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TRANSIENT SOLUTION OF EQUATIONS OF HYDRODYNAMICS IN GAS CLOUDS

A. PERAIAH

ABSTRACT

We have presented numerical results of transient phenomenon in incompressible fluids. This has been obtained by solving the equations of conservation of momentum, energy and mass in X and Y geometry. We have used the explicit techniques in solving the partial differential equations. Initially a non-steady state is assumed and it is found that one obtains a steady state solution after several time steps.

1. Introduction

When two gas clouds which are in motion, whether they are in stellar atmospheres or in interstellar space, collide, there will be exchange in energy between the two clouds and the ionization structure in the two clouds will get modified. This problem is an extremely complicated one because, one has to consider the transient hydrodynamic effects, so that one can predict the temperature and velocity changes which in turn, will allow us to determine the ionization structure of the mixture of the two clouds. There are several ways of obtaining numerical solution since an analytical approach fails to give any meaningful answer. We have made an attempt of obtaining a numerical solution of the problem of radial motion of gas flows in stellar atmospheres (Peraiah 1982). The problem requires a careful study of the evolution of the numerical solution. Various methods have been devised to suit the different kinds of physical situations. There are mainly two kinds of approaches eg. (1) explicit procedures and (2) implicit procedures in the discrete methods.

In this paper we shall consider explicit techniques for obtaining the numerical solution of the equations of continuity, momentum and energy.

2. Equations of motion and the method of obtaining solution

We shall consider a simple problem of fluids which are incompressible and we shall write the equations in dimensionless variables. Let T, U and V represent the dimensionless variables of temperature and velocity components in X and Y directions. Then we have (Hellums and Churchill 1962)

$$\frac{\partial U}{\partial X} + \frac{\partial V}{\partial Y} = 0 \qquad \text{Equation of continuity} \tag{1}$$

$$\frac{\partial T}{\partial \tau} + U\frac{\partial T}{\partial X} + V\frac{\partial T}{\partial Y} = \frac{1}{P_r}\frac{\partial^2 T}{\partial Y^2} \qquad \text{Equation of energy} \tag{2}$$

and

$$\frac{\partial U}{\partial \tau} + U\frac{\partial U}{\partial X} + V\frac{\partial U}{\partial Y} = T + \frac{\partial^2 U}{\partial Y^2} \qquad \text{Equation of momentum} \tag{3}$$

Here τ, X and Y are dimensionless time and distance coordinates respectively and P_r is the Prandtl number.

We would like to solve the equations (1), (2) and (3) subject to the boundary conditions:

$$
\begin{aligned}
X=0 &: \quad U=V=T=0 \\
Y=0 &: \quad U=V=0,\ T=1 \\
Y=\infty &: \quad U=V=T=0 \\
\tau=0 &: \quad U=V=T=0
\end{aligned}
\tag{4}
$$

We should obtain the solution to the partial differential equations (1) to (3) for the dependent variables U, V, and T as functions of X, Y and τ. Obviously we intend to obtain a non-steady solution to these equations. If we set $\partial U/\partial\tau$ and $\partial T/\partial\tau$ to zero, we will obtain a steady state solution. When the two clouds reach a common temperature and hence ionization structure, the non-steady solution would tend to the steady state solution. Therefore, it is essential that we should consider the non-steady state problem. As we increase the steps in time, we approach the steady state solution. We shall follow the method of solution described by Carnahan et al. (1969). We select the discrete points on X and Y axis and obtain the solution in successive time steps. An explicit scheme can be written as,

$$\frac{U'_{i,j}-U_{i,j}}{\Delta\tau}+\frac{U_{i,j}-U_{i-1,j}}{\Delta X}+V_{ij}\frac{U_{i,j+1}-U_{i,j}}{\Delta Y}=T'_{i,j}+\frac{U_{i,j+1}-2U_{i,j}+U_{i,j-1}}{(\Delta Y)^2} \tag{5}$$

$$\frac{T'_{i,j}-T_{i,j}}{\Delta\tau}+U_{i,j}\frac{T_{i,j}-T_{i-1,j}}{\Delta X}+V_{i,j}\frac{T_{i,j+1}-T_{i,j}}{\Delta Y}=\frac{1}{P_r}\frac{T_{i,j+1}-2T_{i,j}+T_{i,j-1}}{(\Delta Y)^2} \tag{6}$$

$$\frac{U'_{i,j}-U'_{i-1,j}}{\Delta X}+\frac{V'_{i,j}-V'_{i,j-1}}{\Delta Y}=0 \tag{7}$$

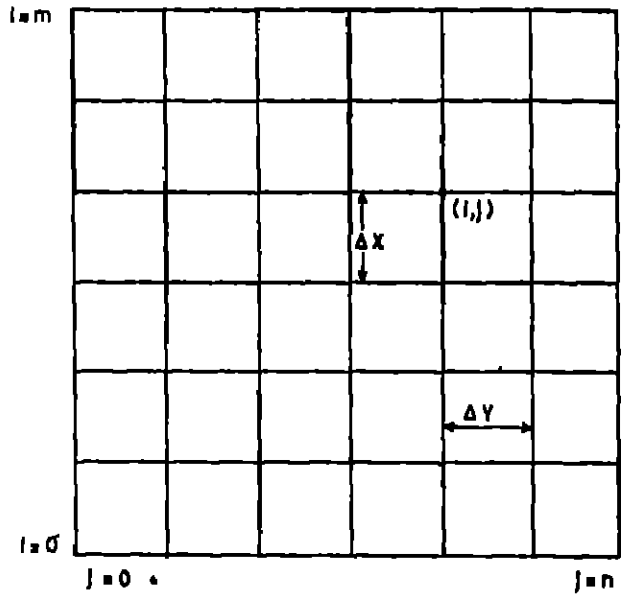
The stability condition is given by

$$\frac{U\Delta\tau}{\Delta X}+\frac{|V|\,\Delta\tau}{\Delta Y}+\frac{1}{P_r}\frac{2\Delta\tau}{(\Delta Y)^2}\leq 1$$

(see Carnahan et al. 1969).

In this problem we shall consider that the Prandtl number to be equal to unity (Glatzmaier and Gilman 1981 a, b; Gilman and Glatzmaier 1981). We have computed the U, V and T fields at each step of $\tau=.5$, on the grid shown in Fig. 1. We have presented the results in the form of U, V, T grids in tables at $\tau=.5$, 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 35, 40, 45 and 50. One can see that, initially, the changes are quite large and with successive time steps there is convergence and one obtains a steady state solution.

In the next paper, we shall present how this procedure could be applied to compressible fluids.



The difference grid

FIG.1

References

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TAU= .5

U COMPONENT OF VELOCITY

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V COMPONENT OF VELOCITY

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TEMPERATURE

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TAU= 1.0

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V COMPONENT OF VELOCITY

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V COMPONENT OF VELOCITY

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TEMPERATURE

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.10000E+01	.25287E+00	.30781E-01	.18022E-02	.40960E-04	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.25287E+00	.30781E-01	.18022E-02	.40960E-04	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.25287E+00	.30781E-01	.18022E-02	.40960E-04	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.25287E+00	.30781E-01	.18022E-02	.40960E-04	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.25287E+00	.30781E-01	.18022E-02	.40960E-04	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.25270E+00	.30772E-01	.18020E-02	.40960E-04	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.24261E+00	.30001E-01	.17812E-02	.40960E-04	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU= 3.0

U COMPONENT OF VELOCITY

.00000E+00	.10092E+01	.27588E+00	.36040E-01	.25923E-02	.98959E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.10092E+01	.27588E+00	.36040E-01	.25923E-02	.98959E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.10092E+01	.27588E+00	.36040E-01	.25923E-02	.98959E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.10092E+01	.27588E+00	.36040E-01	.25923E-02	.98959E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.10092E+01	.27588E+00	.36040E-01	.25923E-02	.98959E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.10092E+01	.27588E+00	.36040E-01	.25923E-02	.98959E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.10092E+01	.27588E+00	.36040E-01	.25923E-02	.98959E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.10089E+01	.27584E+00	.36036E-01	.25922E-02	.98956E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.99942E+00	.27432E+00	.35903E-01	.25859E-02	.98834E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.86411E+00	.24686E+00	.33407E-01	.24697E-02	.96626E-04	.15729E-05	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	-.38418E-08	-.43364E-08	-.43830E-08	-.43853E-08	-.43853E-08	-.43853E-08	-.43853E-08	-.43853E-08	-.43853E-08	-.43853E-08
.00000E+00	-.99797E-06	-.11300E-05	-.11423E-05	-.11429E-05	-.11429E-05	-.11429E-05	-.11429E-05	-.11429E-05	-.11429E-05	-.11429E-05
.00000E+00	-.75591E-04	-.86263E-04	-.87225E-04	-.87272E-04	-.87272E-04	-.87272E-04	-.87272E-04	-.87272E-04	-.87272E-04	-.87272E-04
.00000E+00	-.23788E-02	-.27592E-02	-.27923E-02	-.27939E-02	-.27939E-02	-.27939E-02	-.27939E-02	-.27939E-02	-.27939E-02	-.27939E-02
.00000E+00	-.33826E-01	-.40691E-01	-.41315E-01	-.41344E-01	-.41345E-01	-.41345E-01	-.41345E-01	-.41345E-01	-.41345E-01	-.41345E-01
.00000E+00	-.21603E+00	-.27774E+00	-.28610E+00	-.28671E+00	-.28674E+00	-.28674E+00	-.28674E+00	-.28674E+00	-.28674E+00	-.28674E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.33139E+00	.62741E-01	.70556E-02	.46865E-03	.17039E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.33139E+00	.62741E-01	.70556E-02	.46865E-03	.17039E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.33139E+00	.62741E-01	.70556E-02	.46865E-03	.17039E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.33139E+00	.62741E-01	.70556E-02	.46865E-03	.17039E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.33139E+00	.62741E-01	.70556E-02	.46865E-03	.17039E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.33139E+00	.62741E-01	.70556E-02	.46865E-03	.17039E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.33139E+00	.62741E-01	.70556E-02	.46865E-03	.17039E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.33132E+00	.62732E-01	.70549E-02	.46862E-03	.17039E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.32904E+00	.62421E-01	.70304E-02	.46752E-03	.17018E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.29540E+00	.56790E-01	.65694E-02	.44736E-03	.16650E-04	.26214E-06	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU= 4.0

U COMPONENT OF VELOCITY

.00000E+00	.14591E+01	.53262E+00	.10115E+00	.11863E-01	.89121E-03	.41977E-04	.11333E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.14591E+01	.53262E+00	.10115E+00	.11863E-01	.89121E-03	.41977E-04	.11333E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.14591E+01	.53262E+00	.10115E+00	.11863E-01	.89121E-03	.41977E-04	.11333E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.14591E+01	.53262E+00	.10115E+00	.11863E-01	.89121E-03	.41977E-04	.11333E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.14591E+01	.53262E+00	.10115E+00	.11863E-01	.89121E-03	.41977E-04	.11333E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.14591E+01	.53262E+00	.10115E+00	.11863E-01	.89120E-03	.41977E-04	.11333E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.14589E+01	.53257E+00	.10114E+00	.11862E-01	.89117E-03	.41975E-04	.11333E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.14545E+01	.53152E+00	.10099E+00	.11848E-01	.89035E-03	.41949E-04	.11329E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.14047E+01	.51799E+00	.99060E-01	.11670E-01	.88022E-03	.41626E-04	.11285E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.10957E+01	.41729E+00	.83467E-01	.10219E-01	.79777E-03	.38991E-04	.10921E-05	.13422E-07	.00000E+00	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
.00000E+00	-.57348E-10	-.69194E-10	-.70969E-10	-.71139E-10	-.71149E-10	-.71149E-10	-.71149E-10	-.71149E-10	-.71149E-10	-.71149E-10
.00000E+00	-.15750E-07	-.19043E-07	-.19533E-07	-.19580E-07	-.19583E-07	-.19583E-07	-.19583E-07	-.19583E-07	-.19583E-07	-.19583E-07
.00000E+00	-.13535E-05	-.16438E-05	-.16866E-05	-.16907E-05	-.16909E-05	-.16909E-05	-.16909E-05	-.16909E-05	-.16909E-05	-.16909E-05
.00000E+00	-.53197E-04	-.65119E-04	-.66849E-04	-.67014E-04	-.67023E-04	-.67024E-04	-.67024E-04	-.67024E-04	-.67024E-04	-.67024E-04
.00000E+00	-.10984E-02	-.13629E-02	-.14007E-02	-.14042E-02	-.14044E-02	-.14045E-02	-.14045E-02	-.14045E-02	-.14045E-02	-.14045E-02
.00000E+00	-.12455E-01	-.15836E-01	-.16319E-01	-.16363E-01	-.16366E-01	-.16366E-01	-.16366E-01	-.16366E-01	-.16366E-01	-.16366E-01
.00000E+00	-.77254E-01	-.10243E+00	-.10633E+00	-.10669E+00	-.10671E+00	-.10671E+00	-.10671E+00	-.10671E+00	-.10671E+00	-.10671E+00
.00000E+00	-.27392E+00	-.37825E+00	-.39911E+00	-.40167E+00	-.40187E+00	-.40188E+00	-.40188E+00	-.40188E+00	-.40188E+00	-.40188E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.39163E+00	.96963E-01	.15685E-01	.16888E-02	.12042E-03	.54778E-05	.14428E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.39163E+00	.96963E-01	.15685E-01	.16888E-02	.12042E-03	.54778E-05	.14428E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.39163E+00	.96963E-01	.15685E-01	.16888E-02	.12042E-03	.54778E-05	.14428E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.39163E+00	.96963E-01	.15685E-01	.16888E-02	.12042E-03	.54778E-05	.14428E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.39163E+00	.96963E-01	.15685E-01	.16888E-02	.12042E-03	.54778E-05	.14428E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.39163E+00	.96963E-01	.15685E-01	.16888E-02	.12042E-03	.54778E-05	.14428E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.39158E+00	.96955E-01	.15684E-01	.16887E-02	.12041E-03	.54776E-05	.14428E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.39070E+00	.96778E-01	.15662E-01	.16867E-02	.12031E-03	.54743E-05	.14424E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.38100E+00	.94555E-01	.15377E-01	.16623E-02	.11897E-03	.54329E-05	.14368E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.31824E+00	.77960E-01	.13080E-01	.14626E-02	.10812E-03	.50964E-05	.13914E-06	.16777E-08	.00000E+00	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU= 5.0

U COMPONENT OF VELOCITY

.00000E+00	.19095E+01	.85404E+00	.20926E+00	.33561E-01	.37168E-02	.28790E-03	.15383E-04	.54192E-06	.11355E-07	.00000E+00
.00000E+00	.19095E+01	.85404E+00	.20926E+00	.33561E-01	.37168E-02	.28790E-03	.15383E-04	.54192E-06	.11355E-07	.00000E+00
.00000E+00	.19095E+01	.85404E+00	.20926E+00	.33561E-01	.37168E-02	.28790E-03	.15383E-04	.54192E-06	.11355E-07	.00000E+00
.00000E+00	.19095E+01	.85404E+00	.20926E+00	.33561E-01	.37168E-02	.28790E-03	.15383E-04	.54192E-06	.11355E-07	.00000E+00
.00000E+00	.19095E+01	.85404E+00	.20926E+00	.33561E-01	.37168E-02	.28790E-03	.15383E-04	.54192E-06	.11355E-07	.00000E+00
.00000E+00	.19093E+01	.85398E+00	.20925E+00	.33560E-01	.37166E-02	.28789E-03	.15382E-04	.54191E-06	.11355E-07	.00000E+00
.00000E+00	.19067E+01	.85313E+00	.20908E+00	.33537E-01	.37144E-02	.28775E-03	.15377E-04	.54177E-06	.11353E-07	.00000E+00
.00000E+00	.18827E+01	.84454E+00	.20740E+00	.33308E-01	.34929E-02	.28639E-03	.15321E-04	.54044E-06	.11339E-07	.00000E+00
.00000E+00	.17443E+01	.78952E+00	.19637E+00	.31822E-01	.35543E-02	.27762E-03	.14962E-04	.53186E-06	.11248E-07	.00000E+00
.00000E+00	.12457E+01	.56716E+00	.14719E+00	.24939E-01	.29044E-02	.23619E-03	.13249E-04	.49023E-06	.10796E-07	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.14289E-11	-.18517E-11	-.19366E-11	-.19485E-11	-.19497E-11	-.19497E-11	-.19497E-11	-.19497E-11	-.19497E-11	-.19497E-11
.00000E+00	-.40786E-09	-.52928E-09	-.55361E-09	-.55703E-09	-.55735E-09	-.55737E-09	-.55737E-09	-.55737E-09	-.55737E-09	-.55737E-09
.00000E+00	-.37999E-07	-.49457E-07	-.51742E-07	-.52063E-07	-.52093E-07	-.52095E-07	-.52095E-07	-.52095E-07	-.52095E-07	-.52095E-07
.00000E+00	-.17005E-05	-.22240E-05	-.23277E-05	-.23422E-05	-.23436E-05	-.23437E-05	-.23437E-05	-.23437E-05	-.23437E-05	-.23437E-05
.00000E+00	-.42636E-04	-.56177E-04	-.58840E-04	-.59210E-04	-.59245E-04	-.59248E-04	-.59248E-04	-.59248E-04	-.59248E-04	-.59248E-04
.00000E+00	-.64327E-03	-.85745E-03	-.89926E-03	-.90503E-03	-.90557E-03	-.90561E-03	-.90561E-03	-.90561E-03	-.90561E-03	-.90561E-03
.00000E+00	-.60006E-02	-.81479E-02	-.85667E-02	-.86238E-02	-.86292E-02	-.86295E-02	-.86295E-02	-.86295E-02	-.86295E-02	-.86295E-02
.00000E+00	-.34607E-01	-.48361E-01	-.51118E-01	-.51490E-01	-.51524E-01	-.51527E-01	-.51527E-01	-.51527E-01	-.51527E-01	-.51527E-01
.00000E+00	-.12464E+00	-.18023E+00	-.19253E+00	-.19425E+00	-.19441E+00	-.19442E+00	-.19442E+00	-.19442E+00	-.19442E+00	-.19442E+00
.00000E+00	-.31143E+00	-.45322E+00	-.49002E+00	-.49625E+00	-.49698E+00	-.49704E+00	-.49704E+00	-.49704E+00	-.49704E+00	-.49704E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.43917E+00	.13081E+00	.27034E-01	.39581E-02	.41460E-03	.30947E-04	.16108E-05	.55655E-07	.11489E-08	.00000E+00
.10000E+01	.43917E+00	.13081E+00	.27034E-01	.39581E-02	.41460E-03	.30947E-04	.16108E-05	.55655E-07	.11489E-08	.00000E+00
.10000E+01	.43917E+00	.13081E+00	.27034E-01	.39581E-02	.41460E-03	.30947E-04	.16108E-05	.55655E-07	.11489E-08	.00000E+00
.10000E+01	.43917E+00	.13081E+00	.27034E-01	.39581E-02	.41460E-03	.30947E-04	.16108E-05	.55655E-07	.11489E-08	.00000E+00
.10000E+01	.43917E+00	.13081E+00	.27034E-01	.39581E-02	.41460E-03	.30947E-04	.16108E-05	.55655E-07	.11489E-08	.00000E+00
.10000E+01	.43914E+00	.13080E+00	.27033E-01	.39579E-02	.41459E-03	.30946E-04	.16107E-05	.55654E-07	.11489E-08	.00000E+00
.10000E+01	.43868E+00	.13068E+00	.27012E-01	.39553E-02	.41435E-03	.30931E-04	.16101E-05	.55640E-07	.11488E-08	.00000E+00
.10000E+01	.43461E+00	.12947E+00	.26804E-01	.39291E-02	.41200E-03	.30787E-04	.16044E-05	.55505E-07	.11473E-08	.00000E+00
.10000E+01	.41182E+00	.12189E+00	.25444E-01	.37588E-02	.39688E-03	.29862E-04	.15674E-05	.54635E-07	.11382E-08	.00000E+00
.10000E+01	.32507E+00	.91019E-01	.19389E-01	.29707E-02	.32592E-03	.25485E-04	.13906E-05	.50416E-07	.10930E-08	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=10.0

U COMPONENT OF VELOCITY

.00000E+00	.39827E+01	.29771E+01	.13807E+01	.47201E+00	.12605E+00	.27059E-01	.47476E-02	.68784E-03	.82114E-04	.00000E+00
.00000E+00	.39818E+01	.29762E+01	.13803E+01	.47189E+00	.12602E+00	.27052E-01	.47465E-02	.68769E-03	.82095E-04	.00000E+00
.00000E+00	.39774E+01	.29718E+01	.13783E+01	.47127E+00	.12586E+00	.27019E-01	.47408E-02	.68691E-03	.82002E-04	.00000E+00
.00000E+00	.39600E+01	.29545E+01	.13707E+01	.46882E+00	.12523E+00	.26888E-01	.47187E-02	.68386E-03	.81638E-04	.00000E+00
.00000E+00	.39059E+01	.29014E+01	.13469E+01	.46116E+00	.12327E+00	.26481E-01	.46501E-02	.67440E-03	.80520E-04	.00000E+00
.00000E+00	.37724E+01	.27733E+01	.12881E+01	.44214E+00	.11841E+00	.25476E-01	.44808E-02	.65104E-03	.77787E-04	.00000E+00
.00000E+00	.35067E+01	.25268E+01	.11719E+01	.40397E+00	.10865E+00	.23462E-01	.41418E-02	.60422E-03	.72360E-04	.00000E+00
.00000E+00	.30628E+01	.21331E+01	.98180E+00	.34003E+00	.92148E-01	.20051E-01	.35673E-02	.52467E-03	.63205E-04	.00000E+00
.00000E+00	.24018E+01	.15834E+01	.71372E+00	.24718E+00	.67640E-01	.14921E-01	.26957E-02	.40306E-03	.49219E-04	.00000E+00
.00000E+00	.14532E+01	.87440E+00	.37576E+00	.12790E+00	.35159E-01	.79053E-02	.14694E-02	.22734E-03	.28667E-04	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.22188E-03	-.44637E-03	-.54334E-03	-.57446E-03	-.58248E-03	-.58416E-03	-.58444E-03	-.58448E-03	-.58448E-03	-.58448E-03
.00000E+00	-.11060E-02	-.22169E-02	-.27009E-02	-.28561E-02	-.28961E-02	-.29044E-02	-.29058E-02	-.29060E-02	-.29061E-02	-.29061E-02
.00000E+00	-.43523E-02	-.86834E-02	-.10594E-01	-.11207E-01	-.11364E-01	-.11397E-01	-.11402E-01	-.11403E-01	-.11403E-01	-.11403E-01
.00000E+00	-.13520E-01	-.26802E-01	-.32758E-01	-.34672E-01	-.35163E-01	-.35264E-01	-.35281E-01	-.35284E-01	-.35284E-01	-.35284E-01
.00000E+00	-.33362E-01	-.65371E-01	-.80065E-01	-.84819E-01	-.86034E-01	-.86285E-01	-.86328E-01	-.86334E-01	-.86334E-01	-.86334E-01
.00000E+00	-.66427E-01	-.12807E+00	-.15713E+00	-.16667E+00	-.16912E+00	-.16962E+00	-.16970E+00	-.16972E+00	-.16972E+00	-.16972E+00
.00000E+00	-.11096E+00	-.20937E+00	-.25688E+00	-.27287E+00	-.27699E+00	-.27784E+00	-.27799E+00	-.27801E+00	-.27801E+00	-.27801E+00
.00000E+00	-.16525E+00	-.30268E+00	-.36970E+00	-.39291E+00	-.39904E+00	-.40032E+00	-.40054E+00	-.40057E+00	-.40057E+00	-.40057E+00
.00000E+00	-.23716E+00	-.41442E+00	-.49891E+00	-.52873E+00	-.53685E+00	-.53860E+00	-.53891E+00	-.53895E+00	-.53896E+00	-.53896E+00
.00000E+00	-.36330E+00	-.58189E+00	-.67583E+00	-.70781E+00	-.71660E+00	-.71857E+00	-.71894E+00	-.71900E+00	-.71901E+00	-.71901E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.57905E+00	.27062E+00	.10180E+00	.31008E-01	.77063E-02	.15770E-02	.26752E-03	.37811E-04	.44304E-05	.00000E+00
.10000E+01	.57893E+00	.27054E+00	.10178E+00	.30992E-01	.77043E-02	.15766E-02	.26746E-03	.37802E-04	.44294E-05	.00000E+00
.10000E+01	.57837E+00	.27815E+00	.10163E+00	.30951E-01	.76946E-02	.15747E-02	.26715E-03	.37760E-04	.44244E-05	.00000E+00
.10000E+01	.57631E+00	.26862E+00	.10107E+00	.30791E-01	.76564E-02	.15671E-02	.26591E-03	.37593E-04	.44050E-05	.00000E+00
.10000E+01	.57029E+00	.26406E+00	.99331E-01	.30291E-01	.75373E-02	.15436E-02	.26207E-03	.37077E-04	.43451E-05	.00000E+00
.10000E+01	.55652E+00	.25340E+00	.95089E-01	.29052E-01	.72423E-02	.14855E-02	.25260E-03	.35802E-04	.41986E-05	.00000E+00
.10000E+01	.53092E+00	.23359E+00	.86846E-01	.26580E-01	.66585E-02	.13689E-02	.23363E-03	.33245E-04	.39078E-05	.00000E+00
.10000E+01	.48982E+00	.20285E+00	.73629E-01	.22482E-01	.56538E-02	.11717E-02	.20147E-03	.28898E-04	.34167E-05	.00000E+00
.10000E+01	.42627E+00	.15974E+00	.55143E-01	.16584E-01	.41819E-02	.87584E-03	.15271E-03	.22250E-04	.26657E-05	.00000E+00
.10000E+01	.31454E+00	.99099E-01	.31056E-01	.89235E-02	.22250E-02	.47081E-03	.84033E-04	.12633E-04	.15604E-05	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=15.0

U COMPONENT OF VELOCITY

.00000E+00	.56449E+01	.51788E+01	.31510E+01	.14947E+01	.58103E+00	.18979E+00	.52917E-01	.12716E-01	.25724E-02	.00000E+00
.00000E+00	.55323E+01	.50135E+01	.30365E+01	.14398E+01	.55987E+00	.18292E+00	.51006E-01	.12258E-01	.24720E-02	.00000E+00
.00000E+00	.53506E+01	.47674E+01	.28664E+01	.13573E+01	.52801E+00	.17258E+00	.48137E-01	.11570E-01	.23246E-02	.00000E+00
.00000E+00	.50905E+01	.44392E+01	.26410E+01	.12470E+01	.48516E+00	.15867E+00	.44286E-01	.10649E-01	.21314E-02	.00000E+00
.00000E+00	.47502E+01	.40347E+01	.23661E+01	.11114E+01	.43209E+00	.14142E+00	.39514E-01	.95097E-02	.18971E-02	.00000E+00
.00000E+00	.43296E+01	.35604E+01	.20482E+01	.95374E+00	.36993E+00	.12114E+00	.33899E-01	.81717E-02	.16262E-02	.00000E+00
.00000E+00	.38231E+01	.30187E+01	.16923E+01	.77724E+00	.29983E+00	.98120E-01	.27506E-01	.66471E-02	.13209E-02	.00000E+00
.00000E+00	.32128E+01	.24061E+01	.13019E+01	.58509E+00	.22322E+00	.72782E-01	.20424E-01	.49510E-02	.98338E-03	.00000E+00
.00000E+00	.24574E+01	.17118E+01	.88046E+00	.38202E+00	.14261E+00	.46005E-01	.12878E-01	.31295E-02	.62110E-03	.00000E+00
.00000E+00	.14663E+01	.91724E+00	.43606E+00	.17792E+00	.63507E-01	.19915E-01	.54992E-02	.13318E-02	.26301E-03	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.28149E-01	-.69472E-01	-.98103E-01	-.11184E+00	-.11713E+00	-.11885E+00	-.11932E+00	-.11944E+00	-.11946E+00	-.11946E+00
.00000E+00	-.45421E-01	-.10696E+00	-.14949E+00	-.17010E+00	-.17807E+00	-.18065E+00	-.18137E+00	-.18154E+00	-.18158E+00	-.18158E+00
.00000E+00	-.65020E-01	-.14707E+00	-.20341E+00	-.23099E+00	-.24170E+00	-.24518E+00	-.24637E+00	-.24642E+00	-.24642E+00	
.00000E+00	-.85076E-01	-.18619E+00	-.25492E+00	-.28883E+00	-.30210E+00	-.30641E+00	-.30760E+00	-.30789E+00	-.30794E+00	-.30794E+00
.00000E+00	-.10515E+00	-.22372E+00	-.30320E+00	-.34261E+00	-.35815E+00	-.36322E+00	-.36462E+00	-.36496E+00	-.36502E+00	-.36502E+00
.00000E+00	-.12661E+00	-.26204E+00	-.35100E+00	-.39512E+00	-.41265E+00	-.41840E+00	-.42000E+00	-.42038E+00	-.42046E+00	-.42046E+00
.00000E+00	-.15260E+00	-.30576E+00	-.40336E+00	-.45140E+00	-.47055E+00	-.47688E+00	-.47865E+00	-.47908E+00	-.47916E+00	-.47916E+00
.00000E+00	-.18884E+00	-.36240E+00	-.46777E+00	-.51854E+00	-.53869E+00	-.54538E+00	-.54727E+00	-.54773E+00	-.54782E+00	-.54782E+00
.00000E+00	-.24779E+00	-.44642E+00	-.55753E+00	-.60855E+00	-.62833E+00	-.63485E+00	-.63669E+00	-.63714E+00	-.63723E+00	-.63723E+00
.00000E+00	-.36657E+00	-.59588E+00	-.70489E+00	-.74937E+00	-.76525E+00	-.77023E+00	-.77160E+00	-.77194E+00	-.77200E+00	-.77200E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.63981E+00	.35319E+00	.16963E+00	.70369E-01	.25137E-01	.77552E-02	.20763E-02	.48428E-03	.95857E-04	.00000E+00
.10000E+01	.63058E+00	.34265E+00	.16346E+00	.67751E-01	.24215E-01	.74738E-02	.20014E-02	.46686E-03	.92137E-04	.00000E+00
.10000E+01	.61692E+00	.32760E+00	.15447E+00	.63852E-01	.22829E-01	.70504E-02	.18889E-02	.44073E-03	.86671E-04	.00000E+00
.10000E+01	.59888E+00	.30841E+00	.14285E+00	.58697E-01	.20974E-01	.64817E-02	.17380E-02	.40573E-03	.79500E-04	.00000E+00
.10000E+01	.57674E+00	.28570E+00	.12904E+00	.52450E-01	.18691E-01	.57780E-02	.15510E-02	.36244E-03	.70799E-04	.00000E+00
.10000E+01	.55028E+00	.25979E+00	.11344E+00	.45303E-01	.16040E-01	.49538E-02	.13313E-02	.31160E-03	.60729E-04	.00000E+00
.10000E+01	.51807E+00	.23031E+00	.96181E-01	.37404E-01	.13080E-01	.40238E-02	.10818E-02	.25371E-03	.49376E-04	.00000E+00
.10000E+01	.47642E+00	.19588E+00	.77108E-01	.28837E-01	.98660E-02	.30059E-02	.80642E-03	.18944E-03	.36827E-04	.00000E+00
.10000E+01	.41623E+00	.15339E+00	.55662E-01	.19638E-01	.64708E-02	.19310E-02	.51364E-03	.12053E-03	.23374E-04	.00000E+00
.10000E+01	.30938E+00	.95579E-01	.30696E-01	.98707E-02	.30386E-02	.86701E-03	.22493E-03	.52214E-04	.10033E-04	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=20.0

U COMPONENT OF VELOCITY

.00000E+00	.62489E+01	.59999E+01	.40407E+01	.22494E+01	.10733E+01	.44443E+00	.16114E+00	.51227E-01	.13273E-01	.00000E+00
.00000E+00	.59467E+01	.55977E+01	.37166E+01	.20511E+01	.97421E+00	.40254E+00	.14577E+00	.46267E-01	.11926E-01	.00000E+00
.00000E+00	.56114E+01	.51656E+01	.33741E+01	.18425E+01	.87000E+00	.35841E+00	.12959E+00	.41061E-01	.10534E-01	.00000E+00
.00000E+00	.52412E+01	.47026E+01	.30136E+01	.16247E+01	.76121E+00	.31229E+00	.11266E+00	.35631E-01	.90987E-02	.00000E+00
.00000E+00	.48302E+01	.42055E+01	.26348E+01	.13980E+01	.64837E+00	.26442E+00	.95084E-01	.29999E-01	.76224E-02	.00000E+00
.00000E+00	.43687E+01	.36691E+01	.22368E+01	.11634E+01	.53220E+00	.21519E+00	.76995E-01	.24208E-01	.61148E-02	.00000E+00
.00000E+00	.38407E+01	.30859E+01	.18187E+01	.92187E+00	.41390E+00	.16525E+00	.58659E-01	.18341E-01	.45976E-02	.00000E+00
.00000E+00	.32198E+01	.24452E+01	.13800E+01	.67586E+00	.29550E+00	.11573E+00	.40547E-01	.12559E-01	.31135E-02	.00000E+00
.00000E+00	.24599E+01	.17320E+01	.92190E+00	.43006E+00	.18066E+00	.68595E-01	.23492E-01	.71530E-02	.17416E-02	.00000E+00
.00000E+00	.14670E+01	.92489E+00	.45147E+00	.19518E+00	.76625E-01	.27508E-01	.90137E-02	.26499E-02	.62371E-03	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.75564E-01	-.17610E+00	-.25713E+00	-.30673E+00	-.33149E+00	-.34196E+00	-.34580E+00	-.34704E+00	-.34738E+00	-.34738E+00
.00000E+00	-.83806E-01	-.19183E+00	-.27747E+00	-.32960E+00	-.35565E+00	-.36668E+00	-.37073E+00	-.37203E+00	-.37238E+00	-.37238E+00
.00000E+00	-.92564E-01	-.20832E+00	-.29844E+00	-.35291E+00	-.38010E+00	-.39163E+00	-.39587E+00	-.39722E+00	-.39758E+00	-.39758E+00
.00000E+00	-.10273E+00	-.22701E+00	-.32171E+00	-.37837E+00	-.40658E+00	-.41854E+00	-.42294E+00	-.42435E+00	-.42472E+00	-.42472E+00
.00000E+00	-.11538E+00	-.24947E+00	-.34897E+00	-.40764E+00	-.43668E+00	-.44899E+00	-.45351E+00	-.45496E+00	-.45534E+00	-.45534E+00
.00000E+00	-.13202E+00	-.27782E+00	-.38234E+00	-.44272E+00	-.47230E+00	-.48478E+00	-.48936E+00	-.49083E+00	-.49121E+00	-.49121E+00
.00000E+00	-.15520E+00	-.31537E+00	-.42505E+00	-.48655E+00	-.51615E+00	-.52853E+00	-.53306E+00	-.53450E+00	-.53487E+00	-.53487E+00
.00000E+00	-.18998E+00	-.36828E+00	-.48281E+00	-.54426E+00	-.57297E+00	-.58475E+00	-.58901E+00	-.59037E+00	-.59071E+00	-.59071E+00
.00000E+00	-.24823E+00	-.45002E+00	-.56762E+00	-.62636E+00	-.65237E+00	-.66264E+00	-.66626E+00	-.66739E+00	-.66767E+00	-.66767E+00
.00000E+00	-.36675E+00	-.59797E+00	-.71084E+00	-.75962E+00	-.77877E+00	-.78565E+00	-.78790E+00	-.78857E+00	-.78872E+00	-.78872E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.63048E+00	.34749E+00	.17723E+00	.84135E-01	.36416E-01	.14142E-01	.49012E-02	.15076E-02	.38192E-03	.00000E+00
.10000E+01	.61597E+00	.33033E+00	.16465E+00	.77010E-01	.33081E-01	.12807E-01	.44323E-02	.13614E-02	.34323E-03	.00000E+00
.10000E+01	.60030E+00	.31230E+00	.15164E+00	.69644E-01	.29612E-01	.11408E-01	.39399E-02	.12082E-02	.30322E-03	.00000E+00
.10000E+01	.58298E+00	.29310E+00	.13811E+00	.62051E-01	.26030E-01	.99571E-02	.34271E-02	.10486E-02	.26197E-03	.00000E+00
.10000E+01	.56324E+00	.27226E+00	.12392E+00	.54215E-01	.22347E-01	.84618E-02	.28969E-02	.88352E-03	.21959E-03	.00000E+00
.10000E+01	.53982E+00	.24906E+00	.10883E+00	.46102E-01	.18574E-01	.69330E-02	.23540E-02	.71429E-03	.17638E-03	.00000E+00
.10000E+01	.51060E+00	.22244E+00	.92529E-01	.37663E-01	.14727E-01	.53863E-02	.18057E-02	.54341E-03	.13299E-03	.00000E+00
.10000E+01	.47153E+00	.19062E+00	.74543E-01	.28834E-01	.10831E-01	.38467E-02	.12640E-02	.37522E-03	.90610E-04	.00000E+00
.10000E+01	.41342E+00	.15034E+00	.54141E-01	.19554E-01	.69396E-02	.23576E-02	.74979E-03	.21732E-03	.51342E-04	.00000E+00
.10000E+01	.30816E+00	.94285E-01	.30068E-01	.98124E-02	.31875E-02	.10053E-02	.30142E-03	.83434E-04	.18927E-04	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=25.0

U COMPONENT OF VELOCITY

.00000E+00	.62682E+01	.60750E+01	.42178E+01	.25011E+01	.13189E+01	.62360E+00	.26426E+00	.98887E-01	.29206E-01	.00000E+00
.00000E+00	.59521E+01	.56525E+01	.38599E+01	.22596E+01	.11804E+01	.55446E+00	.23388E+00	.87171E-01	.25610E-01	.00000E+00
.00000E+00	.56108E+01	.52068E+01	.34892E+01	.20127E+01	.10398E+01	.48450E+00	.20320E+00	.75369E-01	.22009E-01	.00000E+00
.00000E+00	.52386E+01	.47340E+01	.31046E+01	.17603E+01	.89735E+00	.41402E+00	.17238E+00	.63552E-01	.18426E-01	.00000E+00
.00000E+00	.48276E+01	.42293E+01	.27048E+01	.15027E+01	.75375E+00	.34348E+00	.14167E+00	.51826E-01	.14895E-01	.00000E+00
.00000E+00	.43668E+01	.36868E+01	.22886E+01	.12407E+01	.60995E+00	.27357E+00	.11145E+00	.40350E-01	.11470E-01	.00000E+00
.00000E+00	.38395E+01	.30985E+01	.18549E+01	.97543E+00	.46743E+00	.20530E+00	.82241E-01	.29356E-01	.82242E-02	.00000E+00
.00000E+00	.32193E+01	.24535E+01	.14032E+01	.70948E+00	.32860E+00	.14021E+00	.54842E-01	.19181E-01	.52670E-02	.00000E+00
.00000E+00	.24598E+01	.17368E+01	.93457E+00	.44778E+00	.19757E+00	.80792E-01	.30472E-01	.10328E-01	.27526E-02	.00000E+00
.00000E+00	.14670E+01	.92688E+00	.45630E+00	.20135E+00	.82206E-01	.31314E-01	.11094E-01	.35594E-02	.90214E-03	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.79038E-01	-.18465E+00	-.27412E+00	-.33447E+00	-.36909E+00	-.38637E+00	-.39397E+00	-.39690E+00	-.39780E+00	-.39780E+00
.00000E+00	-.85319E-01	-.19675E+00	-.28941E+00	-.35115E+00	-.38631E+00	-.40380E+00	-.41147E+00	-.41442E+00	-.41532E+00	-.41532E+00
.00000E+00	-.93047E-01	-.21125E+00	-.30740E+00	-.37051E+00	-.40611E+00	-.42373E+00	-.43144E+00	-.43439E+00	-.43529E+00	-.43529E+00
.00000E+00	-.10274E+00	-.22890E+00	-.32885E+00	-.39324E+00	-.42914E+00	-.44678E+00	-.45445E+00	-.45738E+00	-.45827E+00	-.45827E+00
.00000E+00	-.11521E+00	-.25084E+00	-.35489E+00	-.42040E+00	-.45635E+00	-.47383E+00	-.48139E+00	-.48426E+00	-.48511E+00	-.48511E+00
.00000E+00	-.13183E+00	-.27891E+00	-.38733E+00	-.45364E+00	-.48927E+00	-.50634E+00	-.51364E+00	-.51639E+00	-.51720E+00	-.51720E+00
.00000E+00	-.15505E+00	-.31629E+00	-.42923E+00	-.49572E+00	-.53042E+00	-.54670E+00	-.55354E+00	-.55609E+00	-.55683E+00	-.55683E+00
.00000E+00	-.18988E+00	-.36906E+00	-.48622E+00	-.55164E+00	-.58440E+00	-.59926E+00	-.60535E+00	-.60756E+00	-.60819E+00	-.60819E+00
.00000E+00	-.24819E+00	-.45066E+00	-.57023E+00	-.63184E+00	-.66068E+00	-.67305E+00	-.67789E+00	-.67958E+00	-.68005E+00	-.68005E+00
.00000E+00	-.36676E+00	-.59848E+00	-.71255E+00	-.76289E+00	-.78344E+00	-.79127E+00	-.79404E+00	-.79493E+00	-.79516E+00	-.79516E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.61815E+00	.33243E+00	.16716E+00	.81101E-01	.37700E-01	.16449E-01	.66094E-02	.23856E-02	.68889E-03	.00000E+00
.10000E+01	.60615E+00	.31810E+00	.15623E+00	.74277E-01	.34080E-01	.14679E-01	.58587E-02	.21042E-02	.60425E-03	.00000E+00
.10000E+01	.59267E+00	.30260E+00	.14477E+00	.67288E-01	.30257E-01	.12898E-01	.51041E-02	.18217E-02	.51968E-03	.00000E+00
.10000E+01	.57720E+00	.28559E+00	.13266E+00	.60095E-01	.26467E-01	.11110E-01	.43491E-02	.15398E-02	.43574E-03	.00000E+00
.10000E+01	.55896E+00	.26658E+00	.11972E+00	.52653E-01	.22629E-01	.93216E-02	.35989E-02	.12609E-02	.35324E-03	.00000E+00
.10000E+01	.53673E+00	.24490E+00	.10572E+00	.44913E-01	.18744E-01	.75423E-02	.28604E-02	.98839E-03	.27332E-03	.00000E+00
.10000E+01	.50846E+00	.21952E+00	.90348E-01	.36814E-01	.14820E-01	.57879E-02	.21438E-02	.72695E-03	.19761E-03	.00000E+00
.10000E+01	.47015E+00	.18873E+00	.73139E-01	.28286E-01	.10875E-01	.40830E-02	.14641E-02	.48348E-03	.12834E-03	.00000E+00
.10000E+01	.41263E+00	.14927E+00	.53367E-01	.19259E-01	.69563E-02	.24713E-02	.84531E-03	.26826E-03	.68761E-04	.00000E+00
.10000E+01	.30782E+00	.93841E-01	.29773E-01	.97086E-02	.31926E-02	.10402E-02	.32940E-03	.97785E-04	.23647E-04	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=30.0

U COMPONENT OF VELOCITY

.00000E+00	.62569E+01	.60839E+01	.42718E+01	.26014E+01	.14390E+01	.73007E+00	.33790E+00	.13873E+00	.44052E-01	.00000E+00
.00000E+00	.59439E+01	.56613E+01	.39059E+01	.23439E+01	.12810E+01	.64349E+00	.29545E+00	.12045E+00	.37966E-01	.00000E+00
.00000E+00	.56050E+01	.52149E+01	.35276E+01	.20819E+01	.11220E+01	.55719E+00	.25340E+00	.10245E+00	.32016E-01	.00000E+00
.00000E+00	.52347E+01	.47811E+01	.31357E+01	.18157E+01	.96277E+00	.47162E+00	.21204E+00	.84863E-01	.26254E-01	.00000E+00
.00000E+00	.48251E+01	.42354E+01	.27292E+01	.15456E+01	.80393E+00	.38738E+00	.17174E+00	.67887E-01	.20748E-01	.00000E+00
.00000E+00	.43652E+01	.36917E+01	.23070E+01	.12723E+01	.64658E+00	.30530E+00	.13299E+00	.51758E-01	.15583E-01	.00000E+00
.00000E+00	.38386E+01	.31821E+01	.18679E+01	.99734E+00	.49233E+00	.22654E+00	.96472E-01	.36793E-01	.10868E-01	.00000E+00
.00000E+00	.32188E+01	.24561E+01	.14116E+01	.72318E+00	.34374E+00	.15283E+00	.63115E-01	.23419E-01	.67432E-02	.00000E+00
.00000E+00	.24596E+01	.17383E+01	.93919E+00	.45492E+00	.20513E+00	.86838E-01	.34301E-01	.12228E-01	.33948E-02	.00000E+00
.00000E+00	.14670E+01	.92753E+00	.45806E+00	.20382E+00	.84598E-01	.33091E-01	.12149E-01	.40542E-02	.10611E-02	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.78258E-01	-.18392E+00	-.27540E+00	-.33977E+00	-.37929E+00	-.40093E+00	-.41154E+00	-.41611E+00	-.41763E+00	-.41763E+00
.00000E+00	-.84711E-01	-.19630E+00	-.29089E+00	-.35638E+00	-.39611E+00	-.41769E+00	-.42820E+00	-.43270E+00	-.43419E+00	-.43419E+00
.00000E+00	-.92586E-01	-.21102E+00	-.30899E+00	-.37555E+00	-.41536E+00	-.43676E+00	-.44710E+00	-.45149E+00	-.45293E+00	-.45293E+00
.00000E+00	-.10240E+00	-.22884E+00	-.33046E+00	-.39799E+00	-.43770E+00	-.45876E+00	-.46883E+00	-.47308E+00	-.47445E+00	-.47445E+00
.00000E+00	-.11497E+00	-.25089E+00	-.35645E+00	-.42876E+00	-.46418E+00	-.48462E+00	-.49431E+00	-.49834E+00	-.49963E+00	-.49963E+00
.00000E+00	-.13166E+00	-.27904E+00	-.38880E+00	-.45754E+00	-.49611E+00	-.51579E+00	-.52492E+00	-.52867E+00	-.52984E+00	-.52984E+00
.00000E+00	-.15494E+00	-.31646E+00	-.43055E+00	-.49909E+00	-.53623E+00	-.55466E+00	-.56300E+00	-.56635E+00	-.56738E+00	-.56738E+00
.00000E+00	-.18981E+00	-.36925E+00	-.48735E+00	-.55441E+00	-.58907E+00	-.60556E+00	-.61277E+00	-.61556E+00	-.61640E+00	-.61640E+00
.00000E+00	-.24815E+00	-.45084E+00	-.57113E+00	-.63390E+00	-.66463E+00	-.67747E+00	-.68301E+00	-.68505E+00	-.68564E+00	-.68564E+00
.00000E+00	-.36675E+00	-.59863E+00	-.71315E+00	-.76410E+00	-.78525E+00	-.79352E+00	-.79656E+00	-.79758E+00	-.79784E+00	-.79784E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.61454E+00	.32708E+00	.16227E+00	.78268E-01	.36983E-01	.16899E-01	.73022E-02	.28684E-02	.88785E-03	.00000E+00
.10000E+01	.60327E+00	.31377E+00	.15222E+00	.71934E-01	.33388E-01	.15033E-01	.64216E-02	.24992E-02	.76700E-03	.00000E+00
.10000E+01	.59040E+00	.29913E+00	.14154E+00	.65382E-01	.29744E-01	.13169E-01	.55497E-02	.21362E-02	.64906E-03	.00000E+00
.10000E+01	.57543E+00	.28285E+00	.13010E+00	.58580E-01	.26049E-01	.11311E-01	.46907E-02	.17818E-02	.53498E-03	.00000E+00
.10000E+01	.55760E+00	.26447E+00	.11775E+00	.51486E-01	.22300E-01	.94641E-02	.38500E-02	.14391E-02	.42592E-03	.00000E+00
.10000E+01	.53573E+00	.24333E+00	.10426E+00	.44052E-01	.18499E-01	.76382E-02	.30350E-02	.11119E-02	.32333E-03	.00000E+00
.10000E+01	.50775E+00	.21841E+00	.89323E-01	.36219E-01	.14649E-01	.58476E-02	.22557E-02	.80559E-03	.22905E-03	.00000E+00
.10000E+01	.46967E+00	.18800E+00	.72483E-01	.27915E-01	.10770E-01	.41163E-02	.15273E-02	.52726E-03	.14553E-03	.00000E+00
.10000E+01	.41235E+00	.14885E+00	.53011E-01	.19067E-01	.69043E-02	.24867E-02	.87391E-03	.28749E-03	.76091E-04	.00000E+00
.10000E+01	.30770E+00	.93670E-01	.29642E-01	.96454E-02	.31774E-02	.10450E-02	.33725E-03	.10273E-03	.25435E-04	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=35.0

U COMPONENT OF VELOCITY

.00000E+00	.62523E+01	.60867E+01	.42937E+01	.26463E+01	.14987E+01	.78884E+00	.38286E+00	.16520E+00	.54465E-01	.00000E+00
.00000E+00	.59404E+01	.56641E+01	.39245E+01	.23815E+01	.13305E+01	.69203E+00	.33239E+00	.14208E+00	.46421E-01	.00000E+00
.00000E+00	.56025E+01	.52175E+01	.35430E+01	.21127E+01	.11623E+01	.59632E+00	.28299E+00	.11965E+00	.38689E-01	.00000E+00
.00000E+00	.52329E+01	.47435E+01	.31482E+01	.18402E+01	.99453E+00	.50221E+00	.23497E+00	.98084E-01	.31334E-01	.00000E+00
.00000E+00	.48239E+01	.42374E+01	.27391E+01	.15645E+01	.82807E+00	.41035E+00	.18877E+00	.77596E-01	.24437E-01	.00000E+00
.00000E+00	.43644E+01	.36933E+01	.23144E+01	.12862E+01	.66401E+00	.32162E+00	.14492E+00	.58459E-01	.18093E-01	.00000E+00
.00000E+00	.38381E+01	.31034E+01	.18732E+01	.10069E+01	.50402E+00	.23725E+00	.10414E+00	.41021E-01	.12423E-01	.00000E+00
.00000E+00	.32186E+01	.24570E+01	.14149E+01	.72907E+00	.35072E+00	.15903E+00	.67425E-01	.25735E-01	.75753E-02	.00000E+00
.00000E+00	.24595E+01	.17388E+01	.94101E+00	.45794E+00	.20851E+00	.89702E-01	.36209E-01	.13215E-01	.37373E-02	.00000E+00
.00000E+00	.14670E+01	.92776E+00	.45873E+00	.20483E+00	.85621E-01	.33885E-01	.12640E-01	.42922E-02	.11392E-02	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.77955E-01	-.18362E+00	-.27592E+00	-.34213E+00	-.38418E+00	-.40838E+00	-.42099E+00	-.42677E+00	-.42878E+00	-.42878E+00
.00000E+00	-.84474E-01	-.19611E+00	-.29148E+00	-.35867E+00	-.40073E+00	-.42466E+00	-.43701E+00	-.44262E+00	-.44455E+00	-.44455E+00
.00000E+00	-.92402E-01	-.21091E+00	-.30960E+00	-.37772E+00	-.41966E+00	-.44319E+00	-.45519E+00	-.46058E+00	-.46242E+00	-.46242E+00
.00000E+00	-.10226E+00	-.22878E+00	-.33107E+00	-.40002E+00	-.44163E+00	-.46460E+00	-.47615E+00	-.48127E+00	-.48299E+00	-.48299E+00
.00000E+00	-.11486E+00	-.25088E+00	-.35785E+00	-.42662E+00	-.46763E+00	-.48981E+00	-.50078E+00	-.50556E+00	-.50715E+00	-.50715E+00
.00000E+00	-.13158E+00	-.27906E+00	-.38936E+00	-.45919E+00	-.49919E+00	-.52028E+00	-.53048E+00	-.53484E+00	-.53626E+00	-.53626E+00
.00000E+00	-.15488E+00	-.31650E+00	-.43105E+00	-.50051E+00	-.53883E+00	-.55839E+00	-.56757E+00	-.57139E+00	-.57260E+00	-.57260E+00
.00000E+00	-.18977E+00	-.36930E+00	-.48778E+00	-.55557E+00	-.59112E+00	-.60845E+00	-.61625E+00	-.61938E+00	-.62034E+00	-.62034E+00
.00000E+00	-.24813E+00	-.45090E+00	-.57147E+00	-.63475E+00	-.66547E+00	-.67983E+00	-.68532E+00	-.68755E+00	-.68820E+00	-.68820E+00
.00000E+00	-.36675E+00	-.59869E+00	-.71337E+00	-.76458E+00	-.78598E+00	-.79445E+00	-.79761E+00	-.79869E+00	-.79897E+00	-.79897E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.61327E+00	.32496E+00	.15999E+00	.76580E-01	.36176E-01	.16766E-01	.74649E-02	.30469E-02	.97348E-03	.00000E+00
.10000E+01	.60222E+00	.31200E+00	.15032E+00	.70530E-01	.32714E-01	.14916E-01	.65475E-02	.26401E-02	.83455E-03	.00000E+00
.10000E+01	.58955E+00	.29769E+00	.13999E+00	.64238E-01	.29194E-01	.13068E-01	.56443E-02	.22443E-02	.70081E-03	.00000E+00
.10000E+01	.57475E+00	.28169E+00	.12886E+00	.57671E-01	.25612E-01	.11226E-01	.47592E-02	.18619E-02	.57318E-03	.00000E+00
.10000E+01	.55707E+00	.26357E+00	.11679E+00	.50787E-01	.21966E-01	.93967E-02	.38974E-02	.14957E-02	.45279E-03	.00000E+00
.10000E+01	.53533E+00	.24265E+00	.10355E+00	.43540E-01	.18255E-01	.75876E-02	.30657E-02	.11495E-02	.34103E-03	.00000E+00
.10000E+01	.50746E+00	.21793E+00	.88823E-01	.35868E-01	.14486E-01	.58130E-02	.22740E-02	.82839E-03	.23968E-03	.00000E+00
.10000E+01	.46949E+00	.18768E+00	.72166E-01	.27700E-01	.10672E-01	.40957E-02	.15369E-02	.53930E-03	.15105E-03	.00000E+00
.10000E+01	.41224E+00	.14867E+00	.52842E-01	.18959E-01	.68577E-02	.24773E-02	.87802E-03	.29248E-03	.78309E-04	.00000E+00
.10000E+01	.30765E+00	.93599E-01	.29581E-01	.96111E-02	.31644E-02	.10428E-02	.33841E-03	.10395E-03	.25942E-04	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=40.0

U COMPONENT OF VELOCITY

.00000E+00	.62501E+01	.60875E+01	.43029E+01	.26670E+01	.15281E+01	.81956E+00	.40767E+00	.18044E+00	.60611E-01	.00000E+00
.00000E+00	.59388E+01	.56649E+01	.39323E+01	.23987E+01	.13547E+01	.71715E+00	.35251E+00	.15434E+00	.51327E-01	.00000E+00
.00000E+00	.56013E+01	.52183E+01	.35494E+01	.21267E+01	.11818E+01	.61635E+00	.29887E+00	.12924E+00	.42491E-01	.00000E+00
.00000E+00	.52320E+01	.47442E+01	.31534E+01	.18513E+01	.10098E+01	.51767E+00	.24710E+00	.10532E+00	.34173E-01	.00000E+00
.00000E+00	.48233E+01	.42380E+01	.27431E+01	.15729E+01	.83951E+00	.42180E+00	.19762E+00	.82808E-01	.26455E-01	.00000E+00
.00000E+00	.43640E+01	.36938E+01	.23174E+01	.12924E+01	.67215E+00	.32962E+00	.15099E+00	.61977E-01	.19435E-01	.00000E+00
.00000E+00	.38379E+01	.31038E+01	.18753E+01	.10110E+01	.50939E+00	.24239E+00	.10795E+00	.43184E-01	.13232E-01	.00000E+00
.00000E+00	.32185E+01	.24572E+01	.14163E+01	.73160E+00	.35385E+00	.16193E+00	.69509E-01	.26883E-01	.79937E-02	.00000E+00
.00000E+00	.24595E+01	.17390E+01	.94173E+00	.45920E+00	.20999E+00	.90996E-01	.37096E-01	.13683E-01	.39021E-02	.00000E+00
.00000E+00	.14670E+01	.92784E+00	.45899E+00	.20523E+00	.86046E-01	.34224E-01	.12854E-01	.43979E-02	.11743E-02	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.77829E-01	-.18349E+00	-.27615E+00	-.34322E+00	-.38656E+00	-.41216E+00	-.42595E+00	-.43248E+00	-.43480E+00	-.43480E+00
.00000E+00	-.84370E-01	-.19601E+00	-.29172E+00	-.35971E+00	-.40295E+00	-.42815E+00	-.44156E+00	-.44784E+00	-.45004E+00	-.45004E+00
.00000E+00	-.92317E-01	-.21084E+00	-.30984E+00	-.37870E+00	-.42170E+00	-.44637E+00	-.45931E+00	-.46529E+00	-.46737E+00	-.46737E+00
.00000E+00	-.10219E+00	-.22874E+00	-.33131E+00	-.40091E+00	-.44347E+00	-.46744E+00	-.47981E+00	-.48544E+00	-.48737E+00	-.48737E+00
.00000E+00	-.11481E+00	-.25085E+00	-.35728E+00	-.42743E+00	-.46926E+00	-.49231E+00	-.50396E+00	-.50917E+00	-.51093E+00	-.51093E+00
.00000E+00	-.13154E+00	-.27904E+00	-.38957E+00	-.45990E+00	-.50060E+00	-.52240E+00	-.53316E+00	-.53786E+00	-.53941E+00	-.53941E+00
.00000E+00	-.15485E+00	-.31650E+00	-.43125E+00	-.50111E+00	-.53999E+00	-.56011E+00	-.56972E+00	-.57380E+00	-.57511E+00	-.57511E+00
.00000E+00	-.18975E+00	-.36931E+00	-.48795E+00	-.55605E+00	-.59201E+00	-.60975E+00	-.61785E+00	-.62115E+00	-.62217E+00	-.62217E+00
.00000E+00	-.24812E+00	-.45091E+00	-.57160E+00	-.63509E+00	-.66608E+00	-.68027E+00	-.68633E+00	-.68865E+00	-.68933E+00	-.68933E+00
.00000E+00	-.36674E+00	-.59870E+00	-.71345E+00	-.76476E+00	-.78627E+00	-.79483E+00	-.79804E+00	-.79914E+00	-.79943E+00	-.79943E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.61272E+00	.32397E+00	.15882E+00	.75580E-01	.35555E-01	.16506E-01	.74169E-02	.30705E-02	.99298E-03	.00000E+00
.10000E+01	.60176E+00	.31117E+00	.14934E+00	.69698E-01	.32199E-01	.14698E-01	.65043E-02	.26564E-02	.84900E-03	.00000E+00
.10000E+01	.58917E+00	.29701E+00	.13918E+00	.63560E-01	.28776E-01	.12890E-01	.56068E-02	.22549E-02	.71114E-03	.00000E+00
.10000E+01	.57444E+00	.28114E+00	.12822E+00	.57132E-01	.25282E-01	.11086E-01	.47280E-02	.18682E-02	.58024E-03	.00000E+00
.10000E+01	.55684E+00	.26314E+00	.11629E+00	.50375E-01	.21716E-01	.92904E-02	.38727E-02	.14991E-02	.45736E-03	.00000E+00
.10000E+01	.53515E+00	.24233E+00	.10318E+00	.43240E-01	.18076E-01	.75118E-02	.30475E-02	.11510E-02	.34379E-03	.00000E+00
.10000E+01	.50734E+00	.21770E+00	.88568E-01	.35664E-01	.14367E-01	.57634E-02	.22619E-02	.82891E-03	.24118E-03	.00000E+00
.10000E+01	.46940E+00	.18753E+00	.72005E-01	.27577E-01	.10603E-01	.40675E-02	.15301E-02	.53940E-03	.15176E-03	.00000E+00
.10000E+01	.41219E+00	.14859E+00	.52758E-01	.18899E-01	.68257E-02	.24650E-02	.87511E-03	.29251E-03	.78580E-04	.00000E+00
.10000E+01	.30763E+00	.93567E-01	.29553E-01	.95931E-02	.31559E-02	.10398E-02	.33781E-03	.10399E-03	.26009E-04	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=45.0

U COMPONENT OF VELOCITY

.00000E+00	.62488E+01	.60873E+01	.43065E+01	.26761E+01	.15419E+01	.83465E+00	.42026E+00	.18836E+00	.63848E-01	.00000E+00
.00000E+00	.59378E+01	.56648E+01	.39352E+01	.24062E+01	.13660E+01	.72935E+00	.36260E+00	.16063E+00	.53876E-01	.00000E+00
.00000E+00	.56005E+01	.52183E+01	.35519E+01	.21328E+01	.11907E+01	.62597E+00	.30674E+00	.13410E+00	.44439E-01	.00000E+00
.00000E+00	.52315E+01	.47442E+01	.31554E+01	.18561E+01	.10167E+01	.52501E+00	.25302E+00	.10893E+00	.35606E-01	.00000E+00
.00000E+00	.48229E+01	.42381E+01	.27446E+01	.15765E+01	.84864E+00	.42715E+00	.20187E+00	.85364E-01	.27456E-01	.00000E+00
.00000E+00	.43638E+01	.36939E+01	.23185E+01	.12949E+01	.67576E+00	.33330E+00	.15386E+00	.63671E-01	.20088E-01	.00000E+00
.00000E+00	.38377E+01	.31089E+01	.18760E+01	.10128E+01	.51172E+00	.24471E+00	.10972E+00	.44201E-01	.13617E-01	.00000E+00
.00000E+00	.32184E+01	.24573E+01	.14168E+01	.73261E+00	.35518E+00	.16320E+00	.70446E-01	.27408E-01	.81870E-02	.00000E+00
.00000E+00	.24594E+01	.17398E+01	.94198E+00	.45969E+00	.21059E+00	.91545E-01	.37480E-01	.13890E-01	.39753E-02	.00000E+00
.00000E+00	.14670E+01	.92786E+00	.45908E+00	.20538E+00	.86213E-01	.34361E-01	.12942E-01	.44419E-02	.11890E-02	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.77761E-01	-.18340E+00	-.27620E+00	-.34368E+00	-.38765E+00	-.41397E+00	-.42838E+00	-.43532E+00	-.43781E+00	-.43781E+00
.00000E+00	-.84312E-01	-.19593E+00	-.29177E+00	-.36013E+00	-.40395E+00	-.42979E+00	-.44376E+00	-.45039E+00	-.45275E+00	-.45275E+00
.00000E+00	-.92269E-01	-.21078E+00	-.30991E+00	-.37909E+00	-.42260E+00	-.44784E+00	-.46127E+00	-.46756E+00	-.46977E+00	-.46977E+00
.00000E+00	-.10215E+00	-.22869E+00	-.33138E+00	-.40127E+00	-.44428E+00	-.46874E+00	-.48153E+00	-.48742E+00	-.48946E+00	-.48946E+00
.00000E+00	-.11478E+00	-.25082E+00	-.35735E+00	-.42774E+00	-.46996E+00	-.49343E+00	-.50543E+00	-.51085E+00	-.51269E+00	-.51269E+00
.00000E+00	-.13151E+00	-.27902E+00	-.38963E+00	-.46018E+00	-.50119E+00	-.52334E+00	-.53437E+00	-.53924E+00	-.54086E+00	-.54086E+00
.00000E+00	-.15443E+00	-.31648E+00	-.43130E+00	-.50134E+00	-.54047E+00	-.56885E+00	-.57067E+00	-.57487E+00	-.57622E+00	-.57622E+00
.00000E+00	-.18974E+00	-.36930E+00	-.48800E+00	-.55622E+00	-.59237E+00	-.61029E+00	-.61853E+00	-.62191E+00	-.62296E+00	-.62296E+00
.00000E+00	-.24812E+00	-.45091E+00	-.57164E+00	-.63521E+00	-.66631E+00	-.68061E+00	-.68674E+00	-.68910E+00	-.68980E+00	-.68980E+00
.00000E+00	-.36674E+00	-.59870E+00	-.71347E+00	-.76482E+00	-.78637E+00	-.79496E+00	-.79820E+00	-.79931E+00	-.79961E+00	-.79961E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.61245E+00	.32346E+00	.15817E+00	.74975E-01	.35119E-01	.16260E-01	.73106E-02	.30361E-02	.98497E-03	.00000E+00
.10000E+01	.60153E+00	.31075E+00	.14881E+00	.69196E-01	.31838E-01	.14496E-01	.64163E-02	.26274E-02	.84205E-03	.00000E+00
.10000E+01	.58898E+00	.29666E+00	.13875E+00	.63153E-01	.28485E-01	.12728E-01	.55360E-02	.22313E-02	.70534E-03	.00000E+00
.10000E+01	.57430E+00	.28087E+00	.12787E+00	.56811E-01	.25055E-01	.10960E-01	.46731E-02	.18497E-02	.57563E-03	.00000E+00
.10000E+01	.55672E+00	.26292E+00	.11602E+00	.50132E-01	.21546E-01	.91968E-02	.38321E-02	.14853E-02	.45390E-03	.00000E+00
.10000E+01	.53507E+00	.24217E+00	.10298E+00	.43064E-01	.17956E-01	.74465E-02	.30194E-02	.11415E-02	.34139E-03	.00000E+00
.10000E+01	.50728E+00	.21759E+00	.88433E-01	.35547E-01	.14288E-01	.57218E-02	.22442E-02	.82299E-03	.23970E-03	.00000E+00
.10000E+01	.46936E+00	.18746E+00	.71923E-01	.27508E-01	.10558E-01	.40446E-02	.15206E-02	.53630E-03	.15099E-03	.00000E+00
.10000E+01	.41217E+00	.14855E+00	.52716E-01	.18866E-01	.68859E-02	.24553E-02	.87131E-03	.29131E-03	.78297E-04	.00000E+00
.10000E+01	.30762E+00	.93553E-01	.29539E-01	.95838E-02	.31509E-02	.10377E-02	.33703E-03	.10376E-03	.25961E-04	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TAU=50.0

U COMPONENT OF VELOCITY

.00000E+00	.62488E+01	.60867E+01	.43074E+01	.26796E+01	.15477E+01	.84141E+00	.42609E+00	.19210E+00	.65394E-01	.00000E+00
.00000E+00	.59371E+01	.56643E+01	.39360E+01	.24091E+01	.13707E+01	.73476E+00	.36723E+00	.16357E+00	.55080E-01	.00000E+00
.00000E+00	.56000E+01	.52179E+01	.35525E+01	.21351E+01	.11945E+01	.63017E+00	.31030E+00	.13634E+00	.45347E-01	.00000E+00
.00000E+00	.52311E+01	.47440E+01	.31559E+01	.18578E+01	.10195E+01	.52817E+00	.25566E+00	.11057E+00	.36264E-01	.00000E+00
.00000E+00	.48226E+01	.42379E+01	.27450E+01	.15778E+01	.84672E+00	.42942E+00	.20374E+00	.86508E-01	.27909E-01	.00000E+00
.00000E+00	.43634E+01	.36938E+01	.23188E+01	.12959E+01	.67719E+00	.33483E+00	.15510E+00	.64415E-01	.20377E-01	.00000E+00
.00000E+00	.38376E+01	.31038E+01	.18763E+01	.10134E+01	.51263E+00	.24566E+00	.11046E+00	.44639E-01	.13784E-01	.00000E+00
.00000E+00	.32183E+01	.24573E+01	.14169E+01	.73297E+00	.35569E+00	.16371E+00	.70832E-01	.27628E-01	.82688E-02	.00000E+00
.00000E+00	.24594E+01	.17390E+01	.94205E+00	.45986E+00	.21082E+00	.91758E-01	.37634E-01	.13973E-01	.40853E-02	.00000E+00
.00000E+00	.14669E+01	.92786E+00	.45911E+00	.20543E+00	.86272E-01	.34411E-01	.12976E-01	.44588E-02	.11947E-02	.00000E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

V COMPONENT OF VELOCITY

.00000E+00	-.77717E-01	-.18332E+00	-.27616E+00	-.34380E+00	-.38806E+00	-.41472E+00	-.42943E+00	-.43657E+00	-.43915E+00	-.43915E+00
.00000E+00	-.84275E-01	-.19587E+00	-.29175E+00	-.36025E+00	-.40432E+00	-.43046E+00	-.44469E+00	-.45150E+00	-.45394E+00	-.45394E+00
.00000E+00	-.92237E-01	-.21072E+00	-.30989E+00	-.37919E+00	-.42293E+00	-.44843E+00	-.46209E+00	-.46853E+00	-.47080E+00	-.47080E+00
.00000E+00	-.10212E+00	-.22864E+00	-.33136E+00	-.40136E+00	-.44456E+00	-.46925E+00	-.48223E+00	-.48825E+00	-.49034E+00	-.49034E+00
.00000E+00	-.11475E+00	-.25078E+00	-.35734E+00	-.42783E+00	-.47021E+00	-.49386E+00	-.50602E+00	-.51154E+00	-.51342E+00	-.51342E+00
.00000E+00	-.13150E+00	-.27899E+00	-.38963E+00	-.46025E+00	-.50139E+00	-.52369E+00	-.53485E+00	-.53979E+00	-.54144E+00	-.54144E+00
.00000E+00	-.15482E+00	-.31646E+00	-.43130E+00	-.50140E+00	-.54063E+00	-.56112E+00	-.57103E+00	-.57528E+00	-.57666E+00	-.57666E+00
.00000E+00	-.18973E+00	-.36929E+00	-.48800E+00	-.55627E+00	-.59249E+00	-.61048E+00	-.61878E+00	-.62219E+00	-.62326E+00	-.62326E+00
.00000E+00	-.24811E+00	-.45090E+00	-.57164E+00	-.63525E+00	-.66638E+00	-.68072E+00	-.68689E+00	-.68926E+00	-.68997E+00	-.68997E+00
.00000E+00	-.36674E+00	-.59870E+00	-.71348E+00	-.76484E+00	-.78640E+00	-.79501E+00	-.79825E+00	-.79937E+00	-.79967E+00	-.79967E+00
.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00

TEMPERATURE

.10000E+01	.61231E+00	.32319E+00	.15781E+00	.74608E-01	.34824E-01	.16068E-01	.72067E-02	.29897E-02	.96955E-03	.00000E+00
.10000E+01	.60142E+00	.31053E+00	.14851E+00	.68893E-01	.31597E-01	.14339E-01	.63321E-02	.25899E-02	.82966E-03	.00000E+00
.10000E+01	.58889E+00	.29648E+00	.13850E+00	.62908E-01	.28292E-01	.12604E-01	.54697E-02	.22019E-02	.69570E-03	.00000E+00
.10000E+01	.57422E+00	.28072E+00	.12768E+00	.56621E-01	.24906E-01	.10865E-01	.46227E-02	.18276E-02	.56843E-03	.00000E+00
.10000E+01	.55667E+00	.26281E+00	.11588E+00	.49989E-01	.21436E-01	.91274E-02	.37957E-02	.14695E-02	.44881E-03	.00000E+00
.10000E+01	.53503E+00	.24209E+00	.10288E+00	.42962E-01	.17879E-01	.73991E-02	.29949E-02	.11310E-02	.33806E-03	.00000E+00
.10000E+01	.50725E+00	.21753E+00	.88363E-01	.35481E-01	.14239E-01	.56923E-02	.22293E-02	.81673E-03	.23775E-03	.00000E+00
.10000E+01	.46935E+00	.18743E+00	.71881E-01	.27470E-01	.10531E-01	.40288E-02	.15129E-02	.53314E-03	.15004E-03	.00000E+00
.10000E+01	.41216E+00	.14854E+00	.52696E-01	.18849E-01	.67942E-02	.24489E-02	.86833E-03	.29014E-03	.77958E-04	.00000E+00
.10000E+01	.30762E+00	.93547E-01	.29533E-01	.95791E-02	.31481E-02	.10363E-02	.33645E-03	.10355E-03	.25905E-04	.00000E+00
.10000E+01	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00