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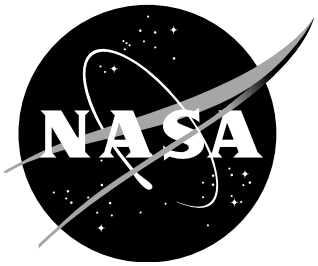

Computer Programs for Calculating the Isentropic Flow Properties for Mixtures of R-134a and Air

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November 2000

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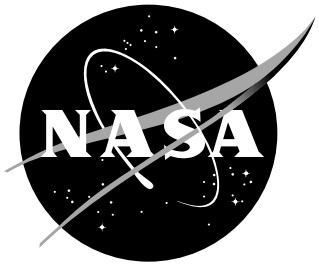

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Abstract

Three computer programs for calculating the isentropic flow properties of R-134a/air mixtures which were developed in support of the heavy gas conversion of the Langley Transonic Dynamics Tunnel (TDT) from dichlorodifluoromethane (R-12) to 1,1,1,2 tetrafluoroethane (R-134a) are described. The first program calculates the Mach number and the corresponding flow properties when the total temperature, total pressure, static pressure, and mole fraction of R-134a in the mixture are given. The second program calculates tables of isentropic flow properties for a specified set of free-stream Mach numbers given the total pressure, total temperature, and mole fraction of R-134a. Real-gas effects are accounted for in these programs by treating the gases comprising the mixture as both thermally and calorically imperfect. The third program is a specialized version of the first program in which the gases are thermally perfect. It was written to provide a simpler computational alternative to the first program in those cases where real-gas effects are not important. The theory and computational procedures underlying the programs are summarized, the equations used to compute the flow quantities of interest are given, and sample calculated results that encompass the operating conditions of the TDT are shown.

Nomenclature

Calculations are done using the International System of units (SI). However, inputs to and outputs from the programs can be in either SI or U.S. Customary units. For those quantities, the U.S. Customary units are given in parentheses after the SI units. Symbols given in parentheses are the names used in the computer programs.

$A(T,V)$		Helmholtz energy, J/kmol
A/A^*	(A/ASTAR)	stream tube area ratio
a_i	(Ai)	Redlich-Kwong coefficient for ith species, $\frac{0.42748R^2T_{c,i}^{2.5}}{P_{c,i}}$
a	(SofS)	speed of sound, m/sec (ft/sec)
a_{mix}	(Amix)	Redlich-Kwong coefficient for the mixture, $\left(\sum_{i=1}^{n} X_i\sqrt{a_i}\right)^2$
b_i	(Bi)	Redlich-Kwong coefficient for ith species, $\frac{0.08664RT_{c,i}}{P_{c,i}}$

b_{mix}	(Bmix)	Redlich-Kwong coefficient for the mixture, $\sum_{i=1}^{n} X_i b_i$
C_p	(CP)	molar specific heat capacity at constant pressure, J/kmol-K
C_p / C_v	(CPCV)	ratio of constant pressure and constant volume heat capacities
C_p^o	(Cpo)	ideal heat capacity at constant pressure, J/kmol-K
C_v	(CV)	molar specific heat capacity at constant volume, J/kmol-K
C_v^o	(Cvo)	ideal heat capacity at constant volume, $C_p^o - R$
M	(M)	Mach number, u/a
$H(T,V)$	(H)	enthalpy, J/kmol
$S(T,V)$	(S)	entropy, J/kmol-K
ρ	(RHO)	density, kg/m^3 (slug/ft^3)
ρ_t	(RHOt)	total (stagnation) density, kg/m^3 (slug/ft^3)
μ	(MU)	viscosity, N-sec/m^2 (lb-sec/ft^2)
R	(R)	universal gas constant, 8314.34 J/kmol-K
Re	(Re)	Reynolds number per meter (per foot)
P		pressure, Pa (psf)
$P_{c,i}$		critical pressure for species i, Pa
P_1	(P1)	calculated static pressure, Pa (psf)
V		specific molar volume, m^3/kmol (ft^3/lbm-mol)
u	(u,U1)	flow speed, m/s (ft/sec)
u/u^*	(U/USTAR)	flow speed ratio
u^*	(USTAR)	flow speed at sonic condition (i.e., M = 1)
V_1	(V1)	calculated specific molar volume, m^3/kmol (ft^3/lbm-mol)

T_1	(T1)	calculated static temperature, K (°F)
P_t	(Pt)	given (measured) total pressure, Pa (psf)
P_s	(Ps)	given (measured) static pressure, Pa (psf)
$P(T,V)$		pressure as a function of temperature and specific volume
T_t	(Tt)	given (measured) total temperature, K (°F)
V_t	(Vt)	total specific molar volume, m^3/kmol
V_1	(V1)	static specific molar volume, m^3/kmol
W		molecular weight, kg/kmol
W_{mix}	(Wmix)	molecular weight of mixture, kg/kmol
W_{air}	(Wair)	molecular weight of air, 28.96 kg/kmol
W_{134a}	(W134a)	molecular weight of R-134a, 102.03 kg/kmol
T	(T)	temperature, K
T_c	(Tc)	critical temperature, K
P_c	(Pc)	critical pressure, Pa
$T_{c,i}$		critical temperature for species *i*, K
X_i	(Xi)	mole fraction of species i in mixture
$T_{c_{134a}}$	(Tc134a)	critical temperature of R-134a, 374.23 K
$P_{c_{134a}}$	(Pc134a)	critical pressure of R-134a, 4060300 Pa
X_{134a}	(X134a)	mole fraction of R-134a in mixture
X_{air}	(Xair)	mole fraction of air in mixture
Z	(Z)	compressibility factor, PV/RT
γ	(CPCV)	ratio of specific heats, C_p/C_v

q	(q)	dynamic pressure, Pa (psf)
k	(k)	thermal conductivity, J/m-sec-K (ft-lb/ft-sec-°R)
Pr	(Pr)	Prandtl number, $\frac{\mu C_p}{kW}$
F	(F)	pressure function formed from equation of state, $P - f(T,V)$
β	(BET)	$= \sqrt{\lvert M^2 - 1 \rvert}$

Subscripts:

t	total condition
s	static condition
1	calculated local static value
mix	mixture
air	air
$134a$	R-134a
$(\ )_T$	temperature held constant during differentiation
$(\ )_V$	volume held constant during differentiation
c	critical condition

Superscripts:

$(\ )^\circ$	ideal state
$^\circ(\ )$	degrees
*	sonic condition (M = 1)(local velocity equal to local speed of sound)

Introduction

The Langley Transonic Dynamics Tunnel (TDT) is a closed-loop, continuous-flow, slotted-throat wind tunnel having a test section 16-feet square. The tunnel is capable of operation at stagnation pressures from near vacuum to atmospheric and of Mach numbers from zero up to about 1.2. Either air or a heavy gas can be used as a test medium. The tunnel was originally constructed as a19-foot diameter subsonic pressure tunnel in 1938 (ref. 1). In the late 1950s, the facility was converted to a transonic dynamics tunnel to fill the need for a wind tunnel dedicated to the testing of aeroelastic models of aerospace flight vehicles through transonic speeds. This new aeroelastic testing capability was made possible by using the high-molecular-weight gas dichlorodifluoromethane (R-12, Freon-12) as the test medium (ref. 2). An aerial view of the wind tunnel is shown in figure 1. Since its inception, the TDT has been a unique national facility for testing aeroelastic models of a variety of aircraft, spacecraft, and launch vehicles (see, for example, refs. 3-4). Environmental concerns raised in the late-1980s regarding the continued use of R-12 (a CFC) led to a decision in 1994 to replace it with the environmentally acceptable refrigerant 1,1,1,2-tetrafluoroethane (R-134a, an HFC). Conversion of the TDT heavy gas test medium from R-12 to R-134a was completed in 1997 and is described in references 5-6. Subsequent wind tunnel characterization and calibration tests were completed in 1998.

The equations used at the TDT for computing the flow properties of Freon-air mixtures are summarized in an internal report (*The Langley Transonic Dynamics Wind Tunnel*. LWP-799, September 1969). Those equations were based on polynomial approximations to the rigorous expressions obtained using the Beattie-Bridgeman equation of state for mixtures and the methods described in reference 7. The simplified expressions were designed to give acceptable engineering accuracy for R-12 volume fractions greater than 80-percent without the need to solve the real-gas equations in each calculation cycle. This expedient was employed so that tunnel flow properties could be calculated on-line in as close to real time as possible using the limited computing resources that were available at that time. Today, the flow properties can be computed on-line in essentially real time using the real-gas equations in each calculation cycle and there is no longer a need to resort to such an approximation. A new, state-of-the-art code for computing the flow properties in the TDT for arbitrary mixtures of R-134a and air was therefore deemed appropriate.

At about this time, there was underway at NASA Langley a research program investigating the potential of the heavy gas sulfur hexafluoride (SF_6) to increase the Reynolds number range for aerodynamic testing in transonic wind tunnels (refs. 8-9). Several computer programs for calculating the isentropic flow properties of SF_6 and SF_6/air mixtures were written in support of those studies (refs. 10-12). Examination of the two SF_6/air mixture codes (ref. 12) and the theory and analyses underlying those codes (refs. 10-11) indicated that they could be modified to treat R-134a/air mixtures. Thus, the decision was made to modify and extend those analyses and codes where necessary to make them applicable over the range of operating conditions characteristic of the TDT. The primary purpose of this report is to summarize the theoretical and computational considerations that underlie those computer programs.

Three computer programs for calculating the isentropic flow properties of R-134a/air mixtures are described. The first program (MACHRK) calculates the Mach number and the cor-

responding flow properties when the total temperature, total pressure, static pressure, and mole fraction of R-134a in the mixture are given. The program that has been implemented at the TDT for calculating tunnel flow properties is based on this program. The second program (MIXRK) calculates tables of isentropic flow properties for a specified set of free-stream Mach numbers given the total pressure, total temperature, and mole fraction of R-134a. Real-gas effects are accounted for in these programs by treating the gases comprising the mixture as both thermally and calorically imperfect. The Redlich-Kwong equation of state for mixtures and the constant-pressure ideal heat capacity equation for the mixture are used in the departure function approach of thermodynamics to obtain the expressions needed to compute the flow properties. These two programs are modified versions of the aforementioned SF_6/air mixture programs. The third program (MACHPG) is a specialized version of the first program in which the gases are assumed thermally perfect. It was written to provide a simpler computational alternative to the first program in those cases where real-gas effects are not important. All three programs are written in FORTRAN 77 with the variables, constants, and functions declared double precision where necessary to ensure the 16 significant decimal digits of precision needed for computations on 32-bit machines. The programs have been compiled, linked, and executed using Lahey Computer Systems' Fortran 90 (LF90) compiler (version 4.5) on a Pentium II-class PC with Windows NT 4.0.

The theory and computational procedures underlying the programs are summarized, the equations used to compute the flow quantities of interest are presented, and the development and verification procedures for the real-gas codes are noted. Illustrative results calculated with the programs for a range of input values that encompass the operating conditions of the TDT are shown.

Pertinent Theoretical Considerations for Real Gas Codes

The theoretical basis of the equations implemented in the two real-gas codes is summarized in this section. It is assumed that the gases comprising the mixture are both thermally and calorically imperfect. Both codes are based on the same theory, but there are some differences in the computational aspects (discussed in the next section). The development in this section is intended to be general and independent of any specific equation of state. However, it is assumed that an equation of state relating pressure to temperature and specific volume ($P=P(T,V)$), and an equation relating the ideal heat capacity at constant pressure to temperature ($C_p^o = C_p^o(T)$), are known for the mixture. Only the principal equations and pertinent considerations are presented here. The reader is referred to references 10-12 for a more extensive development and discussion of the theory underlying the equations that are implemented in the real-gas codes and to references 13-18 for detailed treatment of the relevant thermodynamics and gas dynamics. The comparable theory and computational procedure for mixtures of thermally perfect gases is given in Appendix A.

In developing the compressible flow equations for a real gas, there is a need to determine changes in thermodynamic properties between two states that differ in temperature. This is most easily done by first forming isothermal departure functions to reach the ideal-gas state and then varying the temperature in the ideal state. A departure function (ref. 13) is the difference between a thermodynamic quantity in the real state (as specified by T and V) and in an ideal-gas

state at the same T and at a volume V^o which is determined from the real pressure (P) and temperature (T) by $V^o = RT/P$. The advantage of varying temperature in an ideal-gas state is that heat capacity expressions for ideal gases ($C_p^o(T)$ or $C_v^o(T)$) can then be used, and such expressions are known for many gases. C_p^o and C_v^o refer to the ideal-gas state where (in the limit) the pressure is zero and the volume is infinite.

Expressions for the departure function forms of the Helmholtz energy A, entropy S, and enthalpy H are needed. For isothermal processes, these expressions can be written as

$$A(T,V) - A^o(T,V^o) = -\int_\infty^V \left[P(T,V) - \frac{RT}{V} \right] dV + RT \ln \frac{V^o}{V} \tag{1}$$

$$S(T,V) - S^o(T,V^o) = \left(\frac{\partial}{\partial T} \right)_V \int_\infty^V \left[P(T,V) - \frac{RT}{V} \right] dV - R \ln \frac{V^o}{V} \tag{2}$$

and

$$\begin{aligned} H(T,V) - H^o(T,V^o) &= A(T,V) - A^o(T,V^o) + PV - RT \\ &\quad + T\,[S(T,V) - S^o(T,V^o)] \\ &= -\int_\infty^V \left[P(T,V) - \frac{RT}{V} \right] dV + RT \ln \frac{V^o}{V} + PV - RT \\ &\quad + T \left[\left(\frac{\partial}{\partial T} \right)_V \int_\infty^V \left[P(T,V) - \frac{RT}{V} \right] dV - R \ln \frac{V^o}{V} \right] \end{aligned} \tag{3}$$

Here, V^o is the specific volume in an ideal state determined from the real pressure P and the temperature T by $V^o = RT/P$. The departure function form of the Helmholtz energy, entropy, and enthalpy given in equations 1-3 are valid at any temperature and thus can be used to calculate changes in the values of these quantities between any pair of temperatures. The two temperatures of interest here are T_1 and T_t, the local (free-stream) static and total temperatures, respectively.

The change in the Helmholtz energy between the two temperatures T_1 and T_t $(T_t > T_1)$ is

$$\begin{aligned} A(T_t,V_t) - A^o(T_t,V_t^o) - [A(T_1,V_1) - A^o(T_1,V_1^o)] & \\ = & -\int_\infty^{V_t}\left[P_t(T_t,V_t) - \frac{RT_t}{V_t}\right]dV_t + RT_t \ln\frac{V_t^o}{V_t} \\ & - \left\{-\int_\infty^{V_1}\left[P_1(T_1,V_1) - \frac{RT_1}{V_1}\right]dV_1 + RT_1 \ln\frac{V_1^o}{V_1}\right\} \end{aligned} \tag{4}$$

The change in entropy is

$$\begin{aligned} S(T_t,V_t) - S^o(T_t,V_t^o) - [S(T_1,V_1) - S^o(T_1,V_1^o)] & \\ = & \left(\frac{\partial}{\partial T_t}\right)_{V_t}\int_\infty^{V_t}\left[P_t(T_t,V_t) - \frac{RT_t}{V_t}\right]dV_t - R\ln\frac{V_t^o}{V_t} \\ & - \left\{\left(\frac{\partial}{\partial T_1}\right)_{V_1}\int_\infty^{V_1}\left[P_1(T_1,V_1) - \frac{RT_1}{V_1}\right]dV_1 - R\ln\frac{V_1^o}{V_1}\right\} \end{aligned} \tag{5}$$

The change in enthalpy is

$$\begin{aligned} H(T_t,V_t) - H^o(T_t,V_t^o) - [H(T_1,V_1) - H^o(T_1,V_1^o)] & \\ = A(T_t,V_t) - A^o(T_t,V_t^o) + T_t[S(T_t,V_t) - S^o(T_t,V_t^o)] + P_tV_t - RT_t & \\ - \left\{A(T_1,V_1) - A^o(T_1,V_1^o) + T_1[S(T_1,V_1) - S^o(T_1,V_1^o)] + P_1V_1 - RT_1\right\} & \\ = -\int_\infty^{V_t}\left[P_t(T_t,V_t) - \frac{RT_t}{V_t}\right]dV_t + \int_\infty^{V_1}\left[P_1(T_1,V_1) - \frac{RT_1}{V_1}\right]dV_1 & \\ + T_t\left(\frac{\partial}{\partial T_t}\right)_{V_t}\int_\infty^{V_t}\left[P_t(T_t,V_t) - \frac{RT_t}{V_t}\right]dV_t & \\ - T_1\left(\frac{\partial}{\partial T_1}\right)_{V_1}\int_\infty^{V_1}\left[P_1(T_1,V_1) - \frac{RT_1}{V_1}\right]dV_1 & \\ + P_tV_t - P_1V_1 - RT_t + RT_1 & \end{aligned} \tag{6}$$

Substituting the entropy and enthalpy changes between temperatures T_1 and T_t for an ideal gas given by

$$S^o(T_t,V_t^o) - S^o(T_1,V_1^o) = \int_{T_1}^{T_t}\frac{C_p^o}{T}\,dT - R\ln\frac{P_t}{P_1} \tag{7a}$$

and

$$H^o(T_t,V_t^o) - H^o(T_1,V_1^o) = \int_{T_1}^{T_t} C_p^o \, dT \tag{7b}$$

into equations 5 and 6 yields the final expressions needed for the entropy and enthalpy changes

$$\Delta S = S(T_t,V_t) - S(T_1,V_1)$$

$$= \int_{T_1}^{T_t} \frac{C_p^o}{T} \, dT + \left(\frac{\partial}{\partial T_t}\right)_{V_t} \int_{\infty}^{V_t} \left[P_t(T_t,V_t) - \frac{RT_t}{V_t}\right] dV_t - R\ln\frac{T_t}{V_t} \tag{8}$$

$$- \left\{\left(\frac{\partial}{\partial T_1}\right)_{V_1} \int_{\infty}^{V_1} \left[P_1(T_1,V_1) - \frac{RT_1}{V_1}\right] dV_1 - R\ln\frac{T_1}{V_1}\right\}$$

$$\Delta H = H(T_t,V_t) - H(T_1,V_1)$$

$$= \int_{T_1}^{T_t} C_p^o \, dT - \int_{\infty}^{V_t} \left[P_t(T_t,V_t) - \frac{RT_t}{V_t}\right] dV_t \tag{9}$$

$$+ \int_{\infty}^{V_1} \left[P_1(T_1,V_1) - \frac{RT_1}{V_1}\right] dV_1 + T_t \left(\frac{\partial}{\partial T_t}\right)_{V_t} \int_{\infty}^{V_t} \left[P_t(T_t,V_t) - \frac{RT_t}{V_t}\right] dV_t$$

$$- T_1 \left(\frac{\partial}{\partial T_1}\right)_{V_1} \int_{\infty}^{V_1} \left[P_1(T_1,V_1) - \frac{RT_1}{V_1}\right] dV_1 + P_tV_t - P_1V_1 - RT_t + RT_1$$

The heat capacities are related to pressure (equation of state) by (see, for example, refs. 13-14)

$$C_p - C_v = \frac{-T(\partial P/\partial T)_V^2}{(\partial P/\partial V)_T} \tag{10}$$

and

$$C_v = C_v^o + T \int_{\infty}^{V} \left(\frac{\partial^2 P}{\partial T^2}\right)_V dV \tag{11}$$

Using the ideal gas relation $C_v^o = C_p^o - R$ in combination with equations 10 and 11 yields

$$C_v = C_p^o - R + T\int_\infty^V \left(\frac{\partial^2 P}{\partial T^2}\right)_V dV \tag{12}$$

so that

$$\begin{aligned} C_p &= C_v - \frac{T(\partial P/\partial T)_V^2}{(\partial P/\partial V)_T} \\ &= C_p^o - R + T\int_\infty^V \left(\frac{\partial^2 P}{\partial T^2}\right)_V dV - \frac{T(\partial P/\partial T)_V^2}{(\partial P/\partial V)_T} \end{aligned} \tag{13}$$

The ratio of specific heats γ then follows as

$$\gamma = \frac{C_p}{C_v} = 1 - \frac{T\left(\frac{\partial P}{\partial T}\right)_V^2 \Big/ \left(\frac{\partial P}{\partial V}\right)_T}{C_p^o - R + T\int_\infty^V \left(\frac{\partial^2 P}{\partial T^2}\right)_V dV} \tag{14}$$

The speed of sound is defined by (ref. 18)

$$a = \sqrt{\left(\frac{C_p}{C_v}\right)\left(\frac{\partial P}{\partial \rho}\right)_T} = \sqrt{\gamma\left(\frac{\partial P}{\partial \rho}\right)_T} \tag{15}$$

where $(\partial P/\partial \rho)_T$ is calculated using

$$\left(\frac{\partial P}{\partial \rho}\right)_T = -\left(\frac{V^2}{W}\right)\left(\frac{\partial P}{\partial V}\right)_T \tag{16}$$

because the equation of state is assumed to be an explicit function of volume V rather than density ρ. The above expressions can be easily evaluated given an equation of state relating pressure to temperature and specific volume, and an equation relating the ideal heat capacity at constant pressure to temperature for the gas mixture of interest.

The flow speed u is given by (ref. 19)

$$u = \sqrt{\frac{2\,[H(T_t, V_t) - H(T_1, V_1)]}{W}} = \sqrt{\frac{2\,\Delta H}{W}} \tag{17}$$

The Mach number is then

$$M = \frac{u}{a} \tag{18}$$

The density is

$$\rho = \frac{W}{V} \tag{19}$$

Dynamic pressure is

$$q = \frac{1}{2}\rho\, u^2 \tag{20}$$

Reynolds number (per unit length) is

$$\mathrm{Re} = \frac{\rho\, u}{\mu} \tag{21}$$

The Prandtl number is

$$Pr = \frac{\mu\, C_p}{k\, W} \tag{22}$$

The deviation of the behavior of a real gas from that of an ideal gas is indicated by the compressibility factor defined by

$$Z = \frac{PV}{RT} \tag{23}$$

Z is unity for an ideal gas. For real gases, *Z* is normally less than one, except at high reduced pressures and temperatures (ref. 20).

Computational Procedures for Real Gas Codes

The development in this section, as in the previous section, is intended to be general and independent of any specific equation of state. However, as before, it is assumed that an equation

of state relating pressure to temperature and specific volume, and an equation relating the ideal heat capacity at constant pressure to temperature are known for the mixture. Again, only principal equations and pertinent considerations are presented here. The reader is referred to references 10-12 for a more extensive development and discussion of the computational procedures that are implemented in the real-gas codes.

Program MACHRK

A flow chart indicating the primary computational steps in program MACHRK is shown in figure 2. The purpose of this section is to summarize the equations that have been implemented in the code to carry out those computations. See references 10 and 11 for details.

Program MACHRK calculates Mach number and attendant isentropic flow properties given the total temperature, total pressure, static pressure, and mole fraction of R-134a in the mixture by iterating on static temperature and specific volume to match static pressure. It is assumed that an equation of state relating pressure to temperature and specific volume and an equation relating the ideal heat capacity at constant pressure to temperature are known for the gas mixture. In functional equation form, these relationships can be written as

$$P = f_1(T,V) \tag{24}$$

$$C_p^o = f_2(T) \tag{25}$$

For a real gas, $f_1(T,V)$ will be a nonlinear function of T and V, while f_2 will be a nonlinear function of T.

The required relationships for the changes in entropy and enthalpy for an expansion between temperatures T_t and T_1 are found by substituting the expressions

$$P_t = f_1(T_t,V_t) \tag{26}$$

$$P_1 = f_1(T_1,V_1) \tag{27}$$

$$C_p^o = f_2(T) \tag{28}$$

into equations 8 and 9 for ΔS and ΔH and carrying out the indicated operations. The process is made isentropic by setting the resulting entropy expression to zero. This yields a relationship of the form

$$\Delta S = S(T_t,V_t) - S(T_1,V_1) = g[\,f_1(T_t,V_t),\, f_1(T_1,V_1),\, f_2(T)] = 0 \tag{29}$$

The values of $P_t, T_t, V_t, P_1, T_1,$ and V_1 are needed to compute the flow properties. Substituting the known values of P_t and T_t (either given or measured) into the equation of state $P_t = f_1(T_t, V_t)$, V_t can be determined from the (nonlinear) function

$$F = P_t - f_1(T_t, V_t) = 0 \tag{30}$$

using Newton iteration. Because the total pressure and total temperature P_t and T_t are constant, F is a function of V_t only and

$$F' = \left(\frac{\partial}{\partial V_t}\right)_{P_t, T_t} \left[P_t - f_1(T_t, V_t)\right] \tag{31}$$

The Newton iteration formula for V_t is then given by

$$V_{t_{i+1}} = V_{t_i} - \frac{F}{F'} = V_{t_i} - \frac{\left[P_t - f_1(T_t, V_t)\right]}{\left(\frac{\partial}{\partial V_t}\right)_{P_t, T_t} \left[P_t - f_1(T_t, V_t)\right]} \tag{32}$$

where the first guess for V_t is the ideal gas value $V_t^o = RT_t / P_t$. The iteration process is continued until $V_{t_{i+1}} = V_{t_i}$ or the difference is sufficiently small, e.g., $\left|V_{t_{i+1}} - V_{t_i}\right| < 10^{-10}$.

The quantities P_t, T_t, and V_t [(and $\rho_t = W / V_t$)] are now known. Substituting the values of T_t and V_t into the entropy relationship

$$g[f_1(T_t, V_t), f_1(T_1, V_1), f_2(T)] = 0 \tag{33}$$

given in equation 29 yields a nonlinear equation in T_1 and V_1 which must be solved for T_1 and V_1. A nested iteration scheme can be used to find the root V_1 if an expansion temperature T_1 is chosen. An initial estimate of T_1 can be obtained from the (modified) ideal-gas equation

$$T_1 = \alpha T_t \left(\frac{P_s}{P_t}\right)^{(\gamma_t - 1)/\gamma_t} \tag{34}$$

where γ_t is the ratio of heat capacities C_p / C_v calculated at the total conditions with equation 14 and α is a constant between 0.9 and 1.0, e.g., .95. The Newton iteration formula for V_1 is

$$V_{1_{i+1}} = V_{1_i} - \frac{g\left[f_1(T_t,V_t),\, f_1(T_1,V_1),\, f_2(T)\right]}{\left(\dfrac{\partial}{\partial V_1}\right)_{T_t,V_t,T_1} g\left[f_1(T_t,V_t),\, f_1(T_1,V_1),\, f_2(T)\right]} \tag{35}$$

where $V_1^o = RT_1 / P_s$ is taken as the first guess for V_1. Iteration continues until $V_{1_{i+1}} = V_{1_i}$ or g is sufficiently small (e.g., $|g| < 10^{-16}$), and $V_1 > V_t$.

The quantities T_1 and V_1 are now known and P_1 can be calculated from the equation of state, $P_1 = f_1(T_1,V_1)$. The calculated value of P_1 is compared with the value of the given (or measured) static pressure P_s. If the values do not match to within some tolerance (e.g., 1 Pa), the temperature T_1 is varied and the nested iteration process involving T_1 and V_1 described above is repeated until the pressures do match.

The values of P_t, T_t, V_t, T_1, V_1, and P_1 resulting from the iterative procedures described above are used to evaluate the quantity $\Delta H = H(T_t,V_t) - H(T_1,V_1)$ given in equation 9. The flow quantities of interest are then calculated using equations 14-23. This procedure is repeated for each T_t, P_t, P_s, X_{134a} combination specified (or measured).

Program MIXRK

A flow chart indicating the primary computational steps in program MIXRK is shown in figure 3. The purpose of this section is to summarize the equations that have been implemented in the code to carry out those computations. See references 10 and 12 for details.

Program MIXRK calculates tables of isentropic flow properties given the total temperature, total pressure, and mole fraction of R-134a in the mixture by iterating on static temperature and specific volume to match a specified set of free-stream Mach numbers. As before, it is assumed that an equation of state relating pressure to temperature and specific volume (eq. 24) and an equation relating the ideal heat capacity at constant pressure to temperature (eq. 25) are known for the gas mixture. The program computes the free-stream properties of the gas mixture for an isentropic expansion from given total (stagnation) conditions T_t and P_t to a set of specified Mach numbers. The primary output is a table of flow properties similar in form to the subsonic tables of NACA Report 1135 (ref. 19) in which values for $P/P_t, \rho/\rho_t, T/T_t$, q/P_t, β, A/A^*, and u/u^* are tabulated as a function of free-stream Mach number.

The computational procedure in MIXRK is considerably different from that in MACHRK because of the need to find the sonic condition, and the fact that the expansions are from total conditions to conditions that correspond to the set of specified free-stream Mach numbers. However, while the computational procedure is different the primary equations needed to implement the procedure are the same as those used in MACHRK. The total specific volume V_t is

found using equations 30-32. The sonic condition is determined next using equations 33 and 35 in a nested iteration process involving T_1 and V_1. Once the sonic condition is found, the flow parameters needed for the remainder of the table are calculated. Reference 10 recommends that the values for $(T/T_t)^*$ and $(P/P_t)^*$ be recorded the first time that the sonic condition is found for a new gas and that the program be modified to initiate the sonic convergence procedure at $T_1 = (T/T_t)^* T_t$, $P_1 = (P/P_t)^* P_t$, and $V_1 = RT_1/P_1$. This has been done in program MIXRK.

Governing Equations for Real Gas Model

Specification of the explicit equations that describe the real gas model used in this report are made in this section. The Redlich-Kwong equation of state for mixtures and the corresponding mixing rules were obtained from reference 20. The nonlinear equation of state relating pressure, temperature, and specific volume is

$$P = \frac{RT}{V - b_{mix}} - \frac{a_{mix}}{V(V + b_{mix})\sqrt{T}} \tag{36}$$

where the coefficients a_{mix} and b_{mix} are obtained from the mixing rules

$$a_{mix} = \left(\sum_{i=1}^{n} X_i \sqrt{a_i} \right)^2 \tag{37}$$

and

$$b_{mix} = \sum_{i=1}^{n} X_i b_i \tag{38}$$

The coefficients for the individual species comprising the mixture are calculated from the critical temperature $T_{c,i}$ and the critical pressure $P_{c,i}$ for each species by using the equations

$$a_i = \frac{0.42748 R^2 T_{c,i}^{2.5}}{P_{c,i}} \tag{39a}$$

and

$$b_i = \frac{0.08664 R T_{c,i}}{P_{c,i}} \tag{39b}$$

It should be noted that, once a_{mix} and b_{mix} are calculated for the mixture, the computations proceed as though a_{mix} and b_{mix} were for a pure (single-component) gas.

The critical temperatures and pressures and the Redlich-Kwong coefficients for the constituent gases used in the present work are summarized in table 1. The critical conditions for R-134a were taken from reference 21; the values for the other gases were obtained from reference 20. It should be noted that, for this investigation, air is assumed to be composed of 79% N_2 and 21% O_2.

The ideal heat capacity at constant pressure for the mixture is given by

$$(C_p^o)_{mix} = \sum_{i=1}^{n} X_i\,(C_p^o)_i = X_{134a}\,(C_p^o)_{134a} + X_{air}\,(C_p^o)_{dry\ air + water\ vapor}$$

$$= X_{134a}\,(C_p^o)_{134a} + X_{air}\,[WP_{ratio}\,(C_p^o)_{water\ vapor} + AP_{ratio}\,(C_p^o)_{dry\ air}] \tag{40}$$

where

$$X_{air} = (1 - X_{134a})$$

$$WP_{ratio} = WP / 760$$

$$AP_{ratio} = 1 - WP_{ratio}$$

and WP is the pressure (in mm of Hg) of any water vapor which may be present in the air.

Expressions for the viscosity and thermal conductivity (refs. 22-23) of gas mixtures are typically obtained from the corresponding expressions for the viscosity and thermal conductivity of the constituent gases by means of mixing rules. A well-known mixing rule for viscosity that is suitable for the present work is given by Wilke (ref. 24). Wilke's equation for the viscosity of a mixture of two gases having viscosities μ_1 and μ_2 and molecular weights m_1 and m_2 can be written as:

$$\mu_{mix} = \frac{\mu_1}{1 + \dfrac{\dfrac{X_2}{X_1}\left[1 + \sqrt{\dfrac{\mu_1}{\mu_2}}\left(\dfrac{m_2}{m_1}\right)^{1/4}\right]^2}{\dfrac{4}{\sqrt{2}}\left(1 + \dfrac{m_1}{m_2}\right)^{1/2}}} + \frac{\mu_2}{1 + \dfrac{\dfrac{X_1}{X_2}\left[1 + \sqrt{\dfrac{\mu_2}{\mu_1}}\left(\dfrac{m_1}{m_2}\right)^{1/4}\right]^2}{\dfrac{4}{\sqrt{2}}\left(1 + \dfrac{m_2}{m_1}\right)^{1/2}}} \tag{41}$$

For pressures that are well below the critical pressures of the component gases, viscosities are essentially independent of pressure (density) and a function of temperature alone. A similar mixing rule was recommended by Wilke for the thermal conductivity of a mixture of gases except that the viscosities μ_i are replaced by the conductivities k_i. Wilke's equation for the thermal conductivity of a mixture of two gases having conductivities k_1 and k_2 and molecular weights m_1 and m_2 is then given by:

$$k_{mix} = \frac{k_1}{1 + \dfrac{\dfrac{X_2}{X_1}\left[1+\sqrt{\dfrac{\mu_1}{\mu_2}}\left(\dfrac{m_2}{m_1}\right)^{1/4}\right]^2}{\dfrac{4}{\sqrt{2}}\left(1 + \dfrac{m_1}{m_2}\right)^{1/2}}} + \frac{k_2}{1 + \dfrac{\dfrac{X_1}{X_2}\left[1 + \sqrt{\dfrac{\mu_2}{\mu_1}}\left(\dfrac{m_1}{m_2}\right)^{1/4}\right]^2}{\dfrac{4}{\sqrt{2}}\left(1 + \dfrac{m_2}{m_1}\right)^{1/2}}} \tag{42}$$

For low reduced pressures, the thermal conductivity is, like viscosity, essentially independent of pressure (density).

The viscosity of air is computed by Sutherland's formula (ref. 19):

$$\mu_{air} = 1.086881879\times10^{-6}\,\frac{(1.8T)^{3/2}}{1.8T + 198.6} \quad \text{N-sec/m}^2 \tag{43}$$

The thermal conductivity of air is given by (ref. 25):

$$k_{air} = \frac{Akair\sqrt{T}}{1 + \dfrac{Bkair\times10^{-\frac{Ckair}{T}}}{T}} \quad \text{J/m-sec-K} \tag{44}$$

where

$Akair = .00264638$
$Bkair = 245.4$
$Ckair = 12.$

Constant-pressure ideal heat capacity equation for R-134a (ref. 21):

$$C_p^o = Acp + Bcp\,T + Ccp\,T^2 + Dcp\,T^3 + Ecp\,/\,T^2 \tag{45}$$

where

$Acp = 19400.6$
$Bcp = 258.531$
$Ccp = -0.129665$
$Dcp = 0.0$
$Ecp = 0.0$

Constant-pressure ideal heat capacity equation for water vapor (ref. 20):

$$C_p^o = Acph2o + Bcph2o\,T + Ccph2o\,T^2 + Dcph2o\,T^3 \tag{46}$$

where

$Acph2o = 3.224\times10^5$
$Bcph2o = 1.924$
$Ccph2o = 1.055\times10^{-2}$
$Dcph2o = -3.596\times10^{-6}$

Constant-pressure ideal heat capacity equation for dry air (ref. 15):

$$C_p^o = Acpair + Bcpair\,T + Ccpair\,T^2 + Dcpair\,T^3 \tag{47}$$

where

$Acpair = 28110.$
$Bcpair = -11.091$
$Ccpair = .004802$
$Dcpair = -1.966\times10^{-6}$

Viscosity equation for R-134a (ref. 26):

$$\mu_{134a} = Amu134a + Bmu134a\,T \tag{48}$$

where

$$Amu134a = 4.8347 \times 10^{-7}$$
$$Bmu134a = 3.8599 \times 10^{-8}$$

Thermal conductivity equation for R-134a (ref. 26):

$$k_{134a} = Ak134a + Bk134a\, T \tag{49}$$

where

$$Ak134a = -.01410$$
$$Bk134a = .000096$$

Vapor pressure equation for R-134a (ref. 21):

$$\log(P_{vp}) = Avp + Bvp/T + Cvp\ \log(T) + Dvp\,T + Evp\,[(Fvp - T)/T]\ \log(Fvp - T) \tag{50}$$

where

$$Avp = 4.069889 \times 10^{1}$$
$$Bvp = -2.362540 \times 10^{3}$$
$$Cvp = -1.306883 \times 10^{1}$$
$$Dvp = 7.616005 \times 10^{-3}$$
$$Evp = 2.342564 \times 10^{-1}$$
$$Fvp = 3.761111 \times 10^{2}$$

Computer Programs

Development and Verification Procedures

Real-Gas Codes

The procedures employed for modifying the SF_6/air mixture codes of reference 12 to treat mixtures of R-134a and air and verifying the operation of the modified codes are described in this section.

The SF_6/air programs that were modified are called machRK and mixRK in reference 12. These names are retained in the present work except that they are written as MACHRK and

MIXRK, respectively. It should be pointed out that the SF_6/air programs were tested and verified extensively by their author over a range of operating conditions well beyond (but including) that experienced in the TDT. Thus, the technical integrity of the original programs is well established and they provided a sound starting point for the subject modifications. However, to ensure proper insertion of new code for R-134a into the existing codes, the theoretical, analytical and computational bases of the codes (refs. 10-11) were first thoroughly reviewed. The codes (ref. 12) were then studied to identify the manner in which the relevant analytical and computational operations were encoded. Once this level of understanding of the programs was established, the algebraic manipulations that are implied by equations 8 to 35 were carried out to ensure the ability to reproduce the pertinent SF_6/air expressions in the codes. These preparatory actions were deemed a necessary first step before proceeding with any serious modifications to the programs. Programs MACHRK and MIXRK were then obtained from their author and executed using the input data sets of reference 12 to demonstrate the ability to replicate the results in reference 12. At this point, modification of the programs could begin with confidence. The modification and verification procedures employed were incremental in that only a few modifications were made at any one time before program execution and replication of previously computed results were demonstrated. During this process, comparisons were also made to known results in the literature when appropriate to verify computed results. Modifications made to the programs are summarized first. This is followed by a summary of the comparisons that were made with results in the literature as part of the program verification process.

A chronological summary of the major modifications made to the original programs follows: All SF_6-related variable names were changed to reflect R-134a. The option of having input/output quantities in either U.S. Customary units or SI units was introduced. The data and code necessary to treat R-12 were added. This intermediate step was motivated by the recognition that a substantial portion of the new code for R-134a/air mixtures could be validated by comparing with existing results for R-12/air mixtures. Data for R-12 were obtained from references 20, 27-30. After verifying the computed results for both R-12 and R-12/air mixtures, the data and additional code for R-134a were introduced. Data for R-134a were obtained from references 21 and 31. The assumption that air is calorically perfect was relaxed by introducing an expression for $(C_p^o)_{air}$ which accounts for its variation with temperature (ref. 15). Code for the calculation of thermal conductivity and Prandtl number was added. Where appropriate, names of variables were changed for consistency with added code. Several output quantities were added, deleted, or reformatted. Extraneous code was deleted. Finally, extensive commentary was added throughout the codes.

A number of comparisons were made with numerical results in the literature to verify correct operation of the programs as they were being modified and after modification. These comparisons were made over a range of pressures and temperatures that included the range of values experienced in operations of the TDT. Typically, total pressures (P_t) and static pressures (P_s) varied from 2200 psf to 50 psf, and stagnation temperatures varied from –20 °F to 140 °F. The comparisons were made for both dynamic (Mach number ≠ 0) and static (quiescent) conditions. While some of these comparisons exhibited exact agreement, in most cases the agreement was excellent but not exact. However, in the instances in which differences were noted, they could be attributed to the subtle differences among the various gas models.

Substantiation of MACHRK and MIXRK for SF_6 /air computations was demonstrated by reproducing the results shown in reference 12. The results are in exact agreement in this case because the gas models are identical. The programs were then verified for pure air calculations (X134a = 0.0). MACHRK was verified by duplicating the Mach-q curves shown in figure 1c of LWP-799, and by confirming the values of μ, k, Pr, and C_p^o for air given in tables 2-8, 2-9, 2-10, and 2-11 of reference 25 over the temperature range of interest. The operation of MIXRK was substantiated by introducing temporary code into MIXRK to enforce ideal-gas behavior on air and then reproducing the tabular values in reference 19. Next, the programs were verified for calculations with R-12. MACHRK was verified for pure R-12 computations (X134a = 1.0) by confirming results given for R-12 in references 15 and 29. MIXRK was verified by comparing to results in an unpublished table that was generated during the development of the original R-12/air equations for the TDT. MACHRK was specialized to a 95% R-12/air mixture (X134a = 0.95) and used to duplicate the Mach-q curves shown in figure 1b of LWP-799. Having demonstrated the integrity of the real-gas codes for computations involving either SF_6 or R-12, the final step was to verify the programs for calculations with R-134a. MACHRK was specialized to pure R-134a and used to demonstrate agreement with results given in reference 31. MIXRK was specialized to pure R-134a and its results compared with results obtained from MACHRK at comparable conditions. Because no results for R-134a/air mixtures were found in the literature, no rigorous check of the real-gas codes could be made for such conditions. However, the Mach-q behavior computed for R-134a/air mixtures was always in close agreement with the behavior computed for R-12/air mixtures at comparable conditions. This agreement was expected and was in fact the driving requirement in selecting a replacement heavy gas for R-12. Thus, the computed results were judged correct. Additional credence was given the mixture calculations by comparisons with results obtained from MACHPG, a perfect gas version of MACHRK (see comments in next section).

The real-gas programs contain several places where numerical values are specified either as a threshold ("epsilon") value used in testing nearness to zero or as part of an expression used to set values for iteration. The values in the original programs were tailored to treat SF_6/air mixtures over the range of conditions considered in reference 12. However, it was found that the original settings were applicable to R-134a/air mixtures (as well as R-12/air and SF_6/air) for the range of conditions of interest in the TDT with only a few minor adjustments.

Perfect-Gas Code

During the course of the many calculations that were made during the verification process for the real-gas codes, it was observed that the compressibility factor Z tended to be close to unity for many of the conditions analyzed. Because Z is unity for an ideal gas, this indicated that the behavior of the real gas did not depart markedly from the behavior of an ideal gas at those conditions. This suggested that the "rigor" of a real-gas analysis might not always be required, in which case a perfect-gas code might be sufficient. Program MACHPG was written to serve as a computational alternative to MACHRK in those cases where real-gas effects are not important. It is a new code and was developed in a straightforward manner using well-established equations for dealing with mixtures of perfect gases (see, for example, ref. 14). To allow for variable specific heats, the gases comprising the mixture in MACHPG are assumed calorically imperfect. The theory and computational procedure underlying this code are summarized in Appendix A. Because of the elementary nature of the formulation on which this code is based, the fidelity of

the program can be established on mathematical logic alone. However, for completeness, the program was also verified numerically. Calculated results for pure air and pure R-134a were verified in the same manner as was done for MACHRK, except that the comparisons were made at pressures low enough to ensure essentially ideal-gas behavior. Operation of the program for mixture calculations was verified by comparing the results from MACHPG with comparable low-pressure results from MACHRK.

Because of the lack of definitive data for verifying MACHRK for mixtures of R-134a and air, MACHPG was used to check MACHRK for mixture calculations. This check consisted of comparing results obtained from the two codes over the full range of TDT operating conditions and confirming that the MACHRK results were either the same as or acceptably close to the MACHPG results.

General Comments Relevant to Codes

Programs MACHRK and MIXRK treat mixtures of real gases. MACHPG is a perfect gas version of MACHRK. As mentioned earlier, it was written to provide a simpler computational alternative to MACHRK in those cases where real-gas effects are not important. All three programs are written in FORTRAN 77 with the variables, constants, and functions declared double precision where necessary to ensure the 16 significant decimal digits of precision needed for computations on 32-bit machines. Calculations are done in SI units but input/output quantities can be in either SI or U.S. Customary units. The programs have been compiled, linked, and executed using Lahey Computer Systems' Fortran 90 (LF90) compiler (version 4.5) on a Pentium II-class PC with Windows NT 4.0.

Selection of units (either U.S. Customary or SI) is made in the source code by activating (uncommenting) and deactivating (commenting) the statements `iunits=1` and `iunits=0` as appropriate. Water vapor can be included as part of the air mixture in the real-gas codes by setting the code variable `WP` equal to its vapor pressure expressed in mm of Hg. The SF_6 and R-12 data that were used in the development and verification of the real-gas codes have been retained in the codes but are deactivated (commented). Retention of the R-12-relevant code in MACHRK provides a backward compatibility with the R-12/air code that was used previously at the TDT.

The names of variables used in the codes are intended to replicate to the extent possible the nomenclature used for the variables in the equations presented in the text. However, because of naming conflicts this has not always been possible. In addition, for convenience, sometimes more than one name is used for the same variable. Although the naming convention is not fully consistent among the three codes, the differences are not extensive and should not cause any confusion.

Specific Comments Relevant to Codes

Program MACHRK

Program MACHRK reads total pressure (Pt), static pressure (Ps), total temperature (Tt), and mole fraction of R-134a in the mixture (X134a) from the input file `PsInR-K`. Input can be in either SI or U.S. Customary units. A description of the required input format is given in Ap-

pendix B. The program computes Mach number M, dynamic pressure q, velocity u, static temperature T, mass density ρ, ratio of specific heats γ, speed of sound a, viscosity μ, Reynolds number Re, Prandtl number Pr, and compressibility factor Z. Output from the program is written to the file `MOUTR-K`. Because subsequent executions of the program will replace (overwrite) the contents of file `MOUTR-K`, the user must rename the file if the output needs to be saved.

The user has the option of substituting SF_6 or R-12 properties for R-134a. This option is exercised by activating (uncommenting) the appropriate set of statements near the beginning of the code.

The program that has been implemented at the TDT for calculating tunnel flow properties is based on (but not identical to) MACHRK. Differences between the two programs are associated primarily with changes that were made to MACHRK to have it conform to the open architecture structure of the other tunnel programs at the Langley Research Center.

Program MIXRK

Program MIXRK reads total pressure (Pt), total temperature (Tt), and mole fraction of R-134a in the mixture (X134a) from the input file `inmix`. Input can be in either SI or U.S. Customary units. The required input format is given in Appendix C. The primary output from the program is a table of isentropic flow properties in the style of the subsonic air table in NACA Report 1135 (ref. 19). This table gives P/P_t, ρ/ρ_t, T/T_t, q/P_t, β, A/A^*, and u/u^* as a function of free-stream Mach number. The secondary output includes a number of free-stream or local parameters such as T, P, γ, a, Re, and Pr as a tabular function of the same set of free-stream Mach numbers. The primary output is written to file `outmix6`. The secondary output is written to file `outmix8`. Because subsequent executions of the program will replace (overwrite) the contents of these output files, the user must rename the files if the output needs to be saved.

The user has the option of substituting SF_6 or R-12 properties for R-134a. This option is exercised by activating (uncommenting) the appropriate set of statements near the beginning of the code.

Program MACHPG

Program MACHPG treats mixtures of R-134a and air only and does not include the option of substituting SF_6 or R-12 properties for R-134a as do the real-gas codes. While the program is based on the assumption of a thermally perfect gas, the gas is assumed calorically imperfect. However, the user has the option to specify that the gases are calorically perfect. This option is selected by activating (uncommenting) the appropriate statements near the beginning of the code. The required input is identical to that of MACHRK (see Appendix B). However, for consistency of notation the input file for MACHPG is named `PsInPG` rather than `PsInR-K`. Input can be in either SI or U.S. Customary units. MACHPG computes the same flow quantities as MACHRK, namely: Mach number M, dynamic pressure q, velocity u, static temperature T, mass density ρ, specific heat ratio γ, speed of sound a, viscosity μ, Reynolds number Re, and Prandtl number Pr. Output from the program is written to the file `MOUTPG`. As for the other codes, because subsequent executions of the program will replace the contents of file `MOUTPG` the user must rename the file if the output needs to be saved.

Illustrative Calculated Flow Properties

Flow properties calculated using each of the three programs described in this report are presented in this section. Emphasis is on results obtained with the real-gas codes. In each case, the set of values used for the input quantities P_t, P_s, T_t, and X_{134a} includes combinations that encompass values experienced in typical operations of the TDT. It should be emphasized that the results shown are for illustrative purposes only and are not intended to be the definitive curves characterizing the TDT. To be consistent with the units of measurement and display employed at the TDT, the numerical results presented are in U.S. Customary units.

The primary "working curves" used by test engineers at the TDT during an actual test are calculated plots of dynamic pressure versus Mach number (so-called "Mach-q curves") for various constant total pressures and a fixed value of total temperature. These curves extend to the operating boundaries of the tunnel as defined by either tunnel structural design limits or drive motor power limits. A number of ancillary working curves have also been found useful for estimating other flow properties (see LWP-799). Several of these types of curves are presented here as part of the illustrative results.

Mach-q curves for air computed by program MACHRK assuming pure air (X134a = 0.0) and a total temperature of 100 °F are given in figure 4. These curves are equivalent to the air curves shown in LWP-799. For heavy gas testing, a 95-percent R-134a/air mixture (X134a = .95) and a total temperature of 100 °F are representative of the average conditions in many tests. Unless noted otherwise, these values were used for calculating the mixture flow properties shown in this report. Mach-q curves for R-134a/air computed by MACHRK are shown in figure 5. The associated input and output data are given in Appendices G and H, respectively. Comparison of these curves with those shown for R-12/air in LWP-799 shows considerable similarity, as was expected since R-134a and R-12 have comparable properties. Program MACHRK was also used to compute the data needed to generate the curves presented in figures 6-12. The variation of density with static pressure for several fixed values of static temperature is given in figure 6. Figure 7 shows the variation of speed of sound with static temperature for three values of static pressure. The variations with static temperature of viscosity and thermal conductivity are shown in figures 8 and 9, respectively. Figure 10 illustrates the variation of Reynolds number with Mach number for several combinations of constant static pressure and total temperature. The variation of static temperature with Mach number for a series of total temperatures ranging from 0 °F to 120 °F is shown in figure 11. A carpet-type plot portraying the variation of the ratio of specific heats with speed of sound for several combinations of static temperature and R-134a volume fraction is given in figure 12.

The variations of P/P_t, q/P_t, T/T_t, and ρ/ρ_t with Mach number were computed by MIXRK using the input data given in Appendix I. The calculated results are presented in Appendix J and the corresponding curves are shown in figure 13.

Results computed with MACHPG using the same input data that were used for MACHRK (Appendix D) are shown in Appendix H. A comparison of the flow parameters calculated using the perfect gas equations (Appendix H) with the values calculated using MACHRK (Appendix E) indicates considerable agreement. This suggests that, depending on the range of

conditions considered, the results obtained using a perfect-gas code can be an acceptable approximation to the results obtained with a real-gas code.

Concluding Remarks

Three computer programs for calculating the isentropic flow properties of R-134a/air mixtures which were developed in support of the heavy gas conversion of the Langley Transonic Dynamics Tunnel (TDT) from dichlorodifluoromethane (R-12) to 1,1,1,2 tetrafluoroethane (R-134a) have been described. The first program (MACHRK) calculates the Mach number and the corresponding flow properties when the total temperature, total pressure, static pressure, and mole fraction of R-134a in the mixture are given. The second program (MIXRK) calculates tables of isentropic flow properties as a function of a specified set of free-stream Mach numbers given the total pressure, total temperature, and mole fraction of R-134a. Real-gas effects are accounted for in these programs by treating the gases comprising the mixture as both thermally and calorically imperfect. The Redlich-Kwong equation of state for mixtures and the constant-pressure ideal heat capacity equation for the mixture are used in combination with the departure function approach of thermodynamics to obtain the expressions needed to compute the flow properties. These two programs are modified versions of programs that were developed earlier at Langley for a different heavy gas as part of another (unrelated) investigation. The third program (MACHPG) is a specialized version of the first program in which the gases are thermally perfect. It was written to provide a simpler computational alternative to the first program in those cases where real-gas effects are not important.

The theory and computational procedures underlying the programs were summarized, the equations used to compute the flow quantities of interest were presented, and the development and verification procedures were noted. Illustrative results calculated with the programs for a range of input values that encompass the operating conditions of the TDT were also shown. These results indicate (confirm) that the primary flow characteristics of the TDT for R-134a/air operations are not much different from those for R-12/air, as was expected. The programs have supported a number of activities associated with the heavy gas conversion of the TDT from R-12 to R-134a. In particular, program MACHRK is the basis of the program that has been implemented at the TDT for calculating tunnel flow properties.

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Appendix A

Theory and Computational Procedure for Mixtures of Thermally Perfect Gases

The assumption of a perfect gas is often a reasonable approximation in aeronautical applications. Indeed, air at standard conditions behaves very much like an ideal gas. The theory and computational procedure for a program in which the gases comprising the mixture are thermally perfect but calorically imperfect are summarized here. This new program (MACHPG) was written to provide a simpler computational alternative to MACHRK in those cases where real-gas effects are not important. A code for computing tables of isentropic flow properties like program MIXRK but for mixtures of thermally perfect gases is described in reference 32.

Theory

The equation of state for mixtures of thermally perfect gases can be written as

$$P = \frac{R_{mix} T}{V} \tag{A1}$$

or

$$P = \rho R_{mix} T \tag{A2}$$

where P is the pressure (Pa), R_{mix} is the gas constant (J/kg-K), V is the specific volume (m^3/kg), T is the absolute temperature (in degrees K), and ρ is the mass density (kg/m^3). The gas constant for the mixture is given by

$$R_{mix} = \frac{R}{W_{mix}} \tag{A3}$$

where the average molecular weight of a two-component (R-134a and air) mixture is given by

$$W_{mix} = \sum_{i=1}^{2} X_i W_i \tag{A4}$$

and

$$X_{air} = 1 - X_{134a} \tag{A5}$$

The equations for μ_{air}, μ_{134a}, k_{air}, k_{134a}, $C^o_{p_{134a}}$, and $C^o_{p_{air}}$ are the same as those used in the real-gas model.

Computational Procedure

Given T_t, P_t, and P_s, compute an initial estimate for γ_{mix} by substituting $\gamma_{air} = 1.4$ and $\gamma_{134a} = 1.11$ into the relation (ref. 16)

$$\gamma_{mix} = 1 - \frac{(1-\gamma_{134a})(1-\gamma_{air})}{X_{134a}(1-\gamma_{air}) + (1-X_{134a})(1-\gamma_{134a})} \tag{A6}$$

Compute an initial estimate of T_s for the mixture using the ideal-gas relationship

$$T_s = T_t \left(\frac{P_s}{P_t} \right)^{\frac{\gamma_{mix}-1}{\gamma_{mix}}} \tag{A7}$$

Compute new values of γ_{134a} and γ_{air}. These are obtained by using equations 45 and 47 to first compute $C^o_{p_{134a}}$ and $C^o_{p_{air}}$ at the temperature T_s obtained from equation A7 and then calculating γ_{air} and γ_{134a} using

$$\gamma_{air} = \frac{C^o_{p_{air}}}{C^o_{v_{air}}} = \frac{C^o_{p_{air}}}{C^o_{p_{air}} - R} \tag{A8a}$$

$$\gamma_{134a} = \frac{C^o_{p_{134a}}}{C^o_{v_{134a}}} = \frac{C^o_{p_{134a}}}{C^o_{p_{134a}} - R} \tag{A8b}$$

Compute a new value of γ_{mix} using equation A6. Repeat the procedure until convergence is attained (usually two cycles).

The values for speed of sound, Mach number, velocity, dynamic pressure, and density of the mixture then follow as:

$$a = \sqrt{\gamma_{mix} R_{mix} T_s} \tag{A9}$$

$$M = \sqrt{\frac{2}{\gamma_{mix} - 1}\left(\frac{T_t}{T_s} - 1\right)} \tag{A10}$$

$$u = M\,a \tag{A11}$$

$$q = \frac{1}{2}\gamma_{mix}\,P_s\,M^2 \tag{A12}$$

$$\rho = \frac{P_s}{R_{mix}\,T_s} \tag{A13}$$

Compute μ and k for air and R-134a with equations 43, 44, 48, and 49 using the value of T_s computed above. Then compute μ and k for the mixture using Wilke's formulas as given in equations 41 and 42. The Reynolds number per unit length for the mixture is then

$$\mathrm{Re} = \frac{\rho_{mix}\,u}{\mu_{mix}} \tag{A14}$$

and the Prandtl number is

$$\mathrm{Pr} = \left(\frac{\mu\,C_p}{k\,W}\right)_{mix} \tag{A15}$$

where C_p for the mixture is obtained from the relation

$$C_{p_{mix}} = \frac{\gamma_{mix}\,R}{\gamma_{mix} - 1} \tag{A16}$$

Appendix B

Input Format for Programs MACHRK and MACHPG

The input can be in either U.S. Customary units or SI units and is entered as follows:

Line	Format	Columns	Given or measured quantity
1	E10.3	1 to 10	Total temperature (Tt), °F or °K
	E10.3	11 to 20	Total pressure (Pt), lb/ft^2 or Pa
	E10.3	21 to 30	Static pressure (Ps), lb/ft^2 or Pa
	E10.3	31 to 40	Mole fraction of R-134a, ($0.0 \leq X134a \leq 1.0$)
2			Multiple cases can be run by furnishing values for Tt, Pt, Ps, and X134a as in line 1 for n cases
. . . . .	. . . . .	. . . . .	. . . . .
n			Line is for nth case
The read is terminated by an EOF check inside the program			

Appendix C

Input Format for Program MIXRK

The input can be in either U.S. Customary units or SI units and is entered as follows:

Line	Format	Columns	Given or measured quantity
1	E10.3 E10.3 E10.3	1 to 10 11 to 20 21 to 30	Total temperature (Tt), °F or °K Total pressure (Pt), lb/ft^2 or Pa Mole fraction of R-134a, ($0.0 \leq X134a \leq 1.0$)
2			Multiple cases can be run by furnishing values for Tt, Pt, and X134a as in line 1 for n cases
. . . . .	. . . . .	. . . . .	. . . . .
n			Line is for nth case
The read is terminated by an EOF check inside the program			

Appendix D

Sample Input for Programs MACHRK and MACHPG

(U.S. Customary units)

```
100.      2200.     2200.     .95
100.      2200.     2198.     .95
100.      2200.     2196.     .95
100.      2200.     2194.     .95
100.      2200.     2192.     .95
100.      2200.     2190.     .95
100.      2220.     2180.     .95
100.      2220.     2160.     .95
100.      2220.     2140.     .95
100.      2220.     2120.     .95
100.      2200.     2100.     .95
100.      2200.     2080.     .95
100.      2200.     2060.     .95
100.      2200.     2040.     .95
100.      2200.     2020.     .95
100.      2200.     2000.     .95
100.      2200.     1980.     .95
100.      2200.     1960.     .95
100.      2200.     1940.     .95
100.      2200.     1920.     .95
100.      2200.     1900.     .95
100.      2200.     1800.     .95
100.      2200.     1700.     .95
100.      2200.     1600.     .95
100.      2200.     1500.     .95
100.      2200.     1400.     .95
100.      2200.     1300.     .95
100.      2200.     1200.     .95
100.      2200.     1150.     .95
100.      2200.     1100.     .95
100.      2200.     1050.     .95
100.      2200.     1000.     .95
100.      2200.     950.      .95
100.      2200.     900.      .95
100.      2200.     850.      .95
100.      2200.     800.      .95
100.      1000.     1000.     .95
100.      1000.     999.5     .95
100.      1000.     999.      .95
100.      1000.     998.5     .95
100.      1000.     998.      .95
100.      1000.     996.      .95
100.      1000.     994.      .95
100.      1000.     992.      .95
100.      1000.     990.      .95
100.      1000.     988.      .95
100.      1000.     986.      .95
100.      1000.     984.      .95
100.      1000.     982.      .95
100.      1000.     980.      .95
100.      1000.     960.      .95
100.      1000.     940.      .95
100.      1000.     920.      .95
100.      1000.     900.      .95
100.      1000.     880.      .95
100.      1000.     860.      .95
```

```
100.      1000.     840.      .95
100.      1000.     820.      .95
100.      1000.     800.      .95
100.      1000.     780.      .95
100.      1000.     760.      .95
100.      1000.     740.      .95
100.      1000.     720.      .95
100.      1000.     700.      .95
100.      1000.     680.      .95
100.      1000.     660.      .95
100.      1000.     640.      .95
100.      1000.     620.      .95
100.      1000.     600.      .95
100.      1000.     580.      .95
100.      1000.     560.      .95
100.      1000.     540.      .95
100.      1000.     520.      .95
100.      1000.     500.      .95
100.      1000.     450.      .95
100.      1000.     400.      .95
100.      1000.     350.      .95
100.      1000.     300.      .95
100.      500.      500.      .95
100.      500.      490.      .95
100.      500.      480.      .95
100.      500.      470.      .95
100.      500.      460.      .95
100.      500.      450.      .95
100.      500.      440.      .95
100.      500.      430.      .95
100.      500.      420.      .95
100.      500.      410.      .95
100.      500.      400.      .95
100.      500.      390.      .95
100.      500.      380.      .95
100.      500.      370.      .95
100.      500.      360.      .95
100.      500.      350.      .95
100.      500.      340.      .95
100.      500.      330.      .95
100.      500.      320.      .95
100.      500.      310.      .95
100.      500.      300.      .95
100.      500.      280.      .95
100.      500.      270.      .95
100.      500.      260.      .95
100.      500.      240.      .95
100.      500.      220.      .95
100.      500.      200.      .95
100.      500.      180.      .95
100.      500.      160.      .95
100.      500.      140.      .95
100.      500.      120.      .95
100.      500.      100.      .95
100.      200.      200.      .95
100.      200.      190.      .95
100.      200.      180.      .95
100.      200.      170.      .95
100.      200.      160.      .95
100.      200.      150.      .95
100.      200.      140.      .95
100.      200.      130.      .95
100.      200.      120.      .95
100.      200.      110.      .95
```

100.	200.	100.	.95
100.	200.	90.	.95
100.	200.	80.	.95
100.	200.	70.	.95
100.	200.	60.	.95
100.	200.	50.	.95
100.	200.	40.	.95
100.	200.	30.	.95
100.	200.	20.	.95
100.	200.	10.	.95
100.	200.	5.	.95
100.	100.	100.	.95
100.	100.	98.	.95
100.	100.	96.	.95
100.	100.	94.	.95
100.	100.	92.	.95
100.	100.	90.	.95
100.	100.	88.	.95
100.	100.	86.	.95
100.	100.	84.	.95
100.	100.	82.	.95
100.	100.	80.	.95
100.	100.	78.	.95
100.	100.	76.	.95
100.	100.	74.	.95
100.	100.	72.	.95
100.	100.	70.	.95
100.	100.	65.	.95
100.	100.	60.	.95
100.	100.	55.	.95
100.	100.	50.	.95
100.	100.	45.	.95
100.	100.	40.	.95
100.	100.	35.	.95
100.	100.	30.	.95
100.	50.	40.	.95
100.	50.	39.	.95
100.	50.	38.	.95
100.	50.	37.	.95
100.	50.	36.	.95
100.	50.	35.	.95
100.	50.	34.	.95
100.	50.	33.	.95
100.	50.	32.	.95
100.	50.	31.	.95
100.	50.	30.	.95
100.	50.	28.	.95
100.	50.	26.	.95
100.	50.	24.	.95
100.	50.	22.	.95
100.	50.	20.	.95

Appendix E

Sample Output from Program MACHRK

```
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2200.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0000       0.00          0.01       0.7888E-02          2200.0        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.69        0.2641E-06      1.115    0.2225E+03     0.681      0.9861
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2198.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0408       2.01          22.57       0.7882E-02          2198.0         99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.67        0.2641E-06      1.115    0.6734E+06     0.681      0.9861
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2196.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0575       3.98          31.81       0.7875E-02          2196.0         99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.65        0.2641E-06      1.115    0.9486E+06     0.681      0.9861
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2194.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0705       6.00          39.05       0.7869E-02          2194.0         99.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.63        0.2641E-06      1.115    0.1164E+07     0.681      0.9861
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2192.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0814       7.98          45.07       0.7862E-02          2192.0         99.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.61        0.2640E-06      1.115    0.1342E+07     0.681      0.9861
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2190.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0910       9.97          50.39       0.7856E-02          2190.0         99.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.60        0.2640E-06      1.115    0.1499E+07     0.681      0.9861
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2220.0          2180.0          100.0          0.007961        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.1820      39.69         100.69       0.7831E-02          2180.0         99.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.25        0.2637E-06      1.115    0.2990E+07     0.681      0.9861
================================================================================
```

```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2220.0          2160.0          100.0          0.007961        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.2234       59.25         123.54       0.7765E-02         2160.0         98.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   553.05        0.2634E-06      1.115    0.3641E+07     0.681      0.9862
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2220.0          2140.0          100.0          0.007961        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.2585       78.65         142.94       0.7700E-02         2140.0         97.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   552.85        0.2632E-06      1.115    0.4181E+07     0.681      0.9863
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2220.0          2120.0          100.0          0.007961        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.2898       97.93         160.18       0.7634E-02         2120.0         97.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   552.65        0.2630E-06      1.115    0.4650E+07     0.682      0.9864
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2100.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.2912       97.90         160.92       0.7562E-02         2100.0         97.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   552.70        0.2630E-06      1.115    0.4627E+07     0.682      0.9866
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2080.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.3197      116.95         176.66       0.7496E-02         2080.0         96.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   552.50        0.2627E-06      1.115    0.5040E+07     0.682      0.9866
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2060.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.3463      135.86         191.24       0.7431E-02         2060.0         96.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   552.29        0.2625E-06      1.115    0.5413E+07     0.682      0.9867
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2040.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.3711      154.55         204.88       0.7365E-02         2040.0         95.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   552.08        0.2622E-06      1.115    0.5754E+07     0.682      0.9868
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2020.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.3946      173.09         217.79       0.7299E-02         2020.0         95.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   551.87        0.2620E-06      1.115    0.6068E+07     0.682      0.9869
================================================================================
```

```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          2000.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.4171     191.45         230.09       0.7234E-02          2000.0         94.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   551.66        0.2617E-06      1.115    0.6359E+07     0.682       0.9870
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          1980.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.4386     209.62         241.86       0.7168E-02          1980.0         94.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   551.44        0.2615E-06      1.115    0.6630E+07     0.683       0.9871
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          1960.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.4593     227.59         253.17       0.7102E-02          1960.0         93.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   551.22        0.2612E-06      1.115    0.6883E+07     0.683       0.9872
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          1940.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.4794     245.40         264.12       0.7036E-02          1940.0         93.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   551.00        0.2609E-06      1.115    0.7121E+07     0.683       0.9873
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          1920.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.4988     263.01         274.73       0.6970E-02          1920.0         92.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   550.78        0.2607E-06      1.115    0.7345E+07     0.683       0.9874
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          1900.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.5177     280.43         285.03       0.6904E-02          1900.0         91.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   550.55        0.2604E-06      1.115    0.7556E+07     0.683       0.9875
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          1800.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.6063     364.56         333.06       0.6574E-02          1800.0         88.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   549.37        0.2591E-06      1.116    0.8450E+07     0.684       0.9880
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          1700.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.6878     443.55         377.02       0.6242E-02          1700.0         85.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   548.12        0.2576E-06      1.116    0.9133E+07     0.685       0.9885
================================================================================
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Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
2200.0	1600.0	100.0	0.007888	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7653	517.13	418.43	0.5908E-02	1600.0	82.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
546.77	0.2561E-06	1.116	0.9651E+07	0.687	0.9890

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
2200.0	1500.0	100.0	0.007888	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8402	584.88	458.20	0.5572E-02	1500.0	78.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
545.33	0.2545E-06	1.117	0.1003E+08	0.688	0.9895

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
2200.0	1400.0	100.0	0.007888	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9139	646.38	496.96	0.5235E-02	1400.0	74.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
543.77	0.2528E-06	1.117	0.1029E+08	0.690	0.9900

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
2200.0	1300.0	100.0	0.007888	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9873	701.18	535.23	0.4896E-02	1300.0	70.8

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
542.09	0.2509E-06	1.117	0.1044E+08	0.691	0.9905

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
2200.0	1200.0	100.0	0.007888	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.0614	748.69	573.42	0.4555E-02	1200.0	66.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
540.25	0.2490E-06	1.118	0.1049E+08	0.693	0.9910

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
2200.0	1150.0	100.0	0.007888	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.0989	769.53	592.62	0.4383E-02	1150.0	64.1

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
539.27	0.2479E-06	1.118	0.1048E+08	0.695	0.9913

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
2200.0	1100.0	100.0	0.007888	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.1370	788.28	611.95	0.4210E-02	1100.0	61.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
538.23	0.2468E-06	1.118	0.1044E+08	0.696	0.9916

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
2200.0	1050.0	100.0	0.007888	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.1756	804.86	631.46	0.4038E-02	1050.0	59.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
537.15	0.2457E-06	1.119	0.1038E+08	0.697	0.9918

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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          1000.0          100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.2149      819.14        651.20       0.3864E-02         1000.0        56.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   536.00        0.2445E-06      1.119    0.1029E+08     0.698      0.9921
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          950.0           100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.2551      831.01        671.22       0.3689E-02          950.0         53.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   534.80        0.2432E-06      1.119    0.1018E+08     0.700      0.9924
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          900.0           100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.2963      840.33        691.60       0.3514E-02          900.0         50.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   533.52        0.2419E-06      1.120    0.1004E+08     0.702      0.9927
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          850.0           100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.3387      846.94        712.39       0.3338E-02          850.0         47.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   532.16        0.2405E-06      1.120    0.9885E+07     0.703      0.9930
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    2200.0          800.0           100.0          0.007888        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.3825      850.66        733.68       0.3161E-02          800.0         44.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   530.71        0.2391E-06      1.120    0.9700E+07     0.706      0.9933
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0          1000.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0000       0.00           0.01       0.3558E-02         1000.0        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   557.25        0.2641E-06      1.112    0.1013E+03     0.679      0.9937
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0          999.5           100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0298       0.49          16.62       0.3557E-02          999.5        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   557.23        0.2641E-06      1.112    0.2238E+06     0.679      0.9937
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0          999.0           100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0422       0.98          23.52       0.3555E-02          999.0         99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   557.22        0.2641E-06      1.112    0.3166E+06     0.679      0.9937
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           998.5          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0523       1.51          29.12       0.3553E-02          998.5         99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   557.21        0.2641E-06      1.112    0.3917E+06     0.679       0.9937
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           998.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0602       2.00          33.55       0.3552E-02          998.0         99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   557.20        0.2641E-06      1.112    0.4512E+06     0.679       0.9937
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           996.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0853       4.01          47.54       0.3545E-02          996.0         99.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   557.15        0.2640E-06      1.112    0.6383E+06     0.679       0.9937
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           994.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.1044       5.99          58.19       0.3539E-02          994.0         99.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   557.10        0.2640E-06      1.112    0.7799E+06     0.679       0.9937
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           992.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.1207       7.98          67.23       0.3532E-02          992.0         99.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   557.06        0.2639E-06      1.112    0.8996E+06     0.679       0.9938
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           990.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.1349       9.95          75.13       0.3526E-02          990.0         99.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   557.01        0.2639E-06      1.112    0.1004E+07     0.679       0.9938
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           988.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.1478      11.92          82.32       0.3520E-02          988.0         99.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   556.96        0.2638E-06      1.112    0.1098E+07     0.679       0.9938
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           986.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.1598      13.91          88.99       0.3513E-02          986.0         99.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   556.91        0.2638E-06      1.112    0.1185E+07     0.679       0.9938
================================================================================
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Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	984.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.1710	15.90	95.23	0.3507E-02	984.0	99.1

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
556.86	0.2637E-06	1.112	0.1266E+07	0.679	0.9938

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	982.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.1815	17.86	101.04	0.3500E-02	982.0	99.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
556.82	0.2637E-06	1.112	0.1341E+07	0.679	0.9938

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	980.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.1914	19.84	106.57	0.3494E-02	980.0	98.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
556.77	0.2636E-06	1.112	0.1412E+07	0.679	0.9938

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	960.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.2721	39.27	151.36	0.3429E-02	960.0	97.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
556.28	0.2631E-06	1.112	0.1972E+07	0.679	0.9939

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	940.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.3351	58.34	186.24	0.3364E-02	940.0	96.6

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
555.78	0.2626E-06	1.112	0.2386E+07	0.680	0.9940

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	920.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.3891	77.01	216.07	0.3300E-02	920.0	95.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
555.27	0.2620E-06	1.112	0.2720E+07	0.680	0.9941

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	900.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.4376	95.30	242.75	0.3235E-02	900.0	94.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
554.74	0.2615E-06	1.112	0.3003E+07	0.680	0.9942

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	880.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.4822	113.19	267.26	0.3170E-02	880.0	92.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
554.21	0.2609E-06	1.113	0.3246E+07	0.681	0.9943

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	860.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.5240	130.64	290.13	0.3104E-02	860.0	91.6

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
553.66	0.2604E-06	1.113	0.3459E+07	0.681	0.9944

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	840.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.5637	147.69	311.78	0.3039E-02	840.0	90.3

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
553.09	0.2598E-06	1.113	0.3647E+07	0.682	0.9945

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	820.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.6017	164.28	332.42	0.2974E-02	820.0	89.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
552.51	0.2592E-06	1.113	0.3814E+07	0.682	0.9946

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	800.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.6383	180.45	352.30	0.2908E-02	800.0	87.6

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
551.92	0.2585E-06	1.113	0.3962E+07	0.683	0.9947

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	780.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.6739	196.13	371.52	0.2842E-02	780.0	86.3

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
551.31	0.2579E-06	1.113	0.4094E+07	0.683	0.9947

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	760.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7086	211.36	390.22	0.2776E-02	760.0	84.8

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
550.68	0.2573E-06	1.113	0.4211E+07	0.684	0.9948

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	740.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7426	226.08	408.46	0.2710E-02	740.0	83.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
550.04	0.2566E-06	1.114	0.4314E+07	0.684	0.9949

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	720.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7761	240.32	426.38	0.2644E-02	720.0	81.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
549.38	0.2559E-06	1.114	0.4405E+07	0.685	0.9950

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	700.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8092	254.04	443.98	0.2578E-02	700.0	80.3

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
548.69	0.2552E-06	1.114	0.4484E+07	0.686	0.9951

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	680.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8419	267.21	461.33	0.2511E-02	680.0	78.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
547.99	0.2545E-06	1.114	0.4551E+07	0.686	0.9952

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	660.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8744	279.85	478.52	0.2445E-02	660.0	77.1

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
547.26	0.2538E-06	1.114	0.4609E+07	0.687	0.9953

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	640.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9068	291.92	495.55	0.2378E-02	640.0	75.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
546.51	0.2530E-06	1.115	0.4656E+07	0.688	0.9954

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	620.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9391	303.41	512.50	0.2311E-02	620.0	73.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
545.74	0.2522E-06	1.115	0.4694E+07	0.688	0.9956

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	600.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9714	314.28	529.36	0.2243E-02	600.0	71.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
544.93	0.2514E-06	1.115	0.4723E+07	0.689	0.9957

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	580.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.0038	324.53	546.20	0.2176E-02	580.0	70.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
544.10	0.2506E-06	1.115	0.4742E+07	0.690	0.9958

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
1000.0	560.0	100.0	0.003558	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.0364	334.11	563.02	0.2108E-02	560.0	68.1

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
543.24	0.2497E-06	1.116	0.4752E+07	0.691	0.9959

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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           540.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.0692      343.03         579.90        0.2040E-02          540.0         66.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   542.35        0.2488E-06      1.116    0.4754E+07     0.692       0.9960
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           520.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.1024      351.24         596.84        0.1972E-02          520.0         64.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   541.42        0.2479E-06      1.116    0.4747E+07     0.693       0.9961
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           500.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.1359      358.72         613.90        0.1904E-02          500.0         62.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   540.45        0.2470E-06      1.116    0.4732E+07     0.694       0.9962
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           450.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.2220      373.98         657.22        0.1732E-02          450.0         56.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   537.84        0.2444E-06      1.117    0.4657E+07     0.697       0.9965
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           400.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.3123      383.84         701.96        0.1558E-02          400.0         50.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   534.90        0.2415E-06      1.118    0.4528E+07     0.701       0.9968
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           350.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.4089      387.58         748.90        0.1382E-02          350.0         42.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   531.56        0.2383E-06      1.119    0.4343E+07     0.705       0.9970
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
    1000.0           300.0          100.0          0.003558        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.5141      384.22         798.94        0.1204E-02          300.0         34.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   527.67        0.2346E-06      1.120    0.4099E+07     0.711       0.9974
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           500.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0000        0.00           0.01        0.1773E-02          500.0        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   558.71        0.2641E-06      1.111    0.5067E+02     0.678       0.9969
================================================================================
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Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	490.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.1913	9.92	106.77	0.1741E-02	490.0	98.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
558.21	0.2636E-06	1.111	0.7052E+06	0.678	0.9969

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	480.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.2717	19.63	151.55	0.1709E-02	480.0	97.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
557.70	0.2631E-06	1.111	0.9844E+06	0.678	0.9970

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	470.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.3348	29.18	186.56	0.1677E-02	470.0	96.6

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
557.18	0.2626E-06	1.111	0.1191E+07	0.679	0.9970

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	460.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.3888	38.52	216.42	0.1645E-02	460.0	95.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
556.65	0.2620E-06	1.111	0.1358E+07	0.679	0.9970

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	450.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.4372	47.65	243.13	0.1613E-02	450.0	94.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
556.10	0.2615E-06	1.111	0.1499E+07	0.680	0.9971

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	440.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.4819	56.62	267.71	0.1580E-02	440.0	92.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
555.54	0.2609E-06	1.111	0.1621E+07	0.680	0.9971

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	430.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.5236	65.34	290.61	0.1548E-02	430.0	91.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
554.97	0.2604E-06	1.112	0.1727E+07	0.680	0.9972

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	420.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.5633	73.87	312.27	0.1515E-02	420.0	90.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
554.39	0.2598E-06	1.112	0.1821E+07	0.681	0.9972

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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           410.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.6012       82.15         332.92       0.1483E-02          410.0         89.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.79        0.2592E-06      1.112    0.1904E+07     0.681       0.9973
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           400.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.6378       90.24         352.83       0.1450E-02          400.0         87.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   553.17        0.2586E-06      1.112    0.1978E+07     0.682       0.9973
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           390.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.6733       98.07         372.04       0.1417E-02          390.0         86.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   552.54        0.2579E-06      1.112    0.2044E+07     0.682       0.9974
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           380.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.7081      105.72         390.82       0.1384E-02          380.0         84.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   551.89        0.2573E-06      1.112    0.2103E+07     0.683       0.9974
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           370.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.7422      113.09         409.11       0.1352E-02          370.0         83.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   551.23        0.2566E-06      1.113    0.2154E+07     0.684       0.9975
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           360.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.7756      120.20         427.00       0.1319E-02          360.0         81.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   550.54        0.2560E-06      1.113    0.2199E+07     0.684       0.9975
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           350.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.8086      127.05         444.61       0.1286E-02          350.0         80.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   549.84        0.2553E-06      1.113    0.2239E+07     0.685       0.9976
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     500.0           340.0          100.0          0.001773        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.8414      133.66         462.02       0.1252E-02          340.0         78.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   549.11        0.2546E-06      1.113    0.2273E+07     0.685       0.9976
================================================================================
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Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	330.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8739	139.97	479.20	0.1219E-02	330.0	77.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
548.36	0.2538E-06	1.113	0.2302E+07	0.686	0.9977

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	320.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9062	146.00	496.23	0.1186E-02	320.0	75.5

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
547.59	0.2531E-06	1.114	0.2325E+07	0.687	0.9977

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	310.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9386	151.76	513.20	0.1153E-02	310.0	73.8

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
546.79	0.2523E-06	1.114	0.2344E+07	0.688	0.9978

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	300.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9708	157.19	530.05	0.1119E-02	300.0	72.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
545.97	0.2515E-06	1.114	0.2359E+07	0.689	0.9978

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	280.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.0360	167.13	563.80	0.1052E-02	280.0	68.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
544.23	0.2498E-06	1.115	0.2374E+07	0.690	0.9979

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	270.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.0688	171.59	580.67	0.1018E-02	270.0	66.3

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
543.31	0.2489E-06	1.115	0.2374E+07	0.691	0.9980

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	260.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.1019	175.70	597.62	0.9840E-03	260.0	64.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
542.36	0.2480E-06	1.115	0.2371E+07	0.692	0.9980

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	240.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.1694	182.80	631.89	0.9158E-03	240.0	59.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
540.33	0.2460E-06	1.116	0.2352E+07	0.695	0.9982

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	220.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.2393	188.30	666.89	0.8469E-03	220.0	55.3

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
538.12	0.2439E-06	1.117	0.2315E+07	0.697	0.9983

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	200.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.3120	192.03	702.83	0.7776E-03	200.0	50.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
535.70	0.2416E-06	1.117	0.2262E+07	0.700	0.9984

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	180.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.3887	193.80	740.20	0.7075E-03	180.0	44.5

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
533.01	0.2391E-06	1.118	0.2190E+07	0.704	0.9985

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	160.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.4706	193.37	779.39	0.6367E-03	160.0	38.3

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
529.99	0.2362E-06	1.119	0.2100E+07	0.708	0.9986

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	140.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.5592	190.43	821.04	0.5651E-03	140.0	31.3

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
526.57	0.2331E-06	1.120	0.1990E+07	0.713	0.9987

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	120.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.6571	184.59	865.97	0.4924E-03	120.0	23.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
522.60	0.2294E-06	1.122	0.1858E+07	0.720	0.9989

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
500.0	100.0	100.0	0.001773	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.7676	175.30	915.39	0.4185E-03	100.0	13.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
517.88	0.2251E-06	1.123	0.1701E+07	0.728	0.9990

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	200.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.0000	0.00	0.01	0.7080E-03	200.0	100.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
559.59	0.2641E-06	1.110	0.2027E+02	0.677	0.9987

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	190.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.3045	9.77	170.00	0.6760E-03	190.0	97.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
558.29	0.2629E-06	1.110	0.4372E+06	0.678	0.9988

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	180.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.4368	19.05	243.27	0.6439E-03	180.0	94.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
556.92	0.2615E-06	1.111	0.5989E+06	0.679	0.9988

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	170.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.5435	27.86	301.87	0.6115E-03	170.0	91.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
555.46	0.2601E-06	1.111	0.7097E+06	0.680	0.9989

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	160.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.6375	36.10	353.11	0.5791E-03	160.0	87.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
553.92	0.2586E-06	1.111	0.7906E+06	0.681	0.9989

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	150.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7250	43.79	400.42	0.5463E-03	150.0	84.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
552.28	0.2570E-06	1.112	0.8511E+06	0.683	0.9990

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	140.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8083	50.83	444.96	0.5135E-03	140.0	80.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
550.52	0.2553E-06	1.112	0.8949E+06	0.684	0.9990

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	130.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8899	57.23	488.22	0.4803E-03	130.0	76.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
548.63	0.2535E-06	1.113	0.9250E+06	0.686	0.9991

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
200.0	120.0	100.0	0.000708	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9707	62.90	530.55	0.4470E-03	120.0	72.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
546.58	0.2515E-06	1.114	0.9428E+06	0.688	0.9991

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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0           110.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.0521       67.78         572.72        0.4133E-03          110.0        67.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   544.35        0.2494E-06      1.114    0.9492E+06     0.690      0.9992
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0           100.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.1351       71.79         615.14        0.3795E-03          100.0        62.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   541.91        0.2471E-06      1.115    0.9448E+06     0.693      0.9992
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            90.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.2214       74.86         658.57        0.3452E-03           90.0        56.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   539.20        0.2445E-06      1.116    0.9298E+06     0.696      0.9993
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            80.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.3119       76.84         703.39        0.3106E-03           80.0        50.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   536.17        0.2416E-06      1.117    0.9041E+06     0.700      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            70.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.4084       77.59         750.30        0.2757E-03           70.0        43.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   532.73        0.2384E-06      1.118    0.8674E+06     0.704      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            60.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.5140       76.92         800.48        0.2401E-03           60.0        35.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   528.73        0.2348E-06      1.119    0.8187E+06     0.710      0.9995
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            50.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.6318       74.56         855.05        0.2040E-03           50.0        25.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   523.99        0.2304E-06      1.121    0.7569E+06     0.718      0.9995
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            40.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.7674       70.16         915.90        0.1673E-03           40.0        13.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   518.20        0.2252E-06      1.123    0.6804E+06     0.728      0.9996
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            30.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.9331       63.07         987.20       0.1295E-03           30.0         -1.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   510.68        0.2185E-06      1.126    0.5849E+06     0.744      0.9997
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            20.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  2.1521       52.33        1076.14       0.9039E-04           20.0        -21.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   500.04        0.2091E-06      1.130    0.4650E+06     0.771      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0            10.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  2.5028       35.59        1205.52       0.4899E-04           10.0        -56.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   481.66        0.1935E-06      1.138    0.3051E+06     0.840      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     200.0             5.0          100.0          0.000708        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  2.8330       23.09        1312.43       0.2681E-04            5.0        -89.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   463.27        0.1786E-06      1.146    0.1970E+06     0.952      0.9999
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0           100.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.0000        0.00           0.01       0.3538E-03          100.0        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   559.88        0.2641E-06      1.110    0.1015E+02     0.677      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            98.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.1902        1.97         106.39       0.3475E-03           98.0         98.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   559.37        0.2636E-06      1.110    0.1402E+06     0.677      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            96.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.2715        3.92         151.70       0.3410E-03           96.0         97.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   558.84        0.2631E-06      1.110    0.1966E+06     0.678      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            94.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.3346        5.84         186.82       0.3346E-03           94.0         96.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   558.30        0.2626E-06      1.110    0.2380E+06     0.678      0.9994
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            92.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.3884       7.70         216.65       0.3282E-03           92.0         95.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   557.75        0.2621E-06      1.110    0.2713E+06     0.678      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            90.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.4368       9.53         243.40       0.3218E-03           90.0         94.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   557.19        0.2615E-06      1.110    0.2994E+06     0.679      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            88.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.4814      11.32         267.95       0.3153E-03           88.0         93.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   556.61        0.2610E-06      1.111    0.3237E+06     0.679      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            86.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.5230      13.06         290.79       0.3089E-03           86.0         91.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   556.03        0.2604E-06      1.111    0.3449E+06     0.680      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            84.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.5627      14.77         312.54       0.3024E-03           84.0         90.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   555.42        0.2598E-06      1.111    0.3637E+06     0.680      0.9994
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            82.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.6010      16.44         333.41       0.2958E-03           82.0         89.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   554.80        0.2592E-06      1.111    0.3805E+06     0.681      0.9995
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            80.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.6374      18.05         353.25       0.2894E-03           80.0         87.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   554.17        0.2586E-06      1.111    0.3952E+06     0.681      0.9995
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
     100.0            78.0          100.0          0.000354        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.6729      19.62         372.45       0.2829E-03           78.0         86.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   553.53        0.2580E-06      1.111    0.4083E+06     0.682      0.9995
================================================================================
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Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	76.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7079	21.15	391.36	0.2763E-03	76.0	84.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
552.85	0.2573E-06	1.112	0.4201E+06	0.682	0.9995

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	74.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7416	22.61	409.49	0.2698E-03	74.0	83.5

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
552.18	0.2567E-06	1.112	0.4303E+06	0.683	0.9995

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	72.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7751	24.04	427.43	0.2632E-03	72.0	82.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
551.47	0.2560E-06	1.112	0.4394E+06	0.684	0.9995

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	70.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8084	25.42	445.21	0.2566E-03	70.0	80.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
550.75	0.2553E-06	1.112	0.4474E+06	0.684	0.9995

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	65.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.8897	28.62	488.32	0.2400E-03	65.0	76.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
548.84	0.2535E-06	1.113	0.4624E+06	0.686	0.9995

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	60.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.9702	31.44	530.51	0.2235E-03	60.0	72.1

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
546.80	0.2515E-06	1.113	0.4712E+06	0.688	0.9996

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	55.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.0518	33.89	572.78	0.2066E-03	55.0	67.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
544.55	0.2494E-06	1.114	0.4745E+06	0.690	0.9996

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	50.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.1348	35.89	615.17	0.1897E-03	50.0	62.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
542.10	0.2471E-06	1.115	0.4723E+06	0.693	0.9996

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	45.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.2212	37.43	658.70	0.1726E-03	45.0	56.6

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
539.37	0.2445E-06	1.116	0.4648E+06	0.696	0.9996

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	40.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.3117	38.42	703.49	0.1553E-03	40.0	50.3

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
536.33	0.2417E-06	1.117	0.4520E+06	0.700	0.9997

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	35.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.4084	38.80	750.49	0.1378E-03	35.0	43.2

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
532.87	0.2385E-06	1.118	0.4336E+06	0.704	0.9997

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
100.0	30.0	100.0	0.000354	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
1.5139	38.47	800.64	0.1200E-03	30.0	35.0

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
528.86	0.2348E-06	1.119	0.4093E+06	0.710	0.9997

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
50.0	40.0	100.0	0.000177	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.6379	9.04	353.59	0.1446E-03	40.0	87.7

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
554.29	0.2586E-06	1.111	0.1977E+06	0.681	0.9997

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
50.0	39.0	100.0	0.000177	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.6728	9.81	372.52	0.1414E-03	39.0	86.4

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
553.65	0.2580E-06	1.111	0.2041E+06	0.682	0.9997

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
50.0	38.0	100.0	0.000177	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7078	10.58	391.42	0.1381E-03	38.0	84.9

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
552.97	0.2573E-06	1.112	0.2100E+06	0.682	0.9997

Pt(lb/sq.ft)	Ps(lb/sq.ft)	Tt(deg F)	RHOt(slugs/cu.ft)	X134a	Xair
50.0	37.0	100.0	0.000177	0.950	0.050

M	q(lb/sq.ft)	u(ft/sec)	RHO(slugs/cu.ft)	P(lb/sq.ft)	T(deg F)
0.7411	11.30	409.30	0.1349E-03	37.0	83.5

a(ft/sec)	Mu(lb-sec/sq.ft)	Gamma	Re/ft	Pr	Z
552.30	0.2567E-06	1.112	0.2151E+06	0.683	0.9997

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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            36.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.7745       12.01         427.24       0.1316E-03           36.0         82.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   551.60        0.2560E-06      1.112    0.2196E+06     0.683      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            35.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.8083       12.71         445.27       0.1282E-03           35.0         80.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   550.86        0.2553E-06      1.112    0.2237E+06     0.684      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            34.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.8405       13.36         462.40       0.1250E-03           34.0         78.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   550.12        0.2546E-06      1.112    0.2270E+06     0.685      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            33.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.8732       14.00         479.68       0.1217E-03           33.0         77.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   549.35        0.2539E-06      1.113    0.2299E+06     0.686      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            32.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.9062       14.61         497.11       0.1183E-03           32.0         75.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   548.54        0.2531E-06      1.113    0.2323E+06     0.686      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            31.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.9379       15.18         513.73       0.1150E-03           31.0         73.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   547.74        0.2523E-06      1.113    0.2342E+06     0.687      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            30.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  0.9701       15.72         530.55       0.1117E-03           30.0         72.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   546.90        0.2515E-06      1.113    0.2356E+06     0.688      0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            28.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.0353       16.72         564.34       0.1050E-03           28.0         68.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr         Z
   545.12        0.2498E-06      1.114    0.2371E+06     0.690      0.9998
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            26.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.1011       17.57         598.13       0.9825E-04           26.0         64.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   543.21        0.2480E-06      1.115    0.2369E+06     0.692       0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            24.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.1689       18.29         632.55       0.9142E-04           24.0         60.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   541.13        0.2461E-06      1.115    0.2350E+06     0.694       0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            22.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.2382       18.83         667.27       0.8461E-04           22.0         55.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   538.90        0.2440E-06      1.116    0.2314E+06     0.697       0.9998
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)   RHOt(slugs/cu.ft)   X134a    Xair
      50.0            20.0          100.0          0.000177        0.950   0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)   P(lb/sq.ft)   T(deg F)
  1.3114       19.21         703.48       0.7765E-04           20.0         50.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr          Z
   536.42        0.2417E-06      1.117    0.2260E+06     0.700       0.9998
================================================================================
    *** ALL DATA CASES HAVE BEEN READ AND PROCESSED -   JOB IS COMPLETED ***
```

Appendix F

Sample Input for Program MIXRK

(U.S. Customary units)

```
100.      2200.     .95
100.      1000.     .95
100.      500.      .95
100.      200.      .95
100.      100.      .95
100.      50.       .95
```

Appendix G

Sample Output from Program MIXRK

I S E N T R O P I C E X P A N S I O N
(Output file outmix6)

Pt(lb/sq.ft)	Tt(deg F)	Tt(deg R)	RHOt(slugs/cu.ft)	X134a	Xair	Zt
2200.0	100.0	559.7	0.007888	0.950	0.050	0.9861

M	USTAR	PSTAR/Pt	TSTAR/Tt	RHOSTAR	RHOSTARxUSTAR
1.000001E+00	5.417835E+02	5.830985E-01	9.465545E-01	4.837427E-03	2.620838E+00

M	P/Pt	R/RHOt	T/Tt	BET	q/Pt	A/Astar	U/Ustar	Gamma	Pr
0.00	1.0000	1.0000	1.0000	1.0000	0.0000	0.1410E+03	0.004	1.115	0.68
0.01	0.9999	0.9999	1.0000	0.9999	0.0001	0.6001E+02	0.010	1.115	0.68
0.02	0.9998	0.9998	1.0000	0.9998	0.0002	0.3001E+02	0.020	1.115	0.68
0.03	0.9995	0.9995	1.0000	0.9995	0.0005	0.2001E+02	0.031	1.115	0.68
0.04	0.9991	0.9992	0.9999	0.9992	0.0009	0.1502E+02	0.041	1.115	0.68
0.05	0.9986	0.9988	0.9999	0.9987	0.0014	0.1201E+02	0.051	1.115	0.68
0.06	0.9980	0.9982	0.9998	0.9982	0.0020	0.1002E+02	0.061	1.115	0.68
0.07	0.9973	0.9976	0.9997	0.9975	0.0027	0.8594E+01	0.072	1.115	0.68
0.08	0.9965	0.9968	0.9996	0.9968	0.0035	0.7526E+01	0.082	1.115	0.68
0.09	0.9956	0.9960	0.9996	0.9959	0.0044	0.6695E+01	0.092	1.115	0.68
0.10	0.9945	0.9950	0.9994	0.9950	0.0055	0.6032E+01	0.102	1.115	0.68
0.11	0.9934	0.9940	0.9993	0.9939	0.0066	0.5489E+01	0.112	1.115	0.68
0.12	0.9921	0.9928	0.9992	0.9928	0.0079	0.5038E+01	0.123	1.115	0.68
0.13	0.9908	0.9916	0.9991	0.9915	0.0092	0.4656E+01	0.133	1.115	0.68
0.14	0.9893	0.9903	0.9989	0.9902	0.0107	0.4330E+01	0.143	1.115	0.68
0.15	0.9877	0.9888	0.9988	0.9887	0.0122	0.4048E+01	0.153	1.115	0.68
0.16	0.9860	0.9873	0.9986	0.9871	0.0139	0.3801E+01	0.163	1.115	0.68
0.17	0.9843	0.9857	0.9984	0.9854	0.0156	0.3583E+01	0.174	1.115	0.68
0.18	0.9824	0.9839	0.9982	0.9837	0.0175	0.3390E+01	0.184	1.115	0.68
0.19	0.9804	0.9821	0.9980	0.9818	0.0195	0.3218E+01	0.194	1.115	0.68
0.20	0.9783	0.9802	0.9978	0.9798	0.0215	0.3063E+01	0.204	1.115	0.68
0.21	0.9761	0.9782	0.9976	0.9777	0.0237	0.2924E+01	0.214	1.115	0.68
0.22	0.9738	0.9761	0.9973	0.9755	0.0259	0.2797E+01	0.225	1.115	0.68
0.23	0.9714	0.9739	0.9971	0.9732	0.0283	0.2682E+01	0.235	1.115	0.68
0.24	0.9689	0.9716	0.9968	0.9708	0.0307	0.2576E+01	0.245	1.115	0.68
0.25	0.9663	0.9693	0.9966	0.9682	0.0332	0.2479E+01	0.255	1.115	0.68
0.26	0.9636	0.9668	0.9963	0.9656	0.0358	0.2390E+01	0.265	1.115	0.68
0.27	0.9608	0.9643	0.9960	0.9629	0.0385	0.2308E+01	0.276	1.115	0.68
0.28	0.9579	0.9616	0.9957	0.9600	0.0413	0.2232E+01	0.286	1.115	0.68
0.29	0.9549	0.9589	0.9954	0.9570	0.0442	0.2162E+01	0.296	1.115	0.68
0.30	0.9518	0.9561	0.9950	0.9539	0.0471	0.2096E+01	0.306	1.115	0.68
0.31	0.9486	0.9532	0.9947	0.9507	0.0501	0.2035E+01	0.316	1.115	0.68
0.32	0.9454	0.9502	0.9944	0.9474	0.0532	0.1978E+01	0.326	1.115	0.68
0.33	0.9420	0.9471	0.9940	0.9440	0.0564	0.1924E+01	0.336	1.115	0.68
0.34	0.9386	0.9440	0.9936	0.9404	0.0597	0.1874E+01	0.347	1.115	0.68
0.35	0.9350	0.9407	0.9933	0.9367	0.0630	0.1827E+01	0.357	1.115	0.68
0.36	0.9314	0.9374	0.9929	0.9330	0.0664	0.1783E+01	0.367	1.115	0.68
0.37	0.9277	0.9340	0.9925	0.9290	0.0699	0.1741E+01	0.377	1.115	0.68
0.38	0.9239	0.9305	0.9921	0.9250	0.0734	0.1702E+01	0.387	1.115	0.68
0.39	0.9200	0.9270	0.9916	0.9208	0.0770	0.1665E+01	0.397	1.115	0.68
0.40	0.9161	0.9234	0.9912	0.9165	0.0806	0.1630E+01	0.407	1.115	0.68
0.41	0.9120	0.9197	0.9908	0.9121	0.0844	0.1597E+01	0.418	1.115	0.68
0.42	0.9079	0.9159	0.9903	0.9075	0.0881	0.1566E+01	0.428	1.115	0.68
0.43	0.9037	0.9120	0.9899	0.9028	0.0920	0.1536E+01	0.438	1.115	0.68
0.44	0.8994	0.9081	0.9894	0.8980	0.0958	0.1508E+01	0.448	1.115	0.68
0.45	0.8950	0.9041	0.9889	0.8930	0.0998	0.1481E+01	0.458	1.115	0.68
0.46	0.8906	0.9000	0.9884	0.8879	0.1037	0.1456E+01	0.468	1.115	0.68
0.47	0.8861	0.8959	0.9879	0.8827	0.1077	0.1432E+01	0.478	1.115	0.68
0.48	0.8815	0.8917	0.9874	0.8773	0.1118	0.1409E+01	0.488	1.115	0.68
0.49	0.8769	0.8874	0.9868	0.8717	0.1159	0.1387E+01	0.498	1.115	0.68
0.50	0.8722	0.8831	0.9863	0.8660	0.1201	0.1366E+01	0.508	1.115	0.68
0.51	0.8674	0.8787	0.9858	0.8602	0.1242	0.1346E+01	0.518	1.115	0.68
0.52	0.8625	0.8742	0.9852	0.8542	0.1284	0.1328E+01	0.528	1.115	0.68
0.53	0.8576	0.8697	0.9846	0.8480	0.1327	0.1310E+01	0.538	1.115	0.68
0.54	0.8526	0.8651	0.9841	0.8417	0.1369	0.1292E+01	0.548	1.115	0.68

0.55	0.8476	0.8605	0.9835	0.8352	0.1412	0.1276E+01	0.558	1.115	0.68
0.56	0.8425	0.8558	0.9829	0.8285	0.1455	0.1260E+01	0.569	1.115	0.68
0.57	0.8373	0.8510	0.9822	0.8216	0.1499	0.1246E+01	0.579	1.116	0.68
0.58	0.8321	0.8462	0.9816	0.8146	0.1542	0.1231E+01	0.589	1.116	0.68
0.59	0.8269	0.8413	0.9810	0.8074	0.1586	0.1218E+01	0.599	1.116	0.68
0.60	0.8215	0.8364	0.9804	0.8000	0.1630	0.1205E+01	0.609	1.116	0.68
0.61	0.8162	0.8315	0.9797	0.7924	0.1674	0.1192E+01	0.618	1.116	0.68
0.62	0.8107	0.8265	0.9790	0.7846	0.1717	0.1181E+01	0.628	1.116	0.68
0.63	0.8053	0.8214	0.9784	0.7766	0.1762	0.1169E+01	0.638	1.116	0.68
0.64	0.7997	0.8163	0.9777	0.7684	0.1806	0.1159E+01	0.648	1.116	0.68
0.65	0.7942	0.8111	0.9770	0.7599	0.1850	0.1148E+01	0.658	1.116	0.68
0.66	0.7886	0.8059	0.9763	0.7513	0.1894	0.1139E+01	0.668	1.116	0.69
0.67	0.7829	0.8007	0.9756	0.7424	0.1938	0.1129E+01	0.678	1.116	0.69
0.68	0.7772	0.7954	0.9748	0.7332	0.1982	0.1120E+01	0.688	1.116	0.69
0.69	0.7715	0.7901	0.9741	0.7238	0.2026	0.1112E+01	0.698	1.116	0.69
0.70	0.7657	0.7847	0.9734	0.7141	0.2069	0.1104E+01	0.708	1.116	0.69
0.71	0.7599	0.7793	0.9726	0.7042	0.2113	0.1096E+01	0.718	1.116	0.69
0.72	0.7541	0.7739	0.9719	0.6940	0.2156	0.1089E+01	0.728	1.116	0.69
0.73	0.7482	0.7684	0.9711	0.6834	0.2200	0.1082E+01	0.738	1.116	0.69
0.74	0.7423	0.7630	0.9703	0.6726	0.2243	0.1075E+01	0.747	1.116	0.69
0.75	0.7364	0.7574	0.9695	0.6614	0.2286	0.1069E+01	0.757	1.116	0.69
0.76	0.7304	0.7519	0.9687	0.6499	0.2328	0.1063E+01	0.767	1.116	0.69
0.77	0.7244	0.7463	0.9679	0.6380	0.2371	0.1058E+01	0.777	1.116	0.69
0.78	0.7184	0.7407	0.9671	0.6258	0.2413	0.1052E+01	0.787	1.116	0.69
0.79	0.7124	0.7350	0.9662	0.6131	0.2454	0.1047E+01	0.797	1.116	0.69
0.80	0.7063	0.7294	0.9654	0.6000	0.2496	0.1043E+01	0.806	1.116	0.69
0.81	0.7003	0.7237	0.9645	0.5864	0.2537	0.1038E+01	0.816	1.116	0.69
0.82	0.6942	0.7180	0.9637	0.5724	0.2577	0.1034E+01	0.826	1.116	0.69
0.83	0.6881	0.7123	0.9628	0.5578	0.2618	0.1030E+01	0.836	1.116	0.69
0.84	0.6819	0.7065	0.9619	0.5426	0.2658	0.1027E+01	0.846	1.117	0.69
0.85	0.6758	0.7008	0.9610	0.5268	0.2697	0.1023E+01	0.855	1.117	0.69
0.86	0.6697	0.6950	0.9601	0.5103	0.2736	0.1020E+01	0.865	1.117	0.69
0.87	0.6635	0.6892	0.9592	0.4931	0.2775	0.1017E+01	0.875	1.117	0.69
0.88	0.6573	0.6834	0.9583	0.4750	0.2813	0.1015E+01	0.884	1.117	0.69
0.89	0.6511	0.6776	0.9574	0.4559	0.2850	0.1012E+01	0.894	1.117	0.69
0.90	0.6450	0.6718	0.9564	0.4359	0.2887	0.1010E+01	0.904	1.117	0.69
0.91	0.6388	0.6659	0.9555	0.4146	0.2924	0.1008E+01	0.913	1.117	0.69
0.92	0.6326	0.6601	0.9545	0.3919	0.2960	0.1006E+01	0.923	1.117	0.69
0.93	0.6264	0.6542	0.9536	0.3676	0.2995	0.1005E+01	0.933	1.117	0.69
0.94	0.6202	0.6484	0.9526	0.3412	0.3030	0.1004E+01	0.942	1.117	0.69
0.95	0.6140	0.6425	0.9516	0.3123	0.3065	0.1002E+01	0.952	1.117	0.69
0.96	0.6078	0.6367	0.9506	0.2800	0.3098	0.1002E+01	0.962	1.117	0.69
0.97	0.6016	0.6308	0.9496	0.2431	0.3131	0.1001E+01	0.971	1.117	0.69
0.98	0.5954	0.6249	0.9486	0.1990	0.3164	0.1000E+01	0.981	1.117	0.69
0.99	0.5893	0.6191	0.9476	0.1411	0.3196	0.1000E+01	0.990	1.117	0.69
1.00	0.5831	0.6132	0.9466	0.0011	0.3227	0.1000E+01	1.000	1.117	0.69
1.01	0.5769	0.6074	0.9455	0.1417	0.3257	0.1000E+01	1.010	1.117	0.69
1.02	0.5708	0.6015	0.9445	0.2010	0.3287	0.1000E+01	1.019	1.117	0.69
1.03	0.5646	0.5957	0.9434	0.2468	0.3316	0.1001E+01	1.029	1.118	0.69
1.04	0.5585	0.5898	0.9423	0.2857	0.3345	0.1002E+01	1.038	1.118	0.69
1.05	0.5524	0.5840	0.9413	0.3202	0.3372	0.1002E+01	1.048	1.118	0.69
1.06	0.5463	0.5782	0.9402	0.3516	0.3399	0.1003E+01	1.057	1.118	0.69
1.07	0.5402	0.5724	0.9391	0.3807	0.3426	0.1005E+01	1.067	1.118	0.69
1.08	0.5342	0.5666	0.9380	0.4079	0.3451	0.1006E+01	1.076	1.118	0.69
1.09	0.5281	0.5608	0.9369	0.4337	0.3476	0.1008E+01	1.085	1.118	0.69
1.10	0.5221	0.5550	0.9358	0.4583	0.3500	0.1009E+01	1.095	1.118	0.69
1.11	0.5161	0.5492	0.9347	0.4818	0.3524	0.1011E+01	1.104	1.118	0.69
1.12	0.5101	0.5435	0.9335	0.5044	0.3546	0.1013E+01	1.114	1.118	0.70
1.13	0.5041	0.5377	0.9324	0.5262	0.3568	0.1015E+01	1.123	1.118	0.70
1.14	0.4982	0.5320	0.9312	0.5473	0.3589	0.1018E+01	1.132	1.118	0.70
1.15	0.4923	0.5263	0.9301	0.5679	0.3610	0.1021E+01	1.142	1.118	0.70
1.16	0.4864	0.5206	0.9289	0.5879	0.3629	0.1023E+01	1.151	1.118	0.70
1.17	0.4805	0.5150	0.9277	0.6074	0.3648	0.1026E+01	1.160	1.118	0.70
1.18	0.4747	0.5093	0.9265	0.6264	0.3666	0.1029E+01	1.170	1.119	0.70
1.19	0.4689	0.5037	0.9254	0.6450	0.3684	0.1033E+01	1.179	1.119	0.70
1.20	0.4631	0.4981	0.9241	0.6633	0.3700	0.1036E+01	1.188	1.119	0.70
1.21	0.4573	0.4925	0.9229	0.6813	0.3716	0.1040E+01	1.197	1.119	0.70
1.22	0.4516	0.4870	0.9217	0.6988	0.3731	0.1044E+01	1.207	1.119	0.70
1.23	0.4459	0.4815	0.9205	0.7162	0.3745	0.1048E+01	1.216	1.119	0.70
1.24	0.4403	0.4760	0.9193	0.7332	0.3759	0.1052E+01	1.225	1.119	0.70
1.25	0.4347	0.4705	0.9180	0.7500	0.3771	0.1056E+01	1.234	1.119	0.70
1.26	0.4291	0.4650	0.9168	0.7666	0.3783	0.1061E+01	1.243	1.119	0.70

1.27	0.4235	0.4596	0.9155	0.7829	0.3794	0.1065E+01	1.253	1.119	0.70
1.28	0.4180	0.4542	0.9143	0.7990	0.3804	0.1070E+01	1.262	1.119	0.70
1.29	0.4125	0.4489	0.9130	0.8149	0.3814	0.1075E+01	1.271	1.119	0.70
1.30	0.4071	0.4435	0.9117	0.8307	0.3823	0.1080E+01	1.280	1.120	0.70
1.31	0.4017	0.4382	0.9104	0.8462	0.3831	0.1086E+01	1.289	1.120	0.70
1.32	0.3963	0.4329	0.9091	0.8616	0.3838	0.1091E+01	1.298	1.120	0.70

I S E N T R O P I C E X P A N S I O N

(Output file outmix6)

Pt(lb/sq.ft)	Tt(deg F)	Tt(deg R)	RHOt(slugs/cu.ft)	X134a	Xair	Zt
1000.0	100.0	559.7	0.003558	0.950	0.050	0.9937

M	USTAR	PSTAR/Pt	TSTAR/Tt	RHOSTAR	RHOSTARxUSTAR
9.999997E-01	5.442037E+02	5.823569E-01	9.468748E-01	2.183912E-03	1.188493E+00

M	P/Pt	R/RHOt	T/Tt	BET	q/Pt	A/Astar	U/Ustar	Gamma	Pr
0.00	1.0000	1.0000	1.0000	1.0000	0.0000	0.1405E+03	0.004	1.112	0.68
0.01	0.9999	0.9999	1.0000	0.9999	0.0001	0.5989E+02	0.010	1.112	0.68
0.02	0.9998	0.9998	1.0000	0.9998	0.0002	0.2997E+02	0.020	1.112	0.68
0.03	0.9995	0.9995	1.0000	0.9995	0.0005	0.1998E+02	0.031	1.112	0.68
0.04	0.9991	0.9992	0.9999	0.9992	0.0009	0.1499E+02	0.041	1.112	0.68
0.05	0.9986	0.9988	0.9999	0.9987	0.0014	0.1200E+02	0.051	1.112	0.68
0.06	0.9980	0.9982	0.9998	0.9982	0.0020	0.1001E+02	0.061	1.112	0.68
0.07	0.9973	0.9976	0.9997	0.9975	0.0027	0.8585E+01	0.072	1.112	0.68
0.08	0.9965	0.9968	0.9996	0.9968	0.0035	0.7517E+01	0.082	1.112	0.68
0.09	0.9955	0.9960	0.9996	0.9959	0.0045	0.6688E+01	0.092	1.112	0.68
0.10	0.9945	0.9950	0.9995	0.9950	0.0055	0.6026E+01	0.102	1.112	0.68
0.11	0.9933	0.9940	0.9993	0.9939	0.0066	0.5484E+01	0.113	1.112	0.68
0.12	0.9921	0.9928	0.9992	0.9928	0.0079	0.5033E+01	0.123	1.112	0.68
0.13	0.9907	0.9916	0.9991	0.9915	0.0092	0.4652E+01	0.133	1.112	0.68
0.14	0.9892	0.9903	0.9989	0.9902	0.0107	0.4326E+01	0.143	1.112	0.68
0.15	0.9877	0.9888	0.9988	0.9887	0.0123	0.4043E+01	0.154	1.112	0.68
0.16	0.9860	0.9873	0.9986	0.9871	0.0139	0.3797E+01	0.164	1.112	0.68
0.17	0.9842	0.9857	0.9984	0.9854	0.0157	0.3580E+01	0.174	1.112	0.68
0.18	0.9823	0.9839	0.9982	0.9837	0.0176	0.3387E+01	0.184	1.112	0.68
0.19	0.9803	0.9821	0.9980	0.9818	0.0196	0.3215E+01	0.194	1.112	0.68
0.20	0.9782	0.9802	0.9978	0.9798	0.0216	0.3060E+01	0.205	1.112	0.68
0.21	0.9760	0.9782	0.9976	0.9777	0.0238	0.2921E+01	0.215	1.112	0.68
0.22	0.9736	0.9761	0.9973	0.9755	0.0260	0.2794E+01	0.225	1.112	0.68
0.23	0.9712	0.9739	0.9971	0.9732	0.0284	0.2679E+01	0.235	1.112	0.68
0.24	0.9687	0.9716	0.9968	0.9708	0.0308	0.2574E+01	0.245	1.112	0.68
0.25	0.9661	0.9693	0.9966	0.9682	0.0334	0.2477E+01	0.256	1.112	0.68
0.26	0.9634	0.9668	0.9963	0.9656	0.0360	0.2388E+01	0.266	1.112	0.68
0.27	0.9606	0.9643	0.9960	0.9629	0.0387	0.2306E+01	0.276	1.112	0.68
0.28	0.9577	0.9616	0.9957	0.9600	0.0415	0.2230E+01	0.286	1.112	0.68
0.29	0.9547	0.9589	0.9954	0.9570	0.0444	0.2160E+01	0.296	1.112	0.68
0.30	0.9516	0.9561	0.9951	0.9539	0.0473	0.2094E+01	0.307	1.112	0.68
0.31	0.9484	0.9532	0.9947	0.9507	0.0504	0.2033E+01	0.317	1.112	0.68
0.32	0.9451	0.9502	0.9944	0.9474	0.0535	0.1976E+01	0.327	1.112	0.68
0.33	0.9417	0.9471	0.9940	0.9440	0.0567	0.1923E+01	0.337	1.112	0.68
0.34	0.9383	0.9440	0.9937	0.9404	0.0600	0.1873E+01	0.347	1.112	0.68
0.35	0.9347	0.9408	0.9933	0.9367	0.0633	0.1826E+01	0.357	1.112	0.68
0.36	0.9311	0.9374	0.9929	0.9329	0.0667	0.1782E+01	0.368	1.112	0.68
0.37	0.9274	0.9340	0.9925	0.9290	0.0702	0.1740E+01	0.378	1.112	0.68
0.38	0.9236	0.9306	0.9921	0.9250	0.0737	0.1701E+01	0.388	1.112	0.68
0.39	0.9197	0.9270	0.9917	0.9208	0.0773	0.1664E+01	0.398	1.112	0.68
0.40	0.9157	0.9234	0.9913	0.9165	0.0810	0.1629E+01	0.408	1.112	0.68
0.41	0.9116	0.9197	0.9908	0.9121	0.0847	0.1596E+01	0.418	1.112	0.68
0.42	0.9075	0.9159	0.9904	0.9075	0.0885	0.1565E+01	0.428	1.112	0.68
0.43	0.9033	0.9121	0.9899	0.9028	0.0924	0.1535E+01	0.438	1.112	0.68
0.44	0.8990	0.9081	0.9894	0.8980	0.0962	0.1507E+01	0.448	1.112	0.68
0.45	0.8946	0.9041	0.9890	0.8930	0.1002	0.1480E+01	0.459	1.112	0.68
0.46	0.8902	0.9001	0.9885	0.8879	0.1042	0.1455E+01	0.469	1.112	0.68
0.47	0.8856	0.8959	0.9880	0.8827	0.1082	0.1431E+01	0.479	1.113	0.68
0.48	0.8810	0.8917	0.9874	0.8773	0.1123	0.1408E+01	0.489	1.113	0.68
0.49	0.8764	0.8875	0.9869	0.8717	0.1164	0.1386E+01	0.499	1.113	0.68
0.50	0.8716	0.8831	0.9864	0.8660	0.1205	0.1365E+01	0.509	1.113	0.68
0.51	0.8668	0.8787	0.9858	0.8602	0.1247	0.1346E+01	0.519	1.113	0.68
0.52	0.8620	0.8743	0.9853	0.8542	0.1289	0.1327E+01	0.529	1.113	0.68
0.53	0.8571	0.8698	0.9847	0.8480	0.1332	0.1309E+01	0.539	1.113	0.68
0.54	0.8521	0.8652	0.9841	0.8417	0.1375	0.1292E+01	0.549	1.113	0.68

0.55	0.8470	0.8606	0.9836	0.8352	0.1418	0.1275E+01	0.559	1.113	0.68
0.56	0.8419	0.8559	0.9830	0.8285	0.1461	0.1260E+01	0.569	1.113	0.68
0.57	0.8367	0.8511	0.9823	0.8217	0.1504	0.1245E+01	0.579	1.113	0.68
0.58	0.8315	0.8463	0.9817	0.8146	0.1548	0.1231E+01	0.589	1.113	0.68
0.59	0.8262	0.8415	0.9811	0.8074	0.1592	0.1217E+01	0.599	1.113	0.68
0.60	0.8209	0.8365	0.9805	0.8000	0.1636	0.1204E+01	0.609	1.113	0.68
0.61	0.8155	0.8316	0.9798	0.7924	0.1680	0.1192E+01	0.619	1.113	0.68
0.62	0.8101	0.8266	0.9792	0.7846	0.1724	0.1180E+01	0.629	1.113	0.68
0.63	0.8046	0.8215	0.9785	0.7766	0.1768	0.1169E+01	0.639	1.113	0.68
0.64	0.7991	0.8164	0.9778	0.7684	0.1812	0.1158E+01	0.649	1.113	0.68
0.65	0.7935	0.8113	0.9771	0.7599	0.1856	0.1148E+01	0.659	1.113	0.68
0.66	0.7879	0.8061	0.9764	0.7513	0.1900	0.1138E+01	0.669	1.113	0.68
0.67	0.7822	0.8009	0.9757	0.7424	0.1944	0.1129E+01	0.679	1.113	0.68
0.68	0.7765	0.7956	0.9750	0.7332	0.1988	0.1120E+01	0.689	1.113	0.68
0.69	0.7708	0.7903	0.9743	0.7238	0.2032	0.1112E+01	0.699	1.113	0.68
0.70	0.7650	0.7849	0.9735	0.7141	0.2076	0.1104E+01	0.709	1.113	0.68
0.71	0.7592	0.7795	0.9728	0.7042	0.2120	0.1096E+01	0.718	1.113	0.68
0.72	0.7533	0.7741	0.9720	0.6940	0.2163	0.1089E+01	0.728	1.114	0.68
0.73	0.7475	0.7687	0.9712	0.6834	0.2206	0.1082E+01	0.738	1.114	0.68
0.74	0.7416	0.7632	0.9705	0.6726	0.2250	0.1075E+01	0.748	1.114	0.68
0.75	0.7356	0.7577	0.9697	0.6614	0.2293	0.1069E+01	0.758	1.114	0.68
0.76	0.7297	0.7521	0.9689	0.6499	0.2335	0.1063E+01	0.768	1.114	0.68
0.77	0.7237	0.7466	0.9681	0.6380	0.2377	0.1057E+01	0.777	1.114	0.68
0.78	0.7177	0.7410	0.9673	0.6258	0.2420	0.1052E+01	0.787	1.114	0.69
0.79	0.7116	0.7353	0.9664	0.6131	0.2461	0.1047E+01	0.797	1.114	0.69
0.80	0.7056	0.7297	0.9656	0.6000	0.2503	0.1042E+01	0.807	1.114	0.69
0.81	0.6995	0.7240	0.9647	0.5864	0.2544	0.1038E+01	0.817	1.114	0.69
0.82	0.6934	0.7183	0.9639	0.5724	0.2585	0.1034E+01	0.826	1.114	0.69
0.83	0.6873	0.7126	0.9630	0.5578	0.2625	0.1030E+01	0.836	1.114	0.69
0.84	0.6812	0.7069	0.9621	0.5426	0.2665	0.1026E+01	0.846	1.114	0.69
0.85	0.6750	0.7011	0.9613	0.5268	0.2704	0.1023E+01	0.856	1.114	0.69
0.86	0.6689	0.6954	0.9604	0.5103	0.2743	0.1020E+01	0.865	1.114	0.69
0.87	0.6627	0.6896	0.9595	0.4931	0.2782	0.1017E+01	0.875	1.114	0.69
0.88	0.6565	0.6838	0.9585	0.4750	0.2820	0.1015E+01	0.885	1.114	0.69
0.89	0.6504	0.6780	0.9576	0.4560	0.2857	0.1012E+01	0.894	1.114	0.69
0.90	0.6442	0.6722	0.9567	0.4359	0.2895	0.1010E+01	0.904	1.115	0.69
0.91	0.6380	0.6664	0.9558	0.4146	0.2931	0.1008E+01	0.914	1.115	0.69
0.92	0.6318	0.6605	0.9548	0.3919	0.2967	0.1006E+01	0.923	1.115	0.69
0.93	0.6256	0.6547	0.9538	0.3675	0.3002	0.1005E+01	0.933	1.115	0.69
0.94	0.6194	0.6489	0.9529	0.3412	0.3037	0.1004E+01	0.943	1.115	0.69
0.95	0.6132	0.6430	0.9519	0.3123	0.3072	0.1002E+01	0.952	1.115	0.69
0.96	0.6070	0.6372	0.9509	0.2800	0.3105	0.1002E+01	0.962	1.115	0.69
0.97	0.6009	0.6313	0.9499	0.2431	0.3138	0.1001E+01	0.971	1.115	0.69
0.98	0.5947	0.6255	0.9489	0.1990	0.3171	0.1000E+01	0.981	1.115	0.69
0.99	0.5885	0.6196	0.9479	0.1410	0.3202	0.1000E+01	0.990	1.115	0.69
1.00	0.5824	0.6138	0.9469	0.0031	0.3234	0.1000E+01	1.000	1.115	0.69
1.01	0.5762	0.6079	0.9458	0.1418	0.3264	0.1000E+01	1.010	1.115	0.69
1.02	0.5701	0.6021	0.9448	0.2010	0.3294	0.1000E+01	1.019	1.115	0.69
1.03	0.5639	0.5963	0.9438	0.2468	0.3323	0.1001E+01	1.029	1.115	0.69
1.04	0.5578	0.5904	0.9427	0.2857	0.3351	0.1002E+01	1.038	1.116	0.69
1.05	0.5517	0.5846	0.9416	0.3201	0.3379	0.1002E+01	1.047	1.116	0.69
1.06	0.5456	0.5788	0.9406	0.3516	0.3406	0.1003E+01	1.057	1.116	0.69
1.07	0.5395	0.5730	0.9395	0.3806	0.3432	0.1005E+01	1.066	1.116	0.69
1.08	0.5335	0.5672	0.9384	0.4079	0.3458	0.1006E+01	1.076	1.116	0.69
1.09	0.5274	0.5614	0.9373	0.4337	0.3483	0.1007E+01	1.085	1.116	0.69
1.10	0.5214	0.5557	0.9362	0.4583	0.3507	0.1009E+01	1.095	1.116	0.69
1.11	0.5154	0.5499	0.9350	0.4818	0.3530	0.1011E+01	1.104	1.116	0.69
1.12	0.5094	0.5442	0.9339	0.5044	0.3553	0.1013E+01	1.113	1.116	0.69
1.13	0.5035	0.5385	0.9328	0.5262	0.3575	0.1015E+01	1.123	1.116	0.69
1.14	0.4976	0.5327	0.9316	0.5474	0.3596	0.1018E+01	1.132	1.116	0.69
1.15	0.4917	0.5271	0.9305	0.5679	0.3616	0.1020E+01	1.141	1.116	0.69
1.16	0.4858	0.5214	0.9293	0.5879	0.3636	0.1023E+01	1.150	1.117	0.69
1.17	0.4799	0.5157	0.9282	0.6074	0.3654	0.1026E+01	1.160	1.117	0.70
1.18	0.4741	0.5101	0.9270	0.6264	0.3672	0.1029E+01	1.169	1.117	0.70
1.19	0.4683	0.5045	0.9258	0.6451	0.3690	0.1033E+01	1.178	1.117	0.70
1.20	0.4625	0.4989	0.9246	0.6633	0.3706	0.1036E+01	1.187	1.117	0.70
1.21	0.4568	0.4933	0.9234	0.6813	0.3722	0.1040E+01	1.197	1.117	0.70
1.22	0.4511	0.4878	0.9222	0.6988	0.3737	0.1043E+01	1.206	1.117	0.70
1.23	0.4454	0.4823	0.9210	0.7162	0.3751	0.1047E+01	1.215	1.117	0.70
1.24	0.4398	0.4768	0.9198	0.7332	0.3764	0.1052E+01	1.224	1.117	0.70
1.25	0.4342	0.4713	0.9185	0.7500	0.3777	0.1056E+01	1.233	1.117	0.70
1.26	0.4286	0.4659	0.9173	0.7666	0.3789	0.1060E+01	1.242	1.117	0.70

1.27	0.4231	0.4605	0.9161	0.7829	0.3800	0.1065E+01	1.252	1.118	0.70
1.28	0.4176	0.4551	0.9148	0.7990	0.3810	0.1070E+01	1.261	1.118	0.70
1.29	0.4121	0.4497	0.9135	0.8149	0.3820	0.1075E+01	1.270	1.118	0.70
1.30	0.4067	0.4444	0.9123	0.8307	0.3829	0.1080E+01	1.279	1.118	0.70
1.31	0.4013	0.4391	0.9110	0.8462	0.3837	0.1085E+01	1.288	1.118	0.70
1.32	0.3959	0.4339	0.9097	0.8616	0.3844	0.1091E+01	1.297	1.118	0.70

I S E N T R O P I C E X P A N S I O N

(Output file outmix6)

Pt(lb/sq.ft)	Tt(deg F)	Tt(deg R)	RHOt(slugs/cu.ft)	X134a	Xair	Zt
500.0	100.0	559.7	0.001773	0.950	0.050	0.9969

M	USTAR	PSTAR/Pt	TSTAR/Tt	RHOSTAR	RHOSTARxUSTAR
9.999998E-01	5.452016E+02	5.820521E-01	9.470064E-01	1.088902E-03	5.936709E-01

M	P/Pt	R/RHOt	T/Tt	BET	q/Pt	A/Astar	U/Ustar	Gamma	Pr
0.00	1.0000	1.0000	1.0000	1.0000	0.0000	0.1403E+03	0.004	1.111	0.68
0.01	0.9999	0.9999	1.0000	0.9999	0.0001	0.5990E+02	0.010	1.111	0.68
0.02	0.9998	0.9998	1.0000	0.9998	0.0002	0.2996E+02	0.020	1.111	0.68
0.03	0.9995	0.9996	1.0000	0.9995	0.0005	0.1998E+02	0.031	1.111	0.68
0.04	0.9991	0.9992	0.9999	0.9992	0.0009	0.1499E+02	0.041	1.111	0.68
0.05	0.9986	0.9988	0.9999	0.9987	0.0014	0.1200E+02	0.051	1.111	0.68
0.06	0.9980	0.9982	0.9998	0.9982	0.0020	0.1001E+02	0.061	1.111	0.68
0.07	0.9973	0.9976	0.9997	0.9975	0.0027	0.8581E+01	0.072	1.111	0.68
0.08	0.9965	0.9968	0.9996	0.9968	0.0035	0.7515E+01	0.082	1.111	0.68
0.09	0.9955	0.9960	0.9996	0.9959	0.0045	0.6685E+01	0.092	1.111	0.68
0.10	0.9945	0.9950	0.9995	0.9950	0.0055	0.6023E+01	0.102	1.111	0.68
0.11	0.9933	0.9940	0.9993	0.9939	0.0067	0.5482E+01	0.113	1.111	0.68
0.12	0.9921	0.9928	0.9992	0.9928	0.0079	0.5031E+01	0.123	1.111	0.68
0.13	0.9907	0.9916	0.9991	0.9915	0.0093	0.4650E+01	0.133	1.111	0.68
0.14	0.9892	0.9903	0.9989	0.9902	0.0107	0.4324E+01	0.143	1.111	0.68
0.15	0.9876	0.9888	0.9988	0.9887	0.0123	0.4042E+01	0.154	1.111	0.68
0.16	0.9859	0.9873	0.9986	0.9871	0.0140	0.3795E+01	0.164	1.111	0.68
0.17	0.9841	0.9857	0.9984	0.9854	0.0157	0.3578E+01	0.174	1.111	0.68
0.18	0.9822	0.9839	0.9982	0.9837	0.0176	0.3386E+01	0.184	1.111	0.68
0.19	0.9802	0.9821	0.9980	0.9818	0.0196	0.3214E+01	0.195	1.111	0.68
0.20	0.9781	0.9802	0.9978	0.9798	0.0217	0.3059E+01	0.205	1.111	0.68
0.21	0.9759	0.9782	0.9976	0.9777	0.0238	0.2920E+01	0.215	1.111	0.68
0.22	0.9736	0.9761	0.9974	0.9755	0.0261	0.2793E+01	0.225	1.111	0.68
0.23	0.9712	0.9739	0.9971	0.9732	0.0284	0.2678E+01	0.235	1.111	0.68
0.24	0.9687	0.9717	0.9968	0.9708	0.0309	0.2573E+01	0.246	1.111	0.68
0.25	0.9660	0.9693	0.9966	0.9682	0.0334	0.2476E+01	0.256	1.111	0.68
0.26	0.9633	0.9668	0.9963	0.9656	0.0361	0.2388E+01	0.266	1.111	0.68
0.27	0.9605	0.9643	0.9960	0.9629	0.0388	0.2305E+01	0.276	1.111	0.68
0.28	0.9576	0.9616	0.9957	0.9600	0.0416	0.2229E+01	0.286	1.111	0.68
0.29	0.9546	0.9589	0.9954	0.9570	0.0445	0.2159E+01	0.297	1.111	0.68
0.30	0.9515	0.9561	0.9951	0.9539	0.0474	0.2094E+01	0.307	1.111	0.68
0.31	0.9483	0.9532	0.9948	0.9507	0.0505	0.2032E+01	0.317	1.111	0.68
0.32	0.9450	0.9502	0.9944	0.9474	0.0536	0.1975E+01	0.327	1.111	0.68
0.33	0.9416	0.9471	0.9941	0.9440	0.0568	0.1922E+01	0.337	1.111	0.68
0.34	0.9382	0.9440	0.9937	0.9404	0.0601	0.1872E+01	0.347	1.111	0.68
0.35	0.9346	0.9408	0.9933	0.9367	0.0634	0.1825E+01	0.358	1.111	0.68
0.36	0.9310	0.9374	0.9929	0.9330	0.0668	0.1781E+01	0.368	1.111	0.68
0.37	0.9272	0.9341	0.9925	0.9290	0.0703	0.1739E+01	0.378	1.111	0.68
0.38	0.9234	0.9306	0.9921	0.9250	0.0739	0.1700E+01	0.388	1.111	0.68
0.39	0.9195	0.9270	0.9917	0.9208	0.0775	0.1663E+01	0.398	1.111	0.68
0.40	0.9155	0.9234	0.9913	0.9165	0.0811	0.1628E+01	0.408	1.111	0.68
0.41	0.9115	0.9197	0.9908	0.9121	0.0849	0.1595E+01	0.418	1.111	0.68
0.42	0.9073	0.9159	0.9904	0.9075	0.0887	0.1564E+01	0.429	1.111	0.68
0.43	0.9031	0.9121	0.9899	0.9028	0.0925	0.1535E+01	0.439	1.111	0.68
0.44	0.8988	0.9082	0.9895	0.8980	0.0964	0.1507E+01	0.449	1.111	0.68
0.45	0.8944	0.9042	0.9890	0.8930	0.1004	0.1480E+01	0.459	1.111	0.68
0.46	0.8900	0.9001	0.9885	0.8879	0.1043	0.1455E+01	0.469	1.111	0.68
0.47	0.8854	0.8960	0.9880	0.8827	0.1084	0.1431E+01	0.479	1.111	0.68
0.48	0.8808	0.8918	0.9875	0.8773	0.1125	0.1408E+01	0.489	1.111	0.68
0.49	0.8762	0.8875	0.9869	0.8717	0.1166	0.1386E+01	0.499	1.111	0.68
0.50	0.8714	0.8832	0.9864	0.8660	0.1207	0.1365E+01	0.509	1.111	0.68
0.51	0.8666	0.8788	0.9859	0.8602	0.1249	0.1345E+01	0.519	1.112	0.68
0.52	0.8618	0.8743	0.9853	0.8542	0.1291	0.1327E+01	0.529	1.112	0.68
0.53	0.8568	0.8698	0.9848	0.8480	0.1334	0.1309E+01	0.539	1.112	0.68
0.54	0.8518	0.8652	0.9842	0.8417	0.1377	0.1292E+01	0.549	1.112	0.68

0.55	0.8468	0.8606	0.9836	0.8352	0.1420	0.1275E+01	0.559	1.112	0.68
0.56	0.8417	0.8559	0.9830	0.8285	0.1463	0.1260E+01	0.569	1.112	0.68
0.57	0.8365	0.8512	0.9824	0.8216	0.1507	0.1245E+01	0.580	1.112	0.68
0.58	0.8313	0.8464	0.9818	0.8146	0.1550	0.1231E+01	0.590	1.112	0.68
0.59	0.8260	0.8415	0.9811	0.8074	0.1594	0.1217E+01	0.599	1.112	0.68
0.60	0.8206	0.8366	0.9805	0.8000	0.1638	0.1204E+01	0.609	1.112	0.68
0.61	0.8152	0.8316	0.9799	0.7924	0.1682	0.1192E+01	0.619	1.112	0.68
0.62	0.8098	0.8266	0.9792	0.7846	0.1726	0.1180E+01	0.629	1.112	0.68
0.63	0.8043	0.8216	0.9785	0.7766	0.1770	0.1169E+01	0.639	1.112	0.68
0.64	0.7988	0.8165	0.9779	0.7684	0.1814	0.1158E+01	0.649	1.112	0.68
0.65	0.7932	0.8113	0.9772	0.7599	0.1859	0.1148E+01	0.659	1.112	0.68
0.66	0.7876	0.8062	0.9765	0.7513	0.1903	0.1138E+01	0.669	1.112	0.68
0.67	0.7819	0.8009	0.9758	0.7424	0.1947	0.1129E+01	0.679	1.112	0.68
0.68	0.7762	0.7957	0.9751	0.7332	0.1991	0.1120E+01	0.689	1.112	0.68
0.69	0.7705	0.7904	0.9743	0.7238	0.2035	0.1112E+01	0.699	1.112	0.68
0.70	0.7647	0.7850	0.9736	0.7141	0.2079	0.1104E+01	0.709	1.112	0.68
0.71	0.7589	0.7796	0.9728	0.7042	0.2122	0.1096E+01	0.719	1.112	0.68
0.72	0.7530	0.7742	0.9721	0.6940	0.2166	0.1089E+01	0.729	1.113	0.68
0.73	0.7472	0.7688	0.9713	0.6835	0.2209	0.1082E+01	0.738	1.113	0.68
0.74	0.7412	0.7633	0.9705	0.6726	0.2252	0.1075E+01	0.748	1.113	0.68
0.75	0.7353	0.7578	0.9698	0.6614	0.2295	0.1069E+01	0.758	1.113	0.68
0.76	0.7293	0.7522	0.9690	0.6499	0.2338	0.1063E+01	0.768	1.113	0.68
0.77	0.7234	0.7467	0.9681	0.6380	0.2380	0.1057E+01	0.778	1.113	0.68
0.78	0.7173	0.7411	0.9673	0.6258	0.2422	0.1052E+01	0.788	1.113	0.68
0.79	0.7113	0.7354	0.9665	0.6131	0.2464	0.1047E+01	0.797	1.113	0.68
0.80	0.7052	0.7298	0.9657	0.6000	0.2506	0.1042E+01	0.807	1.113	0.68
0.81	0.6992	0.7241	0.9648	0.5864	0.2547	0.1038E+01	0.817	1.113	0.68
0.82	0.6931	0.7184	0.9640	0.5724	0.2587	0.1034E+01	0.827	1.113	0.69
0.83	0.6870	0.7127	0.9631	0.5578	0.2628	0.1030E+01	0.836	1.113	0.69
0.84	0.6808	0.7070	0.9622	0.5426	0.2668	0.1026E+01	0.846	1.113	0.69
0.85	0.6747	0.7013	0.9614	0.5268	0.2707	0.1023E+01	0.856	1.113	0.69
0.86	0.6685	0.6955	0.9605	0.5103	0.2746	0.1020E+01	0.866	1.113	0.69
0.87	0.6624	0.6897	0.9596	0.4931	0.2785	0.1017E+01	0.875	1.113	0.69
0.88	0.6562	0.6840	0.9587	0.4750	0.2823	0.1015E+01	0.885	1.114	0.69
0.89	0.6500	0.6782	0.9577	0.4560	0.2860	0.1012E+01	0.895	1.114	0.69
0.90	0.6439	0.6724	0.9568	0.4359	0.2897	0.1010E+01	0.904	1.114	0.69
0.91	0.6377	0.6665	0.9559	0.4146	0.2934	0.1008E+01	0.914	1.114	0.69
0.92	0.6315	0.6607	0.9549	0.3919	0.2970	0.1006E+01	0.923	1.114	0.69
0.93	0.6253	0.6549	0.9540	0.3676	0.3005	0.1005E+01	0.933	1.114	0.69
0.94	0.6191	0.6491	0.9530	0.3412	0.3040	0.1004E+01	0.943	1.114	0.69
0.95	0.6129	0.6432	0.9520	0.3123	0.3074	0.1002E+01	0.952	1.114	0.69
0.96	0.6067	0.6374	0.9510	0.2800	0.3108	0.1002E+01	0.962	1.114	0.69
0.97	0.6006	0.6315	0.9500	0.2431	0.3141	0.1001E+01	0.971	1.114	0.69
0.98	0.5944	0.6257	0.9490	0.1990	0.3173	0.1000E+01	0.981	1.114	0.69
0.99	0.5882	0.6198	0.9480	0.1411	0.3205	0.1000E+01	0.990	1.114	0.69
1.00	0.5821	0.6140	0.9470	0.0008	0.3236	0.1000E+01	1.000	1.114	0.69
1.01	0.5759	0.6082	0.9460	0.1418	0.3267	0.1000E+01	1.010	1.114	0.69
1.02	0.5698	0.6023	0.9449	0.2010	0.3297	0.1000E+01	1.019	1.115	0.69
1.03	0.5636	0.5965	0.9439	0.2468	0.3326	0.1001E+01	1.028	1.115	0.69
1.04	0.5575	0.5907	0.9428	0.2857	0.3354	0.1001E+01	1.038	1.115	0.69
1.05	0.5514	0.5849	0.9418	0.3202	0.3382	0.1002E+01	1.047	1.115	0.69
1.06	0.5453	0.5791	0.9407	0.3516	0.3409	0.1003E+01	1.057	1.115	0.69
1.07	0.5393	0.5733	0.9396	0.3807	0.3435	0.1005E+01	1.066	1.115	0.69
1.08	0.5332	0.5675	0.9385	0.4079	0.3461	0.1006E+01	1.076	1.115	0.69
1.09	0.5272	0.5617	0.9374	0.4337	0.3485	0.1007E+01	1.085	1.115	0.69
1.10	0.5212	0.5559	0.9363	0.4583	0.3509	0.1009E+01	1.094	1.115	0.69
1.11	0.5152	0.5502	0.9352	0.4817	0.3533	0.1011E+01	1.104	1.115	0.69
1.12	0.5092	0.5445	0.9341	0.5044	0.3555	0.1013E+01	1.113	1.115	0.69
1.13	0.5032	0.5387	0.9330	0.5262	0.3577	0.1015E+01	1.122	1.116	0.69
1.14	0.4973	0.5330	0.9318	0.5473	0.3598	0.1018E+01	1.132	1.116	0.69
1.15	0.4914	0.5274	0.9307	0.5679	0.3619	0.1020E+01	1.141	1.116	0.69
1.16	0.4855	0.5217	0.9295	0.5879	0.3638	0.1023E+01	1.150	1.116	0.69
1.17	0.4797	0.5161	0.9283	0.6074	0.3657	0.1026E+01	1.160	1.116	0.69
1.18	0.4739	0.5104	0.9272	0.6264	0.3675	0.1029E+01	1.169	1.116	0.69
1.19	0.4681	0.5048	0.9260	0.6450	0.3692	0.1032E+01	1.178	1.116	0.70
1.20	0.4623	0.4992	0.9248	0.6633	0.3709	0.1036E+01	1.187	1.116	0.70
1.21	0.4566	0.4937	0.9236	0.6812	0.3724	0.1040E+01	1.196	1.116	0.70
1.22	0.4509	0.4881	0.9224	0.6989	0.3739	0.1043E+01	1.206	1.116	0.70
1.23	0.4452	0.4826	0.9212	0.7162	0.3754	0.1047E+01	1.215	1.116	0.70
1.24	0.4396	0.4771	0.9200	0.7332	0.3767	0.1051E+01	1.224	1.117	0.70
1.25	0.4340	0.4717	0.9187	0.7500	0.3780	0.1056E+01	1.233	1.117	0.70
1.26	0.4284	0.4663	0.9175	0.7666	0.3791	0.1060E+01	1.242	1.117	0.70

1.27	0.4229	0.4608	0.9163	0.7829	0.3802	0.1065E+01	1.251	1.117	0.70
1.28	0.4174	0.4555	0.9150	0.7990	0.3813	0.1070E+01	1.260	1.117	0.70
1.29	0.4119	0.4501	0.9138	0.8149	0.3822	0.1075E+01	1.269	1.117	0.70
1.30	0.4065	0.4448	0.9125	0.8307	0.3831	0.1080E+01	1.278	1.117	0.70
1.31	0.4011	0.4395	0.9112	0.8462	0.3839	0.1085E+01	1.287	1.117	0.70
1.32	0.3957	0.4342	0.9099	0.8616	0.3846	0.1091E+01	1.296	1.117	0.70

I S E N T R O P I C E X P A N S I O N

(Output file outmix6)

Pt(lb/sq.ft)	Tt(deg F)	Tt(deg R)	RHOt(slugs/cu.ft)	X134a	Xair	Zt
200.0	100.0	559.7	0.000708	0.950	0.050	0.9987

M	USTAR	PSTAR/Pt	TSTAR/Tt	RHOSTAR	RHOSTARxUSTAR
9.999993E-01	5.457975E+02	5.818709E-01	9.470849E-01	4.348338E-04	2.373312E-01

M	P/Pt	R/RHOt	T/Tt	BET	q/Pt	A/Astar	U/Ustar	Gamma	Pr
0.00	1.0000	1.0000	1.0000	1.0000	0.0000	0.1401E+03	0.004	1.110	0.68
0.01	0.9999	1.0000	1.0000	1.0000	0.0001	0.5995E+02	0.010	1.110	0.68
0.02	0.9998	0.9998	1.0000	0.9998	0.0002	0.2995E+02	0.021	1.110	0.68
0.03	0.9995	0.9996	1.0000	0.9995	0.0005	0.1998E+02	0.031	1.110	0.68
0.04	0.9991	0.9992	0.9999	0.9992	0.0009	0.1499E+02	0.041	1.110	0.68
0.05	0.9986	0.9988	0.9999	0.9987	0.0014	0.1199E+02	0.051	1.110	0.68
0.06	0.9980	0.9982	0.9998	0.9982	0.0020	0.1000E+02	0.062	1.110	0.68
0.07	0.9973	0.9976	0.9997	0.9975	0.0027	0.8580E+01	0.072	1.110	0.68
0.08	0.9965	0.9968	0.9996	0.9968	0.0035	0.7513E+01	0.082	1.110	0.68
0.09	0.9955	0.9960	0.9996	0.9959	0.0045	0.6684E+01	0.092	1.110	0.68
0.10	0.9945	0.9950	0.9995	0.9950	0.0055	0.6021E+01	0.103	1.110	0.68
0.11	0.9933	0.9940	0.9993	0.9939	0.0067	0.5480E+01	0.113	1.110	0.68
0.12	0.9921	0.9928	0.9992	0.9928	0.0079	0.5030E+01	0.123	1.110	0.68
0.13	0.9907	0.9916	0.9991	0.9915	0.0093	0.4649E+01	0.133	1.110	0.68
0.14	0.9892	0.9903	0.9989	0.9902	0.0107	0.4323E+01	0.143	1.110	0.68
0.15	0.9876	0.9888	0.9988	0.9887	0.0123	0.4041E+01	0.154	1.110	0.68
0.16	0.9859	0.9873	0.9986	0.9871	0.0140	0.3794E+01	0.164	1.110	0.68
0.17	0.9841	0.9857	0.9984	0.9854	0.0158	0.3577E+01	0.174	1.110	0.68
0.18	0.9822	0.9839	0.9982	0.9837	0.0176	0.3385E+01	0.184	1.110	0.68
0.19	0.9802	0.9821	0.9980	0.9818	0.0196	0.3213E+01	0.195	1.110	0.68
0.20	0.9781	0.9802	0.9978	0.9798	0.0217	0.3058E+01	0.205	1.110	0.68
0.21	0.9759	0.9782	0.9976	0.9777	0.0239	0.2919E+01	0.215	1.110	0.68
0.22	0.9736	0.9761	0.9974	0.9755	0.0261	0.2793E+01	0.225	1.110	0.68
0.23	0.9711	0.9739	0.9971	0.9732	0.0285	0.2678E+01	0.235	1.110	0.68
0.24	0.9686	0.9717	0.9969	0.9708	0.0309	0.2572E+01	0.246	1.110	0.68
0.25	0.9660	0.9693	0.9966	0.9682	0.0335	0.2476E+01	0.256	1.110	0.68
0.26	0.9633	0.9668	0.9963	0.9656	0.0361	0.2387E+01	0.266	1.110	0.68
0.27	0.9605	0.9643	0.9960	0.9629	0.0388	0.2305E+01	0.276	1.110	0.68
0.28	0.9576	0.9616	0.9957	0.9600	0.0416	0.2229E+01	0.287	1.110	0.68
0.29	0.9545	0.9589	0.9954	0.9570	0.0445	0.2159E+01	0.297	1.110	0.68
0.30	0.9514	0.9561	0.9951	0.9539	0.0475	0.2093E+01	0.307	1.110	0.68
0.31	0.9482	0.9532	0.9948	0.9507	0.0505	0.2032E+01	0.317	1.110	0.68
0.32	0.9450	0.9502	0.9944	0.9474	0.0536	0.1975E+01	0.327	1.110	0.68
0.33	0.9416	0.9471	0.9941	0.9440	0.0569	0.1922E+01	0.337	1.110	0.68
0.34	0.9381	0.9440	0.9937	0.9404	0.0601	0.1872E+01	0.348	1.110	0.68
0.35	0.9345	0.9408	0.9933	0.9367	0.0635	0.1825E+01	0.358	1.110	0.68
0.36	0.9309	0.9375	0.9929	0.9330	0.0669	0.1781E+01	0.368	1.110	0.68
0.37	0.9272	0.9341	0.9925	0.9290	0.0704	0.1739E+01	0.378	1.110	0.68
0.38	0.9233	0.9306	0.9921	0.9250	0.0739	0.1700E+01	0.388	1.110	0.68
0.39	0.9194	0.9270	0.9917	0.9208	0.0776	0.1663E+01	0.398	1.110	0.68
0.40	0.9154	0.9234	0.9913	0.9165	0.0812	0.1628E+01	0.408	1.110	0.68
0.41	0.9114	0.9197	0.9909	0.9121	0.0850	0.1595E+01	0.419	1.111	0.68
0.42	0.9072	0.9159	0.9904	0.9075	0.0888	0.1564E+01	0.429	1.111	0.68
0.43	0.9030	0.9121	0.9899	0.9028	0.0926	0.1534E+01	0.439	1.111	0.68
0.44	0.8987	0.9082	0.9895	0.8980	0.0965	0.1506E+01	0.449	1.111	0.68
0.45	0.8943	0.9042	0.9890	0.8930	0.1004	0.1480E+01	0.459	1.111	0.68
0.46	0.8898	0.9001	0.9885	0.8879	0.1044	0.1454E+01	0.469	1.111	0.68
0.47	0.8853	0.8960	0.9880	0.8827	0.1085	0.1430E+01	0.479	1.111	0.68
0.48	0.8807	0.8918	0.9875	0.8773	0.1126	0.1407E+01	0.489	1.111	0.68
0.49	0.8760	0.8875	0.9870	0.8717	0.1167	0.1386E+01	0.499	1.111	0.68
0.50	0.8713	0.8832	0.9864	0.8660	0.1208	0.1365E+01	0.509	1.111	0.68
0.51	0.8665	0.8788	0.9859	0.8602	0.1250	0.1345E+01	0.519	1.111	0.68
0.52	0.8616	0.8743	0.9853	0.8542	0.1293	0.1326E+01	0.530	1.111	0.68
0.53	0.8567	0.8698	0.9848	0.8480	0.1335	0.1308E+01	0.540	1.111	0.68
0.54	0.8517	0.8652	0.9842	0.8417	0.1378	0.1291E+01	0.550	1.111	0.68

0.55	0.8466	0.8606	0.9836	0.8352	0.1421	0.1275E+01	0.560	1.111	0.68
0.56	0.8415	0.8559	0.9830	0.8285	0.1464	0.1260E+01	0.570	1.111	0.68
0.57	0.8363	0.8512	0.9824	0.8217	0.1508	0.1245E+01	0.580	1.111	0.68
0.58	0.8311	0.8464	0.9818	0.8146	0.1552	0.1231E+01	0.590	1.111	0.68
0.59	0.8258	0.8415	0.9812	0.8074	0.1595	0.1217E+01	0.600	1.111	0.68
0.60	0.8205	0.8366	0.9805	0.8000	0.1639	0.1204E+01	0.610	1.111	0.68
0.61	0.8151	0.8317	0.9799	0.7924	0.1683	0.1192E+01	0.620	1.111	0.68
0.62	0.8096	0.8267	0.9792	0.7846	0.1728	0.1180E+01	0.630	1.111	0.68
0.63	0.8042	0.8216	0.9786	0.7766	0.1772	0.1169E+01	0.640	1.111	0.68
0.64	0.7986	0.8165	0.9779	0.7684	0.1816	0.1158E+01	0.649	1.111	0.68
0.65	0.7930	0.8114	0.9772	0.7599	0.1860	0.1148E+01	0.659	1.112	0.68
0.66	0.7874	0.8062	0.9765	0.7513	0.1904	0.1138E+01	0.669	1.112	0.68
0.67	0.7817	0.8010	0.9758	0.7424	0.1948	0.1129E+01	0.679	1.112	0.68
0.68	0.7760	0.7957	0.9751	0.7332	0.1993	0.1120E+01	0.689	1.112	0.68
0.69	0.7703	0.7904	0.9744	0.7238	0.2036	0.1111E+01	0.699	1.112	0.68
0.70	0.7645	0.7851	0.9736	0.7141	0.2080	0.1103E+01	0.709	1.112	0.68
0.71	0.7587	0.7797	0.9729	0.7042	0.2124	0.1096E+01	0.719	1.112	0.68
0.72	0.7529	0.7743	0.9721	0.6940	0.2168	0.1089E+01	0.729	1.112	0.68
0.73	0.7470	0.7688	0.9714	0.6834	0.2211	0.1082E+01	0.739	1.112	0.68
0.74	0.7411	0.7633	0.9706	0.6726	0.2254	0.1075E+01	0.748	1.112	0.68
0.75	0.7351	0.7578	0.9698	0.6614	0.2297	0.1069E+01	0.758	1.112	0.68
0.76	0.7292	0.7523	0.9690	0.6499	0.2340	0.1063E+01	0.768	1.112	0.68
0.77	0.7232	0.7467	0.9682	0.6380	0.2382	0.1057E+01	0.778	1.112	0.68
0.78	0.7172	0.7411	0.9674	0.6258	0.2424	0.1052E+01	0.788	1.112	0.68
0.79	0.7111	0.7355	0.9666	0.6131	0.2466	0.1047E+01	0.797	1.112	0.68
0.80	0.7050	0.7299	0.9657	0.6000	0.2507	0.1042E+01	0.807	1.112	0.68
0.81	0.6990	0.7242	0.9649	0.5864	0.2548	0.1038E+01	0.817	1.112	0.68
0.82	0.6929	0.7185	0.9640	0.5724	0.2589	0.1034E+01	0.827	1.113	0.68
0.83	0.6868	0.7128	0.9632	0.5578	0.2629	0.1030E+01	0.836	1.113	0.68
0.84	0.6806	0.7071	0.9623	0.5426	0.2669	0.1026E+01	0.846	1.113	0.69
0.85	0.6745	0.7014	0.9614	0.5268	0.2709	0.1023E+01	0.856	1.113	0.69
0.86	0.6684	0.6956	0.9605	0.5103	0.2748	0.1020E+01	0.866	1.113	0.69
0.87	0.6622	0.6898	0.9596	0.4931	0.2786	0.1017E+01	0.875	1.113	0.69
0.88	0.6560	0.6841	0.9587	0.4750	0.2824	0.1015E+01	0.885	1.113	0.69
0.89	0.6498	0.6783	0.9578	0.4559	0.2862	0.1012E+01	0.895	1.113	0.69
0.90	0.6437	0.6725	0.9569	0.4359	0.2899	0.1010E+01	0.904	1.113	0.69
0.91	0.6375	0.6666	0.9559	0.4146	0.2936	0.1008E+01	0.914	1.113	0.69
0.92	0.6313	0.6608	0.9550	0.3919	0.2972	0.1006E+01	0.924	1.113	0.69
0.93	0.6251	0.6550	0.9540	0.3675	0.3007	0.1005E+01	0.933	1.113	0.69
0.94	0.6189	0.6492	0.9531	0.3412	0.3042	0.1004E+01	0.943	1.113	0.69
0.95	0.6127	0.6433	0.9521	0.3123	0.3076	0.1002E+01	0.952	1.113	0.69
0.96	0.6066	0.6375	0.9511	0.2800	0.3110	0.1002E+01	0.962	1.114	0.69
0.97	0.6004	0.6317	0.9501	0.2431	0.3143	0.1001E+01	0.971	1.114	0.69
0.98	0.5942	0.6258	0.9491	0.1990	0.3175	0.1000E+01	0.981	1.114	0.69
0.99	0.5880	0.6200	0.9481	0.1410	0.3207	0.1000E+01	0.990	1.114	0.69
1.00	0.5819	0.6141	0.9471	0.0011	0.3238	0.1000E+01	1.000	1.114	0.69
1.01	0.5757	0.6083	0.9461	0.1417	0.3268	0.1000E+01	1.009	1.114	0.69
1.02	0.5696	0.6025	0.9450	0.2010	0.3298	0.1000E+01	1.019	1.114	0.69
1.03	0.5634	0.5966	0.9440	0.2468	0.3327	0.1001E+01	1.028	1.114	0.69
1.04	0.5573	0.5908	0.9429	0.2857	0.3356	0.1001E+01	1.038	1.114	0.69
1.05	0.5512	0.5850	0.9419	0.3202	0.3383	0.1002E+01	1.047	1.114	0.69
1.06	0.5452	0.5792	0.9408	0.3516	0.3410	0.1003E+01	1.057	1.114	0.69
1.07	0.5391	0.5734	0.9397	0.3807	0.3437	0.1005E+01	1.066	1.114	0.69
1.08	0.5330	0.5676	0.9386	0.4079	0.3462	0.1006E+01	1.076	1.115	0.69
1.09	0.5270	0.5619	0.9375	0.4337	0.3487	0.1007E+01	1.085	1.115	0.69
1.10	0.5210	0.5561	0.9364	0.4583	0.3511	0.1009E+01	1.094	1.115	0.69
1.11	0.5150	0.5504	0.9353	0.4818	0.3534	0.1011E+01	1.104	1.115	0.69
1.12	0.5090	0.5446	0.9342	0.5044	0.3557	0.1013E+01	1.113	1.115	0.69
1.13	0.5031	0.5389	0.9331	0.5262	0.3579	0.1015E+01	1.122	1.115	0.69
1.14	0.4972	0.5332	0.9319	0.5474	0.3600	0.1018E+01	1.132	1.115	0.69
1.15	0.4913	0.5275	0.9308	0.5679	0.3620	0.1020E+01	1.141	1.115	0.69
1.16	0.4854	0.5219	0.9296	0.5879	0.3640	0.1023E+01	1.150	1.115	0.69
1.17	0.4795	0.5162	0.9285	0.6074	0.3659	0.1026E+01	1.159	1.115	0.69
1.18	0.4737	0.5106	0.9273	0.6264	0.3677	0.1029E+01	1.169	1.116	0.69
1.19	0.4679	0.5050	0.9261	0.6451	0.3694	0.1032E+01	1.178	1.116	0.69
1.20	0.4622	0.4994	0.9249	0.6633	0.3710	0.1036E+01	1.187	1.116	0.70
1.21	0.4565	0.4939	0.9237	0.6812	0.3726	0.1040E+01	1.196	1.116	0.70
1.22	0.4508	0.4883	0.9225	0.6989	0.3741	0.1043E+01	1.205	1.116	0.70
1.23	0.4451	0.4828	0.9213	0.7162	0.3755	0.1047E+01	1.214	1.116	0.70
1.24	0.4395	0.4774	0.9201	0.7332	0.3768	0.1051E+01	1.224	1.116	0.70
1.25	0.4339	0.4719	0.9189	0.7500	0.3781	0.1056E+01	1.233	1.116	0.70
1.26	0.4283	0.4665	0.9176	0.7666	0.3793	0.1060E+01	1.242	1.116	0.70

1.27	0.4228	0.4611	0.9164	0.7829	0.3804	0.1065E+01	1.251	1.116	0.70
1.28	0.4173	0.4557	0.9151	0.7990	0.3814	0.1070E+01	1.260	1.117	0.70
1.29	0.4118	0.4503	0.9139	0.8149	0.3824	0.1075E+01	1.269	1.117	0.70
1.30	0.4064	0.4450	0.9126	0.8307	0.3832	0.1080E+01	1.278	1.117	0.70
1.31	0.4010	0.4397	0.9113	0.8462	0.3840	0.1085E+01	1.287	1.117	0.70
1.32	0.3956	0.4345	0.9101	0.8616	0.3848	0.1091E+01	1.296	1.117	0.70

I S E N T R O P I C E X P A N S I O N

(Output file outmix6)

Pt(lb/sq.ft)	Tt(deg F)	Tt(deg R)	RHOt(slugs/cu.ft)	X134a	Xair	Zt
100.0	100.0	559.7	0.000354	0.950	0.050	0.9994

M	USTAR	PSTAR/Pt	TSTAR/Tt	RHOSTAR	RHOSTARxUSTAR
9.999997E-01	5.459956E+02	5.818103E-01	9.471109E-01	2.172961E-04	1.186427E-01

M	P/Pt	R/RHOt	T/Tt	BET	q/Pt	A/Astar	U/Ustar	Gamma	Pr
0.00	1.0000	1.0000	1.0000	1.0000	0.0000	0.1401E+03	0.004	1.110	0.68
0.01	0.9999	1.0000	1.0000	1.0000	0.0001	0.5994E+02	0.010	1.110	0.68
0.02	0.9998	0.9998	1.0000	0.9998	0.0002	0.2996E+02	0.021	1.110	0.68
0.03	0.9995	0.9995	1.0000	0.9995	0.0005	0.1997E+02	0.031	1.110	0.68
0.04	0.9991	0.9992	0.9999	0.9992	0.0009	0.1498E+02	0.041	1.110	0.68
0.05	0.9986	0.9988	0.9999	0.9987	0.0014	0.1199E+02	0.051	1.110	0.68
0.06	0.9980	0.9982	0.9998	0.9982	0.0020	0.1000E+02	0.062	1.110	0.68
0.07	0.9973	0.9976	0.9997	0.9975	0.0027	0.8579E+01	0.072	1.110	0.68
0.08	0.9965	0.9968	0.9996	0.9968	0.0035	0.7512E+01	0.082	1.110	0.68
0.09	0.9955	0.9960	0.9996	0.9959	0.0045	0.6684E+01	0.092	1.110	0.68
0.10	0.9945	0.9950	0.9995	0.9950	0.0055	0.6020E+01	0.103	1.110	0.68
0.11	0.9933	0.9940	0.9993	0.9939	0.0067	0.5480E+01	0.113	1.110	0.68
0.12	0.9921	0.9928	0.9992	0.9928	0.0079	0.5029E+01	0.123	1.110	0.68
0.13	0.9907	0.9916	0.9991	0.9915	0.0093	0.4648E+01	0.133	1.110	0.68
0.14	0.9892	0.9903	0.9989	0.9902	0.0108	0.4322E+01	0.143	1.110	0.68
0.15	0.9876	0.9888	0.9988	0.9887	0.0123	0.4040E+01	0.154	1.110	0.68
0.16	0.9859	0.9873	0.9986	0.9871	0.0140	0.3794E+01	0.164	1.110	0.68
0.17	0.9841	0.9857	0.9984	0.9854	0.0158	0.3577E+01	0.174	1.110	0.68
0.18	0.9822	0.9839	0.9982	0.9837	0.0176	0.3384E+01	0.184	1.110	0.68
0.19	0.9802	0.9821	0.9980	0.9818	0.0196	0.3213E+01	0.195	1.110	0.68
0.20	0.9781	0.9802	0.9978	0.9798	0.0217	0.3058E+01	0.205	1.110	0.68
0.21	0.9759	0.9782	0.9976	0.9777	0.0239	0.2919E+01	0.215	1.110	0.68
0.22	0.9736	0.9761	0.9974	0.9755	0.0261	0.2793E+01	0.225	1.110	0.68
0.23	0.9711	0.9739	0.9971	0.9732	0.0285	0.2677E+01	0.236	1.110	0.68
0.24	0.9686	0.9717	0.9969	0.9708	0.0309	0.2572E+01	0.246	1.110	0.68
0.25	0.9660	0.9693	0.9966	0.9682	0.0335	0.2476E+01	0.256	1.110	0.68
0.26	0.9633	0.9668	0.9963	0.9656	0.0361	0.2387E+01	0.266	1.110	0.68
0.27	0.9605	0.9643	0.9960	0.9629	0.0388	0.2305E+01	0.276	1.110	0.68
0.28	0.9575	0.9616	0.9957	0.9600	0.0416	0.2229E+01	0.287	1.110	0.68
0.29	0.9545	0.9589	0.9954	0.9570	0.0445	0.2158E+01	0.297	1.110	0.68
0.30	0.9514	0.9561	0.9951	0.9539	0.0475	0.2093E+01	0.307	1.110	0.68
0.31	0.9482	0.9532	0.9948	0.9507	0.0505	0.2032E+01	0.317	1.110	0.68
0.32	0.9449	0.9502	0.9944	0.9474	0.0537	0.1975E+01	0.327	1.110	0.68
0.33	0.9416	0.9471	0.9941	0.9440	0.0569	0.1922E+01	0.337	1.110	0.68
0.34	0.9381	0.9440	0.9937	0.9404	0.0602	0.1872E+01	0.348	1.110	0.68
0.35	0.9345	0.9408	0.9933	0.9367	0.0635	0.1825E+01	0.358	1.110	0.68
0.36	0.9309	0.9375	0.9929	0.9330	0.0669	0.1781E+01	0.368	1.110	0.68
0.37	0.9271	0.9341	0.9925	0.9290	0.0704	0.1739E+01	0.378	1.110	0.68
0.38	0.9233	0.9306	0.9921	0.9250	0.0740	0.1700E+01	0.388	1.110	0.68
0.39	0.9194	0.9270	0.9917	0.9208	0.0776	0.1663E+01	0.398	1.110	0.68
0.40	0.9154	0.9234	0.9913	0.9165	0.0813	0.1628E+01	0.409	1.110	0.68
0.41	0.9113	0.9197	0.9909	0.9121	0.0850	0.1595E+01	0.419	1.110	0.68
0.42	0.9072	0.9159	0.9904	0.9075	0.0888	0.1564E+01	0.429	1.110	0.68
0.43	0.9030	0.9121	0.9899	0.9028	0.0926	0.1534E+01	0.439	1.110	0.68
0.44	0.8987	0.9082	0.9895	0.8980	0.0965	0.1506E+01	0.449	1.110	0.68
0.45	0.8943	0.9042	0.9890	0.8930	0.1005	0.1480E+01	0.459	1.110	0.68
0.46	0.8898	0.9001	0.9885	0.8879	0.1045	0.1454E+01	0.469	1.110	0.68
0.47	0.8853	0.8960	0.9880	0.8827	0.1085	0.1430E+01	0.479	1.110	0.68
0.48	0.8807	0.8918	0.9875	0.8773	0.1126	0.1407E+01	0.489	1.111	0.68
0.49	0.8760	0.8875	0.9870	0.8717	0.1167	0.1386E+01	0.499	1.111	0.68
0.50	0.8713	0.8832	0.9864	0.8660	0.1209	0.1365E+01	0.509	1.111	0.68
0.51	0.8665	0.8788	0.9859	0.8602	0.1251	0.1345E+01	0.520	1.111	0.68
0.52	0.8616	0.8743	0.9853	0.8542	0.1293	0.1326E+01	0.530	1.111	0.68
0.53	0.8566	0.8698	0.9848	0.8480	0.1336	0.1308E+01	0.540	1.111	0.68
0.54	0.8517	0.8653	0.9842	0.8417	0.1378	0.1291E+01	0.550	1.111	0.68

0.55	0.8466	0.8606	0.9836	0.8352	0.1422	0.1275E+01	0.560	1.111	0.68
0.56	0.8415	0.8559	0.9830	0.8285	0.1465	0.1259E+01	0.570	1.111	0.68
0.57	0.8363	0.8512	0.9824	0.8216	0.1508	0.1245E+01	0.580	1.111	0.68
0.58	0.8311	0.8464	0.9818	0.8146	0.1552	0.1230E+01	0.590	1.111	0.68
0.59	0.8258	0.8415	0.9812	0.8074	0.1596	0.1217E+01	0.600	1.111	0.68
0.60	0.8204	0.8366	0.9805	0.8000	0.1640	0.1204E+01	0.610	1.111	0.68
0.61	0.8150	0.8317	0.9799	0.7924	0.1684	0.1192E+01	0.620	1.111	0.68
0.62	0.8096	0.8267	0.9792	0.7846	0.1728	0.1180E+01	0.630	1.111	0.68
0.63	0.8041	0.8216	0.9786	0.7766	0.1772	0.1169E+01	0.640	1.111	0.68
0.64	0.7986	0.8165	0.9779	0.7684	0.1816	0.1158E+01	0.650	1.111	0.68
0.65	0.7930	0.8114	0.9772	0.7599	0.1861	0.1148E+01	0.659	1.111	0.68
0.66	0.7874	0.8062	0.9765	0.7513	0.1905	0.1138E+01	0.669	1.111	0.68
0.67	0.7817	0.8010	0.9758	0.7424	0.1949	0.1129E+01	0.679	1.111	0.68
0.68	0.7760	0.7957	0.9751	0.7332	0.1993	0.1120E+01	0.689	1.111	0.68
0.69	0.7702	0.7904	0.9744	0.7238	0.2037	0.1111E+01	0.699	1.112	0.68
0.70	0.7645	0.7851	0.9736	0.7142	0.2081	0.1103E+01	0.709	1.112	0.68
0.71	0.7586	0.7797	0.9729	0.7042	0.2125	0.1096E+01	0.719	1.112	0.68
0.72	0.7528	0.7743	0.9721	0.6940	0.2168	0.1089E+01	0.729	1.112	0.68
0.73	0.7469	0.7688	0.9714	0.6835	0.2211	0.1082E+01	0.739	1.112	0.68
0.74	0.7410	0.7634	0.9706	0.6726	0.2255	0.1075E+01	0.748	1.112	0.68
0.75	0.7351	0.7579	0.9698	0.6614	0.2298	0.1069E+01	0.758	1.112	0.68
0.76	0.7291	0.7523	0.9690	0.6499	0.2340	0.1063E+01	0.768	1.112	0.68
0.77	0.7231	0.7467	0.9682	0.6380	0.2383	0.1057E+01	0.778	1.112	0.68
0.78	0.7171	0.7412	0.9674	0.6258	0.2425	0.1052E+01	0.788	1.112	0.68
0.79	0.7110	0.7355	0.9666	0.6131	0.2466	0.1047E+01	0.797	1.112	0.68
0.80	0.7050	0.7299	0.9657	0.6000	0.2508	0.1042E+01	0.807	1.112	0.68
0.81	0.6989	0.7242	0.9649	0.5864	0.2549	0.1038E+01	0.817	1.112	0.68
0.82	0.6928	0.7186	0.9640	0.5724	0.2590	0.1034E+01	0.827	1.112	0.68
0.83	0.6867	0.7129	0.9632	0.5578	0.2630	0.1030E+01	0.836	1.112	0.68
0.84	0.6806	0.7071	0.9623	0.5426	0.2670	0.1026E+01	0.846	1.112	0.68
0.85	0.6744	0.7014	0.9614	0.5268	0.2709	0.1023E+01	0.856	1.113	0.69
0.86	0.6683	0.6956	0.9605	0.5103	0.2748	0.1020E+01	0.866	1.113	0.69
0.87	0.6621	0.6899	0.9596	0.4931	0.2787	0.1017E+01	0.875	1.113	0.69
0.88	0.6560	0.6841	0.9587	0.4750	0.2825	0.1015E+01	0.885	1.113	0.69
0.89	0.6498	0.6783	0.9578	0.4560	0.2863	0.1012E+01	0.895	1.113	0.69
0.90	0.6436	0.6725	0.9569	0.4359	0.2900	0.1010E+01	0.904	1.113	0.69
0.91	0.6374	0.6667	0.9559	0.4146	0.2936	0.1008E+01	0.914	1.113	0.69
0.92	0.6312	0.6609	0.9550	0.3919	0.2972	0.1006E+01	0.924	1.113	0.69
0.93	0.6250	0.6550	0.9540	0.3676	0.3008	0.1005E+01	0.933	1.113	0.69
0.94	0.6189	0.6492	0.9531	0.3412	0.3042	0.1004E+01	0.943	1.113	0.69
0.95	0.6127	0.6434	0.9521	0.3123	0.3077	0.1002E+01	0.952	1.113	0.69
0.96	0.6065	0.6375	0.9511	0.2800	0.3110	0.1002E+01	0.962	1.113	0.69
0.97	0.6003	0.6317	0.9501	0.2431	0.3143	0.1001E+01	0.971	1.113	0.69
0.98	0.5941	0.6259	0.9491	0.1990	0.3176	0.1000E+01	0.981	1.114	0.69
0.99	0.5880	0.6200	0.9481	0.1411	0.3207	0.1000E+01	0.990	1.114	0.69
1.00	0.5818	0.6142	0.9471	0.0013	0.3239	0.1000E+01	1.000	1.114	0.69
1.01	0.5757	0.6083	0.9461	0.1418	0.3269	0.1000E+01	1.009	1.114	0.69
1.02	0.5695	0.6025	0.9450	0.2010	0.3299	0.1000E+01	1.019	1.114	0.69
1.03	0.5634	0.5967	0.9440	0.2468	0.3328	0.1001E+01	1.028	1.114	0.69
1.04	0.5573	0.5909	0.9430	0.2857	0.3356	0.1001E+01	1.038	1.114	0.69
1.05	0.5512	0.5851	0.9419	0.3202	0.3384	0.1002E+01	1.047	1.114	0.69
1.06	0.5451	0.5793	0.9408	0.3516	0.3411	0.1003E+01	1.057	1.114	0.69
1.07	0.5390	0.5735	0.9397	0.3807	0.3437	0.1005E+01	1.066	1.114	0.69
1.08	0.5330	0.5677	0.9387	0.4079	0.3463	0.1006E+01	1.076	1.114	0.69
1.09	0.5270	0.5619	0.9376	0.4337	0.3487	0.1007E+01	1.085	1.115	0.69
1.10	0.5209	0.5562	0.9365	0.4582	0.3512	0.1009E+01	1.094	1.115	0.69
1.11	0.5150	0.5504	0.9353	0.4818	0.3535	0.1011E+01	1.104	1.115	0.69
1.12	0.5090	0.5447	0.9342	0.5044	0.3557	0.1013E+01	1.113	1.115	0.69
1.13	0.5030	0.5390	0.9331	0.5262	0.3579	0.1015E+01	1.122	1.115	0.69
1.14	0.4971	0.5333	0.9320	0.5474	0.3600	0.1018E+01	1.132	1.115	0.69
1.15	0.4912	0.5276	0.9308	0.5679	0.3621	0.1020E+01	1.141	1.115	0.69
1.16	0.4853	0.5219	0.9297	0.5879	0.3640	0.1023E+01	1.150	1.115	0.69
1.17	0.4795	0.5163	0.9285	0.6074	0.3659	0.1026E+01	1.159	1.115	0.69
1.18	0.4737	0.5107	0.9273	0.6264	0.3677	0.1029E+01	1.169	1.115	0.69
1.19	0.4679	0.5051	0.9261	0.6451	0.3694	0.1032E+01	1.178	1.115	0.69
1.20	0.4621	0.4995	0.9250	0.6633	0.3711	0.1036E+01	1.187	1.116	0.70
1.21	0.4564	0.4940	0.9238	0.6812	0.3726	0.1040E+01	1.196	1.116	0.70
1.22	0.4507	0.4884	0.9226	0.6989	0.3741	0.1043E+01	1.205	1.116	0.70
1.23	0.4450	0.4829	0.9213	0.7162	0.3756	0.1047E+01	1.214	1.116	0.70
1.24	0.4394	0.4774	0.9201	0.7332	0.3769	0.1051E+01	1.224	1.116	0.70
1.25	0.4338	0.4720	0.9189	0.7500	0.3781	0.1056E+01	1.233	1.116	0.70
1.26	0.4282	0.4665	0.9177	0.7666	0.3793	0.1060E+01	1.242	1.116	0.70

1.27	0.4227	0.4611	0.9164	0.7829	0.3804	0.1065E+01	1.251	1.116	0.70
1.28	0.4172	0.4558	0.9152	0.7990	0.3815	0.1070E+01	1.260	1.116	0.70
1.29	0.4118	0.4504	0.9139	0.8149	0.3824	0.1075E+01	1.269	1.117	0.70
1.30	0.4063	0.4451	0.9127	0.8307	0.3833	0.1080E+01	1.278	1.117	0.70
1.31	0.4010	0.4398	0.9114	0.8462	0.3841	0.1085E+01	1.287	1.117	0.70
1.32	0.3956	0.4345	0.9101	0.8616	0.3848	0.1091E+01	1.296	1.117	0.70

I S E N T R O P I C E X P A N S I O N
(Output file outmix6)

Pt(lb/sq.ft)	Tt(deg F)	Tt(deg R)	RHOt(slugs/cu.ft)	X134a	Xair	Zt
50.0	100.0	559.7	0.000177	0.950	0.050	0.9997

M	USTAR	PSTAR/Pt	TSTAR/Tt	RHOSTAR	RHOSTARxUSTAR
9.999998E-01	5.460946E+02	5.817802E-01	9.471240E-01	1.086179E-04	5.931567E-02

M	P/Pt	R/RHOt	T/Tt	BET	q/Pt	A/Astar	U/Ustar	Gamma	Pr
0.00	1.0000	1.0000	1.0000	1.0000	0.0000	0.1401E+03	0.004	1.109	0.68
0.01	0.9999	1.0000	1.0000	1.0000	0.0001	0.5993E+02	0.010	1.109	0.68
0.02	0.9998	0.9998	1.0000	0.9998	0.0002	0.2996E+02	0.021	1.109	0.68
0.03	0.9995	0.9996	1.0000	0.9995	0.0005	0.1997E+02	0.031	1.109	0.68
0.04	0.9991	0.9992	0.9999	0.9992	0.0009	0.1498E+02	0.041	1.109	0.68
0.05	0.9986	0.9988	0.9999	0.9987	0.0014	0.1199E+02	0.051	1.109	0.68
0.06	0.9980	0.9982	0.9998	0.9982	0.0020	0.1000E+02	0.062	1.109	0.68
0.07	0.9973	0.9976	0.9997	0.9975	0.0027	0.8578E+01	0.072	1.109	0.68
0.08	0.9965	0.9968	0.9997	0.9968	0.0035	0.7511E+01	0.082	1.110	0.68
0.09	0.9955	0.9960	0.9996	0.9959	0.0045	0.6683E+01	0.092	1.110	0.68
0.10	0.9945	0.9950	0.9995	0.9950	0.0055	0.6021E+01	0.103	1.110	0.68
0.11	0.9933	0.9940	0.9993	0.9939	0.0067	0.5480E+01	0.113	1.110	0.68
0.12	0.9920	0.9928	0.9992	0.9928	0.0079	0.5029E+01	0.123	1.110	0.68
0.13	0.9907	0.9916	0.9991	0.9915	0.0093	0.4648E+01	0.133	1.110	0.68
0.14	0.9892	0.9903	0.9989	0.9902	0.0108	0.4322E+01	0.144	1.110	0.68
0.15	0.9876	0.9888	0.9988	0.9887	0.0123	0.4040E+01	0.154	1.110	0.68
0.16	0.9859	0.9873	0.9986	0.9871	0.0140	0.3794E+01	0.164	1.110	0.68
0.17	0.9841	0.9857	0.9984	0.9854	0.0158	0.3577E+01	0.174	1.110	0.68
0.18	0.9822	0.9839	0.9982	0.9837	0.0177	0.3384E+01	0.184	1.110	0.68
0.19	0.9802	0.9821	0.9980	0.9818	0.0196	0.3213E+01	0.195	1.110	0.68
0.20	0.9781	0.9802	0.9978	0.9798	0.0217	0.3058E+01	0.205	1.110	0.68
0.21	0.9759	0.9782	0.9976	0.9777	0.0239	0.2919E+01	0.215	1.110	0.68
0.22	0.9735	0.9761	0.9974	0.9755	0.0261	0.2792E+01	0.225	1.110	0.68
0.23	0.9711	0.9739	0.9971	0.9732	0.0285	0.2677E+01	0.236	1.110	0.68
0.24	0.9686	0.9717	0.9969	0.9708	0.0309	0.2572E+01	0.246	1.110	0.68
0.25	0.9660	0.9693	0.9966	0.9682	0.0335	0.2476E+01	0.256	1.110	0.68
0.26	0.9633	0.9668	0.9963	0.9656	0.0361	0.2387E+01	0.266	1.110	0.68
0.27	0.9604	0.9643	0.9960	0.9629	0.0388	0.2305E+01	0.276	1.110	0.68
0.28	0.9575	0.9616	0.9957	0.9600	0.0416	0.2229E+01	0.287	1.110	0.68
0.29	0.9545	0.9589	0.9954	0.9570	0.0445	0.2158E+01	0.297	1.110	0.68
0.30	0.9514	0.9561	0.9951	0.9539	0.0475	0.2093E+01	0.307	1.110	0.68
0.31	0.9482	0.9532	0.9948	0.9507	0.0506	0.2032E+01	0.317	1.110	0.68
0.32	0.9449	0.9502	0.9944	0.9474	0.0537	0.1975E+01	0.327	1.110	0.68
0.33	0.9415	0.9471	0.9941	0.9440	0.0569	0.1921E+01	0.337	1.110	0.68
0.34	0.9381	0.9440	0.9937	0.9404	0.0602	0.1872E+01	0.348	1.110	0.68
0.35	0.9345	0.9408	0.9933	0.9367	0.0635	0.1825E+01	0.358	1.110	0.68
0.36	0.9309	0.9375	0.9929	0.9330	0.0669	0.1781E+01	0.368	1.110	0.68
0.37	0.9271	0.9341	0.9925	0.9290	0.0704	0.1739E+01	0.378	1.110	0.68
0.38	0.9233	0.9306	0.9921	0.9250	0.0740	0.1700E+01	0.388	1.110	0.68
0.39	0.9194	0.9270	0.9917	0.9208	0.0776	0.1663E+01	0.398	1.110	0.68
0.40	0.9154	0.9234	0.9913	0.9165	0.0813	0.1628E+01	0.409	1.110	0.68
0.41	0.9113	0.9197	0.9909	0.9121	0.0850	0.1595E+01	0.419	1.110	0.68
0.42	0.9072	0.9159	0.9904	0.9075	0.0888	0.1564E+01	0.429	1.110	0.68
0.43	0.9029	0.9121	0.9900	0.9028	0.0927	0.1534E+01	0.439	1.110	0.68
0.44	0.8986	0.9082	0.9895	0.8980	0.0965	0.1506E+01	0.449	1.110	0.68
0.45	0.8943	0.9042	0.9890	0.8930	0.1005	0.1480E+01	0.459	1.110	0.68
0.46	0.8898	0.9001	0.9885	0.8879	0.1045	0.1454E+01	0.469	1.110	0.68
0.47	0.8853	0.8960	0.9880	0.8827	0.1085	0.1430E+01	0.479	1.110	0.68
0.48	0.8807	0.8918	0.9875	0.8773	0.1126	0.1407E+01	0.489	1.110	0.68
0.49	0.8760	0.8875	0.9870	0.8717	0.1167	0.1386E+01	0.499	1.110	0.68
0.50	0.8712	0.8832	0.9864	0.8660	0.1209	0.1365E+01	0.510	1.111	0.68
0.51	0.8664	0.8788	0.9859	0.8602	0.1251	0.1345E+01	0.520	1.111	0.68
0.52	0.8616	0.8744	0.9853	0.8542	0.1293	0.1326E+01	0.530	1.111	0.68
0.53	0.8566	0.8698	0.9848	0.8480	0.1336	0.1308E+01	0.540	1.111	0.68
0.54	0.8516	0.8653	0.9842	0.8417	0.1379	0.1291E+01	0.550	1.111	0.68

0.55	0.8466	0.8606	0.9836	0.8352	0.1422	0.1275E+01	0.560	1.111	0.68
0.56	0.8414	0.8559	0.9830	0.8285	0.1465	0.1259E+01	0.570	1.111	0.68
0.57	0.8363	0.8512	0.9824	0.8216	0.1509	0.1245E+01	0.580	1.111	0.68
0.58	0.8310	0.8464	0.9818	0.8146	0.1552	0.1230E+01	0.590	1.111	0.68
0.59	0.8257	0.8415	0.9812	0.8074	0.1596	0.1217E+01	0.600	1.111	0.68
0.60	0.8204	0.8366	0.9805	0.8000	0.1640	0.1204E+01	0.610	1.111	0.68
0.61	0.8150	0.8317	0.9799	0.7924	0.1684	0.1192E+01	0.620	1.111	0.68
0.62	0.8096	0.8267	0.9792	0.7846	0.1728	0.1180E+01	0.630	1.111	0.68
0.63	0.8041	0.8216	0.9786	0.7766	0.1773	0.1169E+01	0.640	1.111	0.68
0.64	0.7985	0.8165	0.9779	0.7684	0.1817	0.1158E+01	0.650	1.111	0.68
0.65	0.7930	0.8114	0.9772	0.7599	0.1861	0.1148E+01	0.659	1.111	0.68
0.66	0.7873	0.8062	0.9765	0.7513	0.1905	0.1138E+01	0.669	1.111	0.68
0.67	0.7817	0.8010	0.9758	0.7424	0.1949	0.1129E+01	0.679	1.111	0.68
0.68	0.7760	0.7957	0.9751	0.7332	0.1993	0.1120E+01	0.689	1.111	0.68
0.69	0.7702	0.7904	0.9744	0.7238	0.2037	0.1111E+01	0.699	1.111	0.68
0.70	0.7644	0.7851	0.9736	0.7141	0.2081	0.1103E+01	0.709	1.112	0.68
0.71	0.7586	0.7797	0.9729	0.7042	0.2125	0.1096E+01	0.719	1.112	0.68
0.72	0.7528	0.7743	0.9721	0.6940	0.2168	0.1088E+01	0.729	1.112	0.68
0.73	0.7469	0.7688	0.9714	0.6835	0.2212	0.1082E+01	0.739	1.112	0.68
0.74	0.7410	0.7634	0.9706	0.6726	0.2255	0.1075E+01	0.748	1.112	0.68
0.75	0.7350	0.7579	0.9698	0.6614	0.2298	0.1069E+01	0.758	1.112	0.68
0.76	0.7291	0.7523	0.9690	0.6499	0.2341	0.1063E+01	0.768	1.112	0.68
0.77	0.7231	0.7468	0.9682	0.6380	0.2383	0.1057E+01	0.778	1.112	0.68
0.78	0.7171	0.7412	0.9674	0.6258	0.2425	0.1052E+01	0.788	1.112	0.68
0.79	0.7110	0.7355	0.9666	0.6131	0.2467	0.1047E+01	0.797	1.112	0.68
0.80	0.7050	0.7299	0.9657	0.6000	0.2508	0.1042E+01	0.807	1.112	0.68
0.81	0.6989	0.7242	0.9649	0.5864	0.2549	0.1038E+01	0.817	1.112	0.68
0.82	0.6928	0.7186	0.9641	0.5724	0.2590	0.1034E+01	0.827	1.112	0.68
0.83	0.6867	0.7129	0.9632	0.5578	0.2630	0.1030E+01	0.836	1.112	0.68
0.84	0.6806	0.7071	0.9623	0.5426	0.2670	0.1026E+01	0.846	1.112	0.68
0.85	0.6744	0.7014	0.9614	0.5268	0.2710	0.1023E+01	0.856	1.112	0.69
0.86	0.6683	0.6957	0.9605	0.5103	0.2749	0.1020E+01	0.866	1.113	0.69
0.87	0.6621	0.6899	0.9596	0.4930	0.2787	0.1017E+01	0.875	1.113	0.69
0.88	0.6559	0.6841	0.9587	0.4750	0.2825	0.1015E+01	0.885	1.113	0.69
0.89	0.6498	0.6783	0.9578	0.4560	0.2863	0.1012E+01	0.895	1.113	0.69
0.90	0.6436	0.6725	0.9569	0.4359	0.2900	0.1010E+01	0.904	1.113	0.69
0.91	0.6374	0.6667	0.9560	0.4146	0.2936	0.1008E+01	0.914	1.113	0.69
0.92	0.6312	0.6609	0.9550	0.3919	0.2972	0.1006E+01	0.924	1.113	0.69
0.93	0.6250	0.6550	0.9541	0.3675	0.3008	0.1005E+01	0.933	1.113	0.69
0.94	0.6188	0.6492	0.9531	0.3412	0.3043	0.1004E+01	0.943	1.113	0.69
0.95	0.6126	0.6434	0.9521	0.3122	0.3077	0.1002E+01	0.952	1.113	0.69
0.96	0.6065	0.6376	0.9511	0.2800	0.3111	0.1002E+01	0.962	1.113	0.69
0.97	0.6003	0.6317	0.9501	0.2431	0.3144	0.1001E+01	0.971	1.113	0.69
0.98	0.5941	0.6259	0.9492	0.1990	0.3176	0.1000E+01	0.981	1.113	0.69
0.99	0.5879	0.6200	0.9481	0.1411	0.3208	0.1000E+01	0.990	1.114	0.69
1.00	0.5818	0.6142	0.9471	0.0025	0.3239	0.1000E+01	1.000	1.114	0.69
1.01	0.5756	0.6084	0.9461	0.1418	0.3269	0.1000E+01	1.009	1.114	0.69
1.02	0.5695	0.6025	0.9451	0.2010	0.3299	0.1000E+01	1.019	1.114	0.69
1.03	0.5634	0.5967	0.9440	0.2467	0.3328	0.1001E+01	1.028	1.114	0.69
1.04	0.5573	0.5909	0.9430	0.2857	0.3356	0.1001E+01	1.038	1.114	0.69
1.05	0.5512	0.5851	0.9419	0.3202	0.3384	0.1002E+01	1.047	1.114	0.69
1.06	0.5451	0.5793	0.9408	0.3515	0.3411	0.1003E+01	1.057	1.114	0.69
1.07	0.5390	0.5735	0.9398	0.3807	0.3437	0.1005E+01	1.066	1.114	0.69
1.08	0.5329	0.5677	0.9387	0.4079	0.3463	0.1006E+01	1.076	1.114	0.69
1.09	0.5269	0.5619	0.9376	0.4337	0.3488	0.1007E+01	1.085	1.114	0.69
1.10	0.5209	0.5562	0.9365	0.4583	0.3512	0.1009E+01	1.094	1.115	0.69
1.11	0.5149	0.5505	0.9354	0.4817	0.3535	0.1011E+01	1.104	1.115	0.69
1.12	0.5090	0.5447	0.9342	0.5044	0.3558	0.1013E+01	1.113	1.115	0.69
1.13	0.5030	0.5390	0.9331	0.5262	0.3580	0.1015E+01	1.122	1.115	0.69
1.14	0.4971	0.5333	0.9320	0.5473	0.3601	0.1018E+01	1.132	1.115	0.69
1.15	0.4912	0.5276	0.9308	0.5679	0.3621	0.1020E+01	1.141	1.115	0.69
1.16	0.4853	0.5220	0.9297	0.5879	0.3640	0.1023E+01	1.150	1.115	0.69
1.17	0.4795	0.5163	0.9285	0.6074	0.3659	0.1026E+01	1.159	1.115	0.69
1.18	0.4737	0.5107	0.9273	0.6264	0.3677	0.1029E+01	1.169	1.115	0.69
1.19	0.4679	0.5051	0.9262	0.6451	0.3695	0.1032E+01	1.178	1.115	0.69
1.20	0.4621	0.4995	0.9250	0.6633	0.3711	0.1036E+01	1.187	1.116	0.70
1.21	0.4564	0.4940	0.9238	0.6812	0.3727	0.1040E+01	1.196	1.116	0.70
1.22	0.4507	0.4885	0.9226	0.6988	0.3742	0.1043E+01	1.205	1.116	0.70
1.23	0.4450	0.4829	0.9214	0.7162	0.3756	0.1047E+01	1.214	1.116	0.70
1.24	0.4394	0.4775	0.9202	0.7332	0.3769	0.1051E+01	1.224	1.116	0.70
1.25	0.4338	0.4720	0.9189	0.7500	0.3782	0.1056E+01	1.233	1.116	0.70
1.26	0.4282	0.4666	0.9177	0.7666	0.3794	0.1060E+01	1.242	1.116	0.70

1.27	0.4227	0.4612	0.9165	0.7829	0.3805	0.1065E+01	1.251	1.116	0.70
1.28	0.4172	0.4558	0.9152	0.7990	0.3815	0.1070E+01	1.260	1.116	0.70
1.29	0.4117	0.4504	0.9139	0.8149	0.3824	0.1075E+01	1.269	1.116	0.70
1.30	0.4063	0.4451	0.9127	0.8307	0.3833	0.1080E+01	1.278	1.117	0.70
1.31	0.4009	0.4398	0.9114	0.8462	0.3841	0.1085E+01	1.287	1.117	0.70
1.32	0.3956	0.4346	0.9101	0.8616	0.3848	0.1091E+01	1.296	1.117	0.70

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*** ALL DATA CASES HAVE BEEN READ AND PROCESSED - JOB IS COMPLETED ***

I S E N T R O P I C E X P A N S I O N

(Output file outmix8)

Tt(deg F)	Pt(lb/sq.ft)	Vt(ft^3/lbm-mol)	Zt	Cpt/Cvt	Prt	X134a	Xair
100.0	2200.0	0.1247E+05	0.9861	1.115	0.681	0.950	0.050

M	T(deg F)	P(psf)	Re/ft	V(ft^3/lbm-mol)	Z	CP/CV	a(ft/sec)
0.00	100.0	2200.0	0.7037E+05	0.1247E+05	0.9861	1.115	553.69
0.01	100.0	2199.9	0.1653E+06	0.1247E+05	0.9861	1.115	553.69
0.02	100.0	2199.5	0.3306E+06	0.1247E+05	0.9861	1.115	553.69
0.03	100.0	2198.9	0.4959E+06	0.1248E+05	0.9861	1.115	553.68
0.04	100.0	2198.1	0.6608E+06	0.1248E+05	0.9861	1.115	553.67
0.05	99.9	2197.0	0.8259E+06	0.1249E+05	0.9861	1.115	553.66
0.06	99.9	2195.7	0.9905E+06	0.1249E+05	0.9861	1.115	553.65
0.07	99.8	2194.1	0.1155E+07	0.1250E+05	0.9861	1.115	553.63
0.08	99.8	2192.3	0.1319E+07	0.1251E+05	0.9861	1.115	553.62
0.09	99.7	2190.2	0.1483E+07	0.1252E+05	0.9861	1.115	553.60
0.10	99.7	2187.9	0.1646E+07	0.1253E+05	0.9861	1.115	553.58
0.11	99.6	2185.4	0.1809E+07	0.1255E+05	0.9862	1.115	553.55
0.12	99.6	2182.7	0.1971E+07	0.1256E+05	0.9862	1.115	553.52
0.13	99.5	2179.7	0.2133E+07	0.1258E+05	0.9862	1.115	553.49
0.14	99.4	2176.4	0.2294E+07	0.1259E+05	0.9862	1.115	553.46
0.15	99.3	2173.0	0.2454E+07	0.1261E+05	0.9862	1.115	553.43
0.16	99.2	2169.3	0.2614E+07	0.1263E+05	0.9862	1.115	553.39
0.17	99.1	2165.4	0.2773E+07	0.1265E+05	0.9863	1.115	553.36
0.18	99.0	2161.2	0.2931E+07	0.1267E+05	0.9863	1.115	553.31
0.19	98.9	2156.8	0.3089E+07	0.1270E+05	0.9863	1.115	553.27
0.20	98.8	2152.2	0.3246E+07	0.1272E+05	0.9863	1.115	553.23
0.21	98.6	2147.4	0.3401E+07	0.1275E+05	0.9863	1.115	553.18
0.22	98.5	2142.3	0.3556E+07	0.1278E+05	0.9864	1.115	553.13
0.23	98.4	2137.0	0.3710E+07	0.1280E+05	0.9864	1.115	553.08
0.24	98.2	2131.5	0.3863E+07	0.1283E+05	0.9864	1.115	553.02
0.25	98.1	2125.8	0.4015E+07	0.1287E+05	0.9864	1.115	552.96
0.26	97.9	2119.9	0.4165E+07	0.1290E+05	0.9865	1.115	552.90
0.27	97.8	2113.7	0.4315E+07	0.1293E+05	0.9865	1.115	552.84
0.28	97.6	2107.3	0.4463E+07	0.1297E+05	0.9865	1.115	552.78
0.29	97.4	2100.8	0.4610E+07	0.1301E+05	0.9866	1.115	552.71
0.30	97.2	2094.0	0.4756E+07	0.1304E+05	0.9866	1.115	552.64
0.31	97.0	2087.0	0.4900E+07	0.1308E+05	0.9866	1.115	552.57
0.32	96.8	2079.8	0.5044E+07	0.1312E+05	0.9866	1.115	552.50
0.33	96.6	2072.4	0.5186E+07	0.1317E+05	0.9867	1.115	552.42
0.34	96.4	2064.8	0.5326E+07	0.1321E+05	0.9867	1.115	552.34
0.35	96.2	2057.1	0.5465E+07	0.1326E+05	0.9868	1.115	552.26
0.36	96.0	2049.1	0.5603E+07	0.1330E+05	0.9868	1.115	552.18
0.37	95.8	2040.9	0.5739E+07	0.1335E+05	0.9868	1.115	552.09
0.38	95.6	2032.6	0.5874E+07	0.1340E+05	0.9869	1.115	552.01
0.39	95.3	2024.0	0.6007E+07	0.1345E+05	0.9869	1.115	551.92
0.40	95.1	2015.3	0.6138E+07	0.1351E+05	0.9870	1.115	551.82
0.41	94.8	2006.4	0.6268E+07	0.1356E+05	0.9870	1.115	551.73
0.42	94.6	1997.3	0.6396E+07	0.1362E+05	0.9870	1.115	551.63
0.43	94.3	1988.1	0.6522E+07	0.1367E+05	0.9871	1.115	551.53
0.44	94.1	1978.7	0.6647E+07	0.1373E+05	0.9871	1.115	551.43
0.45	93.8	1969.1	0.6770E+07	0.1379E+05	0.9872	1.115	551.32
0.46	93.5	1959.3	0.6891E+07	0.1386E+05	0.9872	1.115	551.22
0.47	93.2	1949.4	0.7011E+07	0.1392E+05	0.9873	1.115	551.11
0.48	92.9	1939.3	0.7129E+07	0.1399E+05	0.9873	1.115	550.99
0.49	92.6	1929.1	0.7244E+07	0.1405E+05	0.9874	1.115	550.88
0.50	92.3	1918.7	0.7358E+07	0.1412E+05	0.9874	1.115	550.76
0.51	92.0	1908.2	0.7470E+07	0.1419E+05	0.9875	1.115	550.64
0.52	91.7	1897.5	0.7581E+07	0.1427E+05	0.9875	1.115	550.52
0.53	91.4	1886.7	0.7689E+07	0.1434E+05	0.9876	1.115	550.40
0.54	91.1	1875.8	0.7795E+07	0.1442E+05	0.9876	1.115	550.27
0.55	90.7	1864.7	0.7900E+07	0.1449E+05	0.9877	1.115	550.14
0.56	90.4	1853.5	0.8002E+07	0.1457E+05	0.9877	1.115	550.01
0.57	90.1	1842.1	0.8103E+07	0.1465E+05	0.9878	1.116	549.88
0.58	89.7	1830.7	0.8201E+07	0.1474E+05	0.9878	1.116	549.74
0.59	89.4	1819.1	0.8298E+07	0.1482E+05	0.9879	1.116	549.60
0.60	89.0	1807.4	0.8392E+07	0.1491E+05	0.9879	1.116	549.46
0.61	88.6	1795.6	0.8485E+07	0.1500E+05	0.9880	1.116	549.32
0.62	88.3	1783.6	0.8575E+07	0.1509E+05	0.9881	1.116	549.17
0.63	87.9	1771.6	0.8663E+07	0.1518E+05	0.9881	1.116	549.02
0.64	87.5	1759.4	0.8750E+07	0.1528E+05	0.9882	1.116	548.87

0.65	87.1	1747.2	0.8834E+07	0.1537E+05	0.9882	1.116	548.72
0.66	86.7	1734.9	0.8916E+07	0.1547E+05	0.9883	1.116	548.56
0.67	86.3	1722.4	0.8996E+07	0.1558E+05	0.9884	1.116	548.41
0.68	85.9	1709.9	0.9074E+07	0.1568E+05	0.9884	1.116	548.24
0.69	85.5	1697.3	0.9149E+07	0.1578E+05	0.9885	1.116	548.08
0.70	85.1	1684.6	0.9223E+07	0.1589E+05	0.9885	1.116	547.92
0.71	84.7	1671.8	0.9294E+07	0.1600E+05	0.9886	1.116	547.75
0.72	84.2	1659.0	0.9364E+07	0.1611E+05	0.9887	1.116	547.58
0.73	83.8	1646.1	0.9431E+07	0.1623E+05	0.9887	1.116	547.40
0.74	83.4	1633.1	0.9496E+07	0.1635E+05	0.9888	1.116	547.23
0.75	82.9	1620.0	0.9559E+07	0.1646E+05	0.9889	1.116	547.05
0.76	82.5	1606.9	0.9620E+07	0.1659E+05	0.9889	1.116	546.87
0.77	82.0	1593.8	0.9679E+07	0.1671E+05	0.9890	1.116	546.69
0.78	81.6	1580.5	0.9735E+07	0.1684E+05	0.9891	1.116	546.50
0.79	81.1	1567.3	0.9790E+07	0.1697E+05	0.9891	1.116	546.31
0.80	80.6	1554.0	0.9842E+07	0.1710E+05	0.9892	1.116	546.12
0.81	80.2	1540.6	0.9892E+07	0.1723E+05	0.9893	1.116	545.93
0.82	79.7	1527.2	0.9940E+07	0.1737E+05	0.9893	1.116	545.73
0.83	79.2	1513.8	0.9986E+07	0.1751E+05	0.9894	1.116	545.54
0.84	78.7	1500.3	0.1003E+08	0.1765E+05	0.9895	1.117	545.33
0.85	78.2	1486.8	0.1007E+08	0.1780E+05	0.9895	1.117	545.13
0.86	77.7	1473.3	0.1011E+08	0.1794E+05	0.9896	1.117	544.93
0.87	77.2	1459.7	0.1015E+08	0.1809E+05	0.9897	1.117	544.72
0.88	76.7	1446.1	0.1019E+08	0.1825E+05	0.9897	1.117	544.51
0.89	76.1	1432.5	0.1022E+08	0.1840E+05	0.9898	1.117	544.29
0.90	75.6	1418.9	0.1025E+08	0.1856E+05	0.9899	1.117	544.08
0.91	75.1	1405.3	0.1028E+08	0.1873E+05	0.9899	1.117	543.86
0.92	74.6	1391.7	0.1031E+08	0.1889E+05	0.9900	1.117	543.64
0.93	74.0	1378.1	0.1033E+08	0.1906E+05	0.9901	1.117	543.42
0.94	73.5	1364.4	0.1036E+08	0.1923E+05	0.9902	1.117	543.19
0.95	72.9	1350.8	0.1038E+08	0.1941E+05	0.9902	1.117	542.96
0.96	72.4	1337.2	0.1040E+08	0.1959E+05	0.9903	1.117	542.73
0.97	71.8	1323.6	0.1041E+08	0.1977E+05	0.9904	1.117	542.50
0.98	71.2	1310.0	0.1043E+08	0.1996E+05	0.9904	1.117	542.26
0.99	70.7	1296.4	0.1044E+08	0.2014E+05	0.9905	1.117	542.02
1.00	70.1	1282.8	0.1046E+08	0.2034E+05	0.9906	1.117	541.78
1.01	69.5	1269.3	0.1047E+08	0.2053E+05	0.9907	1.117	541.54
1.02	68.9	1255.7	0.1047E+08	0.2073E+05	0.9907	1.117	541.29
1.03	68.3	1242.2	0.1048E+08	0.2094E+05	0.9908	1.118	541.05
1.04	67.7	1228.8	0.1049E+08	0.2114E+05	0.9909	1.118	540.80
1.05	67.1	1215.3	0.1049E+08	0.2135E+05	0.9909	1.118	540.54
1.06	66.5	1201.9	0.1049E+08	0.2157E+05	0.9910	1.118	540.29
1.07	65.9	1188.5	0.1049E+08	0.2179E+05	0.9911	1.118	540.03
1.08	65.3	1175.2	0.1048E+08	0.2201E+05	0.9912	1.118	539.77
1.09	64.7	1161.9	0.1048E+08	0.2224E+05	0.9912	1.118	539.50
1.10	64.1	1148.6	0.1047E+08	0.2247E+05	0.9913	1.118	539.24
1.11	63.4	1135.4	0.1047E+08	0.2271E+05	0.9914	1.118	538.97
1.12	62.8	1122.2	0.1046E+08	0.2295E+05	0.9914	1.118	538.70
1.13	62.2	1109.1	0.1045E+08	0.2319E+05	0.9915	1.118	538.43
1.14	61.5	1096.0	0.1043E+08	0.2344E+05	0.9916	1.118	538.15
1.15	60.9	1083.0	0.1042E+08	0.2369E+05	0.9917	1.118	537.87
1.16	60.2	1070.1	0.1040E+08	0.2395E+05	0.9917	1.118	537.59
1.17	59.6	1057.2	0.1039E+08	0.2422E+05	0.9918	1.118	537.31
1.18	58.9	1044.3	0.1037E+08	0.2448E+05	0.9919	1.119	537.02
1.19	58.2	1031.5	0.1035E+08	0.2476E+05	0.9920	1.119	536.73
1.20	57.5	1018.8	0.1033E+08	0.2504E+05	0.9920	1.119	536.44
1.21	56.9	1006.2	0.1030E+08	0.2532E+05	0.9921	1.119	536.15
1.22	56.2	993.6	0.1028E+08	0.2561E+05	0.9922	1.119	535.85
1.23	55.5	981.1	0.1025E+08	0.2590E+05	0.9922	1.119	535.56
1.24	54.8	968.6	0.1022E+08	0.2620E+05	0.9923	1.119	535.26
1.25	54.1	956.3	0.1019E+08	0.2651E+05	0.9924	1.119	534.95
1.26	53.4	944.0	0.1016E+08	0.2682E+05	0.9924	1.119	534.65
1.27	52.7	931.8	0.1013E+08	0.2713E+05	0.9925	1.119	534.34
1.28	52.0	919.6	0.1010E+08	0.2746E+05	0.9926	1.119	534.03
1.29	51.3	907.6	0.1007E+08	0.2778E+05	0.9927	1.119	533.72
1.30	50.6	895.6	0.1003E+08	0.2812E+05	0.9927	1.120	533.40
1.31	49.9	883.7	0.9995E+07	0.2846E+05	0.9928	1.120	533.08
1.32	49.1	871.9	0.9958E+07	0.2881E+05	0.9929	1.120	532.76

I S E N T R O P I C E X P A N S I O N
(Output file outmix8)

Tt(deg F)	Pt(lb/sq.ft)	Vt(ft^3/lbm-mol)	Zt	Cpt/Cvt	Prt	X134a	Xair
100.0	1000.0	0.2765E+05	0.9937	1.112	0.679	0.950	0.050

M	T(deg F)	P(psf)	Re/ft	V(ft^3/lbm-mol)	Z	CP/CV	a(ft/sec)
0.00	100.0	1000.0	0.3203E+05	0.2765E+05	0.9937	1.112	557.25
0.01	100.0	999.9	0.7512E+05	0.2765E+05	0.9937	1.112	557.24
0.02	100.0	999.8	0.1501E+06	0.2765E+05	0.9937	1.112	557.24
0.03	100.0	999.5	0.2251E+06	0.2766E+05	0.9937	1.112	557.23
0.04	100.0	999.1	0.3001E+06	0.2767E+05	0.9937	1.112	557.23
0.05	99.9	998.6	0.3749E+06	0.2768E+05	0.9937	1.112	557.21
0.06	99.9	998.0	0.4496E+06	0.2770E+05	0.9937	1.112	557.20
0.07	99.8	997.3	0.5242E+06	0.2772E+05	0.9937	1.112	557.18
0.08	99.8	996.5	0.5987E+06	0.2774E+05	0.9937	1.112	557.16
0.09	99.8	995.5	0.6730E+06	0.2776E+05	0.9937	1.112	557.14
0.10	99.7	994.5	0.7471E+06	0.2779E+05	0.9937	1.112	557.12
0.11	99.6	993.3	0.8210E+06	0.2782E+05	0.9937	1.112	557.09
0.12	99.6	992.1	0.8947E+06	0.2785E+05	0.9938	1.112	557.06
0.13	99.5	990.7	0.9680E+06	0.2788E+05	0.9938	1.112	557.03
0.14	99.4	989.2	0.1041E+07	0.2792E+05	0.9938	1.112	556.99
0.15	99.3	987.7	0.1114E+07	0.2796E+05	0.9938	1.112	556.95
0.16	99.2	986.0	0.1187E+07	0.2800E+05	0.9938	1.112	556.91
0.17	99.1	984.2	0.1259E+07	0.2805E+05	0.9938	1.112	556.87
0.18	99.0	982.3	0.1331E+07	0.2810E+05	0.9938	1.112	556.82
0.19	98.9	980.3	0.1402E+07	0.2815E+05	0.9938	1.112	556.77
0.20	98.8	978.2	0.1473E+07	0.2821E+05	0.9938	1.112	556.72
0.21	98.6	976.0	0.1544E+07	0.2826E+05	0.9938	1.112	556.67
0.22	98.5	973.6	0.1614E+07	0.2832E+05	0.9938	1.112	556.61
0.23	98.4	971.2	0.1684E+07	0.2839E+05	0.9938	1.112	556.55
0.24	98.2	968.7	0.1753E+07	0.2845E+05	0.9939	1.112	556.49
0.25	98.1	966.1	0.1822E+07	0.2852E+05	0.9939	1.112	556.43
0.26	97.9	963.4	0.1890E+07	0.2860E+05	0.9939	1.112	556.36
0.27	97.8	960.6	0.1958E+07	0.2867E+05	0.9939	1.112	556.29
0.28	97.6	957.7	0.2026E+07	0.2875E+05	0.9939	1.112	556.22
0.29	97.4	954.7	0.2092E+07	0.2883E+05	0.9939	1.112	556.15
0.30	97.2	951.6	0.2159E+07	0.2892E+05	0.9939	1.112	556.07
0.31	97.1	948.4	0.2224E+07	0.2901E+05	0.9940	1.112	555.99
0.32	96.9	945.1	0.2289E+07	0.2910E+05	0.9940	1.112	555.91
0.33	96.7	941.7	0.2353E+07	0.2919E+05	0.9940	1.112	555.82
0.34	96.5	938.3	0.2417E+07	0.2929E+05	0.9940	1.112	555.73
0.35	96.3	934.7	0.2480E+07	0.2939E+05	0.9940	1.112	555.64
0.36	96.0	931.1	0.2543E+07	0.2949E+05	0.9940	1.112	555.55
0.37	95.8	927.4	0.2604E+07	0.2960E+05	0.9940	1.112	555.46
0.38	95.6	923.6	0.2665E+07	0.2971E+05	0.9941	1.112	555.36
0.39	95.3	919.7	0.2726E+07	0.2982E+05	0.9941	1.112	555.26
0.40	95.1	915.7	0.2785E+07	0.2994E+05	0.9941	1.112	555.15
0.41	94.9	911.6	0.2844E+07	0.3006E+05	0.9941	1.112	555.05
0.42	94.6	907.5	0.2902E+07	0.3019E+05	0.9941	1.112	554.94
0.43	94.4	903.3	0.2960E+07	0.3031E+05	0.9942	1.112	554.83
0.44	94.1	899.0	0.3016E+07	0.3044E+05	0.9942	1.112	554.72
0.45	93.8	894.6	0.3072E+07	0.3058E+05	0.9942	1.112	554.60
0.46	93.5	890.2	0.3127E+07	0.3072E+05	0.9942	1.112	554.48
0.47	93.3	885.6	0.3181E+07	0.3086E+05	0.9942	1.113	554.36
0.48	93.0	881.0	0.3234E+07	0.3100E+05	0.9943	1.113	554.23
0.49	92.7	876.4	0.3287E+07	0.3115E+05	0.9943	1.113	554.11
0.50	92.4	871.6	0.3338E+07	0.3131E+05	0.9943	1.113	553.98
0.51	92.1	866.8	0.3389E+07	0.3146E+05	0.9943	1.113	553.85
0.52	91.8	862.0	0.3439E+07	0.3162E+05	0.9944	1.113	553.71
0.53	91.4	857.1	0.3488E+07	0.3179E+05	0.9944	1.113	553.57
0.54	91.1	852.1	0.3536E+07	0.3196E+05	0.9944	1.113	553.43
0.55	90.8	847.0	0.3584E+07	0.3213E+05	0.9944	1.113	553.29
0.56	90.5	841.9	0.3630E+07	0.3230E+05	0.9945	1.113	553.15
0.57	90.1	836.7	0.3676E+07	0.3248E+05	0.9945	1.113	553.00
0.58	89.8	831.5	0.3720E+07	0.3267E+05	0.9945	1.113	552.85
0.59	89.4	826.2	0.3764E+07	0.3286E+05	0.9945	1.113	552.70
0.60	89.1	820.9	0.3807E+07	0.3305E+05	0.9946	1.113	552.54
0.61	88.7	815.5	0.3849E+07	0.3325E+05	0.9946	1.113	552.38
0.62	88.3	810.1	0.3889E+07	0.3345E+05	0.9946	1.113	552.22
0.63	88.0	804.6	0.3929E+07	0.3365E+05	0.9946	1.113	552.06
0.64	87.6	799.1	0.3968E+07	0.3386E+05	0.9947	1.113	551.89
0.65	87.2	793.5	0.4007E+07	0.3408E+05	0.9947	1.113	551.72
0.66	86.8	787.9	0.4044E+07	0.3430E+05	0.9947	1.113	551.55
0.67	86.4	782.2	0.4080E+07	0.3452E+05	0.9947	1.113	551.38

0.68	86.0	776.5	0.4115E+07	0.3475E+05	0.9948	1.113	551.20
0.69	85.6	770.8	0.4149E+07	0.3499E+05	0.9948	1.113	551.02
0.70	85.2	765.0	0.4183E+07	0.3522E+05	0.9948	1.113	550.84
0.71	84.8	759.2	0.4215E+07	0.3547E+05	0.9949	1.113	550.66
0.72	84.3	753.3	0.4246E+07	0.3572E+05	0.9949	1.114	550.47
0.73	83.9	747.5	0.4277E+07	0.3597E+05	0.9949	1.114	550.28
0.74	83.5	741.6	0.4306E+07	0.3623E+05	0.9949	1.114	550.09
0.75	83.0	735.6	0.4335E+07	0.3649E+05	0.9950	1.114	549.90
0.76	82.6	729.7	0.4362E+07	0.3676E+05	0.9950	1.114	549.70
0.77	82.1	723.7	0.4389E+07	0.3703E+05	0.9950	1.114	549.50
0.78	81.7	717.7	0.4414E+07	0.3731E+05	0.9951	1.114	549.30
0.79	81.2	711.6	0.4439E+07	0.3760E+05	0.9951	1.114	549.09
0.80	80.7	705.6	0.4463E+07	0.3789E+05	0.9951	1.114	548.89
0.81	80.3	699.5	0.4485E+07	0.3819E+05	0.9951	1.114	548.68
0.82	79.8	693.4	0.4507E+07	0.3849E+05	0.9952	1.114	548.46
0.83	79.3	687.3	0.4528E+07	0.3880E+05	0.9952	1.114	548.25
0.84	78.8	681.2	0.4548E+07	0.3911E+05	0.9952	1.114	548.03
0.85	78.3	675.0	0.4567E+07	0.3943E+05	0.9953	1.114	547.81
0.86	77.8	668.9	0.4585E+07	0.3976E+05	0.9953	1.114	547.59
0.87	77.3	662.7	0.4602E+07	0.4009E+05	0.9953	1.114	547.36
0.88	76.8	656.5	0.4618E+07	0.4043E+05	0.9954	1.114	547.13
0.89	76.3	650.4	0.4633E+07	0.4078E+05	0.9954	1.114	546.90
0.90	75.8	644.2	0.4647E+07	0.4113E+05	0.9954	1.115	546.67
0.91	75.2	638.0	0.4661E+07	0.4149E+05	0.9955	1.115	546.44
0.92	74.7	631.8	0.4673E+07	0.4186E+05	0.9955	1.115	546.20
0.93	74.2	625.6	0.4684E+07	0.4223E+05	0.9955	1.115	545.96
0.94	73.6	619.4	0.4695E+07	0.4261E+05	0.9956	1.115	545.71
0.95	73.1	613.2	0.4705E+07	0.4300E+05	0.9956	1.115	545.47
0.96	72.5	607.0	0.4714E+07	0.4339E+05	0.9956	1.115	545.22
0.97	72.0	600.9	0.4722E+07	0.4379E+05	0.9957	1.115	544.97
0.98	71.4	594.7	0.4729E+07	0.4420E+05	0.9957	1.115	544.72
0.99	70.8	588.5	0.4735E+07	0.4462E+05	0.9957	1.115	544.46
1.00	70.3	582.4	0.4740E+07	0.4505E+05	0.9957	1.115	544.20
1.01	69.7	576.2	0.4745E+07	0.4548E+05	0.9958	1.115	543.94
1.02	69.1	570.1	0.4748E+07	0.4592E+05	0.9958	1.115	543.68
1.03	68.5	563.9	0.4751E+07	0.4637E+05	0.9958	1.115	543.41
1.04	67.9	557.8	0.4753E+07	0.4683E+05	0.9959	1.116	543.15
1.05	67.3	551.7	0.4754E+07	0.4729E+05	0.9959	1.116	542.88
1.06	66.7	545.6	0.4755E+07	0.4777E+05	0.9959	1.116	542.60
1.07	66.1	539.5	0.4754E+07	0.4825E+05	0.9960	1.116	542.33
1.08	65.5	533.5	0.4753E+07	0.4874E+05	0.9960	1.116	542.05
1.09	64.9	527.4	0.4751E+07	0.4925E+05	0.9960	1.116	541.77
1.10	64.3	521.4	0.4748E+07	0.4976E+05	0.9961	1.116	541.48
1.11	63.6	515.4	0.4745E+07	0.5028E+05	0.9961	1.116	541.20
1.12	63.0	509.4	0.4740E+07	0.5081E+05	0.9961	1.116	540.91
1.13	62.4	503.5	0.4735E+07	0.5135E+05	0.9962	1.116	540.62
1.14	61.7	497.6	0.4730E+07	0.5190E+05	0.9962	1.116	540.33
1.15	61.1	491.7	0.4723E+07	0.5246E+05	0.9962	1.116	540.03
1.16	60.5	485.8	0.4716E+07	0.5303E+05	0.9963	1.117	539.74
1.17	59.8	479.9	0.4708E+07	0.5361E+05	0.9963	1.117	539.44
1.18	59.1	474.1	0.4700E+07	0.5420E+05	0.9963	1.117	539.13
1.19	58.5	468.3	0.4690E+07	0.5480E+05	0.9964	1.117	538.83
1.20	57.8	462.5	0.4681E+07	0.5542E+05	0.9964	1.117	538.52
1.21	57.1	456.8	0.4670E+07	0.5604E+05	0.9964	1.117	538.21
1.22	56.5	451.1	0.4659E+07	0.5668E+05	0.9965	1.117	537.90
1.23	55.8	445.4	0.4647E+07	0.5733E+05	0.9965	1.117	537.58
1.24	55.1	439.8	0.4635E+07	0.5799E+05	0.9965	1.117	537.27
1.25	54.4	434.2	0.4622E+07	0.5866E+05	0.9966	1.117	536.95
1.26	53.7	428.6	0.4608E+07	0.5934E+05	0.9966	1.117	536.62
1.27	53.0	423.1	0.4594E+07	0.6004E+05	0.9966	1.118	536.30
1.28	52.3	417.6	0.4579E+07	0.6075E+05	0.9966	1.118	535.97
1.29	51.6	412.1	0.4564E+07	0.6147E+05	0.9967	1.118	535.65
1.30	50.9	406.7	0.4548E+07	0.6221E+05	0.9967	1.118	535.31
1.31	50.2	401.3	0.4531E+07	0.6296E+05	0.9967	1.118	534.98
1.32	49.5	395.9	0.4515E+07	0.6373E+05	0.9968	1.118	534.65

I S E N T R O P I C E X P A N S I O N
(Output file outmix8)

Tt(deg F)	Pt(lb/sq.ft)	Vt(ft^3/lbm-mol)	Zt	Cpt/Cvt	Prt	X134a	Xair
100.0	500.0	0.5547E+05	0.9969	1.111	0.678	0.950	0.050

M	T(deg F)	P(psf)	Re/ft	V(ft^3/lbm-mol)	Z	CP/CV	a(ft/sec)
0.00	100.0	500.0	0.1602E+05	0.5547E+05	0.9969	1.111	558.71
0.01	100.0	500.0	0.3752E+05	0.5547E+05	0.9969	1.111	558.71
0.02	100.0	499.9	0.7501E+05	0.5548E+05	0.9969	1.111	558.71
0.03	100.0	499.8	0.1125E+06	0.5550E+05	0.9969	1.111	558.70
0.04	100.0	499.6	0.1499E+06	0.5552E+05	0.9969	1.111	558.69
0.05	99.9	499.3	0.1873E+06	0.5554E+05	0.9969	1.111	558.68
0.06	99.9	499.0	0.2247E+06	0.5557E+05	0.9969	1.111	558.66
0.07	99.8	498.6	0.2620E+06	0.5561E+05	0.9969	1.111	558.64
0.08	99.8	498.2	0.2991E+06	0.5565E+05	0.9969	1.111	558.62
0.09	99.8	497.8	0.3363E+06	0.5570E+05	0.9969	1.111	558.60
0.10	99.7	497.2	0.3733E+06	0.5575E+05	0.9969	1.111	558.58
0.11	99.6	496.7	0.4102E+06	0.5581E+05	0.9969	1.111	558.55
0.12	99.6	496.0	0.4471E+06	0.5587E+05	0.9969	1.111	558.52
0.13	99.5	495.3	0.4838E+06	0.5594E+05	0.9969	1.111	558.48
0.14	99.4	494.6	0.5203E+06	0.5602E+05	0.9969	1.111	558.44
0.15	99.3	493.8	0.5567E+06	0.5610E+05	0.9969	1.111	558.40
0.16	99.2	493.0	0.5929E+06	0.5619E+05	0.9969	1.111	558.36
0.17	99.1	492.1	0.6290E+06	0.5628E+05	0.9969	1.111	558.32
0.18	99.0	491.1	0.6649E+06	0.5638E+05	0.9969	1.111	558.27
0.19	98.9	490.1	0.7006E+06	0.5648E+05	0.9969	1.111	558.22
0.20	98.8	489.1	0.7362E+06	0.5659E+05	0.9969	1.111	558.17
0.21	98.6	488.0	0.7715E+06	0.5671E+05	0.9969	1.111	558.11
0.22	98.5	486.8	0.8066E+06	0.5683E+05	0.9969	1.111	558.05
0.23	98.4	485.6	0.8415E+06	0.5696E+05	0.9969	1.111	557.99
0.24	98.2	484.3	0.8761E+06	0.5709E+05	0.9969	1.111	557.92
0.25	98.1	483.0	0.9105E+06	0.5723E+05	0.9969	1.111	557.86
0.26	97.9	481.7	0.9446E+06	0.5738E+05	0.9969	1.111	557.79
0.27	97.8	480.3	0.9786E+06	0.5753E+05	0.9970	1.111	557.72
0.28	97.6	478.8	0.1012E+07	0.5768E+05	0.9970	1.111	557.64
0.29	97.4	477.3	0.1046E+07	0.5785E+05	0.9970	1.111	557.56
0.30	97.2	475.7	0.1079E+07	0.5802E+05	0.9970	1.111	557.48
0.31	97.1	474.2	0.1111E+07	0.5820E+05	0.9970	1.111	557.40
0.32	96.9	472.5	0.1144E+07	0.5838E+05	0.9970	1.111	557.31
0.33	96.7	470.8	0.1176E+07	0.5857E+05	0.9970	1.111	557.22
0.34	96.5	469.1	0.1208E+07	0.5876E+05	0.9970	1.111	557.13
0.35	96.3	467.3	0.1239E+07	0.5896E+05	0.9970	1.111	557.04
0.36	96.0	465.5	0.1270E+07	0.5917E+05	0.9970	1.111	556.94
0.37	95.8	463.6	0.1301E+07	0.5939E+05	0.9970	1.111	556.84
0.38	95.6	461.7	0.1332E+07	0.5961E+05	0.9970	1.111	556.74
0.39	95.4	459.8	0.1362E+07	0.5984E+05	0.9970	1.111	556.64
0.40	95.1	457.8	0.1392E+07	0.6007E+05	0.9971	1.111	556.53
0.41	94.9	455.7	0.1421E+07	0.6031E+05	0.9971	1.111	556.42
0.42	94.6	453.7	0.1450E+07	0.6056E+05	0.9971	1.111	556.30
0.43	94.4	451.5	0.1479E+07	0.6082E+05	0.9971	1.111	556.19
0.44	94.1	449.4	0.1507E+07	0.6108E+05	0.9971	1.111	556.07
0.45	93.8	447.2	0.1535E+07	0.6135E+05	0.9971	1.111	555.95
0.46	93.6	445.0	0.1562E+07	0.6163E+05	0.9971	1.111	555.83
0.47	93.3	442.7	0.1589E+07	0.6191E+05	0.9971	1.111	555.70
0.48	93.0	440.4	0.1616E+07	0.6220E+05	0.9971	1.111	555.57
0.49	92.7	438.1	0.1642E+07	0.6250E+05	0.9972	1.111	555.44
0.50	92.4	435.7	0.1668E+07	0.6281E+05	0.9972	1.111	555.30
0.51	92.1	433.3	0.1693E+07	0.6312E+05	0.9972	1.112	555.17
0.52	91.8	430.9	0.1718E+07	0.6345E+05	0.9972	1.112	555.03
0.53	91.5	428.4	0.1743E+07	0.6377E+05	0.9972	1.112	554.88
0.54	91.1	425.9	0.1767E+07	0.6411E+05	0.9972	1.112	554.74
0.55	90.8	423.4	0.1790E+07	0.6446E+05	0.9972	1.112	554.59
0.56	90.5	420.8	0.1814E+07	0.6481E+05	0.9972	1.112	554.44
0.57	90.1	418.2	0.1836E+07	0.6517E+05	0.9972	1.112	554.29
0.58	89.8	415.6	0.1859E+07	0.6554E+05	0.9973	1.112	554.13
0.59	89.4	413.0	0.1880E+07	0.6592E+05	0.9973	1.112	553.97
0.60	89.1	410.3	0.1902E+07	0.6631E+05	0.9973	1.112	553.81
0.61	88.7	407.6	0.1923E+07	0.6670E+05	0.9973	1.112	553.64
0.62	88.4	404.9	0.1943E+07	0.6711E+05	0.9973	1.112	553.48
0.63	88.0	402.2	0.1963E+07	0.6752E+05	0.9973	1.112	553.31
0.64	87.6	399.4	0.1982E+07	0.6794E+05	0.9973	1.112	553.14
0.65	87.2	396.6	0.2001E+07	0.6837E+05	0.9973	1.112	552.96
0.66	86.8	393.8	0.2020E+07	0.6881E+05	0.9974	1.112	552.78
0.67	86.4	391.0	0.2038E+07	0.6926E+05	0.9974	1.112	552.60
0.68	86.0	388.1	0.2056E+07	0.6972E+05	0.9974	1.112	552.42
0.69	85.6	385.2	0.2073E+07	0.7019E+05	0.9974	1.112	552.24
0.70	85.2	382.3	0.2089E+07	0.7066E+05	0.9974	1.112	552.05

0.71	84.8	379.4	0.2106E+07	0.7115E+05	0.9974	1.112	551.86
0.72	84.4	376.5	0.2121E+07	0.7165E+05	0.9974	1.113	551.66
0.73	83.9	373.6	0.2136E+07	0.7216E+05	0.9975	1.113	551.47
0.74	83.5	370.6	0.2151E+07	0.7268E+05	0.9975	1.113	551.27
0.75	83.1	367.7	0.2165E+07	0.7320E+05	0.9975	1.113	551.07
0.76	82.6	364.7	0.2179E+07	0.7374E+05	0.9975	1.113	550.87
0.77	82.2	361.7	0.2192E+07	0.7429E+05	0.9975	1.113	550.66
0.78	81.7	358.7	0.2205E+07	0.7485E+05	0.9975	1.113	550.45
0.79	81.3	355.7	0.2217E+07	0.7543E+05	0.9975	1.113	550.24
0.80	80.8	352.6	0.2229E+07	0.7601E+05	0.9976	1.113	550.02
0.81	80.3	349.6	0.2240E+07	0.7660E+05	0.9976	1.113	549.81
0.82	79.8	346.5	0.2251E+07	0.7721E+05	0.9976	1.113	549.59
0.83	79.4	343.5	0.2262E+07	0.7783E+05	0.9976	1.113	549.37
0.84	78.9	340.4	0.2272E+07	0.7846E+05	0.9976	1.113	549.14
0.85	78.4	337.3	0.2281E+07	0.7910E+05	0.9976	1.113	548.91
0.86	77.9	334.3	0.2290E+07	0.7976E+05	0.9977	1.113	548.69
0.87	77.4	331.2	0.2298E+07	0.8042E+05	0.9977	1.113	548.45
0.88	76.9	328.1	0.2306E+07	0.8110E+05	0.9977	1.114	548.22
0.89	76.3	325.0	0.2314E+07	0.8180E+05	0.9977	1.114	547.98
0.90	75.8	321.9	0.2321E+07	0.8250E+05	0.9977	1.114	547.74
0.91	75.3	318.8	0.2328E+07	0.8322E+05	0.9977	1.114	547.50
0.92	74.8	315.7	0.2334E+07	0.8396E+05	0.9978	1.114	547.25
0.93	74.2	312.7	0.2340E+07	0.8470E+05	0.9978	1.114	547.01
0.94	73.7	309.6	0.2345E+07	0.8547E+05	0.9978	1.114	546.76
0.95	73.1	306.5	0.2350E+07	0.8624E+05	0.9978	1.114	546.50
0.96	72.6	303.4	0.2354E+07	0.8703E+05	0.9978	1.114	546.25
0.97	72.0	300.3	0.2358E+07	0.8784E+05	0.9978	1.114	545.99
0.98	71.5	297.2	0.2362E+07	0.8866E+05	0.9978	1.114	545.73
0.99	70.9	294.1	0.2365E+07	0.8949E+05	0.9979	1.114	545.47
1.00	70.3	291.0	0.2367E+07	0.9034E+05	0.9979	1.114	545.20
1.01	69.8	288.0	0.2370E+07	0.9121E+05	0.9979	1.114	544.93
1.02	69.2	284.9	0.2372E+07	0.9209E+05	0.9979	1.115	544.66
1.03	68.6	281.8	0.2373E+07	0.9300E+05	0.9979	1.115	544.39
1.04	68.0	278.8	0.2374E+07	0.9391E+05	0.9979	1.115	544.12
1.05	67.4	275.7	0.2374E+07	0.9485E+05	0.9980	1.115	543.84
1.06	66.8	272.7	0.2375E+07	0.9580E+05	0.9980	1.115	543.56
1.07	66.2	269.6	0.2374E+07	0.9677E+05	0.9980	1.115	543.27
1.08	65.6	266.6	0.2374E+07	0.9775E+05	0.9980	1.115	542.99
1.09	65.0	263.6	0.2373E+07	0.9876E+05	0.9980	1.115	542.70
1.10	64.4	260.6	0.2371E+07	0.9978E+05	0.9980	1.115	542.41
1.11	63.7	257.6	0.2370E+07	0.1008E+06	0.9981	1.115	542.12
1.12	63.1	254.6	0.2368E+07	0.1019E+06	0.9981	1.115	541.82
1.13	62.5	251.6	0.2365E+07	0.1030E+06	0.9981	1.116	541.53
1.14	61.8	248.7	0.2362E+07	0.1041E+06	0.9981	1.116	541.23
1.15	61.2	245.7	0.2359E+07	0.1052E+06	0.9981	1.116	540.92
1.16	60.5	242.8	0.2355E+07	0.1063E+06	0.9981	1.116	540.62
1.17	59.9	239.8	0.2351E+07	0.1075E+06	0.9982	1.116	540.31
1.18	59.2	236.9	0.2347E+07	0.1087E+06	0.9982	1.116	540.00
1.19	58.6	234.0	0.2343E+07	0.1099E+06	0.9982	1.116	539.69
1.20	57.9	231.2	0.2338E+07	0.1111E+06	0.9982	1.116	539.38
1.21	57.2	228.3	0.2332E+07	0.1124E+06	0.9982	1.116	539.06
1.22	56.6	225.4	0.2327E+07	0.1136E+06	0.9982	1.116	538.74
1.23	55.9	222.6	0.2321E+07	0.1149E+06	0.9982	1.116	538.42
1.24	55.2	219.8	0.2315E+07	0.1163E+06	0.9983	1.117	538.10
1.25	54.5	217.0	0.2308E+07	0.1176E+06	0.9983	1.117	537.77
1.26	53.8	214.2	0.2301E+07	0.1190E+06	0.9983	1.117	537.44
1.27	53.1	211.4	0.2294E+07	0.1204E+06	0.9983	1.117	537.11
1.28	52.4	208.7	0.2287E+07	0.1218E+06	0.9983	1.117	536.78
1.29	51.7	206.0	0.2279E+07	0.1232E+06	0.9983	1.117	536.44
1.30	51.0	203.2	0.2271E+07	0.1247E+06	0.9984	1.117	536.10
1.31	50.3	200.5	0.2263E+07	0.1262E+06	0.9984	1.117	535.76
1.32	49.6	197.9	0.2255E+07	0.1277E+06	0.9984	1.117	535.42

I S E N T R O P I C E X P A N S I O N
(Output file outmix8)

Tt(deg F)	Pt(lb/sq.ft)	Vt(ft^3/lbm-mol)	Zt	Cpt/Cvt	Prt	X134a	Xair
100.0	200.0	0.1389E+06	0.9987	1.110	0.677	0.950	0.050

M	T(deg F)	P(psf)	Re/ft	V(ft^3/lbm-mol)	Z	CP/CV	a(ft/sec)
0.00	100.0	200.0	0.6411E+04	0.1389E+06	0.9987	1.110	559.59
0.01	100.0	200.0	0.1499E+05	0.1389E+06	0.9987	1.110	559.59

0.02	100.0	200.0	0.3000E+05	0.1390E+06	0.9987	1.110	559.58
0.03	100.0	199.9	0.4498E+05	0.1390E+06	0.9987	1.110	559.57
0.04	100.0	199.8	0.5995E+05	0.1391E+06	0.9987	1.110	559.56
0.05	99.9	199.7	0.7491E+05	0.1391E+06	0.9987	1.110	559.55
0.06	99.9	199.6	0.8983E+05	0.1392E+06	0.9987	1.110	559.54
0.07	99.8	199.5	0.1047E+06	0.1393E+06	0.9988	1.110	559.52
0.08	99.8	199.3	0.1196E+06	0.1394E+06	0.9988	1.110	559.50
0.09	99.8	199.1	0.1345E+06	0.1395E+06	0.9988	1.110	559.47
0.10	99.7	198.9	0.1493E+06	0.1396E+06	0.9988	1.110	559.45
0.11	99.6	198.7	0.1640E+06	0.1398E+06	0.9988	1.110	559.42
0.12	99.6	198.4	0.1788E+06	0.1399E+06	0.9988	1.110	559.38
0.13	99.5	198.1	0.1934E+06	0.1401E+06	0.9988	1.110	559.35
0.14	99.4	197.8	0.2080E+06	0.1403E+06	0.9988	1.110	559.31
0.15	99.3	197.5	0.2226E+06	0.1405E+06	0.9988	1.110	559.27
0.16	99.2	197.2	0.2371E+06	0.1407E+06	0.9988	1.110	559.23
0.17	99.1	196.8	0.2515E+06	0.1410E+06	0.9988	1.110	559.18
0.18	99.0	196.4	0.2659E+06	0.1412E+06	0.9988	1.110	559.13
0.19	98.9	196.0	0.2802E+06	0.1415E+06	0.9988	1.110	559.08
0.20	98.8	195.6	0.2944E+06	0.1417E+06	0.9988	1.110	559.03
0.21	98.7	195.2	0.3085E+06	0.1420E+06	0.9988	1.110	558.97
0.22	98.5	194.7	0.3225E+06	0.1423E+06	0.9988	1.110	558.91
0.23	98.4	194.2	0.3365E+06	0.1427E+06	0.9988	1.110	558.85
0.24	98.2	193.7	0.3503E+06	0.1430E+06	0.9988	1.110	558.78
0.25	98.1	193.2	0.3641E+06	0.1433E+06	0.9988	1.110	558.71
0.26	97.9	192.7	0.3777E+06	0.1437E+06	0.9988	1.110	558.64
0.27	97.8	192.1	0.3913E+06	0.1441E+06	0.9988	1.110	558.57
0.28	97.6	191.5	0.4047E+06	0.1445E+06	0.9988	1.110	558.49
0.29	97.4	190.9	0.4181E+06	0.1449E+06	0.9988	1.110	558.41
0.30	97.3	190.3	0.4313E+06	0.1453E+06	0.9988	1.110	558.33
0.31	97.1	189.6	0.4444E+06	0.1458E+06	0.9988	1.110	558.24
0.32	96.9	189.0	0.4573E+06	0.1462E+06	0.9988	1.110	558.15
0.33	96.7	188.3	0.4702E+06	0.1467E+06	0.9988	1.110	558.06
0.34	96.5	187.6	0.4829E+06	0.1472E+06	0.9988	1.110	557.97
0.35	96.3	186.9	0.4955E+06	0.1477E+06	0.9988	1.110	557.87
0.36	96.0	186.2	0.5080E+06	0.1482E+06	0.9988	1.110	557.77
0.37	95.8	185.4	0.5203E+06	0.1487E+06	0.9988	1.110	557.67
0.38	95.6	184.7	0.5325E+06	0.1493E+06	0.9988	1.110	557.57
0.39	95.4	183.9	0.5445E+06	0.1499E+06	0.9988	1.110	557.46
0.40	95.1	183.1	0.5564E+06	0.1505E+06	0.9988	1.110	557.35
0.41	94.9	182.3	0.5682E+06	0.1511E+06	0.9988	1.111	557.23
0.42	94.6	181.4	0.5798E+06	0.1517E+06	0.9988	1.111	557.12
0.43	94.4	180.6	0.5912E+06	0.1523E+06	0.9988	1.111	557.00
0.44	94.1	179.7	0.6025E+06	0.1530E+06	0.9988	1.111	556.88
0.45	93.8	178.9	0.6136E+06	0.1537E+06	0.9988	1.111	556.76
0.46	93.6	178.0	0.6246E+06	0.1544E+06	0.9988	1.111	556.63
0.47	93.3	177.1	0.6354E+06	0.1551E+06	0.9989	1.111	556.50
0.48	93.0	176.1	0.6461E+06	0.1558E+06	0.9989	1.111	556.37
0.49	92.7	175.2	0.6566E+06	0.1566E+06	0.9989	1.111	556.23
0.50	92.4	174.3	0.6669E+06	0.1573E+06	0.9989	1.111	556.09
0.51	92.1	173.3	0.6770E+06	0.1581E+06	0.9989	1.111	555.95
0.52	91.8	172.3	0.6870E+06	0.1589E+06	0.9989	1.111	555.81
0.53	91.5	171.3	0.6968E+06	0.1597E+06	0.9989	1.111	555.66
0.54	91.2	170.3	0.7064E+06	0.1606E+06	0.9989	1.111	555.52
0.55	90.8	169.3	0.7158E+06	0.1614E+06	0.9989	1.111	555.36
0.56	90.5	168.3	0.7251E+06	0.1623E+06	0.9989	1.111	555.21
0.57	90.2	167.3	0.7342E+06	0.1632E+06	0.9989	1.111	555.05
0.58	89.8	166.2	0.7431E+06	0.1642E+06	0.9989	1.111	554.89
0.59	89.5	165.2	0.7518E+06	0.1651E+06	0.9989	1.111	554.73
0.60	89.1	164.1	0.7603E+06	0.1661E+06	0.9989	1.111	554.57
0.61	88.7	163.0	0.7687E+06	0.1671E+06	0.9989	1.111	554.40
0.62	88.4	161.9	0.7768E+06	0.1681E+06	0.9989	1.111	554.23
0.63	88.0	160.8	0.7848E+06	0.1691E+06	0.9989	1.111	554.06
0.64	87.6	159.7	0.7926E+06	0.1702E+06	0.9989	1.111	553.88
0.65	87.2	158.6	0.8002E+06	0.1712E+06	0.9989	1.112	553.70
0.66	86.9	157.5	0.8076E+06	0.1723E+06	0.9989	1.112	553.52
0.67	86.5	156.3	0.8148E+06	0.1735E+06	0.9990	1.112	553.34
0.68	86.1	155.2	0.8218E+06	0.1746E+06	0.9990	1.112	553.15
0.69	85.7	154.1	0.8286E+06	0.1758E+06	0.9990	1.112	552.96
0.70	85.2	152.9	0.8353E+06	0.1770E+06	0.9990	1.112	552.77
0.71	84.8	151.7	0.8417E+06	0.1782E+06	0.9990	1.112	552.57
0.72	84.4	150.6	0.8480E+06	0.1794E+06	0.9990	1.112	552.38
0.73	84.0	149.4	0.8541E+06	0.1807E+06	0.9990	1.112	552.18

0.74	83.5	148.2	0.8599E+06	0.1820E+06	0.9990	1.112	551.98
0.75	83.1	147.0	0.8656E+06	0.1833E+06	0.9990	1.112	551.77
0.76	82.6	145.8	0.8711E+06	0.1847E+06	0.9990	1.112	551.56
0.77	82.2	144.6	0.8764E+06	0.1861E+06	0.9990	1.112	551.35
0.78	81.7	143.4	0.8815E+06	0.1875E+06	0.9990	1.112	551.14
0.79	81.3	142.2	0.8864E+06	0.1889E+06	0.9990	1.112	550.92
0.80	80.8	141.0	0.8911E+06	0.1904E+06	0.9990	1.112	550.70
0.81	80.3	139.8	0.8956E+06	0.1919E+06	0.9990	1.112	550.48
0.82	79.9	138.6	0.9000E+06	0.1934E+06	0.9990	1.113	550.26
0.83	79.4	137.4	0.9041E+06	0.1949E+06	0.9990	1.113	550.03
0.84	78.9	136.1	0.9081E+06	0.1965E+06	0.9991	1.113	549.81
0.85	78.4	134.9	0.9118E+06	0.1981E+06	0.9991	1.113	549.57
0.86	77.9	133.7	0.9154E+06	0.1997E+06	0.9991	1.113	549.34
0.87	77.4	132.4	0.9188E+06	0.2014E+06	0.9991	1.113	549.10
0.88	76.9	131.2	0.9220E+06	0.2031E+06	0.9991	1.113	548.87
0.89	76.4	130.0	0.9250E+06	0.2049E+06	0.9991	1.113	548.62
0.90	75.9	128.7	0.9279E+06	0.2066E+06	0.9991	1.113	548.38
0.91	75.3	127.5	0.9305E+06	0.2084E+06	0.9991	1.113	548.13
0.92	74.8	126.3	0.9330E+06	0.2103E+06	0.9991	1.113	547.88
0.93	74.3	125.0	0.9353E+06	0.2121E+06	0.9991	1.113	547.63
0.94	73.7	123.8	0.9374E+06	0.2140E+06	0.9991	1.113	547.38
0.95	73.2	122.5	0.9393E+06	0.2160E+06	0.9991	1.113	547.12
0.96	72.6	121.3	0.9411E+06	0.2179E+06	0.9991	1.114	546.86
0.97	72.1	120.1	0.9427E+06	0.2200E+06	0.9991	1.114	546.60
0.98	71.5	118.8	0.9441E+06	0.2220E+06	0.9991	1.114	546.33
0.99	71.0	117.6	0.9453E+06	0.2241E+06	0.9991	1.114	546.07
1.00	70.4	116.4	0.9464E+06	0.2262E+06	0.9992	1.114	545.80
1.01	69.8	115.1	0.9473E+06	0.2284E+06	0.9992	1.114	545.53
1.02	69.2	113.9	0.9480E+06	0.2306E+06	0.9992	1.114	545.25
1.03	68.6	112.7	0.9485E+06	0.2329E+06	0.9992	1.114	544.97
1.04	68.1	111.5	0.9489E+06	0.2352E+06	0.9992	1.114	544.69
1.05	67.5	110.2	0.9492E+06	0.2375E+06	0.9992	1.114	544.41
1.06	66.9	109.0	0.9492E+06	0.2399E+06	0.9992	1.114	544.13
1.07	66.3	107.8	0.9491E+06	0.2423E+06	0.9992	1.114	543.84
1.08	65.6	106.6	0.9489E+06	0.2448E+06	0.9992	1.115	543.55
1.09	65.0	105.4	0.9485E+06	0.2473E+06	0.9992	1.115	543.26
1.10	64.4	104.2	0.9479E+06	0.2498E+06	0.9992	1.115	542.96
1.11	63.8	103.0	0.9472E+06	0.2525E+06	0.9992	1.115	542.67
1.12	63.2	101.8	0.9464E+06	0.2551E+06	0.9992	1.115	542.37
1.13	62.5	100.6	0.9454E+06	0.2578E+06	0.9992	1.115	542.07
1.14	61.9	99.4	0.9442E+06	0.2606E+06	0.9992	1.115	541.76
1.15	61.3	98.3	0.9430E+06	0.2634E+06	0.9992	1.115	541.46
1.16	60.6	97.1	0.9415E+06	0.2662E+06	0.9993	1.115	541.15
1.17	60.0	95.9	0.9400E+06	0.2691E+06	0.9993	1.115	540.84
1.18	59.3	94.7	0.9383E+06	0.2721E+06	0.9993	1.116	540.52
1.19	58.6	93.6	0.9364E+06	0.2751E+06	0.9993	1.116	540.21
1.20	58.0	92.4	0.9344E+06	0.2782E+06	0.9993	1.116	539.89
1.21	57.3	91.3	0.9323E+06	0.2813E+06	0.9993	1.116	539.57
1.22	56.6	90.2	0.9301E+06	0.2845E+06	0.9993	1.116	539.24
1.23	56.0	89.0	0.9278E+06	0.2878E+06	0.9993	1.116	538.92
1.24	55.3	87.9	0.9253E+06	0.2911E+06	0.9993	1.116	538.59
1.25	54.6	86.8	0.9227E+06	0.2944E+06	0.9993	1.116	538.26
1.26	53.9	85.7	0.9200E+06	0.2979E+06	0.9993	1.116	537.93
1.27	53.2	84.6	0.9172E+06	0.3013E+06	0.9993	1.116	537.59
1.28	52.5	83.5	0.9142E+06	0.3049E+06	0.9993	1.117	537.26
1.29	51.8	82.4	0.9112E+06	0.3085E+06	0.9993	1.117	536.92
1.30	51.1	81.3	0.9080E+06	0.3122E+06	0.9993	1.117	536.58
1.31	50.4	80.2	0.9047E+06	0.3160E+06	0.9994	1.117	536.23
1.32	49.7	79.1	0.9014E+06	0.3198E+06	0.9994	1.117	535.89

I S E N T R O P I C E X P A N S I O N

(Output file outmix8)

Tt(deg F)	Pt(lb/sq.ft)	Vt(ft^3/lbm-mol)	Zt	Cpt/Cvt	Prt	X134a	Xair
100.0	100.0	0.2781E+06	0.9994	1.110	0.677	0.950	0.050

M	T(deg F)	P(psf)	Re/ft	V(ft^3/lbm-mol)	Z	CP/CV	a(ft/sec)
0.00	100.0	100.0	0.3206E+04	0.2781E+06	0.9994	1.110	559.88
0.01	100.0	100.0	0.7493E+04	0.2781E+06	0.9994	1.110	559.88
0.02	100.0	100.0	0.1499E+05	0.2781E+06	0.9994	1.110	559.87
0.03	100.0	100.0	0.2249E+05	0.2782E+06	0.9994	1.110	559.87
0.04	100.0	99.9	0.2998E+05	0.2783E+06	0.9994	1.110	559.86

0.05	99.9	99.9	0.3745E+05	0.2784E+06	0.9994	1.110	559.84
0.06	99.9	99.8	0.4491E+05	0.2786E+06	0.9994	1.110	559.83
0.07	99.9	99.7	0.5237E+05	0.2787E+06	0.9994	1.110	559.81
0.08	99.8	99.6	0.5981E+05	0.2789E+06	0.9994	1.110	559.79
0.09	99.8	99.6	0.6723E+05	0.2792E+06	0.9994	1.110	559.76
0.10	99.7	99.4	0.7464E+05	0.2794E+06	0.9994	1.110	559.74
0.11	99.6	99.3	0.8201E+05	0.2797E+06	0.9994	1.110	559.71
0.12	99.6	99.2	0.8937E+05	0.2801E+06	0.9994	1.110	559.67
0.13	99.5	99.1	0.9670E+05	0.2804E+06	0.9994	1.110	559.64
0.14	99.4	98.9	0.1040E+06	0.2808E+06	0.9994	1.110	559.60
0.15	99.3	98.8	0.1113E+06	0.2812E+06	0.9994	1.110	559.56
0.16	99.2	98.6	0.1185E+06	0.2816E+06	0.9994	1.110	559.52
0.17	99.1	98.4	0.1257E+06	0.2821E+06	0.9994	1.110	559.47
0.18	99.0	98.2	0.1329E+06	0.2826E+06	0.9994	1.110	559.42
0.19	98.9	98.0	0.1401E+06	0.2831E+06	0.9994	1.110	559.37
0.20	98.8	97.8	0.1472E+06	0.2837E+06	0.9994	1.110	559.31
0.21	98.7	97.6	0.1542E+06	0.2842E+06	0.9994	1.110	559.25
0.22	98.5	97.4	0.1612E+06	0.2849E+06	0.9994	1.110	559.19
0.23	98.4	97.1	0.1682E+06	0.2855E+06	0.9994	1.110	559.13
0.24	98.2	96.9	0.1751E+06	0.2862E+06	0.9994	1.110	559.06
0.25	98.1	96.6	0.1820E+06	0.2869E+06	0.9994	1.110	558.99
0.26	97.9	96.3	0.1888E+06	0.2876E+06	0.9994	1.110	558.92
0.27	97.8	96.0	0.1956E+06	0.2884E+06	0.9994	1.110	558.85
0.28	97.6	95.8	0.2023E+06	0.2891E+06	0.9994	1.110	558.77
0.29	97.4	95.5	0.2090E+06	0.2900E+06	0.9994	1.110	558.69
0.30	97.3	95.1	0.2156E+06	0.2908E+06	0.9994	1.110	558.61
0.31	97.1	94.8	0.2222E+06	0.2917E+06	0.9994	1.110	558.52
0.32	96.9	94.5	0.2286E+06	0.2926E+06	0.9994	1.110	558.43
0.33	96.7	94.2	0.2351E+06	0.2936E+06	0.9994	1.110	558.34
0.34	96.5	93.8	0.2414E+06	0.2946E+06	0.9994	1.110	558.25
0.35	96.3	93.5	0.2477E+06	0.2956E+06	0.9994	1.110	558.15
0.36	96.0	93.1	0.2540E+06	0.2966E+06	0.9994	1.110	558.05
0.37	95.8	92.7	0.2601E+06	0.2977E+06	0.9994	1.110	557.95
0.38	95.6	92.3	0.2662E+06	0.2988E+06	0.9994	1.110	557.84
0.39	95.4	91.9	0.2722E+06	0.2999E+06	0.9994	1.110	557.73
0.40	95.1	91.5	0.2782E+06	0.3011E+06	0.9994	1.110	557.62
0.41	94.9	91.1	0.2840E+06	0.3023E+06	0.9994	1.110	557.51
0.42	94.6	90.7	0.2898E+06	0.3036E+06	0.9994	1.110	557.39
0.43	94.4	90.3	0.2956E+06	0.3049E+06	0.9994	1.110	557.27
0.44	94.1	89.9	0.3012E+06	0.3062E+06	0.9994	1.110	557.15
0.45	93.8	89.4	0.3068E+06	0.3075E+06	0.9994	1.110	557.02
0.46	93.6	89.0	0.3123E+06	0.3089E+06	0.9994	1.110	556.90
0.47	93.3	88.5	0.3177E+06	0.3103E+06	0.9994	1.110	556.76
0.48	93.0	88.1	0.3230E+06	0.3118E+06	0.9994	1.111	556.63
0.49	92.7	87.6	0.3282E+06	0.3133E+06	0.9994	1.111	556.50
0.50	92.4	87.1	0.3334E+06	0.3148E+06	0.9994	1.111	556.36
0.51	92.1	86.6	0.3384E+06	0.3164E+06	0.9994	1.111	556.22
0.52	91.8	86.2	0.3434E+06	0.3180E+06	0.9994	1.111	556.07
0.53	91.5	85.7	0.3483E+06	0.3197E+06	0.9994	1.111	555.92
0.54	91.2	85.2	0.3531E+06	0.3214E+06	0.9994	1.111	555.77
0.55	90.8	84.7	0.3579E+06	0.3231E+06	0.9994	1.111	555.62
0.56	90.5	84.1	0.3625E+06	0.3249E+06	0.9994	1.111	555.47
0.57	90.2	83.6	0.3670E+06	0.3267E+06	0.9995	1.111	555.31
0.58	89.8	83.1	0.3715E+06	0.3285E+06	0.9995	1.111	555.15
0.59	89.5	82.6	0.3758E+06	0.3304E+06	0.9995	1.111	554.98
0.60	89.1	82.0	0.3801E+06	0.3324E+06	0.9995	1.111	554.82
0.61	88.8	81.5	0.3843E+06	0.3343E+06	0.9995	1.111	554.65
0.62	88.4	81.0	0.3883E+06	0.3364E+06	0.9995	1.111	554.48
0.63	88.0	80.4	0.3923E+06	0.3384E+06	0.9995	1.111	554.30
0.64	87.6	79.9	0.3962E+06	0.3405E+06	0.9995	1.111	554.13
0.65	87.2	79.3	0.4000E+06	0.3427E+06	0.9995	1.111	553.95
0.66	86.9	78.7	0.4037E+06	0.3449E+06	0.9995	1.111	553.76
0.67	86.5	78.2	0.4073E+06	0.3471E+06	0.9995	1.111	553.58
0.68	86.1	77.6	0.4108E+06	0.3494E+06	0.9995	1.111	553.39
0.69	85.7	77.0	0.4142E+06	0.3518E+06	0.9995	1.112	553.20
0.70	85.2	76.4	0.4176E+06	0.3542E+06	0.9995	1.112	553.01
0.71	84.8	75.9	0.4208E+06	0.3566E+06	0.9995	1.112	552.81
0.72	84.4	75.3	0.4239E+06	0.3591E+06	0.9995	1.112	552.61
0.73	84.0	74.7	0.4269E+06	0.3617E+06	0.9995	1.112	552.41
0.74	83.5	74.1	0.4299E+06	0.3643E+06	0.9995	1.112	552.21
0.75	83.1	73.5	0.4327E+06	0.3669E+06	0.9995	1.112	552.00
0.76	82.7	72.9	0.4355E+06	0.3696E+06	0.9995	1.112	551.79

0.77	82.2	72.3	0.4381E+06	0.3724E+06	0.9995	1.112	551.58
0.78	81.8	71.7	0.4407E+06	0.3752E+06	0.9995	1.112	551.37
0.79	81.3	71.1	0.4431E+06	0.3780E+06	0.9995	1.112	551.15
0.80	80.8	70.5	0.4455E+06	0.3810E+06	0.9995	1.112	550.93
0.81	80.4	69.9	0.4477E+06	0.3839E+06	0.9995	1.112	550.71
0.82	79.9	69.3	0.4499E+06	0.3870E+06	0.9995	1.112	550.48
0.83	79.4	68.7	0.4520E+06	0.3901E+06	0.9995	1.112	550.26
0.84	78.9	68.1	0.4539E+06	0.3932E+06	0.9995	1.112	550.03
0.85	78.4	67.4	0.4558E+06	0.3964E+06	0.9995	1.113	549.79
0.86	77.9	66.8	0.4576E+06	0.3997E+06	0.9995	1.113	549.56
0.87	77.4	66.2	0.4593E+06	0.4031E+06	0.9995	1.113	549.32
0.88	76.9	65.6	0.4609E+06	0.4065E+06	0.9995	1.113	549.08
0.89	76.4	65.0	0.4624E+06	0.4099E+06	0.9995	1.113	548.84
0.90	75.9	64.4	0.4638E+06	0.4135E+06	0.9995	1.113	548.59
0.91	75.3	63.7	0.4652E+06	0.4171E+06	0.9995	1.113	548.34
0.92	74.8	63.1	0.4664E+06	0.4207E+06	0.9996	1.113	548.09
0.93	74.3	62.5	0.4675E+06	0.4245E+06	0.9996	1.113	547.84
0.94	73.7	61.9	0.4686E+06	0.4283E+06	0.9996	1.113	547.58
0.95	73.2	61.3	0.4696E+06	0.4322E+06	0.9996	1.113	547.33
0.96	72.6	60.6	0.4704E+06	0.4361E+06	0.9996	1.113	547.06
0.97	72.1	60.0	0.4712E+06	0.4402E+06	0.9996	1.113	546.80
0.98	71.5	59.4	0.4719E+06	0.4443E+06	0.9996	1.114	546.54
0.99	71.0	58.8	0.4725E+06	0.4485E+06	0.9996	1.114	546.27
1.00	70.4	58.2	0.4731E+06	0.4527E+06	0.9996	1.114	546.00
1.01	69.8	57.6	0.4735E+06	0.4571E+06	0.9996	1.114	545.72
1.02	69.2	57.0	0.4739E+06	0.4615E+06	0.9996	1.114	545.45
1.03	68.7	56.3	0.4742E+06	0.4660E+06	0.9996	1.114	545.17
1.04	68.1	55.7	0.4744E+06	0.4706E+06	0.9996	1.114	544.89
1.05	67.5	55.1	0.4745E+06	0.4753E+06	0.9996	1.114	544.60
1.06	66.9	54.5	0.4745E+06	0.4800E+06	0.9996	1.114	544.32
1.07	66.3	53.9	0.4745E+06	0.4849E+06	0.9996	1.114	544.03
1.08	65.7	53.3	0.4743E+06	0.4898E+06	0.9996	1.114	543.74
1.09	65.1	52.7	0.4741E+06	0.4948E+06	0.9996	1.115	543.44
1.10	64.4	52.1	0.4739E+06	0.5000E+06	0.9996	1.115	543.15
1.11	63.8	51.5	0.4735E+06	0.5052E+06	0.9996	1.115	542.85
1.12	63.2	50.9	0.4731E+06	0.5105E+06	0.9996	1.115	542.55
1.13	62.6	50.3	0.4726E+06	0.5159E+06	0.9996	1.115	542.25
1.14	61.9	49.7	0.4720E+06	0.5214E+06	0.9996	1.115	541.94
1.15	61.3	49.1	0.4714E+06	0.5270E+06	0.9996	1.115	541.63
1.16	60.6	48.5	0.4707E+06	0.5327E+06	0.9996	1.115	541.32
1.17	60.0	48.0	0.4699E+06	0.5386E+06	0.9996	1.115	541.01
1.18	59.3	47.4	0.4690E+06	0.5445E+06	0.9996	1.115	540.70
1.19	58.7	46.8	0.4681E+06	0.5505E+06	0.9996	1.115	540.38
1.20	58.0	46.2	0.4671E+06	0.5567E+06	0.9996	1.116	540.06
1.21	57.3	45.6	0.4661E+06	0.5629E+06	0.9996	1.116	539.74
1.22	56.7	45.1	0.4650E+06	0.5693E+06	0.9996	1.116	539.41
1.23	56.0	44.5	0.4638E+06	0.5758E+06	0.9997	1.116	539.09
1.24	55.3	43.9	0.4625E+06	0.5824E+06	0.9997	1.116	538.76
1.25	54.6	43.4	0.4612E+06	0.5891E+06	0.9997	1.116	538.42
1.26	53.9	42.8	0.4599E+06	0.5960E+06	0.9997	1.116	538.09
1.27	53.2	42.3	0.4585E+06	0.6030E+06	0.9997	1.116	537.75
1.28	52.5	41.7	0.4570E+06	0.6101E+06	0.9997	1.116	537.42
1.29	51.8	41.2	0.4555E+06	0.6173E+06	0.9997	1.117	537.08
1.30	51.1	40.6	0.4539E+06	0.6247E+06	0.9997	1.117	536.73
1.31	50.4	40.1	0.4523E+06	0.6322E+06	0.9997	1.117	536.39
1.32	49.7	39.6	0.4506E+06	0.6399E+06	0.9997	1.117	536.04

I S E N T R O P I C E X P A N S I O N

(Output file outmix8)

Tt(deg F)	Pt(lb/sq.ft)	Vt(ft^3/lbm-mol)	Zt	Cpt/Cvt	Prt	X134a	Xair
100.0	50.0	0.5563E+06	0.9997	1.109	0.677	0.950	0.050

M	T(deg F)	P(psf)	Re/ft	V(ft^3/lbm-mol)	Z	CP/CV	a(ft/sec)
0.00	100.0	50.0	0.1603E+04	0.5563E+06	0.9997	1.109	560.02
0.01	100.0	50.0	0.3747E+04	0.5563E+06	0.9997	1.109	560.02
0.02	100.0	50.0	0.7495E+04	0.5564E+06	0.9997	1.109	560.02
0.03	100.0	50.0	0.1124E+05	0.5565E+06	0.9997	1.109	560.01
0.04	100.0	50.0	0.1499E+05	0.5567E+06	0.9997	1.109	560.00
0.05	99.9	49.9	0.1872E+05	0.5570E+06	0.9997	1.109	559.99
0.06	99.9	49.9	0.2245E+05	0.5573E+06	0.9997	1.109	559.97
0.07	99.9	49.9	0.2618E+05	0.5577E+06	0.9997	1.109	559.95

0.08	99.8	49.8	0.2990E+05	0.5581E+06	0.9997	1.110	559.93
0.09	99.8	49.8	0.3361E+05	0.5585E+06	0.9997	1.110	559.91
0.10	99.7	49.7	0.3732E+05	0.5591E+06	0.9997	1.110	559.88
0.11	99.6	49.7	0.4100E+05	0.5597E+06	0.9997	1.110	559.85
0.12	99.6	49.6	0.4468E+05	0.5603E+06	0.9997	1.110	559.82
0.13	99.5	49.5	0.4835E+05	0.5610E+06	0.9997	1.110	559.78
0.14	99.4	49.5	0.5200E+05	0.5618E+06	0.9997	1.110	559.74
0.15	99.3	49.4	0.5564E+05	0.5626E+06	0.9997	1.110	559.70
0.16	99.2	49.3	0.5927E+05	0.5634E+06	0.9997	1.110	559.66
0.17	99.1	49.2	0.6287E+05	0.5644E+06	0.9997	1.110	559.61
0.18	99.0	49.1	0.6646E+05	0.5654E+06	0.9997	1.110	559.56
0.19	98.9	49.0	0.7003E+05	0.5664E+06	0.9997	1.110	559.51
0.20	98.8	48.9	0.7358E+05	0.5675E+06	0.9997	1.110	559.46
0.21	98.7	48.8	0.7711E+05	0.5687E+06	0.9997	1.110	559.40
0.22	98.5	48.7	0.8061E+05	0.5699E+06	0.9997	1.110	559.34
0.23	98.4	48.6	0.8410E+05	0.5712E+06	0.9997	1.110	559.27
0.24	98.2	48.4	0.8756E+05	0.5725E+06	0.9997	1.110	559.21
0.25	98.1	48.3	0.9100E+05	0.5739E+06	0.9997	1.110	559.14
0.26	97.9	48.2	0.9441E+05	0.5754E+06	0.9997	1.110	559.06
0.27	97.8	48.0	0.9780E+05	0.5769E+06	0.9997	1.110	558.99
0.28	97.6	47.9	0.1012E+06	0.5785E+06	0.9997	1.110	558.91
0.29	97.4	47.7	0.1045E+06	0.5801E+06	0.9997	1.110	558.83
0.30	97.3	47.6	0.1078E+06	0.5818E+06	0.9997	1.110	558.75
0.31	97.1	47.4	0.1111E+06	0.5836E+06	0.9997	1.110	558.66
0.32	96.9	47.2	0.1143E+06	0.5854E+06	0.9997	1.110	558.57
0.33	96.7	47.1	0.1175E+06	0.5873E+06	0.9997	1.110	558.48
0.34	96.5	46.9	0.1207E+06	0.5893E+06	0.9997	1.110	558.38
0.35	96.3	46.7	0.1239E+06	0.5913E+06	0.9997	1.110	558.29
0.36	96.1	46.5	0.1270E+06	0.5934E+06	0.9997	1.110	558.19
0.37	95.8	46.4	0.1300E+06	0.5956E+06	0.9997	1.110	558.08
0.38	95.6	46.2	0.1331E+06	0.5978E+06	0.9997	1.110	557.98
0.39	95.4	46.0	0.1361E+06	0.6001E+06	0.9997	1.110	557.87
0.40	95.1	45.8	0.1391E+06	0.6024E+06	0.9997	1.110	557.76
0.41	94.9	45.6	0.1420E+06	0.6048E+06	0.9997	1.110	557.64
0.42	94.6	45.4	0.1449E+06	0.6073E+06	0.9997	1.110	557.53
0.43	94.4	45.1	0.1478E+06	0.6099E+06	0.9997	1.110	557.41
0.44	94.1	44.9	0.1506E+06	0.6125E+06	0.9997	1.110	557.28
0.45	93.8	44.7	0.1534E+06	0.6152E+06	0.9997	1.110	557.16
0.46	93.6	44.5	0.1561E+06	0.6180E+06	0.9997	1.110	557.03
0.47	93.3	44.3	0.1588E+06	0.6209E+06	0.9997	1.110	556.90
0.48	93.0	44.0	0.1615E+06	0.6238E+06	0.9997	1.110	556.76
0.49	92.7	43.8	0.1641E+06	0.6268E+06	0.9997	1.110	556.63
0.50	92.4	43.6	0.1667E+06	0.6299E+06	0.9997	1.111	556.49
0.51	92.1	43.3	0.1692E+06	0.6330E+06	0.9997	1.111	556.35
0.52	91.8	43.1	0.1717E+06	0.6362E+06	0.9997	1.111	556.20
0.53	91.5	42.8	0.1741E+06	0.6395E+06	0.9997	1.111	556.05
0.54	91.2	42.6	0.1766E+06	0.6429E+06	0.9997	1.111	555.90
0.55	90.8	42.3	0.1789E+06	0.6464E+06	0.9997	1.111	555.75
0.56	90.5	42.1	0.1812E+06	0.6499E+06	0.9997	1.111	555.59
0.57	90.2	41.8	0.1835E+06	0.6535E+06	0.9997	1.111	555.44
0.58	89.8	41.6	0.1857E+06	0.6572E+06	0.9997	1.111	555.27
0.59	89.5	41.3	0.1879E+06	0.6610E+06	0.9997	1.111	555.11
0.60	89.1	41.0	0.1900E+06	0.6649E+06	0.9997	1.111	554.94
0.61	88.8	40.8	0.1921E+06	0.6689E+06	0.9997	1.111	554.77
0.62	88.4	40.5	0.1942E+06	0.6729E+06	0.9997	1.111	554.60
0.63	88.0	40.2	0.1961E+06	0.6770E+06	0.9997	1.111	554.43
0.64	87.6	39.9	0.1981E+06	0.6813E+06	0.9997	1.111	554.25
0.65	87.3	39.6	0.2000E+06	0.6856E+06	0.9997	1.111	554.07
0.66	86.9	39.4	0.2018E+06	0.6900E+06	0.9997	1.111	553.89
0.67	86.5	39.1	0.2036E+06	0.6945E+06	0.9997	1.111	553.70
0.68	86.1	38.8	0.2054E+06	0.6991E+06	0.9997	1.111	553.51
0.69	85.7	38.5	0.2071E+06	0.7038E+06	0.9997	1.111	553.32
0.70	85.2	38.2	0.2088E+06	0.7086E+06	0.9997	1.112	553.13
0.71	84.8	37.9	0.2104E+06	0.7135E+06	0.9997	1.112	552.93
0.72	84.4	37.6	0.2119E+06	0.7184E+06	0.9997	1.112	552.73
0.73	84.0	37.3	0.2135E+06	0.7235E+06	0.9997	1.112	552.53
0.74	83.5	37.0	0.2149E+06	0.7287E+06	0.9997	1.112	552.33
0.75	83.1	36.8	0.2163E+06	0.7340E+06	0.9997	1.112	552.12
0.76	82.7	36.5	0.2177E+06	0.7394E+06	0.9998	1.112	551.91
0.77	82.2	36.2	0.2190E+06	0.7449E+06	0.9998	1.112	551.70
0.78	81.8	35.9	0.2203E+06	0.7506E+06	0.9998	1.112	551.48
0.79	81.3	35.6	0.2215E+06	0.7563E+06	0.9998	1.112	551.26

0.80	80.8	35.2	0.2227E+06	0.7621E+06	0.9998	1.112	551.04
0.81	80.4	34.9	0.2238E+06	0.7681E+06	0.9998	1.112	550.82
0.82	79.9	34.6	0.2249E+06	0.7742E+06	0.9998	1.112	550.60
0.83	79.4	34.3	0.2260E+06	0.7804E+06	0.9998	1.112	550.37
0.84	78.9	34.0	0.2269E+06	0.7867E+06	0.9998	1.112	550.14
0.85	78.4	33.7	0.2279E+06	0.7931E+06	0.9998	1.112	549.90
0.86	77.9	33.4	0.2288E+06	0.7997E+06	0.9998	1.113	549.67
0.87	77.4	33.1	0.2296E+06	0.8064E+06	0.9998	1.113	549.43
0.88	76.9	32.8	0.2304E+06	0.8132E+06	0.9998	1.113	549.19
0.89	76.4	32.5	0.2312E+06	0.8201E+06	0.9998	1.113	548.94
0.90	75.9	32.2	0.2319E+06	0.8272E+06	0.9998	1.113	548.70
0.91	75.4	31.9	0.2326E+06	0.8344E+06	0.9998	1.113	548.45
0.92	74.8	31.6	0.2332E+06	0.8417E+06	0.9998	1.113	548.20
0.93	74.3	31.3	0.2337E+06	0.8492E+06	0.9998	1.113	547.94
0.94	73.7	30.9	0.2343E+06	0.8568E+06	0.9998	1.113	547.69
0.95	73.2	30.6	0.2348E+06	0.8646E+06	0.9998	1.113	547.43
0.96	72.7	30.3	0.2352E+06	0.8725E+06	0.9998	1.113	547.17
0.97	72.1	30.0	0.2356E+06	0.8806E+06	0.9998	1.113	546.90
0.98	71.5	29.7	0.2359E+06	0.8888E+06	0.9998	1.113	546.64
0.99	71.0	29.4	0.2362E+06	0.8972E+06	0.9998	1.114	546.37
1.00	70.4	29.1	0.2365E+06	0.9057E+06	0.9998	1.114	546.09
1.01	69.8	28.8	0.2367E+06	0.9144E+06	0.9998	1.114	545.82
1.02	69.3	28.5	0.2369E+06	0.9232E+06	0.9998	1.114	545.54
1.03	68.7	28.2	0.2371E+06	0.9322E+06	0.9998	1.114	545.26
1.04	68.1	27.9	0.2372E+06	0.9414E+06	0.9998	1.114	544.98
1.05	67.5	27.6	0.2372E+06	0.9508E+06	0.9998	1.114	544.70
1.06	66.9	27.3	0.2372E+06	0.9603E+06	0.9998	1.114	544.41
1.07	66.3	27.0	0.2372E+06	0.9700E+06	0.9998	1.114	544.12
1.08	65.7	26.6	0.2371E+06	0.9799E+06	0.9998	1.114	543.83
1.09	65.1	26.3	0.2370E+06	0.9899E+06	0.9998	1.114	543.54
1.10	64.4	26.0	0.2369E+06	0.1000E+07	0.9998	1.115	543.24
1.11	63.8	25.7	0.2367E+06	0.1011E+07	0.9998	1.115	542.94
1.12	63.2	25.4	0.2365E+06	0.1021E+07	0.9998	1.115	542.64
1.13	62.6	25.2	0.2363E+06	0.1032E+07	0.9998	1.115	542.34
1.14	61.9	24.9	0.2360E+06	0.1043E+07	0.9998	1.115	542.03
1.15	61.3	24.6	0.2357E+06	0.1054E+07	0.9998	1.115	541.72
1.16	60.6	24.3	0.2353E+06	0.1066E+07	0.9998	1.115	541.41
1.17	60.0	24.0	0.2349E+06	0.1077E+07	0.9998	1.115	541.10
1.18	59.3	23.7	0.2345E+06	0.1089E+07	0.9998	1.115	540.78
1.19	58.7	23.4	0.2340E+06	0.1101E+07	0.9998	1.115	540.46
1.20	58.0	23.1	0.2335E+06	0.1114E+07	0.9998	1.116	540.14
1.21	57.3	22.8	0.2330E+06	0.1126E+07	0.9998	1.116	539.82
1.22	56.7	22.5	0.2325E+06	0.1139E+07	0.9998	1.116	539.50
1.23	56.0	22.3	0.2319E+06	0.1152E+07	0.9998	1.116	539.17
1.24	55.3	22.0	0.2312E+06	0.1165E+07	0.9998	1.116	538.84
1.25	54.6	21.7	0.2306E+06	0.1179E+07	0.9998	1.116	538.51
1.26	53.9	21.4	0.2299E+06	0.1192E+07	0.9998	1.116	538.17
1.27	53.2	21.1	0.2292E+06	0.1206E+07	0.9998	1.116	537.84
1.28	52.5	20.9	0.2285E+06	0.1220E+07	0.9998	1.116	537.50
1.29	51.8	20.6	0.2277E+06	0.1235E+07	0.9998	1.116	537.15
1.30	51.1	20.3	0.2269E+06	0.1250E+07	0.9998	1.117	536.81
1.31	50.4	20.0	0.2261E+06	0.1265E+07	0.9998	1.117	536.47
1.32	49.7	19.8	0.2253E+06	0.1280E+07	0.9998	1.117	536.12

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*** ALL DATA CASES HAVE BEEN READ AND PROCESSED - JOB IS COMPLETED ***

Appendix H

Sample Output from Program MACHPG

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================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2200.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0000       0.00          0.00       0.7779E-02        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.17        0.2641E-06      1.109    0.0000E+00     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2198.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0405       2.00          22.68       0.7772E-02         99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.14        0.2641E-06      1.109    0.6674E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2196.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0573       4.00          32.08       0.7766E-02         99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.12        0.2641E-06      1.109    0.9434E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2194.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0702       5.99          39.30       0.7760E-02         99.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.10        0.2641E-06      1.109    0.1155E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2192.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0810       7.99          45.39       0.7753E-02         99.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.07        0.2640E-06      1.109    0.1333E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2190.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0906       9.98          50.76       0.7747E-02         99.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.05        0.2640E-06      1.109    0.1489E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2220.0          2180.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1811      39.67         101.37       0.7722E-02         99.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.70        0.2637E-06      1.109    0.2968E+07     0.677
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2220.0          2160.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.2224       59.26        124.41       0.7658E-02          98.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.46        0.2634E-06      1.110    0.3616E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2220.0          2140.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.2574       78.68        143.96       0.7594E-02          98.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.22        0.2632E-06      1.110    0.4153E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2220.0          2120.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.2885       97.94        161.29       0.7530E-02          97.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.98        0.2630E-06      1.110    0.4618E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2100.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.2899       97.92        162.04       0.7459E-02          97.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.97        0.2630E-06      1.110    0.4596E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2080.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3184      116.99        177.88       0.7395E-02          96.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.72        0.2627E-06      1.110    0.5006E+07     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2060.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3448      135.89        192.55       0.7331E-02          96.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.47        0.2625E-06      1.110    0.5377E+07     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2040.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3696      154.61        206.29       0.7267E-02          95.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.22        0.2622E-06      1.110    0.5716E+07     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2020.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3930      173.16        219.28       0.7203E-02          95.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   557.96        0.2620E-06      1.110    0.6028E+07     0.678
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          2000.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4154     191.52        231.66       0.7139E-02         94.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   557.71        0.2618E-06      1.110    0.6317E+07     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1980.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4368     209.71        243.50       0.7074E-02         94.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   557.45        0.2615E-06      1.110    0.6587E+07     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1960.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4575     227.71        254.90       0.7010E-02         93.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   557.18        0.2612E-06      1.110    0.6839E+07     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1940.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4775     245.52        265.91       0.6946E-02         93.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.92        0.2610E-06      1.110    0.7076E+07     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1920.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4969     263.15        276.57       0.6881E-02         92.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.65        0.2607E-06      1.110    0.7298E+07     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1900.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.5157     280.59        286.94       0.6817E-02         91.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.38        0.2605E-06      1.110    0.7508E+07     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1800.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6041     364.85        335.25       0.6493E-02         88.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   554.97        0.2591E-06      1.111    0.8400E+07     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1700.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6856     444.02        379.46       0.6168E-02         85.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.47        0.2577E-06      1.111    0.9082E+07     0.682
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1600.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7630      517.77         421.07       0.5841E-02         82.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   551.88        0.2562E-06      1.112    0.9601E+07     0.683
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1500.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8379      585.74         461.01       0.5513E-02         78.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.17        0.2545E-06      1.112    0.9983E+07     0.685
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1400.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9117      647.51         499.92       0.5182E-02         74.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   548.34        0.2528E-06      1.113    0.1025E+08     0.687
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1300.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9853      702.59         538.31       0.4850E-02         70.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   546.37        0.2509E-06      1.114    0.1040E+08     0.688
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1200.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0595      750.43         576.60       0.4515E-02         66.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   544.22        0.2489E-06      1.114    0.1046E+08     0.691
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1150.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0971      771.43         595.83       0.4347E-02         63.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   543.07        0.2478E-06      1.115    0.1045E+08     0.692
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1100.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1353      790.36         615.18       0.4177E-02         61.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   541.86        0.2467E-06      1.115    0.1042E+08     0.693
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1050.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1741      807.12         634.69       0.4008E-02         58.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   540.60        0.2455E-06      1.115    0.1036E+08     0.695
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          1000.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.2136     821.60        654.43       0.3837E-02         56.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft         Pr
   539.27        0.2443E-06      1.116    0.1028E+08     0.696
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          950.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.2539     833.68        674.45       0.3666E-02         53.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft         Pr
   537.86        0.2430E-06      1.116    0.1018E+08     0.698
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          900.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.2954     843.20        694.80       0.3494E-02         50.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft         Pr
   536.37        0.2416E-06      1.117    0.1005E+08     0.700
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          850.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.3380     850.03        715.55       0.3321E-02         46.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft         Pr
   534.79        0.2401E-06      1.117    0.9895E+07     0.702
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    2200.0          800.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.3820     853.99        736.77       0.3147E-02         43.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft         Pr
   533.11        0.2386E-06      1.118    0.9718E+07     0.704
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0          1000.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0000       0.00          0.00       0.3536E-02        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft         Pr
   560.17        0.2641E-06      1.109    0.0000E+00     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0          999.5          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0300       0.50          16.82       0.3534E-02        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft         Pr
   560.15        0.2641E-06      1.109    0.2250E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0          999.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0425       1.00          23.79       0.3533E-02         99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft         Pr
   560.14        0.2641E-06      1.109    0.3182E+06     0.677
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           998.5          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0520       1.50          29.14       0.3531E-02          99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.13        0.2641E-06      1.109    0.3896E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           998.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0601       2.00          33.65       0.3529E-02          99.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.12        0.2641E-06      1.109    0.4497E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           996.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0850       3.99          47.61       0.3523E-02          99.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.06        0.2640E-06      1.109    0.6352E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           994.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1042       5.98          58.34       0.3517E-02          99.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.01        0.2640E-06      1.109    0.7771E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           992.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1204       7.97          67.40       0.3510E-02          99.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.96        0.2639E-06      1.109    0.8962E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           990.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1346       9.95          75.38       0.3504E-02          99.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.91        0.2639E-06      1.109    0.1001E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           988.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1476      11.93          82.62       0.3498E-02          99.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.86        0.2638E-06      1.109    0.1095E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           986.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1595      13.91          89.28       0.3491E-02          99.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.80        0.2638E-06      1.109    0.1181E+07     0.677
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           984.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1706       15.88          95.48       0.3485E-02         99.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.75        0.2637E-06      1.109    0.1262E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           982.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1810       17.85         101.32       0.3478E-02         99.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.70        0.2637E-06      1.109    0.1336E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           980.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1909       19.82         106.85       0.3472E-02         98.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.65        0.2636E-06      1.110    0.1407E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           960.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.2715       39.27         151.81       0.3408E-02         97.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.12        0.2631E-06      1.110    0.1966E+07     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           940.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3344       58.34         186.81       0.3344E-02         96.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.57        0.2626E-06      1.110    0.2379E+07     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           920.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3884       77.03         216.74       0.3280E-02         95.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.02        0.2621E-06      1.110    0.2712E+07     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           900.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4368       95.32         243.50       0.3216E-02         94.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   557.45        0.2615E-06      1.110    0.2994E+07     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           880.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4814      113.21         268.07       0.3151E-02         92.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.86        0.2609E-06      1.110    0.3237E+07     0.679
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           860.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.5231     130.69         291.01       0.3087E-02         91.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.27        0.2604E-06      1.111    0.3450E+07     0.680
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           840.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.5628     147.74         312.70       0.3022E-02         90.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   555.65        0.2598E-06      1.111    0.3637E+07     0.680
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           820.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6007     164.35         333.41       0.2957E-02         89.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   555.03        0.2592E-06      1.111    0.3804E+07     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           800.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6373     180.52         353.32       0.2892E-02         87.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   554.38        0.2586E-06      1.111    0.3952E+07     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           780.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6729     196.23         372.59       0.2827E-02         86.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.72        0.2579E-06      1.111    0.4084E+07     0.682
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           760.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7076     211.47         391.32       0.2762E-02         84.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.04        0.2573E-06      1.111    0.4201E+07     0.682
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           740.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7416     226.22         409.62       0.2697E-02         83.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   552.34        0.2566E-06      1.112    0.4305E+07     0.683
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           720.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7751     240.48         427.55       0.2631E-02         81.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   551.61        0.2559E-06      1.112    0.4396E+07     0.683
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           700.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8081      254.22         445.19       0.2566E-02         80.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.87        0.2552E-06      1.112    0.4475E+07     0.684
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           680.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8409      267.42         462.58       0.2500E-02         78.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.10        0.2545E-06      1.112    0.4544E+07     0.685
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           660.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8734      280.09         479.78       0.2434E-02         77.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   549.31        0.2537E-06      1.113    0.4602E+07     0.686
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           640.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9058      292.18         496.83       0.2368E-02         75.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   548.50        0.2529E-06      1.113    0.4650E+07     0.686
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           620.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9381      303.70         513.78       0.2301E-02         73.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   547.65        0.2521E-06      1.113    0.4689E+07     0.687
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           600.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9705      314.61         530.65       0.2235E-02         71.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   546.77        0.2513E-06      1.113    0.4718E+07     0.688
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           580.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0030      324.89         547.49       0.2168E-02         69.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   545.87        0.2505E-06      1.114    0.4739E+07     0.689
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           560.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0356      334.52         564.33       0.2101E-02         67.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   544.92        0.2496E-06      1.114    0.4750E+07     0.690
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           540.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0685      343.48         581.20       0.2034E-02         65.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   543.95        0.2486E-06      1.114    0.4754E+07     0.691
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           520.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1017      351.73         598.14       0.1966E-02         63.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   542.93        0.2477E-06      1.115    0.4748E+07     0.692
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           500.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1353      359.25         615.18       0.1899E-02         61.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   541.86        0.2467E-06      1.115    0.4735E+07     0.693
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           450.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.2216      374.64         658.41       0.1729E-02         55.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   538.99        0.2440E-06      1.116    0.4664E+07     0.697
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           400.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.3123      384.67         703.05       0.1557E-02         48.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   535.75        0.2410E-06      1.117    0.4541E+07     0.701
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           350.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.4092      388.59         749.76       0.1383E-02         41.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   532.04        0.2376E-06      1.118    0.4363E+07     0.706
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
    1000.0           300.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.5150      385.45         799.45       0.1206E-02         32.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   527.70        0.2336E-06      1.120    0.4128E+07     0.712
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           500.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0000        0.00           0.00       0.1768E-02        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.17        0.2641E-06      1.109    0.0000E+00     0.677
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           490.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1909        9.91         106.85       0.1736E-02         98.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.65        0.2636E-06      1.110    0.7035E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           480.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.2715       19.63         151.81       0.1704E-02         97.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.12        0.2631E-06      1.110    0.9831E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           470.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3344       29.17         186.81       0.1672E-02         96.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.57        0.2626E-06      1.110    0.1189E+07     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           460.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3884       38.51         216.74       0.1640E-02         95.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.02        0.2621E-06      1.110    0.1356E+07     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           450.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4368       47.66         243.50       0.1608E-02         94.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   557.45        0.2615E-06      1.110    0.1497E+07     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           440.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4814       56.61         268.07       0.1576E-02         92.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.86        0.2609E-06      1.110    0.1618E+07     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           430.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.5231       65.34         291.01       0.1543E-02         91.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.27        0.2604E-06      1.111    0.1725E+07     0.680
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           420.0          100.0         0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.5628       73.87         312.70       0.1511E-02         90.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   555.65        0.2598E-06      1.111    0.1819E+07     0.680
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           410.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6007       82.18         333.41       0.1479E-02         89.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   555.03        0.2592E-06      1.111    0.1902E+07     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           400.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6373       90.26         353.32       0.1446E-02         87.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   554.38        0.2586E-06      1.111    0.1976E+07     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           390.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6729       98.12         372.59       0.1414E-02         86.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.72        0.2579E-06      1.111    0.2042E+07     0.682
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           380.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7076      105.73         391.32       0.1381E-02         84.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.04        0.2573E-06      1.111    0.2100E+07     0.682
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           370.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7416      113.11         409.62       0.1348E-02         83.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   552.34        0.2566E-06      1.112    0.2152E+07     0.683
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           360.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7751      120.24         427.55       0.1316E-02         81.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   551.61        0.2559E-06      1.112    0.2198E+07     0.683
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           350.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8081      127.11         445.19       0.1283E-02         80.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.87        0.2552E-06      1.112    0.2238E+07     0.684
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           340.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8409      133.71         462.58       0.1250E-02         78.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.10        0.2545E-06      1.112    0.2272E+07     0.685
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           330.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8734     140.04         479.78       0.1217E-02         77.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   549.31        0.2537E-06      1.113    0.2301E+07     0.686
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           320.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9058     146.09         496.83       0.1184E-02         75.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   548.50        0.2529E-06      1.113    0.2325E+07     0.686
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           310.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9381     151.85         513.78       0.1151E-02         73.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   547.65        0.2521E-06      1.113    0.2344E+07     0.687
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           300.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9705     157.30         530.65       0.1117E-02         71.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   546.77        0.2513E-06      1.113    0.2359E+07     0.688
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           280.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0356     167.26         564.33       0.1051E-02         67.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   544.92        0.2496E-06      1.114    0.2375E+07     0.690
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           270.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0685     171.74         581.20       0.1017E-02         65.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   543.95        0.2486E-06      1.114    0.2377E+07     0.691
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           260.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1017     175.87         598.14       0.9832E-03         63.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   542.93        0.2477E-06      1.115    0.2374E+07     0.692
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           240.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1694     183.01         632.34       0.9155E-03         59.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   540.75        0.2457E-06      1.115    0.2356E+07     0.694
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           220.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.2393      188.55         667.21       0.8472E-03         54.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   538.38        0.2434E-06      1.116    0.2322E+07     0.697
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           200.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.3123      192.33         703.05       0.7783E-03         48.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   535.75        0.2410E-06      1.117    0.2270E+07     0.701
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           180.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.3892      194.17         740.21       0.7088E-03         42.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   532.83        0.2383E-06      1.118    0.2202E+07     0.704
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           160.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.4714      193.81         779.15       0.6386E-03         36.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   529.52        0.2353E-06      1.119    0.2115E+07     0.709
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           140.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.5605      190.97         820.41       0.5675E-03         28.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   525.74        0.2318E-06      1.120    0.2008E+07     0.715
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           120.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.6589      185.24         864.79       0.4954E-03         19.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   521.30        0.2278E-06      1.122    0.1881E+07     0.723
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     500.0           100.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.7703      176.09         913.42       0.4222E-03          9.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   515.97        0.2230E-06      1.124    0.1729E+07     0.733
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           200.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0000        0.00           0.00       0.7072E-03        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.17        0.2641E-06      1.109    0.0000E+00     0.677
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           190.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3044       9.77         170.13       0.6752E-03         97.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.85        0.2629E-06      1.110    0.4370E+06     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           180.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4368       19.06        243.50       0.6431E-03         94.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   557.45        0.2615E-06      1.110    0.5988E+06     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           170.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.5432       27.85        301.99       0.6109E-03         91.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   555.96        0.2601E-06      1.111    0.7093E+06     0.680
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           160.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6373       36.10        353.32       0.5785E-03         87.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   554.38        0.2586E-06      1.111    0.7904E+06     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           150.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7247       43.78        400.52       0.5459E-03         84.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   552.69        0.2569E-06      1.112    0.8509E+06     0.683
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           140.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8081       50.84        445.19       0.5131E-03         80.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.87        0.2552E-06      1.112    0.8950E+06     0.684
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           130.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8896       57.24        488.32       0.4802E-03         76.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   548.91        0.2533E-06      1.113    0.9254E+06     0.686
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           120.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9705       62.92        530.65       0.4470E-03         71.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   546.77        0.2513E-06      1.113    0.9436E+06     0.688
================================================================================
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```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           110.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0520       67.82         572.76       0.4135E-03         66.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   544.44        0.2491E-06      1.114    0.9506E+06     0.690
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0           100.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1353       71.85         615.18       0.3798E-03         61.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   541.86        0.2467E-06      1.115    0.9469E+06     0.693
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            90.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.2216       74.93         658.41       0.3457E-03         55.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   538.99        0.2440E-06      1.116    0.9328E+06     0.697
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            80.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.3123       76.93         703.05       0.3113E-03         48.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   535.75        0.2410E-06      1.117    0.9081E+06     0.701
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            70.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.4092       77.72         749.76       0.2765E-03         41.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   532.04        0.2376E-06      1.118    0.8726E+06     0.706
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            60.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.5150       77.09         799.45       0.2413E-03         32.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   527.70        0.2336E-06      1.120    0.8256E+06     0.712
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            50.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.6333       74.79         853.35       0.2054E-03         22.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   522.48        0.2289E-06      1.121    0.7659E+06     0.720
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            40.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.7703       70.44         913.42       0.1689E-03          9.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   515.97        0.2230E-06      1.124    0.6915E+06     0.733
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            30.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.9374       63.45         982.97       0.1314E-03         -7.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   507.37        0.2154E-06      1.127    0.5993E+06     0.752
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            20.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  2.1602       52.82        1068.78       0.9250E-04        -31.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   494.77        0.2045E-06      1.132    0.4833E+06     0.788
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0            10.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  2.5208       36.29        1189.24       0.5132E-04        -74.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   471.77        0.1854E-06      1.142    0.3292E+06     0.893
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     200.0             5.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  2.8724       23.82        1282.48       0.2897E-04         *****

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   446.49        0.1654E-06      1.155    0.2245E+06     1.133
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0           100.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.0000        0.00           0.00       0.3536E-03        100.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   560.17        0.2641E-06      1.109    0.0000E+00     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            98.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.1909        1.98         106.85       0.3472E-03         98.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.65        0.2636E-06      1.110    0.1407E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            96.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.2715        3.93         151.81       0.3408E-03         97.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   559.12        0.2631E-06      1.110    0.1966E+06     0.677
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            94.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3344        5.83         186.81       0.3344E-03         96.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.57        0.2626E-06      1.110    0.2379E+06     0.678
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            92.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.3884       7.70         216.74       0.3280E-03         95.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   558.02        0.2621E-06      1.110    0.2712E+06     0.678
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            90.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4368       9.53         243.50       0.3216E-03         94.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   557.45        0.2615E-06      1.110    0.2994E+06     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            88.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.4814      11.32         268.07       0.3151E-03         92.9

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.86        0.2609E-06      1.110    0.3237E+06     0.679
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            86.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.5231      13.07         291.01       0.3087E-03         91.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   556.27        0.2604E-06      1.111    0.3450E+06     0.680
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            84.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.5628      14.77         312.70       0.3022E-03         90.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   555.65        0.2598E-06      1.111    0.3637E+06     0.680
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            82.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6007      16.44         333.41       0.2957E-03         89.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   555.03        0.2592E-06      1.111    0.3804E+06     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            80.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6373      18.05         353.32       0.2892E-03         87.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   554.38        0.2586E-06      1.111    0.3952E+06     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            78.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6729      19.62         372.59       0.2827E-03         86.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.72        0.2579E-06      1.111    0.4084E+06     0.682
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            76.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7076       21.15         391.32       0.2762E-03         84.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.04        0.2573E-06      1.111    0.4201E+06     0.682
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            74.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7416       22.62         409.62       0.2697E-03         83.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   552.34        0.2566E-06      1.112    0.4305E+06     0.683
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            72.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7751       24.05         427.55       0.2631E-03         81.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   551.61        0.2559E-06      1.112    0.4396E+06     0.683
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            70.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8081       25.42         445.19       0.2566E-03         80.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.87        0.2552E-06      1.112    0.4475E+06     0.684
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            65.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8896       28.62         488.32       0.2401E-03         76.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   548.91        0.2533E-06      1.113    0.4627E+06     0.686
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            60.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9705       31.46         530.65       0.2235E-03         71.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   546.77        0.2513E-06      1.113    0.4718E+06     0.688
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            55.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0520       33.91         572.76       0.2067E-03         66.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   544.44        0.2491E-06      1.114    0.4753E+06     0.690
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            50.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1353       35.93         615.18       0.1899E-03         61.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   541.86        0.2467E-06      1.115    0.4735E+06     0.693
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            45.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.2216       37.46         658.41       0.1729E-03         55.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   538.99        0.2440E-06      1.116    0.4664E+06     0.697
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            40.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.3123       38.47         703.05       0.1557E-03         48.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   535.75        0.2410E-06      1.117    0.4541E+06     0.701
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            35.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.4092       38.86         749.76       0.1383E-03         41.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   532.04        0.2376E-06      1.118    0.4363E+06     0.706
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
     100.0            30.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.5150       38.55         799.45       0.1206E-03         32.4

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   527.70        0.2336E-06      1.120    0.4128E+06     0.712
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            40.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6373        9.03         353.32       0.1446E-03         87.7

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   554.38        0.2586E-06      1.111    0.1976E+06     0.681
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            39.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.6729        9.81         372.59       0.1414E-03         86.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.72        0.2579E-06      1.111    0.2042E+06     0.682
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            38.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7076       10.57         391.32       0.1381E-03         84.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   553.04        0.2573E-06      1.111    0.2100E+06     0.682
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            37.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7416       11.31         409.62       0.1348E-03         83.3

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   552.34        0.2566E-06      1.112    0.2152E+06     0.683
================================================================================
```

```
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            36.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.7751       12.02         427.55       0.1316E-03         81.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   551.61        0.2559E-06      1.112    0.2198E+06     0.683
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            35.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8081       12.71         445.19       0.1283E-03         80.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.87        0.2552E-06      1.112    0.2238E+06     0.684
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            34.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8409       13.37         462.58       0.1250E-03         78.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   550.10        0.2545E-06      1.112    0.2272E+06     0.685
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            33.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.8734       14.00         479.78       0.1217E-03         77.0

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   549.31        0.2537E-06      1.113    0.2301E+06     0.686
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            32.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9058       14.61         496.83       0.1184E-03         75.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   548.50        0.2529E-06      1.113    0.2325E+06     0.686
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            31.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9381       15.18         513.78       0.1151E-03         73.5

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   547.65        0.2521E-06      1.113    0.2344E+06     0.687
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            30.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  0.9705       15.73         530.65       0.1117E-03         71.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   546.77        0.2513E-06      1.113    0.2359E+06     0.688
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            28.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.0356       16.73         564.33       0.1051E-03         67.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   544.92        0.2496E-06      1.114    0.2375E+06     0.690
================================================================================
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  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            26.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1017       17.59         598.14       0.9832E-04         63.6

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   542.93        0.2477E-06      1.115    0.2374E+06     0.692
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            24.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.1694       18.30         632.34       0.9155E-04         59.1

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   540.75        0.2457E-06      1.115    0.2356E+06     0.694
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            22.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.2393       18.85         667.21       0.8472E-04         54.2

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   538.38        0.2434E-06      1.116    0.2322E+06     0.697
================================================================================
  Pt(lb/sq.ft)    Ps(lb/sq.ft)    Tt(deg F)      X134a     Xair
      50.0            20.0          100.0        0.950    0.050

     M     q(lb/sq.ft)    u(ft/sec)   RHO(slugs/cu.ft)  Ts(deg F)
  1.3123       19.23         703.05       0.7783E-04         48.8

  a(ft/sec)   Mu(lb-sec/sq.ft)   Gamma       Re/ft          Pr
   535.75        0.2410E-06      1.117    0.2270E+06     0.701
================================================================================
    *** ALL DATA CASES HAVE BEEN READ AND PROCESSED - JOB IS COMPLETED ***
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Table 1. Critical Conditions and Redlich-Kwong Coefficients for Relevant Gases

Species	Critical temperature, K	Critical pressure, Pa	a_i, N-m^4-K$^{0.5}$/kmol^2	b_i, m^3/kmol
H_2O	647.3	2.212×10^7	1.424132814×10^7	0.021079896
N_2	126.2	3.39×10^6	1.559625357×10^6	0.026816842
O_2	154.6	5.04×10^6	1.742467899×10^6	0.022096675
R134a	374.23	4.0603×10^6	1.971785813×10^7	0.066393673
SF_6	318.7	3.76×10^6	1.425078907×10^7	0.061057947
R12	385.0	4.14×10^6	2.075978467×10^7	0.06698948

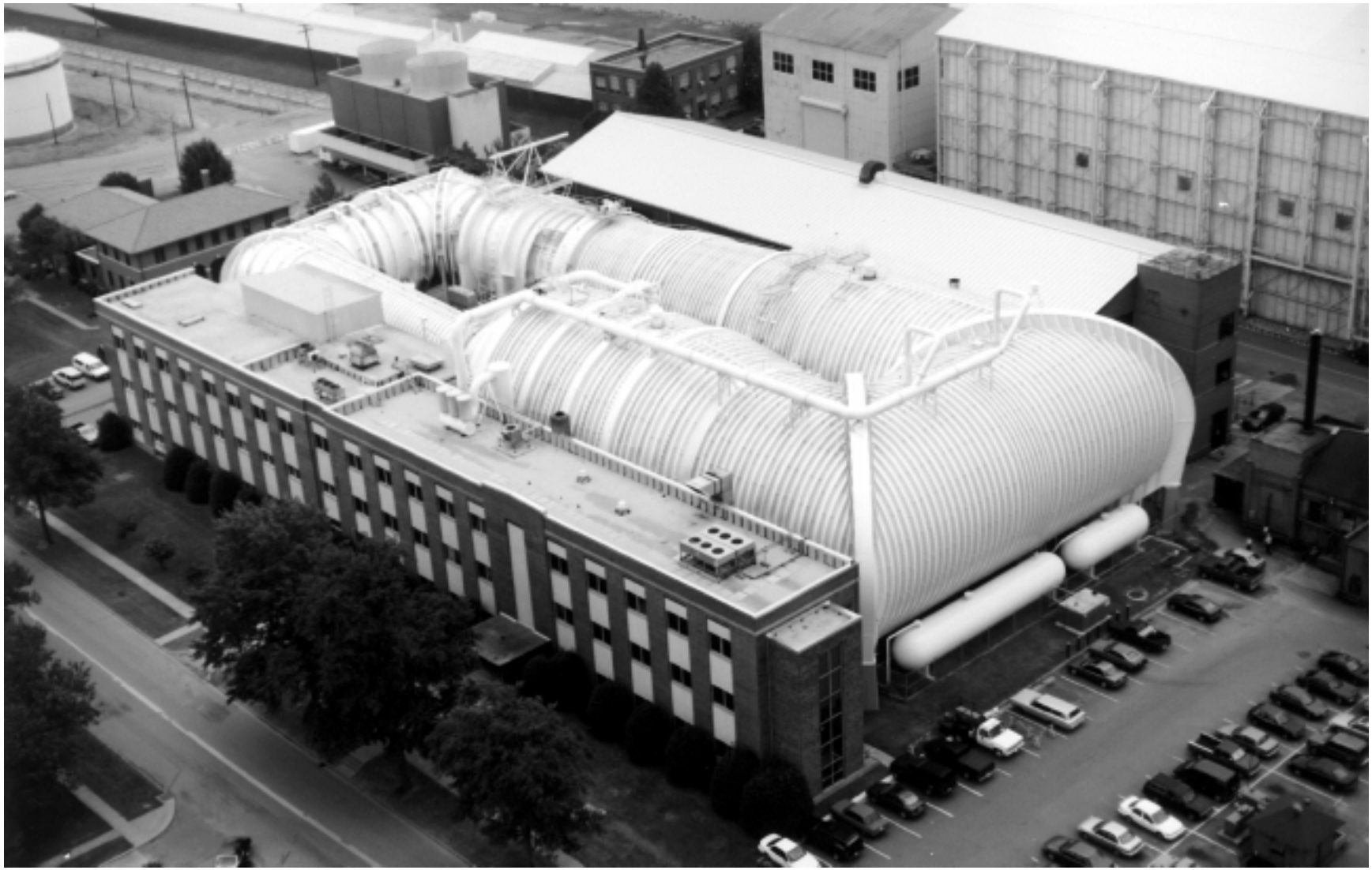

Figure 1. Langley Transonic Dynamics Tunnel.

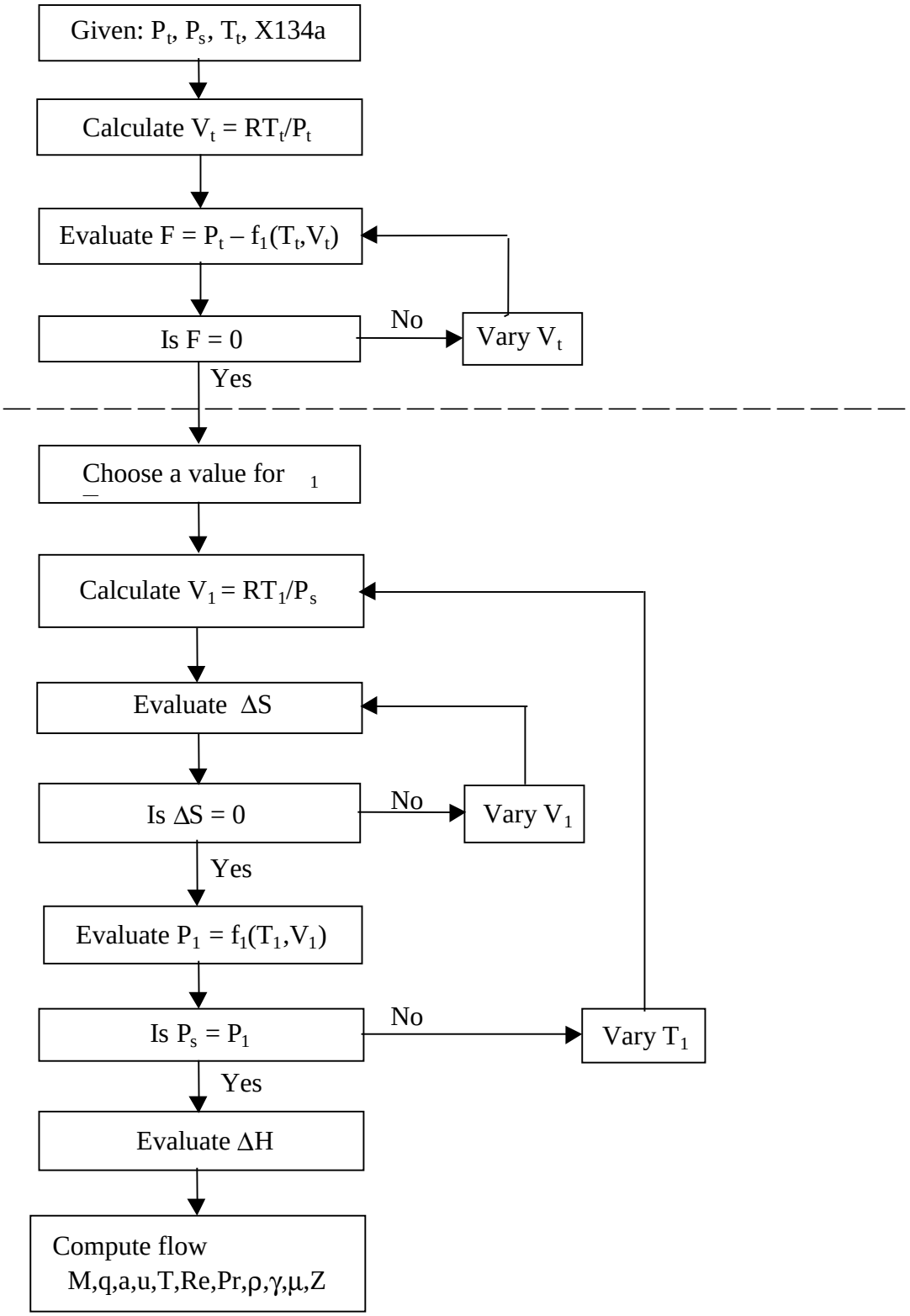

Figure 2. Principal computational steps in program MACHRK

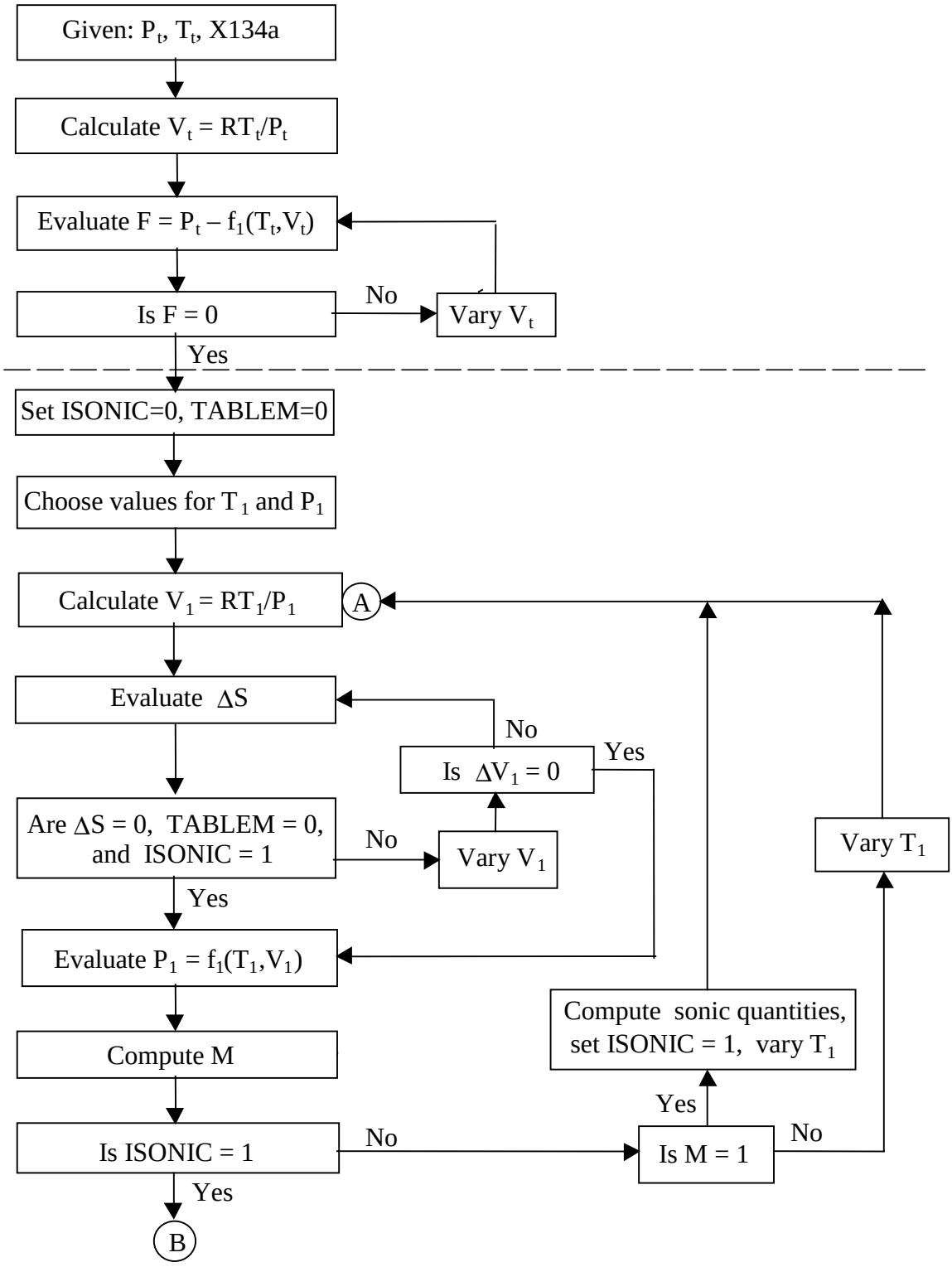

Figure 3. Principal computational steps in program MIXRK.

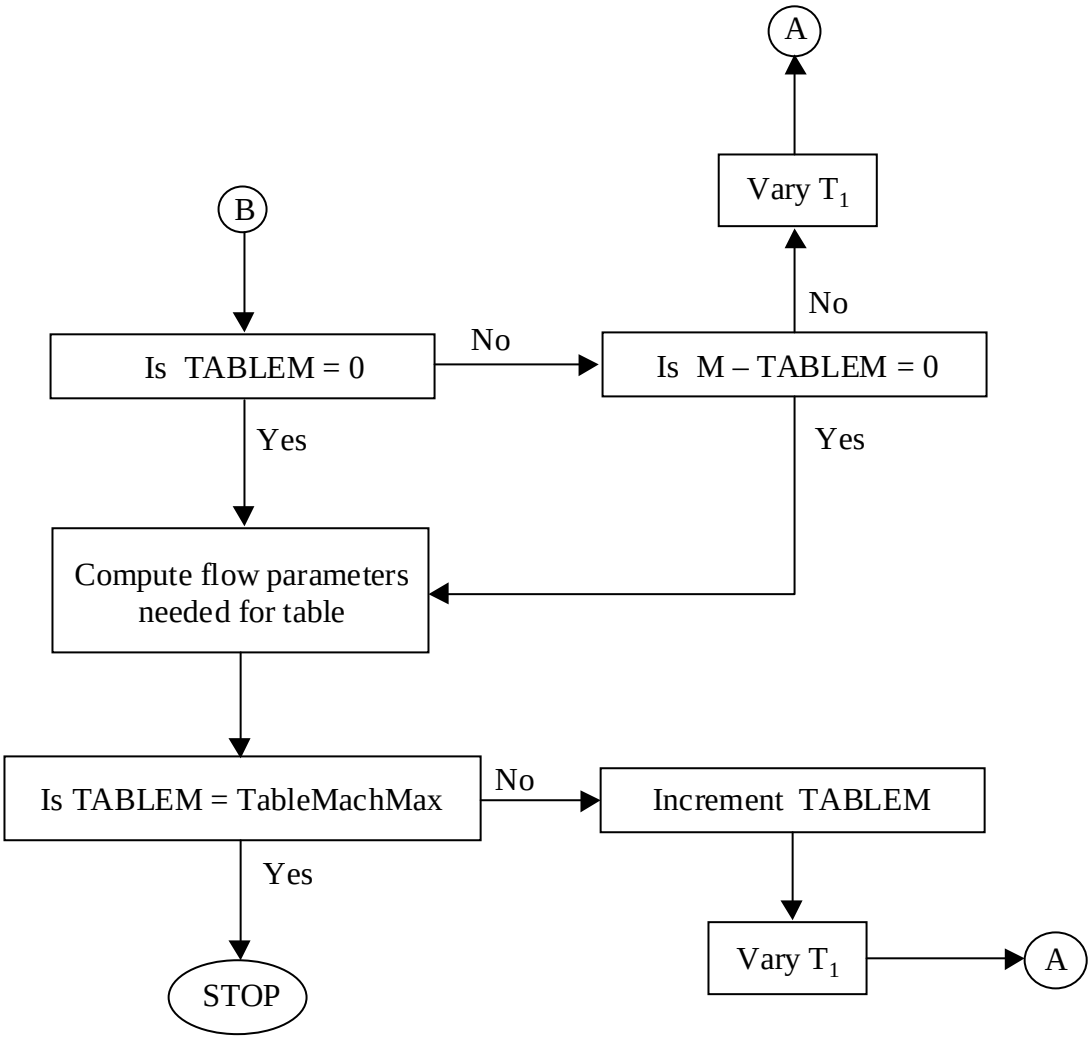

Figure 3. Principal computational steps in program MIXRK (Concluded).

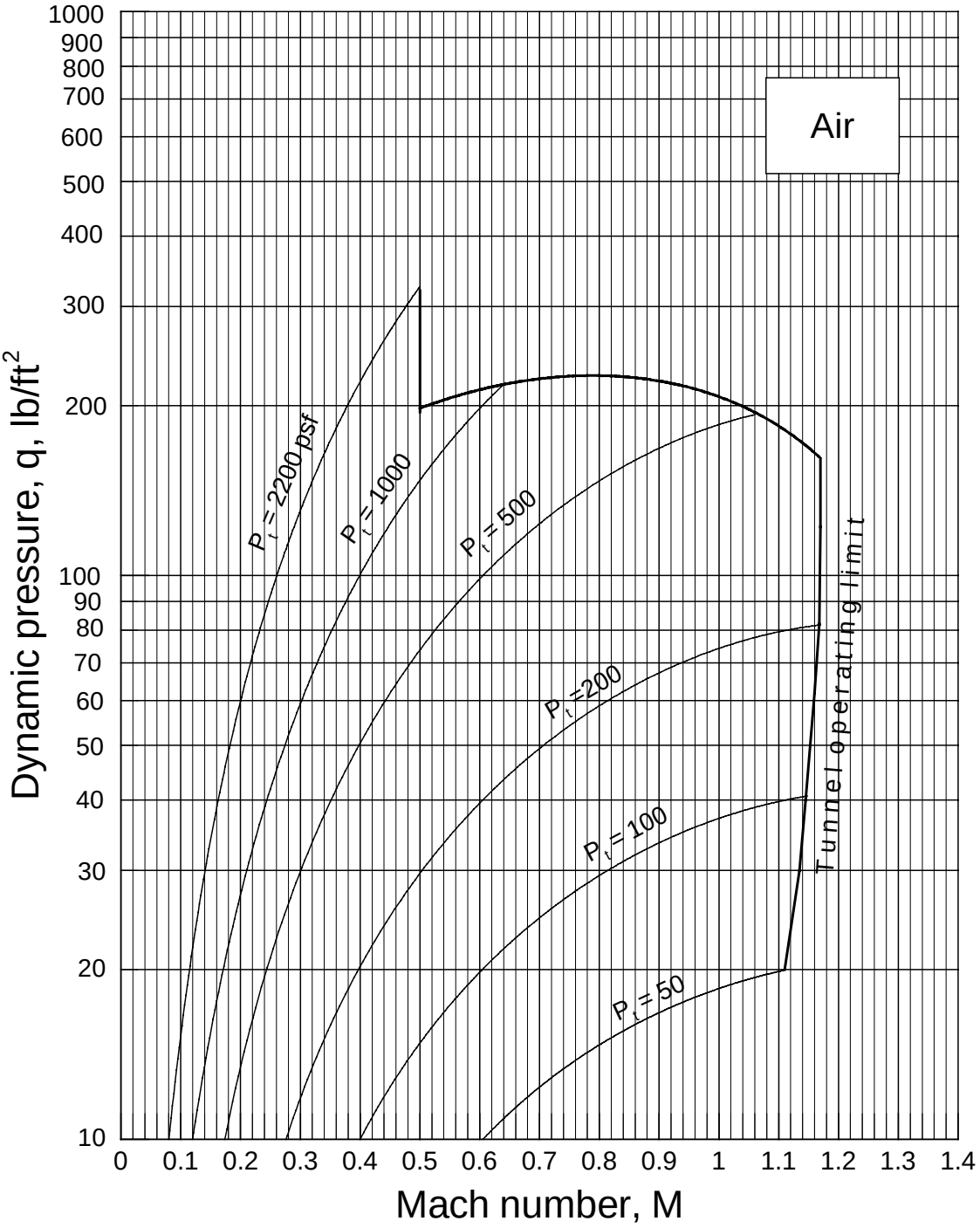

Figure 4. Mach-q curves for air (T_t = 100 °F).

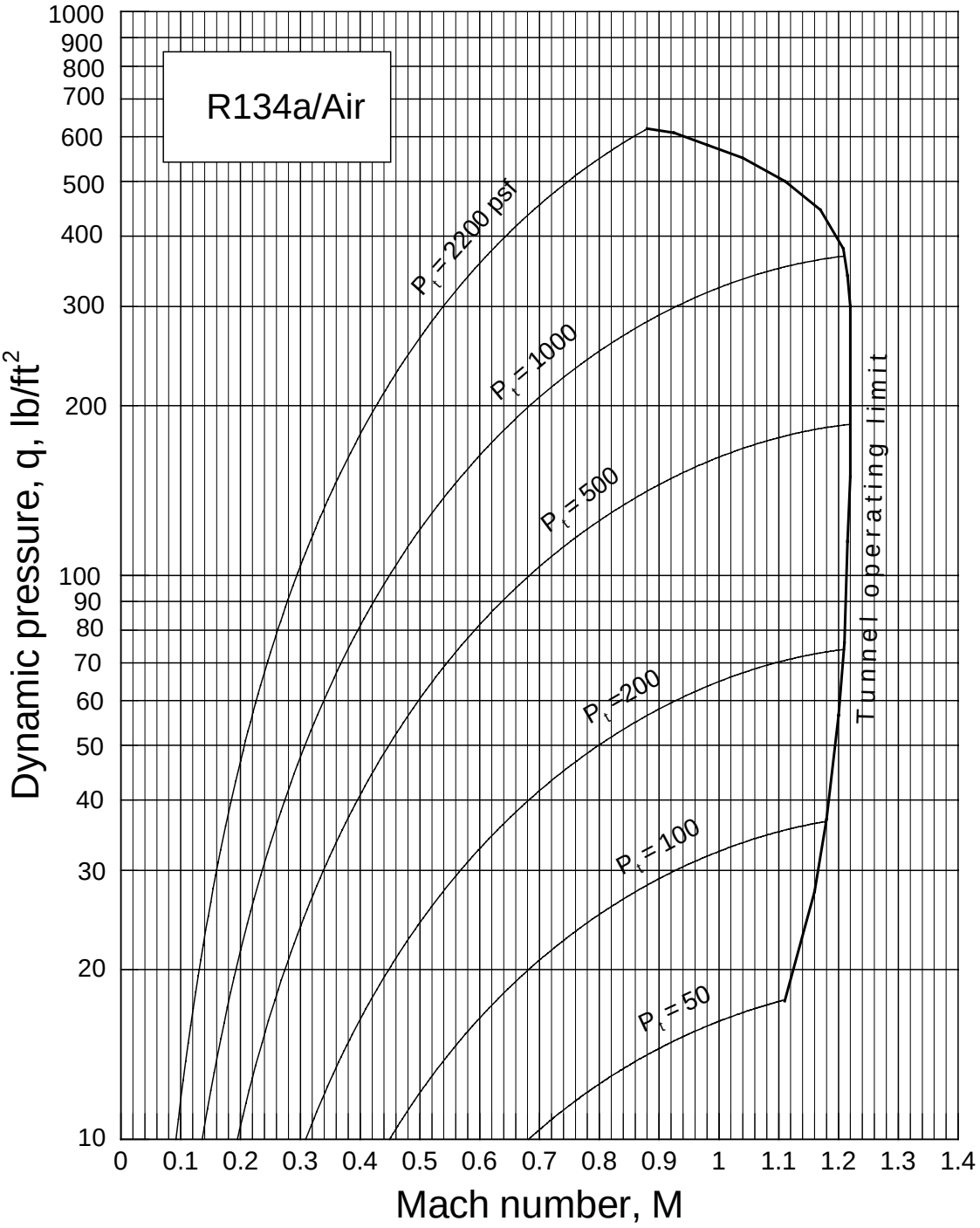

Figure 5. Mach-q curves for 95-percent R-134a/air mixture (T_t = 100 °F).

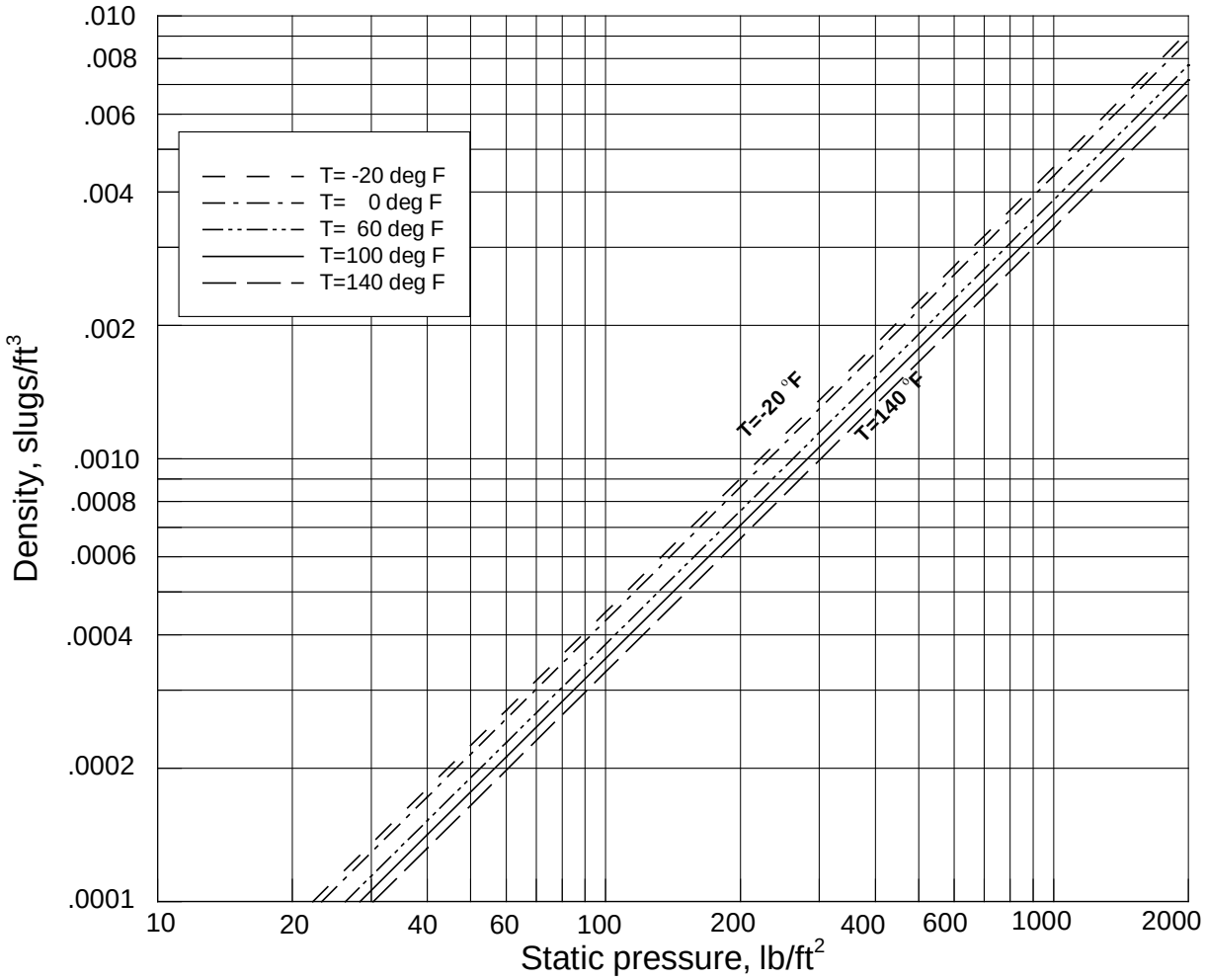

Figure 6. Mass density of 95-percent R-134a/air mixture.

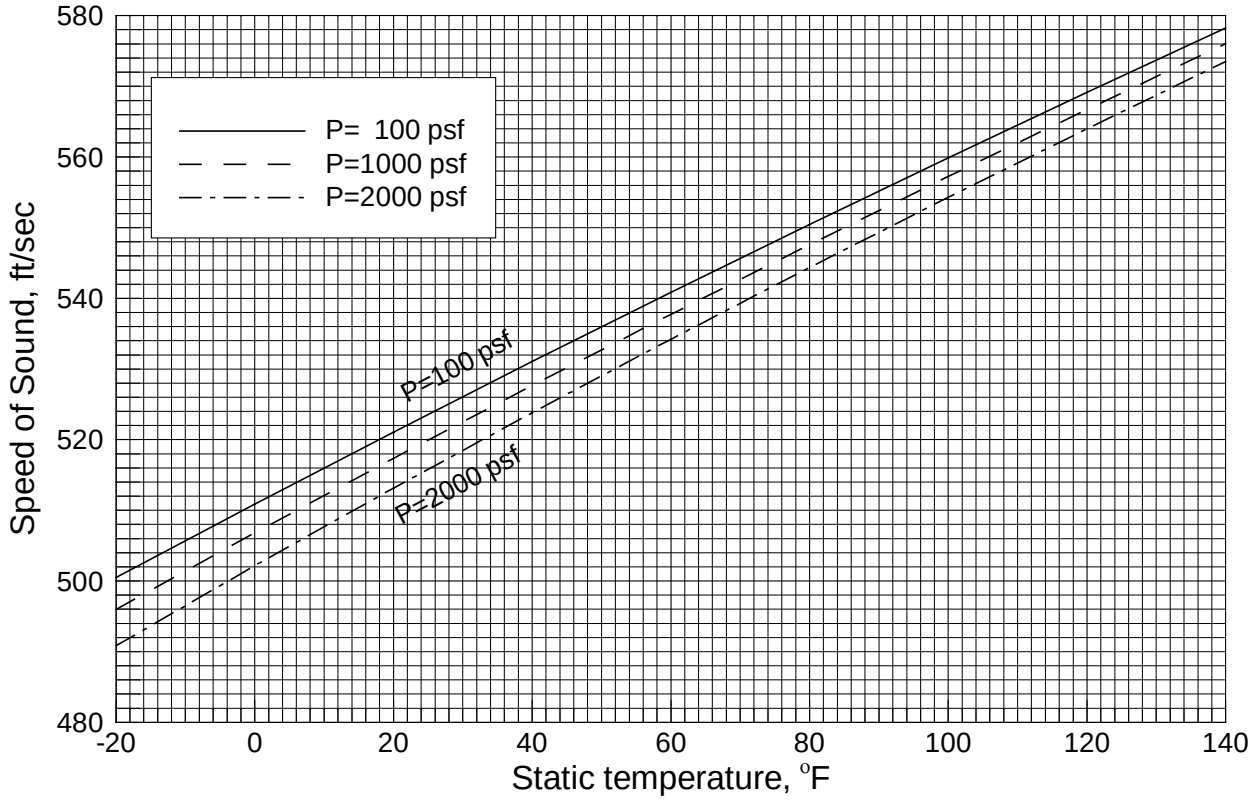

Figure 7. Speed of sound for 95-percent R-134a/air mixture.

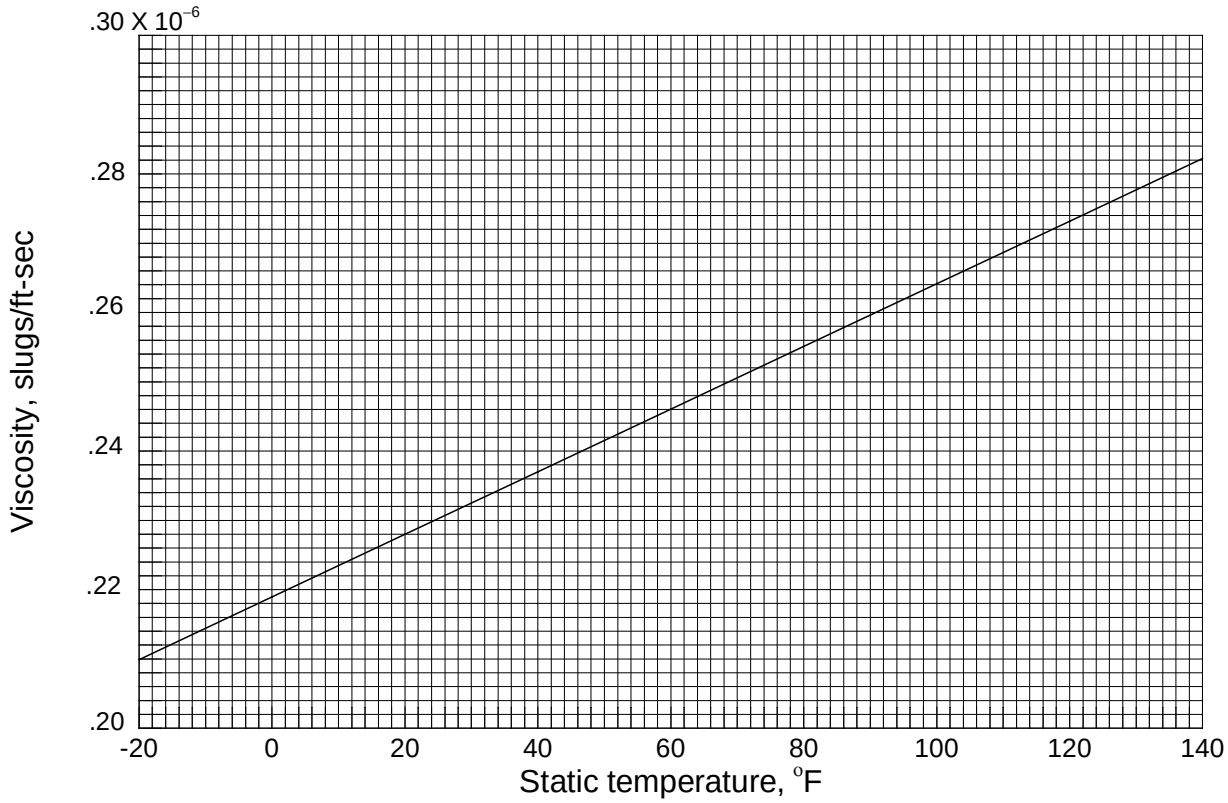

Figure 8. Absolute viscosity of 95-percent R-134a/air mixture.

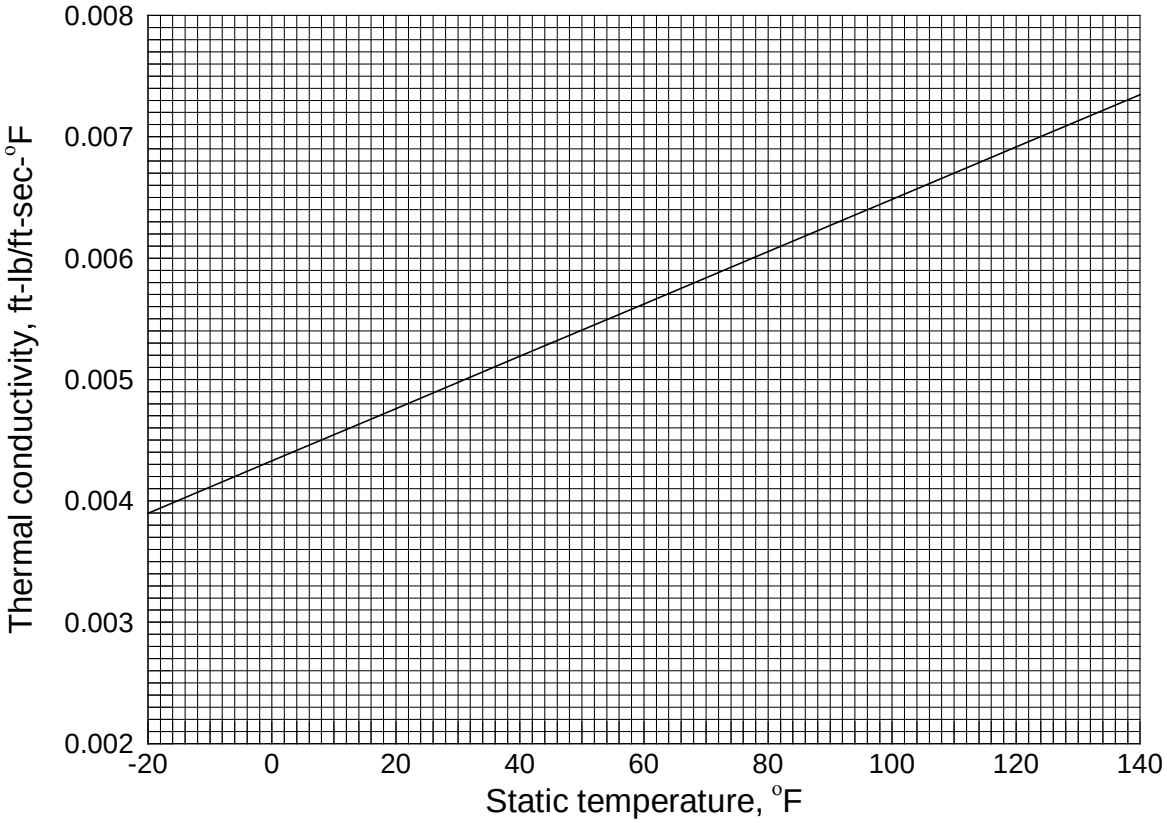

Figure 9. Thermal conductivity of 95-percent R-134a/air mixture.

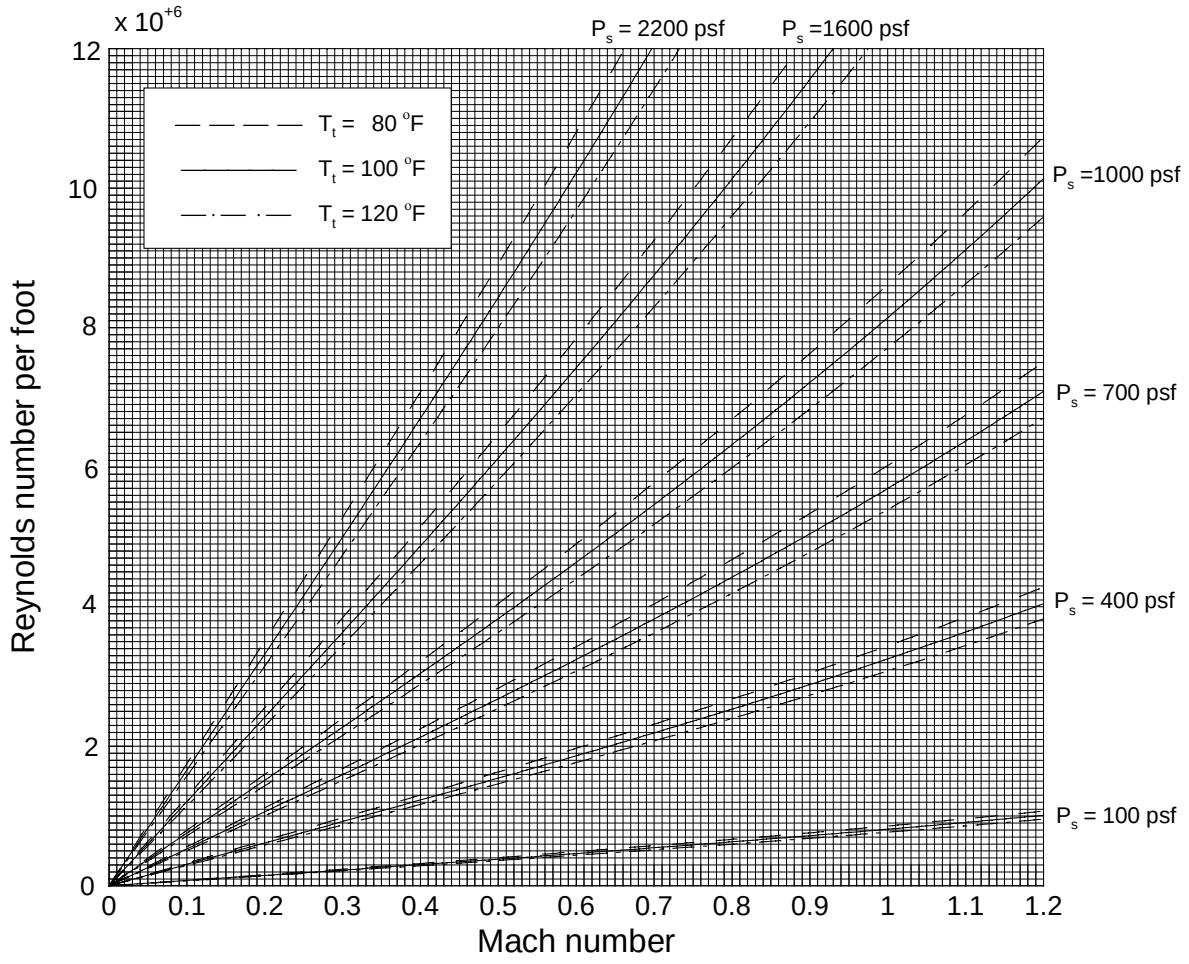

Figure 10. Variation of Reynolds number with Mach number for 95-percent R-134a/air mixture.

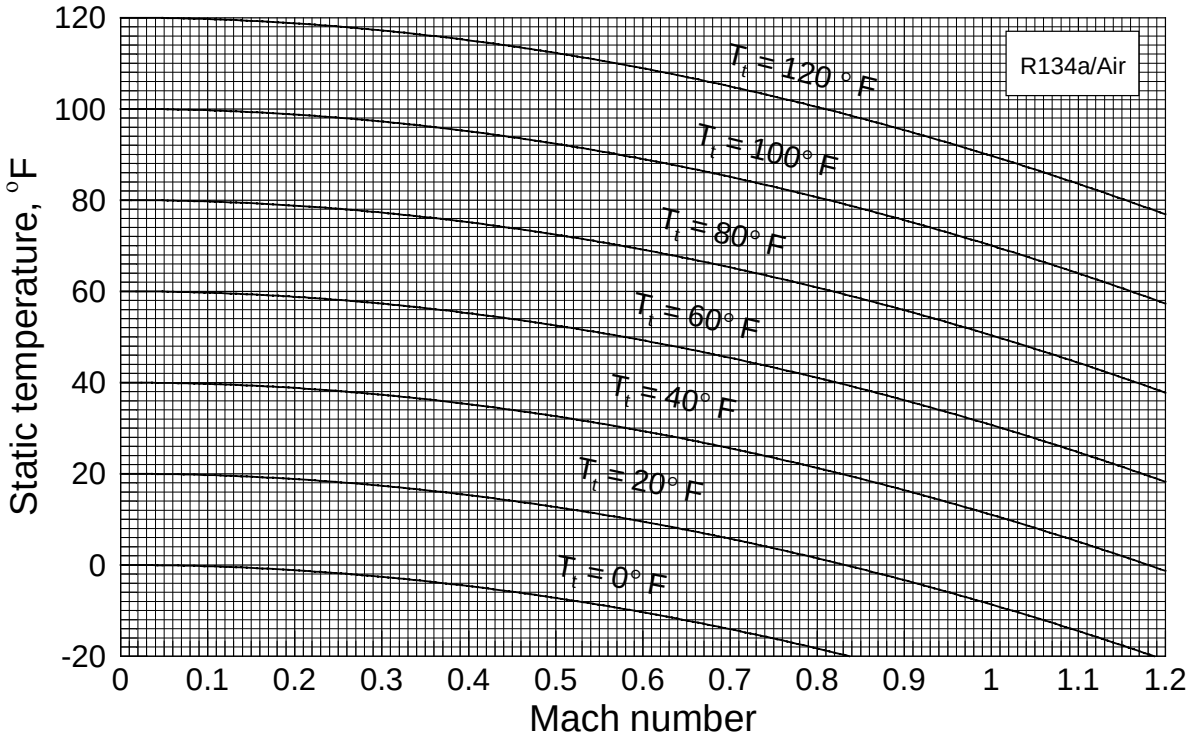

Figure 11. Variation of static temperature with Mach number for 95-percent R-134a/air mixture.

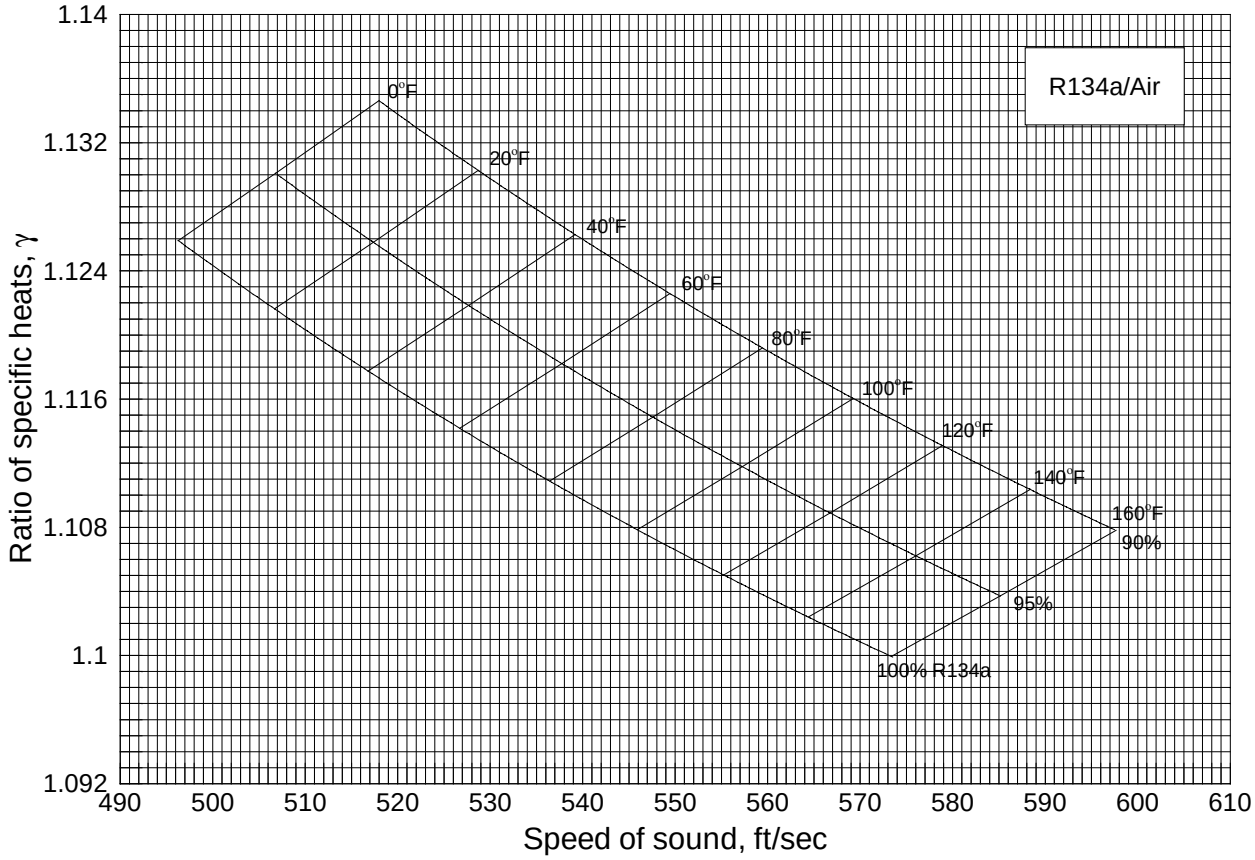

Figure 12. Variation of ratio of specific heats with speed of sound.

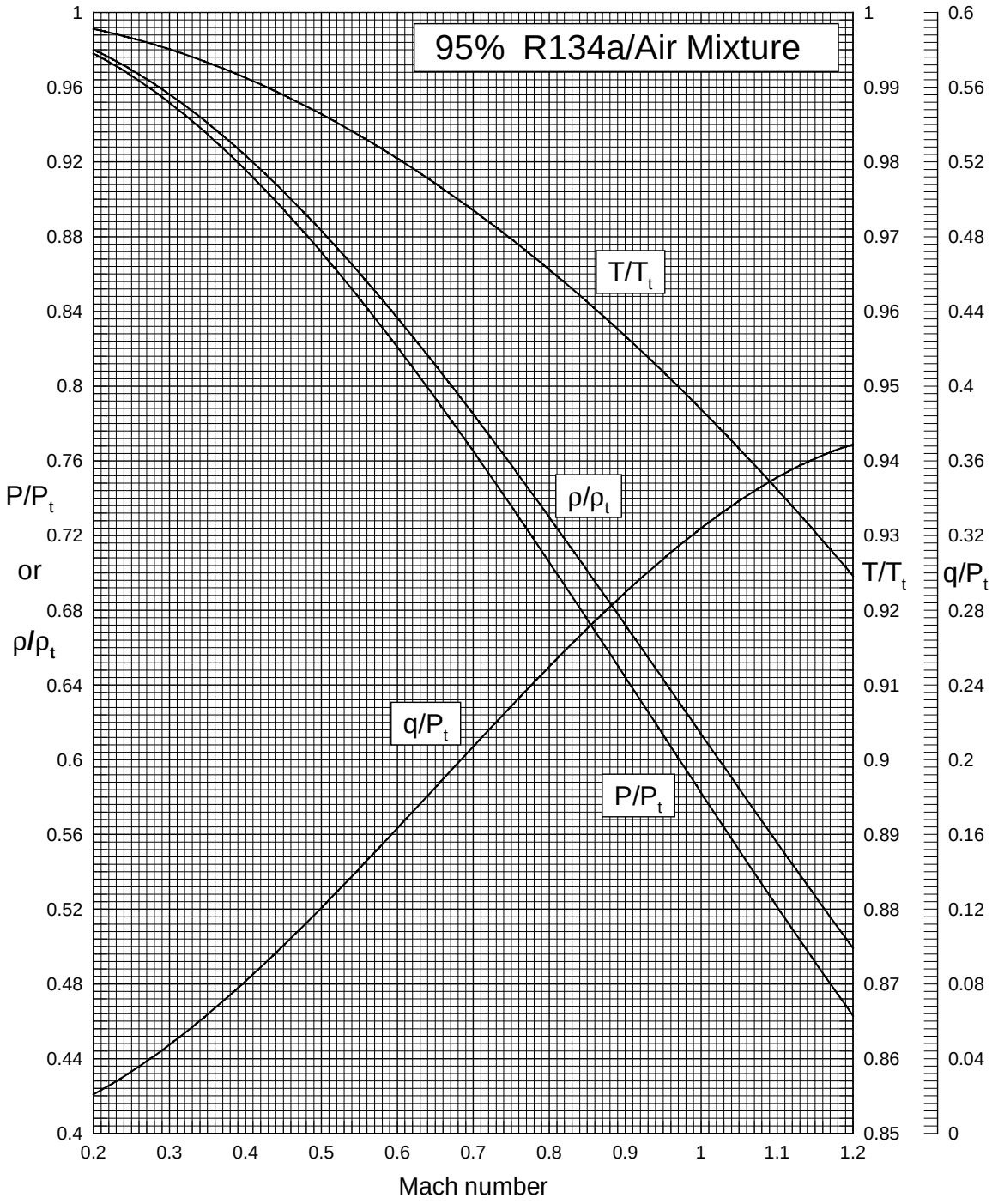

Figure 13. Compressible flow relations for 95-percent R-134a/air mixture (T_t = 100 °F).

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13. ABSTRACT (Maximum 200 words)
Three computer programs for calculating the isentropic flow properties of R-134a/air mixtures which were developed in support of the heavy gas conversion of the Langley Transonic Dynamics Tunnel (TDT) from dichlorodifluoromethane (R-12) to 1,1,1,2 tetrafluoroethane (R-134a) are described. The first program calculates the Mach number and the corresponding flow properties when the total temperature, total pressure, static pressure, and mole fraction of R-134a in the mixture are given. The second program calculates tables of isentropic flow properties for a specified set of free-stream Mach numbers given the total pressure, total temperature, and mole fraction of R-134a. Real-gas effects are accounted for in these programs by treating the gases comprising the mixture as both thermally and calorically imperfect. The third program is a specialized version of the first program in which the gases are thermally perfect. It was written to provide a simpler computational alternative to the first program in those cases where real-gas effects are not important. The theory and computational procedures underlying the programs are summarized, the equations used to compute the flow quantities of interest are given, and sample calculated results that encompass the operating conditions of the TDT are shown.

14. SUBJECT TERMS
R-134a; Wind tunnel flow properties; Real-gas equations; Compressible flow relations; Isentropic flow; Gas mixtures; Computer codes for mixtures of real gases

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