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**ICM: An Integrated Compartment
Method for Numerically
Solving Partial Differential
Equations**

G. T. Yeh

ENVIRONMENTAL SCIENCES DIVISION
Publication No. 1585

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NUMERICALLY SOLVING PARTIAL DIFFERENTIAL EQUATIONS**

G. T. Yeh

**ENVIRONMENTAL SCIENCES DIVISION
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ABSTRACT

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An integrated compartment method (ICM) is proposed to construct a set of algebraic equations from a system of partial differential equations. The ICM combines the utility of integral formulation of finite element approach, the simplicity of interpolation of finite difference approximation, and the flexibility of compartment analyses. The integral formulation eases the treatment of boundary conditions, in particular, the Neumann-type boundary conditions. The simplicity of interpolation provides great economy in computation. The flexibility of discretization with irregular compartments of various shapes and sizes offers advantages in resolving complex boundaries enclosing compound regions of interest. The basic procedures of ICM are first to discretize the region of interest into compartments, then to apply three integral theorems of vectors to transform the volume integral to the surface integral, and finally to use interpolation to relate the interfacial values in terms of compartment values to close the system. The Navier-Stokes equations are used as an example of how to derive the corresponding ICM algorithm for a given set of partial differential equations. Because of the structure of the algorithm, the basic computer program remains the same for cases in one-, two-, or three-dimensional problems.

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I. INTRODUCTION

There are many ways in which sets of algebraic equations can be constructed to simulate, in major respects, the behavior of partial differential equations; but some ways are better than others in accuracy of simulation, convenience in use, and tendency to promote convergence in iterative solution procedures. Because scientists and engineers are naturally concerned with obtaining solutions of differential equations by numerical means, rules are needed for the best ways of formulating the corresponding algebraic equations in particular circumstances.

To predict the processes involving flow dynamics and transport of matter and heat in the physical environment of the hydrosphere, lithosphere, and atmosphere, one is normally faced with the problem of solving a set of elliptic, parabolic, and/or hyperbolic differential equations in which appear both first and second derivatives of dependent variables, usually with nonconstant coefficients. One is further confronted with the problem of analyzing those processes in a region consisting of compound media enclosed by very complex geometries. Therefore, numerical methods must be selected to approximate the governing differential equations and to best represent the region of interest.

The most common numerical methods used by physical scientists to approximate partial differential equations are finite difference (Forsythe and Wasow 1960) and finite element (Taylor and Hood 1973, Smith and Brebbia 1975, Zienkiewicz 1977). In addition, compartmental analysis (Jacquez 1972) has been widely adopted by system analysts to

simulate the evolution of processes that are governed by differential equations without spatial derivatives. Many other numerical techniques, such as the method of characteristics (Lai 1977) and spectral methods (Gottlieb and Orszag 1977), have been employed to deal with particular types of differential equations. Only the finite difference and finite element are general methods in the sense that they can be applied to almost all types of differential equations. The advantages in finite element methods are their inherent ability to handle complex boundaries and obtain the normal derivatives therein because of the integral formulation. On the other hand, the finite difference method offers great economy because of simple interpolation for the derivatives. The arbitrary compartmentalization with various shapes and sizes in compartment analysis has the great flexibility of discretizing the compound region and more closely representing the complex curved boundaries.

This report presents a method that combines the merits of the above three categories. The method is termed the integrated compartment method (ICM). It is an extension of the integrated finite difference method (IFDM) (Narasimhan and Witherspoon 1976) that was routinely applied to groundwater flow problems (Narasimhan et al. 1977, Lippmann et al. 1977, Narasimhan and Palen 1979). Whereas the IFDM employed only the divergence theorem, the ICM uses all three integral theorems of vectors. This generalization is necessitated by the fact that, in general, partial differential equations cannot be carved in terms of only the divergence of some quantities. It is most likely that we can arrange them in the combinations of gradient, divergence,

and curl functionals of the dependent variables. The basic steps of the ICM are (a) to discretize the region of interest into compartments, (b) to apply three integral theorems of vectors over each compartment to transform the volume integral to the surface integral, and (c) to use simple interpolations to relate the interfacial values in terms of compartment values to close the system. These procedures are applied, as an example, to the Navier-Stokes equations to yield the computational algorithm from which the computer program is coded. The algorithm is shown to yield conditionally stable and convergent solutions for the pressure and velocity fields. The program is applied to two simple cases for demonstration purposes. One is the study of wake behind an obstacle in a channel of finite width; the other is the study of the circulatory motion of a body of fluid in a square cavity (Donovan 1970). Applications to complex prototype problems will be made in later communications.

II. THE INTEGRATED COMPARTMENT METHOD (ICM)

Any numerical method to approximate partial differential equations basically consists of (i) discretization of the region, (ii) construction of a system of algebraic equations or coefficient matrices, and (iii) solution of resulting matrix equations. ICM is concerned with steps (i) and (ii), although step (iii) is intimately related to both steps (i) and (ii) (Yeh and Chou 1979). The basic ingredients of the ICM are thus discretization, integration, and interpolation. These aspects will be discussed and outlined below before they are applied to the Navier-Stokes equations.

II.1. Discretization of the Region

Fundamental to any numerical approach to solving partial differential equations is the concept of discretization, wherein a compound region is represented as a number of contiguous subregions. While regular-shaped subareas of one kind are normally used in the finite difference discretization, irregular-grid finite-difference discretization was developed recently (Thacker 1977). Irregular shapes of more than one kind have been employed in finite element discretization. Practical considerations, however, dictate that a very limited number of shapes, for example, triangular and quadrilateral (two-dimensional cases) or tetrahedral and hexahedral (three-dimensional cases), be used in a particular problem. Besides the difficulty of deriving basis functions for shapes other than these simple ones, programming reasons prohibit the consideration of a large number of various shapes simultaneously. On the other hand, in

compartmental analysis, the spatial derivatives do not appear explicitly in differential equations. The implication is that a compartment can be any shape and size. The compartment values are interrelated by transfer coefficients which represent the interaction between compartments through interfaces. These transfer coefficients are considered as input parameters in compartmental models rather than obtained by physical principles resulting in spatial derivatives that govern the flow and transport between compartments. In the proposed ICM method, the implicit feature of the arbitrary division of the system into compartments of various shapes and sizes is retained, but the transfer coefficients are obtained by integration and interpolation of spatial derivatives of physically based partial differential equations.

Thus, the first step of ICM is to divide a compound region into any number of subregions of various shapes and sizes. Each subregion is termed a compartment. It is not termed a discrete element so as not to be confused with finite element methods. Nor is it named a box or a cell since these generally refer to regular shapes such as rectangular or hexahedral prisms. The centroid of a compartment is defined as a node and the line that connects two nodes is called a connector. The connector represents the interface of two neighboring compartments. Thus, a connector will be characterized by its two end nodes, the interfacial area, directional cosines of a unit vector normal to the interface, and two length scales representing the distances from two nodes to the interface, respectively. A compartment is characterized by its volume and the node representing it. With these definitions,

the region of interest is ready for discretization. For example, Fig. 1 shows that the region R is divided into 10 compartments, 14 interior-to-interior-compartment connectors, and 11 interior-to-boundary compartment connectors. For convenience, one may wish to create 11 imaginary boundary compartments and thus 11 interior-to-boundary node connectors in this particular discretization to represent the outside region shown in Fig. 1. The perpendicular distances from boundary compartment nodes to the boundary are zero. In other words, the boundary compartment nodes are located right on the boundary (Fig. 1). Of course, any other discretization is possible.

The major task in employing irregular compartments of various shapes and sizes is, however, the attention and effort demanded for the discretization. Fortunately, methods for automating the discretization of complex regions have been reported elsewhere (Thacker et al. 1980). The only limitation on the irregularity and size of all compartments will be the consideration of computational stability and convergence. Instabilities associated with the irregular compartment discretization are quite like those associated with variable coefficients on uniform compartments (Thacker 1977). Therefore, for numerical stability, it is important that the sizes and shapes of compartments must be smoothly distributed through the region. In other words, transition of the compartment sizes and shapes from one subregion to another should be gradual in consideration with the coefficients of the differential equations. Properly designed, this should lead to the creation of a well-behaved matrix for the resulting algebraic equations.

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10 INTERIOR COMPARTMENT (NODES): (1) ~ (10)

14 INTERIOR-INTERIOR CONNECTORS
(INTERFACES): 1 ~ 14

11 BOUNDARY COMPARTMENT (NODES): (11) ~ (21)

11 INTERIOR-BOUNDARY CONNECTORS
(BOUNDARY SEGMENTS): 15 ~ 25

Fig. 1. Example of ICM spatial discretization of a region

II.2. Integral Formulation

To employ the ICM, differential equations must first be rearranged and regrouped into the combinations of the gradient, divergence, and curl of some quantities. The following integral theorems of vectors are then used to transform the integration of any property over the region to that over the boundary:

$$\int_V F \, dV = \int_S \vec{n} \cdot \vec{F} \, dS, \quad (1)$$

$$\int_V \vec{\nabla} \cdot \vec{U} \, dV = \int_S \vec{n} \cdot \vec{U} \, dS, \quad \text{and} \quad (2)$$

$$\int_V \vec{\nabla} \times \vec{U} \, dV = \int_S \vec{n} \times \vec{U} \, dS, \quad (3)$$

where F and U are any scalar and vector functions, respectively, dV is the differential volume in the compartment, dS is the differential surface area on the compartment interfaces, and $\vec{n}$ is an outward unit vector normal to the enclosing surface. The right-hand sides of Eqs. (1) through (3) can be approximated as follows:

$$\int_S \vec{n} F \, dS = \sum_{j \in N_1} \vec{n}_{ij} F_{ij} S_{ij}, \quad (4)$$

$$\int_S \vec{n} \cdot \vec{U} \, dS = \sum_{j \in N_1} \vec{n}_{ij} \cdot \vec{U}_{ij} S_{ij}, \quad \text{and} \quad (5)$$

$$\int_S \vec{n} \times \vec{U} \, dS = \sum_{j \in N_1} \vec{n}_{ij} \times \vec{U}_{ij} S_{ij}, \quad (6)$$

where the subscript ij indicates that the values are to be evaluated at the interface of compartments i and j as shown in Fig. 2 and N_1 is the set of node numbers surrounding the compartment i . It should be

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- LINEAR : $F_{ij} = (d_j F_i + d_i F_j) / d_{ij}$

- UPSTREAM : ADVECTION TERM

$$\vec{U}_{ij} \cdot \vec{n}_{ij} \geq 0 \quad \vec{U}_{ij} = \vec{U}_i$$

$$\vec{U}_{ij} \cdot \vec{n}_{ij} < 0 \quad \vec{U}_{ij} = \vec{U}_j$$

- OTHER : ANALYTICAL LOCAL SOLUTION

Fig. 2. Definition of compartment and interfacial values

noted that the summation in Eqs. (4) through (6) is to be performed over all the interfaces enclosing compartment i . For example, there are four interfaces, ij , ik , il , and im , surrounding compartment i in Fig. 2.

A particularly attractive feature of Eqs. (1) through (6) is their natural consequence of conserving the properties, F and $\vec{U}$. For example, Eq. (5) applied to the continuity equation would guarantee that the mass is conserved numerically. In addition, the novel feature of applying Eqs. (1) through (3) to any spatial derivative is to reduce the problem to the approximation of $(n-1)^{\text{th}}$ order derivatives on the compartment interfaces rather than the approximation of n^{th} order derivatives at nodal points as used in the irregular-grid finite-difference method (Thacker 1977). This is particularly significant with regard to the first- and second-order derivative terms in any partial differential equations. Instead of having to approximate both the first- and second-order derivatives by the finite difference methods, one simply has to approximate the function itself and the first-order derivative with simple finite difference interpolation at the interface. Because the first-order derivatives usually define the flux of the property under consideration, the reduction in the order of spatial derivatives makes it simple to build the physical representation at the interfaces, in particular the interface of different media.

II.3. Interpolation of Interfacial Values

Equations (4) through (6) involve the interfacial values. To close the system such that a set of algebraic equations can be obtained in which the number of unknowns equals the number of equations,

interpolation methods must be employed to express the interfacial values in terms of the compartment values or the nodal values. The key to the success of the ICM lies in the use of appropriate interpolations, because they are intimately related to the stability of the numerical solution. There may be infinite varieties of interpolations; the intuitive and simplest is the linear interpolation given by

$$F_{ij} = (d_i F_j + d_j F_i) / (d_i + d_j) \quad , \quad (7)$$

where F_i and F_j are the nodal values of compartments, i and j , respectively, and d_i and d_j are the perpendicular distances to the interface, ij , from the nodal points, i and j , respectively, as shown in Fig. 2. If the advection terms in the material transport or flow dynamics are the dominant ones, linear interpolation may lead to an unstable solution so upstream interpolation may be used for such terms:

$$\begin{aligned} F_{ij} &= F_i \quad \text{if} \quad (\vec{n}_{ij} \cdot \vec{U}_{ij}) \geq 0 \quad , \text{ and} \\ F_{ij} &= F_j \quad \text{if} \quad (\vec{n}_{ij} \cdot \vec{U}_{ij}) < 0 \quad , \end{aligned} \quad (8)$$

where $(\vec{n}_{ij} \cdot \vec{U}_{ij})$ is the outward normal velocity to the interface ij .

Another very versatile interpolation is through the analytic solution of a local region. Whereas the linear and upstream interpolations are obvious, the last category requires further explanation. Locally, between nodal points i and j , the nonlinear terms may be linearized, with high probability that analytical solutions may be obtained for the variation of the variable along the connector i - j in terms of its two boundary values (Spalding 1972). If

this is the case, the locally exact solution may be used as the basis for interpolation. Using the exact solution to obtain the interfacial values is naturally superior to any other method. However, it should be noted that exact solutions are seldom obtainable because of the high nonlinearity in the flow dynamic equations. Nevertheless, this exact interpolation usually is obtainable when one is dealing with the transport of materials having locally constant velocity.

The most serious deficiency that may be encountered in the ICM is that the interpolated value is only a representative value of the interface. The value cannot be identified with a definite point on the interface. This deficiency can be overcome by first interpolating the value of each of the corner points of the interface in terms of the node values whose compartments join at the corner and then interpolating the value at any point on the interface in terms of the values at the corner points. This two-step interpolation procedure would greatly complicate the problem. However, it is worth pursuing for the improvement of the ICM.

III. ICM APPROXIMATIONS OF THE NAVIER-STOKES EQUATIONS

III.1. Governing Equations

To demonstrate the application of ICM to partial differential equations, the Navier-Stokes equations for viscous incompressible flow will be used. Since three integral theorems, Eqs. (1) through (3), are used to obtain the ICM approximations, the Navier-Stokes equations are carved in the combinations of these forms as follows:

$$\nabla \cdot \vec{U} = 0 \quad (9)$$

$$\frac{\partial \vec{U}}{\partial t} = -\nabla \phi - \vec{A} + \nu \nabla^2 \vec{U} \quad , \quad (10)$$

where $\phi = p/\rho + gz$, and (11)

$$\vec{A} = \nabla \cdot (\vec{U}\vec{U}) \quad . \quad (12)$$

In Eqs. (9) through (12), p is the pressure, $\vec{U}$ is the the velocity vector, ν the kinematic eddy viscosity, ρ the fluid density, g the gravitational acceleration, t the time, z the vertical coordinate in physical space, ϕ the total potential equal to the pressure and gravitational potentials, and $\vec{A}$ the advective acceleration. These four equations consist of four unknowns, p , $\vec{U}$, ϕ , and $\vec{A}$.

III.2. Computational Algorithm

The purpose of the ICM procedures is to set up a system of algebraic equations that will approximate the system of Eqs. (9) through (12) for the description of the spatially discrete values $\vec{U}_i$, p_i , ϕ_i , and $\vec{A}_i$. Thus, applying Eqs. (1) through (6) to Eq. (12) over the compartment i , one obtains:

$$\vec{A}_i^{(n)} v_i = \sum_{j \in N_i} (\vec{A}_{ij} \cdot \vec{U}_{ij}^{(n)}) \vec{U}_{ij}^{(n)} s_{ij} \quad , \quad (13)$$

where $\vec{A}_i^{(n)}$ and $\vec{U}_{ij}^{(n)}$ denote the values of $\vec{A}$ and $\vec{U}$ at compartment i and interface ij , respectively, at time $n\Delta t$, and v_i is the volume of compartment i . Similarly, applying the ICM method to the divergence, D , derived by

$$D = \nabla \cdot \vec{U} \quad , \quad (14)$$

one obtains

$$D_i^{(n)} v_i = \sum_{j \in N_i} \vec{n}_{ij} \cdot \vec{U}_{ij}^{(n)} s_{ij} \quad , \quad (15)$$

where $D_i^{(n)}$ is the value of divergence at compartment i at time $n\Delta t$. Next, one applies the ICM procedure to the following Poisson equation

$$\nabla^2 \phi = D^{(n)} / \Delta t - \nabla \cdot \vec{A}^{(n)} + v \nabla^2 D^{(n)} \quad , \quad (16)$$

to yield the discrete total potential at time $(n+1)\Delta t$,

$$\begin{aligned} \sum_{j \in N_i} (\phi_j^{(n+1)} - \phi_i^{(n+1)}) s_{ij} / d_{ij} &= D_i^{(n)} v_i / \Delta t - \sum_{j \in N_i} \vec{n}_{ij} \cdot \vec{A}_{ij}^{(n)} s_{ij} \\ &+ v \sum_{j \in N_i} (D_j^{(n)} - D_i^{(n)}) s_{ij} / d_{ij} \quad , \end{aligned} \quad (17)$$

where Δt is the time step and $\phi_i^{(n+1)}$ is the value of ϕ of compartment i at time level $(n+1)\Delta t$. Finally, application of the ICM to Eq. (10) yields:

$$\begin{aligned}
 \vec{u}_i^{(n+1)} = & \vec{u}_i^{(n)} - \Delta t \vec{\lambda}_i^{(n)} - \frac{\Delta t}{v_i} \sum_{j \in \mathcal{N}_i} \vec{n}_{ij} \phi_{ij}^{(n+1)} S_{ij} \\
 & + \frac{v \Delta t}{v_i} \sum_{j \in \mathcal{N}_i} (\vec{u}_j^{(n)} - \vec{u}_i^{(n)}) S_{ij} / d_{ij} \quad . \quad (1c)
 \end{aligned}$$

While all interfacial values denoted by the subscript ij in Eqs. (15), (17), and (18) are linearly interpolated in terms of their corresponding connecting nodal values, as given by Eq. (7), those in Eq. (13) are interpolated according to the upstream convention of Eq. (8).

It can easily be verified that the new velocity field, $\vec{u}^{(n+1)}$, computed by Eq. (18) satisfies the continuity condition, Eq. (9). Thus, the $\vec{u}$ and ϕ fields needed to satisfy the Navier-Stokes equations can be obtained numerically for their discrete fields, $\vec{u}_i$ and ϕ_i , in space through the time dimension by solving Eqs. (17) and (18). Equations (17) and (18) are two coupled, simultaneous equations. This is true despite the apparent completeness of Eq. (17) for the solution of the new total potential, $\phi_i^{(n+1)}$. The reason for this is that the boundary conditions on ϕ are expressed in terms of the derivatives of the velocity, $\vec{u}_i^{(n+1)}$. However, split techniques have been employed elsewhere (Zienkiewicz 1977, Welch et al. 1966) to solve the finite difference equivalence of Eqs. (17) and (18). It has been indicated that the split technique to decouple the Poisson and momentum equations has yielded a conditionally stable solution (Harlow and Welch 1965, Hirt 1968). Hence, this split procedure is also used to solve

Eqs. (17) and (18) separately. In summary, the following procedures are used to advance the solution of $\vec{U}$ and p from time level $n\Delta t$ to $(n+1)\Delta t$:

- (a) The complete field of the velocity is known at the beginning of the time cycle, either as a result of the previous cycle of calculation or from the prescribed initial conditions. It is assumed that this velocity field is conservative; that is, $D_i^{(n)}$ vanishes everywhere. However, in the real computation, this will never be zero because of round-off and discretization errors. Hence, a divergence field, $D_i^{(n)}$, is computed by Eq. (15) and is used as a corrective factor for the Poisson equation.
- (b) An advective acceleration field, $\vec{A}_i^{(n)}$, is computed by Eq. (13). This is input into the Poisson equation as the load function.
- (c) The new total potential field, $\phi_i^{(n+1)}$, is obtained by solving Eq. (17). This may be accomplished by the direct method or a relaxation technique.
- (d) The new velocity field, $\vec{U}_i^{(n+1)}$, is calculated by Eq. (18). The new pressure field, $p^{(n+1)}$, is then easily computed by subtracting the gravitational term from the total potential term in Eq. (11). This completes the advancement of the configuration to the end of the new cycle.

The above time-marching procedures are essentially similar to the conventional finite-difference method (Amsden and Harlow 1970, Chorin 1967, Harlow and Welch 1965, Donovan 1970, Welch et al. 1966, Hirt 1968, Fromm and Harlow 1963). The major differences are in the spatial discretization and in the way the spatially discrete fields of pressure and velocity are interrelated. While the applications of conventional finite difference codes such as MAC (Welch et al. 1966) and SMAC (Amsden and Harlow 1970) are limited to the regular rectangular grid system, the ICM technique may be applied to any shape and size of discretization. It is seen from Eqs. (13), (15), (17), and (18) that the ICM algorithm is designed in such a way that the change of any quantity in a compartment is equal to the summation of the contributions from all joined connectors and from that within the compartment itself. As a result of this, the basic algorithm remains the same for cases in one, two, or three dimensions, and it is easy to unite a single computer program capable of handling all three classes of problems.

Alternatively, the momentum equation, Eq. (10), may be written as:

$$\frac{\partial \vec{U}}{\partial t} = -\nabla E + (\vec{U} \times \vec{\omega}) - \nu \nabla^2 \vec{U} \quad , \quad (19)$$

$$E = p/\rho + U^2/2 + gz \quad , \text{ and} \quad (20)$$

$$\vec{\omega} = \nabla \times \vec{U} \quad , \quad (21)$$

in which E is the total energy equal to the sum of pressure, kinematic, and potential energy and $\vec{\omega}$ is the vorticity. If this alternative approach is adopted, the application of the ICM to the vorticity yields:

$$\vec{\omega}_i^{(n)} v_i = \sum_{j \in N_i} (\vec{n}_{ij} \times \vec{U}_{ij}^{(n)}) S_{ij} \quad (22)$$

The Poisson equation for the total energy, E , is given by the following equation to ensure that the new velocity, $\vec{U}_i^{(n+1)}$, to be calculated below by Eq. (25) satisfies the continuity condition:

$$\nabla^2 E = D^{(n)} / \Delta t + \nabla \cdot (\vec{U}^{(n)} \times \vec{\omega}^{(n)}) \quad (23)$$

The novel advantage of writing the term associated with the eddy viscosity in Eq. (19) in this form is obvious. Even if the vorticity at the previous time is inaccurately computed, this term does not have to be included in Eq. (23) because the divergence of the curl is identical to zero. Thus, the corresponding ICM equation for E is:

$$\begin{aligned} \sum_{j \in N_i} (E_j^{(n+1)} - E_i^{(n+1)}) S_{ij} / d_{ij} &= D_i^{(n)} v_i / \Delta t \\ &+ \sum_{j \in N_i} \vec{n}_{ij} \cdot (\vec{U}_{ij}^{(n)} \times \vec{\omega}_{ij}^{(n)}) S_{ij} \quad (24) \end{aligned}$$

and for $\vec{U}$ is:

$$\begin{aligned} \vec{U}_i^{(n+1)} &= \vec{U}_i^{(n)} + \Delta t (\vec{U}_i^{(n)} \times \vec{\omega}_i^{(n)}) - \frac{\Delta t}{v_i} \sum_{j \in N_i} \vec{n}_{ij} E_{ij}^{(n+1)} S_{ij} \\ &- \frac{v \Delta t}{v_i} \sum_{j \in N_i} \vec{n}_{ij} \times \vec{\omega}_{ij}^{(n)} S_{ij} \quad (25) \end{aligned}$$

Thus, in this alternative approach, the advancement of E and $\vec{U}$ fields are accomplished by using Eqs. (15), (22), (24), and (25). It should be noted that careful inspection of Eqs. (22) and (25) reveals an

artificial smooth factor for the advection term in the momentum equation. This smooth factor is a result of the linear interpolation of the kinematic energy and vorticity.

III.3. Stability Conditions

Since the new velocity is computed explicitly, the time step is limited by the stability conditions. Those conditions have been addressed thoroughly elsewhere (Hirt 1968). Although they were discussed for finite difference approximations, they are equally valid to the ICM algorithm provided the grid size is interpreted as the compartmental volume divided by the interfacial area. Following the derivations by Hirt (1968), the stability conditions for the present algorithm can easily be derived as

$$\Delta t \leq \frac{2 \Delta S^2}{4\nu + \overline{U} \Delta S} \text{ and } \Delta t \leq \frac{2\nu}{U^2} + \left(\frac{\Delta S}{U}\right) \text{ for linear stability} \quad (26)$$

and

$$\Delta S \leq \frac{(\overline{U}) + \sqrt{(\overline{U})^2 + 8\nu G_u}}{2G_u} \text{ for nonlinear stability,} \quad (27)$$

where ΔS is the minimum characteristic grid size, U the averaged maximum speed, and G_u the average maximum velocity gradient. It should be pointed out that the terms with dotted circles in Eqs. (26) and (27) are due to the upstream interpolation for the advection. Had the linear interpolation been applied to the advection in the momentum equations, these terms would disappear (Hirt 1968). Thus, it is very important that the upstream interpolation must be used when the eddy

viscosity is very small. Otherwise, both the time step and grid size must be very small such that Eqs. (26) and (27) can be met.

Since the time advancement in ICM is practically identical to that in finite differences (Welch et al. 1966), it is obvious that the same stability conditions would hold. The major differences between the ICM and finite-difference approximations are in the spatial resolution and in how the spatially discrete values are interrelated.

III.4. Boundary Conditions

Six types of boundary conditions are considered: no-slip rigid surface, free-slip rigid surface, prescribed normal velocity, prescribed tangential velocity, prescribed pressure, and continuative boundaries. For the no-slip rigid surface, the velocity and total potential at the boundary are computed:

$$u_B = 0, v_B = 0, w_B = 0 \text{ and} \quad (28)$$

$$\phi_B = \phi_I + 2\omega \vec{n} \cdot \vec{U}_I / d_{IB} \quad , \quad (29)$$

where the subscript B denotes the values at the boundary, the subscript I represents the value at the compartment I that has one of its sides coinciding with the boundary, $\vec{n}$ is a unit vector normal outward to the fluid (i.e., inwardly to the rigid surface), and d_{IB} is the perpendicular distance from node I to the boundary as shown in Fig. 3. For the free-slip rigid surface, Eq. (29) without the second term on the right-hand side is used to compute ϕ_B , but the following equations are used to obtain the boundary velocity components:

$$u_B = u_I - n_x(\vec{n} \cdot \vec{U}_I) \quad , \quad (30a)$$

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Fig. 3. Definition of interior and boundary node values

$$v_B = v_I - n_y(\vec{n} \cdot \vec{U}_I) \quad , \text{ and} \quad (30b)$$

$$w_B = w_I - n_z(\vec{n} \cdot \vec{U}_I) \quad . \quad (30c)$$

Equation (28) is derived based on the requirements that both the normal and tangential velocities on the surface are zero, while the requirements of Eq. (30) are to satisfy the conditions of vanishing normal velocity at the boundary and of equalling the tangential velocities at the boundary and its corresponding interior node.

Equation (29) is consistent with the vanishing of the normal velocity at the boundary. The prescribed normal velocity, tangential velocity, and pressure conditions are obvious to implement, and the continuative boundary simply allows the fluid to pass out of the region at its own chosen rate.

For the case of the prescribed normal velocity condition, it will be presumed that the tangential velocity is zero, and for the prescribed tangential velocity condition, the normal velocity is zero. Under the former assumptions, the following equations are used to compute the velocity and ϕ at the prescribed normal velocity boundary:

$$u_B = n_x(\vec{n} \cdot \vec{U}_n), \quad v_B = n_y(\vec{n} \cdot \vec{U}_n), \quad w_B = n_z(\vec{n} \cdot \vec{U}_n) \text{ and} \quad (31)$$

$$\phi_B = \phi_I + 2\nu[(\vec{n} \cdot \vec{U}_n) - (\vec{n} \cdot \vec{U}_I)]/d_{IB} \quad , \quad (32)$$

where $\vec{U}_n$ is the prescribe normal velocity vector. On the prescribed tangential velocity boundary with $\vec{U}_t$, the following equations are used:

$$u_B = u_t - n_x(\vec{n} \cdot \vec{U}_t) \quad , \quad (33a)$$

$$v_B = v_t - n_y(\vec{n} \cdot \vec{U}_t) \quad , \quad (33b)$$

$$w_B = w_t - n_z(\vec{n} \cdot \vec{U}_t) \quad , \text{ and} \quad (33c)$$

$$\phi_B = \phi_I - 2v(\vec{n} \cdot \vec{U}_I)/d_{IB} \quad , \quad (34)$$

where u_t , v_t , and w_t are the x-, y-, and z-components, respectively, of $\vec{U}_t$.

For the prescribed pressure boundary with known ϕ_p , additional conditions of zero normal and given tangential velocities are made. Thus, Eqs. (33a), (33b), and (33c) are used to compute u_B , v_B , and w_B , but the following equation is used to obtain ϕ_B :

$$\phi_B = \phi_p \quad . \quad (35)$$

Finally, for the continuative boundary, the following equation may be used:

$$u_B = u_I, \quad v_B = v_I, \quad w_B = w_I, \quad \text{and} \quad \phi_B = gz_B \quad . \quad (36)$$

Boundary conditions for ϕ_B in Eqs. (29), (32), and (34) are, in fact, obtained by applying Eq. (10) to the boundary compartment and incorporating the corresponding conditions for the velocity vector, $\vec{U}$; whereas, in Eqs. (35) and (36), ϕ_B is determined by assuming the pressure is given.

IV. COMPUTER IMPLEMENTATION

The computation algorithms, Eqs. (13), (15), (17), and (18), or Eqs. (15), (22), (24), and (25), are coded in basic FORTRAN language. The code consists of a main program and eight subroutines linked as shown in Fig. 4. The short main program is used to dimensionalize and initialize all arrays and to specify the maximum dimension in each of the arrays. The program is then passed to the subroutine, ICMADV, after it has gone through the subroutine DATAIO, which reads in all necessary parameters (Appendix A) for the successful execution of the problem.

Subroutine ICMADV is used to perform the transient computation. It advances the solution from old to new time by three computational cycles: (a) compute the advective acceleration vector, vorticity, and the divergence of the velocity; (b) compute the pressure by solving the Poisson equation; and (c) compute the new velocity components, u , v , and w , from the momentum equations. Before performing these computations, ICMADV calls TRANIN to read the transient boundary conditions if necessary. Computational cycles (a), (b), and (c) are achieved by the subroutines, ADOMDI, ICMPhi, and ICMUVW, respectively. After the new solutions of pressure and velocity fields are obtained, ICMADV will line-print the results if desired.

Subroutine ADOMDI calculates the advective acceleration vector $\vec{A}$ in Eq. (13), the vorticity vector $\vec{\omega}$ in Eq. (22), and the divergence quantity D in Eq. (15). The computations are straightforward except that the quantities at the boundary nodes require special attention.

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Fig. 4. Structure of the computer program

Subroutine ICMPHI performs the computations of total potential Φ in Eq. (17) or total energy E in Eq. (24). Two options are provided: one for the iterative method, the other for the direct method. Subroutine SOLVE is a standard package from IBM to solve the banded matrix equation. Subroutine OUTPUT line prints the functional value at all nodes. Finally subroutine ICMUVW is employed to compute the vector $\vec{U}$ given either by Eq. (18) or (25). (The complete source listing of the program is given in Appendix D.) Numerous comment cards are included in the program to help the intended readers understand the program structure and its functions.

V. SAMPLE CALCULATIONS

Two calculational examples are used to illustrate the behavior of the Navier-Stokes equations as simulated by the ICM algorithm. One is the study of wake behind an obstacle in a channel of finite width, while the other is the circulatory motion of a body of fluid in a square cavity. Although the computer program was designed for handling two- and three-dimensional problems as desired, it is applied to these simple two-dimensional cases for illustrative purposes. In addition, the study of wake is a prerequisite for investigating vortex shedding and computing the drag forces on the obstacle, and the cavity problem has relevance in bearing and seal studies.

V.1. Wake Problem

In the first example, the fluid is assumed initially at rest in a channel with an infinitely long rectangular prism located in the center between the walls whose spacing is 90 cm. The total length of the channel included for the computation is artificially terminated at 130 cm. The obstacle is located 40 cm from the channel entrance. The width and length of the obstacle are both assumed to be 10 cm. For the ICM simulation, the channel is divided into 116 square compartments and, for convenience, the obstacle into four triangular compartments (compartment nos. 48, 60, 61, 72) as shown in Fig. 5. In addition, 44 boundary compartments indicated by dotted squares in Fig. 5 are created to represent the boundary. The walls of the channel are considered the no-slip rigid surface as is the obstacle. The channel entrance is considered as the prescribed normal-flow boundary and the exit is treated as the continuative boundary. The eddy viscosity is

Fig. 5. Spatial discretization of the vortex problem in a channel with a small obstacle

taken as $0.01 \text{ cm}^2 \text{ s}^{-1}$, a representative value for water at 20°C . The computation starts at $t = 0 \text{ s}$ with the fluid at the entrance impulsively accelerated to the velocity of 1.0 cm s^{-1} and maintained at this velocity throughout the calculation. Figure 6 shows the flow pattern after $t = 720 \text{ s}$ when it can be thought of as having reached the steady state. The input and output are given in Appendix B. The prominent feature of a long, slender, eddy vortex just behind the obstacle is clearly observed (Goldstein 1965). Each vortex produces a backflow (note arrow direction in Fig. 6) over the rear portion of the obstacle. This symmetrical pair is, however, very susceptible to antisymmetrical disturbances (Goldstein 1965) because it provides the main mechanism for vortex shedding. An artificial perturbation has, in fact, been employed to effectively start the vortex shedding processes in a different problem (Fromm and Harlow 1963) and to destroy the symmetry within a fairly short time. Fig. 7 illustrates the pressure distribution. It shows that pressure is gradually built up and reaches maximum at the obstacle. The pressure shows a dip right behind the obstacle.

To investigate the effect of the obstacle size on the wake formation, the width of the obstacle is tripled and the simulation is repeated. The obstacle is discretized by six triangular compartments (compartment nos. 48, 50, 61, 62, 72, and 74) and two rectangular compartments (compartment nos. 49 and 73) as shown in Fig. 8. The resulting flow pattern is shown in Fig. 9. The input and output are also given in Appendix B. It is seen that the length of the vortex behind the obstacle is even greater. The reverse flow in the wake

Fig. 6. Velocity vector plot of the vortex problem in a channel with a small obstacle

Fig. 7. Three-dimensional pressure plot of the vortex problem in a channel with a small obstacle

Fig. 8. Spatial discretization of the vortex problem in a channel with a large obstacle

Fig. 9. Velocity vector plot of the vortex problem in a channel with a large obstacle

extends to the continuative boundaries. This means that a portion of fluid is redrawn into the region of interest after it leaves the continuative boundary. Fig. 10 is the three-dimensional plot of the pressure distribution. It shows a pattern similar to that in Fig. 7. However, the pressure dip behind the obstacle is more pronounced as expected.

V.2. Circulatory Motion in a Square Cavity

As a second illustration of the application of the ICM, fluid initially at rest in a square cavity is set into circulatory motion within the cavity by a boundary moving in its own plane at the top. The calculation is characterized by a Reynolds number which is $LU_w/\nu = 100$, where L and U_w are the constant length and velocity of the top wall, respectively. This Reynolds number is chosen because cavity flow with this number has been investigated experimentally and numerically (Donovan 1970, Mills 1965, Pan and Acrivos 1967) making comparison with prior work possible. Time-exposure photographs have been taken (Mills 1965, Pan and Acrivos 1967) of flows into which a tracer has been injected so that the qualitative features of the steady flow are known (Donovan 1970).

To start the ICM computation, the cavity is divided into 100 compartments, each 10×10 cm (Fig. 11). In addition, 40 boundary compartments indicated by the dotted line in Fig. 11 are created to facilitate the handling of boundary conditions. The constant moving velocity on the top wall is taken to be 1.0 cm s^{-1} , and the viscosity is chosen to be $1.0 \text{ cm}^2 \text{ s}^{-1}$ to make the Reynolds number 100. Input

Fig. 10. Three-dimensional perspective view of the pressure distribution in a channel with a large obstacle

Fig. 11. Large grid spatial discretization of the square cavity problem

and output for this computer run are listed in Appendix C. The flow pattern at time equal to 1440 s when it has reached steady state is shown in Fig. 12. Comparison of this flow configuration with the time exposure photograph of steady flow reported by Mills (1965) and reproduced by Donovan (1970) shows almost identical qualitative results. The vortex center in Fig. 12 is about 76 cm from the bottom and 62 cm from the left wall. This vortex center is in nearly perfect agreement with the experimental vortex center determined by Donovan (1970) from the enlargement of the photograph by Mills (1965). Fig. 13 illustrates the three-dimensional view of the pressure distribution. The shape shows a striking similarity to that reported by Donovan (1970), in which no numerical values were given prohibiting a direct comparison.

To test the effects of compartment size on the computation, the same cavity is divided into 441 square compartments and 84 boundary compartments as shown in Fig. 14, and the calculation is repeated by the ICM computer program. Input and output for this run are also given in Appendix C. The resulting flow is shown in Fig. 15. The vortex center is "almost identical" to that in Fig. 12. The velocity fields as computed by two spatial discretizations with different compartment sizes show no appreciable differences. However, while all fluid rotates about the vortex center in Fig. 12, two small counterrotating vortices exist in the two lower corners in Fig. 15, although the main vortex occupies most of the cavity. It is thus seen that as the compartment size becomes smaller, smaller-scale vortices can be found (Pan and Acrivos 1967). Interestingly, Moffatt (1964) also found these

Fig. 12. Velocity vector plot for the square cavity problem with large grid discretization

Fig. 13. Three-dimensional pressure plot for the square cavity problem with large grid discretization

Fig. 14. Small grid spatial discretization of the square cavity problem

Fig. 15. Velocity vector plot for the square cavity problem with small grid discretization

smaller vortices at about the same location using analytical techniques for the boundary-layer region. Fig. 16 depicts the pressure distribution. The general shape is the same as that in Fig. 13. However, the maximum pressure for this case is larger than that in Fig. 13. This is obvious since it is located closer to the stagnation point because of smaller grid system.

V.3. Requirements of Computer Facilities

The CPU time on IBM 360/91 and the storage requirements for the four computer runs, two for each of the two case studies, are given in Table 1. In addition, one scratch storage file, logic unit 1, is used to store the results for plotting purposes.

Table 1. CPU time and computer storage

	<u>Wake problem</u>		<u>Cavity problem</u>	
	small obstacle	large obstacle	large grid	small grid
CPU time (minutes)	1.06	1.11	0.53	7.91
Storage (K bites)	178	182	166	438

Fig. 16. Three-dimensional pressure plot for the square cavity problem with small grid discretization

VI. CONCLUSIONS

A technique, an integrated compartment method (ICM), was developed to set up the algebraic equations from partial differential equations. It uniquely combines the merits of finite differences, finite elements, and compartment analyses. The method is applied to the Navier-Stokes equations to reduce from the continuous to the discrete field problem. The time-split procedure proposed by several investigators to advance the pressure and velocity fields through the time dimension is adopted to accomplish the evolution of flow dynamics by the ICM algorithm. The computer code designed to handle two- and three-dimensional problems as desired is written to implement this new technique. The program is applied to two simple cases of wake formation behind the obstacle in a channel and circulatory motion of a body of fluid in the square cavity. The preliminary applications show promising results. Adoption of the program to study general three-dimensional fluid problems in complex regions under further investigation.

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VIII. GLOSSARY OF TERMS

- $\vec{A}$ = advective acceleration vector
 $\vec{A}_i^{(n)}$ = value of $\vec{A}$ at compartment i, time $n\Delta t$
 $\vec{A}_{ij}^{(n)}$ = value of $\vec{A}$ at interface ij, time $n\Delta t$
 D = divergence of velocity vector, $\vec{U}$
 $D_i^{(n)}$ = value of D at compartment i, time $n\Delta t$
 $D_{ij}^{(n)}$ = value of D at interface ij, time $n\Delta t$
 d_i = distance from node i to the interface ij
 d_j = distance from node j to the interface ij
 $d_{ij} = d_i + d_j$
 dV = differential volume
 dS = differential interfacial area
 d_{IB} = distance from node I to the boundary
 E = total energy
 $E_i^{(n)}$ = value of E at compartment i, time $n\Delta t$
 $E_{ij}^{(n)}$ = value of E at interface ij, time $n\Delta t$
 F = a scalar function
 F_i = value of F at compartment i
 F_{ij} = value of F at the interface ij
 g = gravitational acceleration
 G_u = average maximum velocity gradient
 $\vec{n}$ = a unit vector normal to the surface
 n = time step counter
 n_x = x-component of $\vec{n}$
 n_y = y-component of $\vec{n}$
 n_z = z-component of $\vec{n}$

- $\vec{n}_{ij}$ = value of $\vec{n}$ at the interface ij
 P = pressure
 $P_i^{(n)}$ = value of P at compartment i , time $n\Delta t$
 $P_{ij}^{(n)}$ = value of P at the interface ij , time $n\Delta t$
 S = surface area
 S_{ij} = interfacial area of the interface ij
 t = time
 $\vec{U}$ = velocity vector
 $\bar{U}$ = average maximum speed
 u_B = x-velocity component at the boundary
 $\vec{U}_i^{(n)}$ = value of $\vec{U}$ at compartment i , time $n\Delta t$
 $\vec{U}_I$ = velocity vector at node I
 u_I = x-component velocity at node I
 $\vec{U}_n$ = prescribed normal velocity vector
 $\vec{U}_t$ = prescribed tangential velocity vector
 u_t = x-component of $\vec{U}_t$
 $\vec{U}_{ij}^{(n)}$ = value of $\vec{U}$ at the interface ij , time $n\Delta t$
 v_B = y-velocity component at the boundary
 v_I = y-component velocity at node I
 v_t = y-component of $\vec{U}_t$
 w_B = z-velocity component at the boundary
 w_I = z-component velocity at node I
 w_t = z-component of $\vec{U}_t$
 z_B = vertical coordinate at the boundary
 z = vertical coordinate
 Φ = potential head plus pressure head
 $\Phi_i^{(n)}$ = value of Φ at compartment i , time $n\Delta t$

$\phi_{ij}^{(n)}$ = value of ϕ at the interface ij , time $n\Delta t$

ϕ_B = value of ϕ at the boundary

ϕ_I = value of ϕ at the node I

$\vec{\omega}$ = vorticity vector

$\vec{\omega}_i^{(n)}$ = value of $\vec{\omega}$ at compartment i , time $n\Delta t$

$\vec{\omega}_{ij}^{(n)}$ = value of $\vec{\omega}$ at the interface ij , time $n\Delta t$

ν = eddy viscosity

∇ = del operator

ΔS = minimum characteristic grid size

Δt = time step size

ρ = fluid density

V = volume

V_i = value of V of compartment i

APPENDIX A DATA INPUT GUIDE

1. TITLE: Format (20A4). One card per problem.

TITLE

80

where

TITLE = Array for the title of the problem.
It may contain up to 80 characters.

2. Basic Integer Parameters: FORMAT (16I5). One card per problem.

NODES	NCONS	NOGF	NOGP	NTI	NITR	NREAD	INTERP
5	10	15	20	25	30	35	40

INTERU	INTERV	INTERW	NPRP	NPRU	NPRV	NPRW	IMPL
45	50	55	60	65	70	75	80

where

NODES = No. of nodes (compartments),

NCONS = No. of connectors (Interfaces),

NOGF = No. of connectors with given normal or tangential flows,

NOGP = No. of connectors with given pressure at their second node,

NTI = No. of time steps,

NITR = Allowed no. of iterations for the iterative solution of PHI,

NREAD = Every NREAD time steps read transient boundary conditions once;

INTERP = Intermittent output control of PHI, 0 = No, 1 = Yes,

INTERU = Intermittent output control of x - component velocity,
0 = No, 1 = Yes,

INTERV = Intermittent output control of y - component velocity,
0 = No, 1 = Yes,

INTERW = Intermittent output control of z - component velocity,
0 = No, 1 = Yes,

NPRP = Every NPRP time steps line-print PHI once,

NPRU = Every NPRU time steps, line-print x - component
velocity once,

NPRV = Every NPRV time steps, line-print y - component
component velocity once,

NPRW = Every NPRW time steps, line-print z - component
velocity once,

IMPL = Solution control of PHI, 0 = iterative method,
1 = direct method.

3. Disk or Tape Output Control: FORMAT (80I1)

where

KDSK(I) = Integer to specify whether the values of PHI, U, V, and
W at (I-1)th time step will be outputed on disk or
tape, 0 = No, 1 = Yes.

4. Basic Real Parameters: FORMAT (8F10.0). One card per problem.

where

DELT = Time step size, in seconds,

EDDX = x-eddy viscosity, in m^2/s ,

EDDY = y-eddy viscosity, in m^2/s ,

EDDZ = z-eddy viscosity, in m^2/s ,

GRAV = Gravity acceleration, in m/s^2 ,

EPS = Error tolerance for solving PHI - iteratively,

OPTN = Optional control, 0 = original Navier-Stokes equations are used, 1 = alternative Navier-Stokes equations are used,

5. Nodal (Compartment) Data: Usually one card per node (compartment) is needed, i.e., a total of NODES cards. However, if nodes appear in a regular pattern, intermediate nodal data information is automatically generated.

Card N: FORMAT (I5, I3, I2, 7F10.0)

NI	NSEQ	NTYPNI	VOLNI	XNI	YNI	ZNI	XADD	YADD	ZADD
5	8	10	20	30	40	50	60	70	80

where

NI = Node number of Nth compartment;

NSEQ = NSEQ subsequent node information will be generated automatically;

NTYPNI = Node type of node NI,
 0 = interior node,
 1 = node on rigid no-slip boundaries,
 2 = node on rigid free-slip boundaries,
 3 = node on boundaries with prescribed flows,
 4 = node on boundaries with prescribed pressure,
 5 = node on continuative boundaries,
 6 = node on boundaries with prescribed flows and pressure;

VOLNI = Volume, area, or length of node NI depending on 3-D, 2-D, or 1-D problems, in m³, m², or m;

XNI = x-coordinate of node NI, in m;

YNI = y-coordinate of node NI, in m;

ZNI = Z-coordinate of node NI, in m;

XADD = Increment of x-coordinate in each of the NSEQ nodes, in m;

YADD = Increment of y-coordinate in each of the NSEQ nodes, in m;

ZADD = Increment of z-coordinate in each of the NSEQ nodes, in m.

6. Connector (Interface) Data: Usually one card per connector (interface) is needed, i.e., a total of NCONS cards. However, if connectors appear in a regular pattern, intermediate connector data information is automatically generated.

Card K: FORMAT (3I4, 4I2, 6F10.0)

KI	NOD1KI	NOD2KI	NSEQ	NAD1	NAD2	KTPKI	D1ICKI
4	8	12	14	16	18	20	30

D2ICKI	AREAKI	DCSXKI	DCSYKI	DCSZKI
40	50	60	70	80

where

KI = Connector (interface) no. of k-th connector;

NOD1KI = First node no. of connector KI;

NOD2KI = Second node no. of connector KI;

Note: In the case of interior-to-boundary node connector, the first node number is that of interior node and the second node is that of boundary node.

NSEQ = NSEQ subsequent connector (interface) information will be generated automatically;

NAD1 = Incremental number of the first node in each of the the NSEQ connectors;

NAD2 = Incremental number of the second node in each of the NSEQ connectors;

KTPKI = Connector type of connector KI,
 0 = interior-to-interior node connector,
 1 = interior-to-rigid no slip node connector,
 2 = interior-to-rigid free slip node connector,
 3 = interior-to-prescribed flow node connector,
 4 = interior-to-prescribed pressure node connector,
 5 = interior-to-continulative node connector;

DIICKI = Perpendicular distance from the first node of connector KI to the interface (NOD1KI, NOD2KI), in m ;

D2ICKI = Perpendicular distance from the second node of connector KI to the interface (NOD1KI, NOD2KI), in m ;

AREAKI = Interfacial area of the interface (connector) KI, in m^2 ;

DCSXKI = Directional cosine with x-coordinate of connector (interface) KI;

DCSYKI = Directional cosine with y-coordinate of connector (interface) KI;

DCSZKI = Directional cosine with z-coordinate of connector (interface) KI.

7. Connector Data of Prescribed Flow: FORMAT (16I5). The number of cards required depends on NOGF. It is equal to $(NOGF/16 + 1)$.

where

KGF(K) = Connector number of K-th interior-to-prescribed-flow node connector.

8. Connector Data of Prescribed Pressure: FORMAT (16I5). The number of cards required is equal to $(NOGP/16 + 1)$.

where

KGP(K) = Connector number of k-th interior-to-prescribed pressure node connector.

9. Initial Conditions of PHI: FORMAT (15, 5X, 710.0). In the most general case, there is one card per node (compartment), i.e., a total of NODES cards.

where

NJ = the node number,

PHI(NJ) = initial value of PHI at node NJ.

Note: Frequently, however, groups of neighboring nodal points NJ have identical values $\text{PHI}(\text{NJ})$. If a gap is recognized in the input sequence of nodal numbers, the initial PHI's are assumed to be identical to the PHI at the lower boundary of the gap. For example, if two neighboring cards of the form

were encountered, nodes 21-29 would be assigned values of $\text{PHI} = 0.0$.

10. Initial Conditions of x-Component Velocity U: Input in the same manner as that for PHI.

11. Initial Conditions of y-Component Velocity V: Input in the same manner as that for PHI.

12. Initial Conditions of z-Component Velocity W: Input in the same manner as that for PHI.

13. Transient Boundary Conditions: This type of card is required only if $\text{NOGF} \neq 0$ or $\text{NOGP} \neq 0$. No card is needed if both $\text{NOGF} = 0$ and $\text{NOGP} = 0$. Essentially $(2 + \text{NTI}/\text{NREAD})$ sets of cards are required. The first set represents the initial boundary conditions. The subsequent set represents the boundary conditions at time equal to $(\text{NREAD}) * (\text{NT}) * \text{DELT}$, where $\text{NT} = 1, 2, \dots, (\text{NTI}/\text{NREAD} + 1)$. Each set will consist of either four groups (when $\text{NOGF} \neq 0$, $\text{NOGP} \neq 0$), or three groups (when $\text{NOGF} = 0$, $\text{NOGP} \neq 0$), or one group (when $\text{NOGF} = 0$, $\text{NOGP} = 0$) of cards. Each group consists of a number of cards equal to $(\text{NOGF}/8 + 1)$ or $(\text{NOGP}/8 + 1)$.

Card Group L: FORMAT (SF10.0)

Group 1:

.

or

Group 2:

.

or

Group 3:

.

or

Group 4:

where

GUX(K) = x-component prescribed flow of k-th given flow connector,

GUY(K) = y-component prescribed flow of k-th given-flow connector,

GWZ(K) = z-component prescribed flow of k-th given-flow connector,

GPR(K) = Prescribed PHI value of k-th given-pressure connector.

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B.1. Input for Wake Problem: Small Obstacle

[illegible]

B.2. Output for Wake Problem: Small Obstacle

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0
0 SOLUTION OF NAVIER-STOKES EQUATIONS BY ICM STREET VORTEX SMALL OBSTACLE
0
*****
NO. OF NODES, NODS ..... 164
NO. OF CONNECTORS, NCNS ..... 289
NO. OF GIVEN PLIN CONNECTORS, NOGP ..... 9
NO. OF GIVEN-PRESSURE CONNECTORS, NOGP ..... 0
NO. OF TIME STEPS, NTI ..... 480
NO. OF ITERATIONS ALLOWED FOR SOLVING PRESSURE, ... 1000
EVERY MREAD STEPS READ TRANSIENT INOUT ..... 48!
PRINT INTERMITTENT PREEURE?, I=YES, O=ND ..... !
PRINT INTERMITTENT UT, I=YES, O=ND ..... !
PRINT INTERMITTENT VT, I=YES, O=ND ..... !
PRINT INTERMITTENT WT, I=YES, O=ND ..... 0
EVERY NPRP STPS PRINT PEESSUE ONCE ..... 480
EVERY NPUR S'S PRINT U ONCE ..... 480
EVERY NPVR S'S PRINT V ONCE ..... 480
EVERY NPRE STPS PRINT W ONCE ..... 48!
IMPLICIT CONTROL CF SOLVING PHI, =I=YES,=O=ND ..... 1

** LIST CF DESK OUTPUT CONTROL **
COCOOOOOOOOOCCCOOOOOOOCCCCOOCOCCCCOJ.COOOOOOOOCCCCOCCCCOCCCCOCCC
COCOOOOOO/C.OOOOOOOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCO
COCOOOOOOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCO
COCOOOOOOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCO
COCOOOOOOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCO
COCOCOOOOOCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCOCCCCO
C
TIME STEP SIZE ..... 0.1500D 01
X-EDDY COEFFICIENT ..... 0.1000D-01
Y-EDDY COEFFICIENT ..... 0.1000D-01
Z-EDDY COEFFICIENT ..... 0.1000D-01
GRAVITY ACCELERATION ..... 0.0
TOTALANCE FR SOLVING PEESSUE ..... 0.1000D-02
OPTION=-ICURL PCRM IN EDVY TERM ..... 0.0
UPSTREAM? WI=IES,=O=ND ..... 0.1000D 01

*** NODE (COMPARTMENT) DATA ***
N      NYTP    VOL(N)          X(N)            Y(N)           Z(N)
1       3     0.0             0.50000D 01     0.10000D 02     0.0
2       3     0.0             0.50000D 01     0.20000D 02     0.0
3       3     0.0             0.50000D 01     0.30000D 02     0.0
4       3     0.0             0.50000D 01     0.40000D 02     0.0
5       3     0.0             0.50000D J1     0.50000D 02     0.0
6       3     0.0             0.50000D 01     0.60000D 02     0.0
7       3     0.0             0.50000D 01     0.70000D 02     0.0
8       3     0.0             0.50000D 01     0.80000D 02     0.0
9       3     0.0             0.50000D 01     0.90000D 02     0.0
10      1     0.0             0.10000D 02     0.50000D 01     0.0
11      0     0.10000D 03     0.10000D 02     0.10000D 02     0.0
12      0     0.10000D 03     0.10000D 02     0.20000D 02     0.0
13      0     0.10000D 03     0.10000D 02     0.30000D 02     0.0
14      0     0.10000D 03     0.10000D 02     0.40000D 02     0.0
15      0     0.10000D 03     0.10000D 02     0.50000D 02     0.0
16      0     0.10000D 03     0.10000D 02     0.60000D 02     0.0
17      0     0.10000D 03     0.10000D 02     0.70000D 02     0.0
18      0     0.10000D 03     0.10000D 02     0.80000D 02     0.0
19      0     0.1000CD 03     0.10000D 02     0.90000D 02     0.0
20      1     0.0             0.10000D 02     0.95000D 02     0.0
21      0     0.0             0.20000D 02     0.50000D 01     0.0
22      0     0.10000D 03     0.20000D 02     0.10000D 02     0.0
23      0     0.10000D 03     0.20000D 02     0.20000D 02     0.0
24      0     0.10000D 03     0.20000D 02     0.30000D 02     0.0
25      0     0.10000D 03     0.20000D 02     0.40000D 02     0.0
26      0     0.10000D 03     0.20000D 02     0.50000D 02     0.0
27      0     0.10000D 03     0.20000D 02     0.60000D 02     0.0
28      0     0.10000D 03     0.20000D 02     0.70000D 02     0.0
29      0     0.10000D 03     0.20000D 02     0.80000D 02     0.0
30      0     0.10000D 03     0.20000D 02     0.90000D 02     0.0
31      1     0.0             0.20000D 02     0.95000D 02     0.0
32      1     0.0             0.30000D 02     0.50000D 01     0.0
33      0     0.10000D 03     0.30000D 02     0.10000D 02     0.0
34      0     0.10000D 03     0.30000D 02     0.20000D 02     0.0
35      0     0.10000D 03     0.30000D 02     0.30000D 02     0.0
36      0     0.10000D 03     0.30000D 02     0.40000D 02     0.0
37      0     0.10000D 03     0.30000D 02     0.50000D 02     0.0
38      0     0.10000D 03     0.30000D 02     0.60000D 02     0.0
39      0     0.10000D 03     0.30000D 02     0.70000D 02     0.0
40      0     0.10000D 03     0.30000D 02     0.80000D 02     0.0
41      0     0.10000D 03     0.30000D 02     0.90000D 02     0.0
42      1     0.0             0.30000D 02     0.95000D 02     0.0
43      1     0.0             0.40000D 02     0.50000D 01     0.0
44      0     0.10000D 03     0.40000D 02     0.10000D 02     0.0
45      0     0.10000D 03     0.40000D 02     0.20000D 02     0.0
46      0     0.10000D 03     0.40000D 02     0.30000D 02     0.0
47      0     0.10000D 03     0.40000D 02     0.40000D 02     0.0
48      0     0.10000D 03     0.40000D 02     0.50000D 02     0.0
49      1     0.0             0.40000D 02     0.50000D 02     0.0
50      0     0.10000D 03     0.40000D 02     0.60000D 02     0.0

```

B.2. Output (continued)

*** NCOE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
51	0	0.100000 03	0.400000 02	0.700000 02	0.0
52	0	0.100000 03	0.400000 02	0.800000 02	0.0
53	0	0.100000 03	0.400000 02	0.900000 02	0.0
54	1	0.0	0.400000 02	0.950000 02	0.0
55	1	0.0	0.500000 02	0.500000 01	0.0
56	0	0.100000 03	0.500000 02	0.100000 02	0.0
57	0	0.100000 03	0.500000 02	0.200000 02	0.0
58	0	0.100000 03	0.500000 02	0.300000 02	0.0
59	0	0.100000 03	0.500000 02	0.400000 02	0.0
60	1	0.0	0.500000 02	0.450000 02	0.0
61	1	0.0	0.500000 02	0.550000 02	0.0
62	0	0.100000 03	0.500000 02	0.600000 02	0.0
63	0	0.100000 03	0.500000 02	0.700000 02	0.0
64	0	0.100000 03	0.500000 02	0.800000 02	0.0
65	0	0.100000 03	0.500000 02	0.900000 02	0.0
66	1	0.0	0.500000 02	0.950000 02	0.0
67	1	0.0	0.600000 02	0.500000 01	0.0
68	0	0.100000 03	0.600000 02	0.100000 02	0.0
69	0	0.100000 03	0.600000 02	0.200000 02	0.0
70	0	0.100000 03	0.600000 02	0.300000 02	0.0
71	0	0.100000 03	0.600000 02	0.400000 02	0.0
72	1	0.0	0.550000 02	0.500000 02	0.0
73	0	0.100000 03	0.600000 02	0.500000 02	0.0
74	0	0.100000 03	0.600000 02	0.600000 02	0.0
75	0	0.100000 03	0.600000 02	0.700000 02	0.0
76	0	0.100000 03	0.600000 02	0.800000 02	0.0
77	0	0.100000 03	0.600000 02	0.900000 02	0.0
78	1	0.0	0.700000 02	0.950000 02	0.0
79	1	0.0	0.700000 02	0.500000 01	0.0
80	0	0.100000 03	0.700000 02	0.100000 02	0.0
81	0	0.100000 03	0.700000 02	0.200000 02	0.0
82	0	0.100000 03	0.700000 02	0.300000 02	0.0
83	0	0.100000 03	0.700000 02	0.400000 02	0.0
84	1	0.100000 03	0.700000 02	0.500000 02	0.0
85	0	0.100000 03	0.700000 02	0.600000 02	0.0
86	0	0.100000 03	0.700000 02	0.700000 02	0.0
87	0	0.100000 03	0.700000 02	0.800000 02	0.0
88	0	0.100000 03	0.700000 02	0.900000 02	0.0
89	1	0.0	0.700000 02	0.950000 02	0.0
90	1	0.0	0.800000 02	0.500000 01	0.0
91	0	0.100000 03	0.800000 02	0.100000 02	0.0
92	0	0.100000 03	0.800000 02	0.200000 02	0.0
93	0	0.100000 03	0.800000 02	0.300000 02	0.0
94	0	0.100000 03	0.800000 02	0.400000 02	0.0
95	0	0.100000 03	0.800000 02	0.500000 02	0.0
96	0	0.100000 03	0.800000 02	0.600000 02	0.0
97	0	0.100000 03	0.800000 02	0.700000 02	0.0
98	0	0.100000 03	0.800000 02	0.800000 02	0.0
99	0	0.100000 03	0.800000 02	0.900000 02	0.0
100	1	0.0	0.850000 02	0.950000 02	0.0
101	1	0.0	0.900000 02	0.500000 01	0.0
102	0	0.100000 03	0.900000 02	0.100000 02	0.0
103	0	0.100000 03	0.900000 02	0.200000 02	0.0
104	0	0.100000 03	0.900000 02	0.300000 02	0.0
105	0	0.100000 03	0.900000 02	0.400000 02	0.0
106	0	0.100000 03	0.900000 02	0.500000 02	0.0
107	0	0.100000 03	0.900000 02	0.600000 02	0.0
108	0	0.100000 03	0.900000 02	0.700000 02	0.0
109	0	0.100000 03	0.900000 02	0.800000 02	0.0
110	0	0.100000 03	0.900000 02	0.900000 02	0.0
111	1	0.0	0.900000 02	0.950000 02	0.0
112	1	0.0	0.100000 03	0.500000 01	0.0
113	0	0.100000 03	0.100000 03	0.100000 02	0.0
114	0	0.100000 03	0.100000 03	0.200000 02	0.0
115	0	0.100000 03	0.100000 03	0.300000 02	0.0
116	0	0.100000 03	0.100000 03	0.400000 02	0.0
117	0	0.100000 03	0.100000 03	0.500000 02	0.0
118	0	0.100000 03	0.100000 03	0.600000 02	0.0
119	0	0.100000 03	0.100000 03	0.700000 02	0.0
120	0	0.100000 03	0.100000 03	0.800000 02	0.0
121	0	0.100000 03	0.100000 03	0.900000 02	0.0
122	1	0.0	0.100000 03	0.950000 02	0.0
123	1	0.0	0.110000 03	0.500000 01	0.0
124	0	0.100000 03	0.110000 03	0.100000 02	0.0
125	0	0.100000 03	0.110000 03	0.200000 02	0.0
126	0	0.100000 03	0.110000 03	0.300000 02	0.0
127	0	0.100000 03	0.110000 03	0.400000 02	0.0
128	0	0.100000 03	0.110000 03	0.500000 02	0.0
129	0	0.100000 03	0.110000 03	0.600000 02	0.0
130	0	0.100000 03	0.110000 03	0.700000 02	0.0
131	0	0.100000 03	0.110000 03	0.800000 02	0.0
132	0	0.100000 03	0.110000 03	0.900000 02	0.0
133	1	0.0	0.110000 03	0.950000 02	0.0
134	1	0.0	0.120000 03	0.500000 01	0.0
135	0	0.100000 03	0.120000 03	0.100000 02	0.0
136	0	0.100000 03	0.120000 03	0.200000 02	0.0
137	0	0.100000 03	0.120000 03	0.300000 02	0.0
138	0	0.100000 03	0.120000 03	0.400000 02	0.0
139	0	0.100000 03	0.120000 03	0.500000 02	0.0
140	0	0.100000 03	0.120000 03	0.600000 02	0.0
141	0	0.100000 03	0.120000 03	0.700000 02	0.0
142	0	0.100000 03	0.120000 03	0.800000 02	0.0
143	0	0.100000 03	0.120000 03	0.900000 02	0.0
144	1	0.0	0.120000 03	0.950000 02	0.0
145	1	0.0	0.130000 03	0.500000 01	0.0
146	0	0.100000 03	0.130000 03	0.100000 02	0.0
147	0	0.100000 03	0.130000 03	0.200000 02	0.0
148	0	0.100000 03	0.130000 03	0.300000 02	0.0
149	0	0.100000 03	0.130000 03	0.400000 02	0.0
150	0	0.100000 03	0.130000 03	0.500000 02	0.0

B.2. Output (continued)

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
151	0	0.100000 03	0.130000 03	0.600000 02	0.0
152	0	0.100000 03	0.130000 03	0.700000 02	0.0
153	0	0.100000 03	0.130000 03	0.800000 02	0.0
154	0	0.100000 03	0.130000 03	0.900000 02	0.0
155	1	0.0	0.130000 03	0.950000 02	0.0
156	1	0.0	0.135000 03	0.100000 02	0.0
157	5	0.0	0.135000 03	0.200000 02	0.0
158	5	0.0	0.135000 03	0.300000 02	0.0
159	5	0.0	0.135000 03	0.400000 02	0.0
160	5	0.0	0.135000 03	0.500000 02	0.0
161	5	0.0	0.135000 03	0.600000 02	0.0
162	5	0.0	0.135000 03	0.700000 02	0.0
163	5	0.0	0.135000 03	0.800000 02	0.0
164	5	0.0	0.135000 03	0.900000 02	0.0

*** CONNECTOR (INTERFACE) DATA ***

K	KT/P	NOD1	NOD2	D1IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	INCH
1	0	11	12	5.000	5.000	10.000	0.0	1.000	0.0	1
2	0	12	13	5.000	5.000	10.000	0.0	1.000	0.0	1
3	0	13	14	5.000	5.000	10.000	0.0	1.000	0.0	1
4	0	14	15	5.000	5.000	10.000	0.0	1.000	0.0	1
5	0	15	16	5.000	5.000	10.000	0.0	1.000	0.0	1
6	0	16	17	5.000	5.000	10.000	0.0	1.000	0.0	1
7	0	17	18	5.000	5.000	10.000	0.0	1.000	0.0	1
8	0	18	19	5.000	5.000	10.000	0.0	1.000	0.0	1
9	0	19	20	5.000	5.000	10.000	0.0	1.000	0.0	1
10	0	20	21	5.000	5.000	10.000	0.0	1.000	0.0	1
11	0	21	22	5.000	5.000	10.000	0.0	1.000	0.0	1
12	0	22	23	5.000	5.000	10.000	0.0	1.000	0.0	1
13	0	23	24	5.000	5.000	10.000	0.0	1.000	0.0	1
14	0	24	25	5.000	5.000	10.000	0.0	1.000	0.0	1
15	0	25	26	5.000	5.000	10.000	0.0	1.000	0.0	1
16	0	26	27	5.000	5.000	10.000	0.0	1.000	0.0	1
17	0	27	28	5.000	5.000	10.000	0.0	1.000	0.0	1
18	0	28	29	5.000	5.000	10.000	0.0	1.000	0.0	1
19	0	29	30	5.000	5.000	10.000	0.0	1.000	0.0	1
20	0	30	31	5.000	5.000	10.000	0.0	1.000	0.0	1
21	0	31	32	5.000	5.000	10.000	0.0	1.000	0.0	1
22	0	32	33	5.000	5.000	10.000	0.0	1.000	0.0	1
23	0	33	34	5.000	5.000	10.000	0.0	1.000	0.0	1
24	0	34	35	5.000	5.000	10.000	0.0	1.000	0.0	1
25	0	35	36	5.000	5.000	10.000	0.0	1.000	0.0	1
26	0	36	37	5.000	5.000	10.000	0.0	1.000	0.0	1
27	0	37	38	5.000	5.000	10.000	0.0	1.000	0.0	1
28	0	38	39	5.000	5.000	10.000	0.0	1.000	0.0	1
29	0	39	40	5.000	5.000	10.000	0.0	1.000	0.0	1
30	0	40	41	5.000	5.000	10.000	0.0	1.000	0.0	1
31	0	41	42	5.000	5.000	10.000	0.0	1.000	0.0	1
32	0	42	43	5.000	5.000	10.000	0.0	1.000	0.0	1
33	0	43	44	5.000	5.000	10.000	0.0	1.000	0.0	1
34	0	44	45	5.000	5.000	10.000	0.0	1.000	0.0	1
35	0	45	46	5.000	5.000	10.000	0.0	1.000	0.0	1
36	0	46	47	5.000	5.000	10.000	0.0	1.000	0.0	1
37	0	47	48	5.000	5.000	10.000	0.0	1.000	0.0	1
38	0	48	49	5.000	5.000	10.000	0.0	1.000	0.0	1
39	0	49	50	5.000	5.000	10.000	0.0	1.000	0.0	1
40	0	50	51	5.000	5.000	10.000	0.0	1.000	0.0	1
41	0	51	52	5.000	5.000	10.000	0.0	1.000	0.0	1
42	0	52	53	5.000	5.000	10.000	0.0	1.000	0.0	1
43	0	53	54	5.000	5.000	10.000	0.0	1.000	0.0	1
44	0	54	55	5.000	5.000	10.000	0.0	1.000	0.0	1
45	0	55	56	5.000	5.000	10.000	0.0	1.000	0.0	1
46	0	56	57	5.000	5.000	10.000	0.0	1.000	0.0	1
47	0	57	58	5.000	5.000	10.000	0.0	1.000	0.0	1
48	0	58	59	5.000	5.000	10.000	0.0	1.000	0.0	1
49	0	59	60	5.000	5.000	10.000	0.0	1.000	0.0	1
50	0	60	61	5.000	5.000	10.000	0.0	1.000	0.0	1
51	0	61	62	5.000	5.000	10.000	0.0	1.000	0.0	1
52	0	62	63	5.000	5.000	10.000	0.0	1.000	0.0	1
53	0	63	64	5.000	5.000	10.000	0.0	1.000	0.0	1
54	0	64	65	5.000	5.000	10.000	0.0	1.000	0.0	1
55	0	65	66	5.000	5.000	10.000	0.0	1.000	0.0	1
56	0	66	67	5.000	5.000	10.000	0.0	1.000	0.0	1
57	0	67	68	5.000	5.000	10.000	0.0	1.000	0.0	1
58	0	68	69	5.000	5.000	10.000	0.0	1.000	0.0	1
59	0	69	70	5.000	5.000	10.000	0.0	1.000	0.0	1
60	0	70	71	5.000	5.000	10.000	0.0	1.000	0.0	1
61	0	71	72	5.000	5.000	10.000	0.0	1.000	0.0	1
62	0	72	73	5.000	5.000	10.000	0.0	1.000	0.0	1
63	0	73	74	5.000	5.000	10.000	0.0	1.000	0.0	1
64	0	74	75	5.000	5.000	10.000	0.0	1.000	0.0	1
65	0	75	76	5.000	5.000	10.000	0.0	1.000	0.0	1
66	0	76	77	5.000	5.000	10.000	0.0	1.000	0.0	1
67	0	77	78	5.000	5.000	10.000	0.0	1.000	0.0	1
68	0	78	79	5.000	5.000	10.000	0.0	1.000	0.0	1
69	0	79	80	5.000	5.000	10.000	0.0	1.000	0.0	1
70	0	80	81	5.000	5.000	10.000	0.0	1.000	0.0	1
71	0	81	82	5.000	5.000	10.000	0.0	1.000	0.0	1
72	0	82	83	5.000	5.000	10.000	0.0	1.000	0.0	1
73	0	83	84	5.000	5.000	10.000	0.0	1.000	0.0	1
74	0	84	85	5.000	5.000	10.000	0.0	1.000	0.0	1
75	0	85	86	5.000	5.000	10.000	0.0	1.000	0.0	1
76	0	86	87	5.000	5.000	10.000	0.0	1.000	0.0	1
77	0	87	88	5.000	5.000	10.000	0.0	1.000	0.0	1
78	0	88	89	5.000	5.000	10.000	0.0	1.000	0.0	1
79	0	89	90	5.000	5.000	10.000	0.0	1.000	0.0	1
80	0	90	91	5.000	5.000	10.000	0.0	1.000	0.0	1
81	0	91	92	5.000	5.000	10.000	0.0	1.000	0.0	1
82	0	92	93	5.000	5.000	10.000	0.0	1.000	0.0	1
83	0	93	94	5.000	5.000	10.000	0.0	1.000	0.0	1
84	0	94	95	5.000	5.000	10.000	0.0	1.000	0.0	1
85	0	95	96	5.000	5.000	10.000	0.0	1.000	0.0	1
86	0	96	97	5.000	5.000	10.000	0.0	1.000	0.0	1
87	0	97	98	5.000	5.000	10.000	0.0	1.000	0.0	1
88	0	98	99	5.000	5.000	10.000	0.0	1.000	0.0	1
89	0	99	100	5.000	5.000	10.000	0.0	1.000	0.0	1
90	0	100	101	5.000	5.000	10.000	0.0	1.000	0.0	1
91	0	101	102	5.000	5.000	10.000	0.0	1.000	0.0	1
92	0	102	103	5.000	5.000	10.000	0.0	1.000	0.0	1
93	0	103	104	5.000	5.000	10.000	0.0	1.000	0.0	1
94	0	104	105	5.000	5.000	10.000	0.0	1.000	0.0	1
95	0	105	106	5.000	5.000	10.000	0.0	1.000	0.0	1
96	0	106	107	5.000	5.000	10.000	0.0	1.000	0.0	1
97	0	107	108	5.000	5.000	10.000	0.0	1.000	0.0	1
98	0	108	109	5.000	5.000	10.000	0.0	1.000	0.0	1
99	0	109	110	5.000	5.000	10.000	0.0	1.000	0.0	1
100	0	110	111	5.000	5.000	10.000	0.0	1.000	0.0	1
101	0	111	112	5.000	5.000	10.000	0.0	1.000	0.0	1
102	0	112	113	5.000	5.000	10.000	0.0	1.000	0.0	1
103	0	113	114	5.000	5.000	10.000	0.0	1.000	0.0	1
104	0	114	115	5.000	5.000	10.000	0.0	1.000	0.0	1
105	0	115	116	5.000	5.000	10.000	0.0	1.000	0.0	1
106	0	116	117	5.000	5.000	10.000	0.0	1.000	0.0	1
107	0	117	118	5.000	5.000	10.000	0.0	1.000	0.0	1

B.2. Output (continued)

000 CONNECTOR (INTERFACE) DATA 000

Z	KTP	ACD	MODE	D1IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	ECSE(K)	INCH
76	0	119	110	5.000	5.000	10.000	0.0	1.000	0.0	1
77	0	110	120	5.000	5.000	10.000	0.0	1.000	0.0	1
78	0	120	121	5.000	5.000	10.000	0.0	1.000	0.0	1
79	0	124	125	5.000	5.000	10.000	0.0	1.000	0.0	1
80	0	125	126	5.000	5.000	10.000	0.0	1.000	0.0	1
81	0	125	127	5.000	5.000	10.000	0.0	1.000	0.0	1
82	0	127	128	5.000	5.000	10.000	0.0	1.000	0.0	1
83	0	128	129	5.000	5.000	10.000	0.0	1.000	0.0	1
84	0	129	130	5.000	5.000	10.000	0.0	1.000	0.0	1
85	0	130	131	5.000	5.000	10.000	0.0	1.000	0.0	1
86	0	131	132	5.000	5.000	10.000	0.0	1.000	0.0	1
87	0	132	134	5.000	5.000	10.000	0.0	1.000	0.0	1
88	0	134	137	5.000	5.000	10.000	0.0	1.000	0.0	1
89	0	137	138	5.000	5.000	10.000	0.0	1.000	0.0	1
90	0	138	139	5.000	5.000	10.000	0.0	1.000	0.0	1
91	0	135	140	5.000	5.000	10.000	0.0	1.000	0.0	1
92	0	140	141	5.000	5.000	10.000	0.0	1.000	0.0	1
93	0	141	142	5.000	5.000	10.000	0.0	1.000	0.0	1
94	0	142	143	5.000	5.000	10.000	0.0	1.000	0.0	1
95	0	144	147	5.000	5.000	10.000	0.0	1.000	0.0	1
96	0	147	148	5.000	5.000	10.000	0.0	1.000	0.0	1
97	0	148	149	5.000	5.000	10.000	0.0	1.000	0.0	1
98	0	149	150	5.000	5.000	10.000	0.0	1.000	0.0	1
99	0	150	151	5.000	5.000	10.000	0.0	1.000	0.0	1
100	0	151	152	5.000	5.000	10.000	0.0	1.000	0.0	1
101	0	152	153	5.000	5.000	10.000	0.0	1.000	0.0	1
102	0	153	154	5.000	5.000	10.000	0.0	1.000	0.0	1
103	0	11	22	5.000	5.000	10.000	1.000	0.0	0.0	11
104	0	12	23	5.000	5.000	10.000	1.000	0.0	0.0	11
105	0	13	24	5.000	5.000	10.000	1.000	0.0	0.0	11
106	0	14	25	5.000	5.000	10.000	1.000	0.0	0.0	11
107	0	15	26	5.000	5.000	10.000	1.000	0.0	0.0	11
108	0	16	27	5.000	5.000	10.000	1.000	0.0	0.0	11
109	0	17	28	5.000	5.000	10.000	1.000	0.0	0.0	11
110	0	18	29	5.000	5.000	10.000	1.000	0.0	0.0	11
111	0	19	30	5.000	5.000	10.000	1.000	0.0	0.0	11
112	0	22	33	5.000	5.000	10.000	1.000	0.0	0.0	11
113	0	23	34	5.000	5.000	10.000	1.000	0.0	0.0	11
114	0	24	35	5.000	5.000	10.000	1.000	0.0	0.0	11
115	0	25	36	5.000	5.000	10.000	1.000	0.0	0.0	11
116	0	26	37	5.000	5.000	10.000	1.000	0.0	0.0	11
117	0	27	38	5.000	5.000	10.000	1.000	0.0	0.0	11
118	0	28	39	5.000	5.000	10.000	1.000	0.0	0.0	11
119	0	29	40	5.000	5.000	10.000	1.000	0.0	0.0	11
120	0	30	41	5.000	5.000	10.000	1.000	0.0	0.0	11
121	0	32	44	5.000	5.000	10.000	1.000	0.0	0.0	11
122	0	34	45	5.000	5.000	10.000	1.000	0.0	0.0	11
123	0	35	46	5.000	5.000	10.000	1.000	0.0	0.0	11
124	0	36	47	5.000	5.000	10.000	1.000	0.0	0.0	11
125	0	37	48	5.000	5.000	10.000	1.000	0.0	0.0	11
126	0	38	50	5.000	5.000	10.000	1.000	0.0	0.0	11
127	0	39	51	5.000	5.000	10.000	1.000	0.0	0.0	12
128	0	40	52	5.000	5.000	10.000	1.000	0.0	0.0	12
129	0	41	53	5.000	5.000	10.000	1.000	0.0	0.0	12
130	0	44	56	5.000	5.000	10.000	1.000	0.0	0.0	12
131	0	45	57	5.000	5.000	10.000	1.000	0.0	0.0	12
132	0	46	58	5.000	5.000	10.000	1.000	0.0	0.0	12
133	0	47	59	5.000	5.000	10.000	1.000	0.0	0.0	12
134	0	50	62	5.000	5.000	10.000	1.000	0.0	0.0	12
135	0	51	63	5.000	5.000	10.000	1.000	0.0	0.0	12
136	0	52	64	5.000	5.000	10.000	1.000	0.0	0.0	12
137	0	53	65	5.000	5.000	10.000	1.000	0.0	0.0	12
138	0	56	68	5.000	5.000	10.000	1.000	0.0	0.0	12
139	0	57	69	5.000	5.000	10.000	1.000	0.0	0.0	12
140	0	58	70	5.000	5.000	10.000	1.000	0.0	0.0	12
141	0	59	71	5.000	5.000	10.000	1.000	0.0	0.0	12
142	0	62	74	5.000	5.000	10.000	1.000	0.0	0.0	12
143	0	64	75	5.000	5.000	10.000	1.000	0.0	0.0	12
144	0	65	76	5.000	5.000	10.000	1.000	0.0	0.0	12
145	0	68	80	5.000	5.000	10.000	1.000	0.0	0.0	12
146	0	69	81	5.000	5.000	10.000	1.000	0.0	0.0	12
147	0	70	82	5.000	5.000	10.000	1.000	0.0	0.0	12
148	0	71	83	5.000	5.000	10.000	1.000	0.0	0.0	12
149	0	73	84	5.000	5.000	10.000	1.000	0.0	0.0	11
150	0	74	85	5.000	5.000	10.000	1.000	0.0	0.0	11
151	0	75	86	5.000	5.000	10.000	1.000	0.0	0.0	11
152	0	76	87	5.000	5.000	10.000	1.000	0.0	0.0	11
153	0	77	88	5.000	5.000	10.000	1.000	0.0	0.0	11
154	0	80	91	5.000	5.000	10.000	1.000	0.0	0.0	11
155	0	81	92	5.000	5.000	10.000	1.000	0.0	0.0	11
156	0	82	93	5.000	5.000	10.000	1.000	0.0	0.0	11
157	0	83	94	5.000	5.000	10.000	1.000	0.0	0.0	11
158	0	84	95	5.000	5.000	10.000	1.000	0.0	0.0	11
159	0	85	96	5.000	5.000	10.000	1.000	0.0	0.0	11
160	0	86	97	5.000	5.000	10.000	1.000	0.0	0.0	11
161	0	87	98	5.000	5.000	10.000	1.000	0.0	0.0	11
162	0	88	99	5.000	5.000	10.000	1.000	0.0	0.0	11
163	0	91	102	5.000	5.000	10.000	1.000	0.0	0.0	11
164	0	92	103	5.000	5.000	10.000	1.000	0.0	0.0	11
165	0	93	104	5.000	5.000	10.000	1.000	0.0	0.0	11
166	0	94	105	5.000	5.000	10.000	1.000	0.0	0.0	11
167	0	95	106	5.000	5.000	10.000	1.000	0.0	0.0	11
168	0	96	107	5.000	5.000	10.000	1.000	0.0	0.0	11
169	0	97	108	5.000	5.000	10.000	1.000	0.0	0.0	11

B.2. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***

K	KTYP	MOD1	MOD2	DIIC(K)	DI' C(K)	AREA(K)	DCSK(K)	DCSV(K)	DCSZ(K)	PRIN
171	0	98	109	5.000	5.000	10.000	1.000	0.0	0.0	11
172	0	99	110	5.000	5.000	10.000	1.000	0.0	0.0	11
173	0	102	113	5.000	5.000	10.000	1.000	0.0	0.0	11
174	0	103	114	5.000	5.000	10.000	1.000	0.0	0.0	11
175	0	104	115	5.000	5.000	10.000	1.000	0.0	0.0	11
176	0	105	116	5.000	5.000	10.000	1.000	0.0	0.0	11
177	0	106	117	5.000	5.000	10.000	1.000	0.0	0.0	11
178	0	107	118	5.000	5.000	10.000	1.000	0.0	0.0	11
179	0	108	119	5.000	5.000	10.000	1.000	0.0	0.0	11
180	0	109	120	5.000	5.000	10.000	1.000	0.0	0.0	11
181	0	110	121	5.000	5.000	10.000	1.000	0.0	0.0	11
182	0	111	122	5.000	5.000	10.000	1.000	0.0	0.0	11
183	0	112	123	5.000	5.000	10.000	1.000	0.0	0.0	11
184	0	113	124	5.000	5.000	10.000	1.000	0.0	0.0	11
185	0	114	125	5.000	5.000	10.000	1.000	0.0	0.0	11
186	0	115	126	5.000	5.000	10.000	1.000	0.0	0.0	11
187	0	116	127	5.000	5.000	10.000	1.000	0.0	0.0	11
188	0	117	128	5.000	5.000	10.000	1.000	0.0	0.0	11
189	0	118	129	5.000	5.000	10.000	1.000	0.0	0.0	11
190	0	119	130	5.000	5.000	10.000	1.000	0.0	0.0	11
191	0	120	131	5.000	5.000	10.000	1.000	0.0	0.0	11
192	0	121	132	5.000	5.000	10.000	1.000	0.0	0.0	11
193	0	122	133	5.000	5.000	10.000	1.000	0.0	0.0	11
194	0	123	134	5.000	5.000	10.000	1.000	0.0	0.0	11
195	0	124	135	5.000	5.000	10.000	1.000	0.0	0.0	11
196	0	125	136	5.000	5.000	10.000	1.000	0.0	0.0	11
197	0	126	137	5.000	5.000	10.000	1.000	0.0	0.0	11
198	0	127	138	5.000	5.000	10.000	1.000	0.0	0.0	11
199	0	128	139	5.000	5.000	10.000	1.000	0.0	0.0	11
200	0	129	140	5.000	5.000	10.000	1.000	0.0	0.0	11
201	0	130	141	5.000	5.000	10.000	1.000	0.0	0.0	11
202	0	131	142	5.000	5.000	10.000	1.000	0.0	0.0	11
203	0	132	143	5.000	5.000	10.000	1.000	0.0	0.0	11
204	0	133	144	5.000	5.000	10.000	1.000	0.0	0.0	11
205	0	134	145	5.000	5.000	10.000	1.000	0.0	0.0	11
206	0	135	146	5.000	5.000	10.000	1.000	0.0	0.0	11
207	0	136	147	5.000	5.000	10.000	1.000	0.0	0.0	11
208	0	137	148	5.000	5.000	10.000	1.000	0.0	0.0	11
209	0	138	149	5.000	5.000	10.000	1.000	0.0	0.0	11
210	0	139	150	5.000	5.000	10.000	1.000	0.0	0.0	11
211	0	140	151	5.000	5.000	10.000	1.000	0.0	0.0	11
212	0	141	152	5.000	5.000	10.000	1.000	0.0	0.0	11
213	0	142	153	5.000	5.000	10.000	1.000	0.0	0.0	11
214	0	143	154	5.000	5.000	10.000	1.000	0.0	0.0	11
215	0	144	155	5.000	5.000	10.000	1.000	0.0	0.0	11
216	0	145	156	5.000	5.000	10.000	1.000	0.0	0.0	11
217	0	146	157	5.000	5.000	10.000	1.000	0.0	0.0	11
218	0	147	158	5.000	5.000	10.000	1.000	0.0	0.0	11
219	0	148	159	5.000	5.000	10.000	1.000	0.0	0.0	11
220	0	149	160	5.000	5.000	10.000	1.000	0.0	0.0	11
221	0	150	161	5.000	5.000	10.000	1.000	0.0	0.0	11
222	0	151	162	5.000	5.000	10.000	1.000	0.0	0.0	11
223	0	152	163	5.000	5.000	10.000	1.000	0.0	0.0	11
224	0	153	164	5.000	5.000	10.000	1.000	0.0	0.0	11
225	0	154	165	5.000	5.000	10.000	1.000	0.0	0.0	11
226	0	155	166	5.000	5.000	10.000	1.000	0.0	0.0	11
227	0	156	167	5.000	5.000	10.000	1.000	0.0	0.0	11
228	0	157	168	5.000	5.000	10.000	1.000	0.0	0.0	11
229	0	158	169	5.000	5.000	10.000	1.000	0.0	0.0	11
230	0	159	170	5.000	5.000	10.000	1.000	0.0	0.0	11
231	0	160	171	5.000	5.000	10.000	1.000	0.0	0.0	11
232	0	161	172	5.000	5.000	10.000	1.000	0.0	0.0	11
233	0	162	173	5.000	5.000	10.000	1.000	0.0	0.0	11
234	0	163	174	5.000	5.000	10.000	1.000	0.0	0.0	11
235	0	164	175	5.000	5.000	10.000	1.000	0.0	0.0	11
236	0	165	176	5.000	5.000	10.000	1.000	0.0	0.0	11
237	0	166	177	5.000	5.000	10.000	1.000	0.0	0.0	11
238	0	167	178	5.000	5.000	10.000	1.000	0.0	0.0	11
239	0	168	179	5.000	5.000	10.000	1.000	0.0	0.0	11
240	0	169	180	5.000	5.000	10.000	1.000	0.0	0.0	11
241	0	170	181	5.000	5.000	10.000	1.000	0.0	0.0	11
242	0	171	182	5.000	5.000	10.000	1.000	0.0	0.0	11
243	0	172	183	5.000	5.000	10.000	1.000	0.0	0.0	11
244	0	173	184	5.000	5.000	10.000	1.000	0.0	0.0	11
245	0	174	185	5.000	5.000	10.000	1.000	0.0	0.0	11
246	0	175	186	5.000	5.000	10.000	1.000	0.0	0.0	11
247	0	176	187	5.000	5.000	10.000	1.000	0.0	0.0	11
248	0	177	188	5.000	5.000	10.000	1.000	0.0	0.0	11
249	0	178	189	5.000	5.000	10.000	1.000	0.0	0.0	11
250	0	179	190	5.000	5.000	10.000	1.000	0.0	0.0	11
251	0	180	191	5.000	5.000	10.000	1.000	0.0	0.0	11
252	0	181	192	5.000	5.000	10.000	1.000	0.0	0.0	11
253	0	182	193	5.000	5.000	10.000	1.000	0.0	0.0	11
254	0	183	194	5.000	5.000	10.000	1.000	0.0	0.0	11
255	0	184	195	5.000	5.000	10.000	1.000	0.0	0.0	11
256	0	185	196	5.000	5.000	10.000	1.000	0.0	0.0	11

*** CONNECTOR (INTERFACE) DATA ***

B.2. Output (continued)

*** PRESSURE DISTRIBUTION AT TIME = 0.0 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0
141	0.0	142	0.0	143	0.0	144	0.0	145	0.0
146	0.0	147	0.0	148	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0	155	0.0
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0		

*** U-VEL AT TIME = 0.0 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0
141	0.0	142	0.0	143	0.0	144	0.0	145	0.0
146	0.0	147	0.0	148	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0	155	0.0
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0		

B.2. Output (continued)

*** V-VEL AT TIME = 0.0 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0
141	0.0	142	0.0	143	0.0	144	0.0	145	0.0
146	0.0	147	0.0	148	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0	155	0.0
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0		

*** PRESSURE DISTRIBUTION AT TIME = 0.720000 GJ ***

I	F	I	F	I	F	I	F	I	F
1	0.1499C 00	2	0.1578D 00	3	0.1809D 00	4	0.1998D 00	5	0.2253C 00
6	0.1998C 00	7	0.1809D 00	8	0.1578D 00	9	0.1499D 00	10	0.1499D 00
11	0.1499D 00	12	0.1578D 00	13	0.1809D 00	14	0.1998D 00	15	0.2253C 00
16	0.1998C 00	17	0.1809D 00	18	0.1578D 00	19	0.1499D 00	20	0.1499D 00
21	0.1499D 00	22	0.1578D 00	23	0.1809D 00	24	0.1998D 00	25	0.2253C 00
26	0.3303D 00	27	0.1923D 00	28	0.1860D 00	29	0.1520D 00	30	0.1438C 00
31	0.1438D 00	32	0.1149D 00	33	0.1149D 00	34	0.1174D 00	35	0.1552D 00
36	0.1437D 00	37	0.3969D 00	38	0.1437D 00	39	0.1554D 00	40	0.1174C 00
41	0.1148C 00	42	0.1149D 00	43	0.8868D-01	44	0.8853D-01	45	0.9448C-01
46	0.1490D 00	47	0.5601D-01	48	0.7872D 00	49	0.7893D 00	50	0.5601D-01
51	0.1490D 00	52	0.9448D-01	53	0.8853D-01	54	0.8868D-01	55	0.9448C-01
56	0.2199C-01	57	-0.1120D-01	58	-0.2740D-02	59	-0.3007D 00	60	-0.3017D 00
61	-0.3017D 00	62	-0.3007D 00	63	-0.2740D-02	64	-0.1120D-01	65	-0.2199C-01
66	0.2201C-01	67	-0.2203D-01	68	-0.2200D-01	69	-0.3645D-01	70	-0.5041C-01
71	-0.1159D 00	72	-0.2586D 00	73	-0.2589D 00	74	-0.1159D 00	75	-0.5041D-01
76	-0.5565D-01	77	-0.2200D-01	78	-0.2203D-01	79	-0.4845D-01	80	-0.4859C-01
81	-0.7264C-01	82	-0.9933D-01	83	-0.1304D 00	84	-0.2602D 00	85	-0.1304C 00
86	-0.9933C-01	87	-0.7264D-01	88	-0.4859D-01	89	-0.4845D-01	90	-0.6236D-01
91	-0.6247D-01	92	-0.7593D-01	93	-0.1143D 00	94	-0.1223D 00	95	-0.2411C 00
96	-0.1223C 00	97	-0.1143D 00	98	-0.7593D-01	99	-0.6247D-01	100	-0.6236D-01
101	-0.6200D-01	102	-0.6190D-01	103	-0.6470D-01	104	-0.9973D-01	105	-0.7960D-01
106	-0.1748C 00	107	-0.7960D-01	108	-0.9973D-01	109	-0.6470D-01	110	-0.6190C-01
111	-0.6200C-01	112	-0.6128D-01	113	-0.6119D-01	114	-0.4677D-01	115	-0.7584D-01
116	-0.4370D-01	117	-0.1034D 00	118	-0.4370D-01	119	-0.7584D-01	120	-0.4677C-01
121	-0.5119C-01	122	-0.6128D-01	123	-0.3863D-01	124	-0.3796D-01	125	-0.3945D-01
126	-0.5119D-01	127	-0.1850D-01	128	-0.4633D-01	129	-0.1850D-01	130	-0.5118D-01
131	-0.2945D-01	132	-0.3796D-01	133	-0.3863D-01	134	-0.2088D-01	135	-0.2083C-01
136	-0.1394C-01	137	-0.2857D-01	138	-0.6548D-02	139	-0.2172D-01	140	-0.6548D-02
141	-0.2857D-01	142	-0.1394D-01	143	-0.2083D-01	144	-0.2088D-01	145	-0.1126C-01
146	-0.1122C-01	147	-0.4570D-02	148	-0.1120D-01	149	0.5588D-02	150	-0.1460C-01
151	0.5588D-02	152	-0.1203D-01	153	-0.4570D-02	154	-0.1122D-01	155	-0.1126D-01
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0		

B.2. Output (continued)

*** U-VEL AT TIME = 0.720000 03 ***

I	F	I	F	I	F	I	F	I	F
1	0.10000 01	2	0.10000 01	3	0.10000 01	4	0.10000 01	5	0.10000 01
6	0.10000 01	7	0.10000 01	8	0.10000 01	9	0.10000 01	10	0.10000 01
11	0.10010 01	12	0.10010 01	13	0.99980 00	14	0.99980 00	15	0.99980 00
16	0.99980 00	17	0.99980 00	18	0.10010 01	19	0.10010 01	20	0.10010 01
21	0.0	22	0.10190 01	23	0.10210 01	24	0.10210 01	25	0.10210 01
26	0.94160 00	27	0.10000 01	28	0.10210 01	29	0.10210 01	30	0.10390 01
31	0.0	32	0.0	33	0.10420 01	34	0.10390 01	35	0.10390 01
36	0.98880 00	37	0.67560 00	38	0.98880 00	39	0.10390 01	40	0.10390 01
41	0.10420 01	42	0.0	43	0.0	44	0.10900 01	45	0.10390 01
46	0.11450 01	47	0.10240 01	48	0.51640 00	49	0.0	50	0.10240 01
51	0.11450 01	52	0.11030 01	53	0.10980 01	54	0.0	55	0.0
56	0.11380 01	57	0.11500 01	58	0.12290 01	59	0.10260 01	60	0.0
61	0.0	62	0.10260 01	63	0.12290 01	64	0.11500 01	65	0.11380 01
66	0.0	67	0.0	68	0.11700 01	69	0.11730 01	70	0.12580 01
71	0.92140 00	72	0.0	73	-0.71740 -01	74	0.92140 00	75	0.12580 01
76	0.11730 01	77	0.11700 01	78	0.0	79	0.0	80	0.11860 01
81	0.11830 01	82	0.12740 01	83	0.91290 00	84	-0.12280 00	85	0.91290 00
86	0.12740 01	87	0.11830 01	88	0.11860 01	89	0.0	90	0.0
91	0.11890 01	92	0.11820 01	93	0.12660 01	94	0.91290 00	95	-0.56410 -01
96	0.91290 00	97	0.12660 01	98	0.11820 01	99	0.11390 01	100	0.0
101	0.0	102	0.11810 01	103	0.11740 01	104	0.12400 01	105	0.90740 00
106	0.21750 -02	107	0.90740 00	108	0.12400 01	109	-0.17400 01	110	0.11810 01
111	0.0	112	0.0	113	0.11670 01	114	0.11640 01	115	0.12100 01
116	0.90660 00	117	0.10170 00	118	0.90660 00	119	0.12100 01	120	0.11640 01
121	0.11670 01	122	0.0	123	0.0	124	0.11500 01	125	0.11540 01
126	0.11820 01	127	0.91070 00	128	0.20750 00	129	0.91070 00	130	0.11820 01
131	0.11540 01	132	0.11500 01	133	0.0	134	0.0	135	0.11370 01
136	0.14700 01	137	0.11610 01	138	0.91420 00	139	0.27550 00	140	0.91420 00
141	0.14700 01	142	0.11470 01	143	0.11370 01	144	0.0	145	0.0
146	0.11610 01	147	0.11390 01	148	0.11360 01	149	0.92550 00	150	0.37620 00
151	0.92550 00	152	0.11360 01	153	0.11390 01	154	0.11160 01	155	0.0
156	0.11160 01	157	0.11390 01	158	0.11360 01	159	0.92550 00	160	0.37620 00
161	0.92550 00	162	0.11360 01	163	0.11390 01	164	0.11160 01		

*** V-VEL AT TIME = 0.720000 03 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	-0.39710 -02	12	-0.15580 -01	13	-0.21510 -01	14	-0.36160 -01	15	0.18650 -16
16	0.36160 -01	17	0.21510 -01	18	0.15580 -01	19	0.39710 -02	20	0.0
21	0.0	22	-0.86510 -02	23	-0.36820 -01	24	-0.46100 -01	25	-0.10120 00
26	0.32280 -17	27	0.10120 00	28	0.46100 -01	29	0.36820 -01	30	0.86510 -02
31	0.0	32	0.0	33	-0.11370 -01	34	-0.37210 -01	35	-0.74960 -01
36	-0.19380 00	37	-0.45970 -16	38	0.19380 00	39	0.74960 -01	40	0.57210 -01
41	0.11370 -01	42	0.0	43	0.0	44	-0.17800 -01	45	-0.57210 -01
46	-0.12940 00	47	0.39820 00	48	-0.11260 -15	49	0.0	50	0.39820 00
51	-0.54370 -02	52	0.89420 -01	53	0.17800 -01	54	0.0	55	0.0
56	0.0	57	-0.74790 -01	58	-0.30730 -01	59	-0.23300 00	60	0.0
61	0.0	62	0.23300 00	63	-0.30730 -01	64	-0.74790 -01	65	0.54370 -02
66	0.0	67	0.0	68	0.74920 -02	69	-0.60630 -01	70	-0.12840 -01
71	-0.12410 00	72	0.0	73	-0.18400 -16	74	0.12410 00	75	0.12840 -01
76	0.60630 -01	77	-0.74920 -02	78	0.0	79	0.0	80	0.17090 -01
81	-0.38390 -01	82	0.92600 -02	83	-0.35010 -01	84	0.36500 -16	85	0.36010 -01
86	-0.93800 -02	87	0.38390 -01	88	-0.17090 -01	89	0.0	90	0.0
91	0.22590 -01	92	-0.16330 -01	93	0.27240 -01	94	0.33790 -01	95	0.93080 -16
96	-0.33790 -01	97	-0.27240 -01	98	0.16330 -01	99	-0.22590 -01	100	0.0
101	0.0	102	0.23610 -01	103	0.20670 -04	104	0.32540 -01	105	0.74030 -01
106	0.91600 -16	107	-0.74030 -01	108	-0.32540 -01	109	-0.20670 -04	110	-0.23610 -01
111	0.0	112	0.0	113	0.21580 -01	114	0.10790 -01	115	0.30780 -01
116	0.86730 -01	117	0.94400 -16	118	-0.86730 -01	119	-0.30780 -01	120	-0.86730 -01
121	-0.21580 -01	122	0.0	123	0.0	124	0.17790 -01	125	0.16590 -01
126	0.25880 -01	127	0.86950 -01	128	0.78870 -16	129	-0.80950 -01	130	-0.25880 -01
131	-0.16590 -01	132	-0.17790 -01	133	0.0	134	0.0	135	0.14710 -01
136	0.19940 -01	137	0.22640 -01	138	0.74600 -01	139	0.35470 -16	140	-0.74600 -01
141	-0.22640 -01	142	-0.19940 -01	143	-0.14710 -01	144	0.0	145	0.0
146	0.11650 -01	147	0.20190 -01	148	0.18180 -01	149	0.58580 -01	150	-0.18040 -16
151	-0.58580 -01	152	-0.18180 -01	153	-0.20190 -01	154	-0.11650 -01	155	0.0
156	0.11650 -01	157	0.20190 -01	158	0.18180 -01	159	0.58580 -01	160	-0.18040 -16
161	-0.58580 -01	162	-0.18180 -01	163	-0.20190 -01	164	-0.11650 -01		

[illegible]

B.4. Output for Wake Problem: Large Obstacle

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*****
*
* SOLUTION OF NAVIER-STOKES EQUATIONS BY ICM STREET VORTEX LARGE OBSTACLE
*
*****

NO. OF NCDES, NCDES ..... 166
NO. OF CONNECTORS, NCONS ..... 254
NO. OF GIVEN FLW CONNECTORS, NOGF ..... 9
NO. OF GIVEN-PRESSURE CONNECTORS, NOGP ..... 0
NO. OF TIME STEPS, NT1 ..... 480
NO. OF ITERATIONS ALLOWED FOR SOLVING PRESSURE, ... 1000
EVERY NREAD STEPS READ TRANSIENT INOUT ..... 481
PRINT INTERMITTENT PRESSURE?, I=YES, O=NO ..... 1
PRINT INTERMITTENT U?, I=YES, O=NO ..... 1
PRINT INTERMITTENT V?, I=YES, O=NO ..... 1
PRINT INTERMITTENT W?, I=YES, O=NO ..... 0
EVERY NPPR STEPS PRINT PRESSURE ONCE ..... 480
EVERY NPPU STEPS PRINT U ONCE ..... 480
EVERY NPPV STEPS PRINT V ONCE ..... 480
EVERY NPPW STEPS PRINT W ONCE ..... 481
IMPLICIT CONTROL OF SOLVING PHI, I=YES, O=NO ..... 1

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[illegible]

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TIME STEP SIZE ..... 0.15000 01
X-EDDY COEFFICIENT ..... 0.10000 -01
Y-EDDY COEFFICIENT ..... 0.10000 -01
Z-EDDY COEFFICIENT ..... 0.10000 -01
GRAVITY ACCELERATION ..... 0.0
TOTAL TOLERANCE FOR SOLVING PRESSURE ..... 0.10000 -02
OPTION=1=CUM FCFP IN ECVY TERM ..... 0.0
UPSTREAM? =YES. =0=NO ..... 0.10000 01

```

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
1	3	0.0	0.500000 01	0.100000 02	0.0
2	3	0.0	0.500000 01	0.200000 02	0.0
3	3	0.0	0.500000 01	0.300000 02	0.0
4	3	0.0	0.500000 01	0.400000 02	0.0
5	3	0.0	0.500000 01	0.500000 02	0.0
6	3	0.0	0.500000 01	0.600000 02	0.0
7	3	0.0	0.500000 01	0.700000 02	0.0
8	3	0.0	0.500000 01	0.800000 02	0.0
9	3	0.0	0.500000 01	0.900000 02	0.0
10	1	0.0	0.100000 02	0.500000 01	0.0
11	0	0.100000 03	0.100000 02	0.100000 02	0.0
12	0	0.100000 03	0.100000 02	0.200000 02	0.0
13	0	0.100000 03	0.100000 02	0.300000 02	0.0
14	0	0.100000 03	0.100000 02	0.400000 02	0.0
15	0	0.100000 03	0.100000 02	0.500000 02	0.0
16	0	0.100000 03	0.100000 02	0.600000 02	0.0
17	0	0.100000 03	0.100000 02	0.700000 02	0.0
18	0	0.100000 03	0.100000 02	0.800000 02	0.0
19	0	0.100000 03	0.100000 02	0.900000 02	0.0
20	1	0.0	0.200000 02	0.500000 01	0.0
21	0	0.100000 03	0.200000 02	0.100000 02	0.0
22	0	0.100000 03	0.200000 02	0.200000 02	0.0
23	0	0.100000 03	0.200000 02	0.300000 02	0.0
24	0	0.100000 03	0.200000 02	0.400000 02	0.0
25	0	0.100000 03	0.200000 02	0.500000 02	0.0
26	0	0.100000 03	0.200000 02	0.600000 02	0.0
27	0	0.100000 03	0.200000 02	0.700000 02	0.0
28	0	0.100000 03	0.200000 02	0.800000 02	0.0
29	0	0.100000 03	0.200000 02	0.900000 02	0.0
30	0	0.100000 03	0.200000 02	0.100000 02	0.0
31	1	0.0	0.300000 02	0.500000 01	0.0
32	0	0.100000 03	0.300000 02	0.100000 02	0.0
33	0	0.100000 03	0.300000 02	0.200000 02	0.0
34	0	0.100000 03	0.300000 02	0.300000 02	0.0
35	0	0.100000 03	0.300000 02	0.400000 02	0.0
36	0	0.100000 03	0.300000 02	0.500000 02	0.0
37	0	0.100000 03	0.300000 02	0.600000 02	0.0
38	0	0.100000 03	0.300000 02	0.700000 02	0.0
39	0	0.100000 03	0.300000 02	0.800000 02	0.0
40	0	0.100000 03	0.300000 02	0.900000 02	0.0
41	0	0.100000 03	0.300000 02	0.100000 02	0.0
42	1	0.0	0.400000 02	0.500000 01	0.0
43	0	0.100000 03	0.400000 02	0.100000 02	0.0
44	0	0.100000 03	0.400000 02	0.200000 02	0.0
45	0	0.100000 03	0.400000 02	0.300000 02	0.0
46	0	0.100000 03	0.400000 02	0.400000 02	0.0
47	0	0.100000 03	0.400000 02	0.500000 02	0.0
48	1	0.0	0.500000 02	0.500000 01	0.0
49	0	0.100000 03	0.500000 02	0.100000 02	0.0
50	1	0.0	0.500000 02	0.500000 01	0.0

B.4. Output (continued)

*** MODE (COMPARTMENT) DATA ***

N	MTYP	VOL(M)	X(M)	Y(M)	Z(M)
51	0	0.100000	0.400000	0.500000	0.0
52	0	0.100000	0.400000	0.600000	0.0
53	0	0.100000	0.400000	0.700000	0.0
54	0	0.100000	0.400000	0.800000	0.0
55	0	0.100000	0.400000	0.900000	0.0
56	1	0.0	0.400000	0.600000	0.0
57	0	0.100000	0.500000	0.600000	0.0
58	0	0.100000	0.500000	0.700000	0.0
59	0	0.100000	0.500000	0.800000	0.0
60	0	0.100000	0.500000	0.900000	0.0
61	1	0.0	0.500000	0.750000	0.0
62	0	0.100000	0.600000	0.700000	0.0
63	0	0.100000	0.600000	0.800000	0.0
64	0	0.100000	0.600000	0.900000	0.0
65	0	0.100000	0.600000	0.700000	0.0
66	0	0.100000	0.600000	0.800000	0.0
67	0	0.100000	0.600000	0.900000	0.0
68	0	0.100000	0.600000	0.700000	0.0
69	0	0.100000	0.600000	0.800000	0.0
70	0	0.100000	0.600000	0.900000	0.0
71	1	0.0	0.600000	0.800000	0.0
72	0	0.100000	0.700000	0.700000	0.0
73	0	0.100000	0.700000	0.800000	0.0
74	0	0.100000	0.700000	0.900000	0.0
75	0	0.100000	0.700000	0.700000	0.0
76	0	0.100000	0.700000	0.800000	0.0
77	0	0.100000	0.700000	0.900000	0.0
78	0	0.100000	0.700000	0.700000	0.0
79	0	0.100000	0.700000	0.800000	0.0
80	0	0.100000	0.700000	0.900000	0.0
81	1	0.0	0.700000	0.800000	0.0
82	0	0.100000	0.800000	0.700000	0.0
83	0	0.100000	0.800000	0.800000	0.0
84	0	0.100000	0.800000	0.900000	0.0
85	0	0.100000	0.800000	0.700000	0.0
86	0	0.100000	0.800000	0.800000	0.0
87	0	0.100000	0.800000	0.900000	0.0
88	0	0.100000	0.800000	0.700000	0.0
89	0	0.100000	0.800000	0.800000	0.0
90	0	0.100000	0.800000	0.900000	0.0
91	1	0.0	0.800000	0.900000	0.0
92	0	0.100000	0.900000	0.800000	0.0
93	0	0.100000	0.900000	0.900000	0.0
94	0	0.100000	0.900000	0.700000	0.0
95	0	0.100000	0.900000	0.800000	0.0
96	0	0.100000	0.900000	0.900000	0.0
97	0	0.100000	0.900000	0.700000	0.0
98	0	0.100000	0.900000	0.800000	0.0
99	0	0.100000	0.900000	0.900000	0.0
100	0	0.100000	0.900000	0.700000	0.0
101	0	0.100000	0.900000	0.800000	0.0
102	0	0.100000	0.900000	0.900000	0.0
103	0	0.100000	0.900000	0.700000	0.0
104	0	0.100000	0.900000	0.800000	0.0
105	0	0.100000	0.900000	0.900000	0.0
106	0	0.100000	0.900000	0.700000	0.0
107	0	0.100000	0.900000	0.800000	0.0
108	0	0.100000	0.900000	0.900000	0.0
109	0	0.100000	0.900000	0.700000	0.0
110	0	0.100000	0.900000	0.800000	0.0
111	0	0.100000	0.900000	0.900000	0.0
112	0	0.100000	0.900000	0.700000	0.0
113	0	0.100000	0.900000	0.800000	0.0
114	0	0.100000	0.900000	0.900000	0.0
115	0	0.100000	0.900000	0.700000	0.0
116	0	0.100000	0.900000	0.800000	0.0
117	0	0.100000	0.900000	0.900000	0.0
118	0	0.100000	0.900000	0.700000	0.0
119	0	0.100000	0.900000	0.800000	0.0
120	0	0.100000	0.900000	0.900000	0.0
121	0	0.100000	0.900000	0.700000	0.0
122	0	0.100000	0.900000	0.800000	0.0
123	0	0.100000	0.900000	0.900000	0.0
124	0	0.100000	0.900000	0.700000	0.0
125	0	0.100000	0.900000	0.800000	0.0
126	0	0.100000	0.900000	0.900000	0.0
127	0	0.100000	0.900000	0.700000	0.0
128	0	0.100000	0.900000	0.800000	0.0
129	0	0.100000	0.900000	0.900000	0.0
130	0	0.100000	0.900000	0.700000	0.0
131	0	0.100000	0.900000	0.800000	0.0
132	0	0.100000	0.900000	0.900000	0.0
133	0	0.100000	0.900000	0.700000	0.0
134	0	0.100000	0.900000	0.800000	0.0
135	0	0.100000	0.900000	0.900000	0.0
136	0	0.100000	0.900000	0.700000	0.0
137	0	0.100000	0.900000	0.800000	0.0
138	0	0.100000	0.900000	0.900000	0.0
139	0	0.100000	0.900000	0.700000	0.0
140	0	0.100000	0.900000	0.800000	0.0
141	0	0.100000	0.900000	0.900000	0.0
142	0	0.100000	0.900000	0.700000	0.0
143	0	0.100000	0.900000	0.800000	0.0
144	0	0.100000	0.900000	0.900000	0.0
145	0	0.100000	0.900000	0.700000	0.0
146	0	0.100000	0.900000	0.800000	0.0
147	0	0.100000	0.900000	0.900000	0.0
148	0	0.100000	0.900000	0.700000	0.0
149	0	0.100000	0.900000	0.800000	0.0
150	0	0.100000	0.900000	0.900000	0.0

B.4. Output (continued)

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
151	0	0.100000 03	0.130000 03	0.400000 02	0.0
152	0	0.100000 03	0.130000 03	0.500000 02	0.0
153	0	0.100000 03	0.130000 03	0.600000 02	0.0
154	0	0.100000 03	0.130000 03	0.700000 02	0.0
155	0	0.100000 03	0.130000 03	0.800000 02	0.0
156	0	0.100000 03	0.130000 03	0.900000 02	0.0
157	1	0.0	0.130000 02	0.950000 02	0.0
158	5	0.0	0.135000 02	0.100000 02	0.0
159	5	0.0	0.135000 03	0.200000 02	0.0
160	5	0.0	0.135000 02	0.300000 02	0.0
161	5	0.0	0.135000 03	0.400000 02	0.0
162	5	0.0	0.135000 03	0.500000 02	0.0
163	5	0.0	0.135000 03	0.600000 02	0.0
164	5	0.0	0.135000 03	0.700000 02	0.0
165	5	0.0	0.135000 03	0.800000 02	0.0
166	5	0.0	0.135000 02	0.900000 02	0.0

*** CONNECTOR (INTERFACE) DATA ***

K	KTYP	NO1	NO2	D1C(K)	D2C(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	INOM
1	0	11	12	5.000	5.000	10.000	0.0	1.000	0.0	1
2	0	12	13	5.000	5.000	10.000	0.0	1.000	0.0	1
3	0	13	14	5.000	5.000	10.000	0.0	1.000	0.0	1
4	0	14	15	5.000	5.000	10.000	0.0	1.000	0.0	1
5	0	15	16	5.000	5.000	10.000	0.0	1.000	0.0	1
6	0	16	17	5.000	5.000	10.000	0.0	1.000	0.0	1
7	0	17	18	5.000	5.000	10.000	0.0	1.000	0.0	1
8	0	18	19	5.000	5.000	10.000	0.0	1.000	0.0	1
9	0	22	23	5.000	5.000	10.000	0.0	1.000	0.0	1
10	0	23	24	5.000	5.000	10.000	0.0	1.000	0.0	1
11	0	24	25	5.000	5.000	10.000	0.0	1.000	0.0	1
12	0	25	26	5.000	5.000	10.000	0.0	1.000	0.0	1
13	0	26	27	5.000	5.000	10.000	0.0	1.000	0.0	1
14	0	27	28	5.000	5.000	10.000	0.0	1.000	0.0	1
15	0	28	29	5.000	5.000	10.000	0.0	1.000	0.0	1
16	0	29	30	5.000	5.000	10.000	0.0	1.000	0.0	1
17	0	33	34	5.000	5.000	10.000	0.0	1.000	0.0	1
18	0	34	35	5.000	5.000	10.000	0.0	1.000	0.0	1
19	0	35	36	5.000	5.000	10.000	0.0	1.000	0.0	1
20	0	36	37	5.000	5.000	10.000	0.0	1.000	0.0	1
21	0	37	38	5.000	5.000	10.000	0.0	1.000	0.0	1
22	0	38	39	5.000	5.000	10.000	0.0	1.000	0.0	1
23	0	39	40	5.000	5.000	10.000	0.0	1.000	0.0	1
24	0	40	41	5.000	5.000	10.000	0.0	1.000	0.0	1
25	0	44	45	5.000	5.000	10.000	0.0	1.000	0.0	1
26	0	45	46	5.000	5.000	10.000	0.0	1.000	0.0	1
27	0	46	47	5.000	5.000	10.000	0.0	1.000	0.0	1
28	0	47	51	5.000	5.000	10.000	0.0	1.000	0.0	4
29	0	51	52	5.000	5.000	10.000	0.0	1.000	0.0	1
30	0	52	53	5.000	5.000	10.000	0.0	1.000	0.0	1
31	0	53	54	5.000	5.000	10.000	0.0	1.000	0.0	1
32	0	54	55	5.000	5.000	10.000	0.0	1.000	0.0	1
33	0	58	59	5.000	5.000	10.000	0.0	1.000	0.0	1
34	0	59	60	5.000	5.000	10.000	0.0	1.000	0.0	1
35	0	63	64	5.000	5.000	10.000	0.0	1.000	0.0	1
36	0	64	65	5.000	5.000	10.000	0.0	1.000	0.0	1
37	0	68	69	5.000	5.000	10.000	0.0	1.000	0.0	1
38	0	69	70	5.000	5.000	10.000	0.0	1.000	0.0	1
39	0	70	71	5.000	5.000	10.000	0.0	1.000	0.0	1
40	0	71	75	5.000	5.000	10.000	0.0	1.000	0.0	4
41	0	75	76	5.000	5.000	10.000	0.0	1.000	0.0	1
42	0	76	77	5.000	5.000	10.000	0.0	1.000	0.0	1
43	0	77	78	5.000	5.000	10.000	0.0	1.000	0.0	1
44	0	78	79	5.000	5.000	10.000	0.0	1.000	0.0	1
45	0	82	83	5.000	5.000	10.000	0.0	1.000	0.0	1
46	0	83	84	5.000	5.000	10.000	0.0	1.000	0.0	1
47	0	84	85	5.000	5.000	10.000	0.0	1.000	0.0	1
48	0	85	86	5.000	5.000	10.000	0.0	1.000	0.0	1
49	0	86	87	5.000	5.000	10.000	0.0	1.000	0.0	1
50	0	87	88	5.000	5.000	10.000	0.0	1.000	0.0	1
51	0	88	89	5.000	5.000	10.000	0.0	1.000	0.0	1
52	0	89	90	5.000	5.000	10.000	0.0	1.000	0.0	1
53	0	93	94	5.000	5.000	10.000	0.0	1.000	0.0	1
54	0	94	95	5.000	5.000	10.000	0.0	1.000	0.0	1
55	0	95	96	5.000	5.000	10.000	0.0	1.000	0.0	1
56	0	96	97	5.000	5.000	10.000	0.0	1.000	0.0	1
57	0	97	98	5.000	5.000	10.000	0.0	1.000	0.0	1
58	0	98	99	5.000	5.000	10.000	0.0	1.000	0.0	1
59	0	99	100	5.000	5.000	10.000	0.0	1.000	0.0	1
60	0	100	101	5.000	5.000	10.000	0.0	1.000	0.0	1
61	0	104	105	5.000	5.000	10.000	0.0	1.000	0.0	1
62	0	105	106	5.000	5.000	10.000	0.0	1.000	0.0	1
63	0	106	107	5.000	5.000	10.000	0.0	1.000	0.0	1
64	0	107	108	5.000	5.000	10.000	0.0	1.000	0.0	1
65	0	108	109	5.000	5.000	10.000	0.0	1.000	0.0	1
66	0	109	110	5.000	5.000	10.000	0.0	1.000	0.0	1
67	0	110	111	5.000	5.000	10.000	0.0	1.000	0.0	1
68	0	111	112	5.000	5.000	10.000	0.0	1.000	0.0	1
69	0	115	116	5.000	5.000	10.000	0.0	1.000	0.0	1
70	0	116	117	5.000	5.000	10.000	0.0	1.000	0.0	1
71	0	117	118	5.000	5.000	10.000	0.0	1.000	0.0	1
72	0	118	119	5.000	5.000	10.000	0.0	1.000	0.0	1
73	0	119	120	5.000	5.000	10.000	0.0	1.000	0.0	1
74	0	120	121	5.000	5.000	10.000	0.0	1.000	0.0	1
75	0	121	122	5.000	5.000	10.000	0.0	1.000	0.0	1

B.4. Output (continued)

*** (CONNECTED) DATA ***

K	KTYPE	KCD1	KCD2	D1C(K)	D2C(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	INNM
171	0	108	119	5.000	5.000	10.000	1.000	0.0	0.0	11
172	0	109	120	5.000	5.000	10.000	1.000	0.0	0.0	11
173	0	110	121	5.000	5.000	10.000	1.000	0.0	0.0	11
174	0	111	122	5.000	5.000	10.000	1.000	0.0	0.0	11
175	0	112	123	5.000	5.000	10.000	1.000	0.0	0.0	11
176	0	113	124	5.000	5.000	10.000	1.000	0.0	0.0	11
177	0	114	125	5.000	5.000	10.000	1.000	0.0	0.0	11
178	0	115	126	5.000	5.000	10.000	1.000	0.0	0.0	11
179	0	116	127	5.000	5.000	10.000	1.000	0.0	0.0	11
180	0	117	128	5.000	5.000	10.000	1.000	0.0	0.0	11
181	0	118	129	5.000	5.000	10.000	1.000	0.0	0.0	11
182	0	119	130	5.000	5.000	10.000	1.000	0.0	0.0	11
183	0	120	131	5.000	5.000	10.000	1.000	0.0	0.0	11
184	0	121	132	5.000	5.000	10.000	1.000	0.0	0.0	11
185	0	122	133	5.000	5.000	10.000	1.000	0.0	0.0	11
186	0	123	134	5.000	5.000	10.000	1.000	0.0	0.0	11
187	0	124	135	5.000	5.000	10.000	1.000	0.0	0.0	11
188	0	125	136	5.000	5.000	10.000	1.000	0.0	0.0	11
189	0	126	137	5.000	5.000	10.000	1.000	0.0	0.0	11
190	0	127	138	5.000	5.000	10.000	1.000	0.0	0.0	11
191	0	128	139	5.000	5.000	10.000	1.000	0.0	0.0	11
192	0	129	140	5.000	5.000	10.000	1.000	0.0	0.0	11
193	0	130	141	5.000	5.000	10.000	1.000	0.0	0.0	11
194	0	131	142	5.000	5.000	10.000	1.000	0.0	0.0	11
195	0	132	143	5.000	5.000	10.000	1.000	0.0	0.0	11
196	0	133	144	5.000	5.000	10.000	1.000	0.0	0.0	11
197	0	134	145	5.000	5.000	10.000	1.000	0.0	0.0	11
198	0	135	146	5.000	5.000	10.000	1.000	0.0	0.0	11
199	0	136	147	5.000	5.000	10.000	1.000	0.0	0.0	11
200	0	137	148	5.000	5.000	10.000	1.000	0.0	0.0	11
201	0	138	149	5.000	5.000	10.000	1.000	0.0	0.0	11
202	0	139	150	5.000	5.000	10.000	1.000	0.0	0.0	11
203	0	140	151	5.000	5.000	10.000	1.000	0.0	0.0	11
204	0	141	152	5.000	5.000	10.000	1.000	0.0	0.0	11
205	0	142	153	5.000	5.000	10.000	1.000	0.0	0.0	11
206	0	143	154	5.000	5.000	10.000	1.000	0.0	0.0	11
207	0	144	155	5.000	5.000	10.000	1.000	0.0	0.0	11
208	0	145	156	5.000	5.000	10.000	1.000	0.0	0.0	11
209	0	146	157	5.000	5.000	10.000	1.000	0.0	0.0	11
210	0	147	158	5.000	5.000	10.000	1.000	0.0	0.0	11
211	0	148	159	5.000	5.000	10.000	1.000	0.0	0.0	11
212	0	149	160	5.000	5.000	10.000	1.000	0.0	0.0	11
213	0	150	161	5.000	5.000	10.000	1.000	0.0	0.0	11
214	0	151	162	5.000	5.000	10.000	1.000	0.0	0.0	11
215	0	152	163	5.000	5.000	10.000	1.000	0.0	0.0	11
216	0	153	164	5.000	5.000	10.000	1.000	0.0	0.0	11
217	0	154	165	5.000	5.000	10.000	1.000	0.0	0.0	11
218	0	155	166	5.000	5.000	10.000	1.000	0.0	0.0	11
219	0	156	167	5.000	5.000	10.000	1.000	0.0	0.0	11
220	0	157	168	5.000	5.000	10.000	1.000	0.0	0.0	11
221	0	158	169	5.000	5.000	10.000	1.000	0.0	0.0	11
222	0	159	170	5.000	5.000	10.000	1.000	0.0	0.0	11
223	0	160	171	5.000	5.000	10.000	1.000	0.0	0.0	11
224	0	161	172	5.000	5.000	10.000	1.000	0.0	0.0	11
225	0	162	173	5.000	5.000	10.000	1.000	0.0	0.0	11
226	0	163	174	5.000	5.000	10.000	1.000	0.0	0.0	11
227	0	164	175	5.000	5.000	10.000	1.000	0.0	0.0	11
228	0	165	176	5.000	5.000	10.000	1.000	0.0	0.0	11
229	0	166	177	5.000	5.000	10.000	1.000	0.0	0.0	11
230	0	167	178	5.000	5.000	10.000	1.000	0.0	0.0	11
231	0	168	179	5.000	5.000	10.000	1.000	0.0	0.0	11
232	0	169	180	5.000	5.000	10.000	1.000	0.0	0.0	11
233	0	170	181	5.000	5.000	10.000	1.000	0.0	0.0	11
234	0	171	182	5.000	5.000	10.000	1.000	0.0	0.0	11
235	0	172	183	5.000	5.000	10.000	1.000	0.0	0.0	11
236	0	173	184	5.000	5.000	10.000	1.000	0.0	0.0	11
237	0	174	185	5.000	5.000	10.000	1.000	0.0	0.0	11
238	0	175	186	5.000	5.000	10.000	1.000	0.0	0.0	11
239	0	176	187	5.000	5.000	10.000	1.000	0.0	0.0	11
240	0	177	188	5.000	5.000	10.000	1.000	0.0	0.0	11
241	0	178	189	5.000	5.000	10.000	1.000	0.0	0.0	11
242	0	179	190	5.000	5.000	10.000	1.000	0.0	0.0	11
243	0	180	191	5.000	5.000	10.000	1.000	0.0	0.0	11
244	0	181	192	5.000	5.000	10.000	1.000	0.0	0.0	11
245	0	182	193	5.000	5.000	10.000	1.000	0.0	0.0	11
246	0	183	194	5.000	5.000	10.000	1.000	0.0	0.0	11
247	0	184	195	5.000	5.000	10.000	1.000	0.0	0.0	11
248	0	185	196	5.000	5.000	10.000	1.000	0.0	0.0	11
249	0	186	197	5.000	5.000	10.000	1.000	0.0	0.0	11
250	0	187	198	5.000	5.000	10.000	1.000	0.0	0.0	11
251	0	188	199	5.000	5.000	10.000	1.000	0.0	0.0	11
252	0	189	200	5.000	5.000	10.000	1.000	0.0	0.0	11
253	0	190	201	5.000	5.000	10.000	1.000	0.0	0.0	11
254	0	191	202	5.000	5.000	10.000	1.000	0.0	0.0	11

B.4. Output (continued)

*** PRESSURE DISTRIBUTION AT TIME =

0.0

***

I	P	I	P	I	P	I	P	I	P
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0
141	0.0	142	0.0	143	0.0	144	0.0	145	0.0
146	0.0	147	0.0	148	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0	155	0.0
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0	165	0.0
166	0.0								

*** U-VEL AT TIME = 0.0

***

I	P	I	P	I	P	I	P	I	P
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0
141	0.0	142	0.0	143	0.0	144	0.0	145	0.0
146	0.0	147	0.0	148	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0	155	0.0
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0	165	0.0
166	0.0								

B.4. Output (continued)

*** V-VEL AT TIME = 0.0 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0
141	0.0	142	0.0	143	0.0	144	0.0	145	0.0
146	0.0	147	0.0	148	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0	155	0.0
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0	165	0.0

*** PRESSURE DISTRIBUTION AT TIME = 6.720000 03 ***

I	F	I	F	I	F	I	F	I	F
1	0.14330 01	2	0.14670 01	3	0.15420 01	4	0.16680 01	5	0.16630 01
6	0.16580 01	7	0.15420 01	8	0.14670 01	9	0.14330 01	10	0.14330 01
11	0.14330 01	12	0.14670 01	13	0.15420 01	14	0.16680 01	15	0.16630 01
16	0.16580 01	17	0.15420 01	18	0.14670 01	19	0.14330 01	20	0.14330 01
21	0.14180 01	22	0.14180 01	23	0.14520 01	24	0.15330 01	25	0.17380 01
26	0.16940 01	27	0.17350 01	28	0.15330 01	29	0.16520 01	30	0.14180 01
31	0.14180 01	32	0.12920 01	33	0.12920 01	34	0.13120 01	35	0.14080 01
36	0.18110 01	37	0.17270 01	38	0.18110 01	39	0.14080 01	40	0.13120 01
41	0.12920 01	42	0.12920 01	43	0.12020 01	44	0.12020 01	45	0.11770 01
46	0.11330 01	47	0.21840 01	48	0.21860 01	49	0.19180 01	50	0.21740 01
51	0.19130 01	52	0.21840 01	53	0.11330 01	54	0.11770 01	55	0.12020 01
56	0.12020 01	57	0.74370 00	58	0.74340 00	59	0.60270 00	60	-0.18410 00
61	-0.18770 00	62	-0.18770 00	63	-0.18610 00	64	0.60270 00	65	0.74340 00
66	0.74370 00	67	0.46230 00	68	0.46200 00	69	0.43350 00	70	0.21140 00
71	0.11690 01	72	0.11940 01	73	0.21820 00	74	0.11940 01	75	0.21780 00
76	0.11690 01	77	0.21140 00	78	0.43350 00	79	0.46200 00	80	0.46 70 00
81	0.31800 00	82	0.31780 00	83	0.27750 00	84	0.19830 00	85	0.16200 01
86	0.19270 00	87	0.16250 01	88	0.19830 00	89	0.27750 00	90	0.31780 00
91	0.31800 00	92	0.21270 00	93	0.21250 00	94	0.15780 00	95	0.13880 00
96	0.20530 01	97	0.14830 00	98	0.20530 01	99	0.13880 00	100	0.15780 00
101	0.21250 00	102	0.21270 00	103	0.13670 00	104	0.13660 00	105	0.09170 01
106	0.09830 01	107	0.15350 01	108	0.09840 01	109	0.15350 01	110	0.09830 01
111	0.05110 01	112	0.13660 00	113	0.13670 00	114	0.08500 01	115	0.05410 01
116	0.43640 01	117	0.52470 01	118	0.10230 01	119	0.08130 01	120	0.10230 01
121	0.52470 01	122	0.43640 01	123	0.15410 01	124	0.08500 01	125	0.05070 01
126	0.50640 01	127	0.21180 01	128	0.25100 01	129	0.34940 02	130	0.28370 01
131	0.34940 02	132	0.25100 01	133	0.21180 01	134	0.50640 01	135	0.50700 01
136	0.25200 01	137	0.25230 01	138	0.74680 02	139	0.091130 02	140	0.14780 02
141	0.10700 01	142	0.14780 02	143	0.091130 02	144	0.74680 02	145	0.28230 01
146	0.25270 01	147	0.89490 02	148	0.89240 02	149	0.12240 04	150	-0.49670 03
151	-0.12670 02	152	-0.73540 03	153	-0.12670 02	154	-0.49670 03	155	0.12240 04
156	0.89240 02	157	0.89490 02	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0	165	0.0

B.4. Output (continued)

*** U-VEL AT TIME = 0.720000 03 ***

I	F	I	F	I	F	I	F	I	F
1	0.10000 01	2	0.10000 01	3	0.10000 01	4	0.10000 01	5	0.10000 01
6	0.10000 01	7	0.10000 01	8	0.10000 01	9	0.10000 01	10	0.0
11	0.10030 01	12	0.10030 01	13	0.99320 00	14	0.96830 00	15	0.97580 00
16	0.96830 00	17	0.99320 00	18	0.10030 01	19	0.10030 01	20	0.0
21	0.0	22	0.10780 01	23	0.10800 01	24	0.10250 01	25	0.92650 00
26	0.92440 00	27	0.92650 00	28	0.10280 01	29	0.10800 01	30	0.10780 01
31	0.0	32	0.0	33	0.11540 01	34	0.11540 01	35	0.10320 01
36	0.67290 00	37	0.72250 00	38	0.67290 00	39	0.10320 01	40	0.11540 01
41	0.11540 01	42	0.0	43	0.0	44	0.14100 01	45	0.14350 01
46	0.12380 01	47	0.49410 00	48	0.0	49	0.0	50	0.0
51	0.47410 00	52	0.49410 00	53	0.12380 01	54	0.14350 01	55	0.14100 01
56	0.0	57	0.0	58	0.16120 01	59	0.16490 01	60	0.13460 01
61	0.0	62	0.0	63	0.13460 01	64	0.16490 01	65	0.16120 01
66	0.0	67	0.0	68	0.17280 01	69	0.17170 01	70	0.11410 01
71	-0.62410-01	72	0.0	73	0.0	74	0.0	75	-0.82960-01
76	-0.62410-01	77	0.11410 01	78	0.17170 01	79	0.17280 01	80	0.0
81	0.0	82	0.17990 01	83	0.17580 01	84	0.10990 01	85	-0.87520-01
86	-0.14170 00	87	-0.87520-01	88	0.10990 01	89	0.17580 01	90	0.17990 01
91	0.0	92	0.0	93	0.18490 01	94	0.17810 01	95	0.10920 01
96	-0.93430-01	97	-0.26040 00	98	-0.93430-01	99	0.10920 01	100	0.17810 01
101	0.18490 01	102	0.0	103	0.0	104	0.18490 01	105	0.17920 01
106	0.10940 01	107	-0.84120-01	108	-0.36470 00	109	-0.84120-01	110	0.10940 01
111	0.17520 01	112	0.18840 01	113	0.0	114	0.0	115	0.19070 01
116	0.17960 01	117	0.10980 01	118	-0.79030-01	119	-0.44210 00	120	-0.79030-01
121	0.10980 01	122	0.17960 01	123	0.19070 01	124	0.0	125	0.0
126	0.15230 01	127	0.17970 01	128	0.11020 01	129	-0.73900-01	130	-0.49270 00
131	-0.73940-01	132	0.11020 01	133	0.17970 01	134	0.19230 01	135	0.0
136	0.0	137	0.15320 01	138	0.17980 01	139	0.11040 01	140	-0.71660-01
141	-0.52160 00	142	-0.71660-01	143	0.11040 01	144	0.17980 01	145	0.19320 01
146	0.0	147	0.0	148	0.19420 01	149	0.17960 01	150	0.11020 01
151	-0.73670-01	152	-0.53530 00	153	-0.73670-01	154	0.11020 01	155	0.17960 01
156	0.19420 01	157	0.0	158	0.19420 01	159	0.17960 01	160	0.11020 01
161	-0.73670-01	162	-0.53530 00	163	-0.73670-01	164	0.11020 01	165	0.17960 01
166	0.19420 01								

*** V-VEL AT TIME = 0.720000 03 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	-0.18280-01	12	-0.56890-01	13	-0.91980-01	14	-0.58720-01	15	0.11600-15
16	0.58720-01	17	0.91980-01	18	0.56890-01	19	0.18280-01	20	0.0
21	0.0	22	-0.41970-01	23	-0.12810 00	24	-0.21560 00	25	-0.13930 00
26	0.43050-17	27	0.13930 00	28	0.21560 00	29	0.12810 00	30	0.41970-01
31	0.0	32	0.0	33	-0.70020-01	34	-0.22460 00	35	-0.39590 00
36	-0.29250 00	37	-0.88830-16	38	0.29250 00	39	0.39590 00	40	0.22460 00
41	0.70020-01	42	0.0	43	0.0	44	-0.12220 00	45	-0.40720 00
46	-0.79700 00	47	-0.73070 00	48	0.0	49	0.0	50	0.0
51	-0.18280-15	52	0.73070 00	53	0.79700 00	54	0.40720 00	55	0.12220 00
56	0.0	57	0.0	58	-0.79360-01	59	-0.15650 00	60	-0.41390 00
61	0.0	62	0.0	63	0.41390 00	64	0.15650 00	65	0.79360-01
66	0.0	67	0.0	68	-0.71640-01	69	-0.98450-01	70	-0.24100 00
71	-0.50850-01	72	0.0	73	0.0	74	0.0	75	-0.32520-16
76	0.50850-01	77	0.24100 00	78	0.98450-01	79	0.71640-01	80	0.0
81	0.0	82	-0.60390-01	83	-0.67060-01	84	-0.11930 00	85	-0.35060-01
86	-0.42150-16	87	0.35060-01	88	0.11930 00	89	0.67060-01	90	0.60390-01
91	0.0	92	0.0	93	-0.45160-01	94	0.46630-01	95	-0.58800-01
96	-0.73880-01	97	-0.32160-16	98	0.73880-01	99	0.58800-01	100	0.66630-01
101	0.45160-01	102	0.0	103	0.0	104	-0.31640-01	105	-0.33540-01
106	-0.28520-01	107	-0.66920-01	108	-0.35350-16	109	0.66920-01	110	0.28520-01
111	0.33540-01	112	0.31640-01	113	0.0	114	0.0	115	-0.21120-01
116	-0.24350-01	117	-0.13620-01	118	-0.50060-01	119	-0.47610-16	120	0.50060-01
121	0.13620-01	122	0.24350-01	123	0.21120-01	124	0.0	125	0.0
126	-0.13390-01	127	-0.17270-01	128	-0.61240-02	129	-0.32790-01	130	-0.79760-16
131	0.32790-01	132	0.61240-02	133	0.17270-01	134	0.13390-01	135	0.0
136	0.0	137	-0.87900-02	138	-0.12860-01	139	-0.34920-01	140	-0.18180-01
141	-0.13640-15	142	0.18180-01	143	0.34920-01	144	0.12860-01	145	0.87900-02
146	0.0	147	0.0	148	-0.64490-02	149	-0.10260-01	150	-0.29410-02
151	-0.80380-02	152	-0.14900-15	153	0.80380-02	154	0.29410-02	155	0.10260-01
156	0.64490-02	157	0.0	158	-0.64490-02	159	-0.10260-01	160	-0.29410-02
161	-0.80380-02	162	-0.14900-15	163	0.80380-02	164	0.29410-02	165	0.10260-01
166	0.64490-02								

C.1. Input for Square Cavity Problem: Large Grid

[illegible]

C.1. Input (continued)

NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85																																																																																																																				

C.2. Output for Square Cavity Problem: Large Grid

MAVEN-STOKES EQUATIONS BY ICM - SQUARE CAVITY LARGE GRID

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NO OF NODES, NODES ..... 140
NO OF CONNECTIONS, NCNDS ..... 220
NO OF ELASH FLOW CONNECTIONS, NCF ..... 10
NO OF ELASH FLOW PRESSURE CONNECTIONS, NCFP ..... 0
NO OF ITERATIONS ALLOWED FOR SOLVING PRESSURE ..... 1000
MESHED STEPS READ TRANSIENT INPUT ..... 601
PRINT INTERMEDIATE PRESSURE, I=YES, O=NO ..... 1
PRINT INTERMEDIATE UZ, I=YES, O=NO ..... 1
PRINT INTERMEDIATE A7, I=YES, O=NO ..... 1
PRINT INTERMEDIATE A7, I=YES, O=NO ..... 1
PRINT INTERMEDIATE PRESSURE ONCE ..... 0
PRINT INTERMEDIATE PRESSURE ONCE ..... 240
PRINT U ONCE ..... 240
PRINT V ONCE ..... 240
PRINT W ONCE ..... 240
IMPLICIT CONTROL OF SOLVING PMS, I=YES, O=NO ..... 1

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*****
*** LIST OF DATA CONTROL ***
*****

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[illegible]

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*** MODE (COMPONENT) DATA ***
      N      NTYPE      VOL(N)      X(N)      Y(N)      Z(N)

```

IN	IN VP	VOL (N)	(N) X	(N) A	(N) Z
1	1	0.0	0.559000	0.109000	0.0
2	1	0.0	0.559000	0.209000	0.0
3	1	0.0	0.559000	0.309000	0.0
4	1	0.0	0.559000	0.409000	0.0
5	1	0.0	0.559000	0.509000	0.0
6	1	0.0	0.559000	0.609000	0.0
7	1	0.0	0.559000	0.709000	0.0
8	1	0.0	0.559000	0.809000	0.0
9	1	0.0	0.559000	0.909000	0.0
10	1	0.0	0.559000	0.109000	0.0
11	1	0.0	0.559000	0.209000	0.0
12	1	0.0	0.559000	0.309000	0.0
13	1	0.0	0.559000	0.409000	0.0
14	1	0.0	0.559000	0.509000	0.0
15	1	0.0	0.559000	0.609000	0.0
16	1	0.0	0.559000	0.709000	0.0
17	1	0.0	0.559000	0.809000	0.0
18	1	0.0	0.559000	0.909000	0.0
19	1	0.0	0.559000	0.109000	0.0
20	1	0.0	0.559000	0.209000	0.0
21	1	0.0	0.559000	0.309000	0.0
22	1	0.0	0.559000	0.409000	0.0
23	1	0.0	0.559000	0.509000	0.0
24	1	0.0	0.559000	0.609000	0.0
25	1	0.0	0.559000	0.709000	0.0
26	1	0.0	0.559000	0.809000	0.0
27	1	0.0	0.559000	0.909000	0.0
28	1	0.0	0.559000	0.109000	0.0
29	1	0.0	0.559000	0.209000	0.0
30	1	0.0	0.559000	0.309000	0.0
31	1	0.0	0.559000	0.409000	0.0
32	1	0.0	0.559000	0.509000	0.0
33	1	0.0	0.559000	0.609000	0.0
34	1	0.0	0.559000	0.709000	0.0
35	1	0.0	0.559000	0.809000	0.0
36	1	0.0	0.559000	0.909000	0.0
37	1	0.0	0.559000	0.109000	0.0
38	1	0.0	0.559000	0.209000	0.0
39	1	0.0	0.559000	0.309000	0.0
40	1	0.0	0.559000	0.409000	0.0
41	1	0.0	0.559000	0.509000	0.0
42	1	0.0	0.559000	0.609000	0.0
43	1	0.0	0.559000	0.709000	0.0
44	1	0.0	0.559000	0.809000	0.0
45	1	0.0	0.559000	0.909000	0.0
46	1	0.0	0.559000	0.109000	0.0
47	1	0.0	0.559000	0.209000	0.0
48	1	0.0	0.559000	0.309000	0.0
49	1	0.0	0.559000	0.409000	0.0
50	1	0.0	0.559000	0.509000	0.0

C.2. Output (continued)

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
51	0	0.100000 03	0.400000 02	0.400000 02	0.0
52	0	0.100000 03	0.400000 02	0.500000 02	0.0
53	0	0.100000 03	0.400000 02	0.600000 02	0.0
54	0	0.100000 03	0.400000 02	0.700000 02	0.0
55	0	0.100000 03	0.400000 02	0.800000 02	0.0
56	0	0.100000 03	0.400000 02	0.900000 02	0.0
57	0	0.100000 03	0.400000 02	0.100000 03	0.0
58	1	0.0	0.400000 02	0.105000 03	0.0
59	1	0.0	0.500000 02	0.500000 01	0.0
60	0	0.100000 03	0.500000 02	0.100000 02	0.0
61	0	0.100000 03	0.500000 02	0.200000 02	0.0
62	0	0.100000 03	0.500000 02	0.300000 02	0.0
63	0	0.100000 03	0.500000 02	0.400000 02	0.0
64	0	0.100000 03	0.500000 02	0.500000 02	0.0
65	0	0.100000 03	0.500000 02	0.600000 02	0.0
66	0	0.100000 03	0.500000 02	0.700000 02	0.0
67	0	0.100000 03	0.500000 02	0.800000 02	0.0
68	0	0.100000 03	0.500000 02	0.900000 02	0.0
69	0	0.100000 03	0.500000 02	0.100000 03	0.0
70	0	0.0	0.500000 02	0.105000 03	0.0
71	1	0.0	0.600000 02	0.500000 01	0.0
72	0	0.100000 03	0.600000 02	0.100000 02	0.0
73	0	0.100000 03	0.600000 02	0.200000 02	0.0
74	0	0.100000 03	0.600000 02	0.300000 02	0.0
75	0	0.100000 03	0.600000 02	0.400000 02	0.0
76	0	0.100000 03	0.600000 02	0.500000 02	0.0
77	0	0.100000 03	0.600000 02	0.600000 02	0.0
78	0	0.100000 03	0.600000 02	0.700000 02	0.0
79	0	0.100000 03	0.600000 02	0.800000 02	0.0
80	0	0.100000 03	0.600000 02	0.900000 02	0.0
81	0	0.100000 03	0.600000 02	0.100000 03	0.0
82	0	0.0	0.600000 02	0.105000 03	0.0
83	1	0.0	0.700000 02	0.500000 01	0.0
84	0	0.100000 03	0.700000 02	0.100000 02	0.0
85	0	0.100000 03	0.700000 02	0.200000 02	0.0
86	0	0.100000 03	0.700000 02	0.300000 02	0.0
87	0	0.100000 03	0.700000 02	0.400000 02	0.0
88	0	0.100000 03	0.700000 02	0.500000 02	0.0
89	0	0.100000 03	0.700000 02	0.600000 02	0.0
90	0	0.100000 03	0.700000 02	0.700000 02	0.0
91	0	0.100000 03	0.700000 02	0.800000 02	0.0
92	0	0.100000 03	0.700000 02	0.900000 02	0.0
93	0	0.100000 03	0.700000 02	0.100000 03	0.0
94	3	0.0	0.700000 02	0.105000 03	0.0
95	1	0.0	0.800000 02	0.500000 01	0.0
96	0	0.100000 03	0.800000 02	0.100000 02	0.0
97	0	0.100000 03	0.800000 02	0.200000 02	0.0
98	0	0.100000 03	0.800000 02	0.300000 02	0.0
99	0	0.100000 03	0.800000 02	0.400000 02	0.0
100	0	0.100000 03	0.800000 02	0.500000 02	0.0
101	0	0.100000 03	0.800000 02	0.600000 02	0.0
102	0	0.100000 03	0.800000 02	0.700000 02	0.0
103	0	0.100000 03	0.800000 02	0.800000 02	0.0
104	0	0.100000 03	0.800000 02	0.900000 02	0.0
105	0	0.100000 03	0.800000 02	0.100000 03	0.0
106	3	0.0	0.800000 02	0.105000 03	0.0
107	1	0.0	0.900000 02	0.500000 01	0.0
108	0	0.100000 03	0.900000 02	0.100000 02	0.0
109	0	0.100000 03	0.900000 02	0.200000 02	0.0
110	0	0.100000 03	0.900000 02	0.300000 02	0.0
111	0	0.100000 03	0.900000 02	0.400000 02	0.0
112	0	0.100000 03	0.900000 02	0.500000 02	0.0
113	0	0.100000 03	0.900000 02	0.600000 02	0.0
114	0	0.100000 03	0.900000 02	0.700000 02	0.0
115	0	0.100000 03	0.900000 02	0.800000 02	0.0
116	0	0.100000 03	0.900000 02	0.900000 02	0.0
117	0	0.100000 03	0.900000 02	0.100000 03	0.0
118	3	0.0	0.900000 02	0.105000 03	0.0
119	1	0.0	0.100000 03	0.500000 01	0.0
120	0	0.100000 03	0.100000 03	0.100000 02	0.0
121	0	0.100000 03	0.100000 03	0.200000 02	0.0
122	0	0.100000 03	0.100000 03	0.300000 02	0.0
123	0	0.100000 03	0.100000 03	0.400000 02	0.0
124	0	0.100000 03	0.100000 03	0.500000 02	0.0
125	0	0.100000 03	0.100000 03	0.600000 02	0.0
126	0	0.100000 03	0.100000 03	0.700000 02	0.0
127	0	0.100000 03	0.100000 03	0.800000 02	0.0
128	0	0.100000 03	0.100000 03	0.900000 02	0.0
129	0	0.100000 03	0.100000 03	0.100000 03	0.0
130	3	0.0	0.100000 03	0.105000 03	0.0
131	1	0.0	0.105000 03	0.100000 02	0.0
132	1	0.0	0.105000 03	0.200000 02	0.0
133	1	0.0	0.105000 03	0.300000 02	0.0
134	1	0.0	0.105000 03	0.400000 02	0.0
135	1	0.0	0.105000 03	0.500000 02	0.0
136	1	0.0	0.105000 03	0.600000 02	0.0
137	1	0.0	0.105000 03	0.700000 02	0.0
138	1	0.0	0.105000 03	0.800000 02	0.0
139	1	0.0	0.105000 03	0.900000 02	0.0
140	1	0.0	0.105000 03	0.100000 03	0.0

C.2. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***											
K	K TYP	NOCT	MOD2	DATA	DI1C(K)	DI2C(K)	AREA(K)	JCSX(K)	DCSTY(K)	JCSZ(K)	ENORM
1	0	12	17	2	5.000	5.000	10.000	0.0	1.000	0.0	1
2	0	13	14	2	5.000	5.000	10.000	0.0	1.000	0.0	1
3	0	14	15	2	5.000	5.000	10.000	0.0	1.000	0.0	1
4	0	15	16	2	5.000	5.000	10.000	0.0	1.000	0.0	1
5	0	16	17	2	5.000	5.000	10.000	0.0	1.000	0.0	1
6	0	17	18	2	5.000	5.000	10.000	0.0	1.000	0.0	1
7	0	18	19	2	5.000	5.000	10.000	0.0	1.000	0.0	1
8	0	19	20	2	5.000	5.000	10.000	0.0	1.000	0.0	1
9	0	20	21	2	5.000	5.000	10.000	0.0	1.000	0.0	1
10	0	21	22	2	5.000	5.000	10.000	0.0	1.000	0.0	1
11	0	22	23	2	5.000	5.000	10.000	0.0	1.000	0.0	1
12	0	23	24	2	5.000	5.000	10.000	0.0	1.000	0.0	1
13	0	24	25	2	5.000	5.000	10.000	0.0	1.000	0.0	1
14	0	25	26	2	5.000	5.000	10.000	0.0	1.000	0.0	1
15	0	26	27	2	5.000	5.000	10.000	0.0	1.000	0.0	1
16	0	27	28	2	5.000	5.000	10.000	0.0	1.000	0.0	1
17	0	28	29	2	5.000	5.000	10.000	0.0	1.000	0.0	1
18	0	29	30	2	5.000	5.000	10.000	0.0	1.000	0.0	1
19	0	30	31	2	5.000	5.000	10.000	0.0	1.000	0.0	1
20	0	31	32	2	5.000	5.000	10.000	0.0	1.000	0.0	1
21	0	32	33	2	5.000	5.000	10.000	0.0	1.000	0.0	1
22	0	33	34	2	5.000	5.000	10.000	0.0	1.000	0.0	1
23	0	34	35	2	5.000	5.000	10.000	0.0	1.000	0.0	1
24	0	35	36	2	5.000	5.000	10.000	0.0	1.000	0.0	1
25	0	36	37	2	5.000	5.000	10.000	0.0	1.000	0.0	1
26	0	37	38	2	5.000	5.000	10.000	0.0	1.000	0.0	1
27	0	38	39	2	5.000	5.000	10.000	0.0	1.000	0.0	1
28	0	39	40	2	5.000	5.000	10.000	0.0	1.000	0.0	1
29	0	40	41	2	5.000	5.000	10.000	0.0	1.000	0.0	1
30	0	41	42	2	5.000	5.000	10.000	0.0	1.000	0.0	1
31	0	42	43	2	5.000	5.000	10.000	0.0	1.000	0.0	1
32	0	43	44	2	5.000	5.000	10.000	0.0	1.000	0.0	1
33	0	44	45	2	5.000	5.000	10.000	0.0	1.000	0.0	1
34	0	45	46	2	5.000	5.000	10.000	0.0	1.000	0.0	1
35	0	46	47	2	5.000	5.000	10.000	0.0	1.000	0.0	1
36	0	47	48	2	5.000	5.000	10.000	0.0	1.000	0.0	1
37	0	48	49	2	5.000	5.000	10.000	0.0	1.000	0.0	1
38	0	49	50	2	5.000	5.000	10.000	0.0	1.000	0.0	1
39	0	50	51	2	5.000	5.000	10.000	0.0	1.000	0.0	1
40	0	51	52	2	5.000	5.000	10.000	0.0	1.000	0.0	1
41	0	52	53	2	5.000	5.000	10.000	0.0	1.000	0.0	1
42	0	53	54	2	5.000	5.000	10.000	0.0	1.000	0.0	1
43	0	54	55	2	5.000	5.000	10.000	0.0	1.000	0.0	1
44	0	55	56	2	5.000	5.000	10.000	0.0	1.000	0.0	1
45	0	56	57	2	5.000	5.000	10.000	0.0	1.000	0.0	1
46	0	57	58	2	5.000	5.000	10.000	0.0	1.000	0.0	1
47	0	58	59	2	5.000	5.000	10.000	0.0	1.000	0.0	1
48	0	59	60	2	5.000	5.000	10.000	0.0	1.000	0.0	1
49	0	60	61	2	5.000	5.000	10.000	0.0	1.000	0.0	1
50	0	61	62	2	5.000	5.000	10.000	0.0	1.000	0.0	1
51	0	62	63	2	5.000	5.000	10.000	0.0	1.000	0.0	1
52	0	63	64	2	5.000	5.000	10.000	0.0	1.000	0.0	1
53	0	64	65	2	5.000	5.000	10.000	0.0	1.000	0.0	1
54	0	65	66	2	5.000	5.000	10.000	0.0	1.000	0.0	1
55	0	66	67	2	5.000	5.000	10.000	0.0	1.000	0.0	1
56	0	67	68	2	5.000	5.000	10.000	0.0	1.000	0.0	1
57	0	68	69	2	5.000	5.000	10.000	0.0	1.000	0.0	1
58	0	69	70	2	5.000	5.000	10.000	0.0	1.000	0.0	1
59	0	70	71	2	5.000	5.000	10.000	0.0	1.000	0.0	1
60	0	71	72	2	5.000	5.000	10.000	0.0	1.000	0.0	1
61	0	72	73	2	5.000	5.000	10.000	0.0	1.000	0.0	1
62	0	73	74	2	5.000	5.000	10.000	0.0	1.000	0.0	1
63	0	74	75	2	5.000	5.000	10.000	0.0	1.000	0.0	1
64	0	75	76	2	5.000	5.000	10.000	0.0	1.000	0.0	1
65	0	76	77	2	5.000	5.000	10.000	0.0	1.000	0.0	1
66	0	77	78	2	5.000	5.000	10.000	0.0	1.000	0.0	1
67	0	78	79	2	5.000	5.000	10.000	0.0	1.000	0.0	1
68	0	79	80	2	5.000	5.000	10.000	0.0	1.000	0.0	1
69	0	80	81	2	5.000	5.000	10.000	0.0	1.000	0.0	1
70	0	81	82	2	5.000	5.000	10.000	0.0	1.000	0.0	1
71	0	82	83	2	5.000	5.000	10.000	0.0	1.000	0.0	1
72	0	83	84	2	5.000	5.000	10.000	0.0	1.000	0.0	1
73	0	84	85	2	5.000	5.000	10.000	0.0	1.000	0.0	1
74	0	85	86	2	5.000	5.000	10.000	0.0	1.000	0.0	1
75	0	86	87	2	5.000	5.000	10.000	0.0	1.000	0.0	1
76	0	87	88	2	5.000	5.000	10.000	0.0	1.000	0.0	1
77	0	88	89	2	5.000	5.000	10.000	0.0	1.000	0.0	1
78	0	89	90	2	5.000	5.000	10.000	0.0	1.000	0.0	1
79	0	90	91	2	5.000	5.000	10.000	0.0	1.000	0.0	1
80	0	91	92	2	5.000	5.000	10.000	0.0	1.000	0.0	1
81	0	92	93	2	5.000	5.000	10.000	0.0	1.000	0.0	1
82	0	93	94	2	5.000	5.000	10.000	0.0	1.000	0.0	1
83	0	94	95	2	5.000	5.000	10.000	0.0	1.000	0.0	1
84	0	95	96	2	5.000	5.000	10.000	0.0	1.000	0.0	1
85	0	96	97	2	5.000	5.000	10.000	0.0	1.000	0.0	1
86	0	97	98	2	5.000	5.000	10.000	0.0	1.000	0.0	1
87	0	98	99	2	5.000	5.000	10.000	0.0	1.000	0.0	1
88	0	99	100	2	5.000	5.000	10.000	0.0	1.000	0.0	1
89	0	100	101	2	5.000	5.000	10.000	0.0	1.000	0.0	1
90	0	101	102	2	5.000	5.000	10.000	0.0	1.000	0.0	1
91	0	102	103	2	5.000	5.000	10.000	0.0	1.000	0.0	1
92	0	103	104	2	5.000	5.000	10.000	0.0	1.000	0.0	1
93	0	104	105	2	5.000	5.000	10.000	0.0	1.000	0.0	1
94	0	105	106	2	5.000	5.000	10.000	0.0	1.000	0.0	1
95	0	106	107	2	5.000	5.000	10.000	0.0	1.000	0.0	1
96	0	107	108	2	5.000	5.000	10.000	0.0	1.000	0.0	1
97	0	108	109	2	5.000	5.000	10.000	0.0	1.000	0.0	1
98	0	109	110	2	5.000	5.000	10.000	0.0	1.000	0.0	1
99	0	110	111	2	5.000	5.000	10.000	0.0	1.000	0.0	1
100	0	111	112	2	5.000	5.000	10.000	0.0	1.000	0.0	1
101	0	112	113	2	5.000	5.000	10.000	0.0	1.000	0.0	1
102	0	113	114	2	5.000	5.000	10.000	0.0	1.000	0.0	1
103	0	114	115	2	5.000	5.000	10.000	0.0	1.000	0.0	1
104	0	115	116	2	5.000	5.000	10.000	0.0	1.000	0.0	1
105	0	116	117	2	5.000	5.000	10.000	0.0	1.000	0.0	1
106	0	117	118	2	5.000	5.000	10.000	0.0	1.000	0.0	1
107	0	118	119	2	5.000	5.000	10.000	0.0	1.000	0.0	1
108	0	119	120	2	5.000	5.000	10.000	0.0	1.000	0.0	1
109	0	120	121	2	5.000	5.000	10.000	0.0	1.000	0.0	1
110	0	121	122	2	5.000	5.000	10.000	0.0	1.000	0.0	1
111	0	122	123	2	5.000	5.000	10.000	0.0	1.000	0.0	1
112	0	123	124	2	5.000	5.000	10.000	0.0	1.000	0.0	1
113	0	124	125	2	5.000	5.000	10.000	0.0	1.000	0.0	1
114	0	125	126	2	5.000	5.000	10.000	0.0	1.000	0.0	1
115	0	126	127	2	5.000	5.000	10.000	0.0	1.000	0.0	1
116	0	127	128	2	5.000	5.000	10.000	0.0	1.000	0.0	1
117	0	128	129	2	5.000	5.000	10.000	0.0	1.000	0.0	1
118	0	129	130	2	5.000	5.000	10.000	0.0	1.000	0.0	1
119	0	130	131	2	5.000	5.000	10.000	0.0	1.000	0.0	1
120	0	131	132	2	5.000	5.000	10.000	0.0</			

C.2. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***

K	K TYP	NO01	NO02	D1IC(K)	D2IC(K)	APEA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	INBM
91	0	12	24	5.000	5.000	10.000	1.000	0.0	0.0	12
92	0	13	25	5.000	5.000	10.000	1.000	0.0	0.0	12
93	0	14	26	5.000	5.000	10.000	1.000	0.0	0.0	12
94	0	15	27	5.000	5.000	10.000	1.000	0.0	0.0	12
95	0	16	28	5.000	5.000	10.000	1.000	0.0	0.0	12
96	0	17	29	5.000	5.000	10.000	1.000	0.0	0.0	12
97	0	18	30	5.000	5.000	10.000	1.000	0.0	0.0	12
98	0	19	31	5.000	5.000	10.000	1.000	0.0	0.0	12
99	0	20	32	5.000	5.000	10.000	1.000	0.0	0.0	12
100	0	21	33	5.000	5.000	10.000	1.000	0.0	0.0	12
101	0	24	36	5.000	5.000	10.000	1.000	0.0	0.0	12
102	0	25	37	5.000	5.000	10.000	1.000	0.0	0.0	12
103	0	26	38	5.000	5.000	10.000	1.000	0.0	0.0	12
104	0	27	39	5.000	5.000	10.000	1.000	0.0	0.0	12
105	0	28	40	5.000	5.000	10.000	1.000	0.0	0.0	12
106	0	29	41	5.000	5.000	10.000	1.000	0.0	0.0	12
107	0	30	42	5.000	5.000	10.000	1.000	0.0	0.0	12
108	0	31	43	5.000	5.000	10.000	1.000	0.0	0.0	12
109	0	32	44	5.000	5.000	10.000	1.000	0.0	0.0	12
110	0	33	45	5.000	5.000	10.000	1.000	0.0	0.0	12
111	0	36	48	5.000	5.000	10.000	1.000	0.0	0.0	12
112	0	37	49	5.000	5.000	10.000	1.000	0.0	0.0	12
113	0	38	50	5.000	5.000	10.000	1.000	0.0	0.0	12
114	0	39	51	5.000	5.000	10.000	1.000	0.0	0.0	12
115	0	40	52	5.000	5.000	10.000	1.000	0.0	0.0	12
116	0	41	53	5.000	5.000	10.000	1.000	0.0	0.0	12
117	0	42	54	5.000	5.000	10.000	1.000	0.0	0.0	12
118	0	43	55	5.000	5.000	10.000	1.000	0.0	0.0	12
119	0	44	56	5.000	5.000	10.000	1.000	0.0	0.0	12
120	0	45	57	5.000	5.000	10.000	1.000	0.0	0.0	12
121	0	48	60	5.000	5.000	10.000	1.000	0.0	0.0	12
122	0	49	61	5.000	5.000	10.000	1.000	0.0	0.0	12
123	0	50	62	5.000	5.000	10.000	1.000	0.0	0.0	12
124	0	51	63	5.000	5.000	10.000	1.000	0.0	0.0	12
125	0	52	64	5.000	5.000	10.000	1.000	0.0	0.0	12
126	0	53	65	5.000	5.000	10.000	1.000	0.0	0.0	12
127	0	54	66	5.000	5.000	10.000	1.000	0.0	0.0	12
128	0	55	67	5.000	5.000	10.000	1.000	0.0	0.0	12
129	0	56	68	5.000	5.000	10.000	1.000	0.0	0.0	12
130	0	57	69	5.000	5.000	10.000	1.000	0.0	0.0	12
131	0	60	72	5.000	5.000	10.000	1.000	0.0	0.0	12
132	0	61	73	5.000	5.000	10.000	1.000	0.0	0.0	12
133	0	62	74	5.000	5.000	10.000	1.000	0.0	0.0	12
134	0	63	75	5.000	5.000	10.000	1.000	0.0	0.0	12
135	0	64	76	5.000	5.000	10.000	1.000	0.0	0.0	12
136	0	65	77	5.000	5.000	10.000	1.000	0.0	0.0	12
137	0	66	78	5.000	5.000	10.000	1.000	0.0	0.0	12
138	0	67	79	5.000	5.000	10.000	1.000	0.0	0.0	12
139	0	68	80	5.000	5.000	10.000	1.000	0.0	0.0	12
140	0	69	81	5.000	5.000	10.000	1.000	0.0	0.0	12
141	0	72	84	5.000	5.000	10.000	1.000	0.0	0.0	12
142	0	73	85	5.000	5.000	10.000	1.000	0.0	0.0	12
143	0	74	86	5.000	5.000	10.000	1.000	0.0	0.0	12
144	0	75	87	5.000	5.000	10.000	1.000	0.0	0.0	12
145	0	76	88	5.000	5.000	10.000	1.000	0.0	0.0	12
146	0	77	89	5.000	5.000	10.000	1.000	0.0	0.0	12
147	0	78	90	5.000	5.000	10.000	1.000	0.0	0.0	12
148	0	79	91	5.000	5.000	10.000	1.000	0.0	0.0	12
149	0	80	92	5.000	5.000	10.000	1.000	0.0	0.0	12
150	0	81	93	5.000	5.000	10.000	1.000	0.0	0.0	12
151	0	84	96	5.000	5.000	10.000	1.000	0.0	0.0	12
152	0	85	97	5.000	5.000	10.000	1.000	0.0	0.0	12
153	0	86	98	5.000	5.000	10.000	1.000	0.0	0.0	12
154	0	87	99	5.000	5.000	10.000	1.000	0.0	0.0	12
155	0	90	100	5.000	5.000	10.000	1.000	0.0	0.0	12
156	0	89	101	5.000	5.000	10.000	1.000	0.0	0.0	12
157	0	90	102	5.000	5.000	10.000	1.000	0.0	0.0	12
158	0	91	103	5.000	5.000	10.000	1.000	0.0	0.0	12
159	0	92	104	5.000	5.000	10.000	1.000	0.0	0.0	12
160	0	93	105	5.000	5.000	10.000	1.000	0.0	0.0	12
161	0	96	108	5.000	5.000	10.000	1.000	0.0	0.0	12
162	0	97	109	5.000	5.000	10.000	1.000	0.0	0.0	12
163	0	98	110	5.000	5.000	10.000	1.000	0.0	0.0	12
164	0	99	111	5.000	5.000	10.000	1.000	0.0	0.0	12
165	0	100	112	5.000	5.000	10.000	1.000	0.0	0.0	12
166	0	101	113	5.000	5.000	10.000	1.000	0.0	0.0	12
167	0	102	114	5.000	5.000	10.000	1.000	0.0	0.0	12
168	0	103	115	5.000	5.000	10.000	1.000	0.0	0.0	12
169	0	104	116	5.000	5.000	10.000	1.000	0.0	0.0	12
170	0	105	117	5.000	5.000	10.000	1.000	0.0	0.0	12
171	0	108	120	5.000	5.000	10.000	1.000	0.0	0.0	12
172	0	109	121	5.000	5.000	10.000	1.000	0.0	0.0	12
173	0	110	122	5.000	5.000	10.000	1.000	0.0	0.0	12
174	0	111	123	5.000	5.000	10.000	1.000	0.0	0.0	12
175	0	112	124	5.000	5.000	10.000	1.000	0.0	0.0	12
176	0	113	125	5.000	5.000	10.000	1.000	0.0	0.0	12
177	0	114	126	5.000	5.000	10.000	1.000	0.0	0.0	12
178	0	115	127	5.000	5.000	10.000	1.000	0.0	0.0	12
179	0	116	128	5.000	5.000	10.000	1.000	0.0	0.0	12
180	0	117	129	5.000	5.000	10.000	1.000	0.0	0.0	12
181	1	12	11	5.000	0.0	10.000	0.0	-1.000	0.0	1
182	1	24	23	5.000	0.0	10.000	0.0	-1.000	0.0	1
183	1	26	35	5.000	0.0	10.000	0.0	-1.000	0.0	1
184	1	48	47	5.000	0.0	10.000	0.0	-1.000	0.0	1
185	1	60	59	5.000	0.0	10.000	0.0	-1.000	0.0	1

C.2. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***

K	KTP	N001	N002	D1IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	INBM
186	1	72	71	5.000	0.0	10.000	0.0	-1.000	0.0	1
187	1	84	83	5.000	0.0	10.000	0.0	-1.000	0.0	1
188	1	96	95	5.000	0.0	10.000	0.0	-1.000	0.0	1
189	1	108	107	5.000	0.0	10.000	0.0	-1.000	0.0	1
190	1	120	119	5.000	0.0	10.000	0.0	-1.000	0.0	1
191	1	120	1	5.000	0.0	10.000	1.000	0.0	0.0	11
192	1	121	1	5.000	0.0	10.000	1.000	0.0	0.0	11
193	1	122	133	5.000	0.0	10.700	1.000	0.0	0.0	11
194	1	123	134	5.000	0.0	10.000	1.000	0.0	0.0	11
195	1	124	135	5.000	0.0	10.000	1.000	0.0	0.0	11
196	1	125	136	5.000	0.0	10.000	1.000	0.0	0.0	11
197	1	126	137	5.000	0.0	10.000	1.000	0.0	0.0	11
198	1	127	138	5.000	0.0	10.000	1.000	0.0	0.0	11
199	1	128	139	5.000	0.0	10.000	1.000	0.0	0.0	11
200	1	129	140	5.000	0.0	10.000	1.000	0.0	0.0	11
201	1	12	1	5.000	0.0	10.000	-1.000	0.0	0.0	11
202	1	13	2	5.000	0.0	10.000	-1.000	0.0	0.0	11
203	1	14	3	5.000	0.0	10.000	-1.000	0.0	0.0	11
204	1	15	4	5.000	0.0	10.000	-1.000	0.0	0.0	11
205	1	16	5	5.000	0.0	10.000	-1.000	0.0	0.0	11
206	1	17	6	5.000	0.0	10.000	-1.000	0.0	0.0	11
207	1	18	7	5.000	0.0	10.000	-1.000	0.0	0.0	11
208	1	19	8	5.000	0.0	10.000	-1.000	0.0	0.0	11
209	1	20	9	5.000	0.0	10.000	-1.000	0.0	0.0	11
210	1	21	10	5.000	0.0	10.000	-1.000	0.0	0.0	11
211	3	21	22	5.000	0.0	10.000	0.0	1.000	0.0	1
212	3	33	34	5.000	0.0	10.000	0.0	1.000	0.0	1
213	3	45	46	5.000	0.0	10.000	0.0	1.000	0.0	1
214	3	57	58	5.000	0.0	10.000	0.0	1.000	0.0	1
215	3	69	70	5.000	0.0	10.000	0.0	1.000	0.0	1
216	3	81	82	5.000	0.0	10.000	0.0	1.000	0.0	1
217	3	93	94	5.000	0.0	10.000	0.0	1.000	0.0	1
218	3	105	106	5.000	0.0	10.000	0.0	1.000	0.0	1
219	3	117	118	5.000	0.0	10.000	0.0	1.000	0.0	1
220	3	129	130	5.000	0.0	10.000	0.0	1.000	0.0	1

*** LIST OF GIVEN-FLOW CONNECTORS ***

211 212 213 214 215 216 217 218 219 220

*** PRESSURE DISTRIBUTION AT TIME = 0.0 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0

C.2. Output (continued)

*** U-VEL AT TIME = 0.0 ***

136	1	0.0
131	1	0.0
126	1	0.0
121	1	0.0
116	1	0.0
111	1	0.0
106	1	0.0
101	1	0.0
96	1	0.0
91	1	0.0
86	1	0.0
81	1	0.0
76	1	0.0
71	1	0.0
66	1	0.0
61	1	0.0
56	1	0.0
51	1	0.0
46	1	0.0
41	1	0.0
36	1	0.0
31	1	0.0
26	1	0.0
21	1	0.0
16	1	0.0
11	1	0.0
6	1	0.0
1	1	0.0
136	1	0.0
131	1	0.0
126	1	0.0
121	1	0.0
116	1	0.0
111	1	0.0
106	1	0.0
101	1	0.0
96	1	0.0
91	1	0.0
86	1	0.0
81	1	0.0
76	1	0.0
71	1	0.0
66	1	0.0
61	1	0.0
56	1	0.0
51	1	0.0
46	1	0.0
41	1	0.0
36	1	0.0
31	1	0.0
26	1	0.0
21	1	0.0
16	1	0.0
11	1	0.0
6	1	0.0
1	1	0.0

*** V-VEL AT TIME = 0.0 ***

136	1	0.0
131	1	0.0
126	1	0.0
121	1	0.0
116	1	0.0
111	1	0.0
106	1	0.0
101	1	0.0
96	1	0.0
91	1	0.0
86	1	0.0
81	1	0.0
76	1	0.0
71	1	0.0
66	1	0.0
61	1	0.0
56	1	0.0
51	1	0.0
46	1	0.0
41	1	0.0
36	1	0.0
31	1	0.0
26	1	0.0
21	1	0.0
16	1	0.0
11	1	0.0
6	1	0.0
1	1	0.0
136	1	0.0
131	1	0.0
126	1	0.0
121	1	0.0
116	1	0.0
111	1	0.0
106	1	0.0
101	1	0.0
96	1	0.0
91	1	0.0
86	1	0.0
81	1	0.0
76	1	0.0
71	1	0.0
66	1	0.0
61	1	0.0
56	1	0.0
51	1	0.0
46	1	0.0
41	1	0.0
36	1	0.0
31	1	0.0
26	1	0.0
21	1	0.0
16	1	0.0
11	1	0.0
6	1	0.0
1	1	0.0

C.2. Output (continued)

*** PRESSURE DISTRIBUTION AT TIME = 0.144000 04 ***

I	F	I	F	I	F	I	F	I	F
1	0.45650-01	2	0.47570-01	3	0.48030-01	4	0.46050-01	5	0.40750-01
6	0.31620-01	7	0.18840-01	8	-0.52260-03	9	-0.29260-01	10	-0.16460 00
11	0.45590-01	12	0.46590-01	13	0.46780-01	14	0.46630-01	15	0.44210-01
16	0.38630-01	17	0.29240-01	18	0.15920-01	19	-0.43150-02	20	-0.29100-01
21	-0.10420 00	22	-0.77970-01	23	0.43890-01	24	0.44430-01	25	0.45520-01
26	0.45090-01	27	0.42470-01	28	0.37010-01	29	0.28460-01	30	0.17800-01
31	0.53880-02	32	-0.10040-02	33	-0.15410-01	34	0.65350-02	35	0.43550-01
36	0.44310-01	37	0.45210-01	38	0.44450-01	39	0.41440-01	40	0.35670-01
41	0.27200-01	42	0.17480-01	43	0.86020-02	44	0.74070-02	45	0.82160-02
46	0.23720-01	47	0.44510-01	48	0.45240-01	49	0.45740-01	50	0.44530-01
51	0.41050-01	52	0.34780-01	53	0.25860-01	54	0.16010-01	55	0.81550-02
56	0.96890-02	57	0.10880-01	58	0.22760-01	59	0.46850-01	60	0.47370-01
61	0.47330-01	62	0.45730-01	63	0.41810-01	64	0.34940-01	65	0.25160-01
66	0.14130-01	67	0.56280-02	68	0.55290-02	69	0.54840-02	70	0.0
71	0.59480-01	72	0.58590-01	73	0.50040-01	74	0.54660-01	75	0.44210-01
76	0.37020-01	77	0.26520-01	78	0.14250-01	79	0.54260-01	80	0.60080-02
81	0.12900-01	82	0.0	83	0.54700-01	84	0.54220-01	85	0.53350-01
86	0.51630-01	87	0.48510-01	88	0.42320-01	89	0.32770-01	90	0.21310-01
91	0.13820-01	92	0.16880-01	93	0.43550-01	94	0.45810-01	95	0.58120-01
96	0.57150-01	97	0.86040-01	98	0.55240-01	99	0.53660-01	100	0.50460-01
101	0.45310-01	102	0.39320-01	103	0.37810-01	104	0.54240-01	105	0.93060-01
106	0.83710-01	107	0.88940-01	108	0.57980-01	109	0.56720-01	110	0.56280-01
111	0.56170-01	112	0.86680-01	113	0.58350-01	114	0.62450-01	115	0.74860-01
116	0.11820 00	117	0.19280 00	118	0.16790 00	119	0.56460-01	120	0.56280-01
121	0.54810-01	122	0.84490-01	123	0.55780-01	124	0.59930-01	125	0.68860-01
126	0.84340-01	127	0.11760 00	128	0.21530 00	129	0.38650 00	130	0.33960 00
131	0.56130-01	132	0.23750-01	133	0.52320-01	134	0.51980-01	135	0.53910-01
136	0.60530-01	137	0.75140-01	138	0.11190 00	139	0.22600 00	140	0.47940 00

*** U-VEL AT TIME = 0.144000 04 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	-0.23680-03	13	-0.19840-02	14	-0.35210-02	15	-0.46110-02
16	-0.53070-02	17	-0.99470-02	18	-0.73060-02	19	-0.94800-02	20	-0.40240-03
21	0.15110 00	22	0.10000 01	23	0.0	24	-0.58400-02	25	-0.18690-01
26	-0.28870-01	27	-0.35470-01	28	-0.38420-01	29	-0.38220-01	30	-0.36070-01
31	-0.29620-01	32	0.17040-01	33	0.28010 00	34	0.10000 01	35	0.0
36	-0.15520-01	37	-0.40520-01	38	-0.58550-01	39	-0.69500-01	40	-0.72760-01
41	-0.67030-01	42	-0.86730-01	43	-0.17140-01	44	0.78170-01	45	0.39630 00
46	0.10000 01	47	0.0	48	-0.25240-01	49	-0.60590-01	50	-0.84750-01
51	-0.99400-01	52	-0.10320 00	53	-0.92220-01	54	-0.61120-01	55	-0.14670-03
56	0.13300 00	57	0.48490 00	58	0.10000 01	59	0.0	60	-0.32720-01
61	-0.74800-01	62	-0.10310 00	63	-0.12120 00	64	-0.12710 00	65	-0.11390 00
66	-0.71840-01	67	0.11490-01	68	0.17260 00	69	0.54820 00	70	0.10000 01
71	0.0	72	-0.35820-01	73	-0.79790-01	74	-0.11000 00	75	-0.13150 00
76	-0.14160 00	77	-0.13120 00	78	-0.86230-01	79	0.10610-01	80	0.19150 00
81	0.58220 00	82	0.10000 01	83	0.0	84	-0.33070-01	85	-0.73440-01
86	-0.10290 00	87	-0.12640 00	88	-0.14090 00	89	-0.13660 00	90	-0.97360-01
91	-0.11500-02	92	0.18440 00	93	0.58550 00	94	0.10000 01	95	0.0
96	-0.23490-01	97	-0.64690-01	98	-0.79950-01	99	-0.10310 00	100	-0.12090 00
101	-0.12380 00	102	-0.95720-01	103	-0.18090-01	104	0.15160 00	105	0.54370 00
106	0.10000 01	107	0.0	108	-0.94530-02	109	-0.26930-01	110	-0.43980-01
111	-0.62580-01	112	-0.80540-01	113	-0.90910-01	114	-0.82010-01	115	-0.38330-01
116	0.72920-01	117	0.41240 00	118	0.10000 01	119	0.0	120	-0.38790-03
121	-0.26310-02	122	-0.94370-02	123	-0.5170-02	124	-0.15060-01	125	-0.20820-01
126	-0.23020-01	127	-0.14310-01	128	0.26740-01	129	0.23220 00	130	0.10000 01
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0

C.2. Output (continued)

*** V-VEL AT TIME = 0.144000 04 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.14250-03	13	0.01610-02	14	0.19720-01	15	0.38200-01
16	0.59720-01	17	0.82280-01	18	0.10620 00	19	0.12850 00	20	0.16850 00
21	0.45440-01	22	0.0	23	0.0	24	0.13460-02	25	0.15510-01
26	0.39840-01	27	0.70470-01	28	0.10420 00	29	0.13680 00	30	0.16400 00
31	0.17470 00	32	0.17030 00	33	0.54860-01	34	0.0	35	0.0
36	0.18890-02	37	0.18330-01	38	0.43530-01	39	0.74050-01	40	0.10710 00
41	0.13630 00	42	0.16090 00	43	0.16240 00	44	0.13550 00	45	0.38760-01
46	0.0	47	0.0	48	0.18320-02	49	0.15960-01	50	0.36120-01
51	0.60480-01	52	0.87650-01	53	0.11430 00	54	0.13400 00	55	0.13390 00
56	0.10850 00	57	0.29690-01	58	0.0	59	0.0	60	0.12800-02
61	0.96310-02	62	0.20770-01	63	0.35020-01	64	0.52760-01	65	0.72800-01
66	0.90710-01	67	0.96460-01	68	0.83730-01	69	0.38620-01	70	0.0
71	0.0	72	0.28460-03	73	0.14430-03	74	-0.70780-03	75	0.14640-03
76	0.46370-02	77	0.13880-01	78	0.26580-01	79	0.39500-01	80	0.41620-01
81	0.38320-01	82	0.0	83	0.0	84	-0.11180-02	85	-0.11420-01
86	-0.26070-01	87	-0.41220-01	88	-0.53900-01	89	-0.61120-01	90	-0.60510-01
91	-0.49450-01	92	-0.31570-01	93	0.56700-02	94	0.0	95	0.0
96	-0.24320-02	97	-0.21530-01	98	-0.49070-01	99	-0.81020-01	100	-0.11400 00
101	-0.14300 00	102	-0.16170 00	103	-0.16060 00	104	-0.12040 00	105	-0.23380-01
106	0.0	107	0.0	108	-0.23960-02	109	-0.22550-01	110	-0.55040-01
111	-0.97490-01	112	-0.14760 00	113	-0.19990 00	114	-0.24560 00	115	-0.26780 00
116	-0.22390 00	117	-0.62200-01	118	0.0	119	0.0	120	-0.45240-03
121	-0.90880-02	122	-0.27970-01	123	-0.58010-01	124	-0.10180 00	125	-0.15960 00
126	-0.22860 00	127	-0.29310 00	128	-0.29380 00	129	-0.11720 00	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0

[illegible]

C.3. Input (continued)

C ----- CARD DATA SET 6: CONNECTOR (INTERFACE) DATA

1	23	2419	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	083
21	46	4719	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	084
41	69	7019	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	085
61	92	9319	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	086
81	115	11619	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	087
101	138	13919	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	088
121	161	16219	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	089
141	184	18519	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	090
161	207	20819	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	091
181	230	23119	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	092
201	253	25419	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	093
221	276	27719	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	094
241	299	30019	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	095
261	322	32319	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	096
281	345	34619	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	097
301	368	36919	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	098
321	391	39219	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	099
341	414	41519	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	100
361	437	43819	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	101
381	460	46119	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	102
401	483	48419	1	1	0	2.5	2.5	5.0	0.0	1.0	0.0	CARD	103
421	23	4620	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	104
442	46	6920	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	105
463	69	9220	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	106
484	92	11520	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	107
505	115	13820	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	108
526	138	16120	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	109
547	161	18420	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	110
568	184	20720	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	111
589	207	23020	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	112
610	230	25320	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	113
631	253	27620	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	114
652	276	29920	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	115
673	299	32220	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	116
694	322	34520	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	117
715	345	36820	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	118
736	368	39120	1	1	0	2.5	2.5	5.0	1.0	0.0	0.0	CARD	119

C ----- CARD DATA SET 7: CONNECTOR DATA OF PRESCRIBED FLOW

[illegible]

C ----- CONNECTOR DATA OF PRESCRIBED PRESSURE

C ----- CARD DATA SET 9: INITIAL CONDITIONS OF PHI

C	1	0.0	CARD 131
	525	0.0	CARD 132

----- CARD DATA SET 10: INITIAL CONDITIONS OF X-COMPONENT VELOCITY U

C	1	0.0	CARD 133
	525	0.0	CARD 134

C
C ----- CARD DATA SET 11: INITIAL CONDITIONS OF Y-COMPONENT VELOCITY V

C	1	0.0	CARD 135
	525	0.0	CARD 136

C
C ----- CARD DATA SET 12: INITIAL CONDITIONS OF Z-COMPONENT VELOCITY W

C	1	0.0	CARD 137
	525	0.0	CARD 138

C ----- CARD DATA SET 13: TRANSIENT BOUNDARY CONDITIONS

C	1	2	3	4	5	6	7	8	CARD
0.0									139
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	140
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	141
1.0	1.0	1.0	1.0	1.0	1.0				142
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	144
0.0	0.0	0.0	0.0	0.0	0.0				145
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	146
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	147
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	148
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	149
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	150
1.0	1.0	1.0	1.0	1.0	1.0				151
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	152
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	153
0.0	0.0	0.0	0.0	0.0	0.0				154
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	155
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	156
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157
0.0	0.0	0.0	0.0	0.0	0.0				158

*****
 * NAVIER STOKES EQUATIONS BY ICM - SQUARE CAVITY PROBLEM - SMALL GRID *
 *****

```

NO. OF MODES, MODES ..... 525
NO. OF CONNECTIONS, NCONS ..... 924
NO. OF GIVEN FLOW CONNECTORS, NCFG ..... 21
NO. OF GIVEN PRESSURE CONNECTORS, NCFG ..... 0
NO. OF ITERATIONS ALLOWED FOR SOLVING PRESSURE, ..... 1000
EVERY READ STEP HEAD TRANSIENT INOUT ..... 961
ININT INTERMEDIATE PRESSURE, I=YES, 0=NO ..... 1
PRINT INTERMEDIATE U? I=YES, 0=NO ..... 1
PRINT INTERMEDIATE V? I=YES, 0=NO ..... 1
PRINT INTERMEDIATE W? I=YES, 0=NO ..... 1
EVERY READ STEP PRINT PRESSURE ONCE ..... 964
EVERY READ STEP PRINT A ONCE ..... 960
EVERY READ STEP PRINT V ONCE ..... 961
EVERY READ STEP PRINT A ONCE ..... 961
IMPLICIT CONTROL OF SOLVING PWT, I=YES, 0=NO ..... 1

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[illegible]

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X-EDDY COEFFICIENT      0.15000000
Y-EDDY COEFFICIENT      0.10000000
Z-EDDY COEFFICIENT      0.10000000
GRAVITY ACCELERATION     9.80000000
TOWLDRANCE FOR SOL AING PRESSURE 0.00000000
OPTION=1=OUT FORM IN EDDY TERM 0
UPSTREAM=1=YES, #=0=NO 0.10000000
TIME STEP SIZE           0.15000000

```

```

*** NODE (COMPONENT) DATA ***
      N      N TYP      VOL(N)      X(N)      Y(N)      Z(N)
1      1      1      0.0      0.253000  0.1      0.000000  0.1
2      2      1      0.0      0.253000  0.1      0.150000  0.2
3      3      1      0.0      0.253000  0.1      0.200000  0.2
4      4      1      0.0      0.253000  0.1      0.250000  0.2
5      5      1      0.0      0.253000  0.1      0.300000  0.2
6      6      1      0.0      0.253000  0.1      0.350000  0.2
7      7      1      0.0      0.253000  0.1      0.400000  0.2
8      8      1      0.0      0.253000  0.1      0.450000  0.2
9      9      1      0.0      0.253000  0.1      0.500000  0.2
10     10     1      0.0      0.253000  0.1      0.550000  0.2
11     11     1      0.0      0.253000  0.1      0.600000  0.2
12     12     1      0.0      0.253000  0.1      0.650000  0.2
13     13     1      0.0      0.253000  0.1      0.700000  0.2
14     14     1      0.0      0.253000  0.1      0.750000  0.2
15     15     1      0.0      0.253000  0.1      0.800000  0.2
16     16     1      0.0      0.253000  0.1      0.850000  0.2
17     17     1      0.0      0.253000  0.1      0.900000  0.2
18     18     1      0.0      0.253000  0.1      0.950000  0.2
19     19     1      0.0      0.253000  0.1      1.000000  0.2
20     20     1      0.0      0.253000  0.1      1.050000  0.2
21     21     1      0.0      0.253000  0.1      1.100000  0.2
22     22     1      0.0      0.253000  0.1      1.150000  0.2
23     23     1      0.0      0.253000  0.1      1.200000  0.2
24     24     1      0.0      0.253000  0.1      1.250000  0.2
25     25     1      0.0      0.253000  0.1      1.300000  0.2
26     26     1      0.0      0.253000  0.1      1.350000  0.2
27     27     1      0.0      0.253000  0.1      1.400000  0.2
28     28     1      0.0      0.253000  0.1      1.450000  0.2
29     29     1      0.0      0.253000  0.1      1.500000  0.2
30     30     1      0.0      0.253000  0.1      1.550000  0.2

```

C.4. Output (continued)

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
31	0	0.250000 02	0.500000 01	0.450000 02	0.0
32	0	0.250000 02	0.500000 01	0.500000 02	0.0
33	0	0.250000 02	0.500000 01	0.550000 02	0.0
34	0	0.250000 02	0.500000 01	0.600000 02	0.0
35	0	0.250000 02	0.500000 01	0.650000 02	0.0
36	0	0.250000 02	0.500000 01	0.700000 02	0.0
37	0	0.250000 02	0.500000 01	0.750000 02	0.0
38	0	0.250000 02	0.500000 01	0.800000 02	0.0
39	0	0.250000 02	0.500000 01	0.850000 02	0.0
40	0	0.250000 02	0.500000 01	0.900000 02	0.0
41	0	0.250000 02	0.500000 01	0.950000 02	0.0
42	0	0.250000 02	0.500000 01	1.000000 03	0.0
43	0	0.250000 02	0.500000 01	1.050000 03	0.0
44	3	0.0	0.500000 01	1.107500 03	0.0
45	1	0.0	0.100000 02	0.250000 01	0.0
46	0	0.250000 02	0.100000 02	0.500000 01	0.0
47	0	0.250000 02	0.100000 02	0.100000 02	0.0
48	0	0.250000 02	0.100000 02	0.150000 02	0.0
49	0	0.250000 02	0.100000 02	0.200000 02	0.0
50	0	0.250000 02	0.100000 02	0.250000 02	0.0
51	0	0.250000 02	0.100000 02	0.300000 02	0.0
52	0	0.250000 02	0.100000 02	0.350000 02	0.0
53	0	0.250000 02	0.100000 02	0.400000 02	0.0
54	0	0.250000 02	0.100000 02	0.450000 02	0.0
55	0	0.250000 02	0.100000 02	0.500000 02	0.0
56	0	0.250000 02	0.100000 02	0.550000 02	0.0
57	0	0.250000 02	0.100000 02	0.600000 02	0.0
58	0	0.250000 02	0.100000 02	0.650000 02	0.0
59	0	0.250000 02	0.100000 02	0.700000 02	0.0
60	0	0.250000 02	0.100000 02	0.750000 02	0.0
61	0	0.250000 02	0.100000 02	0.800000 02	0.0
62	0	0.250000 02	0.100000 02	0.850000 02	0.0
63	0	0.250000 02	0.100000 02	0.900000 02	0.0
64	0	0.250000 02	0.100000 02	0.950000 02	0.0
65	0	0.250000 02	0.100000 02	1.000000 03	0.0
66	0	0.250000 02	0.100000 02	1.050000 03	0.0
67	3	0.0	0.100000 02	1.107500 03	0.0
68	1	0.0	0.150000 02	0.250000 01	0.0
69	0	0.250000 02	0.150000 02	0.500000 01	0.0
70	0	0.250000 02	0.150000 02	0.100000 02	0.0
71	0	0.250000 02	0.150000 02	0.150000 02	0.0
72	0	0.250000 02	0.150000 02	0.200000 02	0.0
73	0	0.250000 02	0.150000 02	0.250000 02	0.0
74	0	0.250000 02	0.150000 02	0.300000 02	0.0
75	0	0.250000 02	0.150000 02	0.350000 02	0.0
76	0	0.250000 02	0.150000 02	0.400000 02	0.0
77	0	0.250000 02	0.150000 02	0.450000 02	0.0
78	0	0.250000 02	0.150000 02	0.500000 02	0.0
79	0	0.250000 02	0.150000 02	0.550000 02	0.0
80	0	0.250000 02	0.150000 02	0.600000 02	0.0
81	0	0.250000 02	0.150000 02	0.650000 02	0.0
82	0	0.250000 02	0.150000 02	0.700000 02	0.0
83	0	0.250000 02	0.150000 02	0.750000 02	0.0
84	0	0.250000 02	0.150000 02	0.800000 02	0.0
85	0	0.250000 02	0.150000 02	0.850000 02	0.0
86	0	0.250000 02	0.150000 02	0.900000 02	0.0
87	0	0.250000 02	0.150000 02	0.950000 02	0.0
88	0	0.250000 02	0.150000 02	1.000000 03	0.0
89	0	0.250000 02	0.150000 02	1.050000 03	0.0
90	3	0.0	0.150000 02	1.107500 03	0.0
91	1	0.0	0.200000 02	0.250000 01	0.0
92	0	0.250000 02	0.200000 02	0.500000 01	0.0
93	0	0.250000 02	0.200000 02	0.100000 02	0.0
94	0	0.250000 02	0.200000 02	0.150000 02	0.0
95	0	0.250000 02	0.200000 02	0.200000 02	0.0
96	0	0.250000 02	0.200000 02	0.250000 02	0.0
97	0	0.250000 02	0.200000 02	0.300000 02	0.0
98	0	0.250000 02	0.200000 02	0.350000 02	0.0
99	0	0.250000 02	0.200000 02	0.400000 02	0.0
100	0	0.250000 02	0.200000 02	0.450000 02	0.0
101	0	0.250000 02	0.200000 02	0.500000 02	0.0
102	0	0.250000 02	0.200000 02	0.550000 02	0.0
103	0	0.250000 02	0.200000 02	0.600000 02	0.0
104	0	0.250000 02	0.200000 02	0.650000 02	0.0
105	0	0.250000 02	0.200000 02	0.700000 02	0.0
106	0	0.250000 02	0.200000 02	0.750000 02	0.0
107	0	0.250000 02	0.200000 02	0.800000 02	0.0
108	0	0.250000 02	0.200000 02	0.850000 02	0.0
109	0	0.250000 02	0.200000 02	0.900000 02	0.0
110	0	0.250000 02	0.200000 02	0.950000 02	0.0
111	0	0.250000 02	0.200000 02	1.000000 03	0.0
112	0	0.250000 02	0.200000 02	1.050000 03	0.0
113	3	0.0	0.200000 02	1.107500 03	0.0
114	1	0.0	0.250000 02	0.250000 01	0.0
115	0	0.250000 02	0.250000 02	0.500000 01	0.0
116	0	0.250000 02	0.250000 02	0.100000 02	0.0
117	0	0.250000 02	0.250000 02	0.150000 02	0.0
118	0	0.250000 02	0.250000 02	0.200000 02	0.0
119	0	0.250000 02	0.250000 02	0.250000 02	0.0
120	0	0.250000 02	0.250000 02	0.300000 02	0.0
121	0	0.250000 02	0.250000 02	0.350000 02	0.0
122	0	0.250000 02	0.250000 02	0.400000 02	0.0
123	0	0.250000 02	0.250000 02	0.450000 02	0.0
124	0	0.250000 02	0.250000 02	0.500000 02	0.0
125	0	0.250000 02	0.250000 02	0.550000 02	0.0

C.4. Output (continued)

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
126	0	0.250000 02	0.253000 02	0.600000 02	0.0
127	0	0.250000 02	0.250000 02	0.650000 02	0.0
128	0	0.250000 02	0.253000 02	0.700000 02	0.0
129	0	0.250000 02	0.253000 02	0.750000 02	0.0
130	0	0.250000 02	0.250000 02	0.800000 02	0.0
131	0	0.250000 02	0.250000 02	0.850000 02	0.0
132	0	0.250000 02	0.250000 02	0.900000 02	0.0
133	0	0.250000 02	0.253000 02	0.950000 02	0.0
134	0	0.250000 02	0.253000 02	0.100000 03	0.0
135	0	0.250000 02	0.250000 02	0.105000 03	0.0
136	3	0.0	0.253000 02	0.107500 03	0.0
137	1	0.0	0.303000 02	0.250000 01	0.0
138	0	0.250000 02	0.303000 02	0.500000 01	0.0
139	0	0.250000 02	0.300000 02	0.100000 02	0.0
140	0	0.250000 02	0.303000 02	0.150000 02	0.0
141	0	0.250000 02	0.303000 02	0.200000 02	0.0
142	0	0.250000 02	0.300000 02	0.250000 02	0.0
143	0	0.250000 02	0.300000 02	0.300000 02	0.0
144	0	0.250000 02	0.303000 02	0.350000 02	0.0
145	0	0.250000 02	0.303000 02	0.400000 02	0.0
146	0	0.250000 02	0.303000 02	0.450000 02	0.0
147	0	0.250000 02	0.303000 02	0.500000 02	0.0
148	0	0.250000 02	0.300000 02	0.550000 02	0.0
149	0	0.250000 02	0.303000 02	0.600000 02	0.0
150	0	0.250000 02	0.303000 02	0.650000 02	0.0
151	0	0.250000 02	0.300000 02	0.700000 02	0.0
152	0	0.250000 02	0.303000 02	0.750000 02	0.0
153	0	0.250000 02	0.300000 02	0.800000 02	0.0
154	0	0.250000 02	0.300000 02	0.850000 02	0.0
155	0	0.250000 02	0.300000 02	0.900000 02	0.0
156	0	0.250000 02	0.303000 02	0.950000 02	0.0
157	0	0.250000 02	0.300000 02	0.107000 03	0.0
158	0	0.250000 02	0.303000 02	0.105000 03	0.0
159	3	0.0	0.303000 02	0.107500 03	0.0
160	1	0.0	0.350000 02	0.250000 01	0.0
161	0	0.250000 02	0.350000 02	0.500000 01	0.0
162	0	0.250000 02	0.350000 02	0.100000 02	0.0
163	0	0.250000 02	0.350000 02	0.150000 02	0.0
164	0	0.250000 02	0.350000 02	0.200000 02	0.0
165	0	0.250000 02	0.353000 02	0.250000 02	0.0
166	0	0.250000 02	0.353000 02	0.300000 02	0.0
167	0	0.250000 02	0.350000 02	0.350000 02	0.0
168	0	0.250000 02	0.350000 02	0.400000 02	0.0
169	0	0.250000 02	0.350000 02	0.450000 02	0.0
170	0	0.250000 02	0.350000 02	0.500000 02	0.0
171	0	0.250000 02	0.350000 02	0.550000 02	0.0
172	0	0.250000 02	0.350000 02	0.600000 02	0.0
173	0	0.250000 02	0.353000 02	0.650000 02	0.0
174	0	0.250000 02	0.353000 02	0.700000 02	0.0
175	0	0.250000 02	0.350000 02	0.750000 02	0.0
176	0	0.250000 02	0.350000 02	0.800000 02	0.0
177	0	0.250000 02	0.353000 02	0.850000 02	0.0
178	0	0.250000 02	0.350000 02	0.900000 02	0.0
179	0	0.250000 02	0.350000 02	0.950000 02	0.0
180	0	0.250000 02	0.353000 02	0.100000 03	0.0
181	0	0.250000 02	0.353000 02	0.105000 03	0.0
182	3	0.0	0.353000 02	0.107500 03	0.0
183	1	0.0	0.403000 02	0.250000 01	0.0
184	0	0.250000 02	0.403000 02	0.500000 01	0.0
185	0	0.250000 02	0.400000 02	0.100000 02	0.0
186	0	0.250000 02	0.403000 02	0.150000 02	0.0
187	0	0.250000 02	0.403000 02	0.200000 02	0.0
188	0	0.250000 02	0.400000 02	0.250000 02	0.0
189	0	0.250000 02	0.400000 02	0.300000 02	0.0
190	0	0.250000 02	0.403000 02	0.350000 02	0.0
191	0	0.250000 02	0.403000 02	0.400000 02	0.0
192	0	0.250000 02	0.403000 02	0.450000 02	0.0
193	0	0.250000 02	0.403000 02	0.500000 02	0.0
194	0	0.250000 02	0.400000 02	0.550000 02	0.0
195	0	0.250000 02	0.403000 02	0.600000 02	0.0
196	0	0.250000 02	0.403000 02	0.650000 02	0.0
197	0	0.250000 02	0.403000 02	0.700000 02	0.0
198	0	0.250000 02	0.400000 02	0.750000 02	0.0
199	0	0.250000 02	0.403000 02	0.800000 02	0.0
200	0	0.250000 02	0.400000 02	0.850000 02	0.0

C.4. Output (continued)

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
201	0	0.250000 02	0.400000 02	0.900000 02	0.0
202	0	0.250000 02	0.400000 02	0.950000 02	0.0
203	0	0.250000 02	0.400000 02	0.100000 03	0.0
204	0	0.250000 02	0.400000 02	0.105000 03	0.0
205	3	0.0	0.400000 02	0.107500 03	0.0
206	1	0.0	0.450000 02	0.250000 01	0.0
207	0	0.250000 02	0.450000 02	0.500000 01	0.0
208	0	0.250000 02	0.450000 02	0.100000 02	0.0
209	0	0.250000 02	0.450000 02	0.150000 02	0.0
210	0	0.250000 02	0.450000 02	0.200000 02	0.0
211	0	0.250000 02	0.450000 02	0.250000 02	0.0
212	0	0.250000 02	0.450000 02	0.300000 02	0.0
213	0	0.250000 02	0.450000 02	0.350000 02	0.0
214	0	0.250000 02	0.450000 02	0.400000 02	0.0
215	0	0.250000 02	0.450000 02	0.450000 02	0.0
216	0	0.250000 02	0.450000 02	0.500000 02	0.0
217	0	0.250000 02	0.450000 02	0.550000 02	0.0
218	0	0.250000 02	0.450000 02	0.600000 02	0.0
219	0	0.250000 02	0.450000 02	0.650000 02	0.0
220	0	0.250000 02	0.450000 02	0.700000 02	0.0
221	0	0.250000 02	0.450000 02	0.750000 02	0.0
222	0	0.250000 02	0.450000 02	0.800000 02	0.0
223	0	0.250000 02	0.450000 02	0.850000 02	0.0
224	0	0.250000 02	0.450000 02	0.900000 02	0.0
225	0	0.250000 02	0.450000 02	0.950000 02	0.0
226	0	0.250000 02	0.450000 02	0.100000 03	0.0
227	0	0.250000 02	0.450000 02	0.105000 03	0.0
228	3	0.0	0.450000 02	0.107500 03	0.0
229	1	0.0	0.500000 02	0.250000 01	0.0
230	0	0.250000 02	0.500000 02	0.500000 01	0.0
231	0	0.250000 02	0.500000 02	0.100000 02	0.0
232	0	0.250000 02	0.500000 02	0.150000 02	0.0
233	0	0.250000 02	0.500000 02	0.200000 02	0.0
234	0	0.250000 02	0.500000 02	0.250000 02	0.0
235	0	0.250000 02	0.500000 02	0.300000 02	0.0
236	0	0.250000 02	0.500000 02	0.350000 02	0.0
237	0	0.250000 02	0.500000 02	0.400000 02	0.0
238	0	0.250000 02	0.500000 02	0.450000 02	0.0
239	0	0.250000 02	0.500000 02	0.500000 02	0.0
240	0	0.250000 02	0.500000 02	0.550000 02	0.0
241	0	0.250000 02	0.500000 02	0.600000 02	0.0
242	0	0.250000 02	0.500000 02	0.650000 02	0.0
243	0	0.250000 02	0.500000 02	0.700000 02	0.0
244	0	0.250000 02	0.500000 02	0.750000 02	0.0
245	0	0.250000 02	0.500000 02	0.800000 02	0.0
246	0	0.250000 02	0.500000 02	0.850000 02	0.0
247	0	0.250000 02	0.500000 02	0.900000 02	0.0
248	0	0.250000 02	0.500000 02	0.950000 02	0.0
249	0	0.250000 02	0.500000 02	0.100000 03	0.0
250	0	0.250000 02	0.500000 02	0.105000 03	0.0
251	3	0.0	0.550000 02	0.107500 03	0.0
252	1	0.0	0.600000 02	0.250000 01	0.0
253	0	0.250000 02	0.600000 02	0.500000 01	0.0
254	0	0.250000 02	0.600000 02	0.100000 02	0.0
255	0	0.250000 02	0.600000 02	0.150000 02	0.0
256	0	0.250000 02	0.600000 02	0.200000 02	0.0
257	0	0.250000 02	0.600000 02	0.250000 02	0.0
258	0	0.250000 02	0.600000 02	0.300000 02	0.0
259	0	0.250000 02	0.600000 02	0.350000 02	0.0
260	0	0.250000 02	0.600000 02	0.400000 02	0.0
261	0	0.250000 02	0.600000 02	0.450000 02	0.0
262	0	0.250000 02	0.600000 02	0.500000 02	0.0
263	0	0.250000 02	0.600000 02	0.550000 02	0.0
264	0	0.250000 02	0.600000 02	0.600000 02	0.0
265	0	0.250000 02	0.600000 02	0.650000 02	0.0
266	0	0.250000 02	0.600000 02	0.700000 02	0.0
267	0	0.250000 02	0.600000 02	0.750000 02	0.0
268	0	0.250000 02	0.600000 02	0.800000 02	0.0
269	0	0.250000 02	0.600000 02	0.850000 02	0.0
270	0	0.250000 02	0.600000 02	0.900000 02	0.0
271	0	0.250000 02	0.600000 02	0.950000 02	0.0
272	0	0.250000 02	0.600000 02	0.100000 03	0.0
273	0	0.250000 02	0.600000 02	0.105000 03	0.0
274	3	0.0	0.650000 02	0.107500 03	0.0
275	1	0.0	0.700000 02	0.250000 01	0.0
276	0	0.250000 02	0.700000 02	0.500000 01	0.0
277	0	0.250000 02	0.700000 02	0.100000 02	0.0
278	0	0.250000 02	0.700000 02	0.150000 02	0.0
279	0	0.250000 02	0.700000 02	0.200000 02	0.0
280	0	0.250000 02	0.700000 02	0.250000 02	0.0
281	0	0.250000 02	0.700000 02	0.300000 02	0.0
282	0	0.250000 02	0.700000 02	0.350000 02	0.0
283	0	0.250000 02	0.700000 02	0.400000 02	0.0
284	0	0.250000 02	0.700000 02	0.450000 02	0.0
285	0	0.250000 02	0.700000 02	0.500000 02	0.0
286	0	0.250000 02	0.700000 02	0.550000 02	0.0
287	0	0.250000 02	0.700000 02	0.600000 02	0.0
288	0	0.250000 02	0.700000 02	0.650000 02	0.0
289	0	0.250000 02	0.700000 02	0.700000 02	0.0
290	0	0.250000 02	0.700000 02	0.750000 02	0.0
291	0	0.250000 02	0.700000 02	0.800000 02	0.0
292	0	0.250000 02	0.700000 02	0.850000 02	0.0
293	0	0.250000 02	0.700000 02	0.900000 02	0.0
294	0	0.250000 02	0.700000 02	0.950000 02	0.0
295	0	0.250000 02	0.700000 02	0.100000 03	0.0
296	0	0.250000 02	0.700000 02	0.105000 03	0.0
297	3	0.0	0.750000 02	0.107500 03	0.0
298	1	0.0	0.800000 02	0.250000 01	0.0
299	0	0.250000 02	0.800000 02	0.500000 01	0.0
300	0	0.250000 02	0.800000 02	0.100000 02	0.0

C.4. Output (continued)

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
301	0	0.250000 02	0.650000 02	0.150000 02	0.0
302	0	0.250000 02	0.650000 02	0.207000 02	0.0
303	0	0.250000 02	0.650000 02	0.250000 02	0.0
304	0	0.250000 02	0.650000 02	0.300000 02	0.0
305	0	0.250000 02	0.650000 02	0.350000 02	0.0
306	0	0.250000 02	0.650000 02	0.400000 02	0.0
307	0	0.250000 02	0.650000 02	0.450000 02	0.0
308	0	0.250000 02	0.650000 02	0.500000 02	0.0
309	0	0.250000 02	0.650000 02	0.550000 02	0.0
310	0	0.250000 02	0.650000 02	0.600000 02	0.0
311	0	0.250000 02	0.650000 02	0.650000 02	0.0
312	0	0.250000 02	0.650000 02	0.700000 02	0.0
313	0	0.250000 02	0.650000 02	0.750000 02	0.0
314	0	0.250000 02	0.650000 02	0.800000 02	0.0
315	0	0.250000 02	0.650000 02	0.850000 02	0.0
316	0	0.250000 02	0.650000 02	0.900000 02	0.0
317	0	0.250000 02	0.650000 02	0.950000 02	0.0
318	0	0.250000 02	0.650000 02	1.000000 03	0.0
319	0	0.250000 02	0.650000 02	0.105000 03	0.0
320	0	0.0	0.650000 02	0.107500 03	0.0
321	1	0.0	0.700000 02	0.250000 01	0.0
322	0	0.250000 02	0.700000 02	0.300000 01	0.0
323	0	0.250000 02	0.700000 02	0.350000 02	0.0
324	0	0.250000 02	0.700000 02	0.400000 02	0.0
325	0	0.250000 02	0.700000 02	0.450000 02	0.0
326	0	0.250000 02	0.700000 02	0.500000 02	0.0
327	0	0.250000 02	0.700000 02	0.550000 02	0.0
328	0	0.250000 02	0.700000 02	0.600000 02	0.0
329	0	0.250000 02	0.700000 02	0.650000 02	0.0
330	0	0.250000 02	0.700000 02	0.700000 02	0.0
331	0	0.250000 02	0.700000 02	0.750000 02	0.0
332	0	0.250000 02	0.700000 02	0.800000 02	0.0
333	0	0.250000 02	0.700000 02	0.850000 02	0.0
334	0	0.250000 02	0.700000 02	0.900000 02	0.0
335	0	0.250000 02	0.700000 02	0.950000 02	0.0
336	0	0.250000 02	0.700000 02	1.000000 03	0.0
337	0	0.250000 02	0.700000 02	0.105000 03	0.0
338	0	0.250000 02	0.700000 02	0.107500 03	0.0
339	0	0.250000 02	0.700000 02	0.250000 01	0.0
340	0	0.250000 02	0.700000 02	0.300000 02	0.0
341	0	0.250000 02	0.700000 02	0.350000 02	0.0
342	0	0.250000 02	0.700000 02	0.400000 02	0.0
343	0	0.0	0.700000 02	0.450000 02	0.0
344	1	0.0	0.750000 02	0.500000 01	0.0
345	0	0.250000 02	0.750000 02	0.550000 01	0.0
346	0	0.250000 02	0.750000 02	0.600000 02	0.0
347	0	0.250000 02	0.750000 02	0.650000 02	0.0
348	0	0.250000 02	0.750000 02	0.700000 02	0.0
349	0	0.250000 02	0.750000 02	0.750000 02	0.0
350	0	0.250000 02	0.750000 02	0.800000 02	0.0
351	0	0.250000 02	0.750000 02	0.850000 02	0.0
352	0	0.250000 02	0.750000 02	0.900000 02	0.0
353	0	0.250000 02	0.750000 02	0.950000 02	0.0
354	0	0.250000 02	0.750000 02	1.000000 03	0.0
355	0	0.250000 02	0.750000 02	0.105000 03	0.0
356	0	0.250000 02	0.750000 02	0.107500 03	0.0
357	0	0.250000 02	0.750000 02	0.250000 01	0.0
358	0	0.250000 02	0.750000 02	0.300000 02	0.0
359	0	0.250000 02	0.750000 02	0.350000 02	0.0
360	0	0.250000 02	0.750000 02	0.400000 02	0.0
361	0	0.250000 02	0.750000 02	0.450000 02	0.0
362	0	0.250000 02	0.750000 02	0.500000 02	0.0
363	0	0.250000 02	0.750000 02	0.550000 02	0.0
364	0	0.250000 02	0.750000 02	0.600000 02	0.0
365	0	0.250000 02	0.750000 02	0.650000 02	0.0
366	0	0.0	0.750000 02	0.700000 02	0.0
367	1	0.0	0.800000 02	0.750000 01	0.0
368	0	0.250000 02	0.800000 02	0.800000 01	0.0
369	0	0.250000 02	0.800000 02	0.850000 02	0.0
370	0	0.250000 02	0.800000 02	0.900000 02	0.0
371	0	0.250000 02	0.800000 02	0.950000 02	0.0
372	0	0.250000 02	0.800000 02	1.000000 03	0.0
373	0	0.250000 02	0.800000 02	0.105000 03	0.0
374	0	0.250000 02	0.800000 02	0.107500 03	0.0
375	0	0.250000 02	0.800000 02	0.250000 01	0.0
376	0	0.250000 02	0.800000 02	0.300000 02	0.0
377	0	0.250000 02	0.800000 02	0.350000 02	0.0
378	0	0.250000 02	0.800000 02	0.400000 02	0.0
379	0	0.250000 02	0.800000 02	0.450000 02	0.0
380	0	0.250000 02	0.800000 02	0.500000 02	0.0
381	0	0.250000 02	0.800000 02	0.550000 02	0.0
382	0	0.250000 02	0.800000 02	0.600000 02	0.0
383	0	0.250000 02	0.800000 02	0.650000 02	0.0
384	0	0.250000 02	0.800000 02	0.700000 02	0.0
385	0	0.250000 02	0.800000 02	0.750000 02	0.0
386	0	0.250000 02	0.800000 02	0.800000 02	0.0
387	0	0.250000 02	0.800000 02	0.850000 02	0.0
388	0	0.250000 02	0.800000 02	0.900000 02	0.0
389	0	0.0	0.800000 02	0.950000 02	0.0
390	1	0.0	0.850000 02	1.000000 03	0.0
391	0	0.250000 02	0.850000 02	0.105000 03	0.0
392	0	0.250000 02	0.850000 02	0.107500 03	0.0
393	0	0.250000 02	0.850000 02	0.250000 01	0.0
394	0	0.250000 02	0.850000 02	0.300000 02	0.0
395	0	0.250000 02	0.850000 02	0.350000 02	0.0
396	0	0.250000 02	0.850000 02	0.400000 02	0.0
397	0	0.250000 02	0.850000 02	0.450000 02	0.0
398	0	0.250000 02	0.850000 02	0.500000 02	0.0
399	0	0.250000 02	0.850000 02	0.550000 02	0.0
400	0	0.250000 02	0.850000 02	0.600000 02	0.0

C.4. Output (continued)

*** MODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
401	0	0.250000 02	0.850000 02	0.550000 02	0.0
402	0	0.250000 02	0.750000 02	0.600000 02	0.0
403	0	0.250000 02	0.650000 02	0.650000 02	0.0
404	0	0.250000 02	0.550000 02	0.700000 02	0.0
405	0	0.250000 02	0.450000 02	0.750000 02	0.0
406	0	0.250000 02	0.350000 02	0.800000 02	0.0
407	0	0.250000 02	0.250000 02	0.850000 02	0.0
408	0	0.250000 02	0.150000 02	0.900000 02	0.0
409	0	0.250000 02	0.050000 02	0.950000 02	0.0
410	0	0.250000 02	0.000000 02	1.000000 03	0.0
411	0	0.250000 02	0.000000 02	1.050000 03	0.0
412	3	0.0	0.000000 02	1.075000 03	0.0
413	1	0.0	0.000000 02	1.250000 01	0.0
414	0	0.250000 02	0.900000 02	0.500000 01	0.0
415	0	0.250000 02	0.800000 02	0.100000 02	0.0
416	0	0.250000 02	0.700000 02	0.150000 02	0.0
417	0	0.250000 02	0.600000 02	0.200000 02	0.0
418	0	0.250000 02	0.500000 02	0.250000 02	0.0
419	0	0.250000 02	0.400000 02	0.300000 02	0.0
420	0	0.250000 02	0.300000 02	0.350000 02	0.0
421	0	0.250000 02	0.200000 02	0.400000 02	0.0
422	0	0.250000 02	0.100000 02	0.450000 02	0.0
423	0	0.250000 02	0.000000 02	0.500000 02	0.0
424	0	0.250000 02	0.900000 02	0.350000 02	0.0
425	0	0.250000 02	0.800000 02	0.600000 02	0.0
426	0	0.250000 02	0.700000 02	0.650000 02	0.0
427	0	0.250000 02	0.600000 02	0.700000 02	0.0
428	0	0.250000 02	0.500000 02	0.750000 02	0.0
429	0	0.250000 02	0.400000 02	0.800000 02	0.0
430	0	0.250000 02	0.300000 02	0.850000 02	0.0
431	0	0.250000 02	0.200000 02	0.900000 02	0.0
432	0	0.250000 02	0.100000 02	0.950000 02	0.0
433	0	0.250000 02	0.000000 02	1.000000 03	0.0
434	0	0.250000 02	0.900000 02	0.105000 03	0.0
435	3	0.0	0.900000 02	0.107500 03	0.0
436	1	0.0	0.950000 02	0.250000 01	0.0
437	0	0.250000 02	0.950000 02	0.500000 01	0.0
438	0	0.250000 02	0.950000 02	0.100000 02	0.0
439	0	0.250000 02	0.950000 02	0.150000 02	0.0
440	0	0.250000 02	0.950000 02	0.200000 02	0.0
441	0	0.250000 02	0.950000 02	0.250000 02	0.0
442	0	0.250000 02	0.950000 02	0.300000 02	0.0
443	0	0.250000 02	0.950000 02	0.350000 02	0.0
444	0	0.250000 02	0.950000 02	0.400000 02	0.0
445	0	0.250000 02	0.950000 02	0.450000 02	0.0
446	0	0.250000 02	0.950000 02	0.500000 02	0.0
447	0	0.250000 02	0.950000 02	0.550000 02	0.0
448	0	0.250000 02	0.950000 02	0.600000 02	0.0
449	0	0.250000 02	0.950000 02	0.650000 02	0.0
450	0	0.250000 02	0.950000 02	0.700000 02	0.0
451	0	0.250000 02	0.950000 02	0.750000 02	0.0
452	0	0.250000 02	0.950000 02	0.800000 02	0.0
453	0	0.250000 02	0.950000 02	0.850000 02	0.0
454	0	0.250000 02	0.950000 02	0.900000 02	0.0
455	0	0.250000 02	0.950000 02	0.950000 02	0.0
456	0	0.250000 02	0.950000 02	1.000000 03	0.0
457	0	0.250000 02	0.950000 02	1.050000 03	0.0
458	3	0.0	1.050000 02	1.075000 03	0.0
459	1	0.0	0.100000 03	0.250000 01	0.0
460	0	0.250000 02	0.100000 03	0.500000 01	0.0
461	0	0.250000 02	0.100000 03	0.100000 02	0.0
462	0	0.250000 02	0.100000 03	0.150000 02	0.0
463	0	0.250000 02	0.100000 03	0.200000 02	0.0
464	0	0.250000 02	0.100000 03	0.250000 02	0.0
465	0	0.250000 02	0.100000 03	0.300000 02	0.0
466	0	0.250000 02	0.100000 03	0.350000 02	0.0
467	1	0.250000 02	0.100000 03	0.400000 02	0.0
468	0	0.250000 02	0.100000 03	0.450000 02	0.0
469	0	0.250000 02	0.100000 03	0.500000 02	0.0
470	0	0.250000 02	0.100000 03	0.550000 02	0.0
471	0	0.250000 02	0.100000 03	0.600000 02	0.0
472	0	0.250000 02	0.100000 03	0.650000 02	0.0
473	0	0.250000 02	0.100000 03	0.700000 02	0.0
474	0	0.250000 02	0.100000 03	0.750000 02	0.0
475	0	0.250000 02	0.100000 03	0.800000 02	0.0
476	0	0.250000 02	0.100000 03	0.850000 02	0.0
477	0	0.250000 02	0.100000 03	0.900000 02	0.0
478	0	0.250000 02	0.100000 03	0.950000 02	0.0
479	0	0.250000 02	0.100000 03	1.000000 03	0.0
480	0	0.250000 02	0.100000 03	1.050000 03	0.0
481	3	0.0	0.100000 03	1.075000 03	0.0
482	1	0.0	0.100000 03	0.250000 01	0.0
483	0	0.250000 02	0.100000 03	0.500000 01	0.0
484	0	0.250000 02	0.100000 03	0.100000 02	0.0
485	0	0.250000 02	0.100000 03	0.150000 02	0.0
486	0	0.250000 02	0.100000 03	0.200000 02	0.0
487	0	0.250000 02	0.100000 03	0.250000 02	0.0
488	0	0.250000 02	0.100000 03	0.300000 02	0.0
489	0	0.250000 02	0.100000 03	0.350000 02	0.0
490	0	0.250000 02	0.100000 03	0.400000 02	0.0
491	0	0.250000 02	0.100000 03	0.450000 02	0.0
492	0	0.250000 02	0.100000 03	0.500000 02	0.0
493	0	0.250000 02	0.100000 03	0.550000 02	0.0
494	0	0.250000 02	0.100000 03	0.600000 02	0.0
495	0	0.250000 02	0.100000 03	0.650000 02	0.0
496	0	0.250000 02	0.100000 03	0.700000 02	0.0
497	0	0.250000 02	0.100000 03	0.750000 02	0.0
498	0	0.250000 02	0.100000 03	0.800000 02	0.0
499	0	0.250000 02	0.100000 03	0.850000 02	0.0
500	0	0.250000 02	0.100000 03	0.900000 02	0.0

C.4. Output (continued)

*** NODE (COMPARTMENT) DATA ***

N	NTYP	VOL(N)	X(N)	Y(N)	Z(N)
501	0	0.250000 02	0.105000 03	0.950000 02	0.0
502	0	0.250000 02	0.105000 03	0.100000 03	0.0
503	0	0.250000 02	0.105000 03	0.105000 03	0.0
504	3	0.0	0.105000 03	0.107500 03	0.0
505	1	0.0	0.107500 03	0.500000 01	0.0
506	1	0.0	0.107500 03	0.100000 02	0.0
507	1	0.0	0.107500 03	0.150000 02	0.0
508	1	0.0	0.107500 03	0.200000 02	0.0
509	1	0.0	0.107500 03	0.250000 02	0.0
510	1	0.0	0.107500 03	0.300000 02	0.0
511	1	0.0	0.107500 03	0.350000 02	0.0
512	1	0.0	0.107500 03	0.400000 02	0.0
513	1	0.0	0.107500 03	0.450000 02	0.0
514	1	0.0	0.107500 03	0.500000 02	0.0
515	1	0.0	0.107500 03	0.550000 02	0.0
516	1	0.0	0.107500 03	0.600000 02	0.0
517	1	0.0	0.107500 03	0.650000 02	0.0
518	1	0.0	0.107500 03	0.700000 02	0.0
519	1	0.0	0.107500 03	0.750000 02	0.0
520	1	0.0	0.107500 03	0.800000 02	0.0
521	1	0.0	0.107500 03	0.850000 02	0.0
522	1	0.0	0.107500 03	0.900000 02	0.0
523	1	0.0	0.107500 03	0.950000 02	0.0
524	1	0.0	0.107500 03	0.100000 03	0.0
525	1	0.0	0.107500 03	0.105000 03	0.0

*** CONNECTOR (INTERFACE) DATA ***

K	KTYP	MOD1	MOD2	D1IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	148M
1	0	23	24	2.500	2.500	5.000	0.0	1.000	0.0	1
2	0	24	25	2.500	2.500	5.000	0.0	1.000	0.0	1
3	0	25	26	2.500	2.500	5.000	0.0	1.000	0.0	1
4	0	26	27	2.500	2.500	5.000	0.0	1.000	0.0	1
5	0	27	28	2.500	2.500	5.000	0.0	1.000	0.0	1
6	0	28	29	2.500	2.500	5.000	0.0	1.000	0.0	1
7	0	29	30	2.500	2.500	5.000	0.0	1.000	0.0	1
8	0	30	31	2.500	2.500	5.000	0.0	1.000	0.0	1
9	0	31	32	2.500	2.500	5.000	0.0	1.000	0.0	1
10	0	32	33	2.500	2.500	5.000	0.0	1.000	0.0	1
11	0	33	34	2.500	2.500	5.000	0.0	1.000	0.0	1
12	0	34	35	2.500	2.500	5.000	0.0	1.000	0.0	1
13	0	35	36	2.500	2.500	5.000	0.0	1.000	0.0	1
14	0	36	37	2.500	2.500	5.000	0.0	1.000	0.0	1
15	0	37	38	2.500	2.500	5.000	0.0	1.000	0.0	1
16	0	38	39	2.500	2.500	5.000	0.0	1.000	0.0	1
17	0	39	40	2.500	2.500	5.000	0.0	1.000	0.0	1
18	0	40	41	2.500	2.500	5.000	0.0	1.000	0.0	1
19	0	41	42	2.500	2.500	5.000	0.0	1.000	0.0	1
20	0	42	43	2.500	2.500	5.000	0.0	1.000	0.0	1
21	0	43	44	2.500	2.500	5.000	0.0	1.000	0.0	1
22	0	44	45	2.500	2.500	5.000	0.0	1.000	0.0	1
23	0	45	46	2.500	2.500	5.000	0.0	1.000	0.0	1
24	0	46	47	2.500	2.500	5.000	0.0	1.000	0.0	1
25	0	47	48	2.500	2.500	5.000	0.0	1.000	0.0	1
26	0	48	49	2.500	2.500	5.000	0.0	1.000	0.0	1
27	0	49	50	2.500	2.500	5.000	0.0	1.000	0.0	1
28	0	50	51	2.500	2.500	5.000	0.0	1.000	0.0	1
29	0	51	52	2.500	2.500	5.000	0.0	1.000	0.0	1
30	0	52	53	2.500	2.500	5.000	0.0	1.000	0.0	1
31	0	53	54	2.500	2.500	5.000	0.0	1.000	0.0	1
32	0	54	55	2.500	2.500	5.000	0.0	1.000	0.0	1
33	0	55	56	2.500	2.500	5.000	0.0	1.000	0.0	1
34	0	56	57	2.500	2.500	5.000	0.0	1.000	0.0	1
35	0	57	58	2.500	2.500	5.000	0.0	1.000	0.0	1
36	0	58	59	2.500	2.500	5.000	0.0	1.000	0.0	1
37	0	59	60	2.500	2.500	5.000	0.0	1.000	0.0	1
38	0	60	61	2.500	2.500	5.000	0.0	1.000	0.0	1
39	0	61	62	2.500	2.500	5.000	0.0	1.000	0.0	1
40	0	62	63	2.500	2.500	5.000	0.0	1.000	0.0	1
41	0	63	64	2.500	2.500	5.000	0.0	1.000	0.0	1
42	0	64	65	2.500	2.500	5.000	0.0	1.000	0.0	1
43	0	65	66	2.500	2.500	5.000	0.0	1.000	0.0	1
44	0	66	67	2.500	2.500	5.000	0.0	1.000	0.0	1
45	0	67	68	2.500	2.500	5.000	0.0	1.000	0.0	1
46	0	68	69	2.500	2.500	5.000	0.0	1.000	0.0	1
47	0	69	70	2.500	2.500	5.000	0.0	1.000	0.0	1
48	0	70	71	2.500	2.500	5.000	0.0	1.000	0.0	1
49	0	71	72	2.500	2.500	5.000	0.0	1.000	0.0	1
50	0	72	73	2.500	2.500	5.000	0.0	1.000	0.0	1
51	0	73	74	2.500	2.500	5.000	0.0	1.000	0.0	1
52	0	74	75	2.500	2.500	5.000	0.0	1.000	0.0	1
53	0	75	76	2.500	2.500	5.000	0.0	1.000	0.0	1
54	0	76	77	2.500	2.500	5.000	0.0	1.000	0.0	1
55	0	77	78	2.500	2.500	5.000	0.0	1.000	0.0	1
56	0	78	79	2.500	2.500	5.000	0.0	1.000	0.0	1

C.4. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***

K	KTP	NOD1	NOD2	D1IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	IMBM
51	0	79	80	2.500	2.500	5.000	0.0	1.000	0.0	1
52	0	80	81	2.500	2.500	5.000	0.0	1.000	0.0	1
53	0	81	82	2.500	2.500	5.000	0.0	1.000	0.0	1
54	0	82	83	2.500	2.500	5.000	0.0	1.000	0.0	1
55	0	83	84	2.500	2.500	5.000	0.0	1.000	0.0	1
56	0	84	85	2.500	2.500	5.000	0.0	1.000	0.0	1
57	0	85	86	2.500	2.500	5.000	0.0	1.000	0.0	1
58	0	86	87	2.500	2.500	5.000	0.0	1.000	0.0	1
59	0	87	88	2.500	2.500	5.000	0.0	1.000	0.0	1
60	0	88	89	2.500	2.500	5.000	0.0	1.000	0.0	1
61	0	92	93	2.500	2.500	5.000	0.0	1.000	0.0	1
62	0	93	94	2.500	2.500	5.000	0.0	1.000	0.0	1
63	0	94	95	2.500	2.500	5.000	0.0	1.000	0.0	1
64	0	95	96	2.500	2.500	5.000	0.0	1.000	0.0	1
65	0	96	97	2.500	2.500	5.000	0.0	1.000	0.0	1
66	0	97	98	2.500	2.500	5.000	0.0	1.000	0.0	1
67	0	98	99	2.500	2.500	5.000	0.0	1.000	0.0	1
68	0	99	100	2.500	2.500	5.000	0.0	1.000	0.0	1
69	0	100	101	2.500	2.500	5.000	0.0	1.000	0.0	1
70	0	101	102	2.500	2.500	5.000	0.0	1.000	0.0	1
71	0	102	103	2.500	2.500	5.000	0.0	1.000	0.0	1
72	0	103	104	2.500	2.500	5.000	0.0	1.000	0.0	1
73	0	104	105	2.500	2.500	5.000	0.0	1.000	0.0	1
74	0	105	106	2.500	2.500	5.000	0.0	1.000	0.0	1
75	0	106	107	2.500	2.500	5.000	0.0	1.000	0.0	1
76	0	107	108	2.500	2.500	5.000	0.0	1.000	0.0	1
77	0	108	109	2.500	2.500	5.000	0.0	1.000	0.0	1
78	0	109	110	2.500	2.500	5.000	0.0	1.000	0.0	1
79	0	110	111	2.500	2.500	5.000	0.0	1.000	0.0	1
80	0	111	112	2.500	2.500	5.000	0.0	1.000	0.0	1
81	0	115	116	2.500	2.500	5.000	0.0	1.000	0.0	1
82	0	116	117	2.500	2.500	5.000	0.0	1.000	0.0	1
83	0	117	118	2.500	2.500	5.000	0.0	1.000	0.0	1
84	0	118	119	2.500	2.500	5.000	0.0	1.000	0.0	1
85	0	119	120	2.500	2.500	5.000	0.0	1.000	0.0	1
86	0	120	121	2.500	2.500	5.000	0.0	1.000	0.0	1
87	0	121	122	2.500	2.500	5.000	0.0	1.000	0.0	1
88	0	122	123	2.500	2.500	5.000	0.0	1.000	0.0	1
89	0	123	124	2.500	2.500	5.000	0.0	1.000	0.0	1
90	0	124	125	2.500	2.500	5.000	0.0	1.000	0.0	1
91	0	125	126	2.500	2.500	5.000	0.0	1.000	0.0	1
92	0	126	127	2.500	2.500	5.000	0.0	1.000	0.0	1
93	0	127	128	2.500	2.500	5.000	0.0	1.000	0.0	1
94	0	128	129	2.500	2.500	5.000	0.0	1.000	0.0	1
95	0	129	130	2.500	2.500	5.000	0.0	1.000	0.0	1
96	0	130	131	2.500	2.500	5.000	0.0	1.000	0.0	1
97	0	131	132	2.500	2.500	5.000	0.0	1.000	0.0	1
98	0	132	133	2.500	2.500	5.000	0.0	1.000	0.0	1
99	0	133	134	2.500	2.500	5.000	0.0	1.000	0.0	1
100	0	134	135	2.500	2.500	5.000	0.0	1.000	0.0	1
101	0	135	136	2.500	2.500	5.000	0.0	1.000	0.0	1
102	0	136	137	2.500	2.500	5.000	0.0	1.000	0.0	1
103	0	137	138	2.500	2.500	5.000	0.0	1.000	0.0	1
104	0	138	139	2.500	2.500	5.000	0.0	1.000	0.0	1
105	0	139	140	2.500	2.500	5.000	0.0	1.000	0.0	1
106	0	140	141	2.500	2.500	5.000	0.0	1.000	0.0	1
107	0	141	142	2.500	2.500	5.000	0.0	1.000	0.0	1
108	0	142	143	2.500	2.500	5.000	0.0	1.000	0.0	1
109	0	143	144	2.500	2.500	5.000	0.0	1.000	0.0	1
110	0	144	145	2.500	2.500	5.000	0.0	1.000	0.0	1
111	0	145	146	2.500	2.500	5.000	0.0	1.000	0.0	1
112	0	146	147	2.500	2.500	5.000	0.0	1.000	0.0	1
113	0	147	148	2.500	2.500	5.000	0.0	1.000	0.0	1
114	0	148	149	2.500	2.500	5.000	0.0	1.000	0.0	1
115	0	149	150	2.500	2.500	5.000	0.0	1.000	0.0	1
116	0	150	151	2.500	2.500	5.000	0.0	1.000	0.0	1
117	0	151	152	2.500	2.500	5.000	0.0	1.000	0.0	1
118	0	152	153	2.500	2.500	5.000	0.0	1.000	0.0	1
119	0	153	154	2.500	2.500	5.000	0.0	1.000	0.0	1
120	0	154	155	2.500	2.500	5.000	0.0	1.000	0.0	1
121	0	155	156	2.500	2.500	5.000	0.0	1.000	0.0	1
122	0	156	157	2.500	2.500	5.000	0.0	1.000	0.0	1
123	0	157	158	2.500	2.500	5.000	0.0	1.000	0.0	1
124	0	158	159	2.500	2.500	5.000	0.0	1.000	0.0	1
125	0	159	160	2.500	2.500	5.000	0.0	1.000	0.0	1
126	0	160	161	2.500	2.500	5.000	0.0	1.000	0.0	1
127	0	161	162	2.500	2.500	5.000	0.0	1.000	0.0	1
128	0	162	163	2.500	2.500	5.000	0.0	1.000	0.0	1
129	0	163	164	2.500	2.500	5.000	0.0	1.000	0.0	1
130	0	164	165	2.500	2.500	5.000	0.0	1.000	0.0	1
131	0	165	166	2.500	2.500	5.000	0.0	1.000	0.0	1
132	0	166	167	2.500	2.500	5.000	0.0	1.000	0.0	1
133	0	167	168	2.500	2.500	5.000	0.0	1.000	0.0	1
134	0	168	169	2.500	2.500	5.000	0.0	1.000	0.0	1
135	0	169	170	2.500	2.500	5.000	0.0	1.000	0.0	1
136	0	170	171	2.500	2.500	5.000	0.0	1.000	0.0	1
137	0	171	172	2.500	2.500	5.000	0.0	1.000	0.0	1
138	0	172	173	2.500	2.500	5.000	0.0	1.000	0.0	1
139	0	173	174	2.500	2.500	5.000	0.0	1.000	0.0	1
140	0	174	175	2.500	2.500	5.000	0.0	1.000	0.0	1
141	0	175	176	2.500	2.500	5.000	0.0	1.000	0.0	1
142	0	176	177	2.500	2.500	5.000	0.0	1.000	0.0	1
143	0	177	178	2.500	2.500	5.000	0.0	1.000	0.0	1
144	0	178	179	2.500	2.500	5.000	0.0	1.000	0.0	1
145	0	179	180	2.500	2.500	5.000	0.0	1.000	0.0	1
146	0	180	181	2.500	2.500	5.000	0.0	1.000	0.0	1
147	0	181	182	2.500	2.500	5.000	0.0	1.000	0.0	1
148	0	182	183	2.500	2.500	5.000	0.0	1.000	0.0	1
149	0	183	184	2.500	2.500	5.000	0.0	1.000	0.0	1
150	0	184	185	2.500	2.500	5.000	0.0	1.000	0.0	1
151	0	185	186	2.500	2.500	5.000	0.0	1.000	0.0	1
152	0	186	187	2.500	2.500	5.000	0.0	1.000	0.0	1
153	0	187	188	2.500	2.500	5.000	0.0	1.000	0.0	1
154	0	188	189	2.500	2.500	5.000	0.0	1.000	0.0	1
155	0	189	190	2.500	2.500	5.000	0.0	1.000	0.0	1
156	0	190	191	2.500	2.500	5.000	0.0	1.000	0.0	1
157	0	191	192	2.500	2.500	5.000	0.0	1.000	0.0	1
158	0	192	193	2.500	2.500	5.000	0.0	1.000	0.0	1
159	0	193	194	2.500	2.500	5.000	0.0	1.000	0.0	1

*** CONNECTOR (INTERFACE) DATA ***

K	K TYP	NO1	NO02	D1C(K)	D2C(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	TH04
151	0	194	195	2.500	2.500	5.000	0.0	1.000	0.0	1
152	0	195	196	2.500	2.500	5.000	0.0	1.000	0.0	1
153	0	196	197	2.500	2.500	5.000	0.0	1.000	0.0	1
154	0	197	198	2.500	2.500	5.000	0.0	1.000	0.0	1
155	0	198	199	2.500	2.500	5.000	0.0	1.000	0.0	1
156	0	199	200	2.500	2.500	5.000	0.0	1.000	0.0	1
157	0	200	201	2.500	2.500	5.000	0.0	1.000	0.0	1
158	0	201	202	2.500	2.500	5.000	0.0	1.000	0.0	1
159	0	202	203	2.500	2.500	5.000	0.0	1.000	0.0	1
160	0	203	204	2.500	2.500	5.000	0.0	1.000	0.0	1
161	0	204	205	2.500	2.500	5.000	0.0	1.000	0.0	1
162	0	205	206	2.500	2.500	5.000	0.0	1.000	0.0	1
163	0	206	207	2.500	2.500	5.000	0.0	1.000	0.0	1
164	0	207	208	2.500	2.500	5.000	0.0	1.000	0.0	1
165	0	208	209	2.500	2.500	5.000	0.0	1.000	0.0	1
166	0	209	210	2.500	2.500	5.000	0.0	1.000	0.0	1
167	0	210	211	2.500	2.500	5.000	0.0	1.000	0.0	1
168	0	211	212	2.500	2.500	5.000	0.0	1.000	0.0	1
169	0	212	213	2.500	2.500	5.000	0.0	1.000	0.0	1
170	0	213	214	2.500	2.500	5.000	0.0	1.000	0.0	1
171	0	214	215	2.500	2.500	5.000	0.0	1.000	0.0	1
172	0	215	216	2.500	2.500	5.000	0.0	1.000	0.0	1
173	0	216	217	2.500	2.500	5.000	0.0	1.000	0.0	1
174	0	217	218	2.500	2.500	5.000	0.0	1.000	0.0	1
175	0	218	219	2.500	2.500	5.000	0.0	1.000	0.0	1
176	0	219	220	2.500	2.500	5.000	0.0	1.000	0.0	1
177	0	220	221	2.500	2.500	5.000	0.0	1.000	0.0	1
178	0	221	222	2.500	2.500	5.000	0.0	1.000	0.0	1
179	0	222	223	2.500	2.500	5.000	0.0	1.000	0.0	1
180	0	223	224	2.500	2.500	5.000	0.0	1.000	0.0	1
181	0	224	225	2.500	2.500	5.000	0.0	1.000	0.0	1
182	0	225	226	2.500	2.500	5.000	0.0	1.000	0.0	1
183	0	226	227	2.500	2.500	5.000	0.0	1.000	0.0	1
184	0	227	228	2.500	2.500	5.000	0.0	1.000	0.0	1
185	0	228	229	2.500	2.500	5.000	0.0	1.000	0.0	1
186	0	229	230	2.500	2.500	5.000	0.0	1.000	0.0	1
187	0	230	231	2.500	2.500	5.000	0.0	1.000	0.0	1
188	0	231	232	2.500	2.500	5.000	0.0	1.000	0.0	1
189	0	232	233	2.500	2.500	5.000	0.0	1.000	0.0	1
190	0	233	234	2.500	2.500	5.000	0.0	1.000	0.0	1
191	0	234	235	2.500	2.500	5.000	0.0	1.000	0.0	1
192	0	235	236	2.500	2.500	5.000	0.0	1.000	0.0	1
193	0	236	237	2.500	2.500	5.000	0.0	1.000	0.0	1
194	0	237	238	2.500	2.500	5.000	0.0	1.000	0.0	1
195	0	238	239	2.500	2.500	5.000	0.0	1.000	0.0	1
196	0	239	240	2.500	2.500	5.000	0.0	1.000	0.0	1
197	0	240	241	2.500	2.500	5.000	0.0	1.000	0.0	1
198	0	241	242	2.500	2.500	5.000	0.0	1.000	0.0	1
199	0	242	243	2.500	2.500	5.000	0.0	1.000	0.0	1
200	0	243	244	2.500	2.500	5.000	0.0	1.000	0.0	1
201	0	244	245	2.500	2.500	5.000	0.0	1.000	0.0	1
202	0	245	246	2.500	2.500	5.000	0.0	1.000	0.0	1
203	0	246	247	2.500	2.500	5.000	0.0	1.000	0.0	1
204	0	247	248	2.500	2.500	5.000	0.0	1.000	0.0	1
205	0	248	249	2.500	2.500	5.000	0.0	1.000	0.0	1
206	0	249	250	2.500	2.500	5.000	0.0	1.000	0.0	1
207	0	253	254	2.500	2.500	5.000	0.0	1.000	0.0	1
208	0	254	255	2.500	2.500	5.000	0.0	1.000	0.0	1
209	0	255	256	2.500	2.500	5.000	0.0	1.000	0.0	1
210	0	256	257	2.500	2.500	5.000	0.0	1.000	0.0	1
211	0	257	258	2.500	2.500	5.000	0.0	1.000	0.0	1
212	0	258	259	2.500	2.500	5.000	0.0	1.000	0.0	1
213	0	259	260	2.500	2.500	5.000	0.0	1.000	0.0	1
214	0	260	261	2.500	2.500	5.000	0.0	1.000	0.0	1
215	0	261	262	2.500	2.500	5.000	0.0	1.000	0.0	1
216	0	262	263	2.500	2.500	5.000	0.0	1.000	0.0	1
217	0	263	264	2.500	2.500	5.000	0.0	1.000	0.0	1
218	0	264	265	2.500	2.500	5.000	0.0	1.000	0.0	1
219	0	265	266	2.500	2.500	5.000	0.0	1.000	0.0	1
220	0	266	267	2.500	2.500	5.000	0.0	1.000	0.0	1
221	0	267	268	2.500	2.500	5.000	0.0	1.000	0.0	1
222	0	268	269	2.500	2.500	5.000	0.0	1.000	0.0	1
223	0	269	270	2.500	2.500	5.000	0.0	1.000	0.0	1
224	0	270	271	2.500	2.500	5.000	0.0	1.000	0.0	1
225	0	271	272	2.500	2.500	5.000	0.0	1.000	0.0	1
226	0	272	273	2.500	2.500	5.000	0.0	1.000	0.0	1
227	0	273	274	2.500	2.500	5.000	0.0	1.000	0.0	1
228	0	274	275	2.500	2.500	5.000	0.0	1.000	0.0	1
229	0	275	276	2.500	2.500	5.000	0.0	1.000	0.0	1
230	0	276	277	2.500	2.500	5.000	0.0	1.000	0.0	1
231	0	277	278	2.500	2.500	5.000	0.0	1.000	0.0	1
232	0	278	279	2.500	2.500	5.000	0.0	1.000	0.0	1
233	0	279	280	2.500	2.500	5.000	0.0	1.000	0.0	1
234	0	280	281	2.500	2.500	5.000	0.0	1.000	0.0	1
235	0	281	282	2.500	2.500	5.000	0.0	1.000	0.0	1
236	0	282	283	2.500	2.500	5.000	0.0	1.000	0.0	1
237	0	283	284	2.500	2.500	5.000	0.0	1.000	0.0	1
238	0	284	285	2.500	2.500	5.000	0.0	1.000	0.0	1
239	0	285	286	2.500	2.500	5.000	0.0	1.000	0.0	1
240	0	286	287	2.500	2.500	5.000	0.0	1.000	0.0	1
241	0	287	288	2.500	2.500	5.000	0.0	1.000	0.0	1
242	0	288	289	2.500	2.500	5.000	0.0	1.000	0.0	1
243	0	289	290	2.500	2.500	5.000	0.0	1.000	0.0	1
244	0	290	291	2.500	2.500	5.000	0.0	1.000	0.0	1
245	0	291	292	2.500	2.500	5.000	0.0	1.000	0.0	1
246	0	292	293	2.500	2.500	5.000	0.0	1.000	0.0	1
247	0	293	294	2.500	2.500	5.000	0.0	1.000	0.0	1
248	0	294	295	2.500	2.500	5.000	0.0	1.000	0.0	1
249	0	295	296	2.500	2.500	5.000	0.0	1.000	0.0	1
250	0	299	300	2.500	2.500	5.000	0.0	1.000	0.0	1
251	0	300	301	2.500	2.500	5.000	0.0	1.000	0.0	1
252	0	301	302	2.500	2.500	5.000	0.0	1.000	0.0	1
253	0	302	303	2.500	2.500	5.000	0.0	1.000	0.0	1
254	0	303	304	2.500	2.500	5.000	0.0	1.000	0.0	1
255	0	304	305	2.500	2.500	5.000	0.0	1.000	0.0	1
256	0	305	306	2.500	2.500	5.000	0.0	1.000	0.0	1
257	0	306	307	2.500	2.500	5.000	0.0	1.000	0.0	1
258	0	307	308	2.500	2.500	5.000	0.0	1.000	0.0	1
259	0	308	309	2.500	2.500	5.000	0.0	1.000	0.0	1

C.4. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***

X	KTYP	NOJ1	NOJ2	D1IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	INBM
451	0	55	78	2.500	2.500	5.000	1.000	0.0	0.0	23
452	0	56	79	2.500	2.500	5.000	1.000	0.0	0.0	23
453	0	57	80	2.500	2.500	5.000	1.000	0.0	0.0	23
454	0	58	81	2.500	2.500	5.000	1.000	0.0	0.0	23
455	0	59	82	2.500	2.500	5.000	1.000	0.0	0.0	23
456	0	60	83	2.500	2.500	5.000	1.000	0.0	0.0	23
457	0	61	84	2.500	2.500	5.000	1.000	0.0	0.0	23
458	0	62	85	2.500	2.500	5.000	1.000	0.0	0.0	23
459	0	63	86	2.500	2.500	5.000	1.000	0.0	0.0	23
460	0	64	87	2.500	2.500	5.000	1.000	0.0	0.0	23
461	0	65	88	2.500	2.500	5.000	1.000	0.0	0.0	23
462	0	66	89	2.500	2.500	5.000	1.000	0.0	0.0	23
463	0	67	90	2.500	2.500	5.000	1.000	0.0	0.0	23
464	0	68	91	2.500	2.500	5.000	1.000	0.0	0.0	23
465	0	69	92	2.500	2.500	5.000	1.000	0.0	0.0	23
466	0	70	93	2.500	2.500	5.000	1.000	0.0	0.0	23
467	0	71	94	2.500	2.500	5.000	1.000	0.0	0.0	23
468	0	72	95	2.500	2.500	5.000	1.000	0.0	0.0	23
469	0	73	96	2.500	2.500	5.000	1.000	0.0	0.0	23
470	0	74	97	2.500	2.500	5.000	1.000	0.0	0.0	23
471	0	75	98	2.500	2.500	5.000	1.000	0.0	0.0	23
472	0	76	99	2.500	2.500	5.000	1.000	0.0	0.0	23
473	0	77	100	2.500	2.500	5.000	1.000	0.0	0.0	23
474	0	78	101	2.500	2.500	5.000	1.000	0.0	0.0	23
475	0	79	102	2.500	2.500	5.000	1.000	0.0	0.0	23
476	0	80	103	2.500	2.500	5.000	1.000	0.0	0.0	23
477	0	81	104	2.500	2.500	5.000	1.000	0.0	0.0	23
478	0	82	105	2.500	2.500	5.000	1.000	0.0	0.0	23
479	0	83	106	2.500	2.500	5.000	1.000	0.0	0.0	23
480	0	84	107	2.500	2.500	5.000	1.000	0.0	0.0	23
481	0	85	108	2.500	2.500	5.000	1.000	0.0	0.0	23
482	0	86	109	2.500	2.500	5.000	1.000	0.0	0.0	23
483	0	87	110	2.500	2.500	5.000	1.000	0.0	0.0	23
484	0	88	111	2.500	2.500	5.000	1.000	0.0	0.0	23
485	0	89	112	2.500	2.500	5.000	1.000	0.0	0.0	23
486	0	90	113	2.500	2.500	5.000	1.000	0.0	0.0	23
487	0	91	114	2.500	2.500	5.000	1.000	0.0	0.0	23
488	0	92	115	2.500	2.500	5.000	1.000	0.0	0.0	23
489	0	93	116	2.500	2.500	5.000	1.000	0.0	0.0	23
490	0	94	117	2.500	2.500	5.000	1.000	0.0	0.0	23
491	0	95	118	2.500	2.500	5.000	1.000	0.0	0.0	23
492	0	96	119	2.500	2.500	5.000	1.000	0.0	0.0	23
493	0	97	120	2.500	2.500	5.000	1.000	0.0	0.0	23
494	0	98	121	2.500	2.500	5.000	1.000	0.0	0.0	23
495	0	99	122	2.500	2.500	5.000	1.000	0.0	0.0	23
496	0	100	123	2.500	2.500	5.000	1.000	0.0	0.0	23
497	0	101	124	2.500	2.500	5.000	1.000	0.0	0.0	23
498	0	102	125	2.500	2.500	5.000	1.000	0.0	0.0	23
499	0	103	126	2.500	2.500	5.000	1.000	0.0	0.0	23
500	0	104	127	2.500	2.500	5.000	1.000	0.0	0.0	23
501	0	105	128	2.500	2.500	5.000	1.000	0.0	0.0	23
502	0	106	129	2.500	2.500	5.000	1.000	0.0	0.0	23
503	0	107	130	2.500	2.500	5.000	1.000	0.0	0.0	23
504	0	108	131	2.500	2.500	5.000	1.000	0.0	0.0	23
505	0	109	132	2.500	2.500	5.000	1.000	0.0	0.0	23
506	0	110	133	2.500	2.500	5.000	1.000	0.0	0.0	23
507	0	111	134	2.500	2.500	5.000	1.000	0.0	0.0	23
508	0	112	135	2.500	2.500	5.000	1.000	0.0	0.0	23
509	0	113	136	2.500	2.500	5.000	1.000	0.0	0.0	23
510	0	114	137	2.500	2.500	5.000	1.000	0.0	0.0	23
511	0	115	138	2.500	2.500	5.000	1.000	0.0	0.0	23
512	0	116	139	2.500	2.500	5.000	1.000	0.0	0.0	23
513	0	117	140	2.500	2.500	5.000	1.000	0.0	0.0	23
514	0	118	141	2.500	2.500	5.000	1.000	0.0	0.0	23
515	0	119	142	2.500	2.500	5.000	1.000	0.0	0.0	23
516	0	120	143	2.500	2.500	5.000	1.000	0.0	0.0	23
517	0	121	144	2.500	2.500	5.000	1.000	0.0	0.0	23
518	0	122	145	2.500	2.500	5.000	1.000	0.0	0.0	23
519	0	123	146	2.500	2.500	5.000	1.000	0.0	0.0	23
520	0	124	147	2.500	2.500	5.000	1.000	0.0	0.0	23
521	0	125	148	2.500	2.500	5.000	1.000	0.0	0.0	23
522	0	126	149	2.500	2.500	5.000	1.000	0.0	0.0	23
523	0	127	150	2.500	2.500	5.000	1.000	0.0	0.0	23
524	0	128	151	2.500	2.500	5.000	1.000	0.0	0.0	23
525	0	129	152	2.500	2.500	5.000	1.000	0.0	0.0	23
526	0	130	153	2.500	2.500	5.000	1.000	0.0	0.0	23
527	0	131	154	2.500	2.500	5.000	1.000	0.0	0.0	23
528	0	132	155	2.500	2.500	5.000	1.000	0.0	0.0	23
529	0	133	156	2.500	2.500	5.000	1.000	0.0	0.0	23
530	0	134	157	2.500	2.500	5.000	1.000	0.0	0.0	23
531	0	135	158	2.500	2.500	5.000	1.000	0.0	0.0	23
532	0	136	159	2.500	2.500	5.000	1.000	0.0	0.0	23
533	0	137	160	2.500	2.500	5.000	1.000	0.0	0.0	23
534	0	138	161	2.500	2.500	5.000	1.000	0.0	0.0	23
535	0	139	162	2.500	2.500	5.000	1.000	0.0	0.0	23
536	0	140	163	2.500	2.500	5.000	1.000	0.0	0.0	23
537	0	141	164	2.500	2.500	5.000	1.000	0.0	0.0	23
538	0	142	165	2.500	2.500	5.000	1.000	0.0	0.0	23
539	0	143	166	2.500	2.500	5.000	1.000	0.0	0.0	23
540	0	144	167	2.500	2.500	5.000	1.000	0.0	0.0	23
541	0	145	168	2.500	2.500	5.000	1.000	0.0	0.0	23
542	0	146	169	2.500	2.500	5.000	1.000	0.0	0.0	23
543	0	147	170	2.500	2.500	5.000	1.000	0.0	0.0	23
544	0	148	171	2.500	2.500	5.000	1.000	0.0	0.0	23
545	0	149	172	2.500	2.500	5.000	1.000	0.0	0.0	23
546	0	150	173	2.500	2.500	5.000	1.000	0.0	0.0	23
547	0	151	174	2.500	2.500	5.000	1.000	0.0	0.0	23
548	0	152	175	2.500	2.500	5.000	1.000	0.0	0.0	23
549	0	153	176	2.500	2.500	5.000	1.000	0.0	0.0	23
550	0	154	177	2.500	2.500	5.000	1.000	0.0	0.0	23
551	0	155	178	2.500	2.500	5.000	1.000	0.0	0.0	23
552	0	156	179	2.500	2.500	5.000	1.000	0.0	0.0	23
553	0	157	180	2.500	2.500	5.000	1.000	0.0	0.0	23
554	0	158	181	2.500	2.500	5.000	1.000	0.0	0.0	23
555	0	159	182	2.500	2.500	5.000	1.000	0.0	0.0	23
556	0	160	183	2.500	2.500	5.000	1.000	0.0	0.0	23
557	0	161	184	2.500	2.500	5.000	1.000	0.0	0.0	23
558	0	162	185	2.500	2.500	5.000	1.000	0.0	0.0	23
559	0	163	186	2.500	2.500	5.000	1.000	0.0	0.0	23
560	0	164	187	2.500	2.500	5.000	1.000	0.0	0.0	23

C.4. Output (continue?)

*** CONNECTOR (INTERFACE) DATA ***

K	KTYP	N001	N002	D1IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	INBM
551	0	165	188	2.500	2.500	5.000	1.000	0.0	0.0	23
552	0	166	189	2.500	2.500	5.000	1.000	0.0	0.0	23
553	0	167	190	2.500	2.500	5.000	1.000	0.0	0.0	23
554	0	168	191	2.500	2.500	5.000	1.000	0.0	0.0	23
555	0	169	192	2.500	2.500	5.000	1.000	0.0	0.0	23
556	0	170	193	2.500	2.500	5.000	1.000	0.0	0.0	23
557	0	171	194	2.500	2.500	5.000	1.000	0.0	0.0	23
558	0	172	195	2.500	2.300	5.000	1.000	0.0	0.0	23
559	0	173	196	2.500	2.500	5.000	1.000	0.0	0.0	23
560	0	174	197	2.500	2.500	5.000	1.000	0.0	0.0	23
561	0	175	198	2.500	2.500	5.000	1.000	0.0	0.0	23
562	0	176	199	2.500	2.500	5.000	1.000	0.0	0.0	23
563	0	177	200	2.500	2.500	5.000	1.000	0.0	0.0	23
564	0	178	201	2.500	2.500	5.000	1.000	0.0	0.0	23
565	0	179	202	2.500	2.500	5.000	1.000	0.0	0.0	23
566	0	180	203	2.500	2.500	5.000	1.000	0.0	0.0	23
567	0	181	204	2.500	2.500	5.000	1.000	0.0	0.0	23
568	0	184	207	2.500	2.500	5.000	1.000	0.0	0.0	23
569	0	185	208	2.500	2.500	5.000	1.000	0.0	0.0	23
570	0	186	209	2.500	2.500	5.000	1.000	0.0	0.0	23
571	0	187	210	2.500	2.500	5.000	1.000	0.0	0.0	23
572	0	188	211	2.500	2.500	5.000	1.000	0.0	0.0	23
573	0	189	212	2.500	2.500	5.000	1.000	0.0	0.0	23
574	0	190	213	2.500	2.500	5.000	1.000	0.0	0.0	23
575	0	191	214	2.500	2.500	5.000	1.000	0.0	0.0	23
576	0	192	215	2.500	2.500	5.000	1.000	0.0	0.0	23
577	0	193	216	2.500	2.500	5.000	1.000	0.0	0.0	23
578	0	194	217	2.500	2.500	5.000	1.000	0.0	0.0	23
579	0	195	218	2.500	2.500	5.000	1.000	0.0	0.0	23
580	0	196	219	2.500	2.500	5.000	1.000	0.0	0.0	23
581	0	197	220	2.500	2.500	5.000	1.000	0.0	0.0	23
582	0	198	221	2.500	2.500	5.000	1.000	0.0	0.0	23
583	0	199	222	2.500	2.500	5.000	1.000	0.0	0.0	23
584	0	200	223	2.500	2.500	5.000	1.000	0.0	0.0	23
585	0	201	224	2.500	2.500	5.000	1.000	0.0	0.0	23
586	0	202	225	2.500	2.500	5.000	1.000	0.0	0.0	23
587	0	203	226	2.500	2.500	5.000	1.000	0.0	0.0	23
588	0	204	227	2.500	2.500	5.000	1.000	0.0	0.0	23
589	0	207	230	2.500	2.500	5.000	1.000	0.0	0.0	23
590	0	208	231	2.500	2.500	5.000	1.000	0.0	0.0	23
591	0	209	232	2.500	2.500	5.000	1.000	0.0	0.0	23
592	0	210	233	2.500	2.500	5.000	1.000	0.0	0.0	23
593	0	211	234	2.500	2.500	5.000	1.000	0.0	0.0	23
594	0	212	235	2.500	2.500	5.000	1.000	0.0	0.0	23
595	0	213	236	2.500	2.500	5.000	1.000	0.0	0.0	23
596	0	214	237	2.500	2.500	5.000	1.000	0.0	0.0	23
597	0	215	238	2.500	2.500	5.000	1.000	0.0	0.0	23
598	0	216	239	2.500	2.500	5.000	1.000	0.0	0.0	23
599	0	217	240	2.500	2.500	5.000	1.000	0.0	0.0	23
600	0	218	241	2.500	2.500	5.000	1.000	0.0	0.0	23
601	0	219	242	2.500	2.500	5.000	1.000	0.0	0.0	23
602	0	220	243	2.500	2.500	5.000	1.000	0.0	0.0	23
603	0	221	244	2.500	2.500	5.000	1.000	0.0	0.0	23
604	0	222	245	2.500	2.500	5.000	1.000	0.0	0.0	23
605	0	223	246	2.500	2.500	5.000	1.000	0.0	0.0	23
606	0	224	247	2.500	2.500	5.000	1.000	0.0	0.0	23
607	0	225	248	2.500	2.500	5.000	1.000	0.0	0.0	23
608	0	226	249	2.500	2.500	5.000	1.000	0.0	0.0	23
609	0	227	250	2.500	2.500	5.000	1.000	0.0	0.0	23
610	0	230	253	2.500	2.500	5.000	1.000	0.0	0.0	23
611	0	231	254	2.500	2.500	5.000	1.000	0.0	0.0	23
612	0	232	255	2.500	2.500	5.000	1.000	0.0	0.0	23
613	0	233	256	2.500	2.500	5.000	1.000	0.0	0.0	23
614	0	234	257	2.500	2.500	5.000	1.000	0.0	0.0	23
615	0	235	258	2.500	2.500	5.000	1.000	0.0	0.0	23
616	0	236	259	2.500	2.500	5.000	1.000	0.0	0.0	23
617	0	237	260	2.500	2.500	5.000	1.000	0.0	0.0	23
618	0	238	261	2.500	2.500	5.000	1.000	0.0	0.0	23
619	0	239	262	2.500	2.500	5.000	1.000	0.0	0.0	23
620	0	240	263	2.500	2.500	5.000	1.000	0.0	0.0	23
621	0	241	264	2.500	2.500	5.000	1.000	0.0	0.0	23
622	0	242	265	2.500	2.500	5.000	1.000	0.0	0.0	23
623	0	243	266	2.500	2.500	5.000	1.000	0.0	0.0	23
624	0	244	267	2.500	2.500	5.000	1.000	0.0	0.0	23
625	0	245	268	2.500	2.500	5.000	1.000	0.0	0.0	23
626	0	246	269	2.500	2.500	5.000	1.000	0.0	0.0	23
627	0	247	270	2.500	2.500	5.000	1.000	0.0	0.0	23
628	0	248	271	2.500	2.500	5.000	1.000	0.0	0.0	23
629	0	249	272	2.500	2.500	5.000	1.000	0.0	0.0	23
630	0	250	273	2.500	2.500	5.000	1.000	0.0	0.0	23
631	0	253	276	2.500	2.500	5.000	1.000	0.0	0.0	23
632	0	254	277	2.500	2.500	5.000	1.000	0.0	0.0	23
633	0	255	278	2.500	2.500	5.000	1.000	0.0	0.0	23
634	0	256	279	2.500	2.500	5.000	1.000	0.0	0.0	23
635	0	257	280	2.500	2.500	5.000	1.000	0.0	0.0	23
636	0	258	281	2.500	2.500	5.000	1.000	0.0	0.0	23
637	0	259	282	2.500	2.500	5.000	1.000	0.0	0.0	23
638	0	260	283	2.500	2.500	5.000	1.000	0.0	0.0	23
639	0	261	284	2.500	2.500	5.000	1.000	0.0	0.0	23
640	0	262	285	2.500	2.500	5.000	1.000	0.0	0.0	23
641	0	263	286	2.500	2.500	5.000	1.000	0.0	0.0	23
642	0	264	287	2.500	2.500	5.000	1.000	0.0	0.0	23
643	0	265	288	2.500	2.500	5.000	1.000	0.0	0.0	23
644	0	266	289	2.500	2.500	5.000	1.000	0.0	0.0	23
645	0	267	290	2.500	2.500	5.000	1.000	0.0	0.0	23
646	0	268	291	2.500	2.500	5.000	1.000	0.0	0.0	23
647	0	269	292	2.500	2.500	5.000	1.000	0.0	0.0	23
648	0	270	293	2.500	2.500	5.000	1.000	0.0	0.0	23
649	0	271	294	2.500	2.500	5.000	1.000	0.0	0.0	23
650	0	272	295	2.500	2.500	5.000	1.000	0.0	0.0	23

C.4. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***

K	KTYP	MOD1	MOD2	D1IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	INBM
651	0	273	296	2.500	2.500	5.000	1.000	0.0	0.0	23
652	0	276	299	2.500	2.500	5.000	1.000	0.0	0.0	23
653	0	277	300	2.500	2.500	5.000	1.000	0.0	0.0	23
654	0	278	301	2.500	2.500	5.000	1.000	0.0	0.0	23
655	0	279	302	2.500	2.500	5.000	1.000	0.0	0.0	23
656	0	280	303	2.500	2.500	5.000	1.000	0.0	0.0	23
657	0	281	304	2.500	2.500	5.000	1.000	0.0	0.0	23
658	0	282	305	2.500	2.500	5.000	1.000	0.0	0.0	23
659	0	283	306	2.500	2.500	5.000	1.000	0.0	0.0	23
660	0	284	307	2.500	2.500	5.000	1.000	0.0	0.0	23
661	0	285	308	2.500	2.500	5.000	1.000	0.0	0.0	23
662	0	286	309	2.500	2.500	5.000	1.000	0.0	0.0	23
663	0	287	310	2.500	2.500	5.000	1.000	0.0	0.0	23
664	0	288	311	2.500	2.500	5.000	1.000	0.0	0.0	23
665	0	289	312	2.500	2.500	5.000	1.000	0.0	0.0	23
666	0	290	313	2.500	2.500	5.000	1.000	0.0	0.0	23
667	0	291	314	2.500	2.500	5.000	1.000	0.0	0.0	23
668	0	292	315	2.500	2.500	5.000	1.000	0.0	0.0	23
669	0	293	316	2.500	2.500	5.000	1.000	0.0	0.0	23
670	0	294	317	2.500	2.500	5.000	1.000	0.0	0.0	23
671	0	295	318	2.500	2.500	5.000	1.000	0.0	0.0	23
672	0	296	319	2.500	2.500	5.000	1.000	0.0	0.0	23
673	0	299	322	2.500	2.500	5.000	1.000	0.0	0.0	23
674	0	300	323	2.500	2.500	5.000	1.000	0.0	0.0	23
675	0	301	324	2.500	2.500	5.000	1.000	0.0	0.0	23
676	0	302	325	2.500	2.500	5.000	1.000	0.0	0.0	23
677	0	303	326	2.500	2.500	5.000	1.000	0.0	0.0	23
678	0	304	327	2.500	2.500	5.000	1.000	0.0	0.0	23
679	0	305	328	2.500	2.500	5.000	1.000	0.0	0.0	23
680	0	306	329	2.500	2.500	5.000	1.000	0.0	0.0	23
681	0	307	330	2.500	2.500	5.000	1.000	0.0	0.0	23
682	0	308	331	2.500	2.500	5.000	1.000	0.0	0.0	23
683	0	309	332	2.500	2.500	5.000	1.000	0.0	0.0	23
684	0	310	333	2.500	2.500	5.000	1.000	0.0	0.0	23
685	0	311	334	2.500	2.500	5.000	1.000	0.0	0.0	23
686	0	312	335	2.500	2.500	5.000	1.000	0.0	0.0	23
687	0	313	336	2.500	2.500	5.000	1.000	0.0	0.0	23
688	0	314	337	2.500	2.500	5.000	1.000	0.0	0.0	23
689	0	315	338	2.500	2.500	5.000	1.000	0.0	0.0	23
690	0	316	339	2.500	2.500	5.000	1.000	0.0	0.0	23
691	0	317	340	2.500	2.500	5.000	1.000	0.0	0.0	23
692	0	318	341	2.500	2.500	5.000	1.000	0.0	0.0	23
693	0	319	342	2.500	2.500	5.000	1.000	0.0	0.0	23
694	0	322	345	2.500	2.500	5.000	1.000	0.0	0.0	23
695	0	323	346	2.500	2.500	5.000	1.000	0.0	0.0	23
696	0	324	347	2.500	2.500	5.000	1.000	0.0	0.0	23
697	0	325	348	2.500	2.500	5.000	1.000	0.0	0.0	23
698	0	326	349	2.500	2.500	5.000	1.000	0.0	0.0	23
699	0	327	350	2.500	2.500	5.000	1.000	0.0	0.0	23
700	0	328	351	2.500	2.500	5.000	1.000	0.0	0.0	23
701	0	329	352	2.500	2.500	5.000	1.000	0.0	0.0	23
702	0	330	353	2.500	2.500	5.000	1.000	0.0	0.0	23
703	0	331	354	2.500	2.500	5.000	1.000	0.0	0.0	23
704	0	332	355	2.500	2.500	5.000	1.000	0.0	0.0	23
705	0	333	356	2.500	2.500	5.000	1.000	0.0	0.0	23
706	0	334	357	2.500	2.500	5.000	1.000	0.0	0.0	23
707	0	335	358	2.500	2.500	5.000	1.000	0.0	0.0	23
708	0	336	359	2.500	2.500	5.000	1.000	0.0	0.0	23
709	0	337	360	2.500	2.500	5.000	1.000	0.0	0.0	23
710	0	338	361	2.500	2.500	5.000	1.000	0.0	0.0	23
711	0	339	362	2.500	2.500	5.000	1.000	0.0	0.0	23
712	0	340	363	2.500	2.500	5.000	1.000	0.0	0.0	23
713	0	341	364	2.500	2.500	5.000	1.000	0.0	0.0	23
714	0	342	365	2.500	2.500	5.000	1.000	0.0	0.0	23
715	0	343	366	2.500	2.500	5.000	1.000	0.0	0.0	23
716	0	344	367	2.500	2.500	5.000	1.000	0.0	0.0	23
717	0	347	370	2.500	2.500	5.000	1.000	0.0	0.0	23
718	0	348	371	2.500	2.500	5.000	1.000	0.0	0.0	23
719	0	349	372	2.500	2.500	5.000	1.000	0.0	0.0	23
720	0	350	373	2.500	2.500	5.000	1.000	0.0	0.0	23
721	0	351	374	2.500	2.500	5.000	1.000	0.0	0.0	23
722	0	352	375	2.500	2.500	5.000	1.000	0.0	0.0	23
723	0	353	376	2.500	2.500	5.000	1.000	0.0	0.0	23
724	0	354	377	2.500	2.500	5.000	1.000	0.0	0.0	23
725	0	355	378	2.500	2.500	5.000	1.000	0.0	0.0	23
726	0	356	379	2.500	2.500	5.000	1.000	0.0	0.0	23
727	0	357	380	2.500	2.500	5.000	1.000	0.0	0.0	23
728	0	358	381	2.500	2.500	5.000	1.000	0.0	0.0	23
729	0	359	382	2.500	2.500	5.000	1.000	0.0	0.0	23
730	0	360	383	2.500	2.500	5.000	1.000	0.0	0.0	23
731	0	361	384	2.500	2.500	5.000	1.000	0.0	0.0	23
732	0	362	385	2.500	2.500	5.000	1.000	0.0	0.0	23
733	0	363	386	2.500	2.500	5.000	1.000	0.0	0.0	23
734	0	364	387	2.500	2.500	5.000	1.000	0.0	0.0	23
735	0	365	388	2.500	2.500	5.000	1.000	0.0	0.0	23
736	0	367	391	2.500	2.500	5.000	1.000	0.0	0.0	23
737	0	369	392	2.500	2.500	5.000	1.000	0.0	0.0	23
738	0	370	393	2.500	2.500	5.000	1.000	0.0	0.0	23
739	0	371	394	2.500	2.500	5.000	1.000	0.0	0.0	23
740	0	372	395	2.500	2.500	5.000	1.000	0.0	0.0	23
741	0	373	396	2.500	2.500	5.000	1.000	0.0	0.0	23
742	0	374	397	2.500	2.500	5.000	1.000	0.0	0.0	23
743	0	375	398	2.500	2.500	5.000	1.000	0.0	0.0	23
744	0	376	399	2.500	2.500	5.000	1.000	0.0	0.0	23
745	0	377	400	2.500	2.500	5.000	1.000	0.0	0.0	23
746	0	378	401	2.500	2.500	5.000	1.000	0.0	0.0	23
747	0	379	402	2.500	2.500	5.000	1.000	0.0	0.0	23
748	0	380	403	2.500	2.500	5.000	1.000	0.0	0.0	23
749	0	381	404	2.500	2.500	5.000	1.000	0.0	0.0	23
750	0	382	405	2.500	2.500	5.000	1.000	0.0	0.0	23

C.4. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***

K	KTY	NO1	NO2	D1IC(K)	D2IC(K)	MPEA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	IMB
751	0	383	406	2.500	2.500	5.000	1.000	0.0	0.0	23
752	0	384	407	2.500	2.500	5.000	1.000	0.0	0.0	23
753	0	385	408	2.500	2.500	5.000	1.000	0.0	0.0	23
754	0	386	409	2.500	2.500	5.000	1.000	0.0	0.0	23
755	0	387	410	2.500	2.500	5.000	1.000	0.0	0.0	23
756	0	388	411	2.500	2.500	5.000	1.000	0.0	0.0	23
757	0	391	414	2.500	2.500	5.000	1.000	0.0	0.0	23
758	0	392	415	2.500	2.500	5.000	1.000	0.0	0.0	23
759	0	393	416	2.500	2.500	5.000	1.000	0.0	0.0	23
760	0	394	417	2.500	2.500	5.000	1.000	0.0	0.0	23
761	0	395	418	2.500	2.500	5.000	1.000	0.0	0.0	23
762	0	396	419	2.500	2.500	5.000	1.000	0.0	0.0	23
763	0	397	420	2.500	2.500	5.000	1.000	0.0	0.0	23
764	0	398	421	2.500	2.500	5.000	1.000	0.0	0.0	23
765	0	399	422	2.500	2.500	5.000	1.000	0.0	0.0	23
766	0	400	423	2.500	2.500	5.000	1.000	0.0	0.0	23
767	0	401	424	2.500	2.500	5.000	1.000	0.0	0.0	23
768	0	402	425	2.500	2.500	5.000	1.000	0.0	0.0	23
769	0	403	426	2.500	2.500	5.000	1.000	0.0	0.0	23
770	0	404	427	2.500	2.500	5.000	1.000	0.0	0.0	23
771	0	405	428	2.500	2.500	5.000	1.000	0.0	0.0	23
772	0	406	429	2.500	2.500	5.000	1.000	0.0	0.0	23
773	0	407	430	2.500	2.500	5.000	1.000	0.0	0.0	23
774	0	408	431	2.500	2.500	5.000	1.000	0.0	0.0	23
775	0	409	432	2.500	2.500	5.000	1.000	0.0	0.0	23
776	0	410	433	2.500	2.500	5.000	1.000	0.0	0.0	23
777	0	411	434	2.500	2.500	5.000	1.000	0.0	0.0	23
778	0	414	437	2.500	2.500	5.000	1.000	0.0	0.0	23
779	0	415	438	2.500	2.500	5.000	1.000	0.0	0.0	23
780	0	416	439	2.500	2.500	5.000	1.000	0.0	0.0	23
781	0	417	440	2.500	2.500	5.000	1.000	0.0	0.0	23
782	0	418	441	2.500	2.500	5.000	1.000	0.0	0.0	23
783	0	419	442	2.500	2.500	5.000	1.000	0.0	0.0	23
784	0	420	443	2.500	2.500	5.000	1.000	0.0	0.0	23
785	0	421	444	2.500	2.500	5.000	1.000	0.0	0.0	23
786	0	422	445	2.500	2.500	5.000	1.000	0.0	0.0	23
787	0	423	446	2.500	2.500	5.000	1.000	0.0	0.0	23
788	0	424	447	2.500	2.500	5.000	1.000	0.0	0.0	23
789	0	425	448	2.500	2.500	5.000	1.000	0.0	0.0	23
790	0	426	449	2.500	2.500	5.000	1.000	0.0	0.0	23
791	0	427	450	2.500	2.500	5.000	1.000	0.0	0.0	23
792	0	428	451	2.500	2.500	5.000	1.000	0.0	0.0	23
793	0	429	452	2.500	2.500	5.000	1.000	0.0	0.0	23
794	0	430	453	2.500	2.500	5.000	1.000	0.0	0.0	23
795	0	431	454	2.500	2.500	5.000	1.000	0.0	0.0	23
796	0	432	455	2.500	2.500	5.000	1.000	0.0	0.0	23
797	0	433	456	2.500	2.500	5.000	1.000	0.0	0.0	23
798	0	434	457	2.500	2.500	5.000	1.000	0.0	0.0	23
799	0	437	460	2.500	2.500	5.000	1.000	0.0	0.0	23
800	0	438	461	2.500	2.500	5.000	1.000	0.0	0.0	23
801	0	439	462	2.500	2.500	5.000	1.000	0.0	0.0	23
802	0	440	463	2.500	2.500	5.000	1.000	0.0	0.0	23
803	0	441	464	2.500	2.500	5.000	1.000	0.0	0.0	23
804	0	442	465	2.500	2.500	5.000	1.000	0.0	0.0	23
805	0	443	466	2.500	2.500	5.000	1.000	0.0	0.0	23
806	0	444	467	2.500	2.500	5.000	1.000	0.0	0.0	23
807	0	445	468	2.500	2.500	5.000	1.000	0.0	0.0	23
808	0	446	469	2.500	2.500	5.000	1.000	0.0	0.0	23
809	0	447	470	2.500	2.500	5.000	1.000	0.0	0.0	23
810	0	448	471	2.500	2.500	5.000	1.000	0.0	0.0	23
811	0	449	472	2.500	2.500	5.000	1.000	0.0	0.0	23
812	0	450	473	2.500	2.500	5.000	1.000	0.0	0.0	23
813	0	451	474	2.500	2.500	5.000	1.000	0.0	0.0	23
814	0	452	475	2.500	2.500	5.000	1.000	0.0	0.0	23
815	0	453	476	2.500	2.500	5.000	1.000	0.0	0.0	23
816	0	454	477	2.500	2.500	5.000	1.000	0.0	0.0	23
817	0	455	478	2.500	2.500	5.000	1.000	0.0	0.0	23
818	0	456	479	2.500	2.500	5.000	1.000	0.0	0.0	23
819	0	457	480	2.500	2.500	5.000	1.000	0.0	0.0	23
820	0	460	483	2.500	2.500	5.000	1.000	0.0	0.0	23
821	0	461	484	2.500	2.500	5.000	1.000	0.0	0.0	23
822	0	462	485	2.500	2.500	5.000	1.000	0.0	0.0	23
823	0	463	486	2.500	2.500	5.000	1.000	0.0	0.0	23
824	0	464	487	2.500	2.500	5.000	1.000	0.0	0.0	23
825	0	465	488	2.500	2.500	5.000	1.000	0.0	0.0	23
826	0	466	489	2.500	2.500	5.000	1.000	0.0	0.0	23
827	0	467	490	2.500	2.500	5.000	1.000	0.0	0.0	23
828	0	468	491	2.500	2.500	5.000	1.000	0.0	0.0	23
829	0	469	492	2.500	2.500	5.000	1.000	0.0	0.0	23
830	0	470	493	2.500	2.500	5.000	1.000	0.0	0.0	23
831	0	471	494	2.500	2.500	5.000	1.000	0.0	0.0	23
832	0	472	495	2.500	2.500	5.000	1.000	0.0	0.0	23
833	0	473	496	2.500	2.500	5.000	1.000	0.0	0.0	23
834	0	474	497	2.500	2.500	5.000	1.000	0.0	0.0	23
835	0	475	498	2.500	2.500	5.000	1.000	0.0	0.0	23
836	0	476	499	2.500	2.500	5.000	1.000	0.0	0.0	23
837	0	477	500	2.500	2.500	5.000	1.000	0.0	0.0	23
838	0	478	501	2.500	2.500	5.000	1.000	0.0	0.0	23
839	0	479	502	2.500	2.500	5.000	1.000	0.0	0.0	23
840	0	480	503	2.500	2.500	5.000	1.000	0.0	0.0	23
841	1	23	22	2.500	0.0	5.000	0.0	-1.000	0.0	1
842	1	46	45	2.500	0.0	5.000	0.0	-1.000	0.0	1
843	1	69	68	2.500	0.0	5.000	0.0	-1.000	0.0	1
844	1	92	91	2.500	0.0	5.000	0.0	-1.000	0.0	1
845	1	115	114	2.500	0.0	5.000	0.0	-1.000	0.0	1
846	1	138	137	2.500	0.0	5.000	0.0	-1.000	0.0	1
847	1	161	160	2.500	0.0	5.000	0.0	-1.000	0.0	1
848	1	184	183	2.500	0.0	5.000	0.0	-1.000	0.0	1
849	1	207	206	2.500	0.0	5.000	0.0	-1.000	0.0	1
850	1	230	229	2.500	0.0	5.000	0.0	-1.000	0.0	1

C.4. Output (continued)

*** CONNECTOR (INTERFACE) DATA ***

K	K TYP	NO1	NO2	IC(K)	D2IC(K)	AREA(K)	DCSX(K)	DCSY(K)	DCSZ(K)	MEM
851	1	253	252	2.500	0.0	5.000	0.0	-1.000	0.0	1
852	1	276	275	2.500	0.0	5.000	0.0	-1.000	0.0	1
853	1	299	298	2.500	0.0	5.000	0.0	-1.000	0.0	1
854	1	322	321	2.500	0.0	5.000	0.0	-1.000	0.0	1
855	1	345	344	2.500	0.0	5.000	0.0	-1.000	0.0	1
856	1	368	367	2.500	0.0	5.000	0.0	-1.000	0.0	1
857	1	391	390	2.500	0.0	5.000	0.0	-1.000	0.0	1
858	1	414	413	2.500	0.0	5.000	0.0	-1.000	0.0	1
859	1	437	436	2.500	0.0	5.000	0.0	-1.000	0.0	1
860	1	460	459	2.500	0.0	5.000	0.0	-1.000	0.0	1
861	1	483	482	2.500	0.0	5.000	0.0	-1.000	0.0	1
862	1	413	505	2.500	0.0	5.000	1.000	0.0	0.0	22
863	1	484	506	2.500	0.0	5.000	1.000	0.0	0.0	22
864	1	485	507	2.500	0.0	5.000	1.000	0.0	0.0	22
865	1	486	508	2.500	0.0	5.000	1.000	0.0	0.0	22
866	1	487	509	2.500	0.0	5.000	1.000	0.0	0.0	22
867	1	488	510	2.500	0.0	5.000	1.000	0.0	0.0	22
868	1	489	511	2.500	0.0	5.000	1.000	0.0	0.0	22
869	1	490	512	2.500	0.0	5.000	1.000	0.0	0.0	22
870	1	491	513	2.500	0.0	5.000	1.000	0.0	0.0	22
871	1	492	514	2.500	0.0	5.000	1.000	0.0	0.0	22
872	1	493	515	2.500	0.0	5.000	1.000	0.0	0.0	22
873	1	494	516	2.500	0.0	5.000	1.000	0.0	0.0	22
874	1	495	517	2.500	0.0	5.000	1.000	0.0	0.0	22
875	1	496	518	2.500	0.0	5.000	1.000	0.0	0.0	22
876	1	497	519	2.500	0.0	5.000	1.000	0.0	0.0	22
877	1	498	520	2.500	0.0	5.000	1.000	0.0	0.0	22
878	1	499	521	2.500	0.0	5.000	1.000	0.0	0.0	22
879	1	500	522	2.500	0.0	5.000	1.000	0.0	0.0	22
880	1	501	523	2.500	0.0	5.000	1.000	0.0	0.0	22
881	1	502	524	2.500	0.0	5.000	1.000	0.0	0.0	22
882	1	503	525	2.500	0.0	5.000	1.000	0.0	0.0	22
883	1	23	1	2.500	0.0	5.000	-1.000	0.0	0.0	22
884	1	24	2	2.500	0.0	5.000	-1.000	0.0	0.0	22
885	1	25	3	2.500	0.0	5.000	-1.000	0.0	0.0	22
886	1	26	4	2.500	0.0	5.000	-1.000	0.0	0.0	22
887	1	27	5	2.500	0.0	5.000	-1.000	0.0	0.0	22
888	1	28	6	2.500	0.0	5.000	-1.000	0.0	0.0	22
889	1	29	7	2.500	0.0	5.000	-1.000	0.0	0.0	22
890	1	30	8	2.500	0.0	5.000	-1.000	0.0	0.0	22
891	1	31	9	2.500	0.0	5.000	-1.000	0.0	0.0	22
892	1	32	10	2.500	0.0	5.000	-1.000	0.0	0.0	22
893	1	33	11	2.500	0.0	5.000	-1.000	0.0	0.0	22
894	1	34	12	2.500	0.0	5.000	-1.000	0.0	0.0	22
895	1	35	13	2.500	0.0	5.000	-1.000	0.0	0.0	22
896	1	36	14	2.500	0.0	5.000	-1.000	0.0	0.0	22
897	1	37	15	2.500	0.0	5.000	-1.000	0.0	0.0	22
898	1	38	16	2.500	0.0	5.000	-1.000	0.0	0.0	22
899	1	39	17	2.500	0.0	5.000	-1.000	0.0	0.0	22
900	1	40	18	2.500	0.0	5.000	-1.000	0.0	0.0	22
901	1	41	19	2.500	0.0	5.000	-1.000	0.0	0.0	22
902	1	42	20	2.500	0.0	5.000	-1.000	0.0	0.0	22
903	1	43	21	2.500	0.0	5.000	-1.000	0.0	0.0	22
904	3	43	44	2.500	0.0	5.000	0.0	1.000	0.0	1
905	3	46	67	2.500	0.0	5.000	0.0	1.000	0.0	1
906	3	69	90	2.500	0.0	5.000	0.0	1.000	0.0	1
907	3	112	113	2.500	0.0	5.000	0.0	1.000	0.0	1
908	3	125	136	2.500	0.0	5.000	0.0	1.000	0.0	1
909	3	158	159	2.500	0.0	5.000	0.0	1.000	0.0	1
910	3	181	182	2.500	0.0	5.000	0.0	1.000	0.0	1
911	3	204	205	2.500	0.0	5.000	0.0	1.000	0.0	1
912	3	227	228	2.500	0.0	5.000	0.0	1.000	0.0	1
913	3	250	251	2.500	0.0	5.000	0.0	1.000	0.0	1
914	3	273	274	2.500	0.0	5.000	0.0	1.000	0.0	1
915	3	296	297	2.500	0.0	5.000	0.0	1.000	0.0	1
916	3	319	320	2.500	0.0	5.000	0.0	1.000	0.0	1
917	3	342	343	2.500	0.0	5.000	0.0	1.000	0.0	1
918	3	365	366	2.500	0.0	5.000	0.0	1.000	0.0	1
919	3	388	389	2.500	0.0	5.000	0.0	1.000	0.0	1
920	3	411	412	2.500	0.0	5.000	0.0	1.000	0.0	1
921	3	434	435	2.500	0.0	5.000	0.0	1.000	0.0	1
922	3	457	458	2.500	0.0	5.000	0.0	1.000	0.0	1
923	3	480	481	2.500	0.0	5.000	0.0	1.000	0.0	1
924	3	503	504	2.500	0.0	5.000	0.0	1.000	0.0	1

*** LIST OF GIVEN-FLOW CONNECTORS ***

904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919
 920 921 922 923 924

C.4. Output (continued)

*** PRESSURE DISTRIBUTION AT TIME =

0.0

***

1	1	0.0	1	1	0.0	1	1	0.0	
6	0.0	2	7	0.0	3	0	0.0	5	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0
141	0.0	142	0.0	143	0.0	144	0.0	145	0.0
146	0.0	147	0.0	148	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0	155	0.0
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0	165	0.0
166	0.0	167	0.0	168	0.0	169	0.0	170	0.0
171	0.0	172	0.0	173	0.0	174	0.0	175	0.0
176	0.0	177	0.0	178	0.0	179	0.0	180	0.0
181	0.0	182	0.0	183	0.0	184	0.0	185	0.0
186	0.0	187	0.0	188	0.0	189	0.0	190	0.0
191	0.0	192	0.0	193	0.0	194	0.0	195	0.0
196	0.0	197	0.0	198	0.0	199	0.0	200	0.0
201	0.0	202	0.0	203	0.0	204	0.0	205	0.0
206	0.0	207	0.0	208	0.0	209	0.0	210	0.0
211	0.0	212	0.0	213	0.0	214	0.0	215	0.0
216	0.0	217	0.0	218	0.0	219	0.0	220	0.0
221	0.0	222	0.0	223	0.0	224	0.0	225	0.0
226	0.0	227	0.0	228	0.0	229	0.0	230	0.0
231	0.0	232	0.0	233	0.0	234	0.0	235	0.0
236	0.0	237	0.0	238	0.0	239	0.0	240	0.0
241	0.0	242	0.0	243	0.0	244	0.0	245	0.0
246	0.0	247	0.0	248	0.0	249	0.0	250	0.0
251	0.0	252	0.0	253	0.0	254	0.0	255	0.0
256	0.0	257	0.0	258	0.0	259	0.0	260	0.0
261	0.0	262	0.0	263	0.0	264	0.0	265	0.0
266	0.0	267	0.0	268	0.0	269	0.0	270	0.0
271	0.0	272	0.0	273	0.0	274	0.0	275	0.0
276	0.0	277	0.0	278	0.0	279	0.0	280	0.0
281	0.0	282	0.0	283	0.0	284	0.0	285	0.0
286	0.0	287	0.0	288	0.0	289	0.0	290	0.0
291	0.0	292	0.0	293	0.0	294	0.0	295	0.0
296	0.0	297	0.0	298	0.0	299	0.0	300	0.0
301	0.0	302	0.0	303	0.0	304	0.0	305	0.0
306	0.0	307	0.0	308	0.0	309	0.0	310	0.0
311	0.0	312	0.0	313	0.0	314	0.0	315	0.0
316	0.0	317	0.0	318	0.0	319	0.0	320	0.0
321	0.0	322	0.0	323	0.0	324	0.0	325	0.0
326	0.0	327	0.0	328	0.0	329	0.0	330	0.0
331	0.0	332	0.0	333	0.0	334	0.0	335	0.0
336	0.0	337	0.0	338	0.0	339	0.0	340	0.0
341	0.0	342	0.0	343	0.0	344	0.0	345	0.0
346	0.0	347	0.0	348	0.0	349	0.0	350	0.0
351	0.0	352	0.0	353	0.0	354	0.0	355	0.0
356	0.0	357	0.0	358	0.0	359	0.0	360	0.0
361	0.0	362	0.0	363	0.0	364	0.0	365	0.0
366	0.0	367	0.0	368	0.0	369	0.0	370	0.0
371	0.0	372	0.0	373	0.0	374	0.0	375	0.0
376	0.0	377	0.0	378	0.0	379	0.0	380	0.0
381	0.0	382	0.0	383	0.0	384	0.0	385	0.0
386	0.0	387	0.0	388	0.0	389	0.0	390	0.0
391	0.0	392	0.0	393	0.0	394	0.0	395	0.0
396	0.0	397	0.0	398	0.0	399	0.0	400	0.0
401	0.0	402	0.0	403	0.0	404	0.0	405	0.0
406	0.0	407	0.0	408	0.0	409	0.0	410	0.0
411	0.0	412	0.0	413	0.0	414	0.0	415	0.0
416	0.0	417	0.0	418	0.0	419	0.0	420	0.0
421	0.0	422	0.0	423	0.0	424	0.0	425	0.0
426	0.0	427	0.0	428	0.0	429	0.0	430	0.0
431	0.0	432	0.0	433	0.0	434	0.0	435	0.0
436	0.0	437	0.0	438	0.0	439	0.0	440	0.0
441	0.0	442	0.0	443	0.0	444	0.0	445	0.0
446	0.0	447	0.0	448	0.0	449	0.0	450	0.0
451	0.0	452	0.0	453	0.0	454	0.0	455	0.0
456	0.0	457	0.0	458	0.0	459	0.0	460	0.0
461	0.0	462	0.0	463	0.0	464	0.0	465	0.0
466	0.0	467	0.0	468	0.0	469	0.0	470	0.0
471	0.0	472	0.0	473	0.0	474	0.0	475	0.0
476	0.0	477	0.0	478	0.0	479	0.0	480	0.0
481	0.0	482	0.0	483	0.0	484	0.0	485	0.0
486	0.0	487	0.0	488	0.0	489	0.0	490	0.0
491	0.0	492	0.0	493	0.0	494	0.0	495	0.0
496	0.0	497	0.0	498	0.0	499	0.0	500	0.0

C.4. Output (continued)

CONTINUED			
I	F	I	F
501	0.0	502	0.0
506	0.0	507	0.0
511	0.0	512	0.0
516	0.0	517	0.0
521	0.0	522	0.0
...			
503	0.0	504	0.0
508	0.0	509	0.0
513	0.0	514	0.0
518	0.0	519	0.0
523	0.0	524	0.0
...			
505	0.0	506	0.0
510	0.0	511	0.0
515	0.0	516	0.0
520	0.0	521	0.0

*** U-VEL AT TIME = 0.0

***

I	F	I	F	I	F	I	F
1	0.0	1	0.0	1	0.0	1	0.0
6	0.0	2	0.0	3	0.0	4	0.0
11	0.0	7	0.0	13	0.0	14	0.0
16	0.0	12	0.0	17	0.0	18	0.0
21	0.0	17	0.0	23	0.0	24	0.0
26	0.0	22	0.0	27	0.0	28	0.0
31	0.0	27	0.0	33	0.0	34	0.0
36	0.0	32	0.0	37	0.0	38	0.0
41	0.0	42	0.0	43	0.0	44	0.0
46	0.0	47	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0
56	0.0	57	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0
66	0.0	67	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0
76	0.0	77	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0
86	0.0	87	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0
96	0.0	97	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0
106	0.0	107	0.0	109	0.0	110	0.0
111	0.0	108	0.0	111	0.0	112	0.0
116	0.0	113	0.0	117	0.0	118	0.0
121	0.0	118	0.0	123	0.0	124	0.0
126	0.0	122	0.0	127	0.0	128	0.0
131	0.0	127	0.0	133	0.0	134	0.0
136	0.0	132	0.0	137	0.0	138	0.0
141	0.0	142	0.0	143	0.0	144	0.0
146	0.0	147	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0
156	0.0	157	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0
166	0.0	167	0.0	169	0.0	170	0.0
171	0.0	172	0.0	173	0.0	174	0.0
176	0.0	177	0.0	179	0.0	180	0.0
181	0.0	182	0.0	183	0.0	184	0.0
186	0.0	187	0.0	189	0.0	190	0.0
191	0.0	192	0.0	193	0.0	194	0.0
196	0.0	197	0.0	199	0.0	200	0.0
201	0.0	202	0.0	203	0.0	204	0.0
206	0.0	207	0.0	209	0.0	210	0.0
211	0.0	212	0.0	213	0.0	214	0.0
216	0.0	217	0.0	219	0.0	220	0.0
221	0.0	222	0.0	223	0.0	224	0.0
226	0.0	227	0.0	229	0.0	230	0.0
231	0.0	232	0.0	233	0.0	234	0.0
236	0.0	237	0.0	239	0.0	240	0.0
241	0.0	242	0.0	243	0.0	244	0.0
246	0.0	247	0.0	249	0.0	250	0.0
251	0.0	252	0.0	253	0.0	254	0.0
256	0.0	257	0.0	259	0.0	260	0.0
261	0.0	262	0.0	263	0.0	264	0.0
266	0.0	267	0.0	269	0.0	270	0.0
271	0.0	272	0.0	273	0.0	274	0.0
276	0.0	277	0.0	279	0.0	280	0.0
281	0.0	282	0.0	283	0.0	284	0.0
286	0.0	287	0.0	289	0.0	290	0.0
291	0.0	292	0.0	293	0.0	294	0.0
296	0.0	297	0.0	299	0.0	300	0.0
301	0.0	302	0.0	303	0.0	304	0.0
306	0.0	307	0.0	309	0.0	310	0.0
311	0.0	312	0.0	313	0.0	314	0.0
316	0.0	317	0.0	319	0.0	320	0.0
321	0.0	322	0.0	323	0.0	324	0.0
326	0.0	327	0.0	329	0.0	330	0.0
331	0.0	332	0.0	333	0.0	334	0.0
336	0.0	337	0.0	339	0.0	340	0.0
341	0.0	342	0.0	343	0.0	344	0.0
346	0.0	347	0.0	349	0.0	350	0.0
351	0.0	352	0.0	353	0.0	354	0.0
356	0.0	357	0.0	359	0.0	360	0.0
361	0.0	362	0.0	363	0.0	364	0.0
366	0.0	367	0.0	369	0.0	370	0.0
371	0.0	372	0.0	373	0.0	374	0.0
376	0.0	377	0.0	379	0.0	380	0.0
381	0.0	382	0.0	383	0.0	384	0.0
386	0.0	387	0.0	389	0.0	390	0.0
391	0.0	392	0.0	393	0.0	394	0.0

C.4. Output (continued)

CONTINUED

I	F	I	F	I	F	I	F	I	F
401	0.0	402	0.0	403	0.0	404	0.0	405	0.0
406	0.0	407	0.0	408	0.0	409	0.0	410	0.0
411	0.0	412	0.0	413	0.0	414	0.0	415	0.0
416	0.0	417	0.0	418	0.0	419	0.0	420	0.0
421	0.0	422	0.0	423	0.0	424	0.0	425	0.0
426	0.0	427	0.0	428	0.0	429	0.0	430	0.0
431	0.0	432	0.0	433	0.0	434	0.0	435	0.0
436	0.0	437	0.0	438	0.0	439	0.0	440	0.0
441	0.0	442	0.0	443	0.0	444	0.0	445	0.0
446	0.0	447	0.0	448	0.0	449	0.0	450	0.0
451	0.0	452	0.0	453	0.0	454	0.0	455	0.0
456	0.0	457	0.0	458	0.0	459	0.0	460	0.0
461	0.0	462	0.0	463	0.0	464	0.0	465	0.0
466	0.0	467	0.0	468	0.0	469	0.0	470	0.0
471	0.0	472	0.0	473	0.0	474	0.0	475	0.0
476	0.0	477	0.0	478	0.0	479	0.0	480	0.0
481	0.0	482	0.0	483	0.0	484	0.0	485	0.0
486	0.0	487	0.0	488	0.0	489	0.0	490	0.0
491	0.0	492	0.0	493	0.0	494	0.0	495	0.0
496	0.0	497	0.0	498	0.0	499	0.0	500	0.0
501	0.0	502	0.0	503	0.0	504	0.0	505	0.0
506	0.0	507	0.0	508	0.0	509	0.0	510	0.0
511	0.0	512	0.0	513	0.0	514	0.0	515	0.0
516	0.0	517	0.0	518	0.0	519	0.0	520	0.0
521	0.0	522	0.0	523	0.0	524	0.0	525	0.0

*** V-VEL AT TIME 0.0

***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.0	24	0.0	25	0.0
26	0.0	27	0.0	28	0.0	29	0.0	30	0.0
31	0.0	32	0.0	33	0.0	34	0.0	35	0.0
36	0.0	37	0.0	38	0.0	39	0.0	40	0.0
41	0.0	42	0.0	43	0.0	44	0.0	45	0.0
46	0.0	47	0.0	48	0.0	49	0.0	50	0.0
51	0.0	52	0.0	53	0.0	54	0.0	55	0.0
56	0.0	57	0.0	58	0.0	59	0.0	60	0.0
61	0.0	62	0.0	63	0.0	64	0.0	65	0.0
66	0.0	67	0.0	68	0.0	69	0.0	70	0.0
71	0.0	72	0.0	73	0.0	74	0.0	75	0.0
76	0.0	77	0.0	78	0.0	79	0.0	80	0.0
81	0.0	82	0.0	83	0.0	84	0.0	85	0.0
86	0.0	87	0.0	88	0.0	89	0.0	90	0.0
91	0.0	92	0.0	93	0.0	94	0.0	95	0.0
96	0.0	97	0.0	98	0.0	99	0.0	100	0.0
101	0.0	102	0.0	103	0.0	104	0.0	105	0.0
106	0.0	107	0.0	108	0.0	109	0.0	110	0.0
111	0.0	112	0.0	113	0.0	114	0.0	115	0.0
116	0.0	117	0.0	118	0.0	119	0.0	120	0.0
121	0.0	122	0.0	123	0.0	124	0.0	125	0.0
126	0.0	127	0.0	128	0.0	129	0.0	130	0.0
131	0.0	132	0.0	133	0.0	134	0.0	135	0.0
136	0.0	137	0.0	138	0.0	139	0.0	140	0.0
141	0.0	142	0.0	143	0.0	144	0.0	145	0.0
146	0.0	147	0.0	148	0.0	149	0.0	150	0.0
151	0.0	152	0.0	153	0.0	154	0.0	155	0.0
156	0.0	157	0.0	158	0.0	159	0.0	160	0.0
161	0.0	162	0.0	163	0.0	164	0.0	165	0.0
166	0.0	167	0.0	168	0.0	169	0.0	170	0.0
171	0.0	172	0.0	173	0.0	174	0.0	175	0.0
176	0.0	177	0.0	178	0.0	179	0.0	180	0.0
181	0.0	182	0.0	183	0.0	184	0.0	185	0.0
186	0.0	187	0.0	188	0.0	189	0.0	190	0.0
191	0.0	192	0.0	193	0.0	194	0.0	195	0.0
196	0.0	197	0.0	198	0.0	199	0.0	200	0.0
201	0.0	202	0.0	203	0.0	204	0.0	205	0.0
206	0.0	207	0.0	208	0.0	209	0.0	210	0.0
211	0.0	212	0.0	213	0.0	214	0.0	215	0.0
216	0.0	217	0.0	218	0.0	219	0.0	220	0.0
221	0.0	222	0.0	223	0.0	224	0.0	225	0.0
226	0.0	227	0.0	228	0.0	229	0.0	230	0.0
231	0.0	232	0.0	233	0.0	234	0.0	235	0.0
236	0.0	237	0.0	238	0.0	239	0.0	240	0.0
241	0.0	242	0.0	243	0.0	244	0.0	245	0.0
246	0.0	247	0.0	248	0.0	249	0.0	250	0.0

C.4. Output (continued)

CONTINUED

I	F	I	F	I	F	I	F	I	F
251	0.0	252	0.0	253	0.0	254	0.0	255	0.0
256	0.0	257	0.0	258	0.0	259	0.0	260	0.0
261	0.0	262	0.0	263	0.0	264	0.0	265	0.0
266	0.0	267	0.0	268	0.0	269	0.0	270	0.0
271	0.0	272	0.0	273	0.0	274	0.0	275	0.0
276	0.0	277	0.0	278	0.0	279	0.0	280	0.0
281	0.0	282	0.0	283	0.0	284	0.0	285	0.0
286	0.0	287	0.0	288	0.0	289	0.0	290	0.0
291	0.0	292	0.0	293	0.0	294	0.0	295	0.0
296	0.0	297	0.0	298	0.0	299	0.0	300	0.0
301	0.0	302	0.0	303	0.0	304	0.0	305	0.0
306	0.0	307	0.0	308	0.0	309	0.0	310	0.0
311	0.0	312	0.0	313	0.0	314	0.0	315	0.0
316	0.0	317	0.0	318	0.0	319	0.0	320	0.0
321	0.0	322	0.0	323	0.0	324	0.0	325	0.0
326	0.0	327	0.0	328	0.0	329	0.0	330	0.0
331	0.0	332	0.0	333	0.0	334	0.0	335	0.0
336	0.0	337	0.0	338	0.0	339	0.0	340	0.0
341	0.0	342	0.0	343	0.0	344	0.0	345	0.0
346	0.0	347	0.0	348	0.0	349	0.0	350	0.0
351	0.0	352	0.0	353	0.0	354	0.0	355	0.0
356	0.0	357	0.0	358	0.0	359	0.0	360	0.0
361	0.0	362	0.0	363	0.0	364	0.0	365	0.0
366	0.0	367	0.0	368	0.0	369	0.0	370	0.0
371	0.0	372	0.0	373	0.0	374	0.0	375	0.0
376	0.0	377	0.0	378	0.0	379	0.0	380	0.0
381	0.0	382	0.0	383	0.0	384	0.0	385	0.0
386	0.0	387	0.0	388	0.0	389	0.0	390	0.0
391	0.0	392	0.0	393	0.0	394	0.0	395	0.0
396	0.0	397	0.0	398	0.0	399	0.0	400	0.0
401	0.0	402	0.0	403	0.0	404	0.0	405	0.0
406	0.0	407	0.0	408	0.0	409	0.0	410	0.0
411	0.0	412	0.0	413	0.0	414	0.0	415	0.0
416	0.0	417	0.0	418	0.0	419	0.0	420	0.0
421	0.0	422	0.0	423	0.0	424	0.0	425	0.0
426	0.0	427	0.0	428	0.0	429	0.0	430	0.0
431	0.0	432	0.0	433	0.0	434	0.0	435	0.0
436	0.0	437	0.0	438	0.0	439	0.0	440	0.0
441	0.0	442	0.0	443	0.0	444	0.0	445	0.0
446	0.0	447	0.0	448	0.0	449	0.0	450	0.0
451	0.0	452	0.0	453	0.0	454	0.0	455	0.0
456	0.0	457	0.0	458	0.0	459	0.0	460	0.0
461	0.0	462	0.0	463	0.0	464	0.0	465	0.0
466	0.0	467	0.0	468	0.0	469	0.0	470	0.0
471	0.0	472	0.0	473	0.0	474	0.0	475	0.0
476	0.0	477	0.0	478	0.0	479	0.0	480	0.0
481	0.0	482	0.0	483	0.0	484	0.0	485	0.0
486	0.0	487	0.0	488	0.0	489	0.0	490	0.0
491	0.0	492	0.0	493	0.0	494	0.0	495	0.0
496	0.0	497	0.0	498	0.0	499	0.0	500	0.0
501	0.0	502	0.0	503	0.0	504	0.0	505	0.0
506	0.0	507	0.0	508	0.0	509	0.0	510	0.0
511	0.0	512	0.0	513	0.0	514	0.0	515	0.0
516	0.0	517	0.0	518	0.0	519	0.0	520	0.0
521	0.0	522	0.0	523	0.0	524	0.0	525	0.0

PRESSURE DISTRIBUTION AT TIME = 0.144000 04 ***									
I	F	I	F	I	F	I	F	I	F
1	0.67230-01	2	0.67910-01	3	0.68710-01	4	0.69400-01	5	0.69750-01
6	0.69560-01	7	0.68690-01	8	0.67020-01	9	0.68460-01	10	0.68940-01
11	0.56540-01	12	0.51230-01	13	0.45100-01	14	0.38290-01	15	0.30410-01
16	0.21340-01	17	0.06450-02	18	-0.11330-02	19	-0.46000-01	20	-0.10360-00
21	-0.41300-00	22	0.67450-01	23	0.67340-01	24	0.47880-01	25	0.68850-01
26	0.69030-01	27	0.69230-01	28	0.68920-01	29	0.67960-01	30	0.66220-01
31	0.63620-01	32	0.60120-01	33	0.55700-01	34	0.50400-01	35	0.44210-01
36	0.37120-01	37	0.26860-01	38	0.18820-01	39	0.52840-02	40	-0.14560-01
41	-0.51540-01	42	-0.10470-00	43	-0.28330-00	44	-0.22370-00	45	0.66740-01
46	0.66790-01	47	0.67310-01	48	0.67750-01	49	0.68060-01	50	0.68300-01
51	0.67520-01	52	0.66390-01	53	0.64520-01	54	0.61840-01	55	0.58290-01
56	0.53870-01	57	0.48600-01	58	0.42500-01	59	0.35850-01	60	0.27760-01
61	0.18620-01	62	0.80160-02	63	-0.49670-02	64	-0.24550-01	65	-0.38270-01
66	-0.84990-01	67	-0.37650-01	68	0.66030-01	69	0.66200-01	70	0.66840-01
71	0.67250-01	72	0.67460-01	73	0.67340-01	74	0.63720-01	75	0.65480-01
76	0.63530-01	77	0.60760-01	78	0.57160-01	79	0.52710-01	80	0.47460-01
81	0.41500-01	82	0.34900-01	83	0.27750-01	84	0.20120-01	85	0.11650-01
86	0.35650-02	87	-0.63640-02	88	-0.71670-02	89	-0.14630-01	90	0.16820-01
91	0.65420-01	92	0.65700-01	93	0.66450-01	94	0.66880-01	95	0.67050-01
96	0.66840-01	97	0.66110-01	98	0.64770-01	99	0.62690-01	100	0.59610-01
101	0.56100-01	102	0.51570-01	103	0.46320-01	104	0.40500-01	105	0.34310-01
106	0.28000-01	107	0.21910-01	108	0.16260-01	109	0.12090-01	110	0.08470-02
111	0.13900-01	112	0.16970-01	113	0.38410-01	114	0.63690-01	115	0.65420-01
116	0.65240-01	117	0.66670-01	118	0.66810-01	119	0.66510-01	120	0.65680-01
121	0.64190-01	122	0.61960-01	123	0.58920-01	124	0.55040-01	125	0.50360-01
126	0.45040-01	127	0.39270-01	128	0.33390-01	129	0.27780-01	130	0.22920-01
131	0.13270-01	132	0.17630-01	133	0.17970-01	134	0.25580-01	135	0.32670-01
136	0.47440-01	137	0.65080-01	138	0.65430-01	139	0.66250-01	140	0.66660-01
141	0.66720-01	142	0.66320-01	143	0.65360-01	144	0.63720-01	145	0.61300-01
146	0.58040-01	147	0.53920-01	148	0.49020-01	149	0.43510-01	150	0.37680-01
151	0.31940-01	152	0.26770-01	153	0.22760-01	154	0.20420-01	155	0.20320-01
156	0.22560-01	157	0.20540-01	158	0.38790-01	159	0.49520-01	160	0.65410-01
161	0.65750-01	162	0.66510-01	163	0.66850-01	164	0.66620-01	165	0.66300-01
166	0.65180-01	167	0.63360-01	168	0.60730-01	169	0.57210-01	170	0.52880-01
171	0								

C.4. Output (continued)

*** U-VEL AT TIME = 0.144000 04 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	0.13960-03	24	-0.34220-04	25	-0.25640-03
26	-0.46470-03	27	-0.04560-03	28	-0.79820-03	29	-0.91310-03	30	-0.99580-03
31	-0.10427-02	32	-0.10580-02	33	-0.10480-02	34	-0.10880-02	35	-0.11160-02
36	-0.13530-02	37	-0.19360-02	38	-0.31480-02	39	-0.54820-02	40	-0.82820-02
41	-0.13290-01	42	-0.13780-02	43	-0.16220-02	44	-0.16880-01	45	0.0
46	-0.46990-01	47	-0.16180-02	48	-0.36630-02	49	-0.56440-02	50	-0.74210-02
51	-0.89230-02	52	-0.18120-01	53	-0.19970-01	54	-0.11460-01	55	-0.11630-01
56	-0.11560-01	57	-0.11480-01	58	-0.11630-01	59	-0.12630-01	60	-0.15220-01
61	-0.20380-01	62	-0.28880-01	63	-0.39230-01	64	-0.41210-01	65	-0.13120-01
66	0.31230 00	67	0.18980 01	68	0.0	69	-0.11310-02	70	-0.53590-02
71	-0.10440-01	72	-0.14820-01	73	-0.18610-01	74	-0.22050-01	75	-0.24790-01
76	-0.26780-01	77	-0.27960-01	78	-0.28260-01	79	-0.27960-01	80	-0.27290-01
81	-0.26740-01	82	-0.27080-01	83	-0.29030-01	84	-0.33270-01	85	-0.39040-01
86	-0.40940-01	87	-0.19590-01	88	0.89590-01	89	0.44520 00	90	0.10000 01
91	0.0	92	-0.30670-02	93	-0.10620-01	94	-0.18340-01	95	-0.25650-01
96	-0.32150-01	97	-0.37670-01	98	-0.42080-01	99	-0.46240-01	100	-0.47090-01
101	-0.47560-01	102	-0.46780-01	103	-0.46830-01	104	-0.42840-01	105	-0.44960-01
106	-0.39960-01	107	-0.39840-01	108	-0.38880-01	109	-0.27820-01	110	-0.18240-01
111	0.16160 00	112	0.54040 00	113	0.18000 01	114	0.0	115	-0.54960-02
116	-0.16820-01	117	-0.27790-01	118	-0.37870-01	119	-0.46780-01	120	-0.54370-01
121	-0.60440-01	122	-0.64830-01	123	-0.67340-01	124	-0.67850-01	125	-0.66340-01
126	-0.63060-01	127	-0.59400-01	128	-0.52940-01	129	-0.47130-01	130	-0.40440-01
131	-0.29560-01	132	-0.38210-02	133	0.62730-01	134	0.22980 00	135	0.61080 00
136	0.10000 01	137	0.0	138	-0.81230-02	139	-0.23440-01	140	-0.37840-01
141	-0.50270-01	142	-0.61450-01	143	-0.70980-01	144	-0.78670-01	145	-0.84270-01
146	-0.87480-01	147	-0.88020-01	148	-0.85710-01	149	-0.86570-01	150	-0.72880-01
151	-0.63070-01	152	-0.51340-01	153	-0.36790-01	154	-0.15270-01	155	0.24980-01
156	0.10840 00	157	0.29000 00	158	0.66510 00	159	0.10000 01	160	0.0
161	-0.10750-01	162	-0.29960-01	163	-0.46960-01	164	-0.62070-01	165	-0.72300-01
166	-0.86440-01	167	-0.95980-01	168	-0.10280 00	169	-0.10680 00	170	-0.10750 00
171	-0.10440-01	172	-0.97320-01	173	-0.86360-01	174	-0.71730-01	175	-0.53490-01
176	-0.36520-01	177	0.18040-02	178	0.54850-01	179	0.15250 00	180	0.34420 00
181	0.70790 00	182	0.10000 01	183	0.0	184	-0.13190-01	185	-0.35780-01
186	-0.56460-01	187	-0.72570-01	188	-0.87610-01	189	-0.10060 00	190	-0.11140 00
191	-0.11970 00	192	-0.12470 00	193	-0.12570 00	194	-0.12210 00	195	-0.11330 00
196	-0.099140-01	197	-0.79590-01	198	-0.54650-01	199	-0.23140-01	200	0.19590-01
201	0.84210-01	202	0.19360 00	203	0.39210 00	204	0.74220 00	205	0.10000 01
206	0.0	207	-0.15270-01	208	-0.40660-01	209	-0.62320-01	210	-0.81140-01
211	-0.97710-01	212	-0.11220 00	213	-0.12460 00	214	-0.13430 00	215	-0.14060 00
216	-0.14240 00	217	-0.13870 00	218	-0.12870 00	219	-0.11160 00	220	-0.87390-01
221	-0.58880-01	222	-0.16950-01	223	3.63310-01	224	0.11150 00	225	0.23080 00
226	0.43360 00	227	0.76980 00	228	0.10000 01	229	0.0	230	-0.16820-01
231	-0.44880-01	232	-0.67250-01	233	-0.87240-01	234	-0.10500 00	235	-0.12090 00
236	-0.13480 00	237	-0.14620 00	238	-0.15400 00	239	-0.15710 00	240	-0.15390 00
241	-0.14330 00	242	-0.12410 00	243	-0.95820-01	244	-0.58220-01	245	-0.10520-01
246	0.50880-01	247	0.13560 00	248	0.26370 00	249	0.46990 00	250	0.79310 00
251	0.10000 01	252	0.0	253	-0.17700-01	254	-0.46040-01	255	-0.69740-01
256	-0.90390-01	257	-0.10900 00	258	-0.12610 00	259	-0.14150 00	260	-0.15460 00
261	-0.16430 00	262	-0.16910 00	263	-0.16720 00	264	-0.15690 00	265	-0.13640 00
266	-0.10840 00	267	-0.62610-01	268	-0.78040-02	269	0.61700-01	270	0.15420 00
271	0.28970 00	272	0.49640 00	273	0.80960 00	274	0.10000 01	275	0.0
276	-0.17750-01	277	-0.45920-01	278	-0.69490-01	279	-0.90230-01	280	-0.10930 00
281	-0.12720 00	282	-0.14400 00	283	-0.15880 00	284	-0.17060 00	285	-0.17760 00
286	-0.17780 00	287	-0.15890 00	288	-0.14890 00	289	-0.11620 00	290	-0.69670-01
291	-0.89330-02	292	0.87780-01	293	0.16830 00	294	0.30940 00	295	0.51720 00
296	0.81890 00	297	0.10000 01	298	0.0	299	-0.16880-01	300	-0.43760-01
301	-0.66310-01	302	-0.88540-01	303	-0.10560 00	304	-0.12410 00	305	-0.14190 00
306	-0.15830 00	307	-0.17220 00	308	-0.18160 00	309	-0.18440 00	310	-0.17810 00
311	-0.16020 00	312	-0.12810 00	313	-0.79780-01	314	-0.14650-01	315	0.68230-01
316	0.17530 00	317	0.32210 00	318	0.33150 00	319	0.82660 00	320	0.10000 01
321	0.0	322	-0.15070-01	323	-0.39380-01	324	-0.60200-01	325	-0.79280-01
326	-0.97770-01	327	-0.11620 00	328	-0.13370 00	329	-0.15240 00	330	-0.16620 00
331	-0.18020 00	332	-0.18610 00	333	-0.18320 00	334	-0.16860 00	335	-0.13920 00
336	-0.92480-01	337	-0.26150-01	338	0.60910-01	339	0.17340 00	340	0.32560 00
341	0.53570 00	342	0.62420 00	343	0.10900 01	344	0.0	345	-0.12420-01
346	-0.33130-01	347	-0.51470-01	348	-0.88740-01	349	-0.85980-01	350	-0.10370 00
351	-0.12210 00	352	-0.14020 00	353	-0.15780 00	354	-0.17220 00	355	-0.18150 00
356	-0.18280 00	357	-0.17380 00	358	-0.14840 00	359	-0.10600 00	360	-0.42070-01
361	0.45740-01	362	0.14080 00	363	0.31460 00	364	0.52890 00	365	0.81680 00
366	0.10000 01	367	0.0	368	-0.91770-02	369	-0.25590-01	370	-0.40780-01
371	-0.55580-01	372	-0.70790-01	373	-0.86960-01	374	-0.10430 00	375	-0.12230 00
376	-0.14020 00	377	-0.15440 00	378	-0.16880 00	379	-0.17470 00	380	-0.17090 00
381	-0.15370 00	382	-0.11890 00	383	-0.51850-01	384	0.22100-01	385	0.13570 00
386	0.28840 00	387	0.49960 00	388	0.79680 00	389	0.10000 01	390	0.0
391	-0.57480-02	392	-0.17550-01	393	-0.29170-01	394	-0.40890-01	395	-0.53260-01
396	-0.66850-01	397	-0.81900-01	398	-0.98310-01	399	-0.11550 00	400	-0.13220 00
401	-0.14480 00	402	-0.15690 00	403	-0.15950 00	404	-0.15100 00	405	-0.12690 00
406	-0.81830-01	407	-0.91320-02	408	0.96940-01	409	0.24390 00	410	-0.45230 00
411	-0.76220 00	412	0.10000 01	413	0.0	414	-0.27020-02	415	-0.10070-01
416	-0.18000-01	417	-0.26280-01	418	-0.35160-01	419	-0.45200-01	420	-0.56750-01
421	-0.60970-01	422	-0.84600-01	423	-0.99900-01	424	-0.11490 00	425	-0.12770 00
426	-0.13580 00	427	-0.13620 00	428	-0.12480 00	429	-0.95990-01	430	-0.42340-01
431	0.46280-01	432	0.17890 00	433	0.37750 00	434	0.70390 00	435	0.10000 01
436	0.0	437	-0.81530-03	438	-0.42430-02	439	-0.87440-02	440	-0.13630-01
441	-0.18740-01	442	-0.24730-01	443	-0.31910-01	444	-0.40560-01	445	-0.50770-01
446	-0.62390-01	447	-0.74980-01	448	-0.87330-01	449	-0.98210-01	450	-0.10830 00
451	-0.10510 00	452	-0.94510-01	453	-0.86130-01	454	-0.60120-02	455	-0.98880-01
456	0.27210 00	457	0.40580 00	458	0.10000 01	459	0.0	460	0.47790-03
461	-0.76520-03	462	-0.28260-02	463	-0.43770-02	464	-0.63440-02	465	-0.86200-02
466	-0.11450 00	467	-0.15070-01	468	-0.19690-01	469	-0.25440-01	470	-0.32540-01
471	-0.40810-01	472	-0.49890-01	473	-0.58990-01	474	-0.66620-01	475	-0.70210-01
476	-0.65280-01	477	-0.43280-01	478	0.11790-01	479	0.12820 00	480	0.43780 00
481	0.10000 01	482	0.0	483	0.20320-03	484	0.95960-04	485	-0.68920-04
486	-0.21280-03	487	-0.34800-03	488	-0.49730-03	489	-0.69170-03	490	-0.96340-03
491	-0.13600-02	492	-0.19310-02	493	-0.27520-02	494	-0.39160-02	495	-0.55260-02
496	-0.76670-02	497	-0.10380-01	498	-0.13440-01	499	-0.16420-01	500	-0.17560-01
501	-0.11210-01	502	0.23070-01	503	0.21440 00	504	0.10000 01	505	0.0
506	0.0	507	0.0	508	0.0	509	0.0	510	0.0
511	0.0	512	0.0	513	0.0	514	0.0	515	0.0
516	0.0	517	0.0	518	0.0	519	0.0	520	0.0
521	0.0	522	0.0	523	0.0	524	0.0	525	0.0

C.4. Output (continued)

*** V-VEL AT TIME = 0.144000 04 ***

I	F	I	F	I	F	I	F	I	F
1	0.0	2	0.0	3	0.0	4	0.0	5	0.0
6	0.0	7	0.0	8	0.0	9	0.0	10	0.0
11	0.0	12	0.0	13	0.0	14	0.0	15	0.0
16	0.0	17	0.0	18	0.0	19	0.0	20	0.0
21	0.0	22	0.0	23	-0.13740-03	24	-0.59530-04	25	0.12110-02
26	0.35800-02	27	0.69710-02	28	0.11240-01	29	0.16230-01	30	0.21760-01
31	0.27850-01	32	0.33780-01	33	0.39770-01	34	0.45750-01	35	0.51730-01
36	0.50830-01	37	0.65480-01	38	0.78270-01	39	0.89740-01	40	0.11300 00
41	0.4290 00	42	0.19540 00	43	0.74440-01	44	0.0	45	0.0
46	0.34160-04	47	0.19280-02	48	0.53770-02	49	0.11440-01	50	0.19680-01
51	0.29360-01	52	0.1 000-01	53	0.53630-01	54	0.66980-01	55	0.80690-01
56	0.94400-01	57	0.10780 00	58	0.12090 00	59	0.13370 00	60	0.14670 00
61	0.16080 00	62	0.17640 00	63	0.19340 00	64	0.20150 00	65	0.19080 00
66	0.39170-01	67	0.0	68	0.0	69	0.21460-03	70	0.31430-02
71	0.91290-02	72	0.17850-01	73	0.29090-01	74	0.42520-01	75	0.57760-01
76	0.74430-01	77	0.91900-01	78	0.11000 00	79	0.12780 00	80	0.14810 00
81	0.16130 00	82	0.17420 00	83	0.18960 00	84	0.20090 00	85	0.20990 00
86	0.11130 00	87	0.19680 00	88	0.18690 00	89	0.30300-01	90	0.0
91	0.0	92	0.33970-03	93	0.43000-02	94	0.11750-01	95	0.22100-01
96	0.35460-01	97	0.39270-01	98	0.67310-01	99	0.85920-01	100	0.10540 00
101	0.12530 00	102	0.14580 00	103	0.16370 00	104	0.18080 00	105	0.19540 00
106	0.20640 00	107	0.21340 00	108	0.21360 00	109	0.20400 00	110	0.17480 00
111	0.12420 00	112	0.26080-01	113	0.0	114	0.0	115	0.40770-03
116	0.49580-02	117	0.13130-01	118	0.24180-01	119	0.37750-01	120	0.53480-01
121	0.71040-01	122	0.90940-01	123	0.11080 00	124	0.13040 00	125	0.16050 00
126	0.16930 00	127	0.18680 00	128	0.19930 00	129	0.20810 00	130	0.21970 00
131	0.20490 00	132	0.16780 00	133	0.15170 00	134	0.09180-01	135	0.10700-01
136	0.0	137	0.0	138	0.43240-03	139	0.61310-02	140	0.13390-01
141	0.24330-01	142	0.37880-01	143	0.52950-01	144	0.69860-01	145	0.80300-01
146	0.10780 00	147	0.12770 00	148	0.14740 00	149	0.16570 00	150	0.18160 00
151	0.19340 00	152	0.20940 00	153	0.20000 00	154	0.19040 00	155	0.16860 00
156	0.13120 00	157	0.09270-01	158	0.13410-01	159	0.0	160	0.0
161	0.42420-03	162	0.49230-02	163	0.12570-01	164	0.22800-01	165	0.34970-01
166	0.48930-01	167	0.64600-01	168	0.81710-01	169	0.99970-01	170	0.11890 00
171	0.13760 00	172	0.18520 00	173	0.17040 00	174	0.10150 00	175	0.10690 00
176	0.10840 00	177	0.17310 00	178	0.15910 00	179	0.11350 00	180	0.65880-01
181	0.98490-02	182	0.0	183	0.0	184	0.38780-03	185	0.43690-02
186	0.11080-01	187	0.19760-01	188	0.30160-01	189	0.42160-01	190	0.55760-01
191	0.70070-01	192	0.87320-01	193	0.10470 00	194	0.12230 00	195	0.13900 00
196	0.15360 00	197	0.16420 00	198	0.16920 00	199	0.16670 00	200	0.15470 00
201	0.13220 00	202	0.97830-01	203	0.54330-01	204	0.74140-02	205	0.0
206	0.0	207	0.38320-03	208	0.34930-02	209	0.66980-02	210	0.15360-01
211	0.23370-01	212	0.38780-01	213	0.43680-01	214	0.56170-01	215	0.70210-01
216	0.85540-01	217	0.10160 00	218	0.11730 00	219	0.13150 00	220	0.14220 00
221	0.14770 00	222	0.14990 00	223	0.13510 00	224	0.11460 00	225	0.83600-01
226	0.44970-01	227	0.87230-02	228	0.0	229	0.0	230	0.22900-03
231	0.23110-02	232	0.95640-02	233	0.97450-02	234	0.14840-01	235	0.21070-01
236	0.20680-01	237	0.37930-01	238	0.40930-01	239	0.61610-01	240	0.75580-01
241	0.90950-01	242	0.10380 00	243	0.11500 00	244	0.12170 00	245	0.12180 00
246	0.11350 00	247	0.96320-01	248	0.89930-01	249	0.37240-01	250	0.53570-02
251	0.0	252	0.0	253	0.10420-03	254	0.04980-03	255	0.18460-02
256	0.31070-02	257	0.40470-02	258	0.74100-02	259	0.11190-01	260	0.16570-01
261	0.23830-01	262	0.33130-01	263	0.44320-01	264	0.56200-01	265	0.69870-01
266	0.01720-01	267	0.90280-01	268	0.93290-01	269	0.88760-01	270	0.76410-01
271	0.56270-01	272	0.31980-01	273	0.18660-01	274	0.0	275	0.0
276	-0.47170-04	277	-0.82580-03	278	-0.23480-02	279	-0.42610-02	280	-0.61920-02
281	-0.76740-02	282	-0.82070-02	283	-0.72930-02	284	-0.44040-02	285	-0.57500-03
286	0.69410-02	287	0.17770-01	288	0.29210-01	289	0.41220-01	290	-0.51790-01
291	0.50470-01	292	0.80780-01	293	0.51970-01	294	0.30240-01	295	-0.18140-01
296	0.50490-02	297	0.0	298	0.0	299	-0.21500-03	300	-0.26040-02
301	-0.67280-02	302	-0.11910-01	303	-0.17670-01	304	-0.23440-01	305	-0.28670-01
306	-0.32780-01	307	-0.35110-01	308	-0.38180-01	309	-0.32520-01	310	-0.26830-01
311	-0.18180-01	312	-0.71980-02	313	0.408730-02	314	0.15610-01	315	0.22090-01
316	0.22380-01	317	0.17070-01	318	0.62530-02	319	0.63230-03	320	0.0
321	0.0	322	-0.38040-03	323	-0.42980-02	324	-0.10870-01	325	-0.19160-01
326	-0.28650-01	327	-0.38770-01	328	-0.40950-01	329	-0.50530-01	330	-0.64700-01
331	-0.72930-01	332	-0.76210-01	333	-0.78580-01	334	-0.71490-01	335	-0.62990-01
336	-0.50840-01	337	-0.38720-01	338	-0.23260-01	339	-0.14120-01	340	-0.85240-02
341	-0.35130-02	342	-0.17910-02	343	0.0	344	0.0	345	-0.81500-03
346	-0.56510-02	347	-0.14190-01	348	-0.25110-01	349	-0.37900-01	350	-0.52090-01
351	-0.67170-01	352	-0.82480-01	353	-0.97230-01	354	-0.11040 00	355	-0.12100 00
356	-0.12770 00	357	-0.12980 00	358	-0.12530 00	359	-0.11490 00	360	-0.98890-01
361	-0.78740-01	362	-0.89580-01	363	-0.40690-01	364	-0.22720-01	365	-0.41680-02
366	0.0	367	0.0	368	-0.58520-03	369	-0.63770-02	370	-0.16080-01
371	-0.20720-01	372	-0.43940-01	373	-0.61440-01	374	-0.80840-01	375	-0.10160 00
376	-0.12300 00	377	-0.14300 00	378	-0.16300 00	379	-0.17860 00	380	-0.18880 00
381	-0.19200 00	382	-0.18630 00	383	-0.17110 00	384	-0.14870 00	385	-0.11580 00
386	-0.81630-01	387	-0.44390-01	388	-0.73070-02	389	0.0	390	0.0
391	-0.56170-03	392	-0.82320-02	393	-0.15990-01	394	-0.29070-01	395	-0.48320-01
396	-0.64700-01	397	-0.87100-01	398	-0.11220 00	399	-0.13980 00	400	-0.16790 00
401	-0.19890 00	402	-0.22180 00	403	-0.24380 00	404	-0.25690 00	405	-0.26040 00
406	-0.25090 00	407	-0.2610 00	408	-0.18880 00	409	-0.13860 00	410	-0.78470-01
411	-0.12290-01	412	0.0	413	0.0	414	-0.43220-03	415	-0.81220-02
416	-0.13640-01	417	-0.25400-01	418	-0.41040-01	419	-0.60170-01	420	-0.83200-01
421	-0.11020 00	422	-0.14180 00	423	-0.17590 00	424	-0.21100 00	425	-0.24710 00
426	-0.20070 00	427	-0.20840 00	428	-0.22610 00	429	-0.32920 00	430	-0.31270 00
431	-0.27080 00	432	-0.29780 00	433	-0.12290 00	434	-0.21380-01	435	0.0
436	0.0	437	-0.21260-03	438	-0.32090-02	439	-0.94070-02	440	-0.18670-01
441	-0.31230-01	442	-0.47420-01	443	-0.87730-01	444	-0.92680-01	445	-0.12280 00
446	-0.15780 00	447	-0.19760 00	448	-0.23980 00	449	-0.28400 00	450	-0.32680 00
451	-0.36800 00	452	-0.38890 00	453	-0.38940 00	454	-0.36390 00	455	-0.30010 00
456	-0.19680 00	457	-0.39370-01	458	0.0	459	0.0	460	-0.38810-04
461	-0.19680-02	462	-0.43080-02	463	-0.98290-02	464	-0.17780-01	465	-0.28480-01
466	-0.42330-01	467	-0.60080-01	468	-0.82470-01	469	-0.11020 00	470	-0.14380 00
471	-0.10330 00	472	-0.22810 00	473	-0.27660 00	474	-0.32580 00	475	-0.37040 00
476	-0.40370 00	477	-0.41390 00	478	-0.33470 00	479	-0.29010 00	480	-0.72580-01
481	0.0	482	0.0	483	-0.19470-03	484	-0.50730-03	485	-0.16220-03
486	-0.17880-02	487	-0.48980-02	488	-0.78430-02	489	-0.12610-01	490	-0.18980-01
491	-0.27340-01	492	-0.39460-01	493	-0.52880-01	494	-0.71650-01	495	-0.95610-01
496	-0.12660 00	497	-0.16280 00	498	-0.20460 00	499	-0.25110 00	500	-0.29680 00
501	-0.33290 00	502	-0.39900 00	503	-0.11170 00	504	0.0	505	0.0
506	0.0	507	0.0	508	0.0	509	0.0	510	0.0
511	0.0	512	0.0	513	0.0	514	0.0	515	0.0
516	0.0	517	0.0	518	0.0	519	0.0	520	0.0
521	0.0	522	0.0	523	0.0	524	0.0	525	0.0

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APPENDIX D LISTING OF FORTRAN SOURCE PROGRAM

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C YEH, G. T., 1980. "ICM: AN INTEGRATED COMPARTMENT METHOD FOR
C NUMERICALLY SOLVING PARTIAL DIFFERENTIAL EQUATIONS" ORNL-
C OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TN. 37830
C FOR ANY QUESTION, CONTACT DR. G. T. YEH AT (615) 574-7285 OR
C FTS 674-7285
C
C THIS COMPUTER CODE IS AN EXAMPLE OF ICM ALGORITHM APPLIED TO
C THE NAVIER-STOKES EQUATIONS. ICM ALGORITHM APPLIED TO
C ANY TYPE OF PARTIAL DIFFERENTIAL EQUATIONS CAN BE CONSTRUCTED
C SIMILARLY.
C FOR EXAMPLES, IT HAS BEEN APPLIED TO CHANNEL FLOW AND TRANSPORT
C PROBLEMS TO OBTAIN CHNHYD AND CHNTRN, TO GROUNDWATER FLOW AND
C TRANSPORT PROBLEMS TO OBTAIN FLOWCAS AND CHENCAS, AND TO STORM
C SURGE PROBLEMS. REFERENCES:
C
C YEH, G. T., C. C. COUTANT, AND J. LEFLER, 1981. "CHNHYD: A CHANNEL
C HYDRODYNAMIC MODEL FOR SIMULATING FLOWS IN A RIVER/STREAM NETWORK"
C ORNL- , OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TN. 37830
C
C YEH, G. T., M. BROWMAN, C. C. COUTANT, AND J. LEFLER, 1981.
C "CHNTRN: A CHANNEL TRANSPORT MODEL OF SEDIMENTS AND CHEMICALS IN A
C RIVER/STREAM NETWORK." ORNL- , OAK RIDGE NATIONAL LABORATORY,
C OAK RIDGE, TN. 37830
C
C YEH, G. T., C. C. COUTANT, AND J. LEFLER, 1981. "FLOWCAS:
C MULTI-DIMENSIONAL MODELING OF COUPLED WATER AND THERMAL FLOW THROUGH
C COMPLEX AQUIFER SYSTEMS." ORNL- , OAK RIDGE NATIONAL LABORATORY,
C OAK RIDGE, TN. 37830
C
C CROOKS, E. A., G. T. YEH, C. C. COUTANT, AND J. LEFLER, 1981.
C "CHENCAS: MULTI-DIMENSIONAL MODELING OF CHEMICAL TRANSPORT AND
C TRANSFORMATION IN COMPLEX AQUIFER SYSTEMS." ORNL/TM-7564, OAK RIDGE
C NATIONAL LABORATORY, OAK RIDGE, TN. 37830
C
C YEH, G. T. AND F. K. CHOU, 1979. AN INTEGRATED COMPARTMENT METHOD
C (ICM) FOR STORM SURGE ANALYSIS. TRANS. AMERICAN GEOPHYSICAL UNION,
C VOL. 60, NO. 46, P.856.
C
C IMPLICIT REAL*8 (A-H,O-Z)
C REAL*4 TITLE(20)
C
C ----- PHI(N) = TOTAL POTENTIAL OR TOTAL ENERGY OF N-TH COMPARTMENT
C U(N) = X-COMPONENT VELOCITY OF N-TH COMPARTMENT
C V(N) = Y-COMPONENT VELOCITY OF N-TH COMPARTMENT
C W(N) = Z-COMPONENT VELOCITY OF N-TH COMPARTMENT
C SURFIX P DENOTES THE PREVIOUS TIME STEP
C
C DIMENSION PHI(164),U(164),V(164),W(164)
C DIMENSION PHIP(164),UP(164),VP(164),WP(164)
C
C ----- DVVY(N) = Y-COMPONENT ADVECTIVE ACCELERATION OF N-TH COMPART.
C DVVX(N) = X-COMPONENT ADVECTIVE ACCELERATION OF N-TH COMPART.
C DVVZ(N) = Z-COMPONENT ADVECTIVE ACCELERATION OF N-TH COMPART.
C PHILC(N) = LOAD FUNCTION OF EQS. (17) OR (25)
C
C DIMENSION DVVX(164),DVVY(164),DVVZ(164),D(164),PHILOD(164)
C
C ----- OMCX(N) = X-COMPONENT VORTICITY OF N-TH COMPARTMENT
C OMCY(N) = Y-COMPONENT VORTICITY OF N-TH COMPARTMENT
C OMCZ(N) = Z-COMPONENT VORTICITY OF N-TH COMPARTMENT
C
C DIMENSION OMCX(164),OMCY(164),OMCZ(164)
C
C ----- VOL(N) = VOLUME OF N-TH COMPARTMENT
C X(N) = X-COORDINATE OF N-TH COMPARTMENT
C Y(N) = Y-COORDINATE OF N-TH COMPARTMENT
C Z(N) = Z-COORDINATE OF N-TH COMPARTMENT
C NTYPE(N) = NODE TYPE OF N-TH COMPARTMENT
C = 0 = INTERIOR COMPARTMENT
C = 1 = RIGID WALL NO SLIP
C = 2 = RIGID WALL FREE SLIP
C = 3 = PRESCRIBED NORMAL FLOW OR TANGENTIAL FLOW
C = 4 = PRESCRIBED PRESSURE
C = 5 = CONTINUATIVE NODE
C = 6 = PRESCRIBED PRESSURE IN GIVEN FLOW CONNECTOR
C
C DIMENSION VOL(164),X(164),Y(164),Z(164),NTYPE(164)
C
C ----- D1IC(K) = DISTANCE FROM NODE N1 TO THE K-TH INTERFACE
C D2IC(K) = DISTANCE FROM NODE N2 TO THE K-TH INTERFACE
C AREA(K) = INTERFACIAL AREA OF K-TH INTERFACE (CONNECTOR)
C
C DIMENSION D1IC(256),D2IC(256),AREA(256)

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MAIN 005
 MAIN 010
 MAIN 015
 MAIN 020
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 MAIN 450

APPENDIX D (continued)

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C ----- DCSX(K) = DIRECTIONAL COSINE WITH X OF K-TH CONNECTOR
C ----- DCSY(K) = DIRECTIONAL COSINE WITH Y OF K-TH CONNECTOR
C ----- DCSZ(K) = DIRECTIONAL COSINE WITH Z OF K-TH CONNECTOR
C
C      DIMENSION DCSX(256),DCSY(256),DCSZ(256)
C
C ----- NOD1(K) = FIRST NODE NUMBER OF K-TH CONNECTOR (INTERFACE)
C ----- NOD2(K) = SECOND NODE NUMBER OF K-TH CONNECTOR (INTERFACE)
C ----- KTOP(K) = CONNECTOR TOP OF K-TH CONNECTOR (INTERFACE)
C -----
C -----      1 = INTERIOR-TO-INTERIOR NODE CONNECTOR
C -----      2 = INTERIOR-TO-NO SLIP RIGID WALL NODE CONNECTOR
C -----      3 = INTERIOR-TO-FREE SLIP RIGID WALL NODE CONNECTOR
C -----      4 = INTERIOR-TO-PREScribed NORMAL FLOW OR TANGENTIAL
C -----          FLOW NODE CONNECTOR
C -----      5 = INTERIOR-TO-PREScribed PRESSURE NODE CONNECTOR
C -----      6 = INTERIOR-TO-CONTINUATIVE NODE CONNECTOR
C
C      DIMENSION NOD1(256),NOD2(256),KTOP(256)
C
C ----- KGF(I) = CONNECTOR NUMBER OF I-TH PRESCRIBED NORMAL FLOW CONN.
C ----- GUX(I) = X-COMPONENT OF I-TH PRESCRIBED NORMAL FLOW OR
C -----          TANGENTIAL FLOW
C ----- GUY(I) = Y-COMPONENT OF I-TH PRESCRIBED NORMAL FLOW OR
C -----          TANGENTIAL FLOW
C ----- GUZ(I) = Z-COMPONENT OF I-TH PRESCRIBED NORMAL FLOW OR
C -----          TANGENTIAL FLOW
C ----- THE SUFFIX N DENOTE THE VALUES AT NEW TIME
C ----- THE SUFFIX P DENOTE THE VALUES AT OLD TIME
C
C      DIMENSION KGF(10),GUX(10),GVY(10),GUZ(10)
C      DIMENSION GUXN(10),GVYN(10),GWZN(10),GUXP(10),GVYP(10),GWZP(10)
C
C ----- KGP(I) = CONNECTOR NUMBER OF I-TH GIVEN PRESSURE CONNECTOR
C ----- GPR(I) = GIVEN PRESSURE OF I-TH I-TH GIVEN PRESSURE CONNECTOR
C ----- SUFFIX N DENOTE THE VALUE AT NEW TIME
C ----- SUFFIX P DENOTE THE VALUE AT OLD TIME
C
C      DIMENSION KGP(10),GPR(10),GPRP(10),GPRN(10)
C
C ----- A(N) = A WORKING ARRAY TO STORE COEFFICIENT OF N-TH
C -----          COMPARTMENT FOR ITERATIVE SOLUTION OF PHI
C ----- A(N,IB) = ARRAY TO STORE MATRIX FOR DIRECT SOLUTION OF PHI
C
C      DIMENSION A(164),C(164,25)
C
C      DIMENSION KDSK(1000)
C
C ----- NODES = NO. OF NODES (COMPARTMENTS)
C ----- NCONS = NO. OF CONNECTORS (INTERFACES)
C ----- NOGF = NO. OF CONNECTORS WITH GIVEN NORMAL OR TANGENTIAL FLOWS
C ----- NOGP = NO. OF CONNECTORS WITH GIVEN PRESSURE
C ----- NTI = NO. OF TIME STEPS
C ----- NITP = ALLOWED NO. OF ITERATIONS FOR ITERATIVE SOL. OF PHI
C ----- NREAD = EVERY NREAD TIME STEP READ TRANSIENT B. C. ONCE
C ----- IMPL = IMPLICIT SOLUTION CONTROL FOR SOLVING PHI
C -----      0 = ITERATIVE SOLUTION FOR PHI
C -----      1 = DIRECT SOLUTION FOR PHI
C
C      COMMON /MDAI/ NODES,NCONS,NOGF,NOGP,NTI,NITP,NREAD,IMPL
C
C ----- DELT = TIME STEP SIZE
C ----- EDDX = EDDY VISCOSITY XX
C ----- EDDY = EDDY VISCOSITY YY
C ----- EDDZ = EDDY VISCOSITY ZZ
C ----- GRAV = GRAVITY ACCELERATION
C ----- EPS = ERROR TOLERANCE FOR ITERATIVE SOLUTION OF PHI
C -----      0 = ORIGINAL FORM OF NAVIER-STOKES EQUATIONS
C -----      1 = ALTERNATIVE FORM OF NAVIER-STOKES EQUATIONS
C ----- UPSTRM = UPSTREAM WEIGHTING CONTROL, = 0.0=NO, =1.0=YES
C
C      COMMON /MDAR/ DELT,EDDX,EDDY,EDDZ,GRAV,EPS,OPTN
C
C ----- INTERP = INTERMITTENT OUTPUT OF PHI, =0=NO, =1=YES
C ----- INTERU = INTERMITTENT OUTPUT OF U, =0=NO, =1=YES
C ----- INTERV = INTERMITTENT OUTPUT OF V, =0=NO, =1=YES
C ----- INTERW = INTERMITTENT OUTPUT OF W, =0=NO, =1=YES
C ----- NRP = EVERY NRP TIME STEPS PRINT PHI ONCE
C ----- NRU = EVERY NRU TIME STEPS U ONCE
C ----- NRV = EVERY NRV TIME STEPS V ONCE
C ----- NRW = EVERY NRW TIME STEPS W ONCE
C
C      COMMON /MDAB/ INTERP,INTERU,INTERV,INTERW,NRP,NRU,NRV,NRW
C
C      DATA NKN,NKK,NKG,NKGP,NAXND/164,256,10,10,25/
C      DATA MAXNTI/1000/

```

MAIN 455
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 MAIN 465
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 MAIN 925

APPENDIX D (continued)

```

      READ(5,10) TITLE
      10 FORMAT(20A4)
      WRITE(6,1000) TITLE
      1000 FORMAT(1H1,/,20X,62(' '),20X,'',60X,'',20X,'',20A4,'',/
      1 20X,'',60X,'',20X,62(' '))
C
C ----- INITIATE ALL NODAL ARRAYS
C
      DO 100 N=1,MXN
        PHI(N)=0.0
        U(N)=0.0
        V(N)=0.0
        W(N)=0.0
        PHIP(N)=0.0
        UP(N)=0.0
        VP(N)=0.0
        WP(N)=0.0
        X(N)=0.0
        Y(N)=0.0
        Z(N)=0.0
        DVX(N)=0.0
        DVY(N)=0.0
        DVZ(N)=0.0
        DIN(N)=0.0
        ONGX(N)=0.0
        ONGY(N)=0.0
        ONGZ(N)=0.0
        PHILOO(N)=0.0
        VOL(N)=0.0
        NTYP(N)=0.0
        A(N)=0.0
      DO 100 I=1,MAXBWD
        C(N,I)=0.0
      100 CONTINUE
C
C ----- INITIATE ALL CONNECTION (INTERFACE) ARRAYS
C
      DO 200 K=1,MXK
        D11C(K)=0.0
        D21C(K)=0.0
        AREA(K)=0.0
        DCSX(K)=0.0
        DCSY(K)=0.0
        DCSZ(K)=0.0
        MOD1(K)=0.0
        MOD2(K)=0.0
        KTYP(K)=0
      200 CONTINUE
C
C ----- INITIATE ARRAYS FOR GIVEN FLOW CONNECTORS
C
      DO 300 I=1,MXGP
        KGF(I)=0
        GUX(I)=0.0
        GUY(I)=0.0
        GWZ(I)=0.0
        GUXP(I)=0.0
        GVYP(I)=0.0
        GWZP(I)=0.0
        GUXN(I)=0.0
        GVYN(I)=0.0
        GWZN(I)=0.0
      300 CONTINUE
C
C ----- INITIATE ARRAYS FOR GIVEN PRESSURE CONNECTORS
C
      DO 400 I=1,MXGP
        KGP(I)=0
        GPR(I)=0.0
        GPRP(I)=0.0
        GPRN(I)=0.0
      400 CONTINUE
C
      DO 450 I=1,MAXNTE
        KOSK(I)=0
      450 KOSK(I)=0
C
C ----- PEAC AND WRITE INPUT DATA BY CALLING DATAIO
C
      CALL DATAIO(PHI,U,V,W,VOL,K,V,Z,NTYP,D11C,D21C,AREA,
      1 DCSX,DCSY,DCSZ,MOD1,MOD2,KTYP,MXN,MXK, MXGP,KGF,MXGP,KGP,IMHALF,
      2 KOSK,MAXNTE)
C
C ----- PASS THE PROGRAM CONTROL TO ICHADV
C ----- FOR ADVANCING THE TIME STEPS
C
      CALL ICHADV(PHI,U,V,W,PHIP,UP,VP,WP,DVX,DVY,DVZ,D,PHILOO,
      1 VOL,X,Y,Z,NTYP,D11C,D21C,AREA,DCSX,DCSY,DCSZ,MOD1,MOD2,KTYP,
      2 MXN,MXK, MXGP,KGF,GUX,GUY,GWZ,GUXP,GVYP,GWZP,GUXN,GVYN,GWZN,
      3 MXGP,KGF,GPR,GPRP,GPRN, A,C,MAXBWD,IMHALF, ONGX,ONGY,ONGZ,
      4 KOSK,MAXNTE)
C
      STOP
      END

```

MAIN 630
 MAIN 635
 MAIN 640
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 MAIN 1420

APPENDIX D (continued)

```

SUBROUTINE DATAIO(PHI,U,V,W,VOL,X,Y,Z,NTYP,D1IC,D2IC,AREA,
1 DCSX,DCSY,DCSZ,NOD1,NOD2,KTYP,MXN,MXK, RXGF,KGF,MXGP,KGP,HALF,
2 KDSK,MAXNTI)
C
C IMPLICIT REAL*8 (A-H,O-Z)
C DIMENSION PHI(MXN),U(MXN),V(MXN),W(MXN)
C DIMENSION VOL(MXN),X(MXN),Y(MXN),Z(MXN),NTYP(MXN)
C
C DIMENSION D1IC(MXK),D2IC(MXK),AREA(MXK)
C DIMENSION DCSX(MXK),DCSY(MXK),DCSZ(MXK)
C DIMENSION NOD1(MXK),NOD2(MXK),KTYP(MXK)
C DIMENSION KGF(MXGP),KGP(MXGP)
C DIMENSION KDSK(MAXNTI)
C
COMMON /NDA1/ NODS,NODS,NODF,NODP,NTI,NITR,NREAD,INPL
COMMON /NDA2/ DELT,EDOX,EDDY,EDDZ,GRAY,EPS,OPTN
COMMON /NDA3/ INTERP,INTERU,INTERV,INTERW,NPPR,NPRU,NPRV,NPRW
C
C ----- READ INTEGER CONTROL PARAMETERS
C
C READ(5,10) NODS,NODS,NODF,NODP,NTI,NITR,NREAD, INTERP,INTERU,
1 INTERV,INTERW, NPPR,NPRU,NPRV,NPRW, INPL
C WRITE(6,1000) NODS,NODS,NODF,NODP,NTI,NITR,NREAD, INTERP,
1 INTERU,INTERV,INTERW, NPPR,NPRU,NPRV,NPRW, INPL
C
C ----- READ AND WRITE DISK OUTPUT CONTROL
C
C NTIP1=NTI+1
C READ(5,15) (KDSK(I),I=1,NTIP1)
C WRITE(6,1500) (KDSK(I),I=1,NTIP1)
C
C ----- READ REAL PARAMETERS
C
C READ(5,20) DELT,EDOX,EDDY,EDDZ,GRAY,EPS,OPTN
C WRITE(6,2000) DELT,EDOX,EDDY,EDDZ,GRAY,EPS,OPTN
C
C ----- READ AND WRITE NODE DATA
C
C NTYP(N) = 0 = INTERIOR NODES
C NTYP(N) = 1 = NODES ON SOLID WALL WITH NO SLIP
C NTYP(N) = 2 = NODES ON SOLID WALL WITH FREE SLIP
C NTYP(N) = 3 = NODES WITH PRESCRIBED FLOW
C NTYP(N) = 4 = NODES WITH PRESCRIBED PRESSURE
C NTYP(N) = 5 = NODES WITH CONTINUATIVE BC
C
C NODESS=0
C 310 READ(5,30) NI,NSEQ,NTYPNI,VOLNI,XNI,YNI,ZNI,XADD,YADD,ZADD
C
C IF(NI.EQ.0) GO TO 360
C NJ=NI+NSEQ
C DO 320 N=NI,NJ
C NTYP(N)=NTYPNI
C VOL(N)=VOLNI
C X(N)=XNI + XADD*DFLOAT(N-NI)
C Y(N)=YNI + YADD*DFLOAT(N-NI)
C Z(N)=ZNI + ZADD*DFLOAT(N-NI)
C NODESS=NODESS+1
C 320 CONTINUE
C
C GO TO 310
C
C 360 IF(NODESS.EQ.NODES) GO TO 370
C
C WRITE(6,3000)
C STOP
C 370 IF(NODES.LE.MXN) GO TO 380
C
C WRITE(6,3100) NODS,MXN
C STOP
C
C ----- WRITE NODE DATA
C
C 380 LINE=0
C DO 390 N=1,NODES
C LINE=LINE+1
C IF(MOD(LINE-1,50).EQ.0) WRITE(6,3600)
C WRITE(6,3700) N,NTYP(N),VOL(N),X(N),Y(N),Z(N)
C 390 CONTINUE
C
C ----- READ CONNECTION (INTERFACE) DATA
C
C KTYP(K) = 0 = INTERIOR TO INTERIOR CONNECTOR
C KTYP(K) = 1 = CONNECTOR TO SOLID WALL WITH NO SLIP
C KTYP(K) = 2 = CONNECTOR TO SOLID WALL WITH FREE SLIP
C KTYP(K) = 3 = CONNECTOR TO NODES WITH PRESCRIBED FLOW
C KTYP(K) = 4 = CONNECTOR TO NODES WITH PRESCRIBED PRESSURE
C KTYP(K) = 5 = CONNECTOR TO NODES WITH CONTINUATIVE BC
C
C NCONSS=0
C 410 READ(5,40) KI,NOD1KI,NOD2KI,NSEQ,NAD1,NAD2,KTYPKI,D1ICKI,D2ICKI,
1 AREAKI,DCSXKI,DCSYKI,DCSZKI
C
C IF(KI.EQ.0) GO TO 460
C
C KJ=KI+NSEQ
C DO 420 K=K1,KJ
C KTYP(K)=KTYPKI
C NOD1(K)=NOD1KI+(K-K1)*NAD1

```

DAT 005
 DATA 010
 DATA 015
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 DATA 455
 DATA 460
 DATA 465
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 DATA 495
 DATA 500

APPENDIX D (continued)

```

      NOD2(K)=NOD2(K)+(K-K1)*NAD2
      D1IC(K)=D1ICK1
      D2IC(K)=D2ICK1
      AREA(K)=AREAK1
      DCSX(K)=DCSXK1
      DCSY(K)=DCSYK1
      DCSZ(K)=DCSZK1
      NCONSS=NCONSS+1
420  CONTINUE
C
      GO TO 410
460  IF(NCONSS.EQ.NCONS) GO TO 470
      WRITE(6,4000)
      STOP
470  IF(NCONS.LE.NXX) GO TO 480
      WRITE(6,4100) NCONS,NXX
      STOP
C
C----- WRITE CONNECTION DATA
C
480  LINE=0
      INALF=0
      DO 490 K=1,NCONS
        N1=NOD1(K)
        N2=NOD2(K)
        INBABS=ABS(N1-N2)
        INALF=MAX(INALF,INBABS)
        LINE=LINE+1
        IF(NOD(LINE-1,50).EQ.0) WRITE(6,4600)
        WRITE(6,4700) K,KTYP(K),NOD1(K),NOD2(K),D1IC(K),D2IC(K),
          1      AREA(K),DCSX(K),DCSY(K),DCSZ(K),INBABS
C
490  CONTINUE
C
C----- READ AND WRITE BOUNDARY CONNECTORS
C
      IF(NOGF.EQ.0) GO TO 600
      READ(5,10) (KGP(I),I=1,NOGF)
      WRITE(6,5000) (KGP(I),I=1,NOGF)
C
600  IF(NOGP.EQ.0) GO TO 700
      READ(5,10) (KGP(I),I=1,NOGP)
      WRITE(6,6000) (KGP(I),I=1,NOGP)
C
C----- READ INITIAL CONDITIONS
C
C----- READ INITIAL CONDITIONS OF PHI
C
700  NI=0
      NJ=0
710  IF(NJ.EQ.NODES) GO TO 750
      READ(5,60) NJ,PHI(NJ)
720  NI=NI+1
      IF(NI.GT.1) GO TO 730
      IF(NJ.EQ.1) GO TO 730
      WRITE(6,7000) NJ
      STOP
730  IF(NJ.EQ.NI) GO TO 710
      IF(NJ.GT.NI) GO TO 740
      WRITE(6,7000) NJ
      STOP
740  PHI(NI)=PHI(NI-1)
      GO TO 720
C
C----- READ INITIAL CONDITIONS OF U
C
750  NI=0
      NJ=0
760  IF(NJ.EQ.NODES) GO TO 800
      READ(5,60) NJ,U(NJ)
770  NI=NI+1
      IF(NI.GT.1) GO TO 780
      IF(NJ.EQ.1) GO TO 780
      WRITE(6,7500) NJ
      STOP
780  IF(NJ.EQ.NI) GO TO 760
      IF(NJ.GT.NI) GO TO 790
      WRITE(6,7500) NJ
      STOP
790  U(NI)=U(NI-1)
      GO TO 770
C
C----- READ INITIAL CONDITIONS OF V
C
800  NI=0
      NJ=0
810  IF(NJ.EQ.NODES) GO TO 850
      READ(5,60) NJ,V(NJ)
820  NI=NI+1
      IF(NI.GT.1) GO TO 830
      IF(NJ.EQ.1) GO TO 830
      WRITE(6,8000) NJ
      STOP
830  IF(NJ.EQ.NI) GO TO 810

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DATA 505
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 DATA 985
 DATA 990
 DATA 995
 DATA 1000

APPENDIX D (continued)

```

      IF(NJ.GT.NI) GO TO 840
      WRITE(C.8000) NJ
      STOP
840 V(NI)=V(NI-1)
      GO TO 820
C ----- READ INITIAL CONDITIONS OF W
C
850 NI=0
      NJ=0
860 IF(NJ.EC.NODES) GO TO 900
      READ(5.60) NJ.W(NJ)
870 NI=NI+1
      IF(NI.GT.1) GO TO 880
      IF(NJ.EQ.1) GO TO 880
      WRITE(6.8500) NJ
      STOP
880 IF(NJ.EQ.NI) GO TO 860
      IF(NJ.GT.NI) GO TO 890
      WRITE(C.8500) NJ
      STOP
890 W(NI)=W(NI-1)
      GO TO 870
900 CONTINUE
C
10 FORMAT(16I5)
15 FORMAT(80I1)
20 FORMAT(8F10.0)
30 FORMAT(15,13,12,7F10.0)
40 FORMAT(314,412,6F10.0)
60 FORMAT(15,5X,F10.0)
1000 FORMAT(1H0/5X,
1 'NO. OF NODES, NODES .....',15/5X,
2 'NO. OF CONNECTORS, NCONS .....',15/5X,
3 'NO. OF GIVEN FLOW CONNECTORS, NOGF .....',15/5X,
4 'NO. OF GIVEN-PRESSURE CONNECTORS, NOGP .....',15/5X,
5 'NO. OF TIME STEPS, NTI .....',15/5X,
6 'NO. OF ITERATIONS ALLOWED FOR SOLVING PRESSURE, ...',15/5X,
7 'EVERY NREAD STEPS REAC TRANSIENT INOUT .....',15/5X,
8 'PRINT INTERMITTENT PRESSURE?, 1=YES, 0=NO .....',15/5X,
9 'PRINT INTERMITTENT U?, 1=YES, 0=NO .....',15/5X,
A 'PRINT INTERMITTENT V?, 1=YES, 0=NO .....',15/5X,
B 'PRINT INTERMITTENT W?, 1=YES, 0=NO .....',15/5X,
C 'EVERY NPRO STEPS PRINT PRESSURE ONCE .....',15/5X,
D 'EVERY NPRO STEPS PRINT U ONCE .....',15/5X,
E 'EVERY NPRO STEPS PRINT V ONCE .....',15/5X,
F 'EVERY NPRO STEPS PRINT W ONCE .....',15/5X,
G 'IMPLICIT CONTROL OF SOLVING PHI, 1=YES, 0=NO .....',15/5X)
1500 FORMAT(1H0,1X,000 LIST OF DISK OUTPUT CONTROL 000/(11X,80I1)/)
2000 FORMAT(1H,5X,
1 'TIME STEP SIZE .....',E12.4/5X,
2 'X-EDDY COEFFICIENT .....',E12.4/5X,
3 'Y-EDDY COEFFICIENT .....',E12.4/5X,
4 'Z-EDDY COEFFICIENT .....',E12.4/5X,
5 'GRAVITY ACCELERATION .....',E12.4/5X,
6 'TOLERANCE FOR SOLVING PRESSURE .....',E12.4/5X,
7 'OPTION=1=CURL FORM IN EDDY TERM .....',E12.4/5X)
3000 FORMAT(1H1,000 ERROR OCCURS IN READING NODE DATA, STOP 000)
3100 FORMAT(1H1,000 NODES = ',15,' .GT. NKN = ',15,' NG 000)
3600 FORMAT(1H1/20X,000 NODE (COMPARTMENT) DATA 000//20X,' N NTYP'
1,5X,'VOL(N)',10X,'X(N)',11X,'Y(N)',11X,'Z(N)'/)
3700 FORMAT(1H,20X,215,4E15.5)
4000 FORMAT(1H1,000 ERROR OCCURS IN READING CONN. DATA, STOP 000)
4100 FORMAT(1H1,000 NCONS = ',15,' .GT. NXX = ',15,' STOP 000)
4600 FORMAT(1H1/10X,000 CONNECTOR (INTERFACE) DATA 000//10X,' K KT
1YP NOD1 NOD2',6X,'D1C(K)',5X,'D2C(K)',5X,'APEA(K)',5X,'DCSX(K)',
2 5X,'DCSY(K)',5X,'DCSZ(K)',10H0//)
4700 FORMAT(1H,7X,415,6F12.3,15)
5000 FORMAT(1H0,5X,000 LIST OF GIVEN-FLOW CONNECTORS 000/(5X,16I5))
6000 FORMAT(1H0,5X,000 LIST OF GIVEN-PRESSURE CONNECTORS 000/(
1(5X,16I5))
7000 FORMAT(1H0,000 ERROR IN READING INITIAL PHI AT CARD NO.,15)
7500 FORMAT(1H0,000 ERROR IN READING INITIAL U AT CARD NO.,15)
8000 FORMAT(1H0,000 ERROR IN READING INITIAL V AT CARD NO.,15)
8500 FORMAT(1H0,000 ERROR IN READING INITIAL W AT CARD NO.,15)
C
      RETURN
C
      END

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DATA1095
 DATA1010
 DATA1015
 DATA1020
 DATA1025
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 DATA1395
 DATA1400

APPENDIX D (continued)

```

SUBROUTINE ICHADV(PHI,U,V,W,PHIP,UP,VP,WP,DVYX,DVYV,DVYZ,D,PHILOO,
1 VOL,X,Y,Z,NTYP,D1IC,D2IC,AREA,DCSX,DCSY,DCSZ,NOD1,NOD2,KTYP,
2 NXN,NXK, MXGF,MGF,GUX,GVY,GWZ,GUXP,GVYP,GWZP,GUXN,GVYN,GWZN,
3 NXGP,MGP,GPR,GPRP,GPRN, A,C,MAXBWD,IMLF,ONGX,ONGY,ONGZ,
4 KOSK,PARNTI)
C
C FUNCTION OF THE SUBROUTINE IS TO ADVANCE THE SOLUTION FOR EACH
C TIME STEP BY THREE CALCULATION CYCLES: (1) COMPUTE OMEGA.
C (2) COMPUTE THE PRESSURE BY SOLVING POISSON EQUATION.
C (3) COMPUTE U, V, AND W FROM MOMENTUM EQUATIONS.
C
C
C IMPLICIT REAL*8 (A-H,O-Z)
C DIMENSION PHI(NXN),U(NXN),V(NXN),W(NXN)
C DIMENSION PHIP(NXN),UP(NXN),VP(NXN),WP(NXN)
C DIMENSION DVYX(NXN),DVYV(NXN),DVYZ(NXN),D(NXN),PHILOO(NXN)
C DIMENSION ONGX(NXN),ONGY(NXN),ONGZ(NXN)
C DIMENSION VOL(NXN),X(NXN),Y(NXN),Z(NXN),NTYP(NXN)
C
C DIMENSION D1IC(NXK),D2IC(NXK),AREA(NXK)
C DIMENSION DCSX(NXK),DCSY(NXK),DCSZ(NXK)
C DIMENSION NOD1(NXK),NOD2(NXK),KTYP(NXK)
C DIMENSION MGF(NXGF),GUX(NXGF),GVY(NXGF),GWZ(NXGF)
C DIMENSION GUXP(NXGP),GVYP(NXGP),GWZP(NXGP)
C DIMENSION GUXN(NXGN),GVYN(NXGN),GWZN(NXGN)
C DIMENSION MGP(NXGP),GPR(NXGP),GPRP(NXGP),GPRN(NXGP)
C DIMENSION A(NXN),C(NXN,PARNTI)
C DIMENSION KOSK(PARNTI)
C
C COMMON /NDA1/ NODS,NODAS,MGPF,MGCP,NTI,NITR,NREAD,INPL
C COMMON /NDA2/ DELT,EDDX,EDDY,EDDZ,GRAY,EPS,OPTN
C COMMON /NDA3/ INTERP,INTERU,INTERV,INTERW,NPRP,NPRU,NPRV,NPRW
C
C REWIND 1
C WRITE(1) (X(N),Y(N),Z(N),NTYP(N),N=1,NODES)
C
C ----- PUT INITIAL VALUES OF PHI,U,V,W INTO PHIP,UP,VP,WP
C
C DO 110 N=1,NODES
C PHIP(N)=PHI(N)
C UP(N)=U(N)
C VP(N)=V(N)
C WP(N)=W(N)
C 110 CONTINUE
C
C ----- START THE TIME LOOP
C
C IF(MGPF.EQ.0 .AND. MGCP.EQ.0) GO TO 200
C CALL TRANIN(TINP,GUXP,GVYP,GWZP,GPRP,MGPF,MGCP,MXGF,MXGP)
C 200 CONTINUE
C
C NITP=NITP+1
C
C DO 450 IT=1,NITP
C TIME=DFLOAT(IT-1)*DELT
C IF(IT.NE.1) GO TO 300
C
C IF(MGPF.EQ.0 .AND. MGCP.EQ.0) GO TO 210
C CALL TRANIN(TINP,GUXN,GVYN,GWZN,GPRN,MGPF,MGCP,MXGF,MXGP)
C
C 210 CONTINUE
C IF(INTERP.EQ.0) GO TO 220
C IF(MOD(IT-1,NPRP).NE.0) GO TO 220
C WRITE(6,2100) TIME
C CALL OUTPUT(PHI,NODES,NXN)
C
C 220 IF(INTERU.EQ.0) GO TO 230
C IF(MOD(IT-1,NPRU).NE.0) GO TO 230
C WRITE(6,2200) TIME
C CALL OUTPUT(U,NODES,NXN)
C
C 230 IF(INTERV.EQ.0) GO TO 240
C IF(MOD(IT-1,NPRV).NE.0) GO TO 240
C WRITE(6,2300) TIME
C CALL OUTPUT(V,NODES,NXN)
C
C 240 IF(INTERW.EQ.0) GO TO 470
C IF(MOD(IT-1,NPRW).NE.0) GO TO 470
C WRITE(6,2400) TIME
C CALL OUTPUT(W,NODES,NXN)
C
C GO TO 470
C 300 CONTINUE
C
C IF(MOD(IT-1,NREAD).NE.0) GO TO 325
C
C TINP=TINP
C IF(MGPF.EQ.0) GO TO 315
C DO 310 I=1,MGPF
C GUXN(I)=GUXP(I)
C GVYN(I)=GVYP(I)
C 310 GWZN(I)=GWZP(I)
C
C 315 IF(MGCP.EQ.0) GO TO 324
C DO 320 I=1,MGCP
C 320 GPRN(I)=GPRP(I)
C
C 324 IF(MGPF.EQ.0 .AND. MGCP.EQ.0) GO TO 325
C CALL TRANIN(TINP,GUXN,GVYN,GWZN,GPRN,MGPF,MGCP,MXGF,MXGP)

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APPENDIX D (continued)

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C
C 325 CONTINUE
C      IF(NCGF.EQ.0 .AND. NOGP.EQ.0) GO TO 350
C      TIMEF=(TIME-TIMEP)/(TIMEN-TIMEP)
C      IF(NCGF.EQ.0) GO TO 335
C      DO 330 I=1,NOCF
C      GUX(I)=GUXP(I)+(GUXN(I)-GUXP(I))*TIMEF
C      GUY(I)=GVYP(I)+(GVYN(I)-GVYP(I))*TIMEF
C 330  GWZ(I)=GWZP(I)+(GWZN(I)-GWZP(I))*TIMEF
C 335 CONTINUE
C      IF(NOGP.EQ.0) GO TO 350
C      DO 340 I=1,NOGP
C 340  GPR(I)=GPRP(I)+(GPRN(I)-GPRP(I))*TIMEF
C 350 CONTINUE
C
C ----- COMPUTE NET ADVECTION COMPONENTS, DVVX, DVVY, AND DVVZ
C ----- BY CALLING THE SUBROUTINE ICHOVV
C      CALL ADCNDI(DVVX,DVVY,DVVZ,UP,VP,WP,VOL,NTYP,
C 1 D1IC,D2IC,AREA,DCSX,DCSY,DCSZ,NOD1,NOD2,KTYP, OMGX,OMGY,OMGZ,D,
C 2 NODES,NCONS,MXN,MXK, NCGF,MXGF,KGF,GUX,GVY,GWZ)
C      TIMEO=(IT-2)*DELTA
C
C ----- COMPUTE PHI = P/PHOB + GZ BY CALLING ICMPHI
C      CALL ICMPHI(PHI,PHIF,UP,VP,WP,DVVX,DVVY,DVVZ,D,PHILOD,
C 1 X,Y,Z,VOL,NTYP, D1IC,D2IC,AREA,DCSX,DCSY,DCSZ,NOD1,NOD2,KTYP,
C 2 NODES,NCONS,MXN,MXK,EPX,EDDY,EDDZ,DELTA,GRAV, OMGX,OMGY,OMGZ,
C 3 NOGF,MXGF,KGF,GUX,GVY,GWZ, NOGP,MXGP,KGP,GPR, OMGX,OMGY,OMGZ,
C 4 A,C,MXBWD,HALF,IMPL,OPTN)
C
C      IF(INTERP.EQ.0) GO TO 355
C      IF(MOD(IT-1,NPRP) .NE.0) GO TO 355
C      WRITE(6,2100) TIME
C      CALL OUTPUT(PHI,NODES,MXN)
C
C ----- COMPUTE NEW U, V, AND W BY CALLING ICMUVW
C 355 CONTINUE
C      CALL ICMUVW(U,V,W,PHI,UP,VP,WP,PHIF,DVVX,DVVY,DVVZ,
C 1 X,Y,Z,VOL,NTYP,D1IC,D2IC,AREA,DCSX,DCSY,DCSZ,NOD1,NOD2,KTYP,
C 2 NODES,NCONS,MXN,MXK,EDCX,EDDY,EDDZ,DELTA,GRAV, OMGX,OMGY,OMGZ,
C 3 NOGF,MXGF,KGF,GUX,GVY,GWZ, NOGP,MXGP,KGP,GPR, OPTN)
C
C      IF(INTERU.EQ.0) GO TO 356
C      IF(MOD(IT-1,NPRU) .NE.0) GO TO 356
C      WRITE(6,2200) TIME
C      CALL OUTPUT(U,NODES,MXN)
C
C 356 CONTINUE
C      IF(INTERV.EQ.0) GO TO 357
C      IF(MOD(IT-1,NPRV) .NE.0) GO TO 357
C      WRITE(6,2300) TIME
C      CALL OUTPUT(V,NODES,MXN)
C
C 357 CONTINUE
C      IF(INTERW.EQ.0) GO TO 358
C      IF(MOD(IT-1,NPRW) .NE.0) GO TO 358
C      WRITE(6,2400) TIME
C      CALL OUTPUT(W,NODES,MXN)
C
C ----- UPDATE PHIP, UP, VP, AND WP
C 358 CONTINUE
C      DO 360 N=1,NODES
C      PHIP(N)=PHI(N)
C      UP(N)=U(N)
C      VP(N)=V(N)
C      WP(N)=W(N)
C 360 CONTINUE
C
C 470 IF(KDSK(IT).EQ.1) WRITE(1) TIME,(PHI(N),U(N),V(N),W(N),N=1,NODES)
C
C 480 CONTINUE
C      RETURN
C
C 2100 FORMAT(1H1,'0000 PRESSURE DISTRIBUTION AT TIME = ',E15.5,' ***//')
C 2200 FORMAT(1H1,'0000 U-VEL AT TIME = ',E15.5,' ***//')
C 2300 FORMAT(1H1,'0000 V-VEL AT TIME = ',E15.5,' ***//')
C 2400 FORMAT(1H1,'0000 W-VEL AT TIME = ',E15.5,' ***//')
C
C      END

```

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ICMA 505
ICMA 510
ICMA 515
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ICMA 930
ICMA 935
ICMA 940
ICMA 945
ICMA 950
ICMA 955
ICMA 960

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APPENDIX D (continued)

```

SUBROUTINE TRANIN(TIME,GUX,GVY,GVZ,GPR,NOCF,NOSP,MKCF,MKGP)
IMPLICIT REAL*8 (A-H,O-Z)
DIMENSION GUX(MKCF),GVY(MKCF),GVZ(MKCF),GPR(MKCF)
READ(5,20) TIME
C
C ----- IF THE GIVEN FLOW IS INTO THE REGION.
C ----- IT MUST BE INPUTTED AS POSITIVE
C
      IF(NOCF.EQ.0) GO TO 100
      READ(5,20) (GUX(I),I=1,NOCF)
      READ(5,20) (GVY(I),I=1,NOCF)
      READ(5,20) (GVZ(I),I=1,NOCF)
100  IF(NOSP.EQ.0) RETURN
      READ(5,20) (GPR(I),I=1,NOSP)
20  FORMAT(10.0)
      RETURN
      END

```

```

TRAN 005
TRAN 010
TRAN 015
TRAN 020
TRAN 025
TRAN 030
TRAN 035
TRAN 040
TRAN 045
TRAN 050
TRAN 055
TRAN 060
TRAN 065
TRAN 070
TRAN 075
TRAN 080
TRAN 085

```

APPENDIX D (continued)

```

SUBROUTINE ADDND1(DVFX,DVFX,DVFX,UP,VP,WP,VOL,NTYP,
1 D1IC,D2IC,AREA,DCSX,DCSY,DCSZ,MOD1,MOD2,KTYP,ONGX,ONGY,ONGZ,0,
2 NDCES,NCONS,NXN,NKK, NCGF,NXGF,KGF,GUX,GVY,GWZ)
C
C FUNCTION OF THIS SUBROUTINE IS TO COMPUTE DVV = DIV(VV),
C CREGA = CURL(V), AND D = DIV(V)
C
C
C IMPLICIT REAL*8 (A-H,O-Z)
C DIMENSION DVFX(NXN),DVFX(NXN),DVFX(NXN)
C DIMENSION ONGX(NXN),ONGY(NXN),ONGZ(NXN),O(NXN)
C DIMENSION UP(NXN),VP(NXN),WP(NXN),VOL(NXN),NTYP(NXN)
C DIMENSION D1IC(NXN),D2IC(NXN),AREA(NXN)
C DIMENSION DCSX(NXN),DCSY(NXN),DCSZ(NXN)
C DIMENSION MOD1(NXN),MOD2(NXN),KTYP(NXN)
C DIMENSION KGF(NXGF),GUX(NXGF),GVY(NXGF),GWZ(NXGF)
C
C
C ----- INITIATE DVFX, DVFX, AND DVFX
C
C DO 190 N=1,NDCES
C DVFX(N)=0.0
C DVFX(N)=0.0
C DVFX(N)=0.0
C ONGX(N)=0.0
C ONGY(N)=0.0
C ONGZ(N)=0.0
C D(N)=0.0
C 190 CONTINUE
C
C
C ----- COMPUTE DVFX, DVFX, AND DVFX AT ALL INTERIOR NODES
C ----- BY SUMMING UP THE CONTRIBUTION OF ALL CONNECTIONS TO EACH NODE
C
C DO 240 IC=1,NCONS
C KTYPIC=KTYP(IC)
C N1=MOD1(IC)
C N2=MOD2(IC)
C D1=D1IC(IC)
C D2=D2IC(IC)
C
C UN1=UP(N1)
C UN2=UP(N2)
C VN1=VP(N1)
C VN2=VP(N2)
C WN1=WP(N1)
C WN2=WP(N2)
C DCSXIC=DCSX(IC)
C DCSYIC=DCSY(IC)
C DCSZIC=DCSZ(IC)
C AREAIC=AREA(IC)
C DIST=D1+D2
C
C ----- INTERPOLATE THE INTERFACIAL VALUES INTERNS OF NODAL VALUES
C
C UIC=(D1*UN2+D2*UN1)/DIST
C VIC=(D1*VN2+D2*VN1)/DIST
C WIC=(D1*WN2+D2*WN1)/DIST
C
C IF(KTYPIC.EQ.0) GO TO 210
C UIC=UN2
C VIC=VN2
C WIC=WN2
C 210 CONTINUE
C
C ----- ADD THE CONTRIBUTION OF IC-TH INTERFACE TO ITS TWO
C ----- CONNECTING NODES
C
C FNIC=(DCSXIC*UIC+DCSYIC*VIC+DCSZIC*WIC)*AREAIC
C
C IF(FNIC.LT.0.0) GO TO 220
C DVVFLX=FNIC*UN1
C DVVFLY=FNIC*VN1
C DVVFLZ=FNIC*WN1
C GO TO 230
C
C 220 DVVFLX=FNIC*UN2
C DVVFLY=FNIC*VN2
C DVVFLZ=FNIC*WN2
C
C 230 DVFX(N1)=DVFX(N1)+DVVFLX
C DVFX(N2)=DVFX(N2)+DVVFLX
C DVFX(N1)=DVFX(N1)+DVVFLY
C DVFX(N2)=DVFX(N2)+DVVFLY
C DVFX(N1)=DVFX(N1)+DVVFLZ
C DVFX(N2)=DVFX(N2)+DVVFLZ
C
C ONGFLX=(VIC*DCSYIC-VIC*DCSZIC)*AREAIC
C ONGX(N1)=ONGX(N1)+ONGFLX
C ONGX(N2)=ONGX(N2)+ONGFLX
C ONGFLY=(UIC*DCSZIC-VIC*DCSXIC)*AREAIC
C ONGY(N1)=ONGY(N1)+ONGFLY
C ONGY(N2)=ONGY(N2)+ONGFLY
C ONGFLZ=(VIC*DCSXIC-UIC*DCSYIC)*AREAIC
C ONGZ(N1)=ONGZ(N1)+ONGFLZ
C ONGZ(N2)=ONGZ(N2)+ONGFLZ
C OPLX=(UIC*DCSXIC+VIC*DCSYIC+VIC*DCSZIC)*AREAIC
C D(N1)=D(N1)+OPLX
C D(N2)=D(N2)+OPLX

```

ADDND 005
 ADDND 010
 ADDND 015
 ADDND 020
 ADDND 025
 ADDND 030
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 ADDND 460
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 ADDND 470
 ADDND 475
 ADDND 480
 ADDND 485
 ADDND 490
 ADDND 495
 ADDND 500

APPENDIX D (continued)

```

240 CONTINUE
C
  DO 250 N=1,NODES
    NTYPN=NTYP(N)
    IF(NTYPN.NE.0) GO TO 25C
    VOLI=1.0/VOL(N)
    DVVX(N)=DVVX(N)*VOLI
    DVVY(N)=DVVY(N)*VOLI
    DVVZ(N)=DVVZ(N)*VOLI
    DMGX(N)=DMGX(N)*VOLI
    DMGY(N)=DMGY(N)*VOLI
    DMGZ(N)=DMGZ(N)*VOLI
    D(N)=D(N)*VOLI
  250 CONTINUE
C
C----- COMPUTE DVVX, DVVY, AND DVVZ AT BOUNDARY NODES
C
  DO 350 IC=1,NCONS
    KTYPIC=KTYP(IC)
    IF(KTYPIC.EQ.0) GO TO 350
    N1=MOD1(IC)
    N2=MOD2(IC)
    DCSXIC=DCSX(IC)
    DCSYIC=DCSY(IC)
    DCSZIC=DCSZ(IC)
    D1=D1IC(IC)
    U2=U2IC(IC)
    UN1=UP(N1)
    UN2=UP(N2)
    VN1=VP(N1)
    VN2=VP(N2)
    WN1=WP(N1)
    WN2=WP(N2)
    VNORM1=DCSXIC*UN1+DCSYIC*VN1+DCSZIC*WN1
    VNORM2=DCSXIC*UN2+DCSYIC*VN2+DCSZIC*WN2
    DIST=D1+D2
C----- KTYP(K) = 1 = CONNECTOR TO SOLID WALL WITH NO SLIP
C----- KTYP(K) = 2 = CONNECTOR TO SOLID WALL WITH FREE SLIP
C----- KTYP(K) = 3 = CONNECTOR TO NODES WITH PRESCRIBED FLOW
C----- KTYP(K) = 4 = CONNECTOR TO NODES WITH PRESCRIBED PRESSURE
C----- KTYP(K) = 5 = CONNECTOR TO NODES WITH CONTINUATIVE BC
C
    GO TO (310,320,330,340,350), KTYPIC
C
  310 DVVX(N2)=0.0
    DVVY(N2)=0.0
    DVVZ(N2)=0.0
    DMGX(N2)=(-DCSZIC*(VN2-WN1)+DCSYIC*(WN2-WN1))/DIST
    DMGY(N2)=(-DCSXIC*(WN2-WN1)+DCSZIC*(UN2-UN1))/DIST
    DMGZ(N2)=(-DCSYIC*(UN2-UN1)+DCSXIC*(VN2-VN1))/DIST
    D(N2)=-VNORM1/DIST
    GO TO 390
C
  320 DVVX(N2)=0.0
    DVVY(N2)=0.0
    DVVZ(N2)=0.0
    DMGX(N2)=0.0
    DMGY(N2)=0.0
    DMGZ(N2)=0.0
    D(N2)=-VNORM1/DIST
    GO TO 390
C
  330 DVVX(N2)=0.0
    DVVY(N2)=0.0
    DVVZ(N2)=0.0
    DMGX(N2)=(-DCSZIC*(VN2-WN1)+DCSYIC*(WN2-WN1))/DIST
    DMGY(N2)=(-DCSXIC*(WN2-WN1)+DCSZIC*(UN2-UN1))/DIST
    DMGZ(N2)=(-DCSYIC*(UN2-UN1)+DCSXIC*(VN2-VN1))/DIST
    D(N2)=(VNORM2-VNORM1)/DIST
    GO TO 390
C
  340 DVVX(N2)=0.0
    DVVY(N2)=0.0
    DVVZ(N2)=0.0
    DMGX(N2)=0.0
    DMGY(N2)=0.0
    DMGZ(N2)=0.0
    D(N2)=0.0
    GO TO 350
C
  350 DVVX(N2)=0.0
    DVVY(N2)=0.0
    DVVZ(N2)=0.0
    DMGX(N2)=0.0
    DMGY(N2)=0.0
    DMGZ(N2)=0.0
    D(N2)=0.0
C
  390 CONTINUE
C
  RETURN
  END

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APPENDIX D (continued)

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      SUBROUTINE ICHPHI(PHI,PHIP,UP,VP,WP,DVXX,DVYY,DVZZ,D,PHILOD,
1     X,Y,Z,VOL,NTYP, D1IC,D2IC,AREA,DCSX,DCSY,DCSZ,NOD1,NOD2,KTYP,
2     NDOES,NCONS,NITR,NXN,NXK,EPX,EDOX,EDDY,EDDZ,DELT,GRAY,
3     NGF,NXGF,KGF,GUX,GVY,GVZ, NGCP,NXCP,KCP,GPF, ONGX,ONGY,ONGZ,
4     A,C,MAXBND,HALF,INPL,OPTN)
C
C      FUNCTION OF THE SUBROUTINE IS TO COMPUTE THE PRESSURE BY SOLVING
C      AN PARAMETERIZED POISSON EQUATION .
C
      IMPLICIT REAL*8 (A-H,O-Z)
      DIMENSION PHI(NXN),PHIP(NXN),UP(NXN),VP(NXN),WP(NXN)
      DIMENSION DVXX(NXN),DVYY(NXN),DVZZ(NXN),D(NXN),PHILOD(NXN)
      DIMENSION ONGX(NXN),ONGY(NXN),ONGZ(NXN)
      DIMENSION X(NXN),Y(NXN),Z(NXN),VOL(NXN),NTYP(NXN)
C
      DIMENSION D1IC(NXK),D2IC(NXK),AREA(NXK)
      DIMENSION DCSX(NXK),DCSY(NXK),DCSZ(NXK)
      DIMENSION NOD1(NXK),NOD2(NXK),KTYP(NXK)
      DIMENSION KGF(NXGF),GUX(NXGF),GVY(NXGF),GVZ(NXGF)
      DIMENSION KCP(NXCP),GPF(NXCP)
      DIMENSION A(NXN),C(NXN,MAXBND)
C
      DATA NROCTN/0/
C
      ITP=0
C
C      ----- COMPUTE LOAD FUNCTION FOR SOLVING PHI
C
      DO 100 N=1,NDOES
100 PHILOD(N)=0.0
C
      DO 120 IC=1,NCONS
      KTYPIC=KTYP(IC)
      N1=NOD1(IC)
      N2=NOD2(IC)
      O1=D1IC(IC)
      O2=D2IC(IC)
      DIST=D1+D2
      IF(OPTN.EQ.1) GO TO 110
      DVXXN1=DVXX(N1)
      DVYYN1=DVYY(N1)
      DVZZN1=DVZZ(N1)
      DVXXN2=DVXX(N2)
      DVYYN2=DVYY(N2)
      DVZZN2=DVZZ(N2)
      DN1=D(N1)
      DN2=D(N2)
C
      DVXXIC=(O1+DVXXN2+O2+DVXXN1)/DIST
      DVYYIC=(O1+DVYYN2+O2+DVYYN1)/DIST
      DVZZIC=(O1+DVZZN2+O2+DVZZN1)/DIST
C
      DVVFLX=(DCSX(IC)+DVXXIC+DCSY(IC)+DVYYIC+DCSZ(IC)+DVZZIC)*AREA(IC)
C
      EDYV=OPAXI(EDOX,EDDY,EDDZ)
      EDYDIV=EDYV*(DN2-DN1)/DIST*AREA(IC)
      IF(KTYPIC.NE.0) EDYDIV=C.0
C
      PHILOD(N1)=PHILOD(N1)+DVVFLX-EDYDIV
      PHILOD(N2)=PHILOD(N2)-DVVFLX+EDYDIV
      GO TO 120
C
110 CONTINUE
      UN1=UP(N1)
      UN2=UP(N2)
      VN1=VP(N1)
      VN2=VP(N2)
      WN1=WP(N1)
      WN2=WP(N2)
      UIC=(O1+UN2+O2+UN1)/DIST
      VIC=(O1+VN2+O2+VN1)/DIST
      WIC=(O1+WN2+O2+WN1)/DIST
      ONGXN1=ONGX(N1)
      ONGXN2=ONGX(N2)
      ONGYN1=ONGY(N1)
      ONGYN2=ONGY(N2)
      ONGZN1=ONGZ(N1)
      ONGZN2=ONGZ(N2)
      ONGXIC=(O1+ONGXN2+O2+ONGXN1)/DIST
      ONGYIC=(O1+ONGYN2+O2+ONGYN1)/DIST
      ONGZIC=(O1+ONGZN2+O2+ONGZN1)/DIST
      UONGXF=UIC+ONGXIC-VIC+ONGYIC
      UONGYF=VIC+ONGYIC-UIC+ONGZIC
      UONGZF=UIC+ONGYIC-VIC+ONGXIC
      UONGFL=(DCSX(IC)+UONGXF+DCSY(IC)+UONGYF+DCSZ(IC)+UONGZF)*AREA(IC)
      PHILOD(N1)=PHILOD(N1)-UONGFL
      PHILOD(N2)=PHILOD(N2)+UONGFL
120 CONTINUE
C
C      ----- COMPUTE PHILOD FOR ALL INTERIOR NODES
C
      DO 140 N=1,NDOES
      NTYPN=NTYP(N)
      IF(NTYPN.NE.0) GO TO 14C
      PHILOD(N)=PHILOD(N)-D(N)*VOL(N)/DELT
140 CONTINUE
C

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ICMP 605
ICMP 610
ICMP 615
ICMP 620
ICMP 625
ICMP 630
ICMP 635
ICMP 640
ICMP 645
ICMP 650
ICMP 655
ICMP 660
ICMP 665
ICMP 670
ICMP 675
ICMP 680
ICMP 685
ICMP 690
ICMP 695
ICMP 700
ICMP 705
ICMP 710
ICMP 715
ICMP 720
ICMP 725
ICMP 730
ICMP 735
ICMP 740
ICMP 745
ICMP 750
ICMP 755
ICMP 760
ICMP 765
ICMP 770
ICMP 775
ICMP 780
ICMP 785
ICMP 790
ICMP 795
ICMP 800
ICMP 805
ICMP 810
ICMP 815
ICMP 820
ICMP 825
ICMP 830
ICMP 835
ICMP 840
ICMP 845
ICMP 850
ICMP 855
ICMP 860
ICMP 865
ICMP 870
ICMP 875
ICMP 880
ICMP 885
ICMP 890
ICMP 895
ICMP 900

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APPENDIX D (continued)

```

C ----- INITIATE PHI
C
C      IF(IYPL.EQ.1) GO TO 800
180 DO 190 N=1,NODES
    A(N)=0.0
190 PHI(N)=0.0
C
C ----- COMPUTE THE CONTRIBUTION OF ALL CONNECTIONS TO PHI
C
C      DO 290 IC=1,NCONS
        KTYPIC=KTYPE(IC)
C
C          N1=NOD1(IC)
          N2=NOD2(IC)
          O1=O1IC(IC)
          O2=O2IC(IC)
          AREAIC=AREA(IC)
C
C          DIST=O1+O2
          ADDIST=AREAIC/DIST
C
C          A(N1)=A(N1)+ADDIST
          A(N2)=A(N2)+ADDIST
          PHI(N1)=PHI(N1)+PHIP(N2)*ADDIST
          PHI(N2)=PHI(N2)+PHIP(N1)*ADDIST
C
290 CONTINUE
C
C ----- COMPUTE PHI OF ALL INTERIOR NODES BY SUMMING
C ----- THE CONTRIBUTION FROM CONNECTIONS AND NODES
C
C      DO 340 N=1,NODES
        NTYPN=NTYPE(N)
        IF(NTYPN.NE.0) GO TO 34C
        ABCD=1.0/A(N)
        PHI(N)=PHI(N)+ABCD*PHILCD(N)*ABCD
340 CONTINUE
C
C ----- COMPUTE PHI AT THE BOUNDARIES
C
C      DO 390 K=1,NCONS
        KTYPEK=KTYPE(K)
        IF(KTYPEK.EQ.0) GO TO 39C
        N1=NOD1(K)
        N2=NOD2(K)
        UN1=UP(N1)
        VN1=VP(N1)
        WN1=WP(N1)
        UN2=UP(N2)
        VN2=VP(N2)
        WN2=WP(N2)
        ZN1=Z(N1)
        ZN2=Z(N2)
        DCSXK=DCSX(K)
        DCSYK=DCSY(K)
        DCSZK=DCSZ(K)
        VNORM1=UN1*DCSXK+VN1*DCSYK+WN1*DCSZK
        VNORM2=UN2*DCSXK+VN2*DCSYK+WN2*DCSZK
        DIST=O1IC(K)+O2IC(K)
        EDYY=DNAX1(EDCX,EDDY,EDCZ)
C
C      KTYPE(K) = 1 = CONNECTOR TO SOLID WALL WITH NO SLIP
C      KTYPE(K) = 2 = CONNECTOR TO SOLID WALL WITH FREE SLIP
C      KTYPE(K) = 3 = CONNECTOR TO NODES WITH PRESCRIBED FLOW
C      KTYPE(K) = 4 = CONNECTOR TO NODES WITH PRESCRIBED PRESSURE
C      KTYPE(K) = 5 = CONNECTOR TO NODES WITH CONTINUATIVE BC
C
C      GO TO (355,360,365,375,380),KTYPEK
C
355 PHI(N2)=PHI(N1)+2.0*EDYY*VNORM1/DIST*(1.0-OPTN)
    GO TO 390
360 PHI(N2)=PHI(N1)
    GO TO 390
C
365 PHI(N2)=PHI(N1) + 2.0*EDYY*(VNORM1-VNORM2)/DIST*(1.0-OPTN)
    NTYPN2=NTYPE(N2)
    IF(NTYPN2.EQ.0) PHI(N2)=0.0
    GO TO 390
375 DO 376 I=1,NOGP
    KGP1=KGP(I)
    IF(KGP1.EQ.K) GO TO 378
376 CONTINUE
    STOP
378 PHI(N2)=GPR(I)+GRAV*ZN2 + OPTN*(UN2*UN2+VN2*VN2+WN2*WN2)*0.5
    GO TO 390
380 PHI(N2)=GRAV*ZN2 + OPTN*(UN2*UN2+VN2*VN2+WN2*WN2)*0.5
C
390 CONTINUE
C
C ----- TEST CONVERGENCE
C
C      IF(IYR.LT.1) GO TO 500
      DIFMAX=0.0
      NMAX=0
      DO 490 N=1,NODES

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APPENDIX D (continued)

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      NTYPN=NTYP(N)
      IF(NTYPN.NE.0) GO TO 490
      IF(PHIP(N).EQ.0.0) GO TO 490
      DIFER=DABS(PHI(N)-PHIP(N))/DABS(PHIP(N))
      IF(DIFER.LE.DIFMAX) GO TO 410
      DIFMAX=CIFER
      NMAX=N
410  CONTINUE
490  CONTINUE
      IF(DIFMAX.GT.EPS) GO TO 500
      GO TO 600

C----- CONVERGENT SOLUTION OF PHI HAS NOT BEEN OBTAINED YET
      DO 560 N=1,MODES
      PHIP(N)=PHI(N)
      ITRMS=NITR-5
      IF(ITR.GT.5 .AND. ITR.LT.ITRMS) GO TO 570
      WRITE(6,2000) ITR, EPS, DIFMAX, NMAX
2000  FORMAT(1H1,5X,'*** VALUES OF PHI AT ITR = ',15,' ***'/10X,
1  'EPS = ',E12.4,5X,' DIFMAX = ',E12.4,5X,' NMAX = ',15)
      CALL OUTPUT(PHI,MODES,NMAX)
      ITR=ITR+1
      IF(ITR.GT.NITR) GO TO 700
      GO TO 180

C----- CONVERGENT SOLUTION OF PHI HAS BEEN OBTAINED
      GO 100 RETURN

C----- CONVERGENT SOLUTION IS NOT OBTAINABLE
      700 WRITE(6,1000) ITR
1000  FORMAT(1H0,5X,' *** CONVERGENCE SOLUTION CAN NOT BE OBTAINED AFTE
      ITR,15,' ITERATIONS. STOP ***')
      STOP

C----- SOLVE THE PRESSURE BY MATRIX INVERSION
      DO 800 CONTINUE
      IF(NROCTN.GE.1) GO TO 840
      IBAND=2*IBAND+1
      INBP=IBAND+1

      DO 810 N=1,MODES
      DO 810 IB=1,IBAND
      C(N,IB)=0.0

C----- SET UP THE MATRIX
      DO 850 IC=1,NCONS
      KTYPC=KTYPC(IC)
      N1=NOD1(IC)
      N2=NOD2(IC)
      O1=O1C(IC)
      O2=O2C(IC)
      AREAIC=AREA(IC)
      DIST=C1+O2
      ADDIST=AREAIC/DIST
      IB=INBP
      C(N1,IB)=C(N1,IB)+ADDIST
      C(N2,IB)=C(N2,IB)+ADDIST
      IB=INBP+(N2-N1)
      C(N1,IB)=C(N1,IB)-ADDIST
      IB=INBP+(N1-N2)
      C(N2,IB)=C(N2,IB)-ADDIST
850  CONTINUE
860  CONTINUE

C----- IMPLEMENT BOUNDARY CONDITIONS
      DO 980 K=1,NCONS
      KTYPK=KTYPC(K)
      IF(KTYPK.EQ.0) GO TO 980
      N1=NOD1(K)
      N2=NOD2(K)
      UN1=UP(N1)
      VN1=VP(N1)
      WN1=WP(N1)
      UN2=UP(N2)
      VN2=VP(N2)
      WN2=WP(N2)
      ZN1=Z(N1)
      ZN2=Z(N2)
      OCSXK=OCSX(K)
      OCSYK=OCSY(K)
      OCSZK=OCSZ(K)
      VNORM1=UN1*OCSXK+VN1*OCSYK+WN1*OCSZK
      VNORM2=UN2*OCSXK+VN2*OCSYK+WN2*OCSZK
      EDDY=OMAX1(EDDX,EDDY,EDDZ)
      DIST=O1C(K) + O2C(K)
      GO TO (910,920,930,940,950),KTYPK

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ICNP1 005
 ICNP1 010
 ICNP1 015
 ICNP1 020
 ICNP1 025
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 ICNP1 035
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 ICNP1 045
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 ICNP1 445
 ICNP1 450
 ICNP1 455
 ICNP1 460
 ICNP1 465
 ICNP1 470
 ICNP1 475
 ICNP1 480
 ICNP1 485
 ICNP1 490
 ICNP1 495
 ICNP1 500

APPENDIX D (continued)

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C ----- KTYP(K) = 1 = CONNECTOR TO SOLID WALL WITH NO SLIP
C ----- KTYP(K) = 2 = CONNECTOR TO SOLID WALL WITH FREE SLIP
C ----- KTYP(K) = 3 = CONNECTOR TO NODES WITH PRESCRIBED FLOW
C ----- KTYP(K) = 4 = CONNECTOR TO NODES WITH PRESCRIBED PRESSURE
C ----- KTYP(K) = 5 = CONNECTOR TO NODES WITH CONTINUATIVE BC
C
910 PHILOD(N2)=2.0*EDYY*VNDNM1/DIST*(1.0-OPTN)
   IF(MRDCN.GE.1) GO TO 960
   GO TO 523
C
520 PHILOD(N2)=0.0
   IF(MRDCN.GE.1) GO TO 960
923 DO 925 I8=1,IBAND
525 C(N2,I8)=0.0
   C(N2,INBP)=1.0
   I8=INBP*(N1-N2)
   C(N2,I8)=-1.0
   GO TO 980
C
930 PHILOD(N2)=2.0*EDYY*(VNDNM1-VNDNM2)/DIST*(1.0-OPTN)
   NTPN2=NTYP(N2)
   IF(NTPN2.EQ.6) PHILOD(N2)=0.0
   IF(MRDCN.GE.1) GO TO 960
C
DO 935 I8=1,IBAND
535 C(N2,I8)=0.0
   C(N2,INBP)=1.0
   I8=INBP*(N1-N2)
   C(N2,I8)=-1.0
   IF(NTPN2.EQ.6) C(N2,I8)=0.0
   GO TO 980
C
940 DO 941 I=1,NGBP
   KGP(I)=KGP(I)
   IF(KGP(I).EQ.0) GO TO 943
941 CONTINUE
   STOP
943 PHILOD(N2)=GPP(I)+GPAV*ZN2 + OPTN*(UN2*UN2+VN2*VN2+WN2*WN2)*0.5
   IF(MRDCN.GE.1) GO TO 960
   DO 944 I8=1,IBAND
944 C(N2,I8)=0.0
   C(N2,INBP)=1.0
   GO TO 980
C
950 PHILOD(N2)=GPAV*ZN2 + OPTN*(UN2*UN2+VN2*VN2+WN2*WN2)*0.5
   IF(MRDCN.GE.1) GO TO 960
   DO 951 I8=1,IBAND
951 C(N2,I8)=0.0
   C(N2,INBP)=1.0
960 CONTINUE
C
C
   IF(MRDCN.GE.1) GO TO 965
   CALL SOLVE(1,C,PHILOD,NODES,IMHALF,NXN,MAXBWD)
C
565 CONTINUE
C
   CALL SOLVE(2,C,PHILOD,NODES,IMHALF,NXN,MAXBWD)
C
MRDCN=MRDCN+1
DO 990 N=1,NODES
990 PHI(N)=PHILOD(N)
C
RETURN
END

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ICNP1505
ICNP1510
ICNP1515
ICNP1520
ICNP1525
ICNP1530
ICNP1535
ICNP1540
ICNP1545
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ICNP1560
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ICNP1570
ICNP1575
ICNP1580
ICNP1585
ICNP1590
ICNP1595
ICNP1600
ICNP1605
ICNP1610
ICNP1615
ICNP1620
ICNP1625
ICNP1630
ICNP1635
ICNP1640
ICNP1645
ICNP1650
ICNP1655
ICNP1660
ICNP1665
ICNP1670
ICNP1675
ICNP1680
ICNP1685
ICNP1690
ICNP1695
ICNP1700
ICNP1705
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ICNP1775
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ICNP1785
ICNP1790
ICNP1795
ICNP1800
ICNP1805
ICNP1810
ICNP1815
ICNP1820
ICNP1825
ICNP1830

APPENDIX D (continued)

```

SUBROUTINE SOLVE(KKK,C,F,NMP,HALFB,MAXNP,MAXWB)
FUNCTION OF SUBROUTINE--TO SOLVE THE TRIX EQUATION CX = F,
RETURNING THE SOLUTION X IN R. IT IS ASSURED THAT THE ARRAY C(NP,IB)
CONTAINS THE FULL BAND OF AN ASYMMETRIC MATRIX.

IMPLICIT REAL*8 (A-H,O-Z)
DIMENSION C(MAXNP,MAXWB),R(MAXNP)

INBP=1HALFB+1

IF KKK = 1, THEN TRIANGULARIZE THE BAND MATRIX C(NP,IB), BUT
IF KKK = 2, THEN SIMPLY SOLVE WITH THE RIGHT-HAND SIDE R(NP)

IF (KKK.EQ.2) GO TO 50

TRIANGULARIZE MATRIX C(NP,IB)

NU=NMP-1HALFB
DO 20 NI=1,NU
PIVOTI=1./C(NI,INBP)
NJ=NI+1
IB=INBP
NK=NI+1HALFB
DO 10 NL=NJ,NK
IB=IB-1
A=C(NL,IB)*PIVOTI
C(NL,IB)=A
JB=IB+1
KB=IB+1HALFB
LB=INBP-IB
DO 10 NB=JB,KB
NB=LB+NB
C(NL,NB)=C(NL,NB)+A*C(NI,NB)
10 CONTINUE
NK=NU+1
NU=NMP-1
NK=NMP
DO 40 NI=NR,NU
PIVOTI=1./C(NI,INBP)
NJ=NI+1
IB=INBP
DO 30 NL=NJ,NK
IB=IB-1
A=C(NL,IB)*PIVOTI
C(NL,IB)=A
JB=IB+1
KB=IB+1HALFB
LB=INBP-IB
DO 30 NB=JB,KB
NB=LB+NB
C(NL,NB)=C(NL,NB)+A*C(NI,NB)
10 CONTINUE
RETURN

MODIFY LOAD VECTOR R(NP)

50 NU=NMP+1
IB=ND=2+1HALFB+1
DO 70 NI=2,INBP
IB=INBP-NI+1
NJ=1
SUM=0.0
DO 60 JB=IB,1HALFB
SUM=SUM+C(NI,JB)*R(NJ)
60 NJ=NJ+1
70 R(NI)=R(NI)+SUM
IB=1
NL=INBP+1
DO 90 NI=NL,NMP
NJ=NI-1HALFB+1
SUM=0.0
DO 80 JB=IB,1HALFB
SUM=SUM+C(NI,JB)*R(NJ)
80 NJ=NJ+1
90 R(NI)=R(NI)+SUM

BACK SOLVE

R(NMP)=R(NMP)/C(NMP,INBP)
DO 110 IB=2,INBP
NI=NU-1R
NJ=NI
NB=1HALFB+IB
SUM=0.0
DO 100 JB=NL,NB
NJ=NJ+1
SUM=SUM+C(NI,JB)*R(NJ)
100 R(NI)=(R(NI)-SUM)/C(NI,INBP)
NB=IBAND
DO 130 IB=NL,NMP
NI=NU-IB
NJ=NI
SUM=0.0
DO 120 JB=NL,NB
NJ=NJ+1
SUM=SUM+C(NI,JB)*R(NJ)
120 R(NI)=(R(NI)-SUM)/C(NI,INBP)
130 RETURN
END

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APPENDIX D (continued)

```

SUBROUTINE ICMUVW(U,V,W,PHI,UP,VP,WP,PHIP,DVUX,DVUY,DVUZ,
1 X,Y,Z,VOL,NTYP,D1IC,D2IC,AREA,DCSX,DCSY,DCSZ,MOD1,MOD2,KTYP,
2 NODES,NCONS,MXN,MXK,EDCX,EDDY,EDDZ,DELT,GRAV,OMGX,OMGY,OMGZ,
3 NOGF,MXGF,KGF,GUX,GUY,GWZ,NOGP,MXGP,KGP,GPR,OPTN)
C
C FUNCTION OF THE SUBROUTINE IS TO COMPUTE U, V, AND W COMPONENTS
C
C IMPLICIT REAL*8 (A-H,O-Z)
C DIMENSION U(MXN),V(MXN),W(MXN),I(MXN)
C DIMENSION UP(MXN),VP(MXN),WP(MXN),PHIP(MXN)
C DIMENSION DVUX(MXN),DVUY(MXN),DVUZ(MXN)
C DIMENSION OMX(MXN),OMY(MXN),OMZ(MXN)
C DIMENSION X(MXN),Y(MXN),Z(MXN),VOL(MXN),NTYP(MXN)
C DIMENSION D1IC(MXK),D2IC(MXK),AREA(MXK)
C DIMENSION DCSX(MXK),DCSY(MXK),DCSZ(MXK)
C DIMENSION MOD1(MXK),MOD2(MXK),KTYP(MXK)
C DIMENSION KGF(MXGF),GUX(MXGF),GUY(MXGF),GWZ(MXGF)
C DIMENSION KGP(MXGP),GPR(MXGP)
C
C ----- INITIATE THE VELOCITY COMPONENTS U, V, AND W
C
C DO 110 N=1,NODES
C   U(N)=0.0
C   V(N)=0.0
C   W(N)=0.0
C
C ----- COMPUTE THE CONTRIBUTION OF ALL CONNECTIONS TO U, V, AND W
C
C DO 150 K=1,NCONS
C   KTYPK=KTYP(K)
C   N1=MOD1(K)
C   N2=MOD2(K)
C   UN1=U(N1)
C   UN2=U(N2)
C   VN1=V(N1)
C   VN2=V(N2)
C   WN1=W(N1)
C   WN2=W(N2)
C   PHIN1=PHI(N1)
C   PHIN2=PHI(N2)
C   D1=D1IC(K)
C   D2=D2IC(K)
C   DIST=L1+D2
C   DISTI=1.0/DIST
C   UIC=(D1*UN2+D2*UN1)*DISTI
C   VIC=(D1*VN2+D2*VN1)*DISTI
C   WIC=(D1*WN2+D2*WN1)*DISTI
C   PHIC=(D1*PHIN2+D2*PHIN1)*DISTI
C   DCSXIC=DCSX(K)
C   DCSYIC=DCSY(K)
C   DCSZIC=DCSZ(K)
C   AREAIC=AREA(K)
C
C   PHIFLX=-PHIC*DCSXIC+AREAIC
C   PHIFLY=-PHIC*DCSYIC+AREAIC
C   PHIFLZ=-PHIC*DCSZIC+AREAIC
C
C   EDYV=DNAXI(EDCX,EDDY,EDDZ)
C   IF(OPTN.EQ.1) GO TO 125
C
C   DISTAI=1.0/DIST*AREAIC
C   EDYFLX=EDYV*(UN2-UN1)*DISTAI
C   EDYFLY=EDYV*(VN2-VN1)*DISTAI
C   EDYFLZ=EDYV*(WN2-WN1)*DISTAI
C   GO TO 130
C
C 125 OMXN1=OMX(N1)
C   OMGN1=OMY(N1)
C   OMZN1=OMZ(N1)
C   OMXN2=OMX(N2)
C   OMGN2=OMY(N2)
C   OMZN2=OMZ(N2)
C
C   OMXIC=(D1*OMGN2+D2*OMGN1)*DISTI
C   OMGYIC=(D1*OMZN2+D2*OMZN1)*DISTI
C   OMGZIC=(D1*OMXN2+D2*OMXN1)*DISTI
C   EDYFLX=-EDYV*(DCSYIC*OMGZIC-DCSZIC*OMGYIC)*AREAIC
C   EDYFLY=-EDYV*(DCSZIC*OMGXIC-DCSXIC*OMGZIC)*AREAIC
C   EDYFLZ=-EDYV*(DCSXIC*OMGYIC-DCSYIC*OMGXIC)*AREAIC
C
C 130 CONTINUE
C   U(N)=U(N) + PHIFLX + EDYFLX
C   V(N)=V(N) + PHIFLY + EDYFLY
C   W(N)=W(N) + PHIFLZ + EDYFLZ
C
C 140 CONTINUE
C
C ----- COMPUTE THE NEW U, V, AND W AT INTERIOR NODES
C
C DO 200 N=1,NODES
C   NTYPN=NTYP(N)
C   IF(NTYPN.EQ.0) GO TO 29C
C   DTOVOL=DELT/VOL(N)

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APPENDIX D (continued)

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      IF(OPTH.EQ.1) GO TO 225
      U(N)=UP(N)+DTQVOL*U(N) - DELT*DVVX(N)
      V(N)=VP(N)+DTQVOL*V(N) - DELT*DVVY(N)
      W(N)=WP(N)+DTQVOL*W(N) - DELT*DVVZ(N)
      GO TO 290
C
225 UPN=UP(N)
    VP=VP(N)
    WP=WP(N)
    ONGXN=ONGX(N)
    ONGYN=ONGY(N)
    ONGZN=ONGZ(N)
    U(N)=UPN+DTQVOL*U(N) + DELT*(VPN+ONGZN-WPN+ONGYN)
    V(N)=VPN+DTQVOL*V(N) + DELT*(WPN+ONGXN-UPN+ONGZN)
    W(N)=WPN+DTQVOL*W(N) + DELT*(UPN+ONGYN-WPN+ONGXN)
290 CONTINUE
C
C ----- COMPUTE U, V, AND W AT BOUNDARY NODES
C
      DO 360 K=1,NCONS
      KTPK=KTP(K)
      IF(KTPK.EQ.0) GO TO 390
      N1=MOD1(K)
      N2=MOD2(K)
C
C ----- KTP(K) = 1 = CONNECTOR TO SOLID WALL WITH NO SLIP
C ----- KTP(K) = 2 = CONNECTOR TO SOLID WALL WITH FREE SLIP
C ----- KTP(K) = 3 = CONNECTOR TO NODES WITH PRESCRIBED FLOW
C ----- KTP(K) = 4 = CONNECTOR TO NODES WITH PRESCRIBED PRESSURE
C ----- KTP(K) = 5 = CONNECTOR TO NODES WITH CONTINUATIVE BC
C
      GO TO (310,320,330,340,350), KTPK
C
310 U(N2)=0.0
    V(N2)=0.0
    W(N2)=0.0
    GO TO 360
C
320 DCSXK=DCSX(K)
    DCSYK=DCSY(K)
    DCSZK=DCSZ(K)
    UN1=U(N1)
    VN1=V(N1)
    WN1=W(N1)
    VNORM1=DCSXK*UN1+DCSYK*VN1+DCSZK*WN1
    U(N2)=UN1-DCSXK*VNORM1
    V(N2)=VN1-DCSYK*VNORM1
    W(N2)=WN1-DCSZK*VNORM1
    GO TO 360
C
330 DO 332 I=1,NOPF
    KGF1=KGF(I)
    IF(KGF1.EQ.K) GO TO 335
332 CONTINUE
C
335 U(N2)=GUX(I)
    V(N2)=GVY(I)
    W(N2)=GWZ(I)
    GO TO 360
C
340 U(N2)=U(N1)
    V(N2)=V(N1)
    W(N2)=W(N1)
    GO TO 360
C
350 U(N2)=U(N1)
    V(N2)=V(N1)
    W(N2)=W(N1)
C
390 CONTINUE
    RETURN
    END

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APPENDIX D (continued)

SUBROUTINE OUTPUT(F,NODES,MAXNOD)	OUTP 805
IMPLICIT REAL*8 (A-H,O-Z)	OUTP 810
DIMENSION F(MAXNOD)	OUTP 815
C	OUTP 820
WRITE(6,1000)	OUTP 825
LINE=0	OUTP 830
DO 100 I=1,NODES,5	OUTP 835
IWIN=I	OUTP 840
IMAX=NIN0(I+4,NODES)	OUTP 845
WRITE(6,1100) (J,F(J),J=(IWIN,IMAX)	OUTP 850
LINE=LINE+1	OUTP 855
IF(MOD(LINE,50).EQ.0) WRITE(6,1200)	OUTP 860
100 CONTINUE	OUTP 865
C	OUTP 870
1000 FORMAT(1H0///5(4X,'I',6),'F',6X)/5(4X,'-',6X,'-',6X))	OUTP 875
1100 FORMAT(1H ,5(14,1X,E12.4,3X))	OUTP 880
1200 FORMAT(1H1,///,4X,'CONTINUED'///5(4X,'I',6X,'F',6X)/5(4X,'-',6X,'-',6X),	OUTP 885
1 6X))	OUTP 890
RETURN	OUTP 895
END	OUTP 900