .00001 | .00000 | .65579 | .00000 | .00000 | .00000 |
| 920 | .00787 | .00002 | .02659 | .11787 | .00000 | .00000 | .06128 | .13059 | .00000 | .00001 | .00000 | .65578 | .00000 | .00000 | .00000 |
| 930 | .00787 | .00001 | .02731 | .11715 | .00000 | .00000 | .06058 | .13130 | .00000 | .00001 | .00000 | .65578 | .00000 | .00000 | .00000 |
| 940 | .00787 | .00001 | .02802 | .11644 | .00000 | .00000 | .05988 | .13200 | .00000 | .00001 | .00000 | .65577 | .00000 | .00000 | .00000 |
| 950 | .00786 | .00001 | .02872 | .11574 | .00000 | .00000 | .05919 | .13270 | .00000 | .00001 | .00000 | .65577 | .00000 | .00000 | .00000 |
| 960 | .00786 | .00001 | .02942 | .11505 | .00000 | .00000 | .05851 | .13338 | .00000 | .00001 | .00000 | .65577 | .00000 | .00000 | .00000 |
| 970 | .00786 | .00000 | .03009 | .11437 | .00000 | .00000 | .05784 | .13406 | .00000 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 980 | .00786 | .00000 | .03076 | .11370 | .00000 | .00000 | .05718 | .13472 | .00000 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 990 | .00786 | .00000 | .03142 | .11304 | .00000 | .00000 | .05652 | .13538 | .00000 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |

TABLE 32.3D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | N | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00786 | .00000 | .03207 | .11240 | .00000 | .00000 | .05588 | .13602 | .00000 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1050 | .00786 | .00000 | .03513 | .10933 | .00000 | .00000 | .05282 | .13909 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1100 | .00786 | .00000 | .03794 | .10653 | .00000 | .00000 | .05002 | .14189 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1150 | .00786 | .00000 | .04049 | .10398 | .00000 | .00000 | .04747 | .14444 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1200 | .00786 | .00000 | .04281 | .10166 | .00000 | .00000 | .04515 | .14676 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1250 | .00786 | .00000 | .04491 | .09956 | .00000 | .00000 | .04305 | .14886 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1300 | .00786 | .00000 | .04682 | .09765 | .00000 | .00000 | .04114 | .15077 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1350 | .00786 | .00000 | .04855 | .09592 | .00000 | .00000 | .03941 | .15250 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1400 | .00786 | .00000 | .05012 | .09434 | .00000 | .00000 | .03784 | .15407 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1450 | .00786 | .00000 | .05155 | .09291 | .00000 | .00000 | .03641 | .15551 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1500 | .00786 | .00000 | .05286 | .09161 | .00000 | .00000 | .03510 | .15681 | .00000 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1550 | .00786 | .00000 | .05405 | .09041 | .00001 | .00000 | .03391 | .15800 | .00000 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1600 | .00786 | .00000 | .05514 | .08932 | .00001 | .00000 | .03281 | .15909 | .00000 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1650 | .00786 | .00000 | .05614 | .08832 | .00002 | .00000 | .03181 | .16009 | .00000 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1700 | .00786 | .00000 | .05706 | .08740 | .00003 | .00000 | .03089 | .16100 | .00000 | .00000 | .00000 | .65575 | .00000 | .00001 | .00000 |
| 1750 | .00786 | .00000 | .05790 | .08656 | .00004 | .00000 | .03004 | .16184 | .00000 | .00000 | .00000 | .65574 | .00000 | .00001 | .00000 |
| 1800 | .00786 | .00000 | .05868 | .08578 | .00006 | .00000 | .02926 | .16260 | .00000 | .00000 | .00000 | .65573 | .00000 | .00002 | .00000 |
| 1850 | .00786 | .00000 | .05940 | .08506 | .00009 | .00000 | .02854 | .16330 | .00000 | .00000 | .00001 | .65571 | .00000 | .00004 | .00000 |
| 1900 | .00786 | .00000 | .06006 | .08439 | .00013 | .00000 | .02787 | .16393 | .00000 | .00000 | .00001 | .65568 | .00000 | .00007 | .00000 |
| 1950 | .00786 | .00000 | .06068 | .08377 | .00019 | .00000 | .02725 | .16449 | .00000 | .00000 | .00002 | .65565 | .00000 | .00011 | .00000 |
| 2000 | .00786 | .00000 | .06125 | .08318 | .00026 | .00000 | .02667 | .16498 | .00000 | .00000 | .00003 | .65559 | .00000 | .00017 | .00000 |
| 2050 | .00786 | .00000 | .06180 | .08261 | .00036 | .00000 | .02614 | .16540 | .00000 | .00000 | .00005 | .65551 | .00000 | .00026 | .00001 |
| 2100 | .00786 | .00000 | .06233 | .08207 | .00050 | .00000 | .02565 | .16572 | .00000 | .00000 | .00008 | .65539 | .00001 | .00039 | .00001 |
| 2150 | .00786 | .00000 | .06285 | .08151 | .00067 | .00000 | .02520 | .16595 | .00000 | .00000 | .00013 | .65522 | .00001 | .00058 | .00003 |
| 2200 | .00786 | .00000 | .06338 | .08094 | .00088 | .00000 | .02481 | .16604 | .00000 | .00000 | .00020 | .65497 | .00002 | .00084 | .00006 |
| 2250 | .00785 | .00000 | .06395 | .08030 | .00115 | .00000 | .02447 | .16598 | .00000 | .00000 | .00031 | .65463 | .00004 | .00120 | .00011 |
| 2300 | .00785 | .00000 | .06459 | .07957 | .00150 | .00000 | .02421 | .16571 | .00000 | .00000 | .00046 | .65415 | .00007 | .00169 | .00020 |
| 2350 | .00784 | .00000 | .06537 | .07867 | .00192 | .00000 | .02405 | .16518 | .00000 | .00000 | .00068 | .65349 | .00012 | .00233 | .00035 |
| 2400 | .00783 | .00000 | .06633 | .07755 | .00245 | .00000 | .02401 | .16432 | .00000 | .00000 | .00098 | .65258 | .00021 | .00315 | .00060 |
| 2450 | .00782 | .00000 | .06754 | .07611 | .00310 | .00000 | .02414 | .16304 | .00000 | .00000 | .00137 | .65136 | .00035 | .00418 | .00098 |
| 2500 | .00780 | .00000 | .06908 | .07427 | .00391 | .00000 | .02447 | .16128 | .00000 | .00000 | .00187 | .64977 | .00056 | .00546 | .00153 |
| 2550 | .00778 | .00000 | .07099 | .07198 | .00491 | .00000 | .02503 | .15896 | .00000 | .00000 | .00248 | .64773 | .00088 | .00698 | .00229 |
| 2600 | .00776 | .00000 | .07329 | .06920 | .00613 | .00000 | .02585 | .15600 | .00000 | .00000 | .00321 | .64520 | .00132 | .00876 | .00327 |
| 2650 | .00773 | .00000 | .07596 | .06596 | .00765 | .00000 | .02693 | .15239 | .00000 | .00000 | .00406 | .64216 | .00193 | .01078 | .00446 |
| 2700 | .00769 | .00000 | .07893 | .06231 | .00950 | .00000 | .02827 | .14810 | .00000 | .00000 | .00499 | .63860 | .00274 | .01303 | .00585 |
| 2750 | .00765 | .00000 | .08212 | .05833 | .01175 | .00000 | .02984 | .14313 | .00000 | .00000 | .00602 | .63452 | .00380 | .01548 | .00738 |
| 2800 | .00760 | .00000 | .08543 | .05413 | .01446 | .00001 | .03161 | .13751 | .00000 | .00000 | .00711 | .62993 | .00512 | .01809 | .00901 |
| 2850 | .00754 | .00000 | .08876 | .04981 | .01771 | .00001 | .03354 | .13126 | .00000 | .00000 | .00824 | .62485 | .00677 | .02083 | .01067 |
| 2900 | .00748 | .00000 | .09200 | .04547 | .02155 | .00001 | .03557 | .12445 | .00000 | .00000 | .00941 | .61931 | .00876 | .02365 | .01232 |
| 2950 | .00742 | .00000 | .09509 | .04119 | .02606 | .00001 | .03765 | .11711 | .00001 | .00000 | .01060 | .61332 | .01114 | .02650 | .01389 |
| 3000 | .00735 | .00000 | .09795 | .03706 | .03128 | .00001 | .03971 | .10934 | .00001 | .00000 | .01178 | .60691 | .01395 | .02930 | .01535 |

TABLE 32.4D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 210 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 220 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 230 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 240 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 250 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 260 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 270 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 280 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 290 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 298 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 300 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 310 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 320 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 330 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 340 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00001 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 350 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00001 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 360 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00002 | .15472 | .00001 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 370 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00002 | .15471 | .00002 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 380 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00003 | .15471 | .00002 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 390 | .00823 | .02298 | .00000 | .12813 | .00000 | .00000 | .00005 | .15470 | .00002 | .00000 | .68590 | .00000 | .00000 | .00000 |
| 400 | .00823 | .02298 | .00000 | .12813 | .00000 | .00000 | .00006 | .15469 | .00002 | .00000 | .68589 | .00000 | .00000 | .00000 |
| 410 | .00823 | .02297 | .00000 | .12814 | .00000 | .00000 | .00009 | .15467 | .00003 | .00000 | .68588 | .00000 | .00000 | .00000 |
| 420 | .00823 | .02296 | .00000 | .12814 | .00000 | .00000 | .00012 | .15465 | .00003 | .00000 | .68587 | .00000 | .00000 | .00000 |
| 430 | .00823 | .02295 | .00000 | .12815 | .00000 | .00000 | .00015 | .15463 | .00003 | .00000 | .68586 | .00000 | .00000 | .00000 |
| 440 | .00823 | .02293 | .00000 | .12816 | .00000 | .00000 | .00020 | .15460 | .00004 | .00000 | .68584 | .00000 | .00000 | .00000 |
| 450 | .00823 | .02292 | .00000 | .12817 | .00000 | .00000 | .00026 | .15456 | .00004 | .00000 | .68582 | .00000 | .00000 | .00000 |
| 460 | .00823 | .02290 | .00000 | .12819 | .00000 | .00000 | .00034 | .15451 | .00005 | .00000 | .68579 | .00000 | .00000 | .00000 |
| 470 | .00822 | .02287 | .00000 | .12821 | .00000 | .00000 | .00043 | .15446 | .00005 | .00000 | .68576 | .00000 | .00000 | .00000 |
| 480 | .00822 | .02284 | .00000 | .12823 | .00000 | .00000 | .00054 | .15439 | .00005 | .00000 | .68572 | .00000 | .00000 | .00000 |
| 490 | .00822 | .02280 | .00000 | .12826 | .00000 | .00000 | .00067 | .15431 | .00006 | .00000 | .68567 | .00000 | .00000 | .00000 |
| 500 | .00822 | .02276 | .00001 | .12829 | .00000 | .00000 | .00083 | .15422 | .00006 | .00000 | .68561 | .00000 | .00000 | .00000 |
| 510 | .00822 | .02271 | .00001 | .12832 | .00000 | .00000 | .00102 | .15410 | .00007 | .00000 | .68555 | .00000 | .00000 | .00000 |
| 520 | .00822 | .02265 | .00001 | .12836 | .00000 | .00000 | .00125 | .15397 | .00007 | .00000 | .68547 | .00000 | .00000 | .00000 |
| 530 | .00822 | .02257 | .00002 | .12841 | .00000 | .00000 | .00151 | .15382 | .00008 | .00000 | .68537 | .00000 | .00000 | .00000 |
| 540 | .00822 | .02249 | .00002 | .12846 | .00000 | .00000 | .00181 | .15364 | .00008 | .00000 | .68527 | .00000 | .00000 | .00000 |
| 550 | .00822 | .02239 | .00003 | .12852 | .00000 | .00000 | .00217 | .15344 | .00009 | .00000 | .68514 | .00000 | .00000 | .00000 |
| 560 | .00822 | .02228 | .00004 | .12859 | .00000 | .00000 | .00257 | .15321 | .00009 | .00000 | .68500 | .00000 | .00000 | .00000 |
| 570 | .00821 | .02216 | .00006 | .12866 | .00000 | .00000 | .00303 | .15295 | .00010 | .00000 | .68483 | .00000 | .00000 | .00000 |
| 580 | .00821 | .02201 | .00008 | .12875 | .00000 | .00000 | .00355 | .15265 | .00010 | .00000 | .68464 | .00000 | .00000 | .00000 |
| 590 | .00821 | .02185 | .00011 | .12884 | .00000 | .00000 | .00414 | .15232 | .00011 | .00000 | .68443 | .00000 | .00000 | .00000 |

TABLE 32.4D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00821 | .02167 | .00014 | .12893 | .00000 | .00000 | .00480 | .15194 | .00012 | .00000 | .68419 | .00000 | .00000 | .00000 |
| 610 | .00820 | .02146 | .00019 | .12903 | .00000 | .00000 | .00554 | .15153 | .00012 | .00000 | .68392 | .00000 | .00000 | .00000 |
| 620 | .00820 | .02123 | .00025 | .12914 | .00000 | .00000 | .00637 | .15108 | .00013 | .00000 | .68361 | .00000 | .00000 | .00000 |
| 630 | .00820 | .02097 | .00032 | .12926 | .00000 | .00000 | .00728 | .15058 | .00013 | .00000 | .68328 | .00000 | .00000 | .00000 |
| 640 | .00819 | .02068 | .00041 | .12937 | .00000 | .00000 | .00828 | .15004 | .00014 | .00000 | .68290 | .00000 | .00000 | .00000 |
| 650 | .00819 | .02036 | .00052 | .12949 | .00000 | .00000 | .00938 | .14944 | .00014 | .00000 | .68248 | .00000 | .00000 | .00000 |
| 660 | .00818 | .02001 | .00066 | .12960 | .00000 | .00000 | .01058 | .14881 | .00015 | .00000 | .68202 | .00000 | .00000 | .00000 |
| 670 | .00817 | .01962 | .00082 | .12971 | .00000 | .00000 | .01188 | .14812 | .00015 | .00000 | .68152 | .00000 | .00000 | .00000 |
| 680 | .00817 | .01920 | .00102 | .12981 | .00000 | .00000 | .01328 | .14739 | .00016 | .00000 | .68097 | .00000 | .00000 | .00000 |
| 690 | .00816 | .01874 | .00126 | .12990 | .00000 | .00000 | .01480 | .14662 | .00016 | .00000 | .68036 | .00000 | .00000 | .00000 |
| 700 | .00815 | .01824 | .00155 | .12997 | .00000 | .00000 | .01642 | .14580 | .00016 | .00000 | .67971 | .00000 | .00000 | .00000 |
| 710 | .00814 | .01770 | .00189 | .13001 | .00000 | .00000 | .01815 | .14494 | .00017 | .00000 | .67900 | .00000 | .00000 | .00000 |
| 720 | .00814 | .01712 | .00229 | .13003 | .00000 | .00000 | .01998 | .14405 | .00017 | .00000 | .67823 | .00000 | .00000 | .00000 |
| 730 | .00813 | .01649 | .00275 | .13002 | .00000 | .00000 | .02192 | .14312 | .00017 | .00000 | .67741 | .00000 | .00000 | .00000 |
| 740 | .00811 | .01581 | .00329 | .12996 | .00000 | .00000 | .02395 | .14218 | .00018 | .00000 | .67652 | .00000 | .00000 | .00000 |
| 750 | .00810 | .01510 | .00391 | .12985 | .00000 | .00000 | .02607 | .14121 | .00018 | .00000 | .67558 | .00000 | .00000 | .00000 |
| 760 | .00809 | .01433 | .00461 | .12969 | .00000 | .00000 | .02828 | .14023 | .00018 | .00000 | .67458 | .00000 | .00000 | .00000 |
| 770 | .00808 | .01353 | .00540 | .12947 | .00000 | .00000 | .03056 | .13925 | .00018 | .00000 | .67353 | .00000 | .00000 | .00000 |
| 780 | .00807 | .01269 | .00630 | .12917 | .00000 | .00000 | .03290 | .13828 | .00018 | .00000 | .67242 | .00000 | .00000 | .00000 |
| 790 | .00805 | .01181 | .00729 | .12881 | .00000 | .00000 | .03527 | .13732 | .00018 | .00000 | .67127 | .00000 | .00000 | .00000 |
| 800 | .00804 | .01089 | .00838 | .12837 | .00000 | .00000 | .03767 | .13640 | .00018 | .00000 | .67007 | .00000 | .00000 | .00000 |
| 810 | .00802 | .00996 | .00956 | .12785 | .00000 | .00000 | .04007 | .13552 | .00018 | .00000 | .66884 | .00000 | .00000 | .00000 |
| 820 | .00801 | .00901 | .01084 | .12725 | .00000 | .00000 | .04243 | .13469 | .00018 | .00000 | .66760 | .00000 | .00000 | .00000 |
| 830 | .00799 | .00805 | .01219 | .12658 | .00000 | .00000 | .04474 | .13394 | .00017 | .00000 | .66634 | .00000 | .00000 | .00000 |
| 840 | .00798 | .00710 | .01361 | .12583 | .00000 | .00000 | .04695 | .13326 | .00017 | .00000 | .66510 | .00000 | .00000 | .00000 |
| 850 | .00796 | .00618 | .01508 | .12502 | .00000 | .00000 | .04903 | .13269 | .00017 | .00000 | .66388 | .00000 | .00000 | .00000 |
| 860 | .00795 | .00529 | .01657 | .12415 | .00000 | .00000 | .05094 | .13222 | .00016 | .00000 | .66272 | .00000 | .00000 | .00000 |
| 870 | .00794 | .00445 | .01807 | .12325 | .00000 | .00000 | .05265 | .13187 | .00016 | .00000 | .66162 | .00000 | .00000 | .00000 |
| 880 | .00792 | .00368 | .01954 | .12232 | .00000 | .00000 | .05412 | .13165 | .00015 | .00000 | .66061 | .00000 | .00000 | .00000 |
| 890 | .00791 | .00300 | .02097 | .12139 | .00000 | .00000 | .05534 | .13155 | .00014 | .00000 | .65971 | .00000 | .00000 | .00000 |
| 900 | .00790 | .00240 | .02233 | .12045 | .00000 | .00000 | .05628 | .13159 | .00013 | .00000 | .65892 | .00000 | .00000 | .00000 |
| 910 | .00790 | .00189 | .02361 | .11954 | .00000 | .00000 | .05696 | .13174 | .00013 | .00000 | .65825 | .00000 | .00000 | .00000 |
| 920 | .00789 | .00147 | .02480 | .11864 | .00000 | .00000 | .05739 | .13200 | .00012 | .00000 | .65770 | .00000 | .00000 | .00000 |
| 930 | .00788 | .00112 | .02590 | .11778 | .00000 | .00000 | .05760 | .13235 | .00011 | .00000 | .65725 | .00000 | .00000 | .00000 |
| 940 | .00788 | .00086 | .02692 | .11695 | .00000 | .00000 | .05762 | .13278 | .00010 | .00000 | .65690 | .00000 | .00000 | .00000 |
| 950 | .00788 | .00065 | .02787 | .11615 | .00000 | .00000 | .05748 | .13327 | .00009 | .00000 | .65662 | .00000 | .00000 | .00000 |
| 960 | .00787 | .00049 | .02876 | .11537 | .00000 | .00000 | .05722 | .13380 | .00009 | .00000 | .65641 | .00000 | .00000 | .00000 |
| 970 | .00787 | .00037 | .02959 | .11463 | .00000 | .00000 | .05686 | .13436 | .00008 | .00000 | .65625 | .00000 | .00000 | .00000 |
| 980 | .00787 | .00028 | .03037 | .11391 | .00000 | .00000 | .05643 | .13494 | .00007 | .00000 | .65613 | .00000 | .00000 | .00000 |
| 990 | .00787 | .00021 | .03112 | .11321 | .00000 | .00000 | .05596 | .13553 | .00007 | .00000 | .65604 | .00000 | .00000 | .00000 |

TABLE 32.4D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H2O | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00787 | .00016 | .03183 | .11253 | .00000 | .00000 | .05545 | .13613 | .00006 | .00000 | .65597 | .00000 | .00000 | .00000 |
| 1050 | .00787 | .00004 | .03506 | .10938 | .00000 | .00000 | .05269 | .13911 | .00004 | .00000 | .65582 | .00000 | .00000 | .00000 |
| 1100 | .00787 | .00001 | .03791 | .10655 | .00000 | .00000 | .04997 | .14189 | .00003 | .00000 | .65578 | .00000 | .00000 | .00000 |
| 1150 | .00787 | .00000 | .04048 | .10399 | .00000 | .00000 | .04744 | .14444 | .00002 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1200 | .00786 | .00000 | .04280 | .10167 | .00000 | .00000 | .04514 | .14676 | .00002 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1250 | .00786 | .00000 | .04490 | .09956 | .00000 | .00000 | .04304 | .14886 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1300 | .00786 | .00000 | .04681 | .09765 | .00000 | .00000 | .04114 | .15077 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1350 | .00786 | .00000 | .04854 | .09592 | .00000 | .00000 | .03941 | .15250 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1400 | .00786 | .00000 | .05012 | .09435 | .00000 | .00000 | .03783 | .15407 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1450 | .00786 | .00000 | .05155 | .09291 | .00000 | .00000 | .03640 | .15551 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1500 | .00786 | .00000 | .05286 | .09161 | .00000 | .00000 | .03510 | .15681 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1550 | .00786 | .00000 | .05405 | .09041 | .00000 | .00000 | .03390 | .15800 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1600 | .00786 | .00000 | .05514 | .08932 | .00000 | .00000 | .03281 | .15910 | .00000 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1650 | .00786 | .00000 | .05614 | .08832 | .00001 | .00000 | .03181 | .16009 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1700 | .00786 | .00000 | .05706 | .08740 | .00001 | .00000 | .03089 | .16101 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1750 | .00786 | .00000 | .05790 | .08656 | .00001 | .00000 | .03005 | .16185 | .00000 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1800 | .00786 | .00000 | .05868 | .08578 | .00002 | .00000 | .02927 | .16263 | .00000 | .00000 | .65575 | .00000 | .00001 | .00000 |
| 1850 | .00786 | .00000 | .05940 | .08506 | .00003 | .00000 | .02855 | .16334 | .00000 | .00000 | .65574 | .00000 | .00001 | .00000 |
| 1900 | .00786 | .00000 | .06007 | .08439 | .00004 | .00000 | .02788 | .16399 | .00000 | .00000 | .65573 | .00000 | .00002 | .00000 |
| 1950 | .00786 | .00000 | .06068 | .08378 | .00006 | .00000 | .02726 | .16459 | .00000 | .00001 | .65572 | .00000 | .00003 | .00000 |
| 2000 | .00786 | .00000 | .06126 | .08320 | .00008 | .00000 | .02669 | .16514 | .00000 | .00001 | .65570 | .00000 | .00005 | .00000 |
| 2050 | .00786 | .00000 | .06179 | .08266 | .00012 | .00000 | .02616 | .16564 | .00000 | .00002 | .65568 | .00000 | .00008 | .00000 |
| 2100 | .00786 | .00000 | .06229 | .08215 | .00016 | .00000 | .02566 | .16608 | .00000 | .00003 | .65564 | .00000 | .00012 | .00000 |
| 2150 | .00786 | .00000 | .06277 | .08166 | .00021 | .00000 | .02521 | .16647 | .00000 | .00004 | .65559 | .00000 | .00018 | .00000 |
| 2200 | .00786 | .00000 | .06322 | .08120 | .00028 | .00000 | .02478 | .16680 | .00000 | .00006 | .65552 | .00000 | .00027 | .00001 |
| 2250 | .00786 | .00000 | .06366 | .08074 | .00036 | .00000 | .02439 | .16706 | .00000 | .00010 | .65542 | .00000 | .00038 | .00001 |
| 2300 | .00786 | .00000 | .06410 | .08028 | .00047 | .00000 | .02404 | .16725 | .00000 | .00015 | .65528 | .00001 | .00054 | .00002 |
| 2350 | .00786 | .00000 | .06455 | .07980 | .00060 | .00000 | .02372 | .16735 | .00000 | .00022 | .65510 | .00001 | .00075 | .00004 |
| 2400 | .00786 | .00000 | .06502 | .07928 | .00077 | .00000 | .02345 | .16735 | .00000 | .00032 | .65484 | .00002 | .00103 | .00007 |
| 2450 | .00785 | .00000 | .06553 | .07871 | .00096 | .00000 | .02323 | .16722 | .00000 | .00046 | .65451 | .00004 | .00138 | .00011 |
| 2500 | .00785 | .00000 | .06612 | .07805 | .00120 | .00000 | .02306 | .16693 | .00000 | .00065 | .65406 | .00006 | .00184 | .00018 |
| 2550 | .00784 | .00000 | .06680 | .07726 | .00149 | .00000 | .02297 | .16645 | .00000 | .00090 | .65347 | .00010 | .00241 | .00030 |
| 2600 | .00784 | .00000 | .06762 | .07631 | .00183 | .00000 | .02297 | .16575 | .00000 | .00122 | .65271 | .00016 | .00312 | .00047 |
| 2650 | .00783 | .00000 | .06861 | .07515 | .00224 | .00000 | .02308 | .16478 | .00000 | .00163 | .65174 | .00024 | .00398 | .00071 |
| 2700 | .00781 | .00000 | .06981 | .07373 | .00273 | .00000 | .02332 | .16350 | .00000 | .00213 | .65053 | .00037 | .00501 | .00105 |
| 2750 | .00780 | .00000 | .07125 | .07203 | .00331 | .00000 | .02371 | .16188 | .00000 | .00274 | .64903 | .00054 | .00621 | .00149 |
| 2800 | .00778 | .00000 | .07295 | .07002 | .00401 | .00000 | .02426 | .15986 | .00000 | .00345 | .64723 | .00078 | .00759 | .00207 |
| 2850 | .00776 | .00000 | .07490 | .06769 | .00483 | .00000 | .02498 | .15745 | .00000 | .00427 | .64511 | .00109 | .00916 | .00277 |
| 2900 | .00774 | .00000 | .07708 | .06506 | .00581 | .00001 | .02588 | .15460 | .00000 | .00518 | .64265 | .00150 | .01090 | .00359 |
| 2950 | .00771 | .00000 | .07948 | .06217 | .00697 | .00001 | .02695 | .15133 | .00000 | .00618 | .63986 | .00201 | .01280 | .00453 |
| 3000 | .00768 | .00000 | .08203 | .05905 | .00833 | .00001 | .02818 | .14764 | .00000 | .00726 | .63675 | .00265 | .01485 | .00556 |

TABLE 32.5D .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 210 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 220 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 230 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 240 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 250 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 260 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 270 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 280 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00000 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 290 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15474 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 298 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 300 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 310 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 320 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 330 | .00823 | .02300 | .00000 | .12811 | .00000 | .00000 | .00000 | .15473 | .00001 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 340 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00000 | .15473 | .00002 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 350 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00000 | .15472 | .00002 | .00000 | .68592 | .00000 | .00000 | .00000 |
| 360 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00001 | .15472 | .00002 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 370 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00001 | .15472 | .00003 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 380 | .00823 | .02299 | .00000 | .12812 | .00000 | .00000 | .00001 | .15471 | .00003 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 390 | .00823 | .02298 | .00000 | .12813 | .00000 | .00000 | .00002 | .15470 | .00003 | .00000 | .68591 | .00000 | .00000 | .00000 |
| 400 | .00823 | .02298 | .00000 | .12813 | .00000 | .00000 | .00003 | .15470 | .00004 | .00000 | .68590 | .00000 | .00000 | .00000 |
| 410 | .00823 | .02298 | .00000 | .12813 | .00000 | .00000 | .00004 | .15469 | .00004 | .00000 | .68590 | .00000 | .00000 | .00000 |
| 420 | .00823 | .02297 | .00000 | .12814 | .00000 | .00000 | .00005 | .15468 | .00005 | .00000 | .68589 | .00000 | .00000 | .00000 |
| 430 | .00823 | .02296 | .00000 | .12814 | .00000 | .00000 | .00007 | .15466 | .00005 | .00000 | .68588 | .00000 | .00000 | .00000 |
| 440 | .00823 | .02296 | .00000 | .12815 | .00000 | .00000 | .00009 | .15465 | .00006 | .00000 | .68587 | .00000 | .00000 | .00000 |
| 450 | .00823 | .02295 | .00000 | .12816 | .00000 | .00000 | .00012 | .15463 | .00006 | .00000 | .68586 | .00000 | .00000 | .00000 |
| 460 | .00823 | .02294 | .00000 | .12816 | .00000 | .00000 | .00015 | .15460 | .00007 | .00000 | .68585 | .00000 | .00000 | .00000 |
| 470 | .00823 | .02292 | .00000 | .12817 | .00000 | .00000 | .00019 | .15458 | .00008 | .00000 | .68583 | .00000 | .00000 | .00000 |
| 480 | .00823 | .02291 | .00000 | .12819 | .00000 | .00000 | .00024 | .15454 | .00008 | .00000 | .68581 | .00000 | .00000 | .00000 |
| 490 | .00823 | .02289 | .00000 | .12820 | .00000 | .00000 | .00030 | .15450 | .00009 | .00000 | .68579 | .00000 | .00000 | .00000 |
| 500 | .00823 | .02287 | .00000 | .12822 | .00000 | .00000 | .00037 | .15446 | .00010 | .00000 | .68576 | .00000 | .00000 | .00000 |
| 510 | .00822 | .02284 | .00000 | .12823 | .00000 | .00000 | .00046 | .15440 | .00010 | .00000 | .68573 | .00000 | .00000 | .00000 |
| 520 | .00822 | .02281 | .00000 | .12825 | .00000 | .00000 | .00056 | .15434 | .00011 | .00000 | .68569 | .00000 | .00000 | .00000 |
| 530 | .00822 | .02278 | .00001 | .12828 | .00000 | .00000 | .00068 | .15427 | .00012 | .00000 | .68565 | .00000 | .00000 | .00000 |
| 540 | .00822 | .02274 | .00001 | .12830 | .00000 | .00000 | .00082 | .15418 | .00013 | .00000 | .68560 | .00000 | .00000 | .00000 |
| 550 | .00822 | .02269 | .00001 | .12833 | .00000 | .00000 | .00097 | .15409 | .00013 | .00000 | .68554 | .00000 | .00000 | .00000 |
| 560 | .00822 | .02264 | .00002 | .12837 | .00000 | .00000 | .00116 | .15398 | .00014 | .00000 | .68547 | .00000 | .00000 | .00000 |
| 570 | .00822 | .02258 | .00003 | .12840 | .00000 | .00000 | .00137 | .15386 | .00015 | .00000 | .68540 | .00000 | .00000 | .00000 |
| 580 | .00822 | .02251 | .00004 | .12844 | .00000 | .00000 | .00160 | .15372 | .00016 | .00000 | .68531 | .00000 | .00000 | .00000 |
| 590 | .00822 | .02244 | .00005 | .12849 | .00000 | .00000 | .00187 | .15356 | .00017 | .00000 | .68521 | .00000 | .00000 | .00000 |

TABLE 32.5D CONTINUED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | HO2 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 600 | .00822 | .02235 | .00006 | .12853 | .00000 | .00000 | .00218 | .15338 | .00018 | .00000 | .68510 | .00000 | .00000 | .00000 |
| 610 | .00822 | .02225 | .00008 | .12858 | .00000 | .00000 | .00252 | .15319 | .00019 | .00000 | .68497 | .00000 | .00000 | .00000 |
| 620 | .00821 | .02214 | .00011 | .12864 | .00000 | .00000 | .00290 | .15297 | .00019 | .00000 | .68483 | .00000 | .00000 | .00000 |
| 630 | .00821 | .02202 | .00014 | .12869 | .00000 | .00000 | .00332 | .15274 | .00020 | .00000 | .68467 | .00000 | .00000 | .00000 |
| 640 | .00821 | .02188 | .00018 | .12875 | .00000 | .00000 | .00379 | .15248 | .00021 | .00000 | .68449 | .00000 | .00000 | .00000 |
| 650 | .00821 | .02173 | .00023 | .12881 | .00000 | .00000 | .00431 | .15219 | .00022 | .00000 | .68429 | .00000 | .00000 | .00000 |
| 660 | .00821 | .02156 | .00029 | .12887 | .00000 | .00000 | .00488 | .15189 | .00023 | .00000 | .68407 | .00000 | .00000 | .00000 |
| 670 | .00820 | .02138 | .00037 | .12893 | .00000 | .00000 | .00550 | .15155 | .00024 | .00000 | .68383 | .00000 | .00000 | .00000 |
| 680 | .00820 | .02117 | .00046 | .12898 | .00000 | .00000 | .00618 | .15119 | .00025 | .00000 | .68357 | .00000 | .00000 | .00000 |
| 690 | .00820 | .02095 | .00057 | .12903 | .00000 | .00000 | .00691 | .15081 | .00026 | .00000 | .68327 | .00000 | .00000 | .00000 |
| 700 | .00819 | .02070 | .00070 | .12908 | .00000 | .00000 | .00771 | .15040 | .00027 | .00000 | .68295 | .00000 | .00000 | .00000 |
| 710 | .00819 | .02044 | .00086 | .12912 | .00000 | .00000 | .00857 | .14996 | .00027 | .00000 | .68260 | .00000 | .00000 | .00000 |
| 720 | .00818 | .02014 | .00104 | .12914 | .00000 | .00000 | .00950 | .14950 | .00028 | .00000 | .68222 | .00000 | .00000 | .00000 |
| 730 | .00818 | .01982 | .00126 | .12915 | .00000 | .00000 | .01049 | .14901 | .00029 | .00000 | .68180 | .00000 | .00000 | .00000 |
| 740 | .00817 | .01948 | .00151 | .12915 | .00000 | .00000 | .01155 | .14850 | .00030 | .00000 | .68135 | .00000 | .00000 | .00000 |
| 750 | .00817 | .01910 | .00180 | .12912 | .00000 | .00000 | .01268 | .14796 | .00030 | .00000 | .68086 | .00000 | .00000 | .00000 |
| 760 | .00816 | .01870 | .00214 | .12907 | .00000 | .00000 | .01387 | .14741 | .00031 | .00000 | .68033 | .00000 | .00000 | .00000 |
| 770 | .00815 | .01826 | .00253 | .12899 | .00000 | .00000 | .01514 | .14684 | .00032 | .00000 | .67976 | .00000 | .00000 | .00000 |
| 780 | .00815 | .01780 | .00297 | .12888 | .00000 | .00000 | .01647 | .14625 | .00032 | .00000 | .67915 | .00000 | .00000 | .00000 |
| 790 | .00814 | .01730 | .00348 | .12873 | .00000 | .00000 | .01788 | .14565 | .00033 | .00000 | .67849 | .00000 | .00000 | .00000 |
| 800 | .00813 | .01676 | .00405 | .12855 | .00000 | .00000 | .01934 | .14505 | .00034 | .00000 | .67779 | .00000 | .00000 | .00000 |
| 810 | .00812 | .01619 | .00469 | .12831 | .00000 | .00000 | .02087 | .14443 | .00034 | .00000 | .67705 | .00000 | .00000 | .00000 |
| 820 | .00811 | .01559 | .00540 | .12803 | .00000 | .00000 | .02246 | .14381 | .00034 | .00000 | .67626 | .00000 | .00000 | .00000 |
| 830 | .00810 | .01495 | .00620 | .12769 | .00000 | .00000 | .02410 | .14320 | .00035 | .00000 | .67542 | .00000 | .00000 | .00000 |
| 840 | .00809 | .01428 | .00707 | .12729 | .00000 | .00000 | .02579 | .14259 | .00035 | .00000 | .67454 | .00000 | .00000 | .00000 |
| 850 | .00808 | .01358 | .00802 | .12684 | .00000 | .00000 | .02752 | .14199 | .00035 | .00000 | .67362 | .00000 | .00000 | .00000 |
| 860 | .00807 | .01284 | .00906 | .12632 | .00000 | .00000 | .02929 | .14141 | .00035 | .00000 | .67265 | .00000 | .00000 | .00000 |
| 870 | .00806 | .01208 | .01019 | .12574 | .00000 | .00000 | .03108 | .14085 | .00035 | .00000 | .67165 | .00000 | .00000 | .00000 |
| 880 | .00805 | .01129 | .01139 | .12509 | .00000 | .00000 | .03288 | .14032 | .00035 | .00000 | .67062 | .00000 | .00000 | .00000 |
| 890 | .00803 | .01049 | .01267 | .12439 | .00000 | .00000 | .03468 | .13982 | .00035 | .00000 | .66957 | .00000 | .00000 | .00000 |
| 900 | .00802 | .00967 | .01402 | .12362 | .00000 | .00000 | .03647 | .13936 | .00035 | .00000 | .66849 | .00000 | .00000 | .00000 |
| 910 | .00801 | .00884 | .01543 | .12280 | .00000 | .00000 | .03823 | .13894 | .00035 | .00000 | .66740 | .00000 | .00000 | .00000 |
| 920 | .00799 | .00801 | .01689 | .12192 | .00000 | .00000 | .03994 | .13857 | .00034 | .00000 | .66632 | .00000 | .00000 | .00000 |
| 930 | .00798 | .00719 | .01839 | .12101 | .00000 | .00000 | .04159 | .13826 | .00034 | .00000 | .66524 | .00000 | .00000 | .00000 |
| 940 | .00797 | .00639 | .01991 | .12006 | .00000 | .00000 | .04314 | .13801 | .00033 | .00000 | .66419 | .00000 | .00000 | .00000 |
| 950 | .00796 | .00562 | .02144 | .11908 | .00000 | .00000 | .04459 | .13783 | .00032 | .00000 | .66317 | .00000 | .00000 | .00000 |
| 960 | .00794 | .00488 | .02295 | .11809 | .00000 | .00000 | .04591 | .13771 | .00031 | .00000 | .66221 | .00000 | .00000 | .00000 |
| 970 | .00793 | .00419 | .02443 | .11710 | .00000 | .00000 | .04708 | .13766 | .00030 | .00000 | .66130 | .00000 | .00000 | .00000 |
| 980 | .00792 | .00356 | .02586 | .11612 | .00000 | .00000 | .04810 | .13769 | .00029 | .00000 | .66046 | .00000 | .00000 | .00000 |
| 990 | .00791 | .00298 | .02723 | .11516 | .00000 | .00000 | .04894 | .13779 | .00028 | .00000 | .65971 | .00000 | .00000 | .00000 |

TABLE 32.5D CONCLUDED .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | CH4 | CO | CO2 | H | H02 | H2 | H2O | NH3 | NO | N2 | O | OH | O2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1000 | .00791 | .00247 | .02853 | .11422 | .00000 | .00000 | .04961 | .13796 | .00027 | .00000 | .65904 | .00000 | .00000 | .00000 |
| 1050 | .00788 | .00084 | .03380 | .11009 | .00000 | .00000 | .05065 | .13964 | .00020 | .00000 | .65689 | .00000 | .00000 | .00000 |
| 1100 | .00787 | .00026 | .03747 | .10683 | .00000 | .00000 | .04929 | .14201 | .00014 | .00000 | .65612 | .00000 | .00000 | .00000 |
| 1150 | .00787 | .00008 | .04031 | .10411 | .00000 | .00000 | .04719 | .14445 | .00010 | .00000 | .65588 | .00000 | .00000 | .00000 |
| 1200 | .00787 | .00003 | .04272 | .10173 | .00000 | .00000 | .04503 | .14675 | .00008 | .00000 | .65580 | .00000 | .00000 | .00000 |
| 1250 | .00787 | .00001 | .04486 | .09960 | .00000 | .00000 | .04298 | .14884 | .00006 | .00000 | .65578 | .00000 | .00000 | .00000 |
| 1300 | .00787 | .00000 | .04679 | .09768 | .00000 | .00000 | .04110 | .15075 | .00004 | .00000 | .65577 | .00000 | .00000 | .00000 |
| 1350 | .00787 | .00000 | .04853 | .09594 | .00000 | .00000 | .03938 | .15249 | .00003 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1400 | .00787 | .00000 | .05010 | .09436 | .00000 | .00000 | .03782 | .15406 | .00003 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1450 | .00786 | .00000 | .05154 | .09293 | .00000 | .00000 | .03639 | .15550 | .00002 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1500 | .00786 | .00000 | .05285 | .09162 | .00000 | .00000 | .03509 | .15681 | .00002 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1550 | .00786 | .00000 | .05404 | .09042 | .00000 | .00000 | .03390 | .15800 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1600 | .00786 | .00000 | .05514 | .08933 | .00000 | .00000 | .03281 | .15909 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1650 | .00786 | .00000 | .05614 | .08833 | .00000 | .00000 | .03181 | .16009 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1700 | .00786 | .00000 | .05706 | .08741 | .00000 | .00000 | .03089 | .16101 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1750 | .00786 | .00000 | .05790 | .08656 | .00001 | .00000 | .03005 | .16185 | .00001 | .00000 | .65576 | .00000 | .00000 | .00000 |
| 1800 | .00786 | .00000 | .05868 | .08578 | .00001 | .00000 | .02927 | .16263 | .00001 | .00000 | .65575 | .00000 | .00000 | .00000 |
| 1850 | .00786 | .00000 | .05940 | .08506 | .00001 | .00000 | .02855 | .16335 | .00001 | .00000 | .65575 | .00000 | .00001 | .00000 |
| 1900 | .00786 | .00000 | .06007 | .08440 | .00002 | .00000 | .02788 | .16401 | .00000 | .00000 | .65575 | .00000 | .00001 | .00000 |
| 1950 | .00786 | .00000 | .06068 | .08378 | .00003 | .00000 | .02727 | .16462 | .00000 | .00000 | .65574 | .00000 | .00001 | .00000 |
| 2000 | .00786 | .00000 | .06125 | .08321 | .00004 | .00000 | .02669 | .16518 | .00000 | .00000 | .65573 | .00000 | .00002 | .00000 |
| 2050 | .00786 | .00000 | .06179 | .08267 | .00005 | .00000 | .02616 | .16569 | .00000 | .00001 | .65572 | .00000 | .00004 | .00000 |
| 2100 | .00786 | .00000 | .06229 | .08217 | .00007 | .00000 | .02567 | .16617 | .00000 | .00001 | .65571 | .00000 | .00006 | .00000 |
| 2150 | .00786 | .00000 | .06275 | .08170 | .00009 | .00000 | .02521 | .16660 | .00000 | .00002 | .65568 | .00000 | .00008 | .00000 |
| 2200 | .00786 | .00000 | .06319 | .08125 | .00012 | .00000 | .02478 | .16698 | .00000 | .00003 | .65565 | .00000 | .00012 | .00000 |
| 2250 | .00786 | .00000 | .06361 | .08083 | .00016 | .00000 | .02438 | .16732 | .00000 | .00004 | .65561 | .00000 | .00017 | .00000 |
| 2300 | .00786 | .00000 | .06401 | .08042 | .00021 | .00000 | .02402 | .16762 | .00000 | .00007 | .65555 | .00000 | .00024 | .00000 |
| 2350 | .00786 | .00000 | .06440 | .08001 | .00027 | .00000 | .02368 | .16786 | .00000 | .00010 | .65547 | .00000 | .00034 | .00001 |
| 2400 | .00786 | .00000 | .06478 | .07961 | .00034 | .00000 | .02337 | .16805 | .00000 | .00015 | .65536 | .00000 | .00046 | .00001 |
| 2450 | .00786 | .00000 | .06517 | .07920 | .00043 | .00000 | .02309 | .16817 | .00000 | .00021 | .65522 | .00001 | .00062 | .00002 |
| 2500 | .00786 | .00000 | .06557 | .07876 | .00053 | .00000 | .02284 | .16822 | .00000 | .00030 | .65503 | .00001 | .00083 | .00004 |
| 2550 | .00786 | .00000 | .06600 | .07829 | .00066 | .00000 | .02263 | .16818 | .00000 | .00041 | .65478 | .00002 | .00110 | .00006 |
| 2600 | .00785 | .00000 | .06647 | .07777 | .00081 | .00000 | .02246 | .16803 | .00000 | .00057 | .65447 | .00003 | .00143 | .00010 |
| 2650 | .00785 | .00000 | .06700 | .07718 | .00099 | .00000 | .02235 | .16777 | .00000 | .00077 | .65406 | .00005 | .00184 | .00016 |
| 2700 | .00784 | .00000 | .06760 | .07649 | .00119 | .00000 | .02229 | .16736 | .00000 | .00102 | .65354 | .00008 | .00234 | .00024 |
| 2750 | .00784 | .00000 | .06831 | .07567 | .00144 | .00000 | .02229 | .16678 | .00000 | .00135 | .65289 | .00012 | .00295 | .00036 |
| 2800 | .00783 | .00000 | .06915 | .07470 | .00172 | .00000 | .02238 | .16602 | .00000 | .00174 | .65209 | .00017 | .00367 | .00052 |
| 2850 | .00782 | .00000 | .07013 | .07356 | .00205 | .00000 | .02256 | .16503 | .00000 | .00222 | .65110 | .00025 | .00452 | .00075 |
| 2900 | .00781 | .00000 | .07128 | .07221 | .00244 | .00000 | .02284 | .16380 | .00000 | .00280 | .64992 | .00036 | .00549 | .00104 |
| 2950 | .00780 | .00000 | .07261 | .07064 | .00289 | .00000 | .02324 | .16231 | .00000 | .00346 | .64852 | .00050 | .00661 | .00140 |
| 3000 | .00778 | .00000 | .07414 | .06884 | .00342 | .00001 | .02376 | .16053 | .00000 | .00422 | .64689 | .00068 | .00787 | .00185 |

TABLE 32.1E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1.01325 KPA (0.01 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19179 | .00012 | .00000 | .65576 |
| 220 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .18992 | .00200 | .00000 | .65576 |
| 240 | .00786 | .04397 | .00001 | .00000 | .10049 | .00000 | .17086 | .02105 | .00000 | .65577 |
| 260 | .00788 | .04200 | .00104 | .00000 | .10173 | .00000 | .00722 | .18302 | .00000 | .65712 |
| 280 | .00789 | .04048 | .00183 | .00000 | .10269 | .00001 | .00000 | .18895 | .00000 | .65816 |
| 298 | .00791 | .03887 | .00267 | .00000 | .10370 | .00002 | .00000 | .18758 | .00000 | .65926 |
| 300 | .00791 | .03868 | .00277 | .00000 | .10382 | .00002 | .00000 | .18742 | .00000 | .65938 |
| 320 | .00793 | .03648 | .00391 | .00000 | .10521 | .00006 | .00000 | .18554 | .00000 | .66088 |
| 340 | .00795 | .03392 | .00522 | .00000 | .10684 | .00016 | .00000 | .18331 | .00000 | .66260 |
| 360 | .00797 | .03105 | .00666 | .00000 | .10868 | .00039 | .00000 | .18076 | .00000 | .66449 |
| 380 | .00799 | .02795 | .00816 | .00000 | .11072 | .00086 | .00000 | .17786 | .00000 | .66646 |
| 400 | .00802 | .02465 | .00965 | .00000 | .11295 | .00173 | .00000 | .17457 | .00000 | .66842 |
| 420 | .00804 | .02121 | .01106 | .00000 | .11539 | .00325 | .00000 | .17079 | .00000 | .67026 |
| 440 | .00806 | .01764 | .01227 | .00001 | .11809 | .00573 | .00000 | .16634 | .00001 | .67186 |
| 460 | .00807 | .01396 | .01319 | .00002 | .12110 | .00954 | .00000 | .16104 | .00001 | .67306 |
| 480 | .00808 | .01019 | .01371 | .00006 | .12446 | .01507 | .00000 | .15467 | .00001 | .67374 |
| 500 | .00808 | .00631 | .01374 | .00014 | .12824 | .02263 | .00000 | .14706 | .00001 | .67378 |
| 520 | .00807 | .00228 | .01325 | .00033 | .13244 | .03239 | .00000 | .13810 | .00001 | .67313 |
| 540 | .00804 | .00000 | .01136 | .00068 | .13571 | .04382 | .00000 | .12972 | .00001 | .67066 |
| 560 | .00799 | .00000 | .00812 | .00125 | .13744 | .05564 | .00000 | .12314 | .00001 | .66641 |
| 580 | .00794 | .00000 | .00501 | .00213 | .13878 | .06668 | .00000 | .11714 | .00001 | .66232 |
| 600 | .00790 | .00000 | .00253 | .00327 | .13940 | .07502 | .00000 | .11280 | .00001 | .65907 |
| 620 | .00788 | .00000 | .00103 | .00453 | .13921 | .07947 | .00000 | .11076 | .00001 | .65711 |
| 640 | .00787 | .00000 | .00037 | .00579 | .13842 | .08076 | .00000 | .11056 | .00000 | .65624 |
| 660 | .00787 | .00000 | .00013 | .00707 | .13731 | .08041 | .00000 | .11130 | .00000 | .65592 |
| 680 | .00787 | .00000 | .00004 | .00839 | .13604 | .07939 | .00000 | .11245 | .00000 | .65581 |
| 700 | .00787 | .00000 | .00002 | .00979 | .13467 | .07811 | .00000 | .11378 | .00000 | .65578 |
| 720 | .00786 | .00000 | .00001 | .01124 | .13322 | .07669 | .00000 | .11521 | .00000 | .65576 |
| 740 | .00786 | .00000 | .00000 | .01275 | .13171 | .07520 | .00000 | .11671 | .00000 | .65576 |
| 760 | .00786 | .00000 | .00000 | .01429 | .13017 | .07366 | .00000 | .11825 | .00000 | .65576 |
| 780 | .00786 | .00000 | .00000 | .01586 | .12861 | .07210 | .00000 | .11981 | .00000 | .65576 |
| 800 | .00786 | .00000 | .00000 | .01743 | .12703 | .07052 | .00000 | .12139 | .00000 | .65576 |

TABLE 32.2E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 10.1325 KPA (0.10 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19190 | .00000 | .00001 | .00000 | .65576 |
| 220 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19171 | .00000 | .00020 | .00000 | .65576 |
| 240 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .18986 | .00000 | .00205 | .00000 | .65576 |
| 260 | .00786 | .04397 | .00001 | .00000 | .10049 | .00000 | .17691 | .00000 | .01500 | .00000 | .65577 |
| 280 | .00787 | .04330 | .00036 | .00000 | .10091 | .00000 | .00000 | .10869 | .08264 | .00000 | .65622 |
| 298 | .00791 | .03887 | .00267 | .00000 | .10370 | .00001 | .00000 | .00000 | .18759 | .00000 | .65926 |
| 300 | .00791 | .03869 | .00277 | .00000 | .10381 | .00001 | .00000 | .00000 | .18744 | .00000 | .65938 |
| 320 | .00793 | .03650 | .00391 | .00000 | .10519 | .00002 | .00000 | .00000 | .18558 | .00000 | .66088 |
| 340 | .00795 | .03396 | .00523 | .00000 | .10679 | .00005 | .00000 | .00000 | .18341 | .00000 | .66261 |
| 360 | .00797 | .03114 | .00668 | .00000 | .10857 | .00012 | .00000 | .00000 | .18099 | .00000 | .66452 |
| 380 | .00799 | .02812 | .00822 | .00000 | .11050 | .00027 | .00000 | .00000 | .17835 | .00000 | .66654 |
| 400 | .00802 | .02497 | .00980 | .00000 | .11253 | .00055 | .00000 | .00000 | .17552 | .00001 | .66861 |
| 420 | .00804 | .02174 | .01136 | .00000 | .11465 | .00104 | .00000 | .00000 | .17251 | .00001 | .67065 |
| 440 | .00807 | .01848 | .01285 | .00000 | .11685 | .00185 | .00000 | .00000 | .16928 | .00001 | .67261 |
| 460 | .00809 | .01522 | .01422 | .00001 | .11913 | .00313 | .00000 | .00000 | .16579 | .00001 | .67440 |
| 480 | .00811 | .01199 | .01540 | .00002 | .12151 | .00504 | .00000 | .00000 | .16196 | .00002 | .67596 |
| 500 | .00812 | .00880 | .01634 | .00004 | .12400 | .00779 | .00000 | .00000 | .15769 | .00002 | .67719 |
| 520 | .00813 | .00566 | .01698 | .00010 | .12663 | .01157 | .00000 | .00000 | .15287 | .00002 | .67803 |
| 540 | .00814 | .00257 | .01726 | .00021 | .12941 | .01658 | .00000 | .00000 | .14741 | .00002 | .67840 |
| 560 | .00813 | .00000 | .01689 | .00043 | .13203 | .02290 | .00000 | .00000 | .14168 | .00002 | .67792 |
| 580 | .00810 | .00000 | .01486 | .00079 | .13311 | .03030 | .00000 | .00000 | .13756 | .00003 | .67525 |
| 600 | .00806 | .00000 | .01249 | .00138 | .13420 | .03876 | .00000 | .00000 | .13292 | .00003 | .67215 |
| 620 | .00802 | .00000 | .00988 | .00229 | .13516 | .04786 | .00000 | .00000 | .12805 | .00003 | .66872 |
| 640 | .00798 | .00000 | .00717 | .00359 | .13578 | .05692 | .00000 | .00000 | .12338 | .00002 | .66517 |
| 660 | .00794 | .00000 | .00463 | .00526 | .13591 | .06495 | .00000 | .00000 | .11945 | .00002 | .66184 |
| 680 | .00791 | .00000 | .00258 | .00718 | .13545 | .07087 | .00000 | .00000 | .11684 | .00002 | .65915 |
| 700 | .00788 | .00000 | .00124 | .00911 | .13448 | .07408 | .00000 | .00000 | .11580 | .00002 | .65739 |
| 720 | .00787 | .00000 | .00054 | .01091 | .13318 | .07498 | .00000 | .00000 | .11605 | .00001 | .65646 |
| 740 | .00787 | .00000 | .00022 | .01259 | .13171 | .07450 | .00000 | .00000 | .11704 | .00001 | .65605 |
| 760 | .00787 | .00000 | .00009 | .01422 | .13018 | .07338 | .00000 | .00000 | .11838 | .00001 | .65588 |
| 780 | .00787 | .00000 | .00004 | .01582 | .12861 | .07198 | .00000 | .00000 | .11986 | .00001 | .65581 |
| 800 | .00787 | .00000 | .00002 | .01742 | .12703 | .07047 | .00000 | .00000 | .12141 | .00000 | .65578 |

TABLE 32.3E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 101.325 KPA (1.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19191 | .00000 | .00000 | .00000 | .65576 |
| 220 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19189 | .00000 | .00002 | .00000 | .65576 |
| 240 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19171 | .00000 | .00020 | .00000 | .65576 |
| 260 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19044 | .00000 | .00147 | .00000 | .65576 |
| 280 | .00786 | .04397 | .00000 | .00000 | .10049 | .00000 | .00000 | .18439 | .00752 | .00000 | .65576 |
| 298 | .00787 | .04389 | .00005 | .00000 | .10054 | .00000 | .00000 | .16729 | .02455 | .00000 | .65582 |
| 300 | .00787 | .04386 | .00006 | .00000 | .10056 | .00000 | .00000 | .16432 | .02749 | .00000 | .65584 |
| 320 | .00788 | .04222 | .00092 | .00000 | .10159 | .00000 | .00000 | .10200 | .08842 | .00000 | .65696 |
| 340 | .00795 | .03397 | .00523 | .00000 | .10678 | .00002 | .00000 | .00000 | .18344 | .00000 | .66262 |
| 360 | .00797 | .03117 | .00669 | .00000 | .10854 | .00004 | .00000 | .00000 | .18106 | .00001 | .66453 |
| 380 | .00799 | .02818 | .00824 | .00000 | .11043 | .00009 | .00000 | .00000 | .17850 | .00001 | .66656 |
| 400 | .00802 | .02507 | .00984 | .00000 | .11240 | .00017 | .00000 | .00000 | .17582 | .00001 | .66866 |
| 420 | .00805 | .02191 | .01145 | .00000 | .11442 | .00033 | .00000 | .00000 | .17306 | .00002 | .67078 |
| 440 | .00807 | .01874 | .01304 | .00000 | .11645 | .00059 | .00000 | .00000 | .17023 | .00002 | .67286 |
| 460 | .00809 | .01562 | .01456 | .00000 | .11849 | .00100 | .00000 | .00000 | .16735 | .00002 | .67486 |
| 480 | .00812 | .01256 | .01600 | .00001 | .12053 | .00163 | .00000 | .00000 | .16440 | .00003 | .67674 |
| 500 | .00814 | .00958 | .01731 | .00001 | .12257 | .00254 | .00000 | .00000 | .16136 | .00003 | .67847 |
| 520 | .00816 | .00670 | .01848 | .00003 | .12460 | .00382 | .00000 | .00000 | .15819 | .00004 | .67999 |
| 540 | .00817 | .00393 | .01946 | .00007 | .12664 | .00556 | .00000 | .00000 | .15484 | .00004 | .68129 |
| 560 | .00818 | .00125 | .02023 | .00013 | .12869 | .00787 | .00000 | .00000 | .15128 | .00005 | .68230 |
| 580 | .00818 | .00000 | .02009 | .00025 | .12993 | .01080 | .00000 | .00000 | .14857 | .00006 | .68211 |
| 600 | .00817 | .00000 | .01909 | .00045 | .13044 | .01441 | .00000 | .00000 | .14657 | .00006 | .68081 |
| 620 | .00815 | .00000 | .01787 | .00077 | .13100 | .01877 | .00000 | .00000 | .14418 | .00006 | .67920 |
| 640 | .00812 | .00000 | .01640 | .00127 | .13154 | .02389 | .00000 | .00000 | .14144 | .00007 | .67727 |
| 660 | .00810 | .00000 | .01468 | .00202 | .13202 | .02971 | .00000 | .00000 | .13839 | .00007 | .67502 |
| 680 | .00807 | .00000 | .01272 | .00309 | .13234 | .03611 | .00000 | .00000 | .13515 | .00007 | .67246 |
| 700 | .00803 | .00000 | .01057 | .00456 | .13240 | .04288 | .00000 | .00000 | .13186 | .00007 | .66963 |
| 720 | .00800 | .00000 | .00830 | .00646 | .13211 | .04965 | .00000 | .00000 | .12875 | .00007 | .66666 |
| 740 | .00796 | .00000 | .00606 | .00876 | .13141 | .05595 | .00000 | .00000 | .12609 | .00006 | .66371 |
| 760 | .00793 | .00000 | .00402 | .01131 | .13030 | .06118 | .00000 | .00000 | .12416 | .00006 | .66104 |
| 780 | .00790 | .00000 | .00240 | .01389 | .12887 | .06481 | .00000 | .00000 | .12316 | .00005 | .65892 |
| 800 | .00789 | .00000 | .00130 | .01628 | .12727 | .06665 | .00000 | .00000 | .12311 | .00004 | .65747 |

TABLE 32.4E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 1013.25 KPA (10.00 ATM)
 WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19191 | .00000 | .00000 | .00000 | .65576 |
| 220 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19191 | .00000 | .00000 | .00000 | .65576 |
| 240 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19189 | .00000 | .00002 | .00000 | .65576 |
| 260 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19177 | .00000 | .00015 | .00000 | .65576 |
| 280 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .00000 | .19117 | .00075 | .00000 | .65576 |
| 298 | .00786 | .04398 | .00000 | .00000 | .10049 | .00000 | .00000 | .18953 | .00239 | .00000 | .65576 |
| 300 | .00786 | .04398 | .00000 | .00000 | .10049 | .00000 | .00000 | .18925 | .00266 | .00000 | .65576 |
| 320 | .00786 | .04397 | .00001 | .00000 | .10049 | .00000 | .00000 | .18392 | .00798 | .00000 | .65577 |
| 340 | .00787 | .04384 | .00007 | .00000 | .10057 | .00000 | .00000 | .17094 | .02085 | .00000 | .65585 |
| 360 | .00787 | .04296 | .00053 | .00000 | .10113 | .00000 | .00000 | .14175 | .04929 | .00000 | .65645 |
| 380 | .00792 | .03762 | .00332 | .00000 | .10449 | .00002 | .00000 | .07629 | .11023 | .00001 | .66011 |
| 400 | .00802 | .02510 | .00985 | .00000 | .11236 | .00006 | .00000 | .00000 | .17591 | .00002 | .66868 |
| 420 | .00805 | .02196 | .01148 | .00000 | .11435 | .00010 | .00000 | .00000 | .17322 | .00003 | .67082 |
| 440 | .00807 | .01883 | .01309 | .00000 | .11633 | .00019 | .00000 | .00000 | .17052 | .00003 | .67294 |
| 460 | .00810 | .01574 | .01467 | .00000 | .11830 | .00032 | .00000 | .00000 | .16783 | .00004 | .67500 |
| 480 | .00812 | .01273 | .01619 | .00000 | .12023 | .00052 | .00000 | .00000 | .16517 | .00005 | .67700 |
| 500 | .00814 | .00982 | .01763 | .00000 | .12211 | .00081 | .00000 | .00000 | .16253 | .00006 | .67889 |
| 520 | .00816 | .00702 | .01898 | .00001 | .12395 | .00122 | .00000 | .00000 | .15992 | .00007 | .68066 |
| 540 | .00818 | .00433 | .02023 | .00002 | .12574 | .00179 | .00000 | .00000 | .15732 | .00008 | .68230 |
| 560 | .00820 | .00177 | .02136 | .00004 | .12748 | .00256 | .00000 | .00000 | .15471 | .00009 | .68379 |
| 580 | .00821 | .00000 | .02201 | .00008 | .12875 | .00355 | .00000 | .00000 | .15265 | .00010 | .68464 |
| 600 | .00821 | .00000 | .02167 | .00014 | .12893 | .00480 | .00000 | .00000 | .15194 | .00012 | .68419 |
| 620 | .00820 | .00000 | .02123 | .00025 | .12914 | .00637 | .00000 | .00000 | .15108 | .00013 | .68361 |
| 640 | .00819 | .00000 | .02068 | .00041 | .12937 | .00828 | .00000 | .00000 | .15004 | .00014 | .68290 |
| 660 | .00818 | .00000 | .02001 | .00066 | .12960 | .01058 | .00000 | .00000 | .14881 | .00015 | .68202 |
| 680 | .00817 | .00000 | .01920 | .00102 | .12981 | .01328 | .00000 | .00000 | .14739 | .00016 | .68097 |
| 700 | .00815 | .00000 | .01824 | .00155 | .12997 | .01642 | .00000 | .00000 | .14580 | .00016 | .67971 |
| 720 | .00814 | .00000 | .01712 | .00229 | .13003 | .01998 | .00000 | .00000 | .14405 | .00017 | .67823 |
| 740 | .00811 | .00000 | .01581 | .00329 | .12996 | .02395 | .00000 | .00000 | .14218 | .00018 | .67652 |
| 760 | .00809 | .00000 | .01433 | .00461 | .12969 | .02828 | .00000 | .00000 | .14023 | .00018 | .67458 |
| 780 | .00807 | .00000 | .01269 | .00630 | .12917 | .03290 | .00000 | .00000 | .13828 | .00018 | .67242 |
| 800 | .00804 | .00000 | .01089 | .00838 | .12837 | .03767 | .00000 | .00000 | .13640 | .00018 | .67007 |

TABLE 32.5E .- EQUILIBRIUM COMPOSITIONS (MOLE FRACTIONS)

FUEL H/C ATOM RATIO = 2.100; F/A = 0.081307; EQUIV. RATIO = 1.250; CHEM. EQUIV. RATIO = 1.2239; P = 5066.25 KPA (50.00 ATM)
WET AIR (W/A= 0.03)

| T K | AR | C(S) | CH4 | CO | CO2 | H2 | H2O(S) | H2O(L) | H2O | NH3 | N2 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 200 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19191 | .00000 | .00000 | .00000 | .65576 |
| 220 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19191 | .00000 | .00000 | .00000 | .65576 |
| 240 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19191 | .00000 | .00000 | .00000 | .65576 |
| 260 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19188 | .00000 | .00003 | .00000 | .65576 |
| 280 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .19177 | .00015 | .00000 | .00000 | .65576 |
| 298 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .00000 | .19144 | .00048 | .00000 | .65576 |
| 300 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .00000 | .19138 | .00053 | .00000 | .65576 |
| 320 | .00786 | .04398 | .00000 | .00000 | .10048 | .00000 | .00000 | .19033 | .00158 | .00000 | .65576 |
| 340 | .00786 | .04397 | .00000 | .00000 | .10049 | .00000 | .00000 | .18783 | .00408 | .00000 | .65576 |
| 360 | .00787 | .04394 | .00002 | .00000 | .10051 | .00000 | .00000 | .18253 | .00935 | .00000 | .65578 |
| 380 | .00787 | .04377 | .00011 | .00000 | .10062 | .00000 | .00000 | .17223 | .01951 | .00000 | .65590 |
| 400 | .00787 | .04301 | .00050 | .00000 | .10110 | .00001 | .00000 | .15332 | .03777 | .00000 | .65642 |
| 420 | .00790 | .04005 | .00205 | .00000 | .10296 | .00002 | .00000 | .11918 | .06939 | .00001 | .65844 |
| 440 | .00798 | .02971 | .00743 | .00000 | .10947 | .00006 | .00000 | .05517 | .12463 | .00003 | .66551 |
| 460 | .00810 | .01577 | .01469 | .00000 | .11826 | .00014 | .00000 | .00000 | .16794 | .00006 | .67504 |
| 480 | .00812 | .01277 | .01623 | .00000 | .12016 | .00023 | .00000 | .00000 | .16535 | .00008 | .67706 |
| 500 | .00814 | .00988 | .01771 | .00000 | .12201 | .00036 | .00000 | .00000 | .16281 | .00009 | .67899 |
| 520 | .00817 | .00709 | .01911 | .00000 | .12380 | .00055 | .00000 | .00000 | .16034 | .00011 | .68083 |
| 540 | .00819 | .00443 | .02043 | .00001 | .12552 | .00081 | .00000 | .00000 | .15793 | .00012 | .68256 |
| 560 | .00821 | .00189 | .02166 | .00002 | .12718 | .00115 | .00000 | .00000 | .15558 | .00014 | .68418 |
| 580 | .00822 | .00000 | .02251 | .00004 | .12844 | .00160 | .00000 | .00000 | .15372 | .00016 | .68531 |
| 600 | .00822 | .00000 | .02235 | .00006 | .12853 | .00218 | .00000 | .00000 | .15338 | .00018 | .68510 |
| 620 | .00821 | .00000 | .02214 | .00011 | .12864 | .00290 | .00000 | .00000 | .15297 | .00019 | .68483 |
| 640 | .00821 | .00000 | .02188 | .00018 | .12875 | .00379 | .00000 | .00000 | .15248 | .00021 | .68449 |
| 660 | .00821 | .00000 | .02156 | .00029 | .12887 | .00488 | .00000 | .00000 | .15189 | .00023 | .68407 |
| 680 | .00820 | .00000 | .02117 | .00046 | .12898 | .00618 | .00000 | .00000 | .15119 | .00025 | .68357 |
| 700 | .00819 | .00000 | .02070 | .00070 | .12908 | .00771 | .00000 | .00000 | .15040 | .00027 | .68295 |
| 720 | .00818 | .00000 | .02014 | .00104 | .12914 | .00950 | .00000 | .00000 | .14950 | .00028 | .68222 |
| 740 | .00817 | .00000 | .01948 | .00151 | .12915 | .01155 | .00000 | .00000 | .14850 | .00030 | .68135 |
| 760 | .00816 | .00000 | .01870 | .00214 | .12907 | .01387 | .00000 | .00000 | .14741 | .00031 | .68033 |
| 780 | .00815 | .00000 | .01780 | .00297 | .12888 | .01647 | .00000 | .00000 | .14625 | .00032 | .67915 |
| 800 | .00813 | .00000 | .01676 | .00405 | .12855 | .01934 | .00000 | .00000 | .14505 | .00034 | .67779 |

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|--|--|---|--|---|--------------------------|
| 1. Report No. NASA TP-1907 | | 2. Government Accession No. | | 3. Recipient's Catalog No. | |
| 4. Title and Subtitle THERMODYNAMIC AND TRANSPORT COMBUSTION PROPERTIES OF HYDROCARBONS WITH AIR II - COMPOSITIONS CORRESPONDING TO KELVIN TEMPERATURE SCHEDULES IN PART I | | | | 5. Report Date July 1982 | |
| 7. Author(s) Sanford Gordon | | | | 6. Performing Organization Code 505-32-72 | |
| 9. Performing Organization Name and Address National Aeronautics and Space Administration Lewis Research Center Cleveland, Ohio 44135 | | | | 8. Performing Organization Report No. E-947 | |
| 12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D. C. 20546 | | | | 10. Work Unit No. | |
| 15. Supplementary Notes | | | | 11. Contract or Grant No. | |
| 16. Abstract <p>Thermodynamic and transport combustion properties have been calculated for a wide range of conditions for the reaction of hydrocarbons with air. Three hydrogen-carbon atom ratios were selected to represent the range of aircraft fuels (H/C = 1.7, 2.0, and 2.1). For each of these H/C ratios, combustion properties were calculated for the following conditions:</p> <p>Equivalence ratio: 0, 0.25, 0.5, 0.75, 1.0, and 1.25 Water - dry air mass ratio: 0 and 0.03 Pressure, kPa: 1.01325, 10.1325, 101.325, 1013.25, and 5066.25 (or in atm: 0.01, 0.1, 1, 10, and 50) Temperature, K: every 10 degrees from 200 to 900 K; every 50 degrees from 900 to 3000 K Temperature, °R; every 20 degrees from 360° to 1600° R; every 100 degrees from 1600° to 5400° R</p> <p>The properties presented are composition, density, molecular weight, enthalpy, entropy, specific heat at constant pressure, volume derivatives, isentropic exponent, velocity of sound, viscosity, thermal conductivity, and Prandtl number. Property tables are based on compositions that were calculated by assuming both (1) chemical equilibrium (for both homogeneous and heterogeneous phases) and (2) constant compositions for all temperatures. Properties in SI units are presented in part I (TP-1906) for the Kelvin temperature schedules, and the corresponding compositions are presented in this report. Properties in U. S. customary units are presented in part III (TP-1908) for the Rankine temperature schedules, and corresponding compositions are presented in part IV (TP-1909).</p> | | | | 13. Type of Report and Period Covered Technical Paper | |
| 17. Key Words (Suggested by Author(s)) Hydrocarbon combustion; Combustion products; Combustion temperature; Thermodynamic properties; Transport properties; Chemical equilibrium; Heat of combustion | | | | 14. Sponsoring Agency Code | |
| 18. Distribution Statement Unclassified - unlimited STAR Category 77 | | | | | |
| 19. Security Classif. (of this report) Unclassified | | 20. Security Classif. (of this page) Unclassified | | 21. No. of Pages 280 | 22. Price* A13 |

* For sale by the National Technical Information Service, Springfield, Virginia 22161

NASA-Langley, 1982

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