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ANALYSIS OF GAS TURBINE TEST CELL #1
LEMOORE NAVAL AIR STATION, CALIFORNIA

by

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The solution of the problem is presented in tabular form and the results are discussed. Recommendations for the future application of PHOENICS to this project are given.

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Analysis of Gas Turbine Test Cell #1
Lemoore Naval Air Station, California

by

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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

This thesis is a three-dimensional numerical analysis of Gas Turbine Test Cell #1 at Lemoore Naval Air Station, California. The Parabolic, Hyperbolic, or Elliptic Numerical Integration Code (PHOENICS) is used to determine the steady-state aerothermal characteristics within the test cell during the full power run-up of a GE F404 gas turbine engine (afterburner in operation). The method in which PHOENICS arrives at a solution is discussed as well as how the code was applied to this problem.

The solution of the problem is presented in tabular form and the results are discussed. Recommendations for the future application of PHOENICS to this project are given.

THESIS DISCLAIMER

The reader is cautioned that computer programs developed in this research may not have been exercised for all cases of interest. While every effort has been made, within the time available, to ensure that the programs are free of computational and logic errors, they cannot be considered validated. Any application of these programs without additional verification is at the risk of the user.

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I. INTRODUCTION

Critical in the rework and overhaul of aviation gas turbine engines is the testing of the powerplants prior to their return to flight status. This testing consists of "run-up" and engine parameter checks either in the airframe or attached to a test stand. A wide variety of test facility designs are currently used by the Navy/Marine Corps repair activities. These test facilities vary from open-air run-up pads where the aircraft is tied down during testing to more complex structures such as hush houses, which allow fully enclosed in-airframe testing and fully enclosed test cells where engines are mounted on test stands during run-up. The choice of the actual design installation is driven by several factors - among them being the number of operating personnel available, the type of powerplants to be tested, noise and pollution standards to be met, and cost and size constraints.

Until now, gas turbine test facilities have been designed and built primarily on the basis of the intuition and experience of design engineers rather than with scientific modeling and testing of proposed plans. This practice resulted in a myriad of different structures without necessarily producing the best designs. Most of these test facilities performed adequately until the emergence of the new, high powered aviation gas turbine engines. The tremendous thrust generated by these engines resulted in velocities, pressures, temperatures, noise and air pollution levels too great for the current test cells to control [Ref. 1]. A heightened public awareness of pollution and noise hazards has led to pressure to closely examine and inprove test sites. The Navy Environmental Health Center reported hearing loss claims due to excessive noise at $114 million through FY81, with a steady 9% increase annually. Also in 1981, the Federal Court decided that military jet test sites must comply with state and local regulations pursuant to Section 233 of the Clean Air Act. [Ref. 2: p. 3]

Currently there are 75 Navy/Marine Corps activities operating 76 enclosed test cells and 5 hush houses. Of the test cells, less than 80% are fully operational and two-thirds of them are at least 25 years old. An analysis conducted in FY83 concluded that costs to rehabilitate these facilities at $84 million. Considering the climbing costs of maintainance and repair of the cells, the lack of standardized designs, the safety hazards posed, and the pollution/noise problems, the Department of the Navy has

chosen to undertake a comprehensive program of research, development, testing and evaluation (RDT&E) leading to the construction of standardized test facilities at Navy/Marine Corps aviation repair activities worldwide. [Ref. 2: p. 3]

A portion of this research is the detailed analysis of the existing gas turbine test facilities. Information is needed as to the aerothermal conditions within the structure as well as the ability of the structure to contain noise and minimize pollutants. In this case the PHOENICS code, a FORTRAN-type computer program, is used to analyze the performance of Lemoore Naval Air Station Test Cell #1 during the run-up of a GE F404 gas turbine engine. A variety of physical parameters, including pressure, temperature, velocity, density, enthalpy and direction, are found using PHOENICS. This data will then be used by engineers performing the design phase of the RDT&E to identify the positive and negative features of the existing facilities.

II. PROBLEM FORMULATION

A. DESCRIPTION OF THE TEST CELL

The test cell being investigated in this thesis is formally called the Coanda/Refraction Noise Suppression System. It is one of two of this type built at Lemoore Naval Air Station, California. The cells are used in support of the overhaul of aviation gas turbines at the depot level. One of the most common engines tested at Lemoore and the one used in this project, is the GE F404. The F404 gas turbine is the powerplant for the Navy F/A-18.

In the normal maintainance cycle of the F/A-18 and when serious engine problems arise, the engines are given a major overhaul. The completion of the overhaul is marked by the successful run-up of the engine in a test cell such as the Coanda. These test cells are subject to heavy use, typically with useage in the order of several times weekly and daily when work loads are high. The test of the F404 engine lasts approximately 45 minutes, of which the final 15 minutes are at or near full power.

The Coanda-Refraction Noise Suppression System is a reinforced concrete structure which fully encloses the engine test stand. At one end, large double doors open to allow the engine to be easily moved in and out of the facility. Once in place, the engine is secured to the test cradle, the doors are closed, and the fuel, electrical, and instrumentation connections made. The engine is controlled during the test by personnel inside the control booth, an acoustically insulated compartment which also houses all monitoring and control equipment. In the test room, where the engine is located, an installed firefighting system as well as peripherals such as observation mirrors, hose reels and wash down equipment are found.

The general dimensions of the Coanda test cell are 30 meters long by 7 meters wide. The highest point of the cell, the exhaust stack, is 17 meters. The complex geometry of the Coanda cell is shown in Figure 2.1 . A single primary air inlet directs air into the cell for ingestion by the engine. This air is divided into two separate channels before turning vanes redirect the flow toward the engine intake. Two secondary air inlets entrain air for cooling of the engine exhaust gases. The forward secondary air inlet allows cooling air to be mixed with the jet blast in the ejector tube, a steel duct encircled with three intake vanes. The after secondary inlet entrains cool

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air which passes over the Coanda surface and mixes with the flow at the base of the exhaust. The mixed primary and secondary flows pass up the exhaust stack to the atmosphere. Noise attenuators are placed at the primary and secondary inlets while acoustic dampening material lines the walls of the exhaust stack. The concept of the system is depicted in Figure 2.2 . Screens cover the primary inlet in an attempt to limit the foreign matter ingested into the cell. Use of the cell after idle periods must begin with the removal of birds which tend to roost in the inlets.

B.   PROBLEMS AND QUESTIONS ABOUT THE COANDA CELL

While the Coanda test cells are currently performing adequately, there are problems associated with them. Investigation of the Coanda Test Cell #1 showed signs of moderate spalling and cracking of the concrete walls and there are reports from operating personnel of extreme vibration in the ejector tube and Coanda surface. The vibration problem has necessitated the inclusion of structural "bolt-tightening" as part of the pre-operation check-off list.

No specific complaints about excessive noise or pollutants were recorded during the on-site inspection, however, the extremely remote locale of the test cells probably limits the observation by non-interested personnel.

There is a lack of information concerning the efficiency of the Coanda test cells. While it appears that the cell is performing as designed, no physical data is available to help in confirmation. The object of this thesis was to develop physical data on the Coanda cell using purely numerical means. Three-dimensional flow velocities, pressure and temperature distribution, along with density and kinetic energy is vital information in understanding the test facility and the measure of its performance.

The approach used to achieve this numerical analysis was through the use of the PHOENICS computer code. The code, which is discussed in more detail in Chapter III, solved for the unknown physical parameters using only the conditions known to exist during the steady state operation of the cell. The information derived from this study will be used to determine which features of the Coanda cell may be useful in future test cell designs.
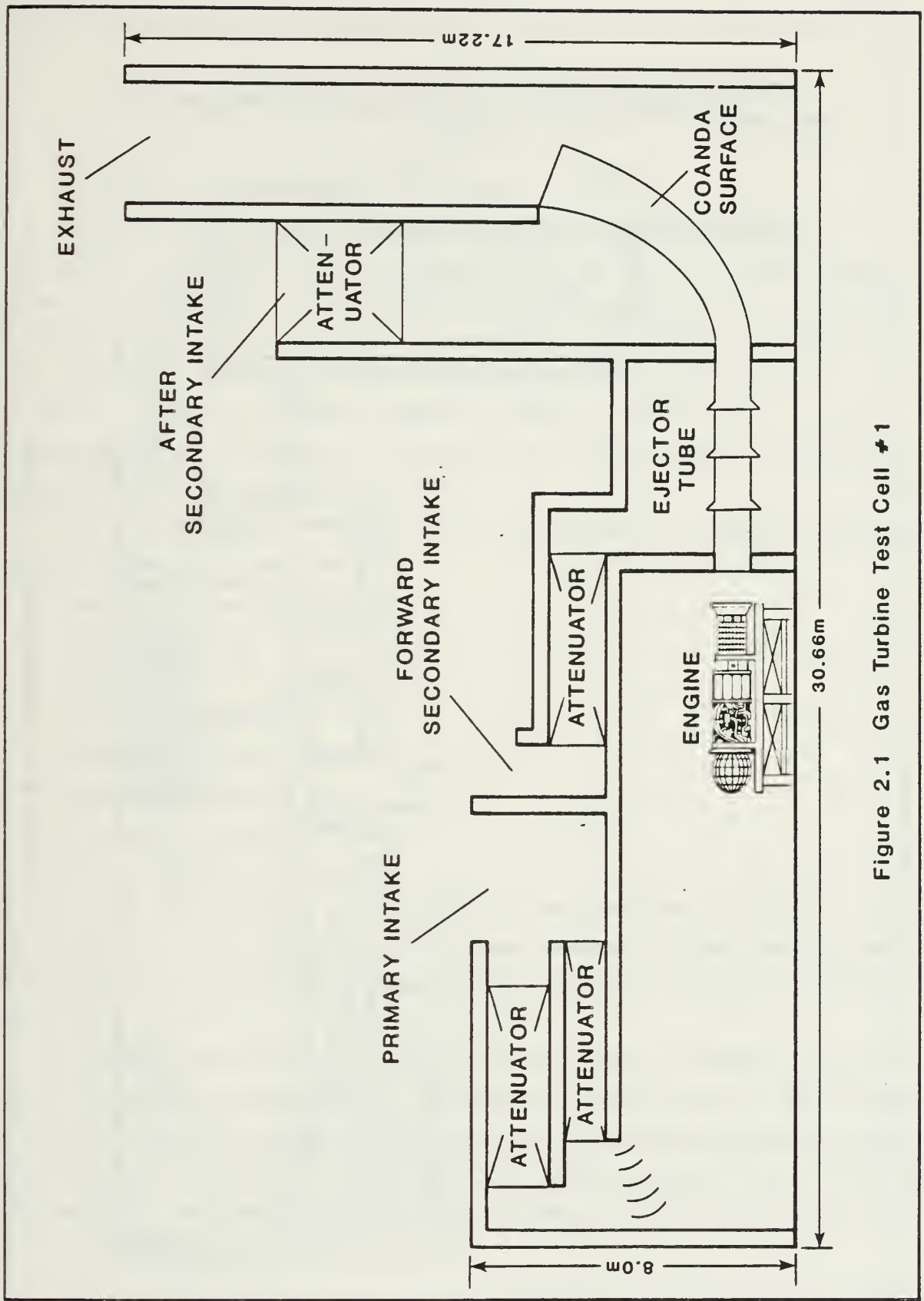
Figure 2.1 Gas Turbine Test Cell #1

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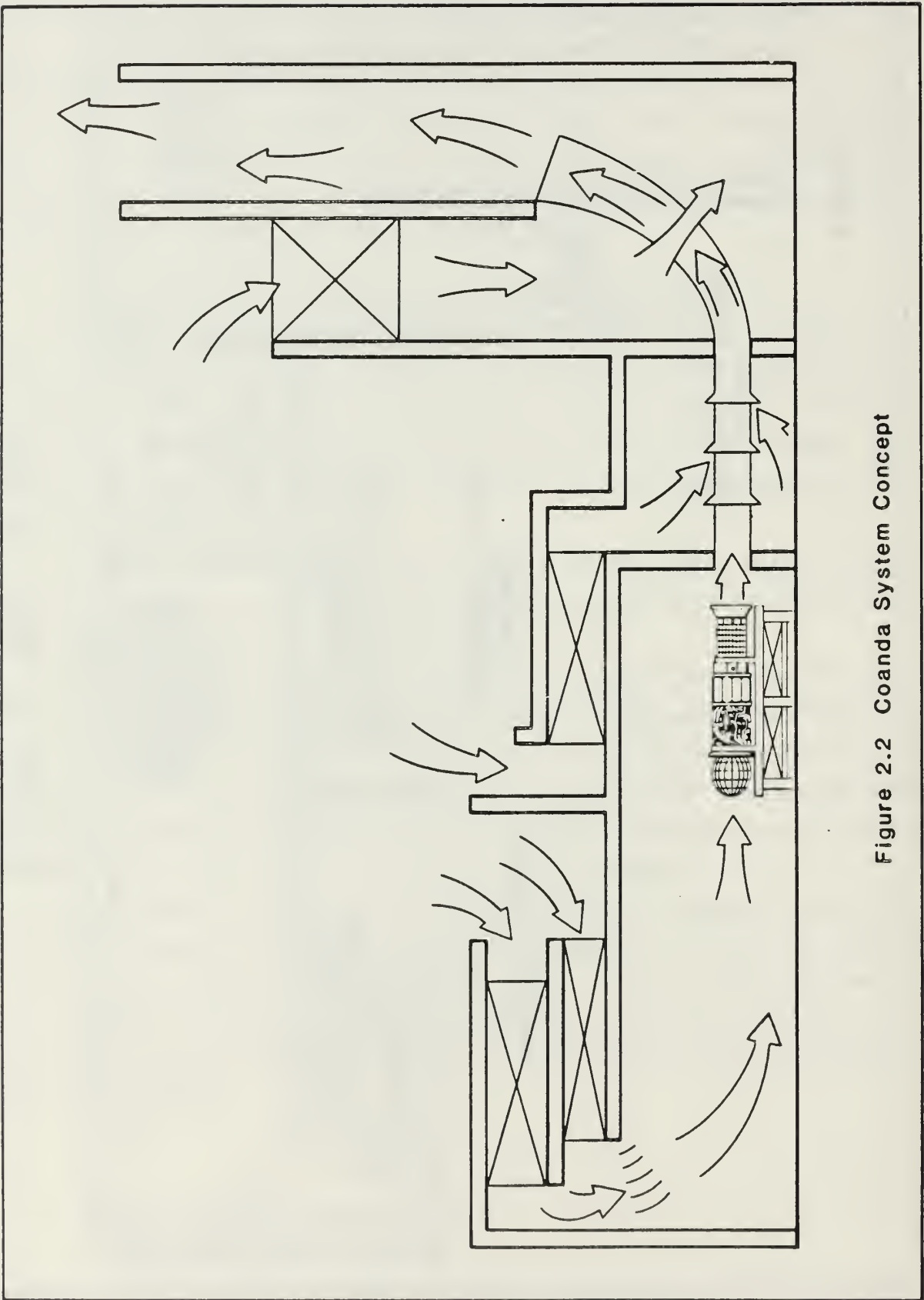
Figure 2.2 Coanda System Concept

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III. THE USE OF PHOENICS IN THE PROBLEM

A.   A BRIEF EXPLANATION OF PHOENICS

PHOENICS, the computer code used in this analysis of the Coanda test cell, is a copyrighted product from CHAM (Concentration Heat and Momentum) Limited. Cham is a software and consultancy organization founded in 1972 by D. Brian Spalding which specializes in the computer modeling of processes involving fluid flow, heat transfer, chemical reaction, and combustion. PHOENICS, which stands for Parabolic, Hyperbolic, or Elliptic Numerical Integration Code Series, is a general purpose computer code system for simulating the above processes in engineering equipment or the environment. [Ref. 3: p. 1]

The basic capabilities of PHOENICS are the simulation of fluid flow and heat transfer which are:

- one, two or three dimensional
- steady or transient
- single, two or multi-phase mixtures
- laminar or turbulent
- subsonic, supersonic, or transonic
- chemically reactive or inert
- compressible or incompressible
- parabolic, elliptic or hyperbolic

The user also has command of up to 25 dependent variables, depending on the requirements of the problem. Some of these variables include pressure, three dimensional velocity components, enthalpy, turbulence, kinetic energy, and radiation flux. [Ref. 3: p. 2]

PHOENICS can be utilized on projects of varying scales and degrees of accuracy. The code lends itself to the solution of problems of the "macro" scale as well as those of the "micro" scale. The quality of the solution is highly dependent upon the accuracy of the initial modeling and the boundary/initial conditions imposed. There is a trade-off however, a search for more accuracy usually results in more computer time and thus, more expense.

The problem to be solved is established in the "Q1" file. This file, which is created entirely by the user, defines all aspects of the problem including physical dimensions, boundary/initial conditions, grid spacing, porosities, and known values of temperature, velocity, pressure, etc. The Q1 data input file is then read and interpreted by the "SATELLITE" program into a language recognizable by EARTH, the main body of the PHOENICS code.

The method in which PHOENICS arrives at the desired quantities is through the solution of the following generalized equation which governs conservation law phenomena:

$$\frac{\partial}{\partial t}(r\rho\varphi) + \text{div}(r\rho V\varphi - r\Gamma_\varphi \text{grad}_\varphi) = rS_\varphi$$

where:

r	$\equiv$	phase volume fraction
φ	$\equiv$	dependent variable
Γ_φ	$\equiv$	exchange coefficient (laminar or turbulent)
S_φ	$\equiv$	source or sink term
ρ	$\equiv$	density
V	$\equiv$	velocity vector
t	$\equiv$	time

The users choice of the property that φ will represent determines which conservation equation the "generalized equation" will represent (i.e. continuity equation, heat transfer equation, momentum equations, etc). [Ref. 3: p. 6]

The distribution of the values in the grid is computed through a finite-domain (FED) method. This method involves the solution of a set of algebraic relationships of the following type:

$$\Phi P = \frac{a_E\Phi_E + a_W\Phi_W + a_N\Phi_N + a_S\Phi_S + a_H\Phi_H + a_L\Phi_L + a_T\Phi_T + S}{a_E + a_W + a_N + a_S + a_{11} + a_L + a_T + a_P}$$

where:

Φ	=	the dependent variable in question
P	=	the point in the grid in question
E	=	subscript indicating the cell to the EAST
W	=	subscript indicating the cell to the WEST
N	=	subscript indicating the cell to the NORTH
S	=	subscript indicating the cell to the SOUTH
H	=	subscript indicating the cell that is HIGH (above)
L	=	subscript indicating the cell that is LOW (below)
T	=	subscript indicating the earlier time value (transient only)

S and a_p express the influence of a source of the entity Φ while the "a" represents coefficients with the dimensions of mass per unit time. The values of all parameters except velocity are calculated at cell centers. The three velocity components (U,V, and W) are calculated at the cell boundaries. [Ref. 4: p. 2.5]

The solution of a grid of even a small number of cells is very complicated, with numerous, strongly coupled algebraic equations to be solved. PHOENICS uses an iterative "guess and correct" process with adjustments and hopefully, improvements, made at every iteration.

These iterations are performed in "sweeps", through any of a combination of possible schemes. These schemes, which are described in detail in the PHOENICS literature, include "slabwise", "whole-field", and "point-to-point" solutions. Correct application of any of these schemes to a specific problem will result in identical solutions, however the difference lies in computer time and storage needed for the different methods. It should be noted that certain chosen variables can be found using one scheme while other variables may be solved using a different scheme... in the same problem. The advantage of using this approach is the possible reduction of computer time needed and quicker convergence of the problem to a correct solution. [Ref. 4: p. 2.5]

Convergence (or divergence) of the solution is indicated by "residual" values given for each unknown at every sweep. These residuals will decrease as the problem progresses if convergence is occuring. PHOENICS has arrived at a solution when the residuals no longer decrease. The value of this residual may be calculated by the user using the formula described in the PHOENICS literature. It should be noted, however, that the convergence is rarely monotonic due to the strong coupling between the

unknowns and the varying speeds at which unknowns will converge. Steadily increasing residual values indicate divergence and corrective methods should be employed. These methods are also thoroughly discussed in the PHOENICS literature.

The matter of problem divergence is one which illustrates that the successful use of PHOENICS is highly dependent upon experience and a "feel" for the behavior of the code in a given situation. One of the more powerful tools used in controlling divergence is the RELAX command. Relaxation placed on a dependent variable controls its variation in consecutive sweeps, thereby limiting the possibility of divergence to an excessively large or small value. Smaller RELAX values result in smaller variation, with very small values effectively "freezing" the value. At this point it becomes apparent that if the RELAX values are too large, divergence will continue while if the values are too small, convergence will require excessive computer time.

For problems of moderate size and larger, the EARTH program requires considerable computer time to run. The complexity of the computations, and size of the problem dictate the actual time required. Data from successful runs is stored in a "DF09" file which is extremely useful as a starting point for subsequent runs, or "restarts." Depending upon the definition of the problem, PHOENICS may require several hundreds or thousands of sweeps to achieve convergence.

Typically, the routine followed using the PHOENICS code was one of the submission of overnight runs in the order of 250-300 sweeps. The results were reviewed the following morning and any adjustments to the code were made. Depending on the size of the code and the complexity of the problem, a few small runs of 50 sweeps could be made during the day. The submission of large runs, however, was not possible until the next "night-time rate" was available. This routine was followed until the convergence of the problem was achieved.

B. MODELING OF THE PROBLEM USING PHOENICS

The modeling of the test cell began with an analysis of the physical dimensions of the structure. The blueprints were used to accurately determine the size and shape of the cell as well as the position of the engine test stand and other internal features. On site inspection of the facility revealed those aspects, such as clearances and complex surface shapes, that were not readily apparent from the blueprints. The next step in the understanding of the physical geometry of the problem was the representation of the structure on a cartesian coordinate system. The cell was carefully redrawn to scale and divided into appropriate subdivisions in the X,Y and Z directions. Since the

PHOENICS code uses the SI system of measurement, all lengths and parameters had to be converted from the english system. Lengths were converted with an accuracy of 0.001 meters. Geometric shapes were approximated as accurately as possible, with deviations in situations such as square vice rounded corners and rectangular vice elliptical tunnels, etc. The centerline of the test cell was used as a line of symmetry and the model was constructed so that only half the actual test cell was modeled. This technique allowed a large reduction in the computer code needed for the model.

The structure was modeled in the PHOENICS code by setting boundaries and conditions in the "Q1" file. Statements in this file describe the physical dimensions and the known boundary conditions. It should be noted that PHOENICS considers any known value within the problem to be a "boundary condition". The established cartesian coordinate system was used to precisely describe the relative positions of the walls, deck, openings, and "patches" where particular conditions are known to exist. The Z-axis was oriented along the major flow direction, as suggested by CHAM. For the model analyzed in this thesis, the number of cells in the X,Y, and Z directions were 6, 16 and 19, respectively. Grid size was determined by three factors: test cell geometry, problem complexity, and program storage dimension available.

An overlay of the grid onto the cell diagram is shown in Figures 3.1 and 3.2. In these figures, it is readily apparent that structures within the cell dictated the absolute minimum number of grid spacings required. This is due to the fact that test cell boundaries, structures and conditions must be described in terms of whole number values in the coordinate system.

In an attempt to limit problem complexity, structures such as turning vanes, noise attenuators, the test stand, and various other obstructions within the test cell were omitted from the problem. Structures such as the ejector tube and Coanda surface were greatly simplified, as were geometric shapes such as circles and ellipsoids. Where possible these more complicated shapes were replaced with flat, square, or rectangular shapes.

The driving factor behind the grid dimension was storage space available in the PHOENICS code itself. Since all surfaces and known conditions must be identified with either a "PATCH" or "CONPOR" statement, the complex geometry of the Coanda cell required a quite lengthy "Q1" file. The PHOENICS code, as currently installed at the Naval Postgraduate School, has a limit of 100 PATCH statements available. This dimension of 100 is divided among all PATCH and CONPOR
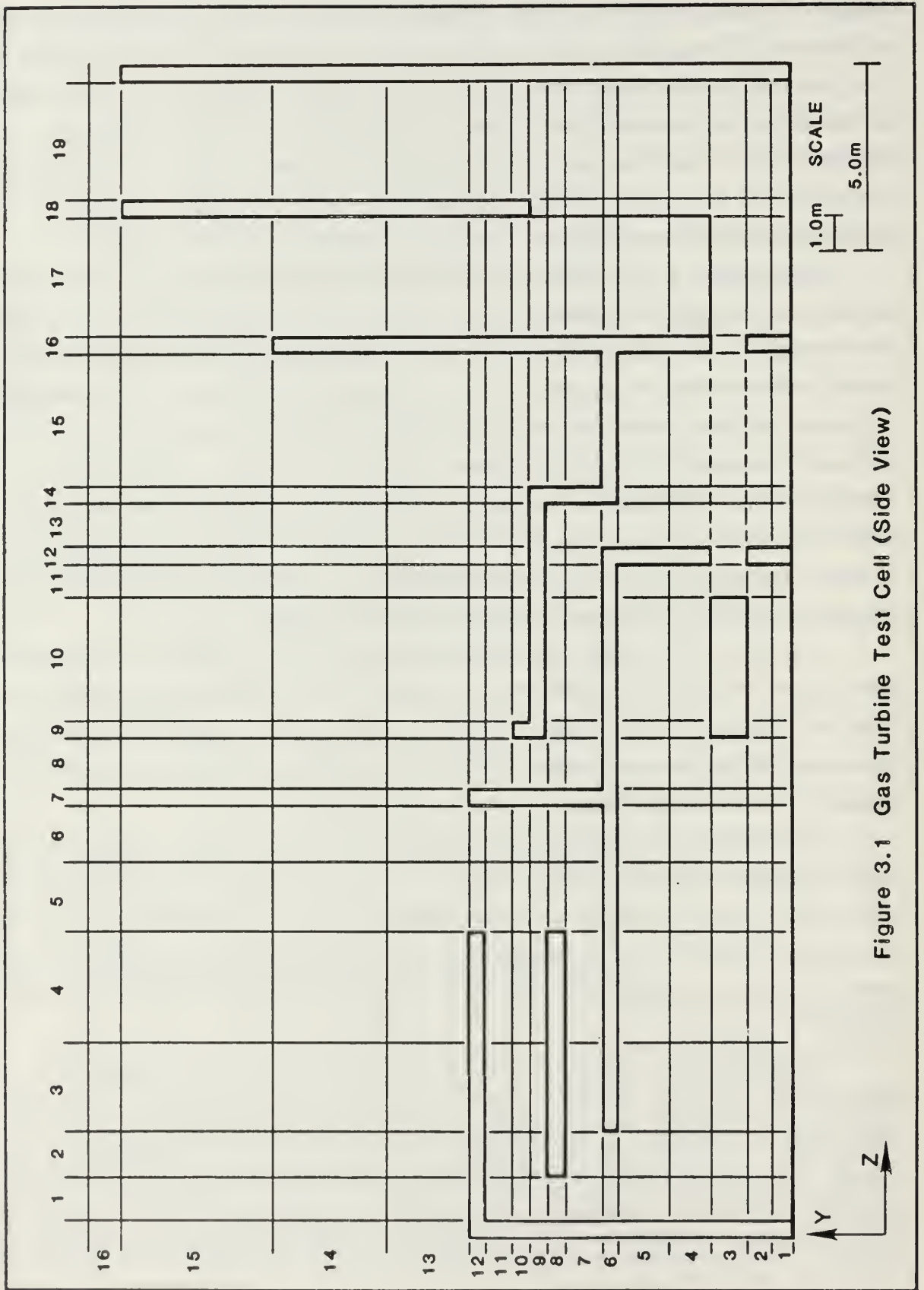
Figure 3.1 Gas Turbine Test Cell (Side View)

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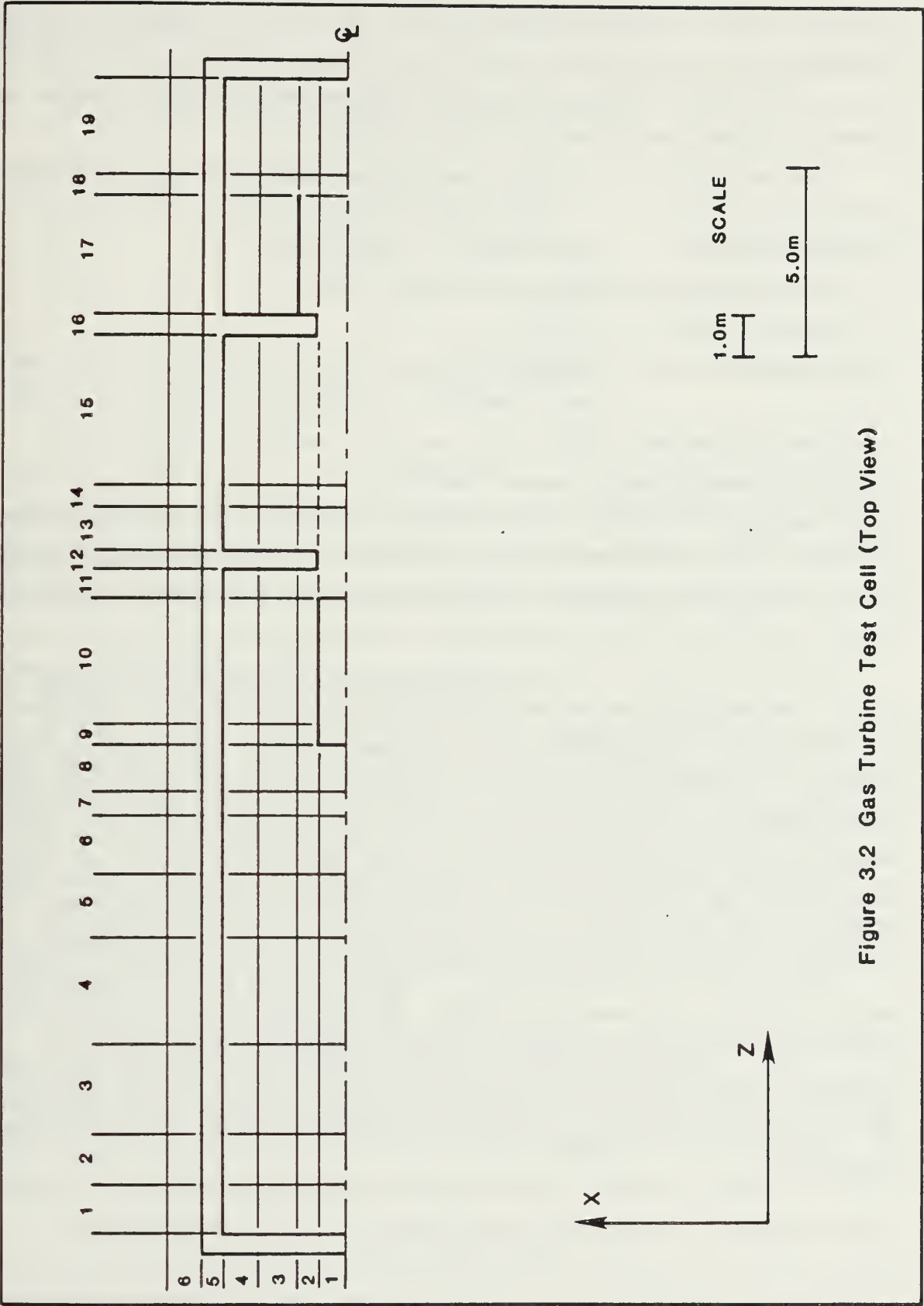
Figure 3.2 Gas Turbine Test Cell (Top View)

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statements, with a CONPOR roughly equal to six PATCH statements in storage requirements. A grid definition finer than the one used in this problem or the inclusion of some of the omitted structures listed above, would exceed the storage dimension and prevent the successful use of the code.

With these factors in mind, the problem was established using the following boundary conditions:

- ambient pressure   101325 Mb
- ambient temperature   295 K
- mass flow (engine)   175 kg/sec
- gas constant   286 $m^2/(sec^2 K)$
- c_p 1004 $m^2/(sec^2 K)$
- jet blast temperature   2000 K
- "no slip" boundary condition on all surfaces

These conditions were used in various places in the "Q1" file to define the physical parameters of the cell during operation. The final form of the Q1 file used in this problem is presented in Appendix A. Specific statements in the Q1 file are described in detail in the PHOENICS user manual [Ref. 4].

Initially the problem was solved without the use of the PHOENICS "turbulence model" in an attempt to achieve more rapid convergence to a solution. This laminar problem solved for the dependent variables pressure, enthalpy, and the three velocity components. Only after convergence was achieved was the more complex turbulence model invoked and the process repeated. The turbulent model solved for the five variables previously mentioned, plus kinetic energy and epsilon. Due to the extreme complexity of the model when the turbulence model is used, it was found that convergence was highly unlikely unless this laminar-turbulent routine was followed.

The turbulence model used was the "KEMODL," one of several models available through PHOENICS. By invoking KEMODL, the k-ε turbulence model is added to the problem. Two additional dependent variables, turbulence kinetic energy (k) and turbulence kinetic energy dissipation rate (ε), are solved. The turbulence calculations are governed by the following equations for turbulent viscosity and mixing length, respectively:

$$v_t = C_\mu k^{(1/2)} l_m$$

$$l_m = C_D k^{(3/2)}/\varepsilon$$

where

$$v_t \qquad\qquad = \text{turbulent viscosity}$$
$$C_\mu \qquad\qquad = \text{viscosity constant}$$
$$k \qquad\qquad = \text{turbulence kinetic energy}$$
$$l_m \qquad\qquad = \text{turbulence mixing length}$$
$$C_D \qquad\qquad = \text{dissipation constant}$$
$$\varepsilon \qquad\qquad = \text{kinetic energy dissipation rate}$$

These equations, which have been developed to model a variety of turbulent flow situations, are thoroughly described in [Ref. 5: p.91].

The problem was solved using the MVS batch system of the IBM 3033 mainframe at NPS. Due to the size of the Coanda problem, all runs of over 75 consecutive sweeps were performed overnight using the appropriate class code. Due to the fact that PHOENICS writes over data stored in the DF09 file during each run, DF09 data was transferred to long term disk storage backup after each successful run in order to protect the vital restart data.

C. MAJOR ASSUMPTIONS IN THE MODEL

Several major assumptions were made in the modeling of this problem. The first major assumption was in the area of geometrical approximation. The two most noteworthy of these approximations were in the modeling of the Coanda surface and the ejector tube. The curved Coanda surface was modeled as a right angle, the sides of which connect the exit of the ejector tube and the bulkhead between the exhaust and the after secondary inlet. The ejector tube, which in reality is a duct of complex geometry with cooling inlets along its length, was replaced by a simpler rectangular cross-section duct with a porous surface.

It was assumed that the deletion of the acoustic attenuators, turning vanes, and interior obstructions would have minimal effects on the general quality of the results. Also neglected were structures such as the supports for the Coanda surface and the test stand. These items, while altering the aerothermal conditions to a certain extent, are thought to play a minimal role in the overall performance of the test facility.

The other assumption which merits discussion here concerns the question of grid cell size. As previously discussed, problem definition was driven by test cell geometry and limitations imposed by the dimensions within the code. The initial strategy of the

research was to solve the problem using a coarse grid and then enhance the solution through the use of a fine grid, time permitting. The limitations on problem size in the current PHOENICS installation and complexity of the problem along with the limited time available for thesis research prevented the establishment of the fine grid model. While the grid cell size finally used in the problem is somewhat coarse, the assumption was made that an adequate solution could be obtained and later refined with a fine grid after the PATCH limitations of the PHOENICS code are expanded.

IV. DISCUSSION OF THE RESULTS

A. OBTAINING A FINAL SOLUTION

As briefly mentioned in Chapter III, the solution of the problem was obtained by first using a laminar model, followed by a restart using the turbulent model. The laminar model, which solved for pressure, enthalpy, and the three velocity components, was run until convergence was achieved. RELAX commands were used on pressure and the three velocities in an effort to force quicker convergence. When appropriate relaxation values were given, the problem converged in approximately 1000 sweeps.

The turbulent model was then invoked by inserting several additional commands into the Q1 file. The significance of these commands is discussed in the PHOENICS literature. Using the five parameters (P,H,U,V,W) solved for in the laminar model as the data for a restart, the turbulent model was run.

Initially, the increased complexity of the turbulent problem led to the divergence of the solution. The RELAX values had to be adjusted in order to insure convergence. The most difficult properties to contain in the turbulent model were enthalpy and kinetic energy. Even when the divergence was stopped, the problem was very slow to converge to a solution. The addition of two additional properties by the turbulent model, kinetic energy and epsilon, caused the computer time to increase drastically. Frequently, only 50 sweeps could be obtained in a 15 minute (NPS Class = G) time frame. Overnight runs of 60 minutes (NPS Class = J) would allow only 250 sweeps.

The turbulent model converged in approximately 2500 sweeps after the restart from the laminar data. It should be noted however, that the sweeps were not taken in consecutive runs. Alterations to the Q1 file were required between runs in order to insure that PHOENICS continued to converge to a solution. Convergence was judged to have occurred when the residuals varied only slightly over a series of sweeps and the mass balance was satisfied. The final 50 sweeps taken in the turbulent model are presented in Appendix B. The output begins with information as to the grid spacing, values to be solved for, and properties defined in the Q1 file. The residuals for each sweep of the problem are then given, indicating the condition of the solution. The values within the test cell are given by "ZSLAB," with each ZSLAB corresponding to a Z coordinate in the model. Values for the Y positions in each slab are labeled as

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"IY = " while the X position is indicated by the column number. The centerline of the test cell is column 1 (IX = 1). The tabular data should be used in association with Figures 3.1 and 3.2, which indicate the location of each of the grid cells.

B.   COMPARISON OF THE SOLUTION WITH EXPECTED RESULTS

In general, the solution of the problem was found to be in agreement with expected results. The direction of flow within the test cell as well as the temperature and pressure distributions were generally found to be within conceivable limits. Comparison of the PHOENICS output in Appendix B with Figures 2.2, 3.1 & 3.2 shows the correlation between the model solution and the test cell concept. Figure 4.1 shows values obtained at selected points and how they compare with the test cell concept presented in Figure 2.2. This comparison is for flow direction only, since no numerical field data was available for a quantitative comparison.

REGION	PRIMARY DIRECTION	COMPARISON
Primary Inlet	W = -6.5 m/s	agrees
Forward Secondary Inlet	W = 15.1 m/s	agrees
After Secondary Inlet	V = 9.5 m/s	disagrees
Exhaust	V = 28 m/s	agrees
Test Room	W = 14 m/s	agrees
Ejector Tube	W = 106 m/s	agrees

Figure 4.1   Comparison of Flow Direction between Results and Concept.

As indicated by the data, the flow directions within the cell roughly coincide with the Coanda concept. The major difference lies in the after secondary inlet. The concept of the Coanda test cell is that cool secondary air in inducted through the after secondary inlet and mixes with the hot exhaust gases below the Coanda surface. This mixture then passes up the exhaust stack and out of the test cell. The results of the model show, however, that the flow in the after secondary inlet is out of the cell. Throughout the modeling of the test facility, this failure of the after secondary inlet has

persisted. It is unclear at this time whether this anomaly is a problem with the test cell design or is a problem with the modeling of the facility. A closer investigation is certainly warranted in this area.

While the actual magnitudes of the values within the cell are unknown, it is a safe assumption that the model failed in the region of the engine exhaust. The values of temperature and velocity (938 °K and 287 m/s respectively) are lower than those expected. These properties, which will be discussed in the next section, were found to have decreased significantly when the turbulent model was invoked. It should be noted however, that even though the values are low, the general flow pattern generated by the solution is considered to be relatively accurate.

The magnitudes of the properties in other regions of the test cell will undoubtedly change when the engine region problem is corrected. It was found that the solution of the entire problem changes drastically as the result of the altering of these key values. An attempt was made to dictate the precise conditions at the exhaust of the engine after the problem had converged, and the result was disastrous. Basically, the entire problem would have had to been completely reworked, beginning with the laminar solution... a prospect that a lack of adequate time prohibited.

C.   COMPARISON OF LAMINAR AND TURBULENT SOLUTIONS

The successful completion of a laminar model was a necessary step in the solution of the problem. While the the problem is most certainly a turbulent one, the simpler laminar case was used to provide "ball-park" values for the restart of the turbulent model. As shown in Figure 4.2, the results of the laminar and turbulent models varied considerably. In both cases, the flow behavior generally followed the expected result, however the magnitudes of the properties were different. In the laminar model, the values around the engine were particularly good, with velocities and temperatures close to those expected from the F404 engine. Other values, however, did not seem to agree with the information gathered during the on-site inspection. The test cell rear wall temperature, for example, was found to be 1836 °K in the laminar model while test personnel reported the wall only warm to the touch immediately after engine shut-down. The turbulent model, on the other hand, gave believable values for the rear wall temperature while producing poor values in the vicinity of the engine exhaust.

While the cause for these differences is not precisely known, it is thought to arise from the large grid cell sizes taken in the model. Due to the nature of turbulence, particularly in the extremely violent conditions at the exhaust of the engine and ejector

LOCATION	PROPERTY	LAMINAR	TURBULENT
engine inlet	T ($^\circ$K)	312 K	295 K
	ΔP	-1202 MPa	-1453 MPa
	velocity(W)	175 m/s	175 m/s
engine exhaust	T ($^\circ$K)	2000 K	938 K
	ΔP	4377 MPa	12100 MPa
	velocity(W)	745 m/s	287 m/s
test cell rear wall	T ($^\circ$K)	1836 K	482 K
test cell exhaust	T ($^\circ$K)	361 K	447 K
	velocity(V)	109 m/s	20 m/s

Figure 4.2   Values at Key Locations in the Test Cell.

tube, the scale of the grid must be made smaller in order to capture the phenomenon. In this model, the dimension of the first grid cell after the engine exhaust was 1 meter in the Z direction. A more accurate solution might have arisen had this single grid cell been divided into several smaller cells. This concept of smaller grid sizes would probably yield better results at not only the engine region, but at any region of extreme turbulence, pressure, or temperature. While PHOENICS gives general guidance as to the final grid size, the establishment of the final grid is basically a "trial and error" procedure in an attempt to find a grid independent solution [Ref. 4: p.8.11].

The solution presented is considered to be a good starting point for further investigation of the Coanda test cell. While the quality of some of the magnitudes in the solution are questionable, the basic concept of the test cell seems to be well represented and therefore indicates the ability of PHOENICS to solve the problem. The obviously erroneous data which was generated in the engine exhaust region is considered to be a local problem within the cell solution, and is not indicative of the failure of the code to obtain results elsewhere in the problem. While the poor results in the engine region do affect the results "downstream", the properties "upstream" seem to have remained virtually unaffected. Even though some of the data in the laminar solution initially appears more accurate, the true values of the solution will undoubtedly be derived from the turbulent solution after the correction of the engine exhaust problem.

V. SUMMARY AND RECOMMENDATIONS

A.   A SUMMARY OF THE PROJECT

In an effort to analyze the performance and determine the design effectiveness of Gas Turbine Test Cell #1, Lemoore NAS, California, a numerical analysis of the operating parameters was performed using the Parabolic, Hyperbolic, or Elliptic Numerical Integration Code Series (PHOENICS). The project involved the on-site inspection of the facility, modeling of the test cell, and the utilization of the code to determine the physical conditions within the cell during the full power run-up of a GE F-404 gas turbine engine. The analysis was first performed using a laminar model of the test cell, followed by the "restart" of the code with a turbulence model invoked. Data was generated in tabular format. This data, in conjunction with the grid model diagram, gives the user insight into the aerothermal characteristics of the Coanda Test Cell.

The results gained through PHOENICS were generally good, with the model roughly replicating the expected results. Obvious errors did occur, however, in the region of the engine exhaust and ejector tube following the introduction of the turbulence model. This problem is thought to have resulted from a coarse grid cell size in regions of extreme turbulence, temperature and/or pressure.

The flow within the model differed from the expected result in the after secondary inlet. Instead of indicating the induction of secondary cooling air through the inlet, the model indicated that air was flowing the opposite direction and exiting the cell. Currently, it is not known if this difference is due to modeling error or a design error in the test cell. This matter warrants further investigation.

B.   RECOMMENDATIONS FOR FURTHER RESEARCH

From the groundwork laid by this thesis, it is apparent that the PHOENICS code is a useful tool in the solution of the problem. Several changes to both the model and the installation of PHOENICS at NPS should be made prior to continuing work on the numerical simulation of Lemoore Test Cell #1. It is believed that the model presented here will produce better results if the following alterations are made.

1. **Improvements to PHOENICS at NPS**

Overall, PHOENICS performed well during the course of the research. It should be noted however, that some limitations in the code as it is currently installed at NPS did cause some difficulties. The dimensions limiting the maximum allowable number of PATCH and CONPOR statements should be increased from the current value of 100 to at least 250. This change would allow a more accurate definition of complex problems such as the Coanda test cell. With the option of using more PATCH and CONPOR statements, many more boundary conditions could be established within a relatively coarse grid or a much finer grid with associated boundary conditions could be used. Either option would undoubtedly lead to an improved solution.

In addition to the dimension change, the PHOTON graphics option of PHOENICS should be made available. The ability to produce a graphic representation of the physical conditions within the problem would be an invaluable asset.

2. **Improvements to the Coanda Model**

The most obvious improvements to the Coanda model are in the area of grid size. Grid cells should be made much smaller in the engine exhaust region, the ejector tube, all inlets and around the Coanda surface. This reduction could be achieved in several ways, the most apparent of which is the redefinition of the problem with a different grid spacing. The difficulty in problem redefinition lies in the fact that the establishment of a revised grid system is very complicated and time consuming. Another approach, which might allow for the current grid to be used, would be through the use of "sub-models" over regions of special interest. The results of these sub-models could then be reinserted into the original test cell model as boundary conditions. In addition to eliminating the need for the complete rework of the test cell problem, this method may reduce computer run times and bypass the need for PHOENICS code dimension alteration.

Additional field data would also greatly enhance the ability of the model to more accurately determine the conditions within the test cell. Values such as the mass flow at each inlet and the exhaust, pressures and temperatures at critical points within the cell, more specifics about the engine performance, and information on areas of recirculation could be inserted as boundary conditions into the current model. The establishment of these additional boundary conditions would help to insure that PHOENICS is converging to the most realistic solution possible.

C. CONCLUSION

This thesis produced results which represent a foundation on which the completion of the project can be based. The results obtained indicate the successful modeling of the gas turbine test facility and suggest ways in which PHOENICS may be more effectively used in the completion of this problem and in the solution of others. With relatively minor changes to the current model of the test facility, accurate values for the aerothermal conditions within the cell may be obtained.

Judging form the results obtained to date, the Coanda test cell performs as it was intended to perform. Questions arise however, concerning the effectiveness of the Coanda surface and the after secondary inlet. Closer examination of these regions should reveal the actual conditions present during test cell operation.

APPENDIX A
THE PHOENICS Q1 FILE

```
TALK=F;RUN(1,1)
    *
    ****************************************************************
    ****************************************************************
    ***                                                        ***
    ***           LEMOORE TEST CELL #1 (COANDA TYPE)           ***
    ***                                                        ***
    ***                    COARSE GRID                         ***
    ***                  TURBULENT MODEL                       ***
    ***                                                        ***
    ****************************************************************
    ****************************************************************
    *
    GROUP1:  TITLE
    *
TEXT(COANDA RUN # 3 ; COARSE GRID)
    *
REAL(WJET,MJET,TJET,PJET,RHOJET,HJET,GASCON,CSUBP,TAMB,WIN)
REAL(KEINJ,EPINJ,KEINA,EPINA)
    GROUP2:  STEADY/TRANSIENT
STEADY =T
    *
    GROUP3:  X DIRECTION GRID
    *
NX= 6
XFRAC(1)=-1. ; XFRAC(2)=0.5
XFRAC(3)= 1. ; XFRAC(4)=1.41
XFRAC(5)= 2. ; XFRAC(6)=0.685
XFRAC(7)= 1. ; XFRAC(8)=0.305
XFRAC(9)= 1. ; XFRAC(10)=1.0
    *
    GROUP4:  Y DIRECTION GRID
    *
NY = 16
YFRAC(1)=-1. ; YFRAC(2)= 0.15
YFRAC(3)= 1. ; YFRAC(4)= 0.815
YFRAC(5)= 1. ; YFRAC(6)= 1.00
YFRAC(7)= 1. ; YFRAC(8)= 0.820
YFRAC(9)= 1. ; YFRAC(10) = 1.19
YFRAC(11)=1. ; YFRAC(12) = .305
YFRAC(13)=1. ; YFRAC(14) = 1.52
YFRAC(15)=1. ; YFRAC(16) = 0.305
YFRAC(17)=1. ; YFRAC(18) = 0.305
YFRAC(19)=1. ; YFRAC(20) = 0.835
YFRAC(21)=1. ; YFRAC(22) = 0.460
YFRAC(23)=1. ; YFRAC(24) = .305
YFRAC(25)=2. ; YFRAC(26) = 2.78
YFRAC(27)=1. ; YFRAC(28) = 3.66
YFRAC(29)=1. ; YFRAC(30) = 1.00
    *
    GROUP5:  Z DIRECTION GRID
    *
NZ = 19
ZFRAC(1) = -2. ; ZFRAC(2) = 1.22
ZFRAC(3) =  2. ; ZFRAC(4) = 2.44
ZFRAC(5) =  2. ; ZFRAC(6) = 1.78
ZFRAC(7) =  1. ; ZFRAC(8) = 0.305
ZFRAC(9) =  1. ; ZFRAC(10)= 1.37
ZFRAC(11)=  1. ; ZFRAC(12)= 0.305
ZFRAC(13)=  1. ; ZFRAC(14)= 3.615
ZFRAC(15)=  1. ; ZFRAC(16)= 1.00
```

```
ZFRAC(17)=   1. ; ZFRAC(18)= 0.305
ZFRAC(19)=   1. ; ZFRAC(20)= 1.22
ZFRAC(21)=   1. ; ZFRAC(22)= 0.305
ZFRAC(23)=   1. ; ZFRAC(24)= 3.68
ZFRAC(25)=   1. ; ZFRAC(26)= 0.457
ZFRAC(27)=   1. ; ZFRAC(28)= 3.0
ZFRAC(29)=   1. ; ZFRAC(30)= 0.457
ZFRAC(31)=   1. ; ZFRAC(32)= 3.0
    *
    GROUP6:  BODY FITTED COORDINATES
    GROUP7:  VARIABLE SOLUTION, STORAGE & NAME
    *
SOLVE(P1,H1,U1,V1,W1)
SOLUTN(P1,Y,Y,Y,N,N,N)
SOLUTN(H1,Y,Y,Y,N,N,N)
SOLUTN(U1,Y,Y,N,Y,N,N)
SOLUTN(V1,Y,Y,N,Y,N,N)
SOLUTN(W1,Y,Y,N,Y,N,N)
STORE(RHO1,TMP1)
    *
    GROUP8:  TERMS IN EQUATIONS
    GROUP9:  PHYSICAL PROPERTIES OF MEDIUM
    *
TAMB = 295.
TJET = 2000.
PJET = 0.
MJET = 175.
PRESS0 = 101325.
RHO1A = 0.
GASCON = 286.
RHO1B = 1./GASCON
RHOJET = (PRESS0 + PJET)* RHO1B/TJET
WJET = MJET/RHOJET
TMP1A = TINY
CSUBP = 1004.
TMP1B = 1./CSUBP
HJET = CSUBP * TJET
TMP1 = GRND2
RHO1 = GRND5
DRH1DP = GRND5
ENUL = 1.E-05
    ENUT = 200. * ENUL
WIN= MJET/1.0
    *
TURMOD(KEMODL)
STORE(VIST)
KEINA = 0.5 * (0.005*WJET)**2
EPINA = 0.09 * KEINA **1.5/(0.1)
    *
    GROUP10: INTERPHASE PROCESSES
    GROUP11: INITIAL VALUES
    *
FIINIT(DEN1) = 1.0
FIINIT(KE) = KEINA
FIINIT(EP) = EPINA
    *
PATCH(WINIT,INIVAL,1,2,2,4,8,19,1,1)
INIT(WINIT,W1,0.0,0.2*WJET)
INIT(WINIT,H1,0.0,CSUBP*0.2*TJET)
INIT(WINIT,KE,0.0,KEINJ*0.2)
INIT(WINIT,EP,0.0,EPINJ*0.2)
    *
    *** INSURE THAT RESTART VARIABLES MATCH THOSE CURRENTLY STORED ***
    *** IN THE DF09 FILE...
    *
RESTRT(ALL)
    GROUP12: ADJUSTMENT TO FLUXES
    GROUP13: BOUNDARY CONDITIONS
    *
    *
```

```
*****************************************************************
*****                                                     *****
*****           ESTABLISHMENT OF PHYSICAL DIMENSIONS        *****
*****                                                     *****
*****************************************************************
*
                        *** TEST CELL DECK ***
*
PATCH(DECK,SWALL,1,4,1,1,1,19,1,1)
COVAL(DECK,U1,GRND2,0.0)
COVAL(DECK,W1,GRND2,0.0)
COVAL(DECK,KE,GRND2,GRND2)
COVAL(DECK,EP,GRND2,GRND2)
*
                        *** TEST CELL FRONT WALL ***
*
PATCH(FRONT,LWALL,1,4,1,11,1,1,1,1)
COVAL(FRONT,U1,GRND2,0.0)
COVAL(FRONT,V1,GRND2,0.0)
COVAL(FRONT,KE,GRND2,GRND2)
COVAL(FRONT,EP,GRND2,GRND2)
*
                        *** PRIMARY INLET TOP ***
*
PATCH(PRITOP,NWALL,1,4,11,11,1,4,1,1)
COVAL(PRITOP,U1,GRND2,0.0)
COVAL(PRITOP,W1,GRND2,0.0)
PATCH(PRIROOF,SWALL,1,4,13,13,1,4,1,1)
COVAL(PRIROOF,U1,GRND2,0.0)
COVAL(PRIROOF,W1,GRND2,0.0)
PATCH(PRIEND,LWALL,1,4,12,12,5,5,1,1)
COVAL(PRIEND,U1,GRND2,0.0)
COVAL(PRIEND,V1,GRND2,0.0)
*
                        *** PRIMARY INLET DIVIDER ***
*
PATCH(PIDTOP,SWALL,1,4,9,9,2,4,1,1)
COVAL(PIDTOP,U1,GRND2,0.0)
COVAL(PIDTOP,W1,GRND2,0.0)
PATCH(PIDBOT,NWALL,1,4,7,7,2,4,1,1)
COVAL(PIDBOT,U1,GRND2,0.0)
COVAL(PIDBOT,W1,GRND2,0.0)
PATCH(PIDLFT,HWALL,1,4,8,8,1,1,1,1)
COVAL(PIDLFT,U1,GRND2,0.0)
COVAL(PIDLFT,V1,GRND2,0.0)
PATCH(PIDRGT,LWALL,1,4,8,8,5,5,1,1)
COVAL(PIDRGT,U1,GRND2,0.0)
COVAL(PIDRGT,V1,GRND2,0.0)
PATCH(PRIINB,SWALL,1,4,7,7,3,6,1,1)
COVAL(PRIINB,U1,GRND2,0.0)
COVAL(PRIINB,W1,GRND2,0.0)
*
                        *** TEST ROOM OVERHEAD ***
*
PATCH(TROVHD,NWALL,1,4,5,5,3,11,1,1)
COVAL(TROVHD,U1,GRND2,0.0)
COVAL(TROVHD,W1,GRND2,0.0)
PATCH(TRLFT,HWALL,1,4,6,6,2,2,1,1)
COVAL(TRLFT,U1,GRND2,0.0)
COVAL(TRLFT,V1,GRND2,0.0)
*
                *** PRIMARY/FORWARD SECONDARY INLET DIVIDER ***
*
PATCH(INFLOW1,LWALL,1,4,9,11,5,5,1,1)
COVAL(INFLOW1,W1,FIXVAL,-6.5)
PATCH(INFLOW2,LWALL,1,4,7,7,5,5,1,1)
COVAL(INFLOW2,W1,FIXVAL,-6.5)
*
PATCH(PFSIDL,HWALL,1,4,7,12,6,6,1,1)
COVAL(PFSIDL,U1,GRND2,0.0)
```

32

```
COVAL(PFSIDL,V1,GRND2,0.0)
PATCH(PFSIDT,SWALL,1,4,13,13,7,7,1,1)
COVAL(PFSIDT,U1,GRND2,0.0)
COVAL(PFSIDT,W1,GRND2,0.0)
PATCH(PFSIDR,LWALL,1,4,7,12,8,8,1,1)
COVAL(PFSIDR,U1,GRND2,0.0)
COVAL(PFSIDR,V1,GRND2,0.0)
      *
                *** FORWARD SECONDARY INLET TOP ***

      *
PATCH(FSLLIP,HWALL,1,4,9,10,8,8,1,1)
COVAL(FSLLIP,U1,GRND2,0.0)
COVAL(FSLLIP,V1,GRND2,0.0)
PATCH(FSBOT,SWALL,1,4,7,7,8,12,1,1)
COVAL(FSBOT,U1,GRND2,0.0)
COVAL(FSBOT,W1,GRND2,0.0)
PATCH(FSOVHD,NWALL,1,4,8,8,9,13,1,1)
COVAL(FSOVHD,U1,GRND2,0.0)
COVAL(FSOVHD,W1,GRND2,0.0)
PATCH(FSTLIP,SWALL,1,4,11,11,9,9,1,1)
COVAL(FSTLIP,U1,GRND2,0.0)
COVAL(FSTLIP,W1,GRND2,0.0)
PATCH(FSRLIP,LWALL,1,4,10,10,10,10,1,1)
COVAL(FSRLIP,U1,GRND2,0.0)
COVAL(FSRLIP,V1,GRND2,0.0)
PATCH(FSTOP,SWALL,1,4,10,10,10,14,1,1)
COVAL(FSTOP,U1,GRND2,0.0)
COVAL(FSTOP,W1,GRND2,0.0)
      *
      *
      *
                *** FORWARD SECONDARY TURNING BULKHEAD ***
      *
PATCH(TBREAR,HWALL,1,4,6,8,13,13,1,1)
COVAL(TBREAR,U1,GRND2,0.0)
COVAL(TBREAR,V1,GRND2,0.0)
PATCH(TBOUT,LWALL,1,4,7,9,15,15,1,1)
COVAL(TBOUT,U1,GRND2,0.0)
COVAL(TBOUT,V1,GRND2,0.0)
PATCH(TBFRNT,LWALL,1,4,5,6,13,13,1,1)
COVAL(TBFRNT,U1,GRND2,0.0)
COVAL(TBFRNT,V1,GRND2,0.0)
      *
                *** TEST ROOM AFT BULKHEAD ***
      *
          UPPER
      *
PATCH(TRUPFT,HWALL,1,4,4,5,11,11,1,1)
COVAL(TRUPFT,U1,GRND2,0.0)
COVAL(TRUPFT,V1,GRND2,0.0)
PATCH(TRUBOT,NWALL,1,4,3,3,12,12,1,1)
COVAL(TRUBOT,U1,GRND2,0.0)
COVAL(TRUBOT,W1,GRND2,0.0)
PATCH(TRURER,LWALL,1,4,4,6,13,13,1,1)
COVAL(TRURER,U1,GRND2,0.0)
COVAL(TRURER,V1,GRND2,0.0)
      *
          LOWER
      *
PATCH(TRLFT,HWALL,1,4,1,2,11,11,1,1)
COVAL(TRLFT,U1,GRND2,0.0)
COVAL(TRLFT,V1,GRND2,0.0)
PATCH(TRLTP,SWALL,1,4,3,3,12,12,1,1)
COVAL(TRLTP,U1,GRND2,0.0)
COVAL(TRLTP,W1,GRND2,0.0)
PATCH(TRLRER,LWALL,1,4,1,2,13,13,1,1)
COVAL(TRLRER,U1,GRND2,0.0)
COVAL(TRLRER,V1,GRND2,0.0)
      *
```

```
          SIDE
     *
PATCH(TRSFT,HWALL,2,4,3,3,11,11,1,1)
COVAL(TRSFT,U1,GRND2,0.0)
COVAL(TRSFT,V1,GRND2,0.0)
PATCH(TRSTP,EWALL,1,1,3,3,12,12,1,1)
COVAL(TRSTP,V1,GRND2,0.0)
COVAL(TRSTP,W1,GRND2,0.0)
PATCH(TRSRER,LWALL,2,4,3,3,13,13,1,1)
COVAL(TRSRER,U1,GRND2,0.0)
COVAL(TRSRER,V1,GRND2,0.0)
     *
                         *** ENGINE ***
     *
CONPOR(0.0,CELL,1,1,3,3,9,10)
     *
PATCH(JETIN,HIGH,1,1,3,3,8,8,1,1)
COVAL(JETIN,P1,FIXFLU,-MJET)
COVAL(JETIN,H1,ONLYMS,SAME)
COVAL(JETIN,W1,FIXVAL,WIN)
     *
PATCH(JETOUT,LOW,1,1,3,3,11,11,1,1)
COVAL(JETOUT,P1,FIXFLU,MJET)
COVAL(JETOUT,W1,ONLYMS,WJET)
COVAL(JETOUT,H1,ONLYMS,HJET)
COVAL(JETOUT,KE,ONLYMS,KEINJ)
COVAL(JETOUT,EP,ONLYMS,EPINJ)    -
     *
     *
                    *** EJECTOR ROOM OVERHEAD ***
     *
PATCH(EROVHD,NWALL,1,4,5,5,14,15,1,1)
COVAL(EROVHD,U1,GRND2,0.0)
COVAL(EROVHD,W1,GRND2,0.0)
PATCH(ERROOF,SWALL,1,4,7,7,15,15,1,1)
COVAL(ERROOF,U1,GRND2,0.0)
COVAL(ERROOF,W1,GRND2,0.0)
     *
                       *** EJECTOR TUBE ***
     *
CONPOR(0.5,EAST,1,1,3,3,12,16)
CONPOR(0.5,NORTH,1,1,3,3,12,16)
CONPOR(0.5,SOUTH,1,1,3,3,12,16)
     *
     *
                  *** EJECTOR ROOM AFT BULKHEAD ***
     *
          UPPER
     *
PATCH(ERUFT,HWALL,1,4,4,5,15,15,1,1)
COVAL(ERUFT,U1,GRND2,0.0)
COVAL(ERUFT,V1,GRND2,0.0)
PATCH(ERUBOT,NWALL,1,4,3,3,16,16,1,1)
COVAL(ERUBOT,U1,GRND2,0.0)
COVAL(ERUBOT,W1,GRND2,0.0)
     *
          LOWER
     *
PATCH(ERLFT,HWALL,1,4,1,2,15,15,1,1)
COVAL(ERLFT,U1,GRND2,0.0)
COVAL(ERLFT,V1,GRND2,0.0)
PATCH(ERLTOP,SWALL,1,4,3,3,16,16,1,1)
COVAL(ERLTOP,U1,GRND2,0.0)
COVAL(ERLTOP,W1,GRND2,0.0)
PATCH(ERLRER,LWALL,1,4,1,2,17,17,1,1)
COVAL(ERLRER,U1,GRND2,0.0)
COVAL(ERLRER,V1,GRND2,0.0)
     *
          SIDE
     *
```

```
PATCH(ERSFT,HWALL,2,4,3,3,15,15,1,1)
COVAL(ERSFT,U1,GRND2,0.0)
COVAL(ERSFT,V1,GRND2,0.0)
PATCH(ERSLIP,EWALL,1,1,3,3,16,16,1,1)
COVAL(ERSLIP,V1,GRND2,0.0)
COVAL(ERSLIP,W1,GRND2,0.0)
PATCH(ERSRER,LWALL,2,4,3,3,17,17,1,1)
COVAL(ERSRER,U1,GRND2,0.0)
COVAL(ERSRER,V1,GRND2,0.0)
    *
              *** AFTER SECONDARY FORWARD BULKHEAD ***
    *
PATCH(ASINR,LWALL,1,4,5,14,17,17,1,1)
COVAL(ASINR,U1,GRND2,0.0)
COVAL(ASINR,V1,GRND2,0.0)
PATCH(ASOUTR,HWALL,1,4,7,14,15,15,1,1)
COVAL(ASOUTR,U1,GRND2,0.0)
COVAL(ASOUTR,V1,GRND2,0.0)
PATCH(ASTOP,SWALL,1,4,15,15,16,16,1,1)
COVAL(ASTOP,U1,GRND2,0.0)
COVAL(ASTOP,W1,GRND2,0.0)
    *
              *** AFTER SECONDARY/EXHAUST DIVIDER ***
    *
PATCH(ASEDFT,HWALL,1,4,10,15,17,17,1,1)
COVAL(ASEDFT,U1,GRND2,0.0)
COVAL(ASEDFT,V1,GRND2,0.0)
PATCH(ASEDTP,SWALL,1,4,16,16,18,18,1,1)
COVAL(ASEDTP,U1,GRND2,0.0)
COVAL(ASEDTP,W1,GRND2,0.0)
PATCH(ASEDRR,LWALL,1,4,10,15,19,19,1,1)
COVAL(ASEDRR,U1,GRND2,0.0)
COVAL(ASEDRR,V1,GRND2,0.0)
COVAL(ASEDRR,KE,GRND2,GRND2)
COVAL(ASEDRR,EP,GRND2,GRND2)
PATCH(ASEDBT,NWALL,1,4,9,9,18,18,1,1)
COVAL(ASEDBT,U1,GRND2,0.0)
COVAL(ASEDBT,W1,GRND2,0.0)
    *
                    *** TEST CELL REAR WALL ***
    *
PATCH(REARWL,HWALL,1,4,1,15,19,19,1,1)
COVAL(REARWL,U1,GRND2,0.0)
COVAL(REARWL,V1,GRND2,0.0)
COVAL(REARWL,KE,GRND2,GRND2)
COVAL(REARWL,EP,GRND2,GRND2)
    *
                    *** TEST CELL INSIDE WALL ***
    *
PATCH(SIDE1,EWALL,4,4,1,11,1,7,1,1)
COVAL(SIDE1,V1,GRND2,0.0)
COVAL(SIDE1,W1,GRND2,0.0)
PATCH(SIDE2,EWALL,4,4,1,10,8,9,1,1)
COVAL(SIDE2,V1,GRND2,0.0)
COVAL(SIDE2,W1,GRND2,0.0)
PATCH(SIDE3,EWALL,4,4,1,8,10,14,1,1)
COVAL(SIDE3,V1,GRND2,0.0)
COVAL(SIDE3,W1,GRND2,0.0)
PATCH(SIDE4,EWALL,4,4,1,5,15,15,1,1)
COVAL(SIDE4,V1,GRND2,0.0)
COVAL(SIDE4,W1,GRND2,0.0)
PATCH(SIDE5,EWALL,4,4,1,14,16,17,1,1)
COVAL(SIDE5,V1,GRND2,0.0)
COVAL(SIDE5,W1,GRND2,0.0)
PATCH(SIDE6,EWALL,4,4,1,15,18,19,1,1)
COVAL(SIDE6,V1,GRND2,0.0)
COVAL(SIDE6,W1,GRND2,0.0)
    *
    *
                    *** TEST CELL OUTSIDE WALL ***
```

```
          *
PATCH(OUT1,WWALL,6,6,1,12,1,7,1,1)
COVAL(OUT1,V1,GRND2,0.0)
COVAL(OUT1,W1,GRND2,0.0)
PATCH(OUT2,WWALL,6,6,1,10,8,9,1,1)
COVAL(OUT2,V1,GRND2,0.0)
COVAL(OUT2,W1,GRND2,0.0)
PATCH(OUT3,WWALL,6,6,1,9,10,14,1,1)
COVAL(OUT3,V1,GRND2,0.0)
COVAL(OUT3,W1,GRND2,0.0)
PATCH(OUT4,WWALL,6,6,1,6,15,15,1,1)
COVAL(OUT4,V1,GRND2,0.0)
COVAL(OUT4,W1,GRND2,0.0)
PATCH(OUT5,WWALL,6,6,1,14,16,17,1,1)
COVAL(OUT5,V1,GRND2,0.0)
COVAL(OUT5,W1,GRND2,0.0)
PATCH(OUT6,WWALL,6,6,1,15,18,19,1,1)
COVAL(OUT6,V1,GRND2,0.0)
COVAL(OUT6,W1,GRND2,0.0)
PATCH(WTOP1,SWALL,5,5,13,13,1,7,1,1)
COVAL(WTOP1,U1,GRND2,0.0)
COVAL(WTOP1,W1,GRND2,0.0)
PATCH(WTOP2,SWALL,5,5,11,11,8,9,1,1)
COVAL(WTOP2,U1,GRND2,0.0)
COVAL(WTOP2,W1,GRND2,0.0)
PATCH(WTOP3,SWALL,5,5,10,10,10,14,1,1)
COVAL(WTOP3,U1,GRND2,0.0)
COVAL(WTOP3,W1,GRND2,0.0)
PATCH(WTOP4,SWALL,5,5,7,7,15,15,1,1)
COVAL(WTOP4,U1,GRND2,0.0)
COVAL(WTOP4,W1,GRND2,0.0)
PATCH(WTOP5,SWALL,5,5,15,15,16,17,1,1)
COVAL(WTOP5,U1,GRND2,0.0)
COVAL(WTOP5,W1,GRND2,0.0)
PATCH(WTOP6,SWALL,5,5,16,16,18,19,1,1)
COVAL(WTOP6,U1,GRND2,0.0)
COVAL(WTOP6,W1,GRND2,0.0)
          *

               *** APPROXIMATION OF THE COANDA SURFACE ***
     *
CONPOR(0.0,NORTH,1,2,3,3,17,17)
CONPOR(0.0,LOW,1,2,4,9,18,18)
CONPOR(0.0,EAST,2,2,3,3,17,17)
CONPOR(0.0,EAST,2,2,4,9,18,18)
     *
               *** BOUNDARIES TO AMBIENT ***
     *
     *
PATCH(SKY,NORTH,1,6,16,16,1,19,1,1)
COVAL(SKY,P1,0.1,0.0)
COVAL(SKY,H1,ONLYMS,CSUBP*TAMB)
COVAL(SKY,KE,ONLYMS,KEINA)
COVAL(SKY,EP,ONLYMS,EPINA)
     *
     *
PATCH(SKY1,EAST,6,6,1,16,1,19,1,1)
COVAL(SKY1,P1,0.1,0.0)
COVAL(SKY1,H1,ONLYMS,CSUBP*TAMB)
COVAL(SKY1,KE,ONLYMS,KEINA)
COVAL(SKY1,EP,ONLYMS,EPINA)
     *
PATCH(SKYLEFT,LOW,1,6,13,16,1,1,1,1)
COVAL(SKYLEFT,P1,0.1,0.0)
COVAL(SKYLEFT,H1,ONLYMS,CSUBP*TAMB)
COVAL(SKYLEFT,KE,ONLYMS,KEINA)
COVAL(SKYLEFT,EP,ONLYMS,EPINA)
     *
PATCH(SKYRT,HIGH,1,6,16,16,19,19,1,1)
COVAL(SKYRT,P1,0.1,0.0)
```

```
COVAL(SKYRT,H1,ONLYMS,CSUBP*TAMB)
COVAL(SKYRT,KE,ONLYMS,KEINA)
COVAL(SKYRT,EP,ONLYMS,EPINA)
     *
     *
    GROUP14: DOWNSTREAM PRESSURE
    GROUP15: TERMINATION FOR INNER ITERATIONS
     *
FSWEEP =  501; LSWEEP =  550
    GROUP16: TERMINATION FOR SWEEPS & OUTER ITERATIONS
    GROUP17: UNDER RELAXATION
RELAX(P1,FALSDT,1.E-3)
RELAX(U1,FALSDT,7.E-2)
RELAX(V1,FALSDT,7.E-2)
RELAX(W1,FALSDT,7.E-2)
     *
    GROUP18: LIMITS ON VARIABLES
     *
VARMIN(P1)= -2.5E+05
VARMAX(P1)= 2.5E+05
VARMIN(V1)=-500.
VARMAX(V1)=500.
VARMIN(W1)=-200.
VARMAX(W1)=1200.
VARMAX(TMP1)=2.1E+03
VARMIN(TMP1)=295.
VARMAX(H1)= 2.008E+06
VARMIN(H1)= 2.962E+05
VARMIN(U1)=-200.
VARMAX(U1)=200.
VARMIN(RHO1)=0.1
VARMAX(RHO1)=2.
VARMAX(KE)=1.E+06
VARMIN(KE)=1.E-08
VARMAX(EP)=1.E+06
VARMIN(EP)=1.E-08
     *

    GROUP19: SPECIAL CALLS TO GROUND
    GROUP20: PRELIMINARY PRINTOUT
ECHO=T
    GROUP21: FIELD PRINTOUT
    GROUP22: MONITOR PRINTOUT
     *
TSTSWP=1
IXMON = 2; IYMON = 5 ; IZMON = 5
    GROUP23: FIELD PRINTOUT & PLOTS
     *
ITABL = 3; NPLT = 15;IPROF =3
     *
    GROUP24: PREPARATION FOR CONTINUATION RUNS
STOP
```

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APPENDIX B
PHOENICS OUTPUT

```
  ----------------------------------------------------------
       CCCC HHH          PHOENICS   VERSION 1.3, 03 SEPT 1986
     CCCCCCCC HHHHH       (C) COPYRIGHT 1984
    CCCCCCC HHHHHHHHHH    CONCENTRATION HEAT AND MOMENTUM LTD
   CCCCCCC HHHHHHHHHHHH   ALL RIGHTS RESERVED.
   CCCCCC HHHHHHHHHHHHHH  CHAM LTD, BAKERY HOUSE, 40 HIGH ST
   CCCCCCC HHHHHHHHHHHHH  WIMBLEDON, LONDON, SW19 5AU
    CCCCCCC HHHHHHHHHH    TEL: 01-947-7651; TELEX: 928517
     CCCCCCCC HHHHH       FACSIMILE: 01-879-3497
       CCCC HHH          THE OPTION LEVEL IS   -18
  ----------------------------------------------------------
```

THIS CODE MAY ONLY BE USED UNDER THE TERMS AND CONDITIONS
OF A LICENCE AGREEMENT WITH CHAM LTD.

REPLICATION OF THIS CODE IS PROHIBITED UNLESS
SPECIFICALLY AUTHORISED IN WRITING BY CHAM LTD.

`**********************************************************`

GREX1 OF 15/07/86 HAS BEEN CALLED
FORMATTED SATLIT DATA READ FROM DF10 FOR IRUN= 1
`***------ STORAGE INFORMATION ------***`
F DIMNSN=200000 OCCUPIED= 51094 ESTIMATED MINIMUM DIMNSN= 15094
DEP VRBL= 25536 OLD VRBL=   0 3D COEFF= 9024 3D DVDPS= 5472

INITIAL FIELDS READ FROM DF09
`**********************************************************`
 GROUP 1. RUN TITLE & NUMBER
`**********************************************************`
`**********************************************************`

TEXT(COANDA RUN # 3 ; COARSE GRID   )

`**********************************************************`
`**********************************************************`

IRUNN   =   1
`**********************************************************`
 GROUP 2. TRANSIENCE
STEADY =   T
`**********************************************************`
 GROUP 3. X-DIRECTION GRID SPACING
CARTES =   T
NX   =   6
XULAST = 1.000E+00
  METHOD OF PAIRS USED FOR GRID SETTING
XFRAC (1) = -1.000E+00 ;XFRAC (2) =   5.000E-01
XFRAC (3) = 1.000E+00 ;XFRAC (4) =   1.410E+00
XFRAC (5) = 2.000E+00 ;XFRAC (6) =   6.850E-01
XFRAC (7) = 1.000E+00 ;XFRAC (8) =   3.050E-01
XFRAC (9) = 1.000E+00 ;XFRAC (10) =   1.000E+00
`**********************************************************`
 GROUP 4. Y-DIRECTION GRID SPACING
NY   =   16
YVLAST = 1.000E+00
  METHOD OF PAIRS USED FOR GRID SETTING
YFRAC (1) = -1.000E+00 ;YFRAC (2) =   1.500E-01
YFRAC (3) = 1.000E+00 ;YFRAC (4) =   8.150E-01
YFRAC (5) = 1.000E+00 ;YFRAC (6) =   1.000E+00
YFRAC (7) = 1.000E+00 ;YFRAC (8) =   8.200E-01
```

```
YFRAC (  9) =   1.000E+00 ;YFRAC ( 10) =   1.190E+00
YFRAC ( 11) =   1.000E+00 ;YFRAC ( 12) =   3.050E-01
YFRAC ( 13) =   1.000E+00 ;YFRAC ( 14) =   1.520E+00
YFRAC ( 15) =   1.000E+00 ;YFRAC ( 16) =   3.050E-01
YFRAC ( 17) =   1.000E+00 ;YFRAC ( 18) =   3.050E-01
YFRAC ( 19) =   1.000E+00 ;YFRAC ( 20) =   8.350E-01
YFRAC ( 21) =   1.000E+00 ;YFRAC ( 22) =   4.600E-01
YFRAC ( 23) =   1.000E+00 ;YFRAC ( 24) =   3.050E-01
YFRAC ( 25) =   2.000E+00 ;YFRAC ( 26) =   2.780E+00
YFRAC ( 27) =   1.000E+00 ;YFRAC ( 28) =   3.660E+00
YFRAC ( 29) =   1.000E+00 ;YFRAC ( 30) =   1.000E+00
*************************************************************
 GROUP 5. Z-DIRECTION GRID SPACING
PARAB   =     F
NZ      =    19
ZWLAST  = 1.000E+00
  METHOD OF PAIRS USED FOR GRID SETTING
ZFRAC (  1) =  -2.000E+00 ;ZFRAC (  2) =   1.220E+00
ZFRAC (  3) =   2.000E+00 ;ZFRAC (  4) =   2.440E+00
ZFRAC (  5) =   2.000E+00 ;ZFRAC (  6) =   1.780E+00
ZFRAC (  7) =   1.000E+00 ;ZFRAC (  8) =   3.050E-01
ZFRAC (  9) =   1.000E+00 ;ZFRAC ( 10) =   1.370E+00
ZFRAC ( 11) =   1.000E+00 ;ZFRAC ( 12) =   3.050E-01
ZFRAC ( 13) =   1.000E+00 ;ZFRAC ( 14) =   3.615E+00
ZFRAC ( 15) =   1.000E+00 ;ZFRAC ( 16) =   1.000E+00
ZFRAC ( 17) =   1.000E+00 ;ZFRAC ( 18) =   3.050E-01
ZFRAC ( 19) =   1.000E+00 ;ZFRAC ( 20) =   1.220E+00
ZFRAC ( 21) =   1.000E+00 ;ZFRAC ( 22) =   3.050E-01
ZFRAC ( 23) =   1.000E+00 ;ZFRAC ( 24) =   3.680E+00
ZFRAC ( 25) =   1.000E+00 ;ZFRAC ( 26) =   4.570E-01
ZFRAC ( 27) =   1.000E+00 ;ZFRAC ( 28) =   3.000E+00
ZFRAC ( 29) =   1.000E+00 ;ZFRAC ( 30) =   4.570E-01
ZFRAC ( 31) =   1.000E+00 ;ZFRAC ( 32) =   3.000E+00
*************************************************************
 GROUP 6. BFC AND GEOMETRY CHANGES
*************************************************************
 GROUP 7. VARIABLES: STORED,SOLVED,NAMED
ONEPHS  =     T
NAME( 1) =P1    ;NAME( 3) =U1
NAME( 5) =V1    ;NAME( 7) =W1
NAME(12) =KE    ;NAME(13) =EP
NAME(14) =H1    ;NAME(19) =HPOR
NAME(20) =NPOR  ;NAME(21) =EPOR
NAME(22) =VPOR  ;NAME(23) =VIST
NAME(24) =TMP1  ;NAME(25) =RHO1
SOLUTN(P1  ,Y,Y,Y,N,N,N)
SOLUTN(U1  ,Y,Y,N,Y,N,N)
SOLUTN(V1  ,Y,Y,N,Y,N,N)
SOLUTN(W1  ,Y,Y,N,Y,N,N)
SOLUTN(KE  ,Y,Y,N,N,N,N)
SOLUTN(EP  ,Y,Y,N,N,N,N)
SOLUTN(H1  ,Y,Y,Y,N,N,N)
SOLUTN(HPOR,Y,N,N,N,N,N)
SOLUTN(NPOR,Y,N,N,N,N,N)
SOLUTN(EPOR,Y,N,N,N,N,N)
SOLUTN(VPOR,Y,N,N,N,N,N)
SOLUTN(VIST,Y,N,N,N,N,N)
SOLUTN(TMP1,Y,N,N,N,N,N)
SOLUTN(RHO1,Y,N,N,N,N,N)
DEN1    =    25
VIST    =    23
EPOR    =    21 ;HPOR   =    19 ;NPOR   =    20 ;VPOR   =    22
TEMP1   =    24
*************************************************************
 GROUP 8. TERMS  & DEVICES
TERMS (P1  ,Y,Y,Y,N,Y,N)
TERMS (U1  ,Y,Y,Y,N,Y,N)
TERMS (V1  ,Y,Y,Y,N,Y,N)
TERMS (W1  ,Y,Y,Y,N,Y,N)
TERMS (KE  ,N,Y,Y,N,Y,N)
```

```
TERMS  (EP  ,N,Y,Y,N,Y,N)
TERMS  (H1  ,Y,Y,Y,N,Y,N)
DIFCUT  = 5.000E-01 ;ZDIFAC = 1.000E+00
GALA    =     F  ;ADDDIF =     F
NEWRH1  =     T
NEWENT  =     T
*********************************************************
 GROUP 9. PROPERTIES
RHO1    =-1.016E+04 ;TMP1   =-1.013E+04 ;EL1    =-1.015E+04
RHO1A   = 0.000E+00 ;RHO1B  = 3.496E-03 ;RHO1C  = 7.143E-01
PRESS0  = 1.013E+05
TMP1A   = 1.000E-20 ;TMP1B  = 9.960E-04 ;TMP1C  = 0.000E+00
TEMP0   = 0.000E+00
EL1A    = 0.000E+00 ,EL1B   = 0.000E+00 ;EL1C   = 0.000E+00
ENUL    = 1.000E-05 ;ENUT   =-1.014E+04
ENUTA   = 0.000E+00 ;ENUTB  = 0.000E+00 ;ENUTC  = 0.000E+00
DRH1DP  =-1.016E+04
PRNDTL(U1  )  =   1.000E+00 ;PRNDTL(V1  ) =   1.000E+00
PRNDTL(W1  )  =   1.000E+00 ;PRNDTL(KE  ) =   1.000E+00
PRNDTL(EP  )  =   1.000E+00 ;PRNDTL(H1  ) =   1.000E+00
PRT    (U1  )  =   1.000E+00 ;PRT    (V1  ) =   1.000E+00
PRT    (W1  )  =   1.000E+00 ;PRT    (KE  ) =   1.000E+00
PRT    (EP  )  =   1.314E+00 ;PRT    (H1  ) =   1.000E+00
*********************************************************
 GROUP 10.INTER-PHASE TRANSFER PROCESSES
*********************************************************
 GROUP 11.INITIALIZE VAR/POROSITY FIELDS
FIINIT(P1  )  = -1.022E+04 ;FIINIT(U1  )  = -1.022E+04
FIINIT(V1  )  = -1.022E+04 ;FIINIT(W1  )  = -1.022E+04
FIINIT(KE  )  = -1.022E+04 ;FIINIT(EP  )  = -1.022E+04
FIINIT(H1  )  = -1.022E+04 ;FIINIT(HPOR)  =  1.000E+00
FIINIT(NPOR)  =  1.000E+00 ;FIINIT(EPOR)  =  1.000E+00
FIINIT(VPOR)  =  1.000E+00 ;FIINIT(VIST)  = -1.022E+04
FIINIT(TMP1)  = -1.022E+04 ;FIINIT(RHO1)  = -1.022E+04

XCYCLE  =     F
KELIN   =     0
*********************************************************
 GROUP 14. DOWNSTREAM PRESSURE FOR PARAB
*********************************************************
 GROUP 15. TERMINATE SWEEPS
LSWEEP  =    550 ;ISWC1  =       1
LITHYD  =      1 ;LITFLX =       1 ;LITC   =      1 ;ITHC1  =      1
RESREF(P1  )  =  1.000E-06 ;RESREF(U1  )  =  1.000E-06
RESREF(V1  )  =  1.000E-06 ;RESREF(W1  )  =  1.000E-06
RESREF(KE  )  =  1.000E-06 ;RESREF(EP  )  =  1.000E-06
RESREF(H1  )  =  1.000E-06
*********************************************************
 GROUP 16. TERMINATE ITERATIONS
LITER  (P1  )  =     20 ;LITER  (U1  )  =     20
LITER  (V1  )  =     20 ;LITER  (W1  )  =     20
LITER  (KE  )  =     20 ;LITER  (EP  )  =     20
LITER  (H1  )  =     20
ENDIT  (P1  )  =  1.000E-06 ;ENDIT  (U1  )  =  1.000E-06
ENDIT  (V1  )  =  1.000E-06 ;ENDIT  (W1  )  =  1.000E-06
ENDIT  (KE  )  =  1.000E-06 ;ENDIT  (EP  )  =  1.000E-06
ENDIT  (H1  )  =  1.000E-06
*********************************************************
 GROUP 17. RELAXATION
RELAX(P1  ,FALSDT, 1.000E-03)
RELAX(U1  ,FALSDT, 7.000E-02)
RELAX(V1  ,FALSDT, 7.000E-02)
RELAX(W1  ,FALSDT, 7.000E-02)
RELAX(KE  ,FALSDT, 1.000E+10)
RELAX(EP  ,FALSDT, 1.000E+10)
RELAX(H1  ,FALSDT, 1.000E+10)
RELAX(VIST,FALSDT, 1.000E+00)
RELAX(TMP1,FALSDT, 1.000E+00)
RELAX(RHO1,FALSDT, 1.000E+00)
*********************************************************
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```
   GROUP 18. LIMITS
VARMAX(P1  ) = 2.500E+05 ;VARMIN(P1  ) =-2.500E+05
VARMAX(U1  ) = 2.000E+02 ;VARMIN(U1  ) =-2.000E+02
VARMAX(V1  ) = 5.000E+02 ;VARMIN(V1  ) =-5.000E+02
VARMAX(W1  ) = 1.200E+03 ;VARMIN(W1  ) =-2.000E+02
VARMAX(KE  ) = 1.000E+06 ;VARMIN(KE  ) = 1.000E-08
VARMAX(EP  ) = 1.000E+06 ;VARMIN(EP  ) = 1.000E-08
VARMAX(H1  ) = 2.008E+06 ;VARMIN(H1  ) = 2.962E+05
VARMAX(HPOR) = 1.000E+10 ;VARMIN(HPOR) =-1.000E+10
VARMAX(NPOR) = 1.000E+10 ;VARMIN(NPOR) =-1.000E+10
VARMAX(EPOR) = 1.000E+10 ;VARMIN(EPOR) =-1.000E+10
VARMAX(VPOR) = 1.000E+10 ;VARMIN(VPOR) =-1.000E+10
VARMAX(VIST) = 1.000E+10 ;VARMIN(VIST) = 1.000E-20
VARMAX(TMP1) = 2.100E+03 ;VARMIN(TMP1) = 2.950E+02
VARMAX(RHO1) = 2.000E+00 ;VARMIN(RHO1) = 1.000E-01
*********************************************************
   GROUP 19. EARTH CALLS TO GROUND STATION
USEGRD  =    T  ;USEGRX =    T
NAMGRD  =NONE
GENK    =    T
*********************************************************
   GROUP 20. PRELIMINARY PRINTOUT
ECHO    =    T
*********************************************************
   GROUP 21. PRINT-OUT OF VARIABLES
INIFLD  =    F  ;SUBWGR =    F
OUTPUT(P1  ,Y,N,N,Y,Y,Y)
OUTPUT(U1  ,Y,N,N,Y,Y,Y)
OUTPUT(V1  ,Y,N,N,Y,Y,Y)
OUTPUT(W1  ,Y,N,N,Y,Y,Y)
OUTPUT(KE  ,Y,N,N,Y,Y,Y)
OUTPUT(EP  ,Y,N,N,Y,Y,Y)
OUTPUT(H1  ,Y,N,N,Y,Y,Y)
OUTPUT(HPOR,N,N,N,N,N,N)
OUTPUT(NPOR,N,N,N,N,N,N)
OUTPUT(EPOR,N,N,N,N,N,N)
OUTPUT(VPOR,N,N,N,N,N,N)
OUTPUT(VIST,Y,N,N,N,N,N)
OUTPUT(TMP1,Y,N,N,N,N,N)
OUTPUT(RHO1,Y,N,N,N,N,N)
*********************************************************
   GROUP 22. MONITOR PRINT-OUT
IXMON   =      2 ;IYMON  =      5 ;IZMON  =      5
NPRMON  = 10000 ;NPRMNT = 10000 ;TSTSWP =      1
HIGHLO  =      F
*********************************************************
   GROUP 23.FIELD PRINT-OUT & PLOT CONTROL
NPRINT  = 10000 ;NUMCLS =      5
NXPRIN  =      1 ;IXPRF  =      1 ;IXPRL  =      6
NYPRIN  =      1 ;IYPRF  =      1 ;IYPRL  =     16
NZPRIN  =      1 ;IZPRF  =      1 ;IZPRL  =     19
XZPR    =      F  ;YZPR   =      F
IPLTF   =      1 ;IPLTL  =    550 ;NPLT   =     15
ITABL   =      3 ;IPROF  =      3
ABSIZ   = 5.000E-01 ;ORSIZ  = 2.000E-01
NTZPRF  =      1 ;NCOLPF =     50
ICHR    =      2 ;NCOLCO =     45 ;NROWCO =     20
   NO PATCHES YET USED FOR THIS GROUP
*********************************************************
   GROUP 24. DUMPS FOR RESTARTS
SAVE    =    T  ;AUTOPS =    F  ;NOWIPE =    F
NSAVE   =DF09
LUSAVE  =      9

*** GRID-GEOMETRY INFORMATION ***
X-COORDINATES OF THE CELL CENTRES
   2.500E-01   1.205E+00   2.252E+00   2.937E+00   3.432E+00
   4.035E+00
Y-COORDINATES OF THE CELL CENTRES
   7.500E-02   5.575E-01   1.465E+00   2.375E+00   3.380E+00
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     4.127E+00     5.040E+00     5.952E+00     6.257E+00     6.827E+00
     7.475E+00     7.857E+00     9.400E+00     1.218E+01     1.540E+01
     1.773E+01
Z-COORDINATES OF THE CELL CENTRES
     6.100E-01     1.830E+00     3.660E+00     6.100E+00     8.210E+00
     9.990E+00     1.103E+01     1.187E+01     1.271E+01     1.467E+01
     1.697E+01     1.763E+01     1.839E+01     1.915E+01     2.114E+01
     2.321E+01     2.494E+01     2.667E+01     2.840E+01


--- INTEGRATION OF EQUATIONS BEGINS ---

TIME STEP =     1      SWEEP = 501
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.103E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.211E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.031E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.845E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   2.096E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.476E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   0.000E+00
TIME STEP =     1      SWEEP = 502
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.411E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   5.263E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.911E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   2.197E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   3.510E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.492E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   3.244E+13
TIME STEP =     1      SWEEP = 503
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.559E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   3.924E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.113E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.465E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   3.067E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.783E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   3.244E+13
TIME STEP =     1      SWEEP = 504
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.675E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   5.352E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.931E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   2.214E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.878E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.387E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.583E+13
TIME STEP =     1      SWEEP = 505
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.331E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.270E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.944E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.690E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.949E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.393E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.583E+13
TIME STEP =     1      SWEEP = 506
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.076E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   2.853E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.394E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.276E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.918E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.467E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.224E+13
TIME STEP =     1      SWEEP = 507
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   7.798E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   2.443E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   2.893E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.110E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.200E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.370E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.224E+13
TIME STEP =     1      SWEEP = 508
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   8.067E+07
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TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.716E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   3.964E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.488E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.237E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.507E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   1.972E+13
TIME STEP =    1      SWEEP = 509
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.108E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   4.140E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   4.437E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.753E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.757E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.457E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   1.972E+13
TIME STEP =    1      SWEEP = 510
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.061E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.335E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   3.845E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.161E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   1.988E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.604E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   1.418E+13
TIME STEP =    1      SWEEP = 511
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   9.223E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.726E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   4.163E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.702E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.146E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.478E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   1.418E+13
TIME STEP =    1      SWEEP = 512
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.186E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   4.557E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   4.848E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   2.003E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   3.161E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.483E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.966E+13
TIME STEP =    1      SWEEP = 513
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.037E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.194E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   3.820E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.250E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.308E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.632E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.966E+13
TIME STEP =    1      SWEEP = 514
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   9.473E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.700E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   4.507E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.740E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.171E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.480E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.351E+13
TIME STEP =    1      SWEEP = 515
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.157E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   4.675E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   4.872E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   2.099E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   3.137E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.497E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.351E+13
TIME STEP =    1      SWEEP = 516
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.068E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.236E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   3.917E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.279E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.309E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.635E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   1.630E+13
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TIME STEP =    1      SWEEP = 517
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  8.878E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  2.703E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  3.489E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.350E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  1.238E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS  3.412E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS  1.630E+13
TIME STEP =    1      SWEEP = 518
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  8.491E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  3.121E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  3.825E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.221E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  1.169E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS  3.443E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS  1.231E+13
TIME STEP =    1      SWEEP = 519
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  6.819E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  2.865E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  3.512E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.302E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  1.772E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS  3.607E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS  1.231E+13
TIME STEP =    1      SWEEP = 520
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  9.305E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  4.358E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  4.681E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.737E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  3.089E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS  3.483E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS  2.685E+13
TIME STEP =    1      SWEEP = 521
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  1.319E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  3.615E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  4.361E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.508E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  2.309E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS  3.669E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS  2.685E+13
TIME STEP =    1      SWEEP = 522
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  9.578E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  2.959E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  3.412E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.375E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  1.153E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS  3.425E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS  1.401E+13
TIME STEP =    1      SWEEP = 523
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  7.930E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  2.824E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  3.561E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.013E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  1.145E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS  3.442E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS  1.401E+13
TIME STEP =    1      SWEEP = 524
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  7.190E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  2.553E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  3.413E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.224E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  1.999E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS  3.639E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS  1.629E+13
TIME STEP =    1      SWEEP = 525
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS  8.928E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS  3.748E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS  3.925E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS  1.757E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS  2.783E+12
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TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.470E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.629E+13
TIME STEP =    1      SWEEP = 526
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.337E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   3.559E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.195E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.491E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   2.298E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.629E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.960E+13
TIME STEP =    1      SWEEP = 527
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   9.807E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   2.712E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   3.147E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.228E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.241E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.421E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.960E+13
TIME STEP =    1      SWEEP = 528
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   7.234E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   2.624E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   3.429E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   8.573E+09
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.359E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.452E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.188E+13
TIME STEP =    1      SWEEP = 529
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   7.918E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   2.138E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   2.790E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.012E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.020E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.439E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.188E+13
TIME STEP =    1      SWEEP = 530
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   6.203E+07
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   3.266E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   3.627E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.455E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   3.002E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.716E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.556E+13
TIME STEP =    1      SWEEP = 531
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.103E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.574E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.874E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   2.183E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   4.093E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.501E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.556E+13
TIME STEP =    1      SWEEP = 532
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.956E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.315E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.335E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.875E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   3.094E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.788E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.114E+13
TIME STEP =    1      SWEEP = 533
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.689E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.707E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.188E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   2.224E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.840E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.455E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.114E+13
TIME STEP =    1      SWEEP = 534
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.214E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   5.057E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.031E+09
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TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.796E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   3.324E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.503E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   3.088E+13
TIME STEP =    1      SWEEP = 535
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.596E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.000E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   3.911E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.588E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.672E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.737E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   3.088E+13
TIME STEP =    1      SWEEP = 536
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.277E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   4.345E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   5.616E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.714E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   1.884E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.422E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.272E+13
TIME STEP =    1      SWEEP = 537
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.136E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.827E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   4.457E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.594E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.140E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.431E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.272E+13
TIME STEP =    1      SWEEP = 538
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.381E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.436E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   3.947E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.298E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.403E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.590E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   1.344E+13
TIME STEP =    1      SWEEP = 539
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.135E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   4.472E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   5.413E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.670E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   1.909E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.390E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   1.344E+13
TIME STEP =    1      SWEEP = 540
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.118E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   4.121E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   4.698E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.678E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   2.394E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.406E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.557E+13
TIME STEP =    1      SWEEP = 541
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.297E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   3.126E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   3.716E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.223E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   1.840E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.570E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.557E+13
TIME STEP =    1      SWEEP = 542
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.166E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1   IS   4.391E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1   IS   5.201E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1   IS   1.865E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE   IS   1.906E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP   IS   3.422E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1   IS   2.441E+13
TIME STEP =    1      SWEEP = 543
TOTAL RESIDUAL/( 1.000E-06) FOR P1   IS   1.249E+08
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TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.682E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.182E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.936E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   3.082E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.457E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.441E+13
TIME STEP =    1     SWEEP = 544
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.496E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   3.304E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.008E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.420E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   2.399E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.686E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.317E+13
TIME STEP =    1     SWEEP = 545
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.419E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.564E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.450E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   2.090E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   1.960E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.412E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   1.317E+13
TIME STEP =    1     SWEEP = 546
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.358E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.255E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.970E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.841E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   2.636E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.425E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.625E+13
TIME STEP =    1     SWEEP = 547
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.255E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   2.732E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   3.663E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.283E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   2.068E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.597E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.625E+13
TIME STEP =    1     SWEEP = 548
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.112E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.507E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.334E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   2.035E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   2.436E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.478E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.818E+13
TIME STEP =    1     SWEEP = 549
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.403E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   4.905E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   5.410E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   2.292E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   3.440E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.475E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   2.818E+13

*************************************************************
TIME STP=    1 SWEEP NO=   550 ZSLAB NO=    5 ITERN NO=    1

TIME STEP =    1     SWEEP = 550
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.705E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   3.763E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.547E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.565E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   2.731E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.728E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   3.412E+13

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TIME STP=    1 SWEEP NO=   550 ZSLAB NO=    1 ITERN NO=    1
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FLOW FIELD AT ITHYD=  1, IZ=  1, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16   -5.856E+00   -5.840E+00   -5.673E+00   -5.512E+00   -5.340E+00
IY= 15   -6.844E+00   -6.845E+00   -6.723E+00   -6.619E+00   -6.511E+00
IY= 14   -7.855E+00   -7.859E+00   -7.739E+00   -7.629E+00   -7.506E+00
IY= 13   -8.752E+00   -8.757E+00   -8.631E+00   -8.514E+00   -8.376E+00
IY= 12   -9.476E+00   -9.545E+00   -9.403E+00   -9.309E+00   -9.186E+00
IY= 11   -9.354E+00   -9.446E+00   -9.304E+00   -9.228E+00   -9.177E+00
IY= 10   -9.247E+00   -9.414E+00   -9.249E+00   -9.162E+00   -9.156E+00
IY=  9   -9.295E+00   -9.512E+00   -9.311E+00   -9.106E+00   -9.120E+00
IY=  8   -9.438E+00   -9.638E+00   -9.478E+00   -9.132E+00   -9.127E+00
IY=  7   -9.581E+00   -1.000E+01   -1.014E+01   -9.775E+00   -9.539E+00
IY=  6   -1.047E+01   -1.070E+01   -1.091E+01   -9.552E+00   -8.801E+00
IY=  5   -1.012E+01   -1.038E+01   -1.030E+01   -9.622E+00   -9.059E+00
IY=  4   -9.522E+00   -9.700E+00   -9.615E+00   -8.882E+00   -7.941E+00
IY=  3   -8.307E+00   -8.457E+00   -8.283E+00   -7.360E+00   -6.316E+00
IY=  2   -6.199E+00   -6.007E+00   -6.555E+00   -5.828E+00   -4.582E+00
IY=  1   -4.753E+00   -5.431E+00   -6.417E+00   -5.764E+00   -4.388E+00
 IX=        1            2            3            4            5
IY= 16   -4.833E+00
IY= 15   -5.953E+00
IY= 14   -6.810E+00
IY= 13   -7.556E+00
IY= 12   -8.478E+00
IY= 11   -8.512E+00
IY= 10   -8.542E+00
IY=  9   -8.508E+00
IY=  8   -8.486E+00
IY=  7   -8.653E+00
IY=  6   -8.056E+00
IY=  5   -8.100E+00
IY=  4   -7.037E+00
IY=  3   -5.603E+00
IY=  2   -4.167E+00
IY=  1   -4.065E+00
 IX=        6
FIELD VALUES OF U1
IY= 16   -4.179E-02   -1.828E-01   -2.792E-01   -3.733E-01   -3.938E-01
IY= 15   -5.844E-02   -2.627E-01   -3.668E-01   -4.541E-01   -4.717E-01
IY= 14   -5.354E-02   -2.600E-01   -3.803E-01   -4.904E-01   -5.167E-01
IY= 13   -4.382E-02   -2.427E-01   -3.759E-01   -5.086E-01   -5.449E-01
IY= 12   -3.730E-02   -3.193E-01   -4.863E-01   -6.407E-01   -6.709E-01
IY= 11   -6.198E-02   -4.708E-01   -6.211E-01   -7.006E-01   -7.067E-01
IY= 10   -2.652E-01   -7.311E-01   -7.439E-01   -6.819E-01   -6.926E-01
IY=  9   -4.511E-01   -9.549E-01   -9.200E-01   -7.120E-01   -7.078E-01
IY=  8   -6.222E-01   -1.011E+00   -9.563E-01   -7.954E-01   -7.375E-01
IY=  7   -5.433E-02   -6.893E-01   -8.754E-01   -8.848E-01   -8.278E-01
IY=  6    1.479E-02    2.639E-01   -3.988E-01   -6.700E-01   -6.066E-01
IY=  5    3.206E-01    5.131E-01    3.776E-02   -4.710E-01   -5.429E-01
IY=  4    4.719E-01    8.801E-01    7.090E-01    1.212E-01   -1.166E-01
IY=  3    6.889E-01    1.201E+00    1.072E+00    6.173E-01    3.414E-01
IY=  2    1.249E+00    1.924E+00    1.806E+00    1.299E+00    9.887E-01
IY=  1    2.683E+00    2.939E+00    2.734E+00    2.252E+00    1.860E+00
 IX=        1            2            3            4            5
FIELD VALUES OF V1
IY= 15   -4.879E-01   -4.964E-01   -5.168E-01   -5.055E-01   -4.497E-01
IY= 14   -5.409E-01   -5.368E-01   -5.034E-01   -4.410E-01   -3.441E-01
IY= 13   -5.149E-01   -5.079E-01   -4.642E-01   -3.991E-01   -3.063E-01
IY= 12   -6.247E-01   -6.493E-01   -6.220E-01   -5.794E-01   -4.964E-01
IY= 11   -4.703E-01   -5.198E-01   -4.894E-01   -4.542E-01   -3.798E-01
IY= 10   -2.919E-01   -3.955E-01   -3.083E-01   -2.556E-01   -2.063E-01
IY=  9   -3.228E-01   -2.517E-01    1.299E-01    2.210E-01    4.313E-02
IY=  8   -4.371E-01   -2.126E-01    3.111E-01    4.729E-01    1.537E-01
IY=  7   -6.468E-01   -1.554E-01    5.031E-01    7.141E-01    3.233E-01
IY=  6   -1.547E+00   -4.645E-01    9.349E-01    1.601E+00    1.257E+00
IY=  5   -1.705E+00   -3.336E-01    8.583E-01    1.732E+00    1.528E+00
IY=  4   -1.971E+00    4.645E-02    8.736E-01    1.826E+00    2.074E+00
IY=  3   -1.966E+00    4.712E-01    1.127E+00    1.658E+00    1.979E+00
IY=  2   -1.572E+00    6.218E-01    9.770E-01    1.224E+00    1.403E+00
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IY=  1  -5.515E-01     1.876E-01      2.185E-01      2.340E-01      2.993E-01
 IX=        1           2              3              4              5
IY= 15  -3.692E-01
IY= 14  -2.569E-01
IY= 13  -2.250E-01
IY= 12  -4.129E-01
IY= 11  -3.097E-01
IY= 10  -1.693E-01
IY=  9   3.024E-02
IY=  8   1.120E-01
IY=  7   2.076E-01
IY=  6   8.679E-01
IY=  5   1.004E+00
IY=  4   1.489E+00
IY=  3   1.591E+00
IY=  2   1.284E+00
IY=  1   3.488E-01
 IX=        6
FIELD VALUES OF W1
IY= 16   5.893E-01     5.960E-01      5.901E-01      5.699E-01      5.206E-01
IY= 15   6.948E-01     7.332E-01      7.497E-01      7.280E-01      6.478E-01
IY= 14   7.962E-01     8.458E-01      8.756E-01      8.499E-01      7.469E-01
IY= 13   7.876E-01     8.392E-01      8.868E-01      8.661E-01      7.593E-01
IY= 12   7.075E-01     7.614E-01      8.273E-01      7.753E-01      5.867E-01
IY= 11   6.237E-01     6.828E-01      7.474E-01      6.677E-01      4.841E-01
IY= 10   6.015E-01     6.127E-01      6.626E-01      5.854E-01      4.071E-01
IY=  9   6.426E-01     5.918E-01      6.619E-01      6.364E-01      4.245E-01
IY=  8   6.781E-01     5.643E-01      6.696E-01      6.775E-01      4.459E-01
IY=  7  -5.897E-01     3.011E-01      6.775E-01      7.279E-01      5.205E-01
IY=  6  -6.696E-01     3.074E-01      8.728E-01      1.006E+00      8.302E-01
IY=  5  -1.055E+00     2.227E-01      8.615E-01      1.002E+00      8.465E-01
IY=  4  -1.143E+00     2.783E-01      6.814E-01      7.956E-01      8.090E-01
IY=  3  -1.201E+00    -2.598E-01      4.662E-02      2.801E-01      3.994E-01
IY=  2  -1.518E+00    -1.235E+00     -9.239E-01     -5.808E-01     -4.087E-01
IY=  1  -2.062E+00    -1.747E+00     -1.411E+00     -1.046E+00     -8.662E-01
 IX=        1           2              3              4              5
IY= 16   4.536E-01
IY= 15   5.626E-01
IY= 14   6.426E-01
IY= 13   6.498E-01
IY= 12   4.555E-01
IY= 11   3.748E-01
IY= 10   3.142E-01
IY=  9   3.279E-01
IY=  8   3.442E-01
IY=  7   3.990E-01
IY=  6   6.232E-01
IY=  5   6.576E-01
IY=  4   7.232E-01
IY=  3   6.111E-01
IY=  2   2.296E-01
IY=  1  -1.545E-01
 IX=        6
FIELD VALUES OF KE
IY= 16   3.848E+00     3.841E+00      3.783E+00      3.777E+00      3.931E+00
IY= 15   2.594E+00     2.597E+00      2.603E+00      2.707E+00      3.087E+00
IY= 14   2.751E+00     2.757E+00      2.774E+00      2.904E+00      3.333E+00
IY= 13   2.958E+00     2.965E+00      2.986E+00      3.124E+00      3.567E+00
IY= 12   1.801E+00     1.824E+00      1.860E+00      2.031E+00      2.599E+00
IY= 11   1.105E-03     1.954E-03      3.044E-03      3.676E-03      2.284E+00
IY= 10   1.209E-03     2.405E-03      3.604E-03      3.342E-03      2.109E+00
IY=  9   2.375E-03     3.582E-03      5.772E-03      4.950E-03      2.100E+00
IY=  8   4.380E-03     4.495E-03      6.943E-03      6.832E-03      2.116E+00
IY=  7   7.372E-03     1.664E-03      6.917E-03      1.223E-02      2.086E+00
IY=  6   1.508E-02     1.303E-03      5.144E-03      1.723E-02      1.460E+00
IY=  5   1.940E-02     1.422E-03      5.239E-03      1.804E-02      1.194E+00
IY=  4   2.253E-02     3.457E-03      9.732E-03      1.803E-02      3.309E-01
IY=  3   2.009E-02     7.292E-03      1.384E-02      1.589E-02      7.821E-02
IY=  2   1.538E-02     1.534E-02      2.131E-02      1.674E-02      1.695E-01
IY=  1   6.151E-02     6.103E-02      5.851E-02      4.493E-02      9.737E-02
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IX=         1              2            3            4            5
IY= 16    4.426E+00
IY= 15    3.903E+00
IY= 14    4.199E+00
IY= 13    4.458E+00
IY= 12    3.690E+00
IY= 11    3.471E+00
IY= 10    3.361E+00
IY=  9    3.338E+00
IY=  8    3.334E+00
IY=  7    3.335E+00
IY=  6    3.092E+00
IY=  5    2.979E+00
IY=  4    2.439E+00
IY=  3    1.888E+00
IY=  2    1.407E+00
IY=  1    1.121E+00
 IX=         6
FIELD VALUES OF EP
IY= 16    7.422E+00      7.406E+00    7.263E+00    7.190E+00    7.425E+00
IY= 15    4.670E+00      4.673E+00    4.649E+00    4.753E+00    5.416E+00
IY= 14    5.054E+00      5.063E+00    5.053E+00    5.195E+00    5.964E+00
IY= 13    5.488E+00      5.499E+00    5.495E+00    5.651E+00    6.470E+00
IY= 12    2.446E+00      2.487E+00    2.492E+00    2.694E+00    3.843E+00
IY= 11    2.274E-05      5.350E-05    1.040E-04    1.380E-04    3.166E+00
IY= 10    2.603E-05      7.303E-05    1.340E-04    1.196E-04    2.926E+00
IY=  9    7.166E-05      1.327E-04    2.715E-04    2.157E-04    2.936E+00
IY=  8    1.795E-04      1.866E-04    3.582E-04    3.496E-04    2.992E+00
IY=  7    3.919E-04      4.203E-05    3.562E-04    8.379E-04    3.038E+00
IY=  6    1.146E-03      2.913E-05    2.284E-04    1.400E-03    2.140E+00
IY=  5    1.673E-03      3.321E-05    2.348E-04    1.500E-03    1.751E+00
IY=  4    2.094E-03      1.259E-04    5.944E-04    1.500E-03    4.068E-01
IY=  3    1.763E-03      3.855E-04    1.008E-03    1.240E-03    3.916E-02
IY=  2    1.181E-03      1.176E-03    1.926E-03    1.342E-03    1.015E-01
IY=  1    4.314E-02      4.263E-02    4.001E-02    2.693E-02    5.803E-02
 IX=         1              2            3            4            5
IY= 16    8.797E+00
IY= 15    7.543E+00
IY= 14    8.247E+00
IY= 13    8.861E+00
IY= 12    6.897E+00
IY= 11    6.460E+00
IY= 10    6.313E+00
IY=  9    6.278E+00
IY=  8    6.275E+00
IY=  7    6.319E+00
IY=  6    5.907E+00
IY=  5    5.751E+00
IY=  4    4.797E+00
IY=  3    3.718E+00
IY=  2    2.778E+00
IY=  1    2.320E+00
 IX=         6
FIELD VALUES OF H1
IY= 16    2.962E+05      2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 15    2.962E+05      2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 14    2.962E+05      2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 13    2.962E+05      2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 12    2.962E+05      2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 11    2.962E+05      2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 10    2.962E+05      2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  9    2.962E+05      2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  8    2.962E+05      2.962E+05    2.963E+05    2.962E+05    2.962E+05
IY=  7    2.963E+05      2.963E+05    2.963E+05    2.963E+05    2.962E+05
IY=  6    2.963E+05      2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  5    2.963E+05      2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  4    2.963E+05      2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  3    2.963E+05      2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  2    2.963E+05      2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  1    2.963E+05      2.963E+05    2.963E+05    2.963E+05    2.963E+05
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  IX=         1            2            3            4            5
IY= 16    2.962E+05
IY= 15    2.962E+05
IY= 14    2.962E+05
IY= 13    2.962E+05
IY= 12    2.962E+05
IY= 11    2.962E+05
IY= 10    2.962E+05
IY=  9    2.962E+05
IY=  8    2.962E+05
IY=  7    2.962E+05
IY=  6    2.962E+05
IY=  5    2.962E+05
IY=  4    2.963E+05
IY=  3    2.963E+05
IY=  2    2.963E+05
IY=  1    2.963E+05
  IX=         6
FIELD VALUES OF TMP1
IY= 16    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 15    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 14    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 13    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 12    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 11    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 10    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  9    2.950E+02    2.950E+02    2.951E+02    2.950E+02    2.950E+02
IY=  8    2.950E+02    2.951E+02    2.951E+02    2.951E+02    2.950E+02
IY=  7    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.950E+02
IY=  6    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  5    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  4    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  3    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  2    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  1    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
  IX=         1            2            3            4            5
IY= 16    2.950E+02
IY= 15    2.950E+02
IY= 14    2.950E+02
IY= 13    2.950E+02
IY= 12    2.950E+02
IY= 11    2.950E+02
IY= 10    2.950E+02
IY=  9    2.950E+02
IY=  8    2.950E+02
IY=  7    2.950E+02
IY=  6    2.950E+02
IY=  5    2.950E+02
IY=  4    2.951E+02
IY=  3    2.951E+02
IY=  2    2.951E+02
IY=  1    2.951E+02
  IX=         6
FIELD VALUES OF RHO1
IY= 16    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 15    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 14    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 13    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 12    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 11    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 10    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  9    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  8    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  7    1.200E+00    1.201E+00    1.200E+00    1.201E+00    1.201E+00
IY=  6    1.200E+00    1.201E+00    1.200E+00    1.200E+00    1.201E+00
IY=  5    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  4    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  3    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  2    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  1    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
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IX=         1              2              3              4              5
IY= 16    1.201E+00
IY= 15    1.201E+00
IY= 14    1.201E+00
IY= 13    1.201E+00
IY= 12    1.201E+00
IY= 11    1.201E+00
IY= 10    1.201E+00
IY=  9    1.201E+00
IY=  8    1.201E+00
IY=  7    1.201E+00
IY=  6    1.201E+00
IY=  5    1.201E+00
IY=  4    1.201E+00
IY=  3    1.201E+00
IY=  2    1.200E+00
IY=  1    1.200E+00
 IX=         6

*************************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     2 ITERN NO=      1


FLOW FIELD AT ITHYD=  1, IZ=  2, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16   -6.608E+00   -6.605E+00   -6.423E+00   -6.257E+00   -6.082E+00
IY= 15   -7.313E+00   -7.364E+00   -7.275E+00   -7.217E+00   -7.161E+00
IY= 14   -8.487E+00   -8.549E+00   -8.473E+00   -8.426E+00   -8.367E+00
IY= 13   -9.419E+00   -9.481E+00   -9.421E+00   -9.389E+00   -9.332E+00
IY= 12   -9.198E+00   -9.275E+00   -9.287E+00   -9.341E+00   -9.368E+00
IY= 11   -9.196E+00   -9.276E+00   -9.286E+00   -9.344E+00   -9.387E+00
IY= 10   -9.226E+00   -9.322E+00   -9.311E+00   -9.363E+00   -9.414E+00
IY=  9   -9.468E+00   -9.419E+00   -9.349E+00   -9.347E+00   -9.419E+00
IY=  8   -9.789E+00   -9.508E+00   -9.451E+00   -9.370E+00   -9.441E+00
IY=  7   -9.329E+00   -9.741E+00   -9.903E+00   -9.802E+00   -9.734E+00
IY=  6   -1.076E+01   -1.074E+01   -1.080E+01   -9.888E+00   -9.436E+00
IY=  5   -1.034E+01   -1.067E+01   -1.086E+01   -1.026E+01   -9.771E+00
IY=  4   -1.010E+01   -1.033E+01   -1.100E+01   -1.029E+01   -9.371E+00
IY=  3   -8.840E+00   -9.241E+00   -9.879E+00   -9.128E+00   -8.052E+00
IY=  2   -6.067E+00   -6.816E+00   -8.101E+00   -7.325E+00   -5.832E+00
IY=  1   -2.366E+00   -6.096E+00   -7.955E+00   -7.246E+00   -5.534E+00
 IX=         1              2              3              4              5
IY= 16   -5.574E+00
IY= 15   -6.705E+00
IY= 14   -7.782E+00
IY= 13   -8.640E+00
IY= 12   -8.755E+00
IY= 11   -8.792E+00
IY= 10   -8.840E+00
IY=  9   -8.840E+00
IY=  8   -8.836E+00
IY=  7   -8.951E+00
IY=  6   -8.591E+00
IY=  5   -8.702E+00
IY=  4   -8.002E+00
IY=  3   -6.788E+00
IY=  2   -5.396E+00
IY=  1   -5.369E+00
 IX=         6
FIELD VALUES OF U1
IY= 16   -6.213E-02   -2.700E-01   -3.967E-01   -5.002E-01   -5.098E-01
IY= 15   -1.157E-01   -4.238E-01   -5.369E-01   -6.017E-01   -6.017E-01
IY= 14   -1.148E-01   -4.384E-01   -5.699E-01   -6.569E-01   -6.664E-01
IY= 13   -1.025E-01   -4.252E-01   -5.778E-01   -6.914E-01   -7.107E-01
IY= 12   -9.345E-02   -4.176E-01   -5.563E-01   -6.580E-01   -6.817E-01
IY= 11   -9.735E-02   -4.506E-01   -5.598E-01   -6.345E-01   -6.648E-01
IY= 10   -2.219E-01   -5.778E-01   -5.853E-01   -5.891E-01   -6.336E-01
IY=  9   -3.906E-01   -7.299E-01   -7.129E-01   -6.060E-01   -6.467E-01
IY=  8   -6.408E-01   -8.280E-01   -7.983E-01   -6.703E-01   -6.757E-01
IY=  7   -8.952E-02   -6.325E-01   -8.276E-01   -8.207E-01   -7.913E-01
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IY=    6    -1.202E-01    -4.359E-01    -7.111E-01    -8.265E-01    -7.573E-01
IY=    5     1.160E-01     2.045E-01    -4.230E-01    -7.277E-01    -7.405E-01
IY=    4     2.277E-01     7.570E-01     3.860E-01    -2.992E-01    -4.553E-01
IY=    3     4.347E-01     1.200E+00     1.030E+00     3.656E-01     6.855E-02
IY=    2     1.335E+00     2.183E+00     2.071E+00     1.438E+00     1.014E+00
IY=    1     2.559E+00     2.894E+00     2.614E+00     1.908E+00     1.355E+00
 IX=         1             2             3             4             5
FIELD VALUES OF V1
IY=   15    -6.850E-01    -7.064E-01    -7.289E-01    -6.967E-01    -5.906E-01
IY=   14    -9.515E-01    -9.201E-01    -8.232E-01    -7.010E-01    -5.177E-01
IY=   13    -9.574E-01    -9.011E-01    -7.630E-01    -6.256E-01    -4.443E-01
IY=   12    -6.650E-01    -6.412E-01    -5.512E-01    -4.570E-01    -3.214E-01
IY=   11    -6.129E-01    -5.980E-01    -5.040E-01    -4.100E-01    -2.776E-01
IY=   10    -5.220E-01    -5.256E-01    -3.867E-01    -2.880E-01    -1.912E-01
IY=    9    -5.943E-01    -3.860E-01     1.275E-04     7.524E-02    -2.306E-02
IY=    8    -7.132E-01    -3.098E-01     1.612E-01     2.603E-01     4.870E-02
IY=    7    -9.767E-01    -1.699E-01     3.308E-01     4.546E-01     1.573E-01
IY=    6    -2.311E+00    -7.301E-01     6.583E-01     1.165E+00     8.805E-01
IY=    5    -2.626E+00    -8.142E-01     6.880E-01     1.269E+00     1.078E+00
IY=    4    -3.070E+00    -9.110E-01     1.784E-01     1.399E+00     1.575E+00
IY=    3    -3.073E+00    -8.024E-01     1.007E-01     1.143E+00     1.612E+00
IY=    2    -2.554E+00    -3.407E-01     1.869E-01     7.664E-01     1.210E+00
IY=    1    -7.108E-01    -1.822E-03     6.297E-02     1.298E-01     2.326E-01
 IX=         1             2             3             4             5
IY=   15    -4.877E-01
IY=   14    -3.979E-01
IY=   13    -3.349E-01
IY=   12    -2.461E-01
IY=   11    -2.112E-01
IY=   10    -1.444E-01
IY=    9    -1.557E-02
IY=    8     4.102E-02
IY=    7     1.089E-01
IY=    6     6.426E-01
IY=    5     7.639E-01
IY=    4     1.237E+00
IY=    3     1.400E+00
IY=    2     1.162E+00
IY=    1     2.046E-01
 IX=         6
FIELD VALUES OF W1
IY=   16     5.766E-01     5.851E-01     5.790E-01     5.399E-01     4.564E-01
IY=   15     8.881E-01     9.284E-01     9.197E-01     8.419E-01     6.721E-01
IY=   14     1.074E+00     1.134E+00     1.136E+00     1.038E+00     8.171E-01
IY=   13     1.166E+00     1.232E+00     1.251E+00     1.142E+00     8.905E-01
IY=   12     1.143E+00     1.214E+00     1.262E+00     1.144E+00     8.563E-01
IY=   11     1.102E+00     1.180E+00     1.252E+00     1.124E+00     8.342E-01
IY=   10     1.037E+00     1.124E+00     1.240E+00     1.122E+00     8.302E-01
IY=    9     1.119E+00     1.189E+00     1.275E+00     1.186E+00     8.733E-01
IY=    8     1.186E+00     1.285E+00     1.294E+00     1.226E+00     9.005E-01
IY=    7    -1.442E+00     3.210E-01     1.287E+00     1.285E+00     9.829E-01
IY=    6    -1.635E+00     2.433E-01     1.480E+00     1.629E+00     1.343E+00
IY=    5    -1.793E+00     4.659E-02     1.456E+00     1.677E+00     1.407E+00
IY=    4    -1.704E+00    -1.825E-02     1.226E+00     1.634E+00     1.487E+00
IY=    3    -1.630E+00    -3.594E-01     4.550E-01     1.003E+00     1.097E+00
IY=    2    -2.016E+00    -1.461E+00    -9.100E-01    -4.081E-01    -1.754E-01
IY=    1    -2.524E+00    -2.022E+00    -1.425E+00    -8.451E-01    -5.461E-01
 IX=         1             2             3             4             5
IY=   16     3.693E-01
IY=   15     5.397E-01
IY=   14     6.478E-01
IY=   13     6.994E-01
IY=   12     6.529E-01
IY=   11     6.342E-01
IY=   10     6.273E-01
IY=    9     6.632E-01
IY=    8     6.888E-01
IY=    7     7.712E-01
IY=    6     1.057E+00
IY=    5     1.124E+00
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IY=   4    1.222E+00
IY=   3    1.094E+00
IY=   2    5.814E-01
IY=   1    3.795E-01
 IX=       6
FIELD VALUES OF KE
IY= 16    3.014E+00    3.013E+00    2.978E+00    3.028E+00    3.318E+00
IY= 15    1.081E+00    1.120E+00    1.215E+00    1.425E+00    2.054E+00
IY= 14    1.027E+00    1.080E+00    1.215E+00    1.486E+00    2.225E+00
IY= 13    1.074E+00    1.138E+00    1.306E+00    1.611E+00    2.407E+00
IY= 12    9.180E-01    9.730E-01    1.124E+00    1.398E+00    2.231E+00
IY= 11    4.809E-01    5.072E-01    6.293E-01    1.003E+00    2.151E+00
IY= 10    1.964E-01    2.379E-01    4.024E-01    8.237E-01    2.081E+00
IY=  9    1.515E-01    1.955E-01    4.033E-01    8.278E-01    2.094E+00
IY=  8    1.411E-01    1.869E-01    4.296E-01    8.675E-01    2.121E+00
IY=  7    1.409E+00    2.607E-01    4.387E-01    9.104E-01    2.191E+00
IY=  6    1.552E+00    2.618E-01    3.669E-01    7.847E-01    1.940E+00
IY=  5    1.967E+00    5.683E-01    3.758E-01    7.767E-01    1.815E+00
IY=  4    2.189E+00    8.369E-01    6.131E-01    9.135E-01    1.404E+00
IY=  3    2.371E+00    1.463E+00    1.239E+00    1.324E+00    1.480E+00
IY=  2    3.593E+00    2.384E+00    2.023E+00    1.831E+00    1.905E+00
IY=  1    9.283E-02    8.395E-02    7.151E-02    4.563E-02    5.120E-01
 IX=       1            2            3            4            5
IY= 16    4.013E+00
IY= 15    3.089E+00
IY= 14    3.343E+00
IY= 13    3.571E+00
IY= 12    3.468E+00
IY= 11    3.437E+00
IY= 10    3.421E+00
IY=  9    3.418E+00
IY=  8    3.418E+00
IY=  7    3.428E+00
IY=  6    3.291E+00
IY=  5    3.232E+00
IY=  4    2.928E+00
IY=  3    2.654E+00
IY=  2    2.572E+00
IY=  1    2.116E+00
 IX=       6
FIELD VALUES OF EP
IY= 16    5.473E+00    5.469E+00    5.375E+00    5.395E+00    5.912E+00
IY= 15    1.250E+00    1.298E+00    1.385E+00    1.643E+00    2.818E+00
IY= 14    1.180E+00    1.244E+00    1.373E+00    1.718E+00    3.125E+00
IY= 13    1.248E+00    1.324E+00    1.493E+00    1.892E+00    3.441E+00
IY= 12    9.038E-01    9.590E-01    1.094E+00    1.482E+00    3.110E+00
IY= 11    3.726E-01    3.934E-01    5.034E-01    9.789E-01    2.974E+00
IY= 10    1.154E-01    1.450E-01    2.982E-01    8.099E-01    2.871E+00
IY=  9    7.985E-02    1.131E-01    3.117E-01    8.294E-01    2.902E+00
IY=  8    7.323E-02    1.112E-01    3.469E-01    8.959E-01    2.964E+00
IY=  7    1.268E+00    1.462E-01    3.622E-01    9.751E-01    3.153E+00
IY=  6    1.414E+00    1.392E-01    2.695E-01    8.011E-01    2.816E+00
IY=  5    1.737E+00    3.087E-01    2.442E-01    7.275E-01    2.607E+00
IY=  4    1.873E+00    4.694E-01    2.861E-01    5.544E-01    1.692E+00
IY=  3    1.910E+00    8.312E-01    6.323E-01    7.054E-01    1.107E+00
IY=  2    3.223E+00    1.812E+00    1.423E+00    1.214E+00    1.260E+00
IY=  1    1.424E-01    1.225E-01    9.630E-02    4.909E-02    2.899E-01
 IX=       1            2            3            4            5
IY= 16    7.764E+00
IY= 15    5.604E+00
IY= 14    6.179E+00
IY= 13    6.674E+00
IY= 12    6.512E+00
IY= 11    6.470E+00
IY= 10    6.462E+00
IY=  9    6.459E+00
IY=  8    6.459E+00
IY=  7    6.502E+00
IY=  6    6.269E+00
IY=  5    6.196E+00
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IY=   4    5.611E+00
IY=   3    4.937E+00
IY=   2    4.379E+00
IY=   1    3.882E+00
 IX=       6
FIELD VALUES OF H1
IY= 16    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 15    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 14    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 13    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 12    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 11    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 10    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  9    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  8    2.962E+05    2.962E+05    2.963E+05    2.962E+05    2.962E+05
IY=  7    2.963E+05    2.963E+05    2.963E+05    2.962E+05    2.962E+05
IY=  6    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  5    2.964E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  4    2.964E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  3    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  2    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  1    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
 IX=       1            2            3            4            5
IY= 16    2.962E+05
IY= 15    2.962E+05
IY= 14    2.962E+05
IY= 13    2.962E+05
IY= 12    2.962E+05
IY= 11    2.962E+05
IY= 10    2.962E+05
IY=  9    2.962E+05
IY=  8    2.962E+05
IY=  7    2.962E+05
IY=  6    2.962E+05
IY=  5    2.962E+05
IY=  4    2.963E+05
IY=  3    2.963E+05
IY=  2    2.963E+05
IY=  1    2.963E+05
 IX=       6
FIELD VALUES OF TMP1
IY= 16    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 15    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 14    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 13    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 12    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 11    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 10    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  9    2.950E+02    2.950E+02    2.951E+02    2.950E+02    2.950E+02
IY=  8    2.950E+02    2.950E+02    2.951E+02    2.951E+02    2.950E+02
IY=  7    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.950E+02
IY=  6    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  5    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  4    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  3    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  2    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  1    2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
 IX=       1            2            3            4            5
IY= 16    2.950E+02
IY= 15    2.950E+02
IY= 14    2.950E+02
IY= 13    2.950E+02
IY= 12    2.950E+02
IY= 11    2.950E+02
IY= 10    2.950E+02
IY=  9    2.950E+02
IY=  8    2.950E+02
IY=  7    2.950E+02
IY=  6    2.950E+02
IY=  5    2.950E+02
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IY=    4    2.951E+02
IY=    3    2.951E+02
IY=    2    2.951E+02
IY=    1    2.951E+02
 IX=       6
FIELD VALUES OF RHO1
IY= 16    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 15    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 14    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 13    1.201E+00    1.201E+00    1.201E+0G    1.201E+00    1.201E+00
IY= 12    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 11    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 10    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=    9    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=    8    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=    7    1.200E+00    1.201E+00    1.200E+00    1.201E+00    1.201E+00
IY=    6    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.201E+00
IY=    5    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=    4    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=    3    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=    2    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=    1    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
 IX=       1            2            3            4            5
IY= 16    1.201E+00
IY= 15    1.201E+00
IY= 14    1.201E+00
IY= 13    1.201E+00
IY= 12    1.201E+00
IY= 11    1.201E+00
IY= 10    1.201E+00
IY=    9    1.201E+00
IY=    8    1.201E+00
IY=    7    1.201E+00
IY=    6    1.201E+00
IY=    5    1.201E+00
IY=    4    1.201E+00
IY=    3    1.201E+00
IY=    2    1.200E+00
IY=    1    1.200E+00
 IX=       6


****************************************************************
TIME STP=      1 SWEEP NO=    550 ZSLAB NO=      3 ITERN NO=         1


FLOW FIELD AT ITHYD=   1, IZ=   3, ISWEEP=  550, ISTEP=      1
FIELD VALUES OF P1
IY= 16   -7.045E+00   -7.058E+00   -6.892E+00   -6.739E+00   -6.569E+00
IY= 15   -7.550E+00   -7.647E+00   -7.625E+00   -7.616E+00   -7.603E+00
IY= 14   -8.861E+00   -8.986E+00   -9.000E+00   -9.015E+00   -9.008E+00
IY= 13   -9.871E+00   -9.997E+00   -1.006E+01   -1.012E+01   -1.013E+01
IY= 12   -9.507E+00   -9.677E+00   -9.973E+00   -1.016E+01   -1.024E+01
IY= 11   -9.509E+00   -9.682E+00   -1.000E+01   -1.019E+01   -1.027E+01
IY= 10   -9.463E+00   -9.675E+00   -1.006E+01   -1.026E+01   -1.034E+01
IY=    9   -1.022E+01   -1.017E+01   -1.019E+01   -1.037E+01   -1.045E+01
IY=    8   -1.075E+01   -1.057E+01   -1.029E+01   -1.045E+01   -1.052E+01
IY=    7   -9.679E+00   -9.988E+00   -1.060E+01   -1.076E+01   -1.081E+01
IY=    6   -1.145E+01   -1.103E+01   -1.149E+01   -1.129E+01   -1.114E+01
IY=    5   -1.047E+01   -1.100E+01   -1.213E+01   -1.200E+01   -1.170E+01
IY=    4   -1.013E+01   -1.085E+01   -1.337E+01   -1.299E+01   -1.219E+01
IY=    3   -8.146E+00   -9.037E+00   -1.222E+01   -1.208E+01   -1.090E+01
IY=    2   -2.856E+00   -5.104E+00   -9.768E+00   -9.905E+00   -7.907E+00
IY=    1    3.419E+00   -3.404E+00   -9.105E+00   -9.679E+00   -7.407E+00
 IX=       1            2            3            4            5
IY= 16   -6.024E+00
IY= 15   -7.151E+00
IY= 14   -8.411E+00
IY= 13   -9.422E+00
IY= 12   -9.570E+00
IY= 11   -9.616E+00
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IY= 10   -9.698E+00
IY=  9   -9.784E+00
IY=  8   -9.835E+00
IY=  7   -1.002E+01
IY=  6   -1.009E+01
IY=  5   -1.039E+01
IY=  4   -1.018E+01
IY=  3   -9.089E+00
IY=  2   -7.306E+00
IY=  1   -7.222E+00
 IX=       6
FIELD VALUES OF U1
IY= 16   -6.351E-02   -3.016E-01   -4.349E-01   -5.345E-01   -5.412E-01
IY= 15   -1.530E-01   -4.963E-01   -5.875E-01   -6.263E-01   -6.229E-01
IY= 14   -1.600E-01   -5.257E-01   -6.313E-01   -6.885E-01   -6.952E-01
IY= 13   -1.413E-01   -4.954E-01   -6.256E-01   -7.158E-01   -7.371E-01
IY= 12   -1.171E-01   -4.271E-01   -5.466E-01   -6.432E-01   -6.845E-01
IY= 11   -7.215E-02   -3.367E-01   -4.652E-01   -5.973E-01   -6.607E-01
IY= 10   -1.420E-02   -2.329E-01   -3.808E-01   -5.414E-01   -6.285E-01
IY=  9   -9.166E-02   -3.251E-01   -4.058E-01   -5.404E-01   -6.334E-01
IY=  8   -2.123E-01   -4.746E-01   -4.473E-01   -5.600E-01   -6.470E-01
IY=  7   -1.532E-01   -2.722E-01   -5.548E-01   -6.847E-01   -7.390E-01
IY=  6   -2.125E-01   -2.930E-01   -8.458E-01   -9.417E-01   -9.049E-01
IY=  5   -2.540E-02    8.806E-02   -7.397E-01   -9.968E-01   -9.832E-01
IY=  4    1.454E-01    7.239E-01   -1.067E-01   -7.863E-01   -8.502E-01
IY=  3    4.240E-01    1.497E+00    1.204E+00    2.776E-01   -1.030E-01
IY=  2    1.419E+00    2.681E+00    2.616E+00    1.844E+00    1.289E+00
IY=  1    2.827E+00    3.530E+00    3.313E+00    2.432E+00    1.685E+00
 IX=       1            2            3            4            5
FIELD VALUES OF V1
IY= 15   -7.435E-01   -7.915E-01   -8.160E-01   -7.633E-01   -6.270E-01
IY= 14   -1.338E+00   -1.283E+00   -1.116E+00   -9.265E-01   -6.568E-01
IY= 13   -1.460E+00   -1.336E+00   -1.076E+00   -8.475E-01   -5.665E-01
IY= 12   -9.848E-01   -8.526E-01   -6.377E-01   -4.573E-01   -2.644E-01
IY= 11   -9.232E-01   -7.936E-01   -5.824E-01   -4.081E-01   -2.356E-01
IY= 10   -8.048E-01   -7.000E-01   -4.997E-01   -3.465E-01   -2.087E-01
IY=  9   -1.326E+00   -9.344E-01   -3.701E-01   -2.389E-01   -1.799E-01
IY=  8   -1.636E+00   -1.065E+00   -2.931E-01   -1.862E-01   -1.698E-01
IY=  7   -2.073E+00   -1.233E+00   -1.639E-01   -1.200E-01   -1.510E-01
IY=  6   -3.746E+00   -2.445E+00   -1.314E-01    2.659E-01    1.835E-01
IY=  5   -4.093E+00   -2.663E+00   -2.437E-01    3.511E-01    3.229E-01
IY=  4   -4.532E+00   -2.825E+00   -8.745E-01    6.383E-01    9.123E-01
IY=  3   -4.352E+00   -2.447E+00   -1.191E+00    4.798E-01    1.223E+00
IY=  2   -3.361E+00   -1.314E+00   -6.658E-01    1.706E-01    8.546E-01
IY=  1   -8.760E-01   -1.349E-01   -4.688E-02    6.648E-02    2.261E-01
 IX=       1            2            3            4            5
IY= 15   -5.136E-01
IY= 14   -4.992E-01
IY= 13   -4.205E-01
IY= 12   -1.916E-01
IY= 11   -1.741E-01
IY= 10   -1.529E-01
IY=  9   -1.271E-01
IY=  8   -1.152E-01
IY=  7   -9.885E-02
IY=  6    1.584E-01
IY=  5    2.574E-01
IY=  4    8.231E-01
IY=  3    1.201E+00
IY=  2    1.131E+00
IY=  1    2.215E-01
 IX=       6
FIELD VALUES OF W1
IY= 16    5.038E-01    5.001E-01    4.630E-01    4.018E-01    3.151E-01
IY= 15    1.238E+00    1.195E+00    1.044E+00    8.715E-01    6.255E-01
IY= 14    1.747E+00    1.720E+00    1.547E+00    1.311E+00    9.503E-01
IY= 13    2.272E+00    2.269E+00    2.100E+00    1.805E+00    1.326E+00
IY= 12    2.205E+00    2.222E+00    2.128E+00    1.881E+00    1.416E+00
IY= 11    2.080E+00    2.133E+00    2.147E+00    1.920E+00    1.482E+00
IY= 10   -4.153E-01    8.173E-01    2.145E+00    2.008E+00    1.610E+00
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IY=   9   -9.145E-01   5.451E-01   2.177E+00   2.085E+00   1.697E+00
IY=   8   -1.277E+00   3.948E-01   2.228E+00   2.154E+00   1.744E+00
IY=   7   -3.380E+00  -1.418E+00   2.345E+00   2.367E+00   1.953E+00
IY=   6   -3.379E+00  -1.361E+00   2.549E+00   2.651E+00   2.163E+00
IY=   5   -2.570E+00  -4.829E-01   3.109E+00   3.181E+00   2.505E+00
IY=   4   -1.880E+00   1.070E-01   3.240E+00   3.582E+00   2.923E+00
IY=   3   -1.285E+00   5.464E-01   2.779E+00   3.547E+00   3.241E+00
IY=   2   -1.504E+00  -1.167E-01   1.173E+00   2.029E+00   2.379E+00
IY=   1   -2.072E+00  -1.047E+00   1.096E-01   1.210E+00   1.745E+00
 IX=         1           2           3           4           5
IY=  16    2.435E-01
IY=  15    4.824E-01
IY=  14    7.297E-01
IY=  13    1.016E+00
IY=  12    1.068E+00
IY=  11    1.088E+00
IY=  10    1.139E+00
IY=   9    1.201E+00
IY=   8    1.238E+00
IY=   7    1.417E+00
IY=   6    1.692E+00
IY=   5    1.996E+00
IY=   4    2.342E+00
IY=   3    2.517E+00
IY=   2    2.489E+00
IY=   1    2.355E+00
 IX=         6
FIELD VALUES OF KE
IY=  16    2.958E+00   2.960E+00   2.945E+00   3.032E+00   3.385E+00
IY=  15    6.628E-01   7.225E-01   8.804E-01   1.165E+00   1.927E+00
IY=  14    4.859E-01   5.597E-01   7.762E-01   1.151E+00   2.074E+00
IY=  13    4.795E-01   5.710E-01   8.341E-01   1.263E+00   2.270E+00
IY=  12    4.638E-01   5.504E-01   7.992E-01   1.206E+00   2.230E+00
IY=  11    4.112E-01   4.624E-01   6.744E-01   1.113E+00   2.207E+00
IY=  10    5.426E-01   3.323E-01   5.220E-01   1.003E+00   2.180E+00
IY=   9    6.899E-01   3.179E-01   5.098E-01   9.993E-01   2.199E+00
IY=   8    8.812E-01   3.188E-01   5.284E-01   1.020E+00   2.220E+00
IY=   7    2.836E+00   1.961E+00   7.159E-01   1.166E+00   2.341E+00
IY=   6    3.049E+00   2.184E+00   9.780E-01   1.365E+00   2.469E+00
IY=   5    3.383E+00   2.488E+00   1.377E+00   1.466E+00   2.524E+00
IY=   4    3.465E+00   2.565E+00   1.780E+00   1.723E+00   2.416E+00
IY=   3    3.598E+00   2.768E+00   2.258E+00   2.383E+00   2.480E+00
IY=   2    5.448E+00   3.599E+00   3.018E+00   2.722E+00   2.790E+00
IY=   1    8.837E-02   8.157E-02   8.546E-02   7.244E-02   7.975E-01
 IX=         1           2           3           4           5
IY=  16    4.136E+00
IY=  15    3.055E+00
IY=  14    3.309E+00
IY=  13    3.565E+00
IY=  12    3.593E+00
IY=  11    3.603E+00
IY=  10    3.625E+00
IY=   9    3.644E+00
IY=   8    3.655E+00
IY=   7    3.696E+00
IY=   6    3.709E+00
IY=   5    3.745E+00
IY=   4    3.655E+00
IY=   3    3.553E+00
IY=   2    3.498E+00
IY=   1    2.886E+00
 IX=         6
FIELD VALUES OF EP
IY=  16    5.464E+00   5.467E+00   5.402E+00   5.477E+00   6.110E+00
IY=  15    6.526E-01   7.060E-01   8.420E-01   1.202E+00   2.621E+00
IY=  14    3.680E-01   4.225E-01   6.172E-01   1.128E+00   2.891E+00
IY=  13    3.521E-01   4.200E-01   6.636E-01   1.262E+00   3.223E+00
IY=  12    3.204E-01   3.803E-01   6.040E-01   1.175E+00   3.140E+00
IY=  11    2.498E-01   2.791E-01   4.684E-01   1.055E+00   3.092E+00
IY=  10    4.730E-01   1.691E-01   3.419E-01   9.447E-01   3.037E+00
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IY=   9    6.818E-01    1.564E-01    3.388E-01    9.458E-01    3.069E+00
IY=   8    9.285E-01    1.585E-01    3.631E-01    9.749E-01    3.109E+00
IY=   7    3.210E+00    2.009E+00    5.338E-01    1.175E+00    3.354E+00
IY=   6    3.456E+00    2.265E+00    8.083E-01    1.462E+00    3.657E+00
IY=   5    3.610E+00    2.334E+00    1.129E+00    1.551E+00    3.772E+00
IY=   4    3.504E+00    2.171E+00    1.318E+00    1.478E+00    3.291E+00
IY=   3    3.415E+00    2.112E+00    1.529E+00    1.568E+00    2.268E+00
IY=   2    5.872E+00    3.166E+00    2.427E+00    2.070E+00    2.122E+00
IY=   1    1.323E-01    1.173E-01    1.258E-01    9.818E-02    5.400E-01
 IX=         1            2            3            4            5
IY=  16    8.088E+00
IY=  15    5.625E+00
IY=  14    6.224E+00
IY=  13    6.781E+00
IY=  12    6.847E+00
IY=  11    6.872E+00
IY=  10    6.921E+00
IY=   9    6.966E+00
IY=   8    6.990E+00
IY=   7    7.085E+00
IY=   6    7.128E+00
IY=   5    7.238E+00
IY=   4    7.037E+00
IY=   3    6.629E+00
IY=   2    5.899E+00
IY=   1    5.268E+00
 IX=         6
FIELD VALUES OF H1
IY=  16    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  15    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  14    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  13    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  12    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  11    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  10    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=   9    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=   8    2.963E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=   7    2.964E+05    2.963E+05    2.963E+05    2.962E+05    2.962E+05
IY=   6    2.964E+05    2.963E+05    2.963E+05    2.963E+05    2.962E+05
IY=   5    2.964E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=   4    2.964E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=   3    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=   2    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=   1    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
 IX=         1            2            3            4            5
IY=  16    2.962E+05
IY=  15    2.962E+05
IY=  14    2.962E+05
IY=  13    2.962E+05
IY=  12    2.962E+05
IY=  11    2.962E+05
IY=  10    2.962E+05
IY=   9    2.962E+05
IY=   8    2.962E+05
IY=   7    2.962E+05
IY=   6    2.962E+05
IY=   5    2.962E+05
IY=   4    2.962E+05
IY=   3    2.963E+05
IY=   2    2.963E+05
IY=   1    2.963E+05
 IX=         6
FIELD VALUES OF TMP1
IY=  16    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  15    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  14    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  13    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  12    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  11    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  10    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
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```
IY=   9    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=   8    2.951E+02    2.950E+02    2.951E+02    2.950E+02    2.950E+02
IY=   7    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.950E+02
IY=   6    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=   5    2.953E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=   4    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=   3    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=   2    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=   1    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
 IX=          1            2            3            4            5
IY=  16    2.950E+02
IY=  15    2.950E+02
IY=  14    2.950E+02
IY=  13    2.950E+02
IY=  12    2.950E+02
IY=  11    2.950E+02
IY=  10    2.950E+02
IY=   9    2.950E+02
IY=   8    2.950E+02
IY=   7    2.950E+02
IY=   6    2.950E+02
IY=   5    2.950E+02
IY=   4    2.951E+02
IY=   3    2.951E+02
IY=   2    2.951E+02
IY=   1    2.951E+02
 IX=          6
FIELD VALUES OF RHO1
IY=  16    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  15    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  14    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  13    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  12    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  11    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=  10    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=   9    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=   8    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY=   7    1.200E+00    1.200E+00    1.201E+00    1.201E+00    1.201E+00
IY=   6    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.201E+00
IY=   5    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.201E+00
IY=   4    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=   3    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=   2    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=   1    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
 IX=          1            2            3            4            5
IY=  16    1.201E+00
IY=  15    1.201E+00
IY=  14    1.201E+00
IY=  13    1.201E+00
IY=  12    1.201E+00
IY=  11    1.201E+00
IY=  10    1.201E+00
IY=   9    1.201E+00
IY=   8    1.201E+00
IY=   7    1.201E+00
IY=   6    1.201E+00
IY=   5    1.201E+00
IY=   4    1.201E+00
IY=   3    1.200E+00
IY=   2    1.200E+00
IY=   1    1.200E+00
 IX=          6


*********************************************************
TIME STP=      1 SWEEP NO=    550 ZSLAB NO=      4 ITERN NO=        1

FLOW FIELD AT ITHYD=  1, IZ=  4, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16  -7.856E+00  -7.875E+00  -7.702E+00  -7.536E+00  -7.339E+00
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```
IY= 15  -8.466E+00  -8.579E+00  -8.588E+00  -8.603E+00  -8.597E+00
IY= 14  -1.080E+01  -1.096E+01  -1.098E+01  -1.100E+01  -1.097E+01
IY= 13  -1.302E+01  -1.319E+01  -1.331E+01  -1.339E+01  -1.339E+01
IY= 12  -1.085E+01  -1.131E+01  -1.232E+01  -1.285E+01  -1.324E+01
IY= 11  -1.055E+01  -1.108E+01  -1.218E+01  -1.267E+01  -1.318E+01
IY= 10  -9.255E+00  -1.001E+01  -1.194E+01  -1.267E+01  -1.324E+01
IY=  9  -9.857E+00  -1.079E+01  -1.239E+01  -1.312E+01  -1.366E+01
IY=  8  -1.028E+01  -1.134E+01  -1.268E+01  -1.347E+01  -1.394E+01
IY=  7  -6.432E+00  -8.813E+00  -1.297E+01  -1.424E+01  -1.484E+01
IY=  6  -1.604E+01  -1.643E+01  -1.671E+01  -1.709E+01  -1.681E+01
IY=  5  -1.686E+01  -1.955E+01  -2.119E+01  -2.029E+01  -1.963E+01
IY=  4  -1.986E+01  -2.253E+01  -2.516E+01  -2.328E+01  -2.197E+01
IY=  3  -1.589E+01  -1.852E+01  -2.644E+01  -2.540E+01  -2.306E+01
IY=  2   4.593E-01  -4.882E+00  -2.129E+01  -2.239E+01  -1.840E+01
IY=  1   1.653E+01   4.514E+00  -1.752E+01  -2.155E+01  -1.683E+01
 IX=        1           2           3           4           5
IY= 16  -6.686E+00
IY= 15  -8.049E+00
IY= 14  -1.012E+01
IY= 13  -1.224E+01
IY= 12  -1.255E+01
IY= 11  -1.268E+01
IY= 10  -1.296E+01
IY=  9  -1.335E+01
IY=  8  -1.359E+01
IY=  7  -1.444E+01
IY=  6  -1.572E+01
IY=  5  -1.714E+01
IY=  4  -1.807E+01
IY=  3  -1.801E+01
IY=  2  -1.581E+01
IY=  1  -1.579E+01
 IX=        6
FIELD VALUES OF U1
IY= 16  -5.615E-02  -3.009E-01  -4.514E-01  -5.710E-01  -5.835E-01
IY= 15  -1.540E-01  -5.032E-01  -6.033E-01  -6.596E-01  -6.669E-01
IY= 14  -1.729E-01  -5.697E-01  -6.921E-01  -7.747E-01  -7.963E-01
IY= 13  -1.512E-01  -5.424E-01  -7.016E-01  -8.327E-01  -8.814E-01
IY= 12  -4.805E-02  -2.820E-01  -3.893E-01  -4.693E-01  -5.987E-01
IY= 11   1.255E-01   5.501E-02  -1.233E-01  -2.068E-01  -4.579E-01
IY= 10  -2.531E-01  -5.091E-01  -1.164E-01   5.096E-02  -2.563E-01
IY=  9  -3.217E-01  -6.747E-01  -1.591E-01   5.591E-02  -2.427E-01
IY=  8  -3.648E-01  -7.738E-01  -1.131E-01   3.117E-02  -2.493E-01
IY=  7  -4.504E-01  -8.701E-01  -1.232E-01   8.109E-03  -2.848E-01
IY=  6  -5.281E-01  -9.907E-01  -2.040E-01  -2.793E-01  -4.986E-01
IY=  5  -1.978E-01  -6.208E-01  -8.134E-01  -1.089E+00  -1.170E+00
IY=  4   7.182E-02  -2.612E-01  -1.248E+00  -1.614E+00  -1.576E+00
IY=  3   4.611E-01   9.911E-01  -2.394E-01  -1.144E+00  -1.267E+00
IY=  2   1.449E+00   3.325E+00   2.943E+00   1.257E+00   4.545E-01
IY=  1   2.746E+00   4.786E+00   4.421E+00   2.631E+00   1.046E+00
 IX=        1           2           3           4           5
FIELD VALUES OF V1
IY= 15  -8.010E-01  -8.652E-01  -8.988E-01  -8.371E-01  -6.808E-01
IY= 14  -1.747E+00  -1.695E+00  -1.493E+00  -1.245E+00  -8.808E-01
IY= 13  -2.031E+00  -1.895E+00  -1.577E+00  -1.265E+00  -8.578E-01
IY= 12  -8.956E-01  -7.760E-01  -6.224E-01  -4.448E-01  -2.936E-01
IY= 11  -7.012E-01  -6.070E-01  -4.651E-01  -2.776E-01  -2.507E-01
IY= 10  -1.001E+00  -9.511E-01  -7.680E-01  -3.563E-01  -3.006E-01
IY=  9  -2.751E+00  -2.513E+00  -1.558E+00  -7.594E-01  -6.045E-01
IY=  8  -3.439E+00  -3.133E+00  -1.840E+00  -9.072E-01  -7.037E-01
IY=  7  -4.109E+00  -3.737E+00  -2.015E+00  -9.910E-01  -7.888E-01
IY=  6  -7.133E+00  -6.188E+00  -3.036E+00  -1.616E+00  -1.137E+00
IY=  5  -7.712E+00  -6.596E+00  -3.074E+00  -1.670E+00  -1.088E+00
IY=  4  -8.193E+00  -6.744E+00  -2.698E+00  -8.303E-01  -1.643E-01
IY=  3  -7.625E+00  -6.136E+00  -2.615E+00  -1.623E-01   6.859E-01
IY=  2  -5.358E+00  -3.960E+00  -2.177E+00   6.494E-02   1.183E+00
IY=  1  -1.219E+00  -6.935E-01  -3.837E-01  -1.055E-02   4.661E-01
 IX=        1           2           3           4           5
IY= 15  -5.529E-01
IY= 14  -6.613E-01
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```
IY= 13   -6.300E-01
IY= 12   -2.504E-01
IY= 11   -2.527E-01
IY= 10   -2.760E-01
IY=  9   -3.857E-01
IY=  8   -4.244E-01
IY=  7   -4.611E-01
IY=  6   -5.701E-01
IY=  5   -5.760E-01
IY=  4    3.587E-02
IY=  3    6.451E-01
IY=  2    1.054E+00
IY=  1    2.311E-01
 IX=     6
FIELD VALUES OF W1
```

	1	2	3	4	5
IY= 16	4.196E-01	4.126E-01	3.711E-01	3.167E-01	2.450E-01
IY= 15	1.359E+00	1.246E+00	1.005E+00	8.000E-01	5.509E-01
IY= 14	2.341E+00	2.230E+00	1.909E+00	1.587E+00	1.143E+00
IY= 13	4.006E+00	3.928E+00	3.504E+00	2.992E+00	2.211E+00
IY= 12	3.991E+00	3.977E+00	3.766E+00	3.501E+00	2.793E+00
IY= 11	-1.224E-01	4.285E-01	1.175E+00	1.798E+00	3.222E+00
IY= 10	-4.297E+00	-3.304E+00	-1.562E+00	2.335E-01	3.178E+00
IY= 9	-4.844E+00	-3.802E+00	-1.919E+00	1.356E-01	3.288E+00
IY= 8	-4.858E+00	-3.728E+00	-1.526E+00	9.684E-01	3.303E+00
IY= 7	-6.035E+00	-4.627E+00	-1.953E+00	8.958E-01	3.736E+00
IY= 6	-5.440E+00	-3.822E+00	-5.619E-01	2.485E+00	4.311E+00
IY= 5	-2.593E+00	-5.333E-02	4.567E+00	5.885E+00	5.041E+00
IY= 4	-5.477E-01	2.490E+00	7.000E+00	6.872E+00	5.143E+00
IY= 3	1.983E+00	4.933E+00	8.229E+00	7.320E+00	5.443E+00
IY= 2	3.808E+00	6.412E+00	7.897E+00	7.805E+00	6.647E+00
IY= 1	4.354E+00	6.700E+00	7.649E+00	7.756E+00	6.834E+00

```
 IX=     6
IY= 16   1.876E-01
IY= 15   4.185E-01
IY= 14   8.709E-01
IY= 13   1.687E+00
IY= 12   2.138E+00
IY= 11   2.422E+00
IY= 10   2.826E+00
IY=  9   3.011E+00
IY=  8   3.097E+00
IY=  7   3.480E+00
IY=  6   3.621E+00
IY=  5   3.878E+00
IY=  4   3.982E+00
IY=  3   4.081E+00
IY=  2   4.348E+00
IY=  1   4.357E+00
 IX=     6
FIELD VALUES OF KE
```

	1	2	3	4	5
IY= 16	3.166E+00	3.168E+00	3.158E+00	3.255E+00	3.625E+00
IY= 15	6.158E-01	6.923E-01	8.954E-01	1.235E+00	2.088E+00
IY= 14	3.937E-01	4.884E-01	7.792E-01	1.261E+00	2.348E+00
IY= 13	3.889E-01	5.128E-01	8.788E-01	1.469E+00	2.707E+00
IY= 12	5.011E-01	6.109E-01	8.816E-01	1.322E+00	2.492E+00
IY= 11	1.457E+00	1.411E+00	1.050E+00	1.182E+00	2.305E+00
IY= 10	4.206E+00	3.545E+00	2.133E+00	1.283E+00	2.124E+00
IY= 9	4.395E+00	3.876E+00	2.523E+00	1.537E+00	2.176E+00
IY= 8	4.494E+00	4.082E+00	2.651E+00	1.573E+00	2.198E+00
IY= 7	5.987E+00	5.900E+00	4.037E+00	1.976E+00	2.454E+00
IY= 6	6.233E+00	6.260E+00	4.113E+00	2.254E+00	2.679E+00
IY= 5	6.579E+00	6.818E+00	3.899E+00	2.690E+00	3.633E+00
IY= 4	6.549E+00	6.903E+00	3.722E+00	2.989E+00	4.019E+00
IY= 3	7.108E+00	7.553E+00	4.769E+00	4.117E+00	4.481E+00
IY= 2	1.187E+01	1.115E+01	8.693E+00	7.297E+00	6.645E+00
IY= 1	1.765E-01	3.669E-01	4.839E-01	4.453E-01	2.405E+00

```
 IX=     1
IY= 16   4.391E+00
IY= 15   3.283E+00
IY= 14   3.672E+00
```

```
IY= 13    4.121E+00
IY= 12    4.252E+00
IY= 11    4.319E+00
IY= 10    4.331E+00
IY=  9    4.375E+00
IY=  8    4.398E+00
IY=  7    4.585E+00
IY=  6    4.776E+00
IY=  5    5.091E+00
IY=  4    5.179E+00
IY=  3    5.514E+00
IY=  2    6.586E+00
IY=  1    7.095E+00
 IX=     6
FIELD VALUES OF EP
IY= 16    5.923E+00    5.927E+00    5.866E+00    5.956E+00    6.636E+00
IY= 15    6.266E-01    6.945E-01    8.710E-01    1.304E+00    2.907E+00
IY= 14    2.674E-01    3.323E-01    6.049E-01    1.284E+00    3.407E+00
IY= 13    2.283E-01    3.154E-01    6.853E-01    1.556E+00    4.067E+00
IY= 12    3.075E-01    3.741E-01    6.333E-01    1.273E+00    3.630E+00
IY= 11    1.725E+00    1.196E+00    7.282E-01    9.993E-01    3.196E+00
IY= 10    6.425E+00    5.005E+00    2.834E+00    9.945E-01    2.695E+00
IY=  9    6.582E+00    5.535E+00    3.565E+00    1.297E+00    2.739E+00
IY=  8    6.552E+00    5.771E+00    3.697E+00    1.333E+00    2.769E+00
IY=  7    8.620E+00    8.586E+00    6.006E+00    1.794E+00    3.140E+00
IY=  6    8.992E+00    9.188E+00    5.990E+00    2.182E+00    3.677E+00
IY=  5    8.974E+00    9.312E+00    4.916E+00    3.220E+00    5.935E+00
IY=  4    8.417E+00    8.915E+00    4.199E+00    3.744E+00    6.755E+00
IY=  3    8.680E+00    9.239E+00    5.062E+00    4.387E+00    6.796E+00
IY=  2    1.752E+01    1.586E+01    1.145E+01    9.232E+00    8.410E+00
IY=  1    3.734E-01    1.119E+00    1.695E+00    1.497E+00    3.532E+00
 IX=     1           2            3            4            5
IY= 16    8.691E+00
IY= 15    6.128E+00
IY= 14    7.067E+00
IY= 13    8.108E+00
IY= 12    8.374E+00
IY= 11    8.557E+00
IY= 10    8.628E+00
IY=  9    8.757E+00
IY=  8    8.826E+00
IY=  7    9.271E+00
IY=  6    9.760E+00
IY=  5    1.048E+01
IY=  4    1.070E+01
IY=  3    1.119E+01
IY=  2    1.276E+01
IY=  1    1.509E+01
 IX=     6
FIELD VALUES OF H1
IY= 16    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 15    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 14    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 13    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 12    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 11    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 10    2.964E+05    2.963E+05    2.962E+05    2.962E+05    2.962E+05
IY=  9    2.965E+05    2.963E+05    2.962E+05    2.962E+05    2.962E+05
IY=  8    2.965E+05    2.963E+05    2.962E+05    2.962E+05    2.962E+05
IY=  7    2.966E+05    2.964E+05    2.963E+05    2.962E+05    2.962E+05
IY=  6    2.966E+05    2.964E+05    2.963E+05    2.963E+05    2.962E+05
IY=  5    2.966E+05    2.964E+05    2.963E+05    2.963E+05    2.962E+05
IY=  4    2.965E+05    2.964E+05    2.963E+05    2.963E+05    2.963E+05
IY=  3    2.964E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  2    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  1    2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
 IX=     1           2            3            4            5
IY= 16    2.962E+05
IY= 15    2.962E+05
IY= 14    2.962E+05
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IY= 13    2.962E+05
IY= 12    2.962E+05
IY= 11    2.962E+05
IY= 10    2.962E+05
IY=  9    2.962E+05
IY=  8    2.962E+05
IY=  7    2.962E+05
IY=  6    2.962E+05
IY=  5    2.962E+05
IY=  4    2.962E+05
IY=  3    2.963E+05
IY=  2    2.963E+05
IY=  1    2.963E+05
 IX=       6
FIELD VALUES OF TMP1
IY= 16    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 15    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 14    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 13    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 12    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 11    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 10    2.952E+02    2.951E+02    2.950E+02    2.950E+02    2.950E+02
IY=  9    2.953E+02    2.951E+02    2.950E+02    2.950E+02    2.950E+02
IY=  8    2.953E+02    2.952E+02    2.950E+02    2.950E+02    2.950E+02
IY=  7    2.954E+02    2.952E+02    2.951E+02    2.951E+02    2.950E+02
IY=  6    2.954E+02    2.952E+02    2.951E+02    2.951E+02    2.950E+02
IY=  5    2.954E+02    2.952E+02    2.951E+02    2.951E+02    2.951E+02
IY=  4    2.954E+02    2.952E+02    2.951E+02    2.951E+02    2.951E+02
IY=  3    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  2    2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  1    2.952E+02    2.952E+02    2.951E+02    2.951E+02    2.951E+02
 IX=       1            2            3            4            5
IY= 16    2.950E+02
IY= 15    2.950E+02
IY= 14    2.950E+02
IY= 13    2.950E+02
IY= 12    2.950E+02
IY= 11    2.950E+02
IY= 10    2.950E+02
IY=  9    2.950E+02
IY=  8    2.950E+02
IY=  7    2.950E+02
IY=  6    2.950E+02
IY=  5    2.950E+02
IY=  4    2.951E+02
IY=  3    2.951E+02
IY=  2    2.951E+02
IY=  1    2.951E+02
 IX=       6
FIELD VALUES OF RHO1
IY= 16    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 15    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 14    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 13    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 12    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 11    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 10    1.200E+00    1.200E+00    1.201E+00    1.201E+00    1.201E+00
IY=  9    1.200E+00    1.200E+00    1.201E+00    1.201E+00    1.201E+00
IY=  8    1.199E+00    1.200E+00    1.201E+00    1.201E+00    1.201E+00
IY=  7    1.199E+00    1.200E+00    1.201E+00    1.201E+00    1.201E+00
IY=  6    1.199E+00    1.200E+00    1.200E+00    1.200E+00    1.201E+00
IY=  5    1.199E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  4    1.199E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  3    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  2    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  1    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
 IX=       1            2            3            4            5
IY= 16    1.201E+00
IY= 15    1.201E+00
IY= 14    1.201E+00
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IY= 13      1.201E+00
IY= 12      1.201E+00
IY= 11      1.201E+00
IY= 10      1.201E+00
IY=  9      1.201E+00
IY=  8      1.201E+00
IY=  7      1.201E+00
IY=  6      1.201E+00
IY=  5      1.201E+00
IY=  4      1.201E+00
IY=  3      1.200E+00
IY=  2      1.200E+00
IY=  1      1.200E+00
 IX=       6

**********************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=      5 ITERN NO=      1


FLOW FIELD AT ITHYD=  1, IZ=  5, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16   -8.620E+00   -8.642E+00   -8.460E+00   -8.276E+00   -8.049E+00
IY= 15   -9.359E+00   -9.487E+00   -9.536E+00   -9.582E+00   -9.591E+00
IY= 14   -1.444E+01   -1.461E+01   -1.444E+01   -1.435E+01   -1.422E+01
IY= 13   -2.404E+01   -2.426E+01   -2.351E+01   -2.303E+01   -2.249E+01
IY= 12   -2.148E+01   -2.297E+01   -2.500E+01   -2.684E+01   -2.739E+01
IY= 11   -8.911E+00   -1.096E+01   -1.540E+01   -2.070E+01   -2.951E+01
IY= 10    9.249E+00    4.812E+00   -5.428E+00   -1.718E+01   -3.196E+01
IY=  9    6.724E+00    7.288E-01   -1.079E+01   -2.228E+01   -3.494E+01
IY=  8    3.405E+00   -3.197E+00   -1.481E+01   -2.631E+01   -3.458E+01
IY=  7    1.129E+01    1.046E+00   -1.311E+01   -2.447E+01   -4.111E+01
IY=  6   -5.512E+01   -6.392E+01   -6.232E+01   -5.712E+01   -4.735E+01
IY=  5   -7.141E+01   -8.163E+01   -7.852E+01   -6.750E+01   -5.929E+01
IY=  4   -8.015E+01   -8.539E+01   -7.763E+01   -6.756E+01   -6.177E+01
IY=  3   -7.809E+01   -8.343E+01   -8.020E+01   -6.877E+01   -6.143E+01
IY=  2   -5.101E+01   -6.357E+01   -7.494E+01   -6.326E+01   -5.483E+01
IY=  1   -1.439E+01   -4.965E+01   -7.254E+01   -6.212E+01   -5.368E+01
 IX=        1            2            3            4            5
IY= 16   -7.284E+00
IY= 15   -8.942E+00
IY= 14   -1.279E+01
IY= 13   -1.913E+01
IY= 12   -2.307E+01
IY= 11   -2.447E+01
IY= 10   -2.677E+01
IY=  9   -2.863E+01
IY=  8   -2.957E+01
IY=  7   -3.317E+01
IY=  6   -3.664E+01
IY=  5   -4.027E+01
IY=  4   -4.163E+01
IY=  3   -4.133E+01
IY=  2   -3.917E+01
IY=  1   -3.915E+01
 IX=        6
FIELD VALUES OF U1
IY= 16   -4.983E-02   -2.975E-01   -4.681E-01   -6.092E-01   -6.264E-01
IY= 15   -1.293E-01   -4.802E-01   -6.027E-01   -6.880E-01   -7.085E-01
IY= 14   -1.895E-01   -6.669E-01   -8.345E-01   -9.613E-01   -9.968E-01
IY= 13   -2.227E-01   -8.710E-01   -1.144E+00   -1.382E+00   -1.453E+00
IY= 12   -7.274E-02   -6.320E-01   -7.627E-01   -1.146E+00   -1.476E+00
IY= 11   -4.721E-01   -1.819E+00   -1.881E+00   -1.132E+00   -1.518E+00
IY= 10   -9.765E-01   -2.674E+00   -2.280E+00   -5.634E-01   -1.309E+00
IY=  9   -1.072E+00   -2.886E+00   -2.462E+00   -7.403E-01   -1.355E+00
IY=  8   -1.061E+00   -2.688E+00   -1.655E+00    1.748E-03   -1.130E+00
IY=  7   -1.443E+00   -3.570E+00   -2.859E+00   -5.867E-01   -1.454E+00
IY=  6   -1.501E+00   -3.737E+00   -2.885E+00   -1.669E+00   -1.884E+00
IY=  5   -1.249E+00   -3.735E+00   -3.725E+00   -3.528E+00   -3.420E+00
IY=  4   -1.251E+00   -3.677E+00   -3.971E+00   -3.867E+00   -3.763E+00
IY=  3   -6.828E-01   -2.419E+00   -3.262E+00   -3.579E+00   -3.533E+00
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IY=  2    1.235E+00     1.623E+00    -2.575E-02    -1.888E+00    -2.294E+00
IY=  1    3.901E+00     4.246E+00     2.150E+00    -1.016E+00    -2.016E+00
 IX=         1             2             3             4             5
FIELD VALUES OF V1
IY= 15   -8.590E-01    -9.380E-01    -9.923E-01    -9.274E-01    -7.516E-01
IY= 14   -2.349E+00    -2.313E+00    -2.083E+00    -1.766E+00    -1.269E+00
IY= 13   -3.191E+00    -3.065E+00    -2.658E+00    -2.209E+00    -1.551E+00
IY= 12   -1.470E+00    -1.541E+00    -1.688E+00    -1.655E+00    -1.296E+00
IY= 11   -7.608E-01    -9.453E-01    -1.210E+00    -1.454E+00    -1.427E+00
IY= 10   -2.837E+00    -3.171E+00    -3.233E+00    -3.094E+00    -1.510E+00
IY=  9   -5.493E+00    -5.668E+00    -5.064E+00    -4.157E+00    -1.925E+00
IY=  8   -6.429E+00    -6.522E+00    -5.659E+00    -4.527E+00    -1.868E+00
IY=  7   -6.859E+00    -6.793E+00    -5.273E+00    -3.770E+00    -2.257E+00
IY=  6   -1.163E+01    -1.067E+01    -7.568E+00    -5.033E+00    -2.518E+00
IY=  5   -1.246E+01    -1.116E+01    -7.062E+00    -4.163E+00    -2.097E+00
IY=  4   -1.247E+01    -9.748E+00    -3.748E+00    -1.371E+00    -4.177E-01
IY=  3   -1.145E+01    -7.873E+00    -1.886E+00     1.347E-01     4.957E-01
IY=  2   -8.200E+00    -4.777E+00    -6.764E-01     1.195E+00     1.267E+00
IY=  1   -2.001E+00    -7.625E-01    -7.901E-02     4.120E-01     4.489E-01
 IX=         1             2             3             4             5
IY= 15   -6.061E-01
IY= 14   -9.439E-01
IY= 13   -1.124E+00
IY= 12   -9.570E-01
IY= 11   -9.905E-01
IY= 10   -9.399E-01
IY=  9   -8.729E-01
IY=  8   -8.402E-01
IY=  7   -8.777E-01
IY=  6   -8.829E-01
IY=  5   -9.322E-01
IY=  4   -1.899E-01
IY=  3    3.469E-01
IY=  2    7.283E-01
IY=  1    1.484E-01
 IX=         6
FIELD VALUES OF W1
IY= 16    3.457E-01     3.366E-01     3.019E-01     2.594E-01     2.010E-01
IY= 15    1.095E+00     1.020E+00     7.928E-01     6.141E-01     4.190E-01
IY= 14    2.476E+00     2.352E+00     1.976E+00     1.633E+00     1.169E+00
IY= 13    5.901E+00     5.722E+00     4.834E+00     3.966E+00     2.785E+00
IY= 12    8.390E+00     8.161E+00     6.889E+00     5.667E+00     3.953E+00
IY= 11   -6.499E+00    -6.497E+00    -6.499E+00    -6.499E+00     5.149E+00
IY= 10   -6.499E+00    -6.498E+00    -6.499E+00    -6.498E+00     6.641E+00
IY=  9   -6.500E+00    -6.499E+00    -6.500E+00    -6.499E+00     7.207E+00
IY=  8   -3.596E+00    -3.261E+00    -1.962E+00     1.078E+00     7.629E+00
IY=  7   -6.499E+00    -6.496E+00    -6.498E+00    -6.496E+00     8.493E+00
IY=  6   -4.916E+00    -3.812E+00     1.903E-01     4.409E+00     8.025E+00
IY=  5    1.844E+00     5.195E+00     9.499E+00     9.550E+00     6.929E+00
IY=  4    6.121E+00     9.620E+00     1.181E+01     9.873E+00     6.524E+00
IY=  3    1.017E+01     1.263E+01     1.257E+01     1.003E+01     6.555E+00
IY=  2    1.294E+01     1.469E+01     1.349E+01     1.093E+01     7.232E+00
IY=  1    1.420E+01     1.531E+01     1.403E+01     1.109E+01     7.340E+00
 IX=         1             2             3             4             5
IY= 16    1.531E-01
IY= 15    3.187E-01
IY= 14    8.783E-01
IY= 13    2.043E+00
IY= 12    2.736E+00
IY= 11    3.544E+00
IY= 10    4.608E+00
IY=  9    5.034E+00
IY=  8    5.251E+00
IY=  7    5.803E+00
IY=  6    5.412E+00
IY=  5    4.872E+00
IY=  4    4.621E+00
IY=  3    4.600E+00
IY=  2    4.809E+00
IY=  1    4.813E+00
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 IX=        6
FIELD VALUES OF KE
IY= 16    3.378E+00     3.378E+00     3.368E+00     3.466E+00     3.844E+00
IY= 15    6.456E-01     7.385E-01     9.784E-01     1.360E+00     2.276E+00
IY= 14    4.115E-01     5.406E-01     9.279E-01     1.541E+00     2.802E+00
IY= 13    4.538E-01     6.601E-01     1.234E+00     2.123E+00     3.691E+00
IY= 12    3.941E+00     3.534E+00     3.515E+00     3.029E+00     4.134E+00
IY= 11    1.105E+01     9.601E+00     8.883E+00     8.672E+00     4.775E+00
IY= 10    6.860E+00     7.314E+00     8.864E+00     1.102E+01     6.948E+00
IY=  9    6.557E+00     7.458E+00     9.897E+00     1.350E+01     7.680E+00
IY=  8    6.264E+00     7.333E+00     9.991E+00     1.347E+01     8.487E+00
IY=  7    9.011E+00     1.030E+01     1.318E+01     1.719E+01     1.071E+01
IY=  6    9.504E+00     1.092E+01     1.420E+01     1.623E+01     8.900E+00
IY=  5    1.083E+01     1.304E+01     1.178E+01     8.873E+00     6.903E+00
IY=  4    1.206E+01     1.318E+01     7.420E+00     5.794E+00     6.440E+00
IY=  3    1.421E+01     1.303E+01     6.110E+00     6.321E+00     6.775E+00
IY=  2    2.383E+01     1.729E+01     1.102E+01     8.955E+00     8.093E+00
IY=  1    1.195E+00     1.370E+00     1.155E+00     7.193E-01     7.465E+00
 IX=        1             2             3             4             5
IY= 16    4.609E+00
IY= 15    3.518E+00
IY= 14    4.178E+00
IY= 13    5.116E+00
IY= 12    5.675E+00
IY= 11    6.198E+00
IY= 10    7.025E+00
IY=  9    7.236E+00
IY=  8    7.821E+00
IY=  7    8.325E+00
IY=  6    8.012E+00
IY=  5    7.577E+00
IY=  4    7.319E+00
IY=  3    7.553E+00
IY=  2    8.576E+00
IY=  1    9.180E+00
 IX=        6
FIELD VALUES OF EP
IY= 16    6.375E+00     6.377E+00     6.313E+00     6.405E+00     7.115E+00
IY= 15    6.800E-01     7.646E-01     9.786E-01     1.471E+00     3.227E+00
IY= 14    2.931E-01     3.891E-01     7.823E-01     1.700E+00     4.301E+00
IY= 13    2.766E-01     4.575E-01     1.168E+00     2.677E+00     6.240E+00
IY= 12    7.495E+00     5.204E+00     4.180E+00     4.352E+00     7.254E+00
IY= 11    3.049E+01     2.351E+01     2.012E+01     1.963E+01     8.683E+00
IY= 10    1.393E+01     1.417E+01     1.770E+01     2.429E+01     1.299E+01
IY=  9    1.241E+01     1.403E+01     2.019E+01     3.167E+01     1.426E+01
IY=  8    1.115E+01     1.323E+01     1.967E+01     3.023E+01     1.622E+01
IY=  7    1.610E+01     1.928E+01     2.714E+01     4.068E+01     2.142E+01
IY=  6    1.709E+01     2.057E+01     2.931E+01     3.711E+01     1.690E+01
IY=  5    1.893E+01     2.455E+01     2.309E+01     1.763E+01     1.423E+01
IY=  4    2.089E+01     2.411E+01     1.266E+01     1.028E+01     1.336E+01
IY=  3    2.474E+01     2.220E+01     8.321E+00     1.011E+01     1.367E+01
IY=  2    5.128E+01     3.183E+01     1.755E+01     1.393E+01     1.517E+01
IY=  1    6.582E+00     8.080E+00     6.250E+00     3.073E+00     1.517E+01
 IX=        1             2             3             4             5
IY= 16    9.215E+00
IY= 15    6.639E+00
IY= 14    8.276E+00
IY= 13    1.069E+01
IY= 12    1.215E+01
IY= 11    1.357E+01
IY= 10    1.565E+01
IY=  9    1.614E+01
IY=  8    1.801E+01
IY=  7    1.935E+01
IY=  6    1.860E+01
IY=  5    1.764E+01
IY=  4    1.699E+01
IY=  3    1.741E+01
IY=  2    1.953E+01
IY=  1    2.160E+01
```

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   IX=       6
FIELD VALUES OF H1
IY= 16   2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 15   2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 14   2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 13   2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 12   2.963E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 11   2.968E+05    2.965E+05    2.963E+05    2.962E+05    2.962E+05
IY= 10   2.969E+05    2.965E+05    2.963E+05    2.962E+05    2.962E+05
IY=  9   2.969E+05    2.965E+05    2.963E+05    2.962E+05    2.962E+05
IY=  8   2.969E+05    2.965E+05    2.963E+05    2.962E+05    2.962E+05
IY=  7   2.968E+05    2.965E+05    2.963E+05    2.963E+05    2.962E+05
IY=  6   2.968E+05    2.964E+05    2.962E+05    2.962E+05    2.962E+05
IY=  5   2.967E+05    2.964E+05    2.962E+05    2.962E+05    2.962E+05
IY=  4   2.966E+05    2.963E+05    2.963E+05    2.963E+05    2.962E+05
IY=  3   2.964E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  2   2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
IY=  1   2.963E+05    2.963E+05    2.963E+05    2.963E+05    2.963E+05
   IX=       1            2            3            4            5
IY= 16   2.962E+05
IY= 15   2.962E+05
IY= 14   2.962E+05
IY= 13   2.962E+05
IY= 12   2.962E+05
IY= 11   2.962E+05
IY= 10   2.962E+05
IY=  9   2.962E+05
IY=  8   2.962E+05
IY=  7   2.962E+05
IY=  6   2.962E+05
IY=  5   2.962E+05
IY=  4   2.962E+05
IY=  3   2.962E+05
IY=  2   2.963E+05
IY=  1   2.963E+05
   IX=       6
FIELD VALUES OF TMP1
IY= 16   2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 15   2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 14   2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 13   2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 12   2.951E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY= 11   2.956E+02    2.953E+02    2.951E+02    2.950E+02    2.950E+02
IY= 10   2.957E+02    2.953E+02    2.951E+02    2.951E+02    2.950E+02
IY=  9   2.957E+02    2.954E+02    2.951E+02    2.951E+02    2.950E+02
IY=  8   2.957E+02    2.953E+02    2.951E+02    2.950E+02    2.950E+02
IY=  7   2.956E+02    2.953E+02    2.951E+02    2.951E+02    2.950E+02
IY=  6   2.956E+02    2.952E+02    2.951E+02    2.950E+02    2.950E+02
IY=  5   2.955E+02    2.952E+02    2.950E+02    2.950E+02    2.950E+02
IY=  4   2.954E+02    2.952E+02    2.951E+02    2.951E+02    2.950E+02
IY=  3   2.952E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  2   2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
IY=  1   2.951E+02    2.951E+02    2.951E+02    2.951E+02    2.951E+02
   IX=       1            2            3            4            5
IY= 16   2.950E+02
IY= 15   2.950E+02
IY= 14   2.950E+02
IY= 13   2.950E+02
IY= 12   2.950E+02
IY= 11   2.950E+02
IY= 10   2.950E+02
IY=  9   2.950E+02
IY=  8   2.950E+02
IY=  7   2.950E+02
IY=  6   2.950E+02
IY=  5   2.950E+02
IY=  4   2.950E+02
IY=  3   2.950E+02
IY=  2   2.951E+02
IY=  1   2.951E+02
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   IX=       6
FIELD VALUES OF RHO1
IY= 16    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 15    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 14    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 13    1.201E+00    1.201E+00    1.201E+00    1.201E+00    1.201E+00
IY= 12    1.200E+00    1.200E+00    1.201E+00    1.201E+00    1.201E+00
IY= 11    1.198E+00    1.199E+00    1.200E+00    1.201E+00    1.201E+00
IY= 10    1.198E+00    1.200E+00    1.201E+00    1.201E+00    1.200E+00
IY=  9    1.198E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  8    1.198E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  7    1.198E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  6    1.198E+00    1.199E+00    1.200E+00    1.200E+00    1.200E+00
IY=  5    1.198E+00    1.199E+00    1.200E+00    1.200E+00    1.200E+00
IY=  4    1.198E+00    1.199E+00    1.200E+00    1.200E+00    1.200E+00
IY=  3    1.199E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  2    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
IY=  1    1.200E+00    1.200E+00    1.200E+00    1.200E+00    1.200E+00
   IX=       1            2            3            4            5
IY= 16    1.201E+00
IY= 15    1.201E+00
IY= 14    1.201E+00
IY= 13    1.201E+00
IY= 12    1.201E+00
IY= 11    1.201E+00
IY= 10    1.201E+00
IY=  9    1.201E+00
IY=  8    1.201E+00
IY=  7    1.200E+00
IY=  6    1.200E+00
IY=  5    1.200E+00
IY=  4    1.200E+00
IY=  3    1.200E+00
IY=  2    1.200E+00
IY=  1    1.200E+00
   IX=       6

*************************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     6 ITERN NO=      1


FLOW FIELD AT ITHYD=  1, IZ=  6, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16   -9.132E+00   -9.147E+00   -8.957E+00   -8.768E+00   -8.526E+00
IY= 15   -9.467E+00   -9.676E+00   -9.891E+00   -1.002E+01   -1.011E+01
IY= 14   -1.790E+01   -1.810E+01   -1.779E+01   -1.759E+01   -1.735E+01
IY= 13   -4.656E+01   -4.691E+01   -4.243E+01   -3.949E+01   -3.709E+01
IY= 12   -1.627E+02   -1.606E+02   -1.284E+02   -1.040E+02   -7.788E+01
IY= 11   -1.875E+02   -1.874E+02   -1.526E+02   -1.310E+02   -9.693E+01
IY= 10   -1.643E+02   -1.730E+02   -1.542E+02   -1.515E+02   -1.257E+02
IY=  9   -1.498E+02   -1.648E+02   -1.557E+02   -1.602E+02   -1.393E+02
IY=  8   -1.461E+02   -1.647E+02   -1.606E+02   -1.655E+02   -1.475E+02
IY=  7   -1.499E+02   -1.826E+02   -1.910E+02   -2.066E+02   -1.802E+02
IY=  6   -1.531E+02   -1.837E+02   -1.923E+02   -1.863E+02   -1.634E+02
IY=  5   -1.656E+02   -1.939E+02   -1.846E+02   -1.653E+02   -1.502E+02
IY=  4   -1.876E+02   -2.034E+02   -1.791E+02   -1.575E+02   -1.444E+02
IY=  3   -2.095E+02   -2.072E+02   -1.764E+02   -1.535E+02   -1.398E+02
IY=  2   -1.952E+02   -1.959E+02   -1.655E+02   -1.458E+02   -1.316E+02
IY=  1   -1.724E+02   -1.901E+02   -1.637E+02   -1.451E+02   -1.306E+02
   IX=       1            2            3            4            5
IY= 16   -7.681E+00
IY= 15   -9.472E+00
IY= 14   -1.528E+01
IY= 13   -2.815E+01
IY= 12   -4.421E+01
IY= 11   -5.047E+01
IY= 10   -6.100E+01
IY=  9   -6.689E+01
IY=  8   -7.026E+01
IY=  7   -8.093E+01
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IY=    6    -8.000E+01
IY=    5    -7.936E+01
IY=    4    -7.855E+01
IY=    3    -7.729E+01
IY=    2    -7.507E+01
IY=    1    -7.502E+01
 IX=        6
FIELD VALUES OF U1
IY=   16    -5.277E-02    -2.960E-01    -4.746E-01    -6.328E-01    -6.566E-01
IY=   15    -6.874E-02    -3.327E-01    -4.775E-01    -6.196E-01    -6.716E-01
IY=   14    -1.635E-01    -7.082E-01    -9.461E-01    -1.135E+00    -1.184E+00
IY=   13    -4.486E-01    -1.774E+00    -2.281E+00    -2.570E+00    -2.555E+00
IY=   12    -5.247E-01    -2.398E+00    -3.306E+00    -4.304E+00    -4.183E+00
IY=   11    -8.230E-01    -3.835E+00    -5.416E+00    -6.973E+00    -5.956E+00
IY=   10    -1.641E+00    -6.009E+00    -7.579E+00    -8.903E+00    -7.628E+00
IY=    9    -1.930E+00    -6.675E+00    -8.124E+00    -9.284E+00    -8.098E+00
IY=    8    -2.231E+00    -7.184E+00    -8.392E+00    -9.235E+00    -8.288E+00
IY=    7    -2.793E+00    -8.161E+00    -9.380E+00    -1.074E+01    -9.381E+00
IY=    6    -3.072E+00    -8.362E+00    -9.266E+00    -9.280E+00    -8.369E+00
IY=    5    -2.859E+00    -7.687E+00    -8.167E+00    -8.019E+00    -7.688E+00
IY=    4    -3.066E+00    -7.516E+00    -7.805E+00    -7.572E+00    -7.341E+00
IY=    3    -3.205E+00    -6.517E+00    -7.056E+00    -7.153E+00    -7.001E+00
IY=    2    -2.369E-01    -2.522E+00    -4.635E+00    -6.075E+00    -6.227E+00
IY=    1     2.730E+00     1.079E-01    -3.313E+00    -5.736E+00    -6.105E+00
 IX=        1             2             3             4             5
FIELD VALUES OF V1
IY=   15    -8.906E-01    -9.456E-01    -1.022E+00    -9.759E-01    -7.973E-01
IY=   14    -3.254E+00    -3.208E+00    -2.876E+00    -2.413E+00    -1.712E+00
IY=   13    -5.429E+00    -5.263E+00    -4.456E+00    -3.610E+00    -2.447E+00
IY=   12    -1.106E+01    -1.077E+01    -8.919E+00    -6.917E+00    -4.032E+00
IY=   11    -1.219E+01    -1.197E+01    -9.989E+00    -7.933E+00    -4.325E+00
IY=   10    -1.061E+01    -1.063E+01    -8.882E+00    -6.934E+00    -3.749E+00
IY=    9    -9.551E+00    -9.535E+00    -7.341E+00    -5.091E+00    -2.602E+00
IY=    8    -9.335E+00    -9.226E+00    -6.732E+00    -4.318E+00    -2.318E+00
IY=    7    -9.776E+00    -9.502E+00    -6.770E+00    -4.646E+00    -2.296E+00
IY=    6    -8.774E+00    -6.387E+00    -1.563E+00     1.539E-01    -1.964E-01
IY=    5    -8.730E+00    -5.896E+00    -1.136E+00     2.705E-01     5.309E-02
IY=    4    -8.832E+00    -5.322E+00    -6.990E-01     2.207E-01     2.197E-01
IY=    3    -8.885E+00    -4.638E+00     8.987E-02     7.894E-01     5.288E-01
IY=    2    -6.466E+00    -2.466E+00     1.167E+00     1.455E+00     8.781E-01
IY=    1    -1.661E+00    -3.517E-01     4.250E-01     4.133E-01     2.314E-01
 IX=        1             2             3             4             5
IY=   15    -6.307E-01
IY=   14    -1.247E+00
IY=   13    -1.726E+00
IY=   12    -2.424E+00
IY=   11    -2.535E+00
IY=   10    -2.320E+00
IY=    9    -1.662E+00
IY=    8    -1.468E+00
IY=    7    -1.312E+00
IY=    6    -2.691E-01
IY=    5    -1.892E-01
IY=    4     6.413E-02
IY=    3     2.814E-01
IY=    2     4.470E-01
IY=    1     8.429E-02
 IX=        6
FIELD VALUES OF W1
IY=   16     3.024E-01     3.165E-01     2.739E-01     2.334E-01     1.849E-01
IY=   15     2.380E-01     2.976E-01     2.973E-01     2.996E-01     2.834E-01
IY=   14     1.674E+00     1.728E+00     1.582E+00     1.356E+00     9.852E-01
IY=   13     3.908E+00     3.873E+00     3.293E+00     2.601E+00     1.681E+00
IY=   12     3.687E+00     3.637E+00     3.043E+00     2.351E+00     1.561E+00
IY=   11     2.532E+00     2.448E+00     1.891E+00     1.420E+00     1.466E+00
IY=   10     1.589E+00     1.346E+00     8.597E-01     8.779E-01     1.684E+00
IY=    9     1.613E+00     1.285E+00     8.085E-01     1.026E+00     1.984E+00
IY=    8     1.759E+00     1.368E+00     9.521E-01     1.357E+00     2.275E+00
IY=    7     4.607E+00     3.925E+00     2.758E+00     2.665E+00     3.084E+00
IY=    6     6.260E+00     5.714E+00     5.026E+00     5.133E+00     4.216E+00
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IY=   5    1.186E+01     1.215E+01     1.141E+01     9.103E+00     5.281E+00
IY=   4    1.692E+01     1.673E+01     1.428E+01     1.051E+01     5.874E+00
IY=   3    2.589E+01     2.068E+01     1.590E+01     1.147E+01     6.315E+00
IY=   2    2.428E+01     2.220E+01     1.737E+01     1.241E+01     6.723E+00
IY=   1    2.421E+01     2.280E+01     1.788E+01     1.249E+01     6.759E+00
 IX=         1            2             3             4             5
IY=  16    1.389E-01
IY=  15    2.289E-01
IY=  14    7.295E-01
IY=  13    1.224E+00
IY=  12    1.204E+00
IY=  11    1.259E+00
IY=  10    1.484E+00
IY=   9    1.681E+00
IY=   8    1.832E+00
IY=   7    2.336E+00
IY=   6    2.852E+00
IY=   5    3.342E+00
IY=   4    3.680E+00
IY=   3    3.901E+00
IY=   2    4.070E+00
IY=   1    4.077E+00
 IX=         6
FIELD VALUES OF KE
IY=  16    3.551E+00     3.547E+00     3.529E+00     3.621E+00     3.996E+00
IY=  15    3.571E+00     3.248E+00     2.334E+00     1.950E+00     2.446E+00
IY=  14    1.800E+00     1.718E+00     1.579E+00     2.038E+00     3.286E+00
IY=  13    1.336E+00     1.515E+00     2.332E+00     3.625E+00     5.208E+00
IY=  12    2.064E+00     2.199E+00     3.266E+00     4.996E+00     6.431E+00
IY=  11    3.197E+00     3.402E+00     5.631E+00     8.326E+00     8.655E+00
IY=  10    4.266E+00     5.322E+00     8.570E+00     1.056E+01     9.943E+00
IY=   9    4.931E+00     6.456E+00     1.019E+01     1.184E+01     9.917E+00
IY=   8    5.536E+00     7.335E+00     1.052E+01     1.106E+01     9.697E+00
IY=   7    1.260E+01     1.404E+01     1.357E+01     1.246E+01     1.090E+01
IY=   6    1.486E+01     1.602E+01     1.248E+01     1.049E+01     9.760E+00
IY=   5    1.997E+01     1.666E+01     1.005E+01     8.854E+00     9.027E+00
IY=   4    2.013E+01     1.415E+01     7.735E+00     8.141E+00     8.868E+00
IY=   3    2.417E+01     1.414E+01     8.097E+00     8.952E+00     9.112E+00
IY=   2    2.841E+01     1.691E+01     1.140E+01     1.063E+01     9.867E+00
IY=   1    2.950E+00     2.637E+00     1.705E+00     9.848E-01     9.925E+00
 IX=         1            2             3             4             5
IY=  16    4.756E+00
IY=  15    3.700E+00
IY=  14    4.652E+00
IY=  13    6.297E+00
IY=  12    7.359E+00
IY=  11    8.988E+00
IY=  10    9.925E+00
IY=   9    9.921E+00
IY=   8    9.916E+00
IY=   7    1.080E+01
IY=   6    1.020E+01
IY=   5    9.485E+00
IY=   4    9.297E+00
IY=   3    9.416E+00
IY=   2    9.874E+00
IY=   1    1.005E+01
 IX=         6
FIELD VALUES OF EP
IY=  16    6.723E+00     6.721E+00     6.640E+00     6.723E+00     7.445E+00
IY=  15    2.061E+00     1.942E+00     1.653E+00     1.814E+00     3.408E+00
IY=  14    9.861E-01     1.007E+00     1.279E+00     2.335E+00     5.261E+00
IY=  13    8.919E-01     1.275E+00     2.880E+00     5.622E+00     9.941E+00
IY=  12    2.312E+00     2.441E+00     4.706E+00     9.129E+00     1.361E+01
IY=  11    4.499E+00     4.990E+00     1.106E+01     1.910E+01     2.049E+01
IY=  10    6.645E+00     9.542E+00     1.864E+01     2.504E+01     2.407E+01
IY=   9    8.096E+00     1.237E+01     2.308E+01     2.889E+01     2.380E+01
IY=   8    9.374E+00     1.439E+01     2.336E+01     2.579E+01     2.298E+01
IY=   7    2.664E+01     3.123E+01     3.185E+01     3.015E+01     2.680E+01
IY=   6    3.244E+01     3.666E+01     2.765E+01     2.315E+01     2.327E+01
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IY=   5   4.451E+01    3.597E+01    1.990E+01    1.881E+01    2.156E+01
IY=   4   4.333E+01    2.781E+01    1.438E+01    1.728E+01    2.116E+01
IY=   3   5.432E+01    2.593E+01    1.440E+01    1.869E+01    2.162E+01
IY=   2   6.661E+01    3.170E+01    2.106E+01    2.205E+01    2.310E+01
IY=   1   2.552E+01    2.156E+01    1.121E+01    4.922E+00    2.356E+01
 IX=         1            2            3            4            5
IY= 16   9.564E+00
IY= 15   6.995E+00
IY= 14   9.410E+00
IY= 13   1.387E+01
IY= 12   1.729E+01
IY= 11   2.228E+01
IY= 10   2.505E+01
IY=  9   2.506E+01
IY=  8   2.509E+01
IY=  7   2.816E+01
IY=  6   2.629E+01
IY=  5   2.414E+01
IY=  4   2.358E+01
IY=  3   2.379E+01
IY=  2   2.482E+01
IY=  1   2.539E+01
 IX=         6
FIELD VALUES OF H1
IY= 16   2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY= 15   3.052E+05    3.042E+05    3.007E+05    2.982E+05    2.967E+05
IY= 14   3.006E+05    2.997E+05    2.976E+05    2.967E+05    2.963E+05
IY= 13   2.980E+05    2.974E+05    2.965E+05    2.963E+05    2.962E+05
IY= 12   2.978E+05    2.972E+05    2.964E+05    2.962E+05    2.962E+05
IY= 11   2.976E+05    2.970E+05    2.963E+05    2.962E+05    2.962E+05
IY= 10   2.973E+05    2.967E+05    2.962E+05    2.962E+05    2.962E+05
IY=  9   2.973E+05    2.966E+05    2.962E+05    2.962E+05    2.962E+05
IY=  8   2.972E+05    2.966E+05    2.962E+05    2.962E+05    2.962E+05
IY=  7   2.968E+05    2.964E+05    2.962E+05    2.962E+05    2.962E+05
IY=  6   2.968E+05    2.964E+05    2.962E+05    2.962E+05    2.962E+05
IY=  5   2.966E+05    2.963E+05    2.962E+05    2.962E+05    2.962E+05
IY=  4   2.965E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  3   2.963E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  2   2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  1   2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
 IX=         1            2            3            4            5
IY= 16   2.962E+05
IY= 15   2.964E+05
IY= 14   2.962E+05
IY= 13   2.962E+05
IY= 12   2.962E+05
IY= 11   2.962E+05
IY= 10   2.962E+05
IY=  9   2.962E+05
IY=  8   2.962E+05
IY=  7   2.962E+05
IY=  6   2.962E+05
IY=  5   2.962E+05
IY=  4   2.962E+05
IY=  3   2.962E+05
IY=  2   2.962E+05
IY=  1   2.962E+05
 IX=         6
FIELD VALUES OF TMP1
IY= 16   2.951E+02    2.950E+02    2.951E+02    2.951E+02    2.950E+02
IY= 15   3.040E+02    3.029E+02    2.995E+02    2.970E+02    2.955E+02
IY= 14   2.994E+02    2.985E+02    2.965E+02    2.955E+02    2.951E+02
IY= 13   2.969E+02    2.962E+02    2.953E+02    2.951E+02    2.950E+02
IY= 12   2.966E+02    2.960E+02    2.952E+02    2.950E+02    2.950E+02
IY= 11   2.964E+02    2.958E+02    2.951E+02    2.950E+02    2.950E+02
IY= 10   2.961E+02    2.955E+02    2.950E+02    2.950E+02    2.950E+02
IY=  9   2.961E+02    2.955E+02    2.950E+02    2.950E+02    2.950E+02
IY=  8   2.960E+02    2.954E+02    2.950E+02    2.950E+02    2.950E+02
IY=  7   2.956E+02    2.952E+02    2.950E+02    2.950E+02    2.950E+02
IY=  6   2.956E+02    2.952E+02    2.950E+02    2.950E+02    2.950E+02
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IY=   5    2.954E+02        2.951E+02        2.950E+02        2.950E+02        2.950E+02
IY=   4    2.953E+02        2.951E+02        2.950E+02        2.950E+02        2.950E+02
IY=   3    2.951E+02        2.950E+02        2.950E+02        2.950E+02        2.950E+02
IY=   2    2.950E+02        2.950E+02        2.950E+02        2.950E+02        2.950E+02
IY=   1    2.950E+02        2.950E+02        2.950E+02        2.950E+02        2.950E+02
 IX=         1                2                3                4                5
IY=  16    2.950E+02
IY=  15    2.952E+02
IY=  14    2.950E+02
IY=  13    2.950E+02
IY=  12    2.950E+02
IY=  11    2.950E+02
IY=  10    2.950E+02
IY=   9    2.950E+02
IY=   8    2.950E+02
IY=   7    2.950E+02
IY=   6    2.950E+02
IY=   5    2.950E+02
IY=   4    2.950E+02
IY=   3    2.950E+02
IY=   2    2.950E+02
IY=   1    2.950E+02
 IX=         6
FIELD VALUES OF RHO1
IY=  16    1.201E+00        1.201E+00        1.201E+00        1.201E+00        1.201E+00
IY=  15    1.165E+00        1.169E+00        1.183E+00        1.193E+00        1.199E+00
IY=  14    1.183E+00        1.187E+00        1.195E+00        1.199E+00        1.200E+00
IY=  13    1.193E+00        1.195E+00        1.199E+00        1.200E+00        1.200E+00
IY=  12    1.193E+00        1.195E+00        1.199E+00        1.200E+00        1.200E+00
IY=  11    1.193E+00        1.196E+00        1.199E+00        1.199E+00        1.200E+00
IY=  10    1.194E+00        1.197E+00        1.199E+00        1.199E+00        1.199E+00
IY=   9    1.195E+00        1.197E+00        1.199E+00        1.199E+00        1.199E+00
IY=   8    1.195E+00        1.197E+00        1.199E+00        1.199E+00        1.199E+00
IY=   7    1.197E+00        1.198E+00        1.199E+00        1.198E+00        1.199E+00
IY=   6    1.197E+00        1.198E+00        1.199E+00        1.199E+00        1.199E+00
IY=   5    1.197E+00        1.198E+00        1.199E+00        1.199E+00        1.199E+00
IY=   4    1.198E+00        1.198E+00        1.199E+00        1.199E+00        1.199E+00
IY=   3    1.198E+00        1.198E+00        1.199E+00        1.199E+00        1.199E+00
IY=   2    1.198E+00        1.199E+00        1.199E+00        1.199E+00        1.199E+00
IY=   1    1.199E+00        1.199E+00        1.199E+00        1.199E+00        1.199E+00
 IX=         1                2                3                4                5
IY=  16    1.201E+00
IY=  15    1.200E+00
IY=  14    1.201E+00
IY=  13    1.201E+00
IY=  12    1.200E+00
IY=  11    1.200E+00
IY=  10    1.200E+00
IY=   9    1.200E+00
IY=   8    1.200E+00
IY=   7    1.200E+00
IY=   6    1.200E+00
IY=   5    1.200E+00
IY=   4    1.200E+00
IY=   3    1.200E+00
IY=   2    1.200E+00
IY=   1    1.200E+00
 IX=         6

************************************************************
TIME STP=     1 SWEEP NO=   550 ZSLAB NO=     7 ITERN NO=       1


FLOW FIELD AT ITHYD=  1, IZ=  7, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY=  16   -9.607E+00       -9.694E+00       -9.460E+00       -9.242E+00       -9.011E+00
IY=  15   -8.623E+00       -9.318E+00       -9.665E+00       -1.001E+01       -1.036E+01
IY=  14   -1.954E+01       -2.062E+01       -2.063E+01       -2.062E+01       -2.042E+01
IY=  13   -4.470E+01       -4.694E+01       -4.610E+01       -4.537E+01       -4.411E+01
IY=  12   -1.115E+02       -1.128E+02       -9.677E+01       -8.601E+01       -7.679E+01
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IY= 11   -1.219E+02   -1.244E+02   -1.074E+02   -9.726E+01   -8.867E+01
IY= 10   -1.370E+02   -1.443E+02   -1.289E+02   -1.213E+02   -1.133E+02
IY=  9   -1.504E+02   -1.624E+02   -1.463E+02   -1.403E+02   -1.335E+02
IY=  8   -1.548E+02   -1.705E+02   -1.559E+02   -1.519E+02   -1.466E+02
IY=  7   -1.993E+02   -2.298E+02   -2.094E+02   -2.006E+02   -1.939E+02
IY=  6   -2.728E+02   -2.904E+02   -2.388E+02   -2.274E+02   -2.243E+02
IY=  5   -3.311E+02   -3.535E+02   -2.891E+02   -2.655E+02   -2.535E+02
IY=  4   -4.543E+02   -4.060E+02   -3.148E+02   -2.825E+02   -2.655E+02
IY=  3   -8.896E+02   -4.629E+02   -3.366E+02   -2.986E+02   -2.757E+02
IY=  2   -4.521E+02   -3.953E+02   -3.196E+02   -2.911E+02   -2.664E+02
IY=  1   -4.304E+02   -3.882E+02   -3.161E+02   -2.894E+02   -2.647E+02
 IX=        1            2            3            4            5
IY= 16   -8.068E+00
IY= 15   -9.870E+00
IY= 14   -1.766E+01
IY= 13   -3.339E+01
IY= 12   -4.980E+01
IY= 11   -5.597E+01
IY= 10   -6.722E+01
IY=  9   -7.579E+01
IY=  8   -8.090E+01
IY=  7   -9.853E+01
IY=  6   -1.090E+02
IY=  5   -1.186E+02
IY=  4   -1.245E+02
IY=  3   -1.269E+02
IY=  2   -1.252E+02
IY=  1   -1.251E+02
 IX=        6
FIELD VALUES OF U1
IY= 16   -4.790E-02   -3.362E-01   -5.049E-01   -6.525E-01   -6.926E-01
IY= 15   -1.312E-01   -5.036E-01   -6.299E-01   -7.013E-01   -7.119E-01
IY= 14   -1.902E-01   -7.926E-01   -9.753E-01   -1.183E+00   -1.295E+00
IY= 13   -3.890E-01   -1.772E+00   -2.306E+00   -2.671E+00   -2.759E+00
IY= 12   -4.564E-01   -2.260E+00   -3.042E+00   -3.738E+00   -3.909E+00
IY= 11   -6.480E-01   -3.219E+00   -4.397E+00   -5.302E+00   -5.178E+00
IY= 10   -1.185E+00   -4.942E+00   -6.415E+00   -7.211E+00   -6.763E+00
IY=  9   -1.367E+00   -5.579E+00   -7.138E+00   -7.898E+00   -7.471E+00
IY=  8   -1.544E+00   -6.187E+00   -7.766E+00   -8.423E+00   -7.987E+00
IY=  7   -2.250E+00   -8.041E+00   -9.705E+00   -1.019E+01   -9.471E+00
IY=  6   -2.838E+00   -8.827E+00   -9.923E+00   -9.833E+00   -9.610E+00
IY=  5   -3.268E+00   -9.051E+00   -9.234E+00   -9.350E+00   -9.675E+00
IY=  4   -4.234E+00   -8.929E+00   -8.859E+00   -8.965E+00   -9.429E+00
IY=  3   -8.015E+00   -8.098E+00   -8.122E+00   -8.679E+00   -9.436E+00
IY=  2   -1.089E+00   -3.523E+00   -5.640E+00   -7.651E+00   -8.765E+00
IY=  1    1.975E+00   -9.289E-01   -4.423E+00   -7.362E+00   -8.656E+00
 IX=        1            2            3            4            5
FIELD VALUES OF V1
IY= 15   -1.182E+00   -1.220E+00   -1.203E+00   -1.121E+00   -9.600E-01
IY= 14   -3.807E+00   -3.751E+00   -3.392E+00   -2.926E+00   -2.233E+00
IY= 13   -5.976E+00   -5.777E+00   -4.887E+00   -4.002E+00   -2.712E+00
IY= 12   -1.151E+01   -1.115E+01   -9.074E+00   -6.943E+00   -4.080E+00
IY= 11   -1.228E+01   -1.191E+01   -9.644E+00   -7.341E+00   -4.264E+00
IY= 10   -1.272E+01   -1.245E+01   -9.904E+00   -7.323E+00   -4.110E+00
IY=  9   -1.300E+01   -1.272E+01   -9.562E+00   -6.573E+00   -3.411E+00
IY=  8   -1.304E+01   -1.278E+01   -9.296E+00   -6.187E+00   -3.196E+00
IY=  7   -1.298E+01   -1.281E+01   -8.966E+00   -5.831E+00   -2.990E+00
IY=  6   -1.236E+01   -1.055E+01   -4.860E+00   -2.479E+00   -1.411E+00
IY=  5   -1.130E+01   -8.709E+00   -2.854E+00   -1.343E+00   -1.101E+00
IY=  4   -1.021E+01   -5.958E+00   -8.804E-01   -1.089E-01   -1.736E-01
IY=  3   -1.251E+01   -4.853E+00    3.966E-02    4.943E-01    1.846E-01
IY=  2   -2.245E+00   -1.380E+00    1.547E+00    1.486E+00    7.628E-01
IY=  1   -1.172E+00   -1.836E-01    5.399E-01    4.392E-01    2.078E-01
 IX=        1            2            3            4            5
IY= 15   -7.045E-01
IY= 14   -1.448E+00
IY= 13   -1.877E+00
IY= 12   -2.544E+00
IY= 11   -2.678E+00
IY= 10   -2.587E+00
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IY=   9   -2.111E+00
IY=   8   -1.925E+00
IY=   7   -1.723E+00
IY=   6   -7.942E-01
IY=   5   -6.367E-01
IY=   4   -1.619E-01
IY=   3    1.147E-01
IY=   2    3.330E-01
IY=   1    6.754E-02
 IX=       6
FIELD VALUES OF W1
IY=  16    2.212E-01    2.585E-01    2.259E-01    1.945E-01    1.630E-01
IY=  15    1.087E-01    1.788E-01    1.843E-01    1.945E-01    2.061E-01
IY=  14    1.567E+00    1.651E+00    1.504E+00    1.328E+00    1.042E+00
IY=  13    3.536E+00    3.581E+00    3.070E+00    2.441E+00    1.619E+00
IY=  12    3.197E+00    3.258E+00    2.821E+00    2.264E+00    1.549E+00
IY=  11    2.631E+00    2.647E+00    2.241E+00    1.834E+00    1.446E+00
IY=  10    2.209E+00    2.057E+00    1.639E+00    1.506E+00    1.494E+00
IY=   9    2.420E+00    2.144E+00    1.769E+00    1.750E+00    1.777E+00
IY=   8    2.781E+00    2.364E+00    1.984E+00    2.005E+00    2.048E+00
IY=   7    6.141E+00    5.665E+00    4.325E+00    3.553E+00    2.692E+00
IY=   6    9.132E+00    8.932E+00    7.522E+00    6.231E+00    4.316E+00
IY=   5    1.424E+01    1.420E+01    1.201E+01    9.480E+00    5.861E+00
IY=   4    1.872E+01    1.820E+01    1.461E+01    1.080E+01    6.490E+00
IY=   3    3.409E+01    2.181E+01    1.640E+01    1.204E+01    7.269E+00
IY=   2    2.540E+01    2.322E+01    1.796E+01    1.293E+01    7.649E+00
IY=   1    2.544E+01    2.385E+01    1.837E+01    1.292E+01    7.650E+00
 IX=       1            2            3            4            5
IY=  16    1.237E-01
IY=  15    2.071E-01
IY=  14    7.352E-01
IY=  13    1.158E+00
IY=  12    1.144E+00
IY=  11    1.162E+00
IY=  10    1.304E+00
IY=   9    1.515E+00
IY=   8    1.655E+00
IY=   7    2.139E+00
IY=   6    2.851E+00
IY=   5    3.529E+00
IY=   4    4.075E+00
IY=   3    4.318E+00
IY=   2    4.484E+00
IY=   1    4.483E+00
 IX=       6
FIELD VALUES OF KE
IY=  16    4.286E+00    4.171E+00    4.011E+00    4.009E+00    4.292E+00
IY=  15    1.023E+01    9.667E+00    7.900E+00    6.463E+00    5.347E+00
IY=  14    7.217E+00    6.326E+00    3.925E+00    2.877E+00    3.792E+00
IY=  13    2.411E+00    2.365E+00    2.824E+00    3.972E+00    5.531E+00
IY=  12    2.442E+00    2.441E+00    3.176E+00    4.713E+00    6.438E+00
IY=  11    2.791E+00    2.836E+00    4.393E+00    6.557E+00    7.983E+00
IY=  10    5.336E+00    5.388E+00    7.307E+00    9.018E+00    9.222E+00
IY=   9    7.275E+00    7.148E+00    8.910E+00    1.004E+01    9.456E+00
IY=   8    1.060E+01    9.926E+00    1.081E+01    1.079E+01    9.610E+00
IY=   7    4.516E+01    4.379E+01    2.637E+01    1.411E+01    1.025E+01
IY=   6    7.480E+01    7.215E+01    3.378E+01    1.283E+01    9.761E+00
IY=   5    7.256E+01    5.339E+01    1.180E+01    9.474E+00    9.698E+00
IY=   4    3.416E+01    2.027E+01    8.248E+00    8.896E+00    9.780E+00
IY=   3    4.640E+01    1.704E+01    8.881E+00    9.921E+00    1.026E+01
IY=   2    2.950E+01    1.731E+01    1.189E+01    1.157E+01    1.107E+01
IY=   1    3.201E+00    2.846E+00    1.803E+00    1.105E+00    1.123E+01
 IX=       1            2            3            4            5
IY=  16    4.994E+00
IY=  15    4.689E+00
IY=  14    5.023E+00
IY=  13    6.644E+00
IY=  12    7.505E+00
IY=  11    8.607E+00
IY=  10    9.445E+00
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IY=   9    9.627E+00
IY=   8    9.776E+00
IY=   7    1.030E+01
IY=   6    1.004E+01
IY=   5    1.002E+01
IY=   4    1.012E+01
IY=   3    1.039E+01
IY=   2    1.089E+01
IY=   1    1.107E+01
 IX=       6
FIELD VALUES OF EP
IY=  16    7.602E+00    7.495E+00    7.269E+00    7.256E+00    7.916E+00
IY=  15    5.726E+00    5.456E+00    4.796E+00    4.556E+00    5.204E+00
IY=  14    3.301E+00    2.925E+00    2.257E+00    2.965E+00    5.969E+00
IY=  13    1.436E+00    1.750E+00    3.346E+00    6.201E+00    1.075E+01
IY=  12    1.762E+00    2.086E+00    4.191E+00    8.115E+00    1.350E+01
IY=  11    2.465E+00    3.107E+00    7.295E+00    1.324E+01    1.812E+01
IY=  10    4.860E+00    6.752E+00    1.381E+01    1.942E+01    2.174E+01
IY=   9    6.711E+00    9.080E+00    1.704E+01    2.186E+01    2.247E+01
IY=   8    1.038E+01    1.297E+01    2.085E+01    2.368E+01    2.304E+01
IY=   7    5.971E+01    6.376E+01    4.589E+01    2.947E+01    2.531E+01
IY=   6    1.141E+02    1.266E+02    6.849E+01    2.860E+01    2.393E+01
IY=   5    1.065E+02    8.370E+01    2.383E+01    2.100E+01    2.422E+01
IY=   4    6.663E+01    3.837E+01    1.596E+01    1.977E+01    2.460E+01
IY=   3    1.591E+02    3.394E+01    1.674E+01    2.205E+01    2.601E+01
IY=   2    7.119E+01    3.298E+01    2.293E+01    2.578E+01    2.809E+01
IY=   1    2.884E+01    2.418E+01    1.219E+01    5.846E+00    2.874E+01
 IX=       1            2            3            4            5
IY=  16    1.000E+01
IY=  15    8.051E+00
IY=  14    1.028E+01
IY=  13    1.490E+01
IY=  12    1.774E+01
IY=  11    2.104E+01
IY=  10    2.354E+01
IY=   9    2.420E+01
IY=   8    2.482E+01
IY=   7    2.681E+01
IY=   6    2.618E+01
IY=   5    2.644E+01
IY=   4    2.690E+01
IY=   3    2.771E+01
IY=   2    2.912E+01
IY=   1    2.975E+01
 IX=       6
FIELD VALUES OF H1
IY=  16    2.995E+05    2.990E+05    2.981E+05    2.976E+05    2.971E+05
IY=  15    3.118E+05    3.110E+05    3.085E+05    3.064E+05    3.039E+05
IY=  14    3.049E+05    3.035E+05    3.000E+05    2.978E+05    2.968E+05
IY=  13    2.989E+05    2.980E+05    2.968E+05    2.963E+05    2.962E+05
IY=  12    2.985E+05    2.976E+05    2.965E+05    2.963E+05    2.962E+05
IY=  11    2.981E+05    2.973E+05    2.964E+05    2.962E+05    2.962E+05
IY=  10    2.979E+05    2.970E+05    2.963E+05    2.962E+05    2.962E+05
IY=   9    2.980E+05    2.971E+05    2.963E+05    2.962E+05    2.962E+05
IY=   8    2.983E+05    2.973E+05    2.962E+05    2.962E+05    2.962E+05
IY=   7    2.986E+05    2.978E+05    2.963E+05    2.962E+05    2.962E+05
IY=   6    2.989E+05    2.982E+05    2.962E+05    2.962E+05    2.962E+05
IY=   5    2.986E+05    2.978E+05    2.962E+05    2.962E+05    2.962E+05
IY=   4    2.971E+05    2.966E+05    2.962E+05    2.962E+05    2.962E+05
IY=   3    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=   2    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=   1    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
 IX=       1            2            3            4            5
IY=  16    2.968E+05
IY=  15    3.000E+05
IY=  14    2.964E+05
IY=  13    2.962E+05
IY=  12    2.962E+05
IY=  11    2.962E+05
IY=  10    2.962E+05
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IY=  9    2.962E+05
IY=  8    2.962E+05
IY=  7    2.962E+05
IY=  6    2.962E+05
IY=  5    2.962E+05
IY=  4    2.962E+05
IY=  3    2.962E+05
IY=  2    2.962E+05
IY=  1    2.962E+05
 IX=       6
FIELD VALUES OF TMP1
IY= 16    2.983E+02    2.978E+02    2.969E+02    2.964E+02    2.959E+02
IY= 15    3.106E+02    3.097E+02    3.073E+02    3.052E+02    3.027E+02
IY= 14    3.037E+02    3.023E+02    2.988E+02    2.966E+02    2.956E+02
IY= 13    2.977E+02    2.968E+02    2.956E+02    2.952E+02    2.950E+02
IY= 12    2.973E+02    2.965E+02    2.954E+02    2.951E+02    2.950E+02
IY= 11    2.969E+02    2.961E+02    2.952E+02    2.950E+02    2.950E+02
IY= 10    2.967E+02    2.959E+02    2.951E+02    2.950E+02    2.950E+02
IY=  9    2.968E+02    2.959E+02    2.951E+02    2.950E+02    2.950E+02
IY=  8    2.971E+02    2.961E+02    2.951E+02    2.950E+02    2.950E+02
IY=  7    2.974E+02    2.966E+02    2.951E+02    2.950E+02    2.950E+02
IY=  6    2.977E+02    2.970E+02    2.951E+02    2.950E+02    2.950E+02
IY=  5    2.974E+02    2.966E+02    2.950E+02    2.950E+02    2.950E+02
IY=  4    2.959E+02    2.954E+02    2.950E+02    2.950E+02    2.950E+02
IY=  3    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  2    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  1    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
 IX=       1            2            3            4            5
IY= 16    2.956E+02
IY= 15    2.988E+02
IY= 14    2.953E+02
IY= 13    2.950E+02
IY= 12    2.950E+02
IY= 11    2.950E+02
IY= 10    2.950E+02
IY=  9    2.950E+02
IY=  8    2.950E+02
IY=  7    2.950E+02
IY=  6    2.950E+02
IY=  5    2.950E+02
IY=  4    2.950E+02
IY=  3    2.950E+02
IY=  2    2.950E+02
IY=  1    2.950E+02
 IX=       6
FIELD VALUES OF RHO1
IY= 16    1.188E+00    1.189E+00    1.193E+00    1.195E+00    1.197E+00
IY= 15    1.141E+00    1.144E+00    1.153E+00    1.161E+00    1.170E+00
IY= 14    1.166E+00    1.172E+00    1.186E+00    1.194E+00    1.198E+00
IY= 13    1.189E+00    1.193E+00    1.198E+00    1.200E+00    1.200E+00
IY= 12    1.190E+00    1.194E+00    1.198E+00    1.200E+00    1.200E+00
IY= 11    1.192E+00    1.195E+00    1.199E+00    1.200E+00    1.200E+00
IY= 10    1.193E+00    1.196E+00    1.199E+00    1.199E+00    1.200E+00
IY=  9    1.192E+00    1.195E+00    1.199E+00    1.199E+00    1.199E+00
IY=  8    1.191E+00    1.194E+00    1.199E+00    1.199E+00    1.199E+00
IY=  7    1.189E+00    1.192E+00    1.198E+00    1.198E+00    1.199E+00
IY=  6    1.187E+00    1.189E+00    1.198E+00    1.198E+00    1.198E+00
IY=  5    1.188E+00    1.190E+00    1.197E+00    1.198E+00    1.198E+00
IY=  4    1.192E+00    1.194E+00    1.197E+00    1.198E+00    1.198E+00
IY=  3    1.190E+00    1.195E+00    1.197E+00    1.197E+00    1.198E+00
IY=  2    1.196E+00    1.196E+00    1.197E+00    1.197E+00    1.193E+00
IY=  1    1.196E+00    1.196E+00    1.197E+00    1.197E+00    1.198E+00
 IX=       1            2            3            4            5
IY= 16    1.198E+00
IY= 15    1.186E+00
IY= 14    1.200E+00
IY= 13    1.200E+00
IY= 12    1.200E+00
IY= 11    1.200E+00
IY= 10    1.200E+00
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IY=    9    1.200E+00
IY=    8    1.200E+00
IY=    7    1.200E+00
IY=    6    1.200E+00
IY=    5    1.199E+00
IY=    4    1.199E+00
IY=    3    1.199E+00
IY=    2    1.199E+00
IY=    1    1.199E+00
 IX=         6

**********************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     8 ITERN NO=     1


FLOW FIELD AT ITHYD=  1, IZ=  8, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16    -1.042E+01    -1.047E+01    -1.009E+01    -9.771E+00    -9.454E+00
IY= 15    -1.222E+01    -1.301E+01    -1.249E+01    -1.211E+01    -1.177E+01
IY= 14    -2.376E+01    -2.495E+01    -2.326E+01    -2.218E+01    -2.151E+01
IY= 13    -4.981E+01    -5.177E+01    -4.831E+01    -4.709E+01    -4.593E+01
IY= 12    -1.070E+02    -1.093E+02    -9.499E+01    -8.606E+01    -7.840E+01
IY= 11    -1.141E+02    -1.176E+02    -1.042E+02    -9.621E+01    -8.968E+01
IY= 10    -1.226E+02    -1.309E+02    -1.216E+02    -1.172E+02    -1.130E+02
IY=  9    -1.292E+02    -1.430E+02    -1.377E+02    -1.367E+02    -1.340E+02
IY=  8    -1.288E+02    -1.464E+02    -1.451E+02    -1.472E+02    -1.488E+02
IY=  7    -1.253E+02    -1.634E+02    -1.725E+02    -1.819E+02    -1.863E+02
IY=  6    -1.423E+02    -1.986E+02    -2.025E+02    -2.130E+02    -2.230E+02
IY=  5    -1.785E+02    -2.489E+02    -2.421E+02    -2.487E+02    -2.547E+02
IY=  4    -4.890E+02    -3.800E+02    -3.102E+02    -2.990E+02    -2.956E+02
IY=  3    -1.453E+03    -5.211E+02    -3.712E+02    -3.336E+02    -3.212E+02
IY=  2    -5.110E+02    -4.441E+02    -3.583E+02    -3.287E+02    -3.136E+02
IY=  1    -4.879E+02    -4.382E+02    -3.538E+02    -3.260E+02    -3.113E+02
 IX=         1             2             3             4             5
IY= 16    -8.397E+00
IY= 15    -1.060E+01
IY= 14    -1.833E+01
IY= 13    -3.480E+01
IY= 12    -5.148E+01
IY= 11    -5.778E+01
IY= 10    -6.934E+01
IY=  9    -7.868E+01
IY=  8    -8.420E+01
IY=  7    -1.023E+02
IY=  6    -1.159E+02
IY=  5    -1.279E+02
IY=  4    -1.397E+02
IY=  3    -1.455E+02
IY=  2    -1.447E+02
IY=  1    -1.446E+02
 IX=         6
FIELD VALUES OF U1
IY= 16    -9.589E-02    -4.198E-01    -5.794E-01    -7.104E-01    -7.385E-01
IY= 15    -1.887E-01    -6.608E-01    -8.359E-01    -9.531E-01    -9.630E-01
IY= 14    -3.125E-01    -1.110E+00    -1.393E+00    -1.549E+00    -1.534E+00
IY= 13    -5.790E-01    -2.077E+00    -2.560E+00    -2.863E+00    -2.917E+00
IY= 12    -6.232E-01    -2.421E+00    -3.070E+00    -3.603E+00    -3.844E+00
IY= 11    -7.347E-01    -2.962E+00    -3.865E+00    -4.549E+00    -4.715E+00
IY= 10    -9.736E-01    -3.834E+00    -4.985E+00    -5.725E+00    -5.843E+00
IY=  9    -1.013E+00    -4.201E+00    -5.395E+00    -6.263E+00    -6.557E+00
IY=  8    -1.065E+00    -4.362E+00    -5.601E+00    -6.497E+00    -7.026E+00
IY=  7    -1.600E+00    -5.359E+00    -6.579E+00    -7.575E+00    -8.029E+00
IY=  6    -2.165E+00    -6.393E+00    -7.358E+00    -8.150E+00    -8.798E+00
IY=  5    -2.975E+00    -7.274E+00    -8.144E+00    -8.864E+00    -9.460E+00
IY=  4    -6.785E+00    -9.789E+00    -9.730E+00    -1.018E+01    -1.066E+01
IY=  3    -2.404E+01    -1.255E+01    -1.127E+01    -1.126E+01    -1.152E+01
IY=  2    -5.261E+00    -8.275E+00    -9.615E+00    -1.076E+01    -1.116E+01
IY=  1    -1.774E+00    -6.090E+00    -8.798E+00    -1.052E+01    -1.105E+01
 IX=         1             2             3             4             5
FIELD VALUES OF V1
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	1	2	3	4	5
IY= 15	-1.450E+00	-1.484E+00	-1.418E+00	-1.309E+00	-1.139E+00
IY= 14	-4.085E+00	-4.026E+00	-3.632E+00	-3.182E+00	-2.561E+00
IY= 13	-6.794E+00	-6.646E+00	-5.725E+00	-4.621E+00	-3.008E+00
IY= 12	-1.171E+01	-1.139E+01	-9.233E+00	-7.014E+00	-4.181E+00
IY= 11	-1.215E+01	-1.185E+01	-9.586E+00	-7.282E+00	-4.396E+00
IY= 10	-1.263E+01	-1.240E+01	-1.000E+01	-7.549E+00	-4.480E+00
IY= 9	-1.306E+01	-1.288E+01	-1.022E+01	-7.489E+00	-4.191E+00
IY= 8	-1.303E+01	-1.291E+01	-1.016E+01	-7.412E+00	-4.183E+00
IY= 7	-1.289E+01	-1.280E+01	-1.000E+01	-7.274E+00	-4.380E+00
IY= 6	-1.323E+01	-1.251E+01	-8.636E+00	-6.004E+00	-3.676E+00
IY= 5	-1.325E+01	-1.223E+01	-8.107E+00	-5.570E+00	-3.584E+00
IY= 4	-1.594E+01	-1.197E+01	-6.559E+00	-4.096E+00	-2.517E+00
IY= 3	-2.433E+01	-1.073E+01	-3.744E+00	-2.009E+00	-9.344E-01
IY= 2	1.007E+01	4.143E-01	1.591E+00	1.070E+00	4.674E-01
IY= 1	8.486E-01	5.716E-01	8.470E-01	4.976E-01	1.812E-01
IX=	1	2	3	4	5

IY= 15	-8.542E-01
IY= 14	-1.670E+00
IY= 13	-2.072E+00
IY= 12	-2.663E+00
IY= 11	-2.800E+00
IY= 10	-2.789E+00
IY= 9	-2.502E+00
IY= 8	-2.374E+00
IY= 7	-2.218E+00
IY= 6	-1.580E+00
IY= 5	-1.463E+00
IY= 4	-9.365E-01
IY= 3	-4.024E-01
IY= 2	1.589E-01
IY= 1	4.754E-02
IX=	6

FIELD VALUES OF W1

	1	2	3	4	5
IY= 16	-2.912E-01	-2.420E-01	-2.253E-01	-2.064E-01	-1.764E-01
IY= 15	-3.427E-01	-2.902E-01	-2.664E-01	-2.440E-01	-2.194E-01
IY= 14	1.080E+00	1.138E+00	1.054E+00	9.417E-01	7.694E-01
IY= 13	2.691E+00	2.704E+00	2.303E+00	1.859E+00	1.280E+00
IY= 12	2.907E+00	2.914E+00	2.532E+00	2.127E+00	1.668E+00
IY= 11	3.183E+00	3.174E+00	2.794E+00	2.402E+00	1.951E+00
IY= 10	4.148E+00	4.047E+00	3.575E+00	3.087E+00	2.513E+00
IY= 9	5.322E+00	5.149E+00	4.463E+00	3.843E+00	3.151E+00
IY= 8	6.328E+00	6.083E+00	5.178E+00	4.424E+00	3.561E+00
IY= 7	1.025E+01	9.646E+00	8.051E+00	6.715E+00	5.405E+00
IY= 6	1.501E+01	1.444E+01	1.191E+01	9.799E+00	7.698E+00
IY= 5	1.933E+01	1.875E+01	1.561E+01	1.265E+01	9.832E+00
IY= 4	2.354E+01	2.335E+01	1.921E+01	1.519E+01	1.139E+01
IY= 3	1.750E+02	2.589E+01	2.116E+01	1.624E+01	1.046E+01
IY= 2	2.435E+01	2.643E+01	1.940E+01	1.426E+01	9.034E+00
IY= 1	2.257E+01	2.284E+01	1.606E+01	1.184E+01	8.462E+00
IX=	1	2	3	4	5

IY= 16	-1.330E-01
IY= 15	-1.778E-01
IY= 14	5.247E-01
IY= 13	8.401E-01
IY= 12	1.140E+00
IY= 11	1.332E+00
IY= 10	1.687E+00
IY= 9	2.090E+00
IY= 8	2.345E+00
IY= 7	3.405E+00
IY= 6	4.562E+00
IY= 5	5.792E+00
IY= 4	6.318E+00
IY= 3	5.925E+00
IY= 2	5.547E+00
IY= 1	5.424E+00
IX=	6

FIELD VALUES OF KE

IY= 16	6.498E+00	6.238E+00	5.674E+00	5.324E+00	5.212E+00
IY= 15	1.459E+01	1.398E+01	1.188E+01	1.014E+01	8.654E+00

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IY= 14    1.330E+01      1.242E+01      9.568E+00      7.480E+00      5.894E+00
IY= 13    1.237E+01      1.105E+01      7.197E+00      6.379E+00      6.405E+00
IY= 12    1.339E+01      1.202E+01      8.046E+00      7.516E+00      7.769E+00
IY= 11    1.633E+01      1.487E+01      1.076E+01      1.059E+01      1.030E+01
IY= 10    2.776E+01      2.555E+01      1.994E+01      1.834E+01      1.481E+01
IY=  9    3.772E+01      3.401E+01      2.617E+01      2.369E+01      1.844E+01
IY=  8    4.705E+01      4.308E+01      3.383E+01      2.914E+01      2.127E+01
IY=  7    1.236E+02      1.141E+02      8.304E+01      6.019E+01      3.594E+01
IY=  6    1.830E+02      1.675E+02      1.168E+02      8.190E+01      5.073E+01
IY=  5    2.547E+02      2.304E+02      1.477E+02      1.025E+02      6.449E+01
IY=  4    4.130E+02      1.998E+02      9.834E+01      6.481E+01      4.161E+01
IY=  3    7.834E+02      1.968E+02      2.953E+01      1.882E+01      1.319E+01
IY=  2    1.024E+02      3.018E+01      1.262E+01      1.194E+01      1.106E+01
IY=  1    2.494E+00      2.655E+00      1.623E+00      1.243E+00      1.077E+01
 IX=         1              2              3              4              5
IY= 16    5.586E+00
IY= 15    7.085E+00
IY= 14    5.943E+00
IY= 13    7.178E+00
IY= 12    8.410E+00
IY= 11    1.017E+01
IY= 10    1.304E+01
IY=  9    1.550E+01
IY=  8    1.717E+0ı
IY=  7    2.465E+01
IY=  6    3.105E+01
IY=  5    3.721E+01
IY=  4    3.142E+01
IY=  3    1.231E+01
IY=  2    1.098E+01
IY=  1    1.087E+01
 IX=         6
FIELD VALUES OF EP
IY= 16    9.869E+00      9.651E+00      9.023E+00      8.677E+00      8.962E+00
IY= 15    8.387E+00      8.102E+00      7.355E+00      7.124E+00      7.767E+00
IY= 14    7.010E+00      6.636E+00      5.911E+00      6.148E+00      7.942E+00
IY= 13    6.914E+00      6.561E+00      6.551E+00      8.67⁴E+00      1.212E+01
IY= 12    7.470E+00      7.137E+00      7.398E+00      1.034E+01      1.475E+01
IY= 11    9.345E+00      9.098E+00      1.033E+01      1.484E+01      1.925E+01
IY= 10    1.810E+01      1.774E+01      1.991E+01      2.444E+01      2.526E+01
IY=  9    2.505E+01      2.389E+01      2.574E+01      2.987E+01      2.899E+01
IY=  8    3.415E+01      3.241E+01      3.325E+01      3.598E+01      3.242E+01
IY=  7    1.224E+02      1.141E+02      8.649E+01      6.668E+01      4.569E+01
IY=  6    1.954E+02      1.785E+02      1.233E+02      8.785E+01      5.821E+01
IY=  5    3.073E+02      2.716E+02      1.601E+02      1.110E+02      7.171E+01
IY=  4    2.580E+03      3.497E+02      1.164E+02      7.846E+01      5.442E+01
IY=  3    2.032E+04      1.268E+03      4.934E+01      3.796E+01      3.155E+01
IY=  2    8.380E+02      9.958E+01      2.818E+01      2.950E+01      2.905E+01
IY=  1    1.984E+01      2.179E+01      1.041E+01      6.975E+00      2.804E+01
 IX=         1              2              3              4              5
IY= 16    1.079E+01
IY= 15    1.021E+01
IY= 14    1.152E+01
IY= 13    1.592E+01
IY= 12    1.880E+01
IY= 11    2.217E+01
IY= 10    2.616E+01
IY=  9    2.886E+01
IY=  8    3.103E+01
IY=  7    3.841E+01
IY=  6    4.510E+01
IY=  5    5.172E+01
IY=  4    4.732E+01
IY=  3    3.140E+01
IY=  2    2.997E+01
IY=  1    2.963E+01
 IX=         6
FIELD VALUES OF H1
IY= 16    3.031E+05      3.026E+05      3.012E+05      3.000E+05      2.988E+05
IY= 15    3.148E+05      3.140E+05      3.115E+05      3.091E+05      3.066E+05
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IY= 14    3.094E+05    3.084E+05    3.050E+05    3.020E+05    2.992E+05
IY= 13    3.032E+05    3.021E+05    2.989E+05    2.974E+05    2.965E+05
IY= 12    3.027E+05    3.015E+05    2.985E+05    2.970E+05    2.964E+05
IY= 11    3.021E+05    3.009E+05    2.978E+05    2.967E+05    2.963E+05
IY= 10    3.012E+05    3.001E+05    2.973E+05    2.965E+05    2.963E+05
IY=  9    3.011E+05    3.000E+05    2.971E+05    2.965E+05    2.963E+05
IY=  8    3.010E+05    2.999E+05    2.971E+05    2.965E+05    2.963E+05
IY=  7    3.006E+05    2.998E+05    2.974E+05    2.967E+05    2.963E+05
IY=  6    3.006E+05    2.999E+05    2.975E+05    2.967E+05    2.963E+05
IY=  5    3.001E+05    2.994E+05    2.974E+05    2.967E+05    2.963E+05
IY=  4    2.996E+05    2.986E+05    2.966E+05    2.963E+05    2.962E+05
IY=  3    2.968E+05    2.965E+05    2.962E+05    2.962E+05    2.962E+05
IY=  2    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
IY=  1    2.962E+05    2.962E+05    2.962E+05    2.962E+05    2.962E+05
 IX=        1            2            3            4            5
IY= 16    2.979E+05
IY= 15    3.029E+05
IY= 14    2.975E+05
IY= 13    2.963E+05
IY= 12    2.963E+05
IY= 11    2.962E+05
IY= 10    2.962E+05
IY=  9    2.962E+05
IY=  8    2.963E+05
IY=  7    2.963E+05
IY=  6    2.963E+05
IY=  5    2.963E+05
IY=  4    2.962E+05
IY=  3    2.962E+05
IY=  2    2.962E+05
IY=  1    2.962E+05
 IX=        6
FIELD VALUES OF TMP1
IY= 16    3.019E+02    3.014E+02    3.000E+02    2.988E+02    2.976E+02
IY= 15    3.135E+02    3.128E+02    3.102E+02    3.079E+02    3.054E+02
IY= 14    3.082E+02    3.072E+02    3.037E+02    3.008E+02    2.980E+02
IY= 13    3.020E+02    3.009E+02    2.978E+02    2.962E+02    2.953E+02
IY= 12    3.015E+02    3.003E+02    2.973E+02    2.959E+02    2.952E+02
IY= 11    3.009E+02    2.997E+02    2.967E+02    2.956E+02    2.951E+02
IY= 10    3.000E+02    2.989E+02    2.961E+02    2.954E+02    2.951E+02
IY=  9    2.999E+02    2.988E+02    2.959E+02    2.953E+02    2.951E+02
IY=  8    2.998E+02    2.987E+02    2.959E+02    2.953E+02    2.951E+02
IY=  7    2.994E+02    2.986E+02    2.962E+02    2.955E+02    2.951E+02
IY=  6    2.994E+02    2.987E+02    2.963E+02    2.955E+02    2.952E+02
IY=  5    2.989E+02    2.982E+02    2.962E+02    2.955E+02    2.952E+02
IY=  4    2.984E+02    2.975E+02    2.954E+02    2.951E+02    2.950E+02
IY=  3    2.956E+02    2.953E+02    2.950E+02    2.950E+02    2.950E+02
IY=  2    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
IY=  1    2.950E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
 IX=        1            2            3            4            5
IY= 16    2.967E+02
IY= 15    3.017E+02
IY= 14    2.963E+02
IY= 13    2.951E+02
IY= 12    2.951E+02
IY= 11    2.951E+02
IY= 10    2.951E+02
IY=  9    2.951E+02
IY=  8    2.951E+02
IY=  7    2.951E+02
IY=  6    2.951E+02
IY=  5    2.951E+02
IY=  4    2.950E+02
IY=  3    2.950E+02
IY=  2    2.950E+02
IY=  1    2.950E+02
 IX=        6
FIELD VALUES OF RHO1
IY= 16    1.173E+00    1.175E+00    1.181E+00    1.186E+00    1.190E+00
IY= 15    1.130E+00    1.132E+00    1.142E+00    1.151E+00    1.160E+00
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IY= 14    1.149E+00      1.153E+00      1.166E+00      1.178E+00      1.189E+00
IY= 13    1.172E+00      1.177E+00      1.189E+00      1.195E+00      1.199E+00
IY= 12    1.174E+00      1.178E+00      1.191E+00      1.196E+00      1.199E+00
IY= 11    1.176E+00      1.181E+00      1.193E+00      1.198E+00      1.199E+00
IY= 10    1.179E+00      1.184E+00      1.195E+00      1.198E+00      1.199E+00
IY=  9    1.180E+00      1.184E+00      1.195E+00      1.198E+00      1.199E+00
IY=  8    1.180E+00      1.184E+00      1.196E+00      1.198E+00      1.199E+00
IY=  7    1.182E+00      1.185E+00      1.194E+00      1.197E+00      1.198E+00
IY=  6    1.182E+00      1.184E+00      1.193E+00      1.196E+00      1.198E+00
IY=  5    1.183E+00      1.185E+00      1.193E+00      1.196E+00      1.197E+00
IY=  4    1.181E+00      1.187E+00      1.195E+00      1.197E+00      1.197E+00
IY=  3    1.181E+00      1.193E+00      1.196E+00      1.197E+00      1.197E+00
IY=  2    1.195E+00      1.196E+00      1.197E+00      1.197E+00      1.197E+00
IY=  1    1.195E+00      1.196E+00      1.197E+00      1.197E+00      1.197E+00
 IX=         1              2              3              4              5
IY= 16    1.194E+00
IY= 15    1.174E+00
IY= 14    1.195E+00
IY= 13    1.200E+00
IY= 12    1.200E+00
IY= 11    1.200E+00
IY= 10    1.200E+00
IY=  9    1.200E+00
IY=  8    1.200_.)0
IY=  7    1.199E+00
IY=  6    1.199E+00
IY=  5    1.199E+00
IY=  4    1.199E+00
IY=  3    1.199E+00
IY=  2    1.199E+00
IY=  1    1.199E+00
 IX=         6


*************************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     9 ITERN NO=       1


FLOW FIELD AT ITHYD=  1, IZ=  9, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16   -9.317E+00     -9.613E+00     -9.336E+00     -9.092E+00     -8.842E+00
IY= 15   -8.240E+00     -9.606E+00     -9.779E+00     -1.011E+01     -1.043E+01
IY= 14   -2.213E+01     -2.431E+01     -2.388E+01     -2.371E+01     -2.358E+01
IY= 13   -4.814E+01     -5.205E+01     -5.171E+01     -5.168E+01     -5.184E+01
IY= 12   -1.136E+02     -1.173E+02     -1.057E+02     -9.793E+01     -9.286E+01
IY= 11   -1.320E+02     -1.362E+02     -1.211E+02     -1.119E+02     -1.071E+02
IY= 10   -1.683E+02     -1.754E+02     -1.547E+02     -1.431E+02     -1.387E+02
IY=  9   -2.189E+02     -2.278E+02     -1.975E+02     -1.803E+02     -1.746E+02
IY=  8   -2.494E+02     -2.603E+02     -2.229E+02     -2.020E+02     -1.965E+02
IY=  7   -3.245E+02     -3.478E+02     -2.966E+02     -2.710E+02     -2.698E+02
IY=  6   -5.387E+02     -5.410E+02     -4.201E+02     -3.672E+02     -3.650E+02
IY=  5   -7.014E+02     -7.004E+02     -5.143E+02     -4.457E+02     -4.498E+02
IY=  4   -6.426E+02     -8.926E+02     -6.504E+02     -5.540E+02     -5.673E+02
IY=  3    0.000E+00     -7.414E+02     -6.527E+02     -5.781E+02     -6.230E+02
IY=  2   -5.168E+02     -6.458E+02     -5.398E+02     -4.962E+02     -5.353E+02
IY=  1   -4.360E+02     -4.800E+02     -4.077E+02     -3.920E+02     -4.929E+02
 IX=         1              2              3              4              5
IY= 16   -7.942E+00
IY= 15   -9.890E+00
IY= 14   -2.008E+01
IY= 13   -3.880E+01
IY= 12   -6.247E+01
IY= 11   -7.009E+01
IY= 10   -8.580E+01
IY=  9   -1.023E+02
IY=  8   -1.120E+02
IY=  7   -1.443E+02
IY=  6   -1.796E+02
IY=  5   -2.098E+02
IY=  4   -2.476E+02
IY=  3   -2.721E+02
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IY=  2   -2.586E+02
IY=  1   -2.554E+02
 IX=      6
FIELD VALUES OF U1
IY= 16   -1.132E-01    -4.489E-01    -5.988E-01    -7.186E-01    -7.437E-01
IY= 15   -1.882E-01    -6.634E-01    -8.275E-01    -9.379E-01    -9.578E-01
IY= 14   -2.949E-01    -1.060E+00    -1.323E+00    -1.498E+00    -1.547E+00
IY= 13   -5.219E-01    -1.798E+00    -2.222E+00    -2.560E+00    -2.776E+00
IY= 12   -6.096E-01    -2.227E+00    -2.838E+00    -3.359E+00    -3.633E+00
IY= 11   -7.124E-01    -2.622E+00    -3.321E+00    -3.862E+00    -4.100E+00
IY= 10   -9.513E-01    -3.419E+00    -4.230E+00    -4.745E+00    -4.960E+00
IY=  9   -1.079E+00    -3.844E+00    -4.747E+00    -5.312E+00    -5.606E+00
IY=  8   -1.151E+00    -4.113E+00    -5.040E+00    -5.607E+00    -5.943E+00
IY=  7   -1.728E+00    -5.316E+00    -6.185E+00    -6.676E+00    -7.007E+00
IY=  6   -2.428E+00    -6.359E+00    -7.171E+00    -7.556E+00    -8.005E+00
IY=  5   -3.462E+00    -7.806E+00    -8.330E+00    -8.459E+00    -8.931E+00
IY=  4   -3.930E+00    -1.046E+01    -1.027E+01    -9.829E+00    -1.023E+01
IY=  3   -8.616E-05    -1.239E+01    -1.185E+01    -1.040E+01    -1.128E+01
IY=  2   -3.351E+00    -9.070E+00    -1.007E+01    -9.419E+00    -1.086E+01
IY=  1   -9.195E-01    -6.797E+00    -8.585E+00    -6.892E+00    -1.007E+01
 IX=      1             2             3             4             5
FIELD VALUES OF V1
IY= 15   -1.509E+00    -1.539E+00    -1.472E+00    -1.378E+00    -1.248E+00
IY= 14   -4.037E+00    -3.984E+00    -3.622E+00    -3.234E+00    -2.763E+00
IY= 13   -6.567E+00    -6.443E+00    -5.638E+00    -4.759E+00    -3.684E+00
IY= 12   -1.110E+01    -1.081E+01    -8.961E+00    -7.215E+00    -5.327E+00
IY= 11   -1.152E+01    -1.124E+01    -9.243E+00    -7.392E+00    -5.448E+00
IY= 10   -1.209E+01    -1.183E+01    -9.626E+00    -7.641E+00    -5.617E+00
IY=  9   -1.293E+01    -1.267E+01    -1.018E+01    -7.938E+00    -5.766E+00
IY=  8   -1.295E+01    -1.273E+01    -1.017E+01    -7.897E+00    -5.749E+00
IY=  7   -1.300E+01    -1.284E+01    -1.014E+01    -7.813E+00    -5.674E+00
IY=  6   -1.388E+01    -1.309E+01    -9.475E+00    -7.106E+00    -5.218E+00
IY=  5   -1.373E+01    -1.295E+01    -9.118E+00    -6.767E+00    -4.962E+00
IY=  4   -1.282E+01    -1.220E+01    -7.486E+00    -5.192E+00    -3.845E+00
IY=  3   -2.833E-05    -8.329E+00    -3.955E+00    -2.712E+00    -2.083E+00
IY=  2    1.098E-05     1.456E+00     2.982E+00     2.269E+00     1.316E+00
IY=  1    2.414E+00     4.067E+00     4.456E+00     3.847E+00     1.388E+00
 IX=      1             2             3             4             5
IY= 15   -1.031E+00
IY= 14   -2.025E+00
IY= 13   -2.326E+00
IY= 12   -3.184E+00
IY= 11   -3.261E+00
IY= 10   -3.367E+00
IY=  9   -3.364E+00
IY=  8   -3.278E+00
IY=  7   -3.152E+00
IY=  6   -2.761E+00
IY=  5   -2.507E+00
IY=  4   -1.870E+00
IY=  3   -1.156E+00
IY=  2    8.683E-02
IY=  1    1.907E-01
 IX=      6
FIELD VALUES OF W1
IY= 16   -4.383E-01    -3.863E-01    -3.631E-01    -3.361E-01    -2.986E-01
IY= 15   -4.458E-01    -3.966E-01    -3.764E-01    -3.525E-01    -3.213E-01
IY= 14    9.861E-01     1.040E+00     9.591E-01     8.604E-01     7.338E-01
IY= 13    2.518E+00     2.511E+00     2.137E+00     1.746E+00     1.323E+00
IY= 12    2.857E+00     2.840E+00     2.528E+00     2.187E+00     1.834E+00
IY= 11    3.263E+00     3.221E+00     2.875E+00     2.495E+00     2.096E+00
IY= 10    4.449E+00     4.310E+00     3.772E+00     3.231E+00     2.699E+00
IY=  9    6.016E+00     5.757E+00     4.929E+00     4.171E+00     3.497E+00
IY=  8    7.047E+00     6.689E+00     5.690E+00     4.800E+00     4.010E+00
IY=  7    1.120E+01     1.046E+01     8.654E+00     7.131E+00     5.887E+00
IY=  6    1.680E+01     1.557E+01     1.275E+01     1.039E+01     8.488E+00
IY=  5    2.181E+01     2.002E+01     1.639E+01     1.320E+01     1.069E+01
IY=  4    3.065E+01     2.625E+01     2.056E+01     1.598E+01     1.254E+01
IY=  3    0.000E+00     3.162E+01     2.309E+01     1.715E+01     1.244E+01
IY=  2    2.731E+01     2.870E+01     2.043E+01     1.459E+01     1.055E+01
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IY=	1	1.822E+01	1.586E+01	7.811E+00	3.267E+00	8.853E+00
IX=		1	2	3	4	5
IY=	16	-2.643E-01				
IY=	15	-2.939E-01				
IY=	14	5.319E-01				
IY=	13	8.872E-01				
IY=	12	1.548E+00				
IY=	11	1.800E+00				
IY=	10	2.367E+00				
IY=	9	3.081E+00				
IY=	8	3.523E+00				
IY=	7	5.039E+00				
IY=	6	6.973E+00				
IY=	5	8.602E+00				
IY=	4	9.787E+00				
IY=	3	9.800E+00				
IY=	2	8.865E+00				
IY=	1	8.473E+00				
IX=		6				

FIELD VALUES OF KE

IY=	16	1.359E+01	1.310E+01	1.199E+01	1.108E+01	1.022E+01
IY=	15	2.194E+01	2.133E+01	1.929E+01	1.760E+01	1.611E+01
IY=	14	2.062E+01	1.962E+01	1.659E+01	1.424E+01	1.215E+01
IY=	13	3.044E+01	2.880E+01	2.504E+01	2.275E+01	1.983E+01
IY=	12	7.569E+01	7.220E+01	6.537E+01	6.171E+01	5.772E+01
IY=	11	1.056E+02	1.014E+02	9.305E+01	8.773E+01	8.093E+01
IY=	10	1.592E+02	1.539E+02	1.411E+02	1.315E+02	1.195E+02
IY=	9	2.032E+02	1.961E+02	1.784E+02	1.655E+02	1.511E+02
IY=	8	2.279E+02	2.194E+02	1.982E+02	1.832E+02	1.674E+02
IY=	7	3.077E+02	2.941E+02	2.562E+02	2.318E+02	2.119E+02
IY=	6	3.900E+02	3.598E+02	2.945E+02	2.585E+02	2.355E+02
IY=	5	4.636E+02	4.083E+02	3.134E+02	2.692E+02	2.449E+02
IY=	4	6.385E+02	3.333E+02	2.210E+02	1.975E+02	1.945E+02
IY=	3	1.000E-08	2.413E+02	6.828E+01	6.287E+01	8.987E+01
IY=	2	1.035E+02	3.210E+01	1.265E+01	1.374E+01	2.115E+01
IY=	1	2.336E+00	1.501E+00	6.859E-01	4.042E-01	1.616E+01
IX=		1	2	3	4	5
IY=	16	9.374E+00				
IY=	15	1.411E+01				
IY=	14	9.849E+00				
IY=	13	1.567E+01				
IY=	12	4.813E+01				
IY=	11	6.576E+01				
IY=	10	9.575E+01				
IY=	9	1.221E+02				
IY=	8	1.360E+02				
IY=	7	1.741E+02				
IY=	6	1.959E+02				
IY=	5	2.050E+02				
IY=	4	1.786E+02				
IY=	3	1.039E+02				
IY=	2	2.254E+01				
IY=	1	1.745E+01				
IX=		6				

FIELD VALUES OF EP

IY=	16	1.505E+01	1.477E+01	1.392E+01	1.332E+01	1.317E+01
IY=	15	1.356E+01	1.327E+01	1.262E+01	1.248E+01	1.307E+01
IY=	14	1.191E+01	1.139E+01	1.050E+01	1.053E+01	1.174E+01
IY=	13	2.349E+01	2.192E+01	2.014E+01	2.056E+01	2.183E+01
IY=	12	1.358E+02	1.254E+02	1.074E+02	9.987E+01	9.507E+01
IY=	11	2.338E+02	2.183E+02	1.882E+02	1.717E+02	1.557E+02
IY=	10	4.297E+02	4.076E+02	3.530E+02	3.154E+02	2.760E+02
IY=	9	5.764E+02	5.502E+02	4.818E+02	4.333E+02	3.825E+02
IY=	8	6.423E+02	6.146E+02	5.420E+02	4.913E+02	4.372E+02
IY=	7	7.711E+02	7.446E+02	6.721E+02	6.278E+02	5.781E+02
IY=	6	7.927E+02	7.454E+02	6.497E+02	6.165E+02	5.854E+02
IY=	5	7.983E+02	6.769E+02	5.566E+02	5.410E+02	5.364E+02
IY=	4	3.338E+03	7.896E+02	3.099E+02	2.478E+02	2.873E+02
IY=	3	1.000E-08	1.380E+03	9.708E+01	8.520E+01	1.185E+02
IY=	2	8.262E+02	1.064E+02	2.830E+01	3.171E+01	4.529E+01

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IY=  1    1.798E+01      9.265E+00      2.861E+00      1.294E+00      4.526E+01
 IX=         1              2              3              4              5
IY= 16    1.408E+01
IY= 15    1.478E+01
IY= 14    1.485E+01
IY= 13    2.329E+01
IY= 12    8.081E+01
IY= 11    1.222E+02
IY= 10    2.053E+02
IY=  9    2.861E+02
IY=  8    3.293E+02
IY=  7    4.487E+02
IY=  6    4.734E+02
IY=  5    4.517E+02
IY=  4    2.982E+02
IY=  3    1.293E+02
IY=  2    5.116E+01
IY=  1    5.082E+01
 IX=         6
FIELD VALUES OF H1
IY= 16    3.122E+05      3.115E+05      3.097E+05      3.081E+05      3.063E+05
IY= 15    3.198E+05      3.191E+05      3.168E+05      3.148E+05      3.128E+05
IY= 14    3.131E+05      3.121E+05      3.087E+05      3.057E+05      3.029E+05
IY= 13    3.057E+05      3.047E+05      3.013E+05      2.992E+05      2.978E+05
IY= 12    3.050E+05      3.039E+05      3.005E+05      2.986E+05      2.976E+05
IY= 11    3.045E+05      3.035E+05      3.002E+05      2.984E+05      2.975E+05
IY= 10    3.039E+05      3.028E+05      2.998E+05      2.983E+05      2.976E+05
IY=  9    3.038E+05      3.029E+05      2.998E+05      2.984E+05      2.977E+05
IY=  8    3.037E+05      3.028E+05      2.998E+05      2.984E+05      2.977E+05
IY=  7    3.026E+05      3.019E+05      2.998E+05      2.986E+05      2.979E+05
IY=  6    3.023E+05      3.016E+05      2.995E+05      2.984E+05      2.978E+05
IY=  5    3.009E+05      3.003E+05      2.990E+05      2.981E+05      2.976E+05
IY=  4    2.989E+05      2.980E+05      2.975E+05      2.970E+05      2.968E+05
IY=  3    2.962E+05      2.967E+05      2.962E+05      2.962E+05      2.962E+05
IY=  2    2.963E+05      2.962E+05      2.962E+05      2.962E+05      2.962E+05
IY=  1    2.963E+05      2.962E+05      2.962E+05      2.962E+05      2.962E+05
 IX=         1              2              3              4              5
IY= 16    3.040E+05
IY= 15    3.098E+05
IY= 14    2.995E+05
IY= 13    2.969E+05
IY= 12    2.968E+05
IY= 11    2.969E+05
IY= 10    2.970E+05
IY=  9    2.970E+05
IY=  8    2.971E+05
IY=  7    2.971E+05
IY=  6    2.970E+05
IY=  5    2.969E+05
IY=  4    2.966E+05
IY=  3    2.962E+05
IY=  2    2.962E+05
IY=  1    2.962E+05
 IX=         6
FIELD VALUES OF TMP1
IY= 16    3.109E+02      3.103E+02      3.085E+02      3.069E+02      3.051E+02
IY= 15    3.185E+02      3.178E+02      3.155E+02      3.135E+02      3.115E+02
IY= 14    3.119E+02      3.109E+02      3.075E+02      3.045E+02      3.017E+02
IY= 13    3.045E+02      3.034E+02      3.001E+02      2.980E+02      2.966E+02
IY= 12    3.037E+02      3.027E+02      2.993E+02      2.974E+02      2.964E+02
IY= 11    3.033E+02      3.023E+02      2.990E+02      2.972E+02      2.964E+02
IY= 10    3.027E+02      3.016E+02      2.986E+02      2.971E+02      2.964E+02
IY=  9    3.026E+02      3.017E+02      2.986E+02      2.972E+02      2.965E+02
IY=  8    3.025E+02      3.016E+02      2.986E+02      2.972E+02      2.965E+02
IY=  7    3.014E+02      3.007E+02      2.986E+02      2.974E+02      2.967E+02
IY=  6    3.011E+02      3.004E+02      2.983E+02      2.972E+02      2.966E+02
IY=  5    2.997E+02      2.991E+02      2.978E+02      2.969E+02      2.964E+02
IY=  4    2.977E+02      2.968E+02      2.963E+02      2.958E+02      2.956E+02
IY=  3    2.950E+02      2.955E+02      2.950E+02      2.950E+02      2.950E+02
IY=  2    2.952E+02      2.950E+02      2.950E+02      2.950E+02      2.950E+02
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IY=  1    2.951E+02    2.950E+02    2.950E+02    2.950E+02    2.950E+02
 IX=         1            2            3            4            5
IY= 16    3.027E+02
IY= 15    3.086E+02
IY= 14    2.983E+02
IY= 13    2.957E+02
IY= 12    2.957E+02
IY= 11    2.957E+02
IY= 10    2.958E+02
IY=  9    2.958E+02
IY=  8    2.959E+02
IY=  7    2.960E+02
IY=  6    2.959E+02
IY=  5    2.957E+02
IY=  4    2.954E+02
IY=  3    2.950E+02
IY=  2    2.950E+02
IY=  1    2.950E+02
 IX=         6
FIELD VALUES OF RHO1
IY= 16    1.139E+00    1.142E+00    1.148E+00    1.154E+00    1.161E+00
IY= 15    1.112E+00    1.115E+00    1.123E+00    1.130E+00    1.137E+00
IY= 14    1.136E+00    1.139E+00    1.152E+00    1.163E+00    1.174E+00
IY= 13    1.163E+00    1.167E+00    1.180E+00    1.188E+00    1.194E+00
IY= 12    1.165E+00    1.169E+00    1.182E+00    1.190E+00    1.194E+00
IY= 11    1.166E+00    1.171E+00    1.184E+00    1.191E+00    1.194E+00
IY= 10    1.169E+00    1.173E+00    1.185E+00    1.191E+00    1.194E+00
IY=  9    1.168E+00    1.172E+00    1.184E+00    1.190E+00    1.193E+00
IY=  8    1.168E+00    1.172E+00    1.184E+00    1.190E+00    1.192E+00
IY=  7    1.172E+00    1.174E+00    1.183E+00    1.188E+00    1.191E+00
IY=  6    1.170E+00    1.173E+00    1.183E+00    1.188E+00    1.190E+00
IY=  5    1.174E+00    1.176E+00    1.184E+00    1.188E+00    1.190E+00
IY=  4    1.183E+00    1.183E+00    1.188E+00    1.191E+00    1.192E+00
IY=  3    1.201E+00    1.190E+00    1.193E+00    1.194E+00    1.193E+00
IY=  2    1.194E+00    1.193E+00    1.194E+00    1.195E+00    1.195E+00
IY=  1    1.195E+00    1.195E+00    1.196E+00    1.196E+00    1.195E+00
 IX=         1            2            3            4            5
IY= 16    1.170E+00
IY= 15    1.148E+00
IY= 14    1.187E+00
IY= 13    1.197E+00
IY= 12    1.198E+00
IY= 11    1.197E+00
IY= 10    1.197E+00
IY=  9    1.196E+00
IY=  8    1.196E+00
IY=  7    1.195E+00
IY=  6    1.195E+00
IY=  5    1.195E+00
IY=  4    1.197E+00
IY=  3    1.198E+00
IY=  2    1.198E+00
IY=  1    1.198E+00
 IX=         6


*************************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     10 ITERN NO=        1


FLOW FIELD AT ITHYD=  1, IZ= 10, ISWEEP= 550, ISTEP=     1
FIELD VALUES OF P1
IY= 16   -1.437E+01   -1.485E+01   -1.415E+01   -1.349E+01   -1.281E+01
IY= 15   -1.687E+01   -1.880E+01   -1.810E+01   -1.755E+01   -1.694E+01
IY= 14   -2.490E+01   -2.802E+01   -2.716E+01   -2.651E+01   -2.573E+01
IY= 13   -3.460E+01   -3.976E+01   -3.978E+01   -3.987E+01   -3.958E+01
IY= 12   -3.809E+01   -4.613E+01   -4.716E+01   -4.806E+01   -4.863E+01
IY= 11   -3.679E+01   -4.604E+01   -4.787E+01   -4.951E+01   -5.060E+01
IY= 10   -3.245E+01   -4.461E+01   -4.853E+01   -5.174E+01   -5.363E+01
IY=  9   -2.689E+01   -4.239E+01   -4.858E+01   -5.326E+01   -5.614E+01
IY=  8   -2.463E+01   -4.221E+01   -4.937E+01   -5.458E+01   -5.770E+01
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IY=   7   -8.482E-01   -2.757E+01   -4.326E+01   -5.383E+01   -5.995E+01
IY=   6    2.660E+01   -7.907E+00   -3.694E+01   -5.446E+01   -6.475E+01
IY=   5    6.508E+01    1.556E+01   -2.981E+01   -5.445E+01   -6.818E+01
IY=   4    2.707E+02    3.262E+01   -4.107E+01   -6.884E+01   -8.181E+01
IY=   3    0.000E+00   -4.944E+01   -8.945E+01   -9.919E+01   -1.053E+02
IY=   2   -2.209E+02   -1.500E+02   -1.319E+02   -1.260E+02   -1.214E+02
IY=   1   -2.116E+02   -1.146E+02   -1.045E+02   -1.021E+02   -7.439E+01
 IX=         1            2            3            4            5
IY=  16   -1.095E+01
IY=  15   -1.444E+01
IY=  14   -2.124E+01
IY=  13   -3.079E+01
IY=  12   -3.653E+01
IY=  11   -3.720E+01
IY=  10   -3.861E+01
IY=   9   -4.000E+01
IY=   8   -4.057E+01
IY=   7   -4.244E+01
IY=   6   -4.612E+01
IY=   5   -4.913E+01
IY=   4   -5.652E+01
IY=   3   -6.554E+01
IY=   2   -7.191E+01
IY=   1   -4.851E+01
 IX=         6
FIELD VALUES OF U1
IY=  16   -1.405E-01   -4.977E-01   -6.616E-01   -8.006E-01   -8.393E-01
IY=  15   -2.047E-01   -7.361E-01   -9.467E-01   -1.116E+00   -1.163E+00
IY=  14   -2.847E-01   -1.041E+00   -1.344E+00   -1.591E+00   -1.658E+00
IY=  13   -3.343E-01   -1.253E+00   -1.649E+00   -2.017E+00   -2.160E+00
IY=  12   -3.434E-01   -1.312E+00   -1.752E+00   -2.179E+00   -2.362E+00
IY=  11   -3.472E-01   -1.339E+00   -1.792E+00   -2.240E+00   -2.439E+00
IY=  10   -3.541E-01   -1.391E+00   -1.869E+00   -2.351E+00   -2.568E+00
IY=   9   -3.808E-01   -1.440E+00   -1.937E+00   -2.439E+00   -2.664E+00
IY=   8   -3.825E-01   -1.474E+00   -1.985E+00   -2.502E+00   -2.733E+00
IY=   7   -3.751E-01   -1.581E+00   -2.147E+00   -2.708E+00   -2.954E+00
IY=   6   -2.792E-01   -1.710E+00   -2.362E+00   -2.978E+00   -3.237E+00
IY=   5   -1.415E-01   -1.878E+00   -2.619E+00   -3.285E+00   -3.565E+00
IY=   4    1.357E+00   -2.311E+00   -3.353E+00   -4.082E+00   -4.355E+00
IY=   3   -2.521E-05   -4.104E+00   -4.816E+00   -5.238E+00   -5.426E+00
IY=   2   -4.913E+00   -6.037E+00   -6.269E+00   -6.336E+00   -6.309E+00
IY=   1   -5.708E+00   -6.203E+00   -6.493E+00   -6.712E+00   -6.444E+00
 IX=         1            2            3            4            5
FIELD VALUES OF V1
IY=  15   -1.708E+00   -1.732E+00   -1.652E+00   -1.553E+00   -1.426E+00
IY=  14   -3.744E+00   -3.697E+00   -3.380E+00   -3.060E+00   -2.709E+00
IY=  13   -5.402E+00   -5.312E+00   -4.761E+00   -4.210E+00   -3.609E+00
IY=  12   -6.730E+00   -6.634E+00   -5.881E+00   -5.166E+00   -4.437E+00
IY=  11   -6.736E+00   -6.650E+00   -5.907E+00   -5.202E+00   -4.492E+00
IY=  10   -6.753E+00   -6.682E+00   -5.956E+00   -5.267E+00   -4.590E+00
IY=   9   -6.717E+00   -6.684E+00   -5.998E+00   -5.348E+00   -4.733E+00
IY=   8   -6.693E+00   -6.661E+00   -5.996E+00   -5.362E+00   -4.770E+00
IY=   7   -6.642E+00   -6.614E+00   -5.979E+00   -5.366E+00   -4.796E+00
IY=   6   -6.269E+00   -6.380E+00   -5.837E+00   -5.293E+00   -4.786E+00
IY=   5   -6.017E+00   -6.263E+00   -5.789E+00   -5.257E+00   -4.757E+00
IY=   4   -4.216E+00   -5.794E+00   -5.554E+00   -5.043E+00   -4.528E+00
IY=   3   -9.072E-05   -5.780E+00   -5.277E+00   -4.607E+00   -4.037E+00
IY=   2   -2.269E-05   -5.015E+00   -3.712E+00   -3.090E+00   -2.597E+00
IY=   1   -9.747E-02   -1.248E+00   -9.771E-01   -8.111E-01   -5.281E-01
 IX=         1            2            3            4            5
IY=  15   -1.210E+00
IY=  14   -2.149E+00
IY=  13   -2.675E+00
IY=  12   -3.343E+00
IY=  11   -3.462E+00
IY=  10   -3.620E+00
IY=   9   -3.851E+00
IY=   8   -3.927E+00
IY=   7   -3.986E+00
IY=   6   -4.038E+00
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IY=   5   -4.022E+00
IY=   4   -3.746E+00
IY=   3   -3.217E+00
IY=   2   -1.992E+00
IY=   1   -5.854E-01
 IX=        6
FIELD VALUES OF W1
IY= 16   -1.078E+00   -1.059E+00   -1.033E+00   -1.002E+00   -9.601E-01
IY= 15   -9.668E-01   -9.529E-01   -9.361E-01   -9.144E-01   -8.805E-01
IY= 14    8.449E-01    8.577E-01    7.763E-01    6.850E-01    5.847E-01
IY= 13    3.095E+00    3.064E+00    2.741E+00    2.422E+00    2.092E+00
IY= 12    4.944E+00    4.865E+00    4.371E+00    3.911E+00    3.452E+00
IY= 11    5.658E+00    5.558E+00    4.971E+00    4.438E+00    3.920E+00
IY= 10    7.248E+00    7.078E+00    6.267E+00    5.550E+00    4.899E+00
IY=  9    9.300E+00    9.018E+00    7.837E+00    6.877E+00    6.058E+00
IY=  8    1.065E+01    1.029E+01    8.844E+00    7.700E+00    6.759E+00
IY=  7    1.516E+01    1.447E+01    1.231E+01    1.052E+01    9.186E+00
IY=  6    2.255E+01    2.128E+01    1.728E+01    1.444E+01    1.236E+01
IY=  5    2.906E+01  . 2.659E+01    2.155E+01    1.775E+01    1.519E+01
IY=  4    4.057E+01    3.639E+01    2.776E+01    2.206E+01    1.835E+01
IY=  3    0.000E+00    4.514E+01    3.278E+01    2.505E+01    2.020E+01
IY=  2    6.248E+01    4.845E+01    3.395E+01    2.516E+01    1.961E+01
IY=  1    6.178E+01    4.740E+01    3.301E+01    2.402E+01    1.859E+01
 IX=        1            2            3            4            5
IY= 16   -8.876E-01
IY= 15   -8.164E-01
IY= 14    4.364E-01
IY= 13    1.626E+00
IY= 12    2.794E+00
IY= 11    3.187E+00
IY= 10    4.000E+00
IY=  9    4.951E+00
IY=  8    5.526E+00
IY=  7    7.428E+00
IY=  6    9.835E+00
IY=  5    1.184E+01
IY=  4    1.382E+01
IY=  3    1.468E+01
IY=  2    1.420E+01
IY=  1    1.408E+01
 IX=        6
FIELD VALUES OF KE
IY= 16    2.295E+01    2.246E+01    2.110E+01    1.987E+01    1.864E+01
IY= 15    3.454E+01    3.392E+01    3.145E+01    2.923E+01    2.708E+01
IY= 14    3.924E+01    3.818E+01    3.417E+01    3.063E+01    2.720E+01
IY= 13    5.712E+01    5.577E+01    5.117E+01    4.700E+01    4.259E+01
IY= 12    1.139E+02    1.102E+02    9.945E+01    9.118E+01    8.379E+01
IY= 11    1.371E+02    1.324E+02    1.186E+02    1.081E+02    9.891E+01
IY= 10    1.879E+02    1.806E+02    1.593E+02    1.436E+02    1.307E+02
IY=  9    2.473E+02    2.359E+02    2.049E+02    1.828E+02    1.657E+02
IY=  8    2.833E+02    2.691E+02    2.318E+02    2.058E+02    1.862E+02
IY=  7    4.075E+02    3.821E+02    3.224E+02    2.822E+02    2.536E+02
IY=  6    5.825E+02    5.221E+02    4.202E+02    3.582E+02    3.183E+02
IY=  5    7.319E+02    6.328E+02    4.971E+02    4.180E+02    3.690E+02
IY=  4    9.177E+02    7.072E+02    5.240E+02    4.336E+02    3.817E+02
IY=  3    1.000E-08    6.159E+02    4.380E+02    3.740E+02    3.375E+02
IY=  2    3.606E+02    3.461E+02    2.761E+02    2.483E+02    2.460E+02
IY=  1    1.818E+01    1.112E+01    5.731E+00    3.268E+00    2.128E+02
 IX=        1            2            3            4            5
IY= 16    1.696E+01
IY= 15    2.390E+01
IY= 14    2.220E+01
IY= 13    3.582E+01
IY= 12    7.320E+01
IY= 11    8.600E+01
IY= 10    1.130E+02
IY=  9    1.431E+02
IY=  8    1.605E+02
IY=  7    2.172E+02
IY=  6    2.693E+02
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IY=   5    3.097E+02
IY=   4    3.191E+02
IY=   3    2.891E+02
IY=   2    2.336E+02
IY=   1    2.274E+02
 IX=       6
FIELD VALUES OF EP
IY=  16    2.223E+01    2.203E+01    2.115E+01    2.052E+01    2.030E+01
IY=  15    2.264E+01    2.236E+01    2.147E+01    2.103E+01    2.115E+01
IY=  14    2.673E+01    2.614E+01    2.444E+01    2.347E+01    2.324E+01
IY=  13    4.657E+01    4.559E+01    4.380E+01    4.252E+01    4.114E+01
IY=  12    1.440E+02    1.368E+02    1.224E+02    1.133E+02    1.055E+02
IY=  11    1.907E+02    1.801E+02    1.588E+02    1.448E+02    1.330E+02
IY=  10    3.008E+02    2.814E+02    2.430E+02    2.173E+02    1.963E+02
IY=   9    4.277E+02    3.966E+02    3.392E+02    3.013E+02    2.710E+02
IY=   8    5.029E+02    4.643E+02    3.966E+02    3.519E+02    3.161E+02
IY=   7    7.498E+02    6.852E+02    5.901E+02    5.254E+02    4.721E+02
IY=   6    1.120E+03    9.689E+02    7.716E+02    6.723E+02    6.080E+02
IY=   5    .1.565E+03    1.287E+03    9.415E+02    7.834E+02    7.121E+02
IY=   4    2.747E+03    1.981E+03    1.246E+03    9.510E+02    8.043E+02
IY=   3    1.000E-08    2.926E+03    1.480E+03    1.047E+03    8.347E+02
IY=   2    2.287E+03    1.689E+03    1.078E+03    8.124E+02    6.698E+02
IY=   1    3.903E+02    1.868E+02    6.909E+01    2.975E+01    5.531E+02
 IX=       1            2            3            4            5
IY=  16    2.075E+01
IY=  15    2.196E+01
IY=  14    2.377E+01
IY=  13    3.908E+01
IY=  12    9.423E+01
IY=  11    1.163E+02
IY=  10    1.675E+02
IY=   9    2.301E+02
IY=   8    2.680E+02
IY=   7    3.992E+02
IY=   6    5.207E+02
IY=   5    6.157E+02
IY=   4    6.568E+02
IY=   3    6.121E+02
IY=   2    5.152E+02
IY=   1    4.985E+02
 IX=       6
FIELD VALUES OF H1
IY=  16    3.161E+05    3.156E+05    3.141E+05    3.126E+05    3.111E+05
IY=  15    3.275E+05    3.269E+05    3.245E+05    3.221E+05    3.197E+05
IY=  14    3.223E+05    3.214E+05    3.181E+05    3.151E+05    3.121E+05
IY=  13    3.138E+05    3.129E+05    3.096E+05    3.070E+05    3.049E+05
IY=  12    3.122E+05    3.114E+05    3.082E+05    3.058E+05    3.040E+05
IY=  11    3.119E+05    3.111E+05    3.079E+05    3.056E+05    3.039E+05
IY=  10    3.117E+05    3.109E+05    3.078E+05    3.056E+05    3.040E+05
IY=   9    3.121E+05    3.112E+05    3.081E+05    3.059E+05    3.044E+05
IY=   8    3.123E+05    3.115E+05    3.083E+05    3.061E+05    3.046E+05
IY=   7    3.129E+05    3.120E+05    3.088E+05    3.066E+05    3.051E+05
IY=   6    3.140E+05    3.127E+05    3.092E+05    3.068E+05    3.053E+05
IY=   5    3.144E+05    3.127E+05    3.091E+05    3.067E+05    3.051E+05
IY=   4    3.144E+05    3.107E+05    3.072E+05    3.050E+05    3.036E+05
IY=   3    2.962E+05    3.047E+05    3.034E+05    3.023E+05    3.014E+05
IY=   2    2.996E+05    3.014E+05    3.008E+05    3.002E+05    2.997E+05
IY=   1    2.991E+05    3.007E+05    3.003E+05    2.997E+05    2.994E+05
 IX=       1            2            3            4            5
IY=  16    3.087E+05
IY=  15    3.159E+05
IY=  14    3.076E+05
IY=  13    3.022E+05
IY=  12    3.019E+05
IY=  11    3.019E+05
IY=  10    3.022E+05
IY=   9    3.025E+05
IY=   8    3.027E+05
IY=   7    3.032E+05
IY=   6    3.033E+05
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IY=  5    3.031E+05
IY=  4    3.019E+05
IY=  3    3.003E+05
IY=  2    2.991E+05
IY=  1    2.989E+05
 IX=      6
FIELD VALUES OF TMP1
IY= 16    3.149E+02    3.143E+02    3.128E+02    3.114E+02    3.098E+02
IY= 15    3.262E+02    3.256E+02    3.232E+02    3.209E+02    3.184E+02
IY= 14    3.210E+02    3.202E+02    3.168E+02    3.138E+02    3.108E+02
IY= 13    3.125E+02    3.117E+02    3.083E+02    3.058E+02    3.037E+02
IY= 12    3.110E+02    3.102E+02    3.070E+02    3.046E+02    3.028E+02
IY= 11    3.106E+02    3.098E+02    3.067E+02    3.044E+02    3.027E+02
IY= 10    3.104E+02    3.096E+02    3.066E+02    3.044E+02    3.028E+02
IY=  9    3.108E+02    3.100E+02    3.069E+02    3.047E+02    3.032E+02
IY=  8    3.111E+02    3.102E+02    3.071E+02    3.049E+02    3.033E+02
IY=  7    3.117E+02    3.108E+02    3.076E+02    3.054E+02    3.039E+02
IY=  6    3.127E+02    3.115E+02    3.080E+02    3.056E+02    3.040E+02
IY=  5    3.131E+02    3.114E+02    3.079E+02    3.054E+02    3.039E+02
IY=  4    3.132E+02    3.095E+02    3.059E+02    3.037E+02    3.024E+02
IY=  3    2.950E+02    3.035E+02    3.022E+02    3.011E+02    3.002E+02
IY=  2    2.984E+02    3.002E+02    2.996E+02    2.990E+02    2.985E+02
IY=  1    2.979E+02    2.995E+02    2.991E+02    2.985E+02    2.982E+02
 IX=      1            2            3            4            5
IY= 16    3.075E+02
IY= 15    3.146E+02
IY= 14    3.064E+02
IY= 13    3.010E+02
IY= 12    3.007E+02
IY= 11    3.007E+02
IY= 10    3.010E+02
IY=  9    3.013E+02
IY=  8    3.015E+02
IY=  7    3.020E+02
IY=  6    3.021E+02
IY=  5    3.019E+02
IY=  4    3.007E+02
IY=  3    2.991E+02
IY=  2    2.979E+02
IY=  1    2.978E+02
 IX=      6
FIELD VALUES OF RHO1
IY= 16    1.125E+00    1.127E+00    1.132E+00    1.138E+00    1.143E+00
IY= 15    1.086E+00    1.088E+00    1.096E+00    1.104E+00    1.112E+00
IY= 14    1.103E+00    1.106E+00    1.118E+00    1.129E+00    1.140E+00
IY= 13    1.133E+00    1.136E+00    1.149E+00    1.158E+00    1.166E+00
IY= 12    1.139E+00    1.142E+00    1.153E+00    1.163E+00    1.169E+00
IY= 11    1.140E+00    1.143E+00    1.155E+00    1.163E+00    1.170E+00
IY= 10    1.141E+00    1.144E+00    1.155E+00    1.163E+00    1.169E+00
IY=  9    1.140E+00    1.142E+00    1.154E+00    1.162E+00    1.168E+00
IY=  8    1.139E+00    1.142E+00    1.153E+00    1.161E+00    1.167E+00
IY=  7    1.137E+00    1.140E+00    1.151E+00    1.159E+00    1.165E+00
IY=  6    1.133E+00    1.137E+00    1.150E+00    1.159E+00    1.165E+00
IY=  5    1.132E+00    1.138E+00    1.150E+00    1.159E+00    1.165E+00
IY=  4    1.134E+00    1.145E+00    1.158E+00    1.166E+00    1.171E+00
IY=  3    1.201E+00    1.167E+00    1.171E+00    1.176E+00    1.179E+00
IY=  2    1.185E+00    1.179E+00    1.181E+00    1.183E+00    1.186E+00
IY=  1    1.187E+00    1.182E+00    1.183E+00    1.186E+00    1.187E+00
 IX=      1            2            3            4            5
IY= 16    1.152E+00
IY= 15    1.126E+00
IY= 14    1.156E+00
IY= 13    1.177E+00
IY= 12    1.178E+00
IY= 11    1.178E+00
IY= 10    1.177E+00
IY=  9    1.175E+00
IY=  8    1.175E+00
IY=  7    1.173E+00
IY=  6    1.172E+00
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IY=  5    1.173E+00
IY=  4    1.178E+00
IY=  3    1.184E+00
IY=  2    1.189E+00
IY=  1    1.189E+00
 IX=      6

*************************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=    11 ITERN NO=      1


FLOW FIELD AT ITHYD=  1, IZ= 11, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16   -5.005E+00   -5.997E+00   -5.614E+00   -5.307E+00   -5.010E+00
IY= 15   -8.185E+00   -1.047E+01   -1.010E+01   -9.815E+00   -9.448E+00
IY= 14   -3.074E+01   -3.572E+01   -3.455E+01   -3.360E+01   -3.214E+01
IY= 13   -6.182E+01   -7.019E+01   -6.950E+01   -6.859E+01   -6.590E+01
IY= 12   -1.008E+02   -1.138E+02   -1.125E+02   -1.100E+02   -1.034E+02
IY= 11   -1.174E+02   -1.315E+02   -1.277E+02   -1.236E+02   -1.154E+02
IY= 10   -1.446E+02   -1.624E+02   -1.558E+02   -1.500E+02   -1.385E+02
IY=  9   -1.700E+02   -1.932E+02   -1.848E+02   -1.770E+02   -1.614E+02
IY=  8   -2.020E+02   -2.265E+02   -2.097E+02   -1.974E+02   -1.775E+02
IY=  7   -3.260E+02   -3.483E+02   -2.973E+02   -2.688E+02   -2.326E+02
IY=  6   -5.679E+02   -5.362E+02   -4.272E+02   -3.726E+02   -3.082E+02
IY=  5   -1.497E+03   -1.030E+03   -6.614E+02   -5.199E+02   -4.009E+02
IY=  4   -6.558E+03   -1.983E+03   -1.020E+03   -7.301E+02   -5.291E+02
IY=  3    1.210E+04   -4.255E+03   -1.352E+03   -8.787E+02   -6.216E+02
IY=  2   -5.931E+03   -2.096E+03   -1.097E+03   -7.928E+02   -6.313E+02
IY=  1   -3.620E+03   -1.817E+03   -9.725E+02   -7.020E+02   -5.780E+02
 IX=      1            2            3            4            5
IY= 16   -4.713E+00
IY= 15   -8.371E+00
IY= 14   -2.383E+01
IY= 13   -4.251E+01
IY= 12   -5.749E+01
IY= 11   -6.161E+01
IY= 10   -6.898E+01
IY=  9   -7.561E+01
IY=  8   -7.964E+01
IY=  7   -9.196E+01
IY=  6   -1.086E+02
IY=  5   -1.242E+02
IY=  4   -1.476E+02
IY=  3   -1.675E+02
IY=  2   -1.800E+02
IY=  1   -1.487E+02
 IX=      6
FIELD VALUES OF U1
IY= 16   -1.322E-01   -3.534E-01   -4.381E-01   -4.949E-01   -5.042E-01
IY= 15   -1.448E-01   -5.118E-01   -6.548E-01   -7.644E-01   -7.918E-01
IY= 14   -2.825E-01   -1.022E+00   -1.359E+00   -1.677E+00   -1.792E+00
IY= 13   -3.692E-01   -1.389E+00   -1.946E+00   -2.552E+00   -2.808E+00
IY= 12   -4.310E-01   -1.621E+00   -2.348E+00   -3.209E+00   -3.592E+00
IY= 11   -4.592E-01   -1.704E+00   -2.475E+00   -3.402E+00   -3.817E+00
IY= 10   -5.248E-01   -1.869E+00   -2.710E+00   -3.748E+00   -4.219E+00
IY=  9   -6.535E-01   -2.103E+00   -2.997E+00   -4.121E+00   -4.632E+00
IY=  8   -7.502E-01   -2.261E+00   -3.176E+00   -4.347E+00   -4.879E+00
IY=  7   -1.139E+00   -2.845E+00   -3.797E+00   -5.104E+00   -5.681E+00
IY=  6   -2.134E+00   -3.901E+00   -4.887E+00   -6.289E+00   -6.879E+00
IY=  5   -2.931E+00   -4.897E+00   -5.837E+00   -7.342E+00   -7.912E+00
IY=  4    1.869E+00   -4.838E+00   -6.821E+00   -8.812E+00   -9.439E+00
IY=  3    4.205E+01   -3.009E+00   -7.466E+00   -1.004E+01   -1.077E+01
IY=  2    1.437E+00   -7.791E+00   -9.835E+00   -1.142E+01   -1.205E+01
IY=  1   -3.520E+00   -9.708E+00   -1.101E+01   -1.207E+01   -1.234E+01
 IX=      1            2            3            4            5
FIELD VALUES OF V1
IY= 15   -1.538E+00   -1.539E+00   -1.458E+00   -1.381E+00   -1.309E+00
IY= 14   -3.472E+00   -3.447E+00   -3.203E+00   -2.972E+00   -2.745E+00
IY= 13   -5.070E+00   -5.007E+00   -4.577E+00   -4.149E+00   -3.696E+00
IY= 12   -7.224E+00   -7.145E+00   -6.455E+00   -5.757E+00   -5.007E+00
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IY= 11    -7.466E+00    -7.380E+00    -6.634E+00    -5.894E+00    -5.112E+00
IY= 10    -7.759E+00    -7.670E+00    -6.874E+00    -6.093E+00    -5.273E+00
IY=  9    -8.441E+00    -8.310E+00    -7.373E+00    -6.489E+00    -5.593E+00
IY=  8    -8.919E+00    -8.719E+00    -7.635E+00    -6.673E+00    -5.730E+00
IY=  7    -9.389E+00    -9.099E+00    -7.872E+00    -6.837E+00    -5.850E+00
IY=  6    -1.258E+01    -1.121E+01    -9.161E+00    -7.694E+00    -6.466E+00
IY=  5    -1.428E+01    -1.219E+01    -9.570E+00    -7.875E+00    -6.530E+00
IY=  4    -1.400E+01    -1.106E+01    -8.714E+00    -7.187E+00    -5.966E+00
IY=  3     1.742E+01    -6.547E+00    -6.496E+00    -5.573E+00    -4.716E+00
IY=  2    -2.575E+01    -3.268E+00    -2.575E+00    -2.460E+00    -2.377E+00
IY=  1    -1.332E+00    -1.152E-01    -1.564E-01    -2.453E-01    -5.186E-01
 IX=        1             2             3             4             5
IY= 15    -1.209E+00
IY= 14    -2.415E+00
IY= 13    -3.027E+00
IY= 12    -3.900E+00
IY= 11    -3.963E+00
IY= 10    -4.068E+00
IY=  9    -4.283E+00
IY=  8    -4.359E+00
IY=  7    -4.426E+00
IY=  6    -4.706E+00
IY=  5    -4.681E+00
  . =  4    -4.228E+00
IY=  3    -3.425E+00
IY=  2    -1.972E+00
IY=  1    -6.987E-01
 IX=      6
FIELD VALUES OF W1
IY= 16    -1.879E+00    -1.874E+00    -1.839E+00    -1.804E+00    -1.768E+00
IY= 15    -1.221E+00    -1.228E+00    -1.217E+00    -1.201E+00    -1.184E+00
IY= 14     8.343E-01     8.254E-01     7.841E-01     7.350E-01     6.724E-01
IY= 13     3.152E+00     3.118E+00     2.975E+00     2.816E+00     2.611E+00
IY= 12     5.572E+00     5.464E+00     5.208E+00     4.966E+00     4.660E+00
IY= 11     6.412E+00     6.269E+00     5.942E+00     5.647E+00     5.292E+00
IY= 10     8.248E+00     7.998E+00     7.446E+00     7.003E+00     6.538E+00
IY=  9     1.079E+01     1.032E+01     9.337E+00     8.636E+00     8.018E+00
IY=  8     1.248E+01     1.183E+01     1.053E+01     9.640E+00     8.910E+00
IY=  7     1.874E+01     1.732E+01     1.475E+01     1.310E+01     1.191E+01
IY=  6     3.457E+01     2.932E+01     2.266E+01     1.889E+01     1.664E+01
IY=  5     5.240E+01     4.109E+01     3.002E+01     2.407E+01     2.075E+01
IY=  4     1.299E+02     7.371E+01     4.506E+01     3.258E+01     2.677E+01
IY=  3     2.869E+02     1.150E+02     5.837E+01     3.846E+01     3.042E+01
IY=  2     1.586E+02     8.695E+01     5.057E+01     3.466E+01     2.768E+01
IY=  1     1.399E+02     7.632E+01     4.478E+01     3.055E+01     2.592E+01
 IX=        1             2             3             4             5
IY= 16    -1.714E+00
IY= 15    -1.156E+00
IY= 14     5.685E-01
IY= 13     2.266E+00
IY= 12     4.108E+00
IY= 11     4.663E+00
IY= 10     5.753E+00
IY=  9     7.017E+00
IY=  8     7.764E+00
IY=  7     1.022E+01
IY=  6     1.369E+01
IY=  5     1.659E+01
IY=  4     2.003E+01
IY=  3     2.167E+01
IY=  2     2.045E+01
IY=  1     2.031E+01
 IX=        6
FIELD VALUES OF KE
IY= 16     6.962E+01     6.913E+01     6.793E+01     6.682E+01     6.574E+01
IY= 15     7.718E+01     7.670E+01     7.467E+01     7.277E+01     7.088E+01
IY= 14     1.075E+02     1.062E+02     1.006E+02     9.525E+01     8.968E+01
IY= 13     2.244E+02     2.194E+02     2.007E+02     1.846E+02     1.689E+02
IY= 12     5.638E+02     5.397E+02     4.612E+02     4.048E+02     3.605E+02
IY= 11     6.959E+02     6.631E+02     5.581E+02     4.840E+02     4.277E+02
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IY= 10    1.021E+03    9.613E+02    7.841E+02    6.639E+02    5.781E+02
IY=  9    1.549E+03    1.428E+03    1.114E+03    9.137E+02    7.815E+02
IY=  8    1.925E+03    1.750E+03    1.335E+03    1.076E+03    9.115E+02
IY=  7    3.423E+03    2.996E+03    2.162E+03    1.667E+03    1.376E+03
IY=  6    8.297E+03    6.446E+03    4.095E+03    2.862E+03    2.234E+03
IY=  5    1.398E+04    1.003E+04    5.986E+03    3.982E+03    3.019E+03
IY=  4    3.769E+04    2.048E+04    1.029E+04    6.022E+03    4.265E+03
IY=  3    6.853E+04    3.089E+04    1.323E+04    7.000E+03    4.734E+03
IY=  2    3.234E+04    1.588E+04    7.307E+03    4.036E+03    2.986E+03
IY=  1    7.546E+01    2.449E+01    9.619E+00    5.158E+00    2.313E+03
 IX=         1            2            3            4            5
IY= 16    6.415E+01
IY= 15    6.809E+01
IY= 14    8.132E+01
IY= 13    1.462E+02
IY= 12    3.012E+02
IY= 11    3.536E+02
IY= 10    4.688E+02
IY=  9    6.196E+02
IY=  8    7.135E+02
IY=  7    1.037E+03
IY=  6    1.553E+03
IY=  5    1.998E+03
IY=  4    2.525E+03
IY=  3    2.621E+03
IY=  2    1.982E+03
IY=  1    1.890E+03
 IX=         6
FIELD VALUES OF EP
IY= 16    5.868E+01    5.834E+01    5.733E+01    5.649E+01    5.577E+01
IY= 15    6.451E+01    6.414E+01    6.265E+01    6.135E+01    6.015E+01
IY= 14    1.137E+02    1.120E+02    1.059E+02    1.003E+02    9.472E+01
IY= 13    4.267E+02    4.108E+02    3.580E+02    3.178E+02    2.829E+02
IY= 12    2.047E+03    1.899E+03    1.468E+03    1.191E+03    1.001E+03
IY= 11    2.825E+03    2.600E+03    1.967E+03    1.566E+03    1.299E+03
IY= 10    5.129E+03    4.627E+03    3.343E+03    2.562E+03    2.075E+03
IY=  9    9.936E+03    8.637E+03    5.855E+03    4.267E+03    3.358E+03
IY=  8    1.383E+04    1.176E+04    7.731E+03    5.494E+03    4.261E+03
IY=  7    3.189E+04    2.564E+04    1.574E+04    1.054E+04    7.882E+03
IY=  6    1.134E+05    7.784E+04    4.113E+04    2.427E+04    1.687E+04
IY=  5    2.243E+05    1.399E+05    6.931E+04    3.875E+04    2.605E+04
IY=  4    7.779E+05    3.628E+05    1.495E+05    7.185E+04    4.444E+04
IY=  3    1.000E+06    6.134E+05    2.164E+05    9.251E+04    5.377E+04
IY=  2    6.849E+05    2.933E+05    1.095E+05    4.821E+04    2.974E+04
IY=  1    3.301E+03    6.104E+02    1.502E+02    5.899E+01    2.123E+04
 IX=         1            2            3            4            5
IY= 16    5.480E+01
IY= 15    5.849E+01
IY= 14    8.663E+01
IY= 13    2.357E+02
IY= 12    7.698E+02
IY= 11    9.805E+02
IY= 10    1.512E+03
IY=  9    2.348E+03
IY=  8    2.916E+03
IY=  7    5.083E+03
IY=  6    9.626E+03
IY=  5    1.394E+04
IY=  4    2.042E+04
IY=  3    2.233E+04
IY=  2    1.494E+04
IY=  1    1.386E+04
 IX=         6
FIELD VALUES OF H1
IY= 16    3.480E+05    3.474E+05    3.460E+05    3.449E+05    3.439E+05
IY= 15    3.468E+05    3.464E+05    3.447E+05    3.431E+05    3.417E+05
IY= 14    3.362E+05    3.354E+05    3.322E+05    3.294E+05    3.268E+05
IY= 13    3.276E+05    3.265E+05    3.226E+05    3.194E+05    3.166E+05
IY= 12    3.309E+05    3.294E+05    3.238E+05    3.196E+05    3.163E+05
IY= 11    3.326E+05    3.309E+05    3.247E+05    3.201E+05    3.165E+05
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IY= 10    3.375E+05    3.353E+05    3.273E+05    3.218E+05    3.178E+05
IY=  9    3.459E+05    3.428E+05    3.318E+05    3.247E+05    3.200E+05
IY=  8    3.514E+05    3.476E+05    3.347E+05    3.266E+05    3.214E+05
IY=  7    3.718E+05    3.652E+05    3.454E+05    3.335E+05    3.265E+05
IY=  6    4.173E+05    3.988E+05    3.638E+05    3.442E+05    3.337E+05
IY=  5    4.660E+05    4.308E+05    3.807E+05    3.538E+05    3.400E+05
IY=  4    6.428E+05    4.991E+05    4.072E+05    3.648E+05    3.455E+05
IY=  3    9.418E+05    5.543E+05    4.177E+05    3.651E+05    3.435E+05
IY=  2    6.194E+05    4.604E+05    3.787E+05    3.432E+05    3.283E+05
IY=  1    5.663E+05    4.309E+05    3.621E+05    3.327E+05    3.237E+05
 IX=         1            2            3            4            5
IY= 16    3.425E+05
IY= 15    3.396E+05
IY= 14    3.230E+05
IY= 13    3.128E+05
IY= 12    3.121E+05
IY= 11    3.122E+05
IY= 10    3.129E+05
IY=  9    3.143E+05
IY=  8    3.153E+05
IY=  7    3.185E+05
IY=  6    3.222E+05
IY=  5    3.252E+05
IY=  4    3.259E+05
IY=  3    3.227E+05
IY=  2    3.155E+05
IY=  1    3.146E+05
 IX=         6
FIELD VALUES OF TMP1
IY= 16    3.466E+02    3.460E+02    3.447E+02    3.435E+02    3.425E+02
IY= 15    3.454E+02    3.450E+02    3.433E+02    3.418E+02    3.403E+02
IY= 14    3.348E+02    3.340E+02    3.309E+02    3.281E+02    3.255E+02
IY= 13    3.262E+02    3.252E+02    3.213E+02    3.181E+02    3.153E+02
IY= 12    3.296E+02    3.281E+02    3.225E+02    3.183E+02    3.150E+02
IY= 11    3.313E+02    3.296E+02    3.234E+02    3.188E+02    3.153E+02
IY= 10    3.361E+02    3.340E+02    3.260E+02    3.205E+02    3.165E+02
IY=  9    3.445E+02    3.414E+02    3.305E+02    3.234E+02    3.187E+02
IY=  8    3.500E+02    3.462E+02    3.334E+02    3.253E+02    3.201E+02
IY=  7    3.703E+02    3.638E+02    3.440E+02    3.322E+02    3.252E+02
IY=  6    4.156E+02    3.972E+02    3.624E+02    3.429E+02    3.324E+02
IY=  5    4.641E+02    4.291E+02    3.792E+02    3.524E+02    3.386E+02
IY=  4    6.403E+02    4.971E+02    4.056E+02    3.633E+02    3.441E+02
IY=  3    9.381E+02    5.521E+02    4.161E+02    3.636E+02    3.421E+02
IY=  2    6.169E+02    4.586E+02    3.772E+02    3.418E+02    3.270E+02
IY=  1    5.641E+02    4.292E+02    3.607E+02    3.314E+02    3.224E+02
 IX=         1            2            3            4            5
IY= 16    3.411E+02
IY= 15    3.382E+02
IY= 14    3.217E+02
IY= 13    3.116E+02
IY= 12    3.108E+02
IY= 11    3.109E+02
IY= 10    3.117E+02
IY=  9    3.131E+02
IY=  8    3.140E+02
IY=  7    3.172E+02
IY=  6    3.209E+02
IY=  5    3.239E+02
IY=  4    3.246E+02
IY=  3    3.215E+02
IY=  2    3.142E+02
IY=  1    3.134E+02
 IX=         6
FIELD VALUES OF RHO1
IY= 16    1.022E+00    1.024E+00    1.028E+00    1.031E+00    1.034E+00
IY= 15    1.026E+00    1.027E+00    1.032E+00    1.037E+00    1.041E+00
IY= 14    1.058E+00    1.060E+00    1.070E+00    1.079E+00    1.088E+00
IY= 13    1.085E+00    1.089E+00    1.102E+00    1.113E+00    1.123E+00
IY= 12    1.074E+00    1.079E+00    1.097E+00    1.112E+00    1.123E+00
IY= 11    1.068E+00    1.074E+00    1.094E+00    1.110E+00    1.122E+00
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IY= 10    1.052E+00     1.059E+00     1.085E+00     1.104E+00     1.118E+00
IY=  9    1.027E+00     1.036E+00     1.070E+00     1.094E+00     1.110E+00
IY=  8    1.010E+00     1.021E+00     1.060E+00     1.087E+00     1.105E+00
IY=  7    9.537E-01     9.706E-01     1.027E+00     1.064E+00     1.087E+00
IY=  6    8.477E-01     8.872E-01     9.736E-01     1.029E+00     1.063E+00
IY=  5    7.520E-01     8.172E-01     9.283E-01     1.000E+00     1.042E+00
IY=  4    5.175E-01     6.987E-01     8.646E-01     9.681E-01     1.024E+00
IY=  3    4.228E-01     6.148E-01     8.401E-01     9.659E-01     1.029E+00
IY=  2    5.406E-01     7.566E-01     9.292E-01     1.028E+00     1.077E+00
IY=  1    6.057E-01     8.107E-01     9.729E-01     1.062E+00     1.093E+00
 IX=         1            2            3            4            5
IY= 16    1.039E+00
IY= 15    1.047E+00
IY= 14    1.101E+00
IY= 13    1.137E+00
IY= 12    1.139E+00
IY= 11    1.139E+00
IY= 10    1.136E+00
IY=  9    1.131E+00
IY=  8    1.127E+00
IY=  7    1.116E+00
IY=  6    1.103E+00
IY=  5    1.092E+00
IY=  4    1.090E+00
IY=  3    1.100E+00
IY=  2    1.125E+00
IY=  1    1.129E+00
 IX=         6

*************************************************************
TIME STP=      1 SWEEP NO=    550 ZSLAB NO=    12 ITERN NO=       1


FLOW FIELD AT ITHYD=  1, IZ= 12, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16   -3.475E+00    -4.304E+00    -3.966E+00    -3.712E+00    -3.489E+00
IY= 15   -8.680E+00    -1.074E+01    -1.027E+01    -9.920E+00    -9.481E+00
IY= 14   -3.298E+01    -3.798E+01    -3.686E+01    -3.599E+01    -3.462E+01
IY= 13   -6.285E+01    -7.138E+01    -7.180E+01    -7.220E+01    -7.132E+01
IY= 12   -9.683E+01    -1.094E+02    -1.136E+02    -1.162E+02    -1.159E+02
IY= 11   -1.096E+02    -1.230E+02    -1.262E+02    -1.286E+02    -1.285E+02
IY= 10   -1.244E+02    -1.406E+02    -1.459E+02    -1.502E+02    -1.515E+02
IY=  9   -1.376E+02    -1.580E+02    -1.668E+02    -1.735E+02    -1.762E+02
IY=  8   -1.580E+02    -1.799E+02    -1.857E+02    -1.913E+02    -1.937E+02
IY=  7   -1.953E+02    -2.264E+02    -2.320E+02    -2.405E+02    -2.460E+02
IY=  6   -1.368E+02    -2.585E+02    -3.002E+02    -3.192E+02    -3.303E+02
IY=  5   -1.736E+01    -2.935E+02    -3.744E+02    -4.012E+02    -4.146E+02
IY=  4    1.823E+03     6.243E+02    -2.729E+02    -4.726E+02    -5.262E+02
IY=  3    1.461E+04     2.245E+03     5.403E+01    -4.696E+02    -5.972E+02
IY=  2    5.680E+02     5.544E+02    -3.275E+02    -5.022E+02    -6.437E+02
IY=  1    1.321E+03     8.526E+02     4.438E+01    -1.753E+02    -5.533E+02
 IX=         1            2            3            4            5
IY= 16   -3.528E+00
IY= 15   -8.112E+00
IY= 14   -2.477E+01
IY= 13   -4.535E+01
IY= 12   -6.480E+01
IY= 11   -6.969E+01
IY= 10   -7.834E+01
IY=  9   -8.711E+01
IY=  8   -9.254E+01
IY=  7   -1.083E+02
IY=  6   -1.328E+02
IY=  5   -1.535E+02
IY=  4   -1.863E+02
IY=  3   -2.160E+02
IY=  2   -2.414E+02
IY=  1   -2.082E+02
 IX=         6
FIELD VALUES OF U1
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IY= 16   -1.168E-01    -3.076E-01    -3.832E-01    -4.371E-01    -4.473E-01
IY= 15   -1.339E-01    -4.753E-01    -6.170E-01    -7.359E-01    -7.719E-01
IY= 14   -2.734E-01    -9.884E-01    -1.318E+00    -1.636E+00    -1.760E+00
IY= 13   -3.555E-01    -1.319E+00    -1.840E+00    -2.407E+00    -2.666E+00
IY= 12   -3.905E-01    -1.435E+00    -2.083E+00    -2.861E+00    -3.259E+00
IY= 11   -4.076E-01    -1.477E+00    -2.157E+00    -2.985E+00    -3.416E+00
IY= 10   -4.460E-01    -1.551E+00    -2.277E+00    -3.190E+00    -3.677E+00
IY=  9   -5.203E-01    -1.652E+00    -2.407E+00    -3.383E+00    -3.921E+00
IY=  8   -5.753E-01    -1.723E+00    -2.491E+00    -3.498E+00    -4.065E+00
IY=  7   -7.621E-01    -1.950E+00    -2.752E+00    -3.859E+00    -4.506E+00
IY=  6   -8.508E-01    -2.166E+00    -3.073E+00    -4.311E+00    -5.071E+00
IY=  5   -3.873E-01    -2.196E+00    -3.288E+00    -4.706E+00    -5.569E+00
IY=  4    7.218E+00     1.388E-01    -2.639E+00    -4.980E+00    -6.145E+00
IY=  3    3.491E+01     3.549E+00    -1.814E+00    -5.281E+00    -6.768E+00
IY=  2    6.242E+00    -1.769E+00    -4.819E+00    -6.746E+00    -7.992E+00
IY=  1    3.745E+00    -3.237E+00    -6.184E+00    -6.848E+00    -8.118E+00
 IX=         1             2             3             4             5
FIELD VALUES OF V1
IY= 15   -1.371E+00    -1.370E+00    -1.287E+00    -1.210E+00    -1.139E+00
IY= 14   -3.072E+00    -3.052E+00    -2.830E+00    -2.624E+00    -2.425E+00
IY= 13   -4.524E+00    -4.471E+00    -4.093E+00    -3.723E+00    -3.341E+00
IY= 12   -6.279E+00    -6.211E+00    -5.666E+00    -5.112E+00    -4.515E+00
IY= 11   -6.459E+00    -6.381E+00    -5.799E+00    -5.218E+00    -4.602E+00
IY= 10   -6.642E+00    -6.559E+00    -5.958E+00    -5.361E+00    ·4.728E+00
IY=  9   -7.113E+00    -6.983E+00    -6.299E+00    -5.650E+00    -4.979E+00
IY=  8   -7.423E+00    -7.241E+00    -6.471E+00    -5.778E+00    -5.083E+00
IY=  7   -7.655E+00    -7.411E+00    -6.586E+00    -5.867E+00    -5.162E+00
IY=  6   -9.292E+00    -8.477E+00    -7.250E+00    -6.331E+00    -5.510E+00
IY=  5   -9.588E+00    -8.619E+00    -7.310E+00    -6.353E+00    -5.515E+00
IY=  4   -5.835E+00    -5.920E+00    -5.960E+00    -5.515E+00    -4.884E+00
IY=  3    1.213E+01    -2.535E+00    -4.211E+00    -4.293E+00    -3.914E+00
IY=  2   -2.142E+01    -5.945E+00    -3.442E+00    -2.540E+00    -2.316E+00
IY=  1   -2.689E+00    -6.218E-01     5.791E-01     7.533E-01    -1.819E-01
 IX=         1             2             3             4             5
IY= 15   -1.042E+00
IY= 14   -2.138E+00
IY= 13   -2.775E+00
IY= 12   -3.608E+00
IY= 11   -3.667E+00
IY= 10   -3.763E+00
IY=  9   -3.952E+00
IY=  8   -4.020E+00
IY=  7   -4.074E+00
IY=  6   -4.250E+00
IY=  5   -4.215E+00
IY=  4   -3.769E+00
IY=  3   -3.105E+00
IY=  2   -1.925E+00
IY=  1   -6.910E-01
 IX=         6
FIELD VALUES OF W1
IY= 16   -2.144E+00    -2.143E+00    -2.102E+00    -2.062E+00    -2.024E+00
IY= 15   -1.298E+00    -1.311E+00    -1.299E+00    -1.283E+00    -1.268E+00
IY= 14    8.427E-01     8.262E-01     7.963E-01     7.599E-01     7.144E-01
IY= 13    3.216E+00     3.178E+00     3.080E+00     2.960E+00     2.808E+00
IY= 12    5.842E+00     5.721E+00     5.526E+00     5.338E+00     5.120E+00
IY= 11    6.706E+00     6.549E+00     6.292E+00     6.060E+00     5.804E+00
IY= 10    8.583E+00     8.313E+00     7.854E+00     7.490E+00     7.148E+00
IY=  9    1.127E+01     1.075E+01     9.861E+00     9.238E+00     8.764E+00
IY=  8    1.305E+01     1.234E+01     1.112E+01     1.031E+01     9.737E+00
IY=  7    1.941E+01     1.789E+01     1.547E+01     1.393E+01     1.296E+01
IY=  6    3.639E+01     3.093E+01     2.420E+01     2.034E+01     1.831E+01
IY=  5    5.335E+01     4.287E+01     3.192E+01     2.587E+01     2.284E+01
IY=  4    1.110E+02     7.500E+01     4.841E+01     3.554E+01     2.989E+01
IY=  3    2.265E+02     1.080E+02     6.245E+01     4.242E+01     3.437E+01
IY=  2    1.463E+02     9.347E+01     5.651E+01     3.872E+01     3.155E+01
IY=  1    1.454E+02     8.379E+01     4.767E+01     3.065E+01     2.913E+01
 IX=         1             2             3             4             5
IY= 16   -1.983E+00
IY= 15   -1.261E+00
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IY= 14    6.547E-01
IY= 13    2.626E+00
IY= 12    4.898E+00
IY= 11    5.551E+00
IY= 10    6.829E+00
IY=  9    8.332E+00
IY=  8    9.223E+00
IY=  7    1.211E+01
IY=  6    1.645E+01
IY=  5    2.002E+01
IY=  4    2.462E+01
IY=  3    2.711E+01
IY=  2    2.611E+01
IY=  1    2.592E+01
 IX=         6
FIELD VALUES OF KE
IY= 16    8.012E+01    7.968E+01    7.856E+01    7.751E+01    7.647E+01
IY= 15    8.943E+01    8.897E+01    8.693E+01    8.496E+01    8.294E+01
IY= 14    1.339E+02    1.324E+02    1.262E+02    1.201E+02    1.138E+02
IY= 13    2.921E+02    2.857E+02    2.617E+02    2.418E+02    2.234E+02
IY= 12    7.324E+02    7.015E+02    5.990E+02    5.268E+02    4.730E+02
IY= 11    8.954E+02    8.538E+02    7.186E+02    6.248E+02    5.569E+02
IY= 10    1.299E+03    1.225E+03    9.995E+02    8.485E+02    7.456E+02
IY=  9    1.962E+03    1.814E+03    1.420E+03    1.167E+03    1.007E+03
IY=  8    2.422E+03    2.214E+03    1.697E+03    1.372E+03    1.173E+03
IY=  7    4.174E+03    3.695E+03    2.701E+03    2.100E+03    1.754E+03
IY=  6    9.433E+03    7.560E+03    4.971E+03    3.555E+03    2.831E+03
IY=  5    1.508E+04    1.129E+04    7.052E+03    4.845E+03    3.768E+03
IY=  4    3.528E+04    2.111E+04    1.141E+04    7.029E+03    5.167E+03
IY=  3    6.898E+04    2.971E+04    1.414E+04    7.987E+03    5.645E+03
IY=  2    2.994E+04    1.672E+04    8.302E+03    4.830E+03    3.729E+03
IY=  1    8.182E+01    2.945E+01    1.053E+01    4.811E+00    2.894E+03
 IX=         1            2            3            4            5
IY= 16    7.494E+01
IY= 15    7.991E+01
IY= 14    1.043E+02
IY= 13    1.967E+02
IY= 12    4.019E+02
IY= 11    4.686E+02
IY= 10    6.159E+02
IY=  9    8.127E+02
IY=  8    9.350E+02
IY=  7    1.352E+03
IY=  6    2.032E+03
IY=  5    2.602E+03
IY=  4    3.263E+03
IY=  3    3.389E+03
IY=  2    2.651E+03
IY=  1    2.540E+03
 IX=         6
FIELD VALUES OF EP
IY= 16    7.081E+01    7.046E+01    6.941E+01    6.851E+01    6.770E+01
IY= 15    8.079E+01    8.038E+01    7.859E+01    7.695E+01    7.535E+01
IY= 14    1.625E+02    1.603E+02    1.514E+02    1.433E+02    1.353E+02
IY= 13    6.385E+02    6.145E+02    5.324E+02    4.721E+02    4.229E+02
IY= 12    2.961E+03    2.751E+03    2.124E+03    1.722E+03    1.460E+03
IY= 11    4.014E+03    3.703E+03    2.801E+03    2.233E+03    1.871E+03
IY= 10    7.121E+03    6.451E+03    4.673E+03    3.591E+03    2.940E+03
IY=  9    1.357E+04    1.191E+04    8.141E+03    5.961E+03    4.745E+03
IY=  8    1.863E+04    1.604E+04    1.068E+04    7.643E+03    6.003E+03
IY=  7    4.053E+04    3.332E+04    2.098E+04    1.429E+04    1.088E+04
IY=  6    1.299E+05    9.345E+04    5.202E+04    3.187E+04    2.282E+04
IY=  5    2.403E+05    1.591E+05    8.393E+04    4.917E+04    3.430E+04
IY=  4    7.017E+05    3.705E+05    1.675E+05    8.616E+04    5.600E+04
IY=  3    1.000E+06    5.751E+05    2.314E+05    1.077E+05    6.636E+04
IY=  2    6.130E+05    3.108E+05    1.278E+05    6.013E+04    3.932E+04
IY=  1    3.727E+03    8.048E+02    1.721E+02    5.315E+01    2.822E+04
 IX=         1            2            3            4            5
IY= 16    6.660E+01
IY= 15    7.306E+01
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IY= 14    1.236E+02
IY= 13    3.571E+02
IY= 12    1.143E+03
IY= 11    1.440E+03
IY= 10    2.190E+03
IY=  9    3.394E+03
IY=  8    4.207E+03
IY=  7    7.244E+03
IY=  6    1.369E+04
IY=  5    1.957E+04
IY=  4    2.820E+04
IY=  3    3.086E+04
IY=  2    2.193E+04
IY=  1    2.054E+04
 IX=        6
FIELD VALUES OF H1
IY= 16    3.515E+05    3.510E+05    3.499E+05    3.489E+05    3.480E+05
IY= 15    3.511E+05    3.506E+05    3.490E+05    3.476E+05    3.461E+05
IY= 14    3.404E+05    3.396E+05    3.366E+05    3.339E+05    3.313E+05
IY= 13    3.328E+05    3.318E+05    3.279E+05    3.246E+05    3.218E+05
IY= 12    3.378E+05    3.362E+05    3.303E+05    3.259E+05    3.224E+05
IY= 11    3.399E+05    3.381E+05    3.315E+05    3.266E+05    3.229E+05
IY= 10    3.456E+05    3.433E+05    3.349E+05    3.289E+05    3.246E+05
IY=  9    3.549E+05    3.517E+05    3.402E+05    3.326E+05    3.275E+05
IY=  8    3.608E+05    3.570E+05    3.436E+05    3.349E+05    3.293E+05
IY=  7    3.814E+05    3.751E+05    3.554E+05    3.430E+05    3.355E+05
IY=  6    4.256E+05    4.092E+05    3.758E+05    3.559E+05    3.448E+05
IY=  5    4.686E+05    4.395E+05    3.933E+05    3.667E+05    3.524E+05
IY=  4    5.963E+05    5.017E+05    4.214E+05    3.803E+05    3.604E+05
IY=  3    8.137E+05    5.501E+05    4.357E+05    3.834E+05    3.603E+05
IY=  2    6.171E+05    4.910E+05    4.042E+05    3.630E+05    3.452E+05
IY=  1    6.067E+05    4.711E+05    3.865E+05    3.487E+05    3.396E+05
 IX=        1            2            3            4            5
IY= 16    3.467E+05
IY= 15    3.440E+05
IY= 14    3.276E+05
IY= 13    3.179E+05
IY= 12    3.178E+05
IY= 11    3.181E+05
IY= 10    3.193E+05
IY=  9    3.212E+05
IY=  8    3.224E+05
IY=  7    3.267E+05
IY=  6    3.320E+05
IY=  5    3.363E+05
IY=  4    3.386E+05
IY=  3    3.363E+05
IY=  2    3.284E+05
IY=  1    3.274E+05
 IX=        6
FIELD VALUES OF TMP1
IY= 16    3.501E+02    3.496E+02    3.485E+02    3.475E+02    3.466E+02
IY= 15    3.497E+02    3.492E+02    3.476E+02    3.462E+02    3.447E+02
IY= 14    3.390E+02    3.382E+02    3.352E+02    3.325E+02    3.300E+02
IY= 13    3.315E+02    3.304E+02    3.265E+02    3.233E+02    3.205E+02
IY= 12    3.365E+02    3.349E+02    3.290E+02    3.246E+02    3.211E+02
IY= 11    3.385E+02    3.367E+02    3.302E+02    3.253E+02    3.216E+02
IY= 10    3.442E+02    3.419E+02    3.335E+02    3.276E+02    3.233E+02
IY=  9    3.535E+02    3.503E+02    3.389E+02    3.312E+02    3.262E+02
IY=  8    3.594E+02    3.555E+02    3.423E+02    3.336E+02    3.280E+02
IY=  7    3.799E+02    3.736E+02    3.540E+02    3.416E+02    3.342E+02
IY=  6    4.239E+02    4.076E+02    3.743E+02    3.545E+02    3.434E+02
IY=  5    4.667E+02    4.377E+02    3.917E+02    3.652E+02    3.510E+02
IY=  4    5.939E+02    4.997E+02    4.198E+02    3.787E+02    3.589E+02
IY=  3    8.104E+02    5.479E+02    4.339E+02    3.819E+02    3.589E+02
IY=  2    6.146E+02    4.890E+02    4.026E+02    3.615E+02    3.438E+02
IY=  1    6.043E+02    4.692E+02    3.850E+02    3.473E+02    3.382E+02
 IX=        1            2            3            4            5
IY= 16    3.453E+02
IY= 15    3.426E+02
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IY= 14     3.263E+02
IY= 13     3.167E+02
IY= 12     3.166E+02
IY= 11     3.168E+02
IY= 10     3.180E+02
IY=  9     3.199E+02
IY=  8     3.211E+02
IY=  7     3.253E+02
IY=  6     3.307E+02
IY=  5     3.349E+02
IY=  4     3.373E+02
IY=  3     3.349E+02
IY=  2     3.271E+02
IY=  1     3.261E+02
 IX=       6
FIELD VALUES OF RHO1
IY= 16     1.012E+00     1.013E+00     1.017E+00     1.020E+00     1.022E+00
IY= 15     1.013E+00     1.014E+00     1.019E+00     1.023E+00     1.028E+00
IY= 14     1.045E+00     1.047E+00     1.056E+00     1.065E+00     1.073E+00
IY= 13     1.068E+00     1.071E+00     1.084E+00     1.095E+00     1.105E+00
IY= 12     1.052E+00     1.057E+00     1.076E+00     1.090E+00     1.102E+00
IY= 11     1.045E+00     1.051E+00     1.072E+00     1.088E+00     1.100E+00
IY= 10     1.028E+00     1.035E+00     1.061E+00     1.080E+00     1.094E+00
IY=  9     1.001E+00     1.010E+00     1.044E+00     1.068E+00     1.084E+00
IY=  8     9.843E-01     9.947E-01     1.033E+00     1.060E+00     1.078E+00
IY=  7     9.308E-01     9.463E-01     9.986E-01     1.035E+00     1.058E+00
IY=  6     8.347E-01     8.670E-01     9.437E-01     9.963E-01     1.028E+00
IY=  5     7.590E-01     8.070E-01     9.011E-01     9.662E-01     1.005E+00
IY=  4     6.073E-01     7.134E-01     8.417E-01     9.310E-01     9.819E-01
IY=  3     5.002E-01     6.609E-01     8.169E-01     9.234E-01     9.814E-01
IY=  2     5.796E-01     7.284E-01     8.772E-01     9.751E-01     1.024E+00
IY=  1     5.939E-01     7.614E-01     9.207E-01     1.018E+00     1.042E+00
 IX=       1             2             3             4             5
IY= 16     1.026E+00
IY= 15     1.034E+00
IY= 14     1.086E+00
IY= 13     1.118E+00
IY= 12     1.118E+00
IY= 11     1.117E+00
IY= 10     1.113E+00
IY=  9     1.106E+00
IY=  8     1.102E+00
IY=  7     1.088E+00
IY=  6     1.070E+00
IY=  5     1.056E+00
IY=  4     1.048E+00
IY=  3     1.056E+00
IY=  2     1.081E+00
IY=  1     1.084E+00
 IX=       6

****************************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     13 ITERN NO=     1


FLOW FIELD AT ITHYD=  1, IZ= 13, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16    -7.865E+00    -8.615E+00    -8.031E+00    -7.528E+00    -7.056E+00
IY= 15    -1.423E+01    -1.636E+01    -1.534E+01    -1.441E+01    -1.341E+01
IY= 14    -3.076E+01    -3.612E+01    -3.407E+01    -3.239E+01    -3.045E+01
IY= 13    -4.558E+01    -5.468E+01    -5.260E+01    -5.119E+01    -4.920E+01
IY= 12    -3.823E+01    -5.103E+01    -5.308E+01    -5.520E+01    -5.589E+01
IY= 11    -3.987E+01    -5.322E+01    -5.437E+01    -5.655E+01    -5.763E+01
IY= 10    -2.924E+01    -4.434E+01    -4.802E+01    -5.308E+01    -5.654E+01
IY=  9    -5.675E+00    -2.216E+01    -3.185E+01    -4.241E+01    -5.038E+01
IY=  8     8.813E-01    -1.458E+01    -2.525E+01    -3.787E+01    -4.798E+01
IY=  7     5.051E+01     4.241E+01     1.848E+01    -7.679E+00    -2.917E+01
IY=  6     1.683E+02     2.201E+02     1.397E+02     7.413E+01     1.983E+01
IY=  5     1.896E+02     4.011E+02     2.499E+02     1.417E+02     5.653E+01
IY=  4    -2.771E+02     9.740E+02     5.141E+02     2.898E+02     1.263E+02
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IY=  3    1.558E+03      1.273E+03      7.545E+02      4.024E+02      1.759E+02
IY=  2   -2.975E+01      1.373E+03      6.644E+02      3.566E+02      1.655E+02
IY=  1    8.651E+02      1.502E+03      7.037E+02      3.781E+02      2.733E+02
 IX=         1              2              3              4              5
IY= 16   -5.601E+00
IY= 15   -9.771E+00
IY= 14   -2.164E+01
IY= 13   -3.251E+01
IY= 12   -3.653E+01
IY= 11   -3.725E+01
IY= 10   -3.741E+01
IY=  9   -3.626E+01
IY=  8   -3.574E+01
IY=  7   -3.155E+01
IY=  6   -2.237E+01
IY=  5   -1.576E+01
IY=  4   -4.500E+00
IY=  3    1.403E+00
IY=  2   -1.609E+00
IY=  1    3.805E+01
 IX=         6
FIELD VALUES OF U1
IY= 16   -9.468E-02     -2.530E-01     -3.190E-01     -3.734E-01     -3.940E-01
IY= 15   -1.177E-01     -4.340E-01     -5.751E-01     -7.072E-01     -7.604E-01
IY= 14   -2.555E-01     -9.398E-01     -1.256E+00     -1.558E+00     -1.671E+00
IY= 13   -3.274E-01     -1.218E+00     -1.680E+00     -2.165E+00     -2.360E+00
IY= 12   -3.085E-01     -1.151E+00     -1.673E+00     -2.280E+00     -2.541E+00
IY= 11   -3.050E-01     -1.130E+00     -1.661E+00     -2.295E+00     -2.570E+00
IY= 10   -2.917E-01     -1.057E+00     -1.593E+00     -2.264E+00     -2.560E+00
IY=  9   -2.698E-01     -9.226E-01     -1.450E+00     -2.145E+00     -2.454E+00
IY=  8   -2.546E-01     -8.307E-01     -1.349E+00     -2.056E+00     -2.374E+00
IY=  7   -1.797E-01     -4.919E-01     -9.714E-01     -1.706E+00     -2.047E+00
IY=  6    3.662E-01      6.583E-01      8.865E-02     -8.040E-01     -1.210E+00
IY=  5    1.049E+00      1.719E+00      1.041E+00     -1.177E-02     -4.962E-01
IY=  4    5.550E+00      5.321E+00      3.564E+00      1.691E+00      9.166E-01
IY=  3    1.914E+01      8.507E+00      5.578E+00      2.875E+00      1.833E+00
IY=  2    5.054E+00      7.099E+00      4.980E+00      2.466E+00      1.498E+00
IY=  1    3.463E+00      7.756E+00      5.464E+00      2.123E+00      1.523E+00
 IX=         1              2              3              4              5
FIELD VALUES OF V1
IY= 15   -1.135E+00     -1.134E+00     -1.049E+00     -9.723E-01     -9.032E-01
IY= 14   -2.507E+00     -2.492E+00     -2.299E+00     -2.123E+00     -1.960E+00
IY= 13   -3.709E+00     -3.666E+00     -3.353E+00     -3.057E+00     -2.768E+00
IY= 12   -4.710E+00     -4.663E+00     -4.317E+00     -3.965E+00     -3.596E+00
IY= 11   -4.785E+00     -4.729E+00     -4.373E+00     -4.018E+00     -3.653E+00
IY= 10   -4.765E+00     -4.701E+00     -4.373E+00     -4.043E+00     -3.703E+00
IY=  9   -4.682E+00     -4.577E+00     -4.303E+00     -4.036E+00     -3.753E+00
IY=  8   -4.704E+00     -4.553E+00     -4.283E+00     -4.032E+00     -3.770E+00
IY=  7   -4.660E+00     -4.452E+00     -4.205E+00     -3.986E+00     -3.754E+00
IY=  6   -4.089E+00     -3.352E+00     -3.376E+00     -3.429E+00     -3.409E+00
IY=  5   -4.054E+00     -3.092E+00     -3.231E+00     -3.350E+00     -3.356E+00
IY=  4   -2.030E+00     -7.007E-01     -1.795E+00     -2.410E+00     -2.675E+00
IY=  3    4.330E+00     -4.112E-01     -1.583E+00     -2.152E+00     -2.359E+00
IY=  2   -1.100E+01     -3.741E+00     -2.899E+00     -2.372E+00     -2.091E+00
IY=  1   -2.810E-01     -1.394E+00     -1.181E+00     -8.892E-01     -5.733E-01
 IX=         1              2              3              4              5
IY= 15   -8.082E-01
IY= 14   -1.732E+00
IY= 13   -2.360E+00
IY= 12   -3.061E+00
IY= 11   -3.129E+00
IY= 10   -3.213E+00
IY=  9   -3.335E+00
IY=  8   -3.380E+00
IY=  7   -3.412E+00
IY=  6   -3.322E+00
IY=  5   -3.299E+00
IY=  4   -2.879E+00
IY=  3   -2.508E+00
IY=  2   -1.849E+00
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IY=  1   -7.873E-01
 IX=       6
FIELD VALUES OF W1
IY= 16  -2.387E+00   -2.389E+00   -2.338E+00   -2.287E+00   -2.234E+00
IY= 15  -1.489E+00   -1.511E+00   -1.483E+00   -1.450E+00   -1.414E+00
IY= 14   9.207E-01    8.900E-01    8.925E-01    8.862E-01    8.603E-01
IY= 13   3.617E+00    3.561E+00    3.543E+00    3.491E+00    3.370E+00
IY= 12   6.844E+00    6.714E+00    6.641E+00    6.533E+00    6.312E+00
IY= 11   7.783E+00    7.621E+00    7.512E+00    7.372E+00    7.115E+00
IY= 10   9.798E+00    9.540E+00    9.274E+00    9.025E+00    8.683E+00
IY=  9   1.270E+01    1.223E+01    1.157E+01    1.107E+01    1.058E+01
IY=  8   1.456E+01    1.392E+01    1.298E+01    1.230E+01    1.171E+01
IY=  7   2.105E+01    1.976E+01    1.772E+01    1.636E+01    1.538E+01
IY=  6   3.780E+01    3.358E+01    2.745E+01    2.375E+01    2.163E+01
IY=  5   5.293E+01    4.546E+01    3.564E+01    2.989E+01    2.678E+01
IY=  4   9.581E+01    7.445E+01    5.248E+01    4.066E+01    3.497E+01
IY=  3   1.771E+02    1.008E+02    6.623E+01    4.856E+01    4.058E+01
IY=  2   1.349E+02    9.880E+01    6.589E+01    4.796E+01    3.978E+01
IY=  1   1.357E+02    9.782E+01    6.532E+01    4.615E+01    3.829E+01
 IX=       1            2            3            4            5
IY= 16  -2.151E+00
IY= 15  -1.355E+00
IY= 14   7.919E-01
IY= 13   3.098E+00
IY= 12   5.811E+00
IY= 11   6.550E+00
IY= 10   7.992E+00
IY=  9   9.697E+00
IY=  8   1.070E+01
IY=  7   1.392E+01
IY=  6   1.890E+01
IY=  5   2.297E+01
IY=  4   2.851E+01
IY=  3   3.191E+01
IY=  2   3.173E+01
IY=  1   3.159E+01
 IX=       6
FIELD VALUES OF KE
IY= 16   9.105E+01    9.066E+01    8.967E+01    8.873E+01    8.775E+01
IY= 15   1.034E+02    1.029E+02    1.009E+02    9.888E+01    9.673E+01
IY= 14   1.675E+02    1.659E+02    1.587E+02    1.518E+02    1.447E+02
IY= 13   3.805E+02    3.725E+02    3.420E+02    3.174E+02    2.959E+02
IY= 12   9.505E+02    9.113E+02    7.803E+02    6.892E+02    6.252E+02
IY= 11   1.151E+03    1.099E+03    9.283E+02    8.112E+02    7.311E+02
IY= 10   1.650E+03    1.559E+03    1.279E+03    1.092E+03    9.711E+02
IY=  9   2.475E+03    2.300E+03    1.814E+03    1.501E+03    1.311E+03
IY=  8   3.032E+03    2.790E+03    2.161E+03    1.762E+03    1.526E+03
IY=  7   5.032E+03    4.525E+03    3.374E+03    2.661E+03    2.260E+03
IY=  6   1.037E+04    8.727E+03    6.018E+03    4.440E+03    3.629E+03
IY=  5   1.527E+04    1.234E+04    8.239E+03    5.914E+03    4.757E+03
IY=  4   2.865E+04    2.019E+04    1.226E+04    8.179E+03    6.329E+03
IY=  3   5.054E+04    2.536E+04    1.423E+04    8.987E+03    6.799E+03
IY=  2   2.267E+04    1.550E+04    8.955E+03    5.790E+03    4.783E+03
IY=  1   7.228E+01    3.952E+01    1.885E+01    9.896E+00    3.752E+03
 IX=       1            2            3            4            5
IY= 16   8.624E+01
IY= 15   9.339E+01
IY= 14   1.340E+02
IY= 13   2.659E+02
IY= 12   5.448E+02
IY= 11   6.322E+02
IY= 10   8.264E+02
IY=  9   1.092E+03
IY=  8   1.257E+03
IY=  7   1.812E+03
IY=  6   2.750E+03
IY=  5   3.512E+03
IY=  4   4.407E+03
IY=  3   4.623E+03
IY=  2   3.801E+03
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IY=  1    3.651E+03
 IX=      6
FIELD VALUES OF EP
IY= 16    8.411E+01    8.375E+01    8.268E+01    8.174E+01    8.087E+01
IY= 15    1.004E+02    9.989E+01    9.773E+01    9.570E+01    9.367E+01
IY= 14    2.306E+02    2.274E+02    2.144E+02    2.028E+02    1.916E+02
IY= 13    9.451E+02    9.092E+02    7.851E+02    6.961E+02    6.276E+02
IY= 12    4.282E+03    3.986E+03    3.085E+03    2.509E+03    2.148E+03
IY= 11    5.716E+03    5.286E+03    4.016E+03    3.214E+03    2.723E+03
IY= 10    9.936E+03    9.043E+03    6.603E+03    5.104E+03    4.234E+03
IY=  9    1.863E+04    1.653E+04    1.147E+04    8.476E+03    6.845E+03
IY=  8    2.516E+04    2.201E+04    1.495E+04    1.083E+04    8.646E+03
IY=  7    5.117E+04    4.339E+04    2.832E+04    1.975E+04    1.539E+04
IY=  6    1.413E+05    1.103E+05    6.624E+04    4.271E+04    3.177E+04
IY=  5    2.325E+05    1.733E+05    1.010E+05    6.338E+04    4.641E+04
IY=  4    5.137E+05    3.354E+05    1.779E+05    1.028E+05    7.191E+04
IY=  3    8.560E+05    4.532E+05    2.238E+05    1.217E+05    8.264E+04
IY=  2    4.171E+05    2.706E+05    1.366E+05    7.505E+04    5.420E+04
IY=  1    3.094E+03    1.251E+03    4.121E+02    1.568E+02    3.976E+04
 IX=         1            2            3            4            5
IY= 16    7.960E+01
IY= 15    9.063E+01
IY= 14    1.754E+02
IY= 13    5.392E+02
IY= 12    1.727E+03
IY= 11    2.159E+03
IY= 10    3.261E+03
IY=  9    5.077E+03
IY=  8    6.299E+03
IY=  7    1.078E+04
IY=  6    2.055E+04
IY=  5    2.911E+04
IY=  4    4.161E+04
IY=  3    4.591E+04
IY=  2    3.539E+04
IY=  1    3.338E+04
 IX=      6
FIELD VALUES OF H1
IY= 16    3.552E+05    3.548E+05    3.538E+05    3.530E+05    3.522E+05
IY= 15    3.557E+05    3.553E+05    3.538E+05    3.524E+05    3.509E+05
IY= 14    3.454E+05    3.447E+05    3.418E+05    3.392E+05    3.368E+05
IY= 13    3.397E+05    3.387E+05    3.348E+05    3.316E+05    3.289E+05
IY= 12    3.468E+05    3.452E+05    3.392E+05    3.346E+05    3.311E+05
IY= 11    3.494E+05    3.476E+05    3.409E+05    3.358E+05    3.321E+05
IY= 10    3.560E+05    3.537E+05    3.452E+05    3.390E+05    3.347E+05
IY=  9    3.660E+05    3.629E+05    3.517E+05    3.438E+05    3.386E+05
IY=  8    3.722E+05    3.685E+05    3.557E+05    3.468E+05    3.410E+05
IY=  7    3.928E+05    3.871E+05    3.690E+05    3.567E+05    3.491E+05
IY=  6    4.334E+05    4.211E+05    3.919E+05    3.728E+05    3.617E+05
IY=  5    4.673E+05    4.484E+05    4.101E+05    3.855E+05    3.716E+05
IY=  4    5.427E+05    4.978E+05    4.383E+05    4.022E+05    3.832E+05
IY=  3    6.691E+05    5.331E+05    4.545E+05    4.095E+05    3.870E+05
IY=  2    5.885E+05    5.183E+05    4.434E+05    3.990E+05    3.772E+05
IY=  1    5.900E+05    5.137E+05    4.381E+05    3.906E+05    3.721E+05
 IX=         1            2            3            4            5
IY= 16    3.510E+05
IY= 15    3.488E+05
IY= 14    3.332E+05
IY= 13    3.251E+05
IY= 12    3.266E+05
IY= 11    3.273E+05
IY= 10    3.293E+05
IY=  9    3.323E+05
IY=  8    3.341E+05
IY=  7    3.403E+05
IY=  6    3.490E+05
IY=  5    3.558E+05
IY=  4    3.620E+05
IY=  3    3.626E+05
IY=  2    3.562E+05
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IY=  1    3.552E+05
 IX=      6
FIELD VALUES OF TMP1
IY= 16    3.538E+02    3.534E+02    3.524E+02    3.516E+02    3.508E+02
IY= 15    3.542E+02    3.539E+02    3.524E+02    3.509E+02    3.495E+02
IY= 14    3.440E+02    3.433E+02    3.405E+02    3.379E+02    3.354E+02
IY= 13    3.383E+02    3.373E+02    3.335E+02    3.303E+02    3.276E+02
IY= 12    3.454E+02    3.438E+02    3.379E+02    3.333E+02    3.298E+02
IY= 11    3.480E+02    3.462E+02    3.395E+02    3.345E+02    3.308E+02
IY= 10    3.546E+02    3.523E+02    3.438E+02    3.377E+02    3.333E+02
IY=  9    3.646E+02    3.614E+02    3.503E+02    3.424E+02    3.372E+02
IY=  8    3.708E+02    3.670E+02    3.543E+02    3.454E+02    3.397E+02
IY=  7    3.913E+02    3.855E+02    3.675E+02    3.553E+02    3.478E+02
IY=  6    4.317E+02    4.195E+02    3.904E+02    3.713E+02    3.603E+02
IY=  5    4.655E+02    4.466E+02    4.085E+02    3.839E+02    3.701E+02
IY=  4    5.405E+02    4.958E+02    4.365E+02    4.006E+02    3.817E+02
IY=  3    6.664E+02    5.310E+02    4.527E+02    4.079E+02    3.855E+02
IY=  2    5.862E+02    5.162E+02    4.416E+02    3.974E+02    3.757E+02
IY=  1    5.877E+02    5.116E+02    4.363E+02    3.890E+02    3.706E+02
 IX=      1            2            3            4            5
IY= 16    3.496E+02
IY= 15    3.474E+02
IY= 14    3.319E+02
IY= 13    3.238E+02
IY= 12    3.253E+02
IY= 11    3.260E+02
IY= 10    3.279E+02
IY=  9    3.309E+02
IY=  8    3.328E+02
IY=  7    3.389E+02
IY=  6    3.476E+02
IY=  5    3.544E+02
IY=  4    3.606E+02
IY=  3    3.611E+02
IY=  2    3.548E+02
IY=  1    3.538E+02
 IX=      6
FIELD VALUES OF RHO1
IY= 16    1.001E+00    1.002E+00    1.005E+00    1.008E+00    1.010E+00
IY= 15    1.000E+00    1.001E+00    1.005E+00    1.009E+00    1.013E+00
IY= 14    1.029E+00    1.032E+00    1.040E+00    1.048E+00    1.056E+00
IY= 13    1.047E+00    1.050E+00    1.062E+00    1.072E+00    1.081E+00
IY= 12    1.025E+00    1.030E+00    1.048E+00    1.062E+00    1.074E+00
IY= 11    1.018E+00    1.023E+00    1.043E+00    1.059E+00    1.071E+00
IY= 10    9.989E-01    1.005E+00    1.030E+00    1.049E+00    1.062E+00
IY=  9    9.717E-01    9.801E-01    1.011E+00    1.034E+00    1.050E+00
IY=  8    9.556E-01    9.651E-01    9.998E-01    1.025E+00    1.043E+00
IY=  7    9.059E-01    9.193E-01    9.642E-01    9.971E-01    1.018E+00
IY=  6    8.220E-01    8.464E-01    9.088E-01    9.548E-01    9.836E-01
IY=  5    7.625E-01    7.964E-01    8.694E-01    9.240E-01    9.577E-01
IY=  4    6.537E-01    7.214E-01    8.157E-01    8.870E-01    9.293E-01
IY=  3    5.398E-01    6.755E-01    7.884E-01    8.720E-01    9.207E-01
IY=  2    6.042E-01    6.956E-01    8.075E-01    8.947E-01    9.445E-01
IY=  1    6.080E-01    7.027E-01    8.176E-01    9.141E-01    9.585E-01
 IX=      1            2            3            4            5
IY= 16    1.013E+00
IY= 15    1.020E+00
IY= 14    1.067E+00
IY= 13    1.094E+00
IY= 12    1.089E+00
IY= 11    1.086E+00
IY= 10    1.080E+00
IY=  9    1.070E+00
IY=  8    1.064E+00
IY=  7    1.045E+00
IY=  6    1.019E+00
IY=  5    9.995E-01
IY=  4    9.825E-01
IY=  3    9.811E-01
IY=  2    9.986E-01
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IY=  1    1.002E+00
 IX=      6

****************************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     14 ITERN NO=      1


FLOW FIELD AT ITHYD=  1, IZ= 14, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16    2.236E+00     2.057E+00     2.155E+00     2.246E+00     2.354E+00
IY= 15   -9.074E+00    -1.008E+01    -9.541E+00    -9.047E+00    -8.500E+00
IY= 14   -3.507E+01    -3.876E+01    -3.805E+01    -3.766E+01    -3.730E+01
IY= 13   -6.000E+01    -6.605E+01    -6.967E+01    -7.348E+01    -7.738E+01
IY= 12   -8.413E+01    -9.118E+01    -1.092E+02    -1.234E+02    -1.356E+02
IY= 11   -8.255E+01    -8.974E+01    -1.128E+02    -1.308E+02    -1.460E+02
IY= 10   -6.384E+01    -7.232E+01    -1.119E+02    -1.404E+02    -1.630E+02
IY=  9   -2.785E+01    -4.000E+01    -1.072E+02    -1.510E+02    -1.825E+02
IY=  8   -1.335E+00    -1.677E+01    -1.023E+02    -1.559E+02    -1.930E+02
IY=  7    1.551E+02     1.202E+02    -5.161E+01    -1.489E+02    -2.102E+02
IY=  6    5.847E+02     4.549E+02     6.894E+01    -1.250E+02    -2.307E+02
IY=  5    1.154E+03     8.863E+02     2.190E+02    -8.656E+01    -2.449E+02
IY=  4    2.593E+03     1.979E+03     5.561E+02     8.401E+00    -2.436E+02
IY=  3    6.513E+03     2.243E+03     6.789E+02     2.087E+01    -2.728E+02
IY=  2    1.181E+03     1.126E+03     2.526E+02    -8.276E+01    -3.303E+02
IY=  1    1.118E+03     1.062E+03     4.109E+02     1.308E+02    -2.352E+02
 IX=      1             2             3             4             5
IY= 16    1.126E+00
IY= 15   -6.579E+00
IY= 14   -2.500E+01
IY= 13   -4.612E+01
IY= 12   -6.926E+01
IY= 11   -7.282E+01
IY= 10   -7.849E+01
IY=  9   -8.425E+01
IY=  8   -8.701E+01
IY=  7   -9.108E+01
IY=  6   -9.580E+01
IY=  5   -9.742E+01
IY=  4   -1.015E+02
IY=  3   -1.132E+02
IY=  2   -1.380E+02
IY=  1   -1.056E+02
 IX=      6
FIELD VALUES OF U1
IY= 16   -5.286E-02    -1.335E-01    -1.621E-01    -1.739E-01    -1.649E-01
IY= 15   -9.333E-02    -3.153E-01    -4.174E-01    -5.122E-01    -5.477E-01
IY= 14   -2.229E-01    -7.699E-01    -1.030E+00    -1.298E+00    -1.436E+00
IY= 13   -2.801E-01    -9.460E-01    -1.317E+00    -1.759E+00    -2.039E+00
IY= 12   -2.407E-01    -7.656E-01    -1.184E+00    -1.794E+00    -2.259E+00
IY= 11   -2.277E-01    -7.052E-01    -1.133E+00    -1.779E+00    -2.282E+00
IY= 10   -1.858E-01    -5.423E-01    -9.797E-01    -1.690E+00    -2.255E+00
IY=  9   -1.059E-01    -2.856E-01    -7.311E-01    -1.510E+00    -2.146E+00
IY=  8   -4.503E-02    -1.136E-01    -5.646E-01    -1.383E+00    -2.060E+00
IY=  7    2.268E-01     5.230E-01     4.491E-02    -9.052E-01    -1.683E+00
IY=  6    1.355E+00     2.172E+00     1.489E+00     1.864E-01    -8.099E-01
IY=  5    2.675E+00     3.767E+00     2.821E+00     1.171E+00    -1.582E-02
IY=  4    8.192E+00     8.046E+00     5.880E+00     3.135E+00     1.492E+00
IY=  3    1.936E+01     1.117E+01     7.989E+00     4.363E+00     2.323E+00
IY=  2    7.762E+00     9.415E+00     7.056E+00     3.942E+00     1.782E+00
IY=  1    6.268E+00     9.774E+00     7.391E+00     4.089E+00     1.834E+00
 IX=      1             2             3             4             5
FIELD VALUES OF V1
IY= 15   -6.343E-01    -6.302E-01    -5.558E-01    -4.884E-01    -4.287E-01
IY= 14   -1.622E+00    -1.610E+00    -1.460E+00    -1.324E+00    -1.197E+00
IY= 13   -2.650E+00    -2.611E+00    -2.382E+00    -2.165E+00    -1.947E+00
IY= 12   -3.520E+00    -3.471E+00    -3.290E+00    -3.072E+00    -2.795E+00
IY= 11   -3.527E+00    -3.474E+00    -3.313E+00    -3.109E+00    -2.843E+00
IY= 10   -3.455E+00    -3.401E+00    -3.306E+00    -3.147E+00    -2.912E+00
IY=  9   -3.242E+00    -3.183E+00    -3.243E+00    -3.190E+00    -3.016E+00
IY=  8   -3.161E+00    -3.090E+00    -3.202E+00    -3.190E+00    -3.045E+00
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IY=   7   -2.997E+00   -2.909E+00   -3.102E+00   -3.147E+00   -3.047E+00
IY=   6   -1.484E+00   -1.306E+00   -2.156E+00   -2.638E+00   -2.785E+00
IY=   5   -1.226E+00   -9.978E-01   -1.996E+00   -2.565E+00   -2.764E+00
IY=   4    1.370E+00    1.200E+00   -7.842E-01   -1.825E+00   -2.240E+00
IY=   3    4.215E-01   -3.235E-01   -1.430E+00   -2.014E+00   -2.216E+00
IY=   2   -1.189E+01   -5.625E+00   -3.688E+00   -2.568E+00   -2.183E+00
IY=   1   -3.387E+00   -2.935E+00   -1.151E+00   -2.140E-01   -4.412E-01
 IX=       1            2            3            4            5
IY=  15   -3.462E-01
IY=  14   -1.013E+00
IY=  13   -1.612E+00
IY=  12   -2.299E+00
IY=  11   -2.375E+00
IY=  10   -2.476E+00
IY=   9   -2.629E+00
IY=   8   -2.694E+00
IY=   7   -2.750E+00
IY=   6   -2.731E+00
IY=   5   -2.760E+00
IY=   4   -2.487E+00
IY=   3   -2.299E+00
IY=   2   -1.829E+00
IY=   1   -7.933E-01
 IX=       6
FIELD VALUES OF W1
IY=  16   -2.707E+00   -2.719E+00   -2.652E+00   -2.591E+00   -2.538E+00
IY=  15   -1.563E+00   -1.594E+00   -1.563E+00   -1.530E+00   -1.494E+00
IY=  14    9.543E-01    9.096E-01    9.210E-01    9.284E-01    9.423E-01
IY=  13    3.767E+00    3.686E+00    3.691E+00    3.674E+00    3.660E+00
IY=  12    7.218E+00    7.052E+00    7.023E+00    6.978E+00    6.954E+00
IY=  11    8.162E+00    7.966E+00    7.910E+00    7.842E+00    7.805E+00
IY=  10    1.022E+01    9.926E+00    9.737E+00    9.578E+00    9.489E+00
IY=   9    1.316E+01    1.268E+01    1.214E+01    1.175E+01    1.154E+01
IY=   8    1.504E+01    1.442E+01    1.361E+01    1.304E+01    1.275E+01
IY=   7    2.147E+01    2.030E+01    1.846E+01    1.727E+01    1.664E+01
IY=   6    3.734E+01    3.396E+01    2.837E+01    2.495E+01    2.322E+01
IY=   5    5.125E+01    4.564E+01    3.666E+01    3.129E+01    2.861E+01
IY=   4    8.627E+01    7.272E+01    5.325E+01    4.231E+01    3.716E+01
IY=   3    1.530E+02    9.695E+01    6.693E+01    5.055E+01    4.317E+01
IY=   2    1.279E+02    1.002E+02    6.874E+01    5.103E+01    4.322E+01
IY=   1    1.372E+02    1.044E+02    6.982E+01    4.888E+01    4.209E+01
 IX=       1            2            3            4            5
IY=  16   -2.468E+00
IY=  15   -1.434E+00
IY=  14    1.029E+00
IY=  13    3.793E+00
IY=  12    7.195E+00
IY=  11    8.054E+00
IY=  10    9.728E+00
IY=   9    1.169E+01
IY=   8    1.283E+01
IY=   7    1.644E+01
IY=   6    2.197E+01
IY=   5    2.646E+01
IY=   4    3.264E+01
IY=   3    3.668E+01
IY=   2    3.724E+01
IY=   1    3.736E+01
 IX=       6
FIELD VALUES OF KE
IY=  16    1.094E+02    1.092E+02    1.083E+02    1.075E+02    1.068E+02
IY=  15    1.230E+02    1.226E+02    1.209E+02    1.193E+02    1.175E+02
IY=  14    2.137E+02    2.121E+02    2.049E+02    1.982E+02    1.913E+02
IY=  13    4.727E+02    4.647E+02    4.333E+02    4.087E+02    3.874E+02
IY=  12    1.084E+03    1.046E+03    9.145E+02    8.239E+02    7.602E+02
IY=  11    1.287E+03    1.236E+03    1.067E+03    9.516E+02    8.724E+02
IY=  10    1.782E+03    1.695E+03    1.421E+03    1.239E+03    1.120E+03
IY=   9    2.594E+03    2.426E+03    1.954E+03    1.649E+03    1.464E+03
IY=   8    3.139E+03    2.909E+03    2.299E+03    1.910E+03    1.679E+03
IY=   7    5.081E+03    4.603E+03    3.495E+03    2.803E+03    2.411E+03
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IY=  6    1.020E+04    8.694E+03    6.100E+03    4.567E+03    3.769E+03
IY=  5    1.477E+04    1.216E+04    8.281E+03    6.032E+03    4.895E+03
IY=  4    2.664E+04    1.949E+04    1.221E+04    8.294E+03    6.478E+03
IY=  3    4.607E+04    2.406E+04    1.411E+04    9.135E+03    6.986E+03
IY=  2    2.098E+04    1.501E+04    9.018E+03    5.968E+03    4.982E+03
IY=  1    7.376E+01    4.462E+01    2.141E+01    1.108E+01    3.916E+03
 IX=         1            2            3            4            5
IY= 16    1.059E+02
IY= 15    1.149E+02
IY= 14    1.804E+02
IY= 13    3.560E+02
IY= 12    6.751E+02
IY= 11    7.687E+02
IY= 10    9.709E+02
IY=  9    1.239E+03
IY=  8    1.404E+03
IY=  7    1.956E+03
IY=  6    2.878E+03
IY=  5    3.636E+03
IY=  4    4.530E+03
IY=  3    4.760E+03
IY=  2    3.942E+03
IY=  1    3.805E+03
 IX=         6
FIELD VALUES OF EP
IY= 16    1.109E+02    1.106E+02    1.093E+02    1.083E+02    1.076E+02
IY= 15    1.351E+02    1.346E+02    1.321E+02    1.300E+02    1.280E+02
IY= 14    3.438E+02    3.399E+02    3.228E+02    3.085E+02    2.951E+02
IY= 13    1.273E+03    1.233E+03    1.089E+03    9.878E+02    9.114E+02
IY= 12    4.981E+03    4.676E+03    3.720E+03    3.107E+03    2.722E+03
IY= 11    6.469E+03    6.033E+03    4.710E+03    3.870E+03    3.354E+03
IY= 10    1.078E+04    9.885E+03    7.402E+03    5.865E+03    4.968E+03
IY=  9    1.957E+04    1.750E+04    1.241E+04    9.369E+03    7.700E+03
IY=  8    2.613E+04    2.304E+04    1.597E+04    1.180E+04    9.567E+03
IY=  7    5.192E+04    4.444E+04    2.952E+04    2.092E+04    1.650E+04
IY=  6    1.402E+05    1.113E+05    6.809E+04    4.452E+04    3.339E+04
IY=  5    2.260E+05    1.727E+05    1.031E+05    6.571E+04    4.853E+04
IY=  4    4.767E+05    3.235E+05    1.786E+05    1.059E+05    7.498E+04
IY=  3    8.256E+05    4.217E+05    2.199E+05    1.242E+05    8.582E+04
IY=  2    3.787E+05    2.576E+05    1.371E+05    7.798E+04    5.737E+04
IY=  1    3.190E+03    1.501E+03    4.989E+02    1.856E+02    4.231E+04
 IX=         1            2            3            4            5
IY= 16    1.066E+02
IY= 15    1.251E+02
IY= 14    2.749E+02
IY= 13    8.070E+02
IY= 12    2.250E+03
IY= 11    2.733E+03
IY= 10    3.922E+03
IY=  9    5.825E+03
IY=  8    7.091E+03
IY=  7    1.169E+04
IY=  6    2.170E+04
IY=  5    3.054E+04
IY=  4    4.360E+04
IY=  3    4.818E+04
IY=  2    3.762E+04
IY=  1    3.575E+04
 IX=         6
FIELD VALUES OF H1
IY= 16    3.626E+05    3.623E+05    3.614E+05    3.606E+05    3.600E+05
IY= 15    3.609E+05    3.606E+05    3.593E+05    3.582E+05    3.571E+05
IY= 14    3.510E+05    3.504E+05    3.479E+05    3.456E+05    3.434E+05
IY= 13    3.469E+05    3.460E+05    3.425E+05    3.396E+05    3.370E+05
IY= 12    3.546E+05    3.531E+05    3.474E+05    3.431E+05    3.397E+05
IY= 11    3.571E+05    3.555E+05    3.491E+05    3.443E+05    3.407E+05
IY= 10    3.634E+05    3.613E+05    3.533E+05    3.475E+05    3.432E+05
IY=  9    3.728E+05    3.699E+05    3.594E+05    3.520E+05    3.469E+05
IY=  8    3.786E+05    3.752E+05    3.632E+05    3.548E+05    3.492E+05
IY=  7    3.975E+05    3.924E+05    3.757E+05    3.642E+05    3.568E+05
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IY=   6    4.349E+05     4.241E+05     3.973E+05     3.793E+05     3.685E+05
IY=   5    4.655E+05     4.494E+05     4.145E+05     3.914E+05     3.779E+05
IY=   4    5.307E+05     4.954E+05     4.416E+05     4.075E+05     3.889E+05
IY=   3    6.392E+05     5.294E+05     4.581E+05     4.150E+05     3.926E+05
IY=   2    5.821E+05     5.222E+05     4.511E+05     4.066E+05     3.836E+05
IY=   1    5.845E+05     5.198E+05     4.483E+05     3.996E+05     3.786E+05
 IX=         1             2             3             4             5
IY=  16    3.593E+05
IY=  15    3.555E+05
IY=  14    3.401E+05
IY=  13    3.332E+05
IY=  12    3.348E+05
IY=  11    3.356E+05
IY=  10    3.374E+05
IY=   9    3.402E+05
IY=   8    3.418E+05
IY=   7    3.475E+05
IY=   6    3.554E+05
IY=   5    3.616E+05
IY=   4    3.670E+05
IY=   3    3.668E+05
IY=   2    3.598E+05
IY=   1    3.589E+05
 IX=         6
FIELD VALUES OF TMP1
IY=  16    3.611E+02     3.608E+02     3.600E+02     3.592E+02     3.586E+02
IY=  15    3.595E+02     3.591E+02     3.579E+02     3.568E+02     3.557E+02
IY=  14    3.496E+02     3.490E+02     3.465E+02     3.442E+02     3.421E+02
IY=  13    3.456E+02     3.446E+02     3.411E+02     3.382E+02     3.356E+02
IY=  12    3.531E+02     3.517E+02     3.460E+02     3.417E+02     3.383E+02
IY=  11    3.557E+02     3.540E+02     3.477E+02     3.430E+02     3.393E+02
IY=  10    3.620E+02     3.599E+02     3.519E+02     3.461E+02     3.418E+02
IY=   9    3.713E+02     3.685E+02     3.580E+02     3.506E+02     3.455E+02
IY=   8    3.771E+02     3.737E+02     3.618E+02     3.534E+02     3.478E+02
IY=   7    3.959E+02     3.908E+02     3.742E+02     3.627E+02     3.554E+02
IY=   6    4.331E+02     4.224E+02     3.957E+02     3.778E+02     3.670E+02
IY=   5    4.637E+02     4.476E+02     4.129E+02     3.898E+02     3.764E+02
IY=   4    5.286E+02     4.934E+02     4.398E+02     4.059E+02     3.874E+02
IY=   3    6.367E+02     5.273E+02     4.563E+02     4.134E+02     3.910E+02
IY=   2    5.798E+02     5.201E+02     4.493E+02     4.050E+02     3.821E+02
IY=   1    5.822E+02     5.178E+02     4.465E+02     3.980E+02     3.771E+02
 IX=         1             2             3             4             5
IY=  16    3.579E+02
IY=  15    3.541E+02
IY=  14    3.388E+02
IY=  13    3.319E+02
IY=  12    3.335E+02
IY=  11    3.342E+02
IY=  10    3.361E+02
IY=   9    3.388E+02
IY=   8    3.405E+02
IY=   7    3.461E+02
IY=   6    3.539E+02
IY=   5    3.602E+02
IY=   4    3.655E+02
IY=   3    3.653E+02
IY=   2    3.584E+02
IY=   1    3.575E+02
 IX=         6
FIELD VALUES OF RHO1
IY=  16    9.811E-01     9.819E-01     9.843E-01     9.863E-01     9.879E-01
IY=  15    9.855E-01     9.864E-01     9.898E-01     9.929E-01     9.960E-01
IY=  14    1.013E+00     1.015E+00     1.022E+00     1.029E+00     1.035E+00
IY=  13    1.025E+00     1.027E+00     1.038E+00     1.047E+00     1.055E+00
IY=  12    1.002E+00     1.007E+00     1.023E+00     1.036E+00     1.046E+00
IY=  11    9.951E-01     9.998E-01     1.018E+00     1.032E+00     1.043E+00
IY=  10    9.782E-01     9.838E-01     1.006E+00     1.022E+00     1.035E+00
IY=   9    9.538E-01     9.611E-01     9.885E-01     1.009E+00     1.024E+00
IY=   8    9.395E-01     9.478E-01     9.783E-01     1.001E+00     1.017E+00
IY=   7    8.962E-01     9.076E-01     9.464E-01     9.753E-01     9.949E-01
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IY=  6    8.227E-01      8.425E-01      8.960E-01      9.367E-01      9.631E-01
IY=  5    7.728E-01      7.984E-01      8.600E-01      9.081E-01      9.390E-01
IY=  4    6.874E-01      7.321E-01      8.099E-01      8.729E-01      9.124E-01
IY=  3    5.922E-01      6.868E-01      7.816E-01      8.572E-01      9.036E-01
IY=  2    6.182E-01      6.888E-01      7.905E-01      3.741E-01      9.243E-01
IY=  1    6.153E-01      6.914E-01      7.967E-01      8.913E-01      9.373E-01
 IX=         1             2             3             4             5
IY= 16    9.900E-01
IY= 15    1.001E+00
IY= 14    1.046E+00
IY= 13    1.067E+00
IY= 12    1.062E+00
IY= 11    1.059E+00
IY= 10    1.053E+00
IY=  9    1.045E+00
IY=  8    1.040E+00
IY=  7    1.023E+00
IY=  6    1.000E+00
IY=  5    9.827E-01
IY=  4    9.682E-01
IY=  3    9.687E-01
IY=  2    9.872E-01
IY=  1    9.899E-01
 IX=         J


**************************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     15 ITERN NO=        1


FLOW FIELD AT ITHYD=  1, IZ= 15, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16    4.828E+00      5.278E+00      5.497E+00      5.675E+00      5.809E+00
IY= 15   -2.036E+00     -2.290E+00     -1.987E+00     -1.723E+00     -1.481E+00
IY= 14   -9.479E+00     -1.193E+01     -1.128E+01     -1.085E+01     -1.045E+01
IY= 13   -1.331E+01     -1.561E+01     -1.418E+01     -1.341E+01     -1.288E+01
IY= 12   -2.163E+01     -1.881E+01     -1.541E+01     -1.370E+01     -1.286E+01
IY= 11   -2.258E+01     -1.789E+01     -1.395E+01     -1.207E+01     -1.127E+01
IY= 10   -2.435E+01     -1.529E+01     -1.037E+01     -8.297E+00     -7.813E+00
IY=  9   -2.903E+01     -1.367E+01     -7.385E+00     -5.095E+00     -4.992E+00
IY=  8   -3.288E+01     -1.347E+01     -6.065E+00     -3.435E+00     -3.486E+00
IY=  7   -3.261E+01      3.467E+00      9.216E+00      1.005E+01      7.499E+00
IY=  6   -5.661E+01      1.834E+01      2.351E+01      2.240E+01      1.622E+01
IY=  5   -6.538E+01      5.654E+01      4.982E+01      4.227E+01      2.958E+01
IY=  4   -1.710E+02      1.223E+02      9.123E+01      7.195E+01      4.768E+01
IY=  3   -4.280E+01      8.128E+01      1.229E+02      9.772E+01      6.508E+01
IY=  2   -1.439E+02      1.444E+02      1.367E+02      1.138E+02      7.870E+01
IY=  1   -2.542E+01      1.890E+02      1.569E+02      1.213E+02      9.132E+01
 IX=         1             2             3             4             5
IY= 16    4.647E+00
IY= 15   -9.780E-01
IY= 14   -7.414E+00
IY= 13   -7.571E+00
IY= 12   -3.817E+00
IY= 11   -2.346E+00
IY= 10    6.634E-01
IY=  9    3.985E+00
IY=  8    5.938E+00
IY=  7    1.288E+01
IY=  6    2.108E+01
IY=  5    2.858E+01
IY=  4    3.858E+01
IY=  3    4.676E+01
IY=  2    5.180E+01
IY=  1    5.783E+01
 IX=         6
FIELD VALUES OF U1
IY= 16    4.404E-02      1.011E-01      1.421E-01      1.964E-01      2.259E-01
IY= 15   -1.175E-02     -5.088E-02     -6.830E-02     -8.408E-02     -9.003E-02
IY= 14   -8.767E-02     -3.279E-01     -4.443E-01     -5.612E-01     -6.099E-01
IY= 13   -6.796E-02     -2.547E-01     -3.757E-01     -5.201E-01     -5.861E-01
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IY= 12    3.251E-02    1.226E-01    6.341E-02   -6.924E-02   -1.466E-01
IY= 11    5.894E-02    2.235E-01    1.828E-01    5.736E-02   -1.933E-02
IY= 10    1.166E-01    4.407E-01    4.409E-01    3.366E-01    2.656E-01
IY=  9    1.875E-01    7.236E-01    7.724E-01    6.919E-01    6.241E-01
IY=  8    2.318E-01    8.922E-01    9.698E-01    9.026E-01    8.369E-01
IY=  7    3.835E-01    1.435E+00    1.603E+00    1.585E+00    1.531E+00
IY=  6    6.728E-01    2.344E+00    2.597E+00    2.592E+00    2.525E+00
IY=  5    9.684E-01    3.107E+00    3.426E+00    3.437E+00    3.363E+00
IY=  4    1.945E+00    4.521E+00    4.794E+00    4.724E+00    4.602E+00
IY=  3    4.845E+00    5.619E+00    5.864E+00    5.732E+00    5.574E+00
IY=  2    2.108E+00    5.882E+00    6.326E+00    6.226E+00    6.066E+00
IY=  1    1.524E+00    6.263E+00    6.629E+00    6.269E+00    6.115E+00
 IX=         1            2            3            4            5
FIELD VALUES OF V1
IY= 15    6.166E-01    6.184E-01    6.607E-01    6.982E-01    7.295E-01
IY= 14    7.411E-01    7.359E-01    7.774E-01    8.136E-01    8.422E-01
IY= 13    6.342E-01    6.494E-01    6.856E-01    7.166E-01    7.415E-01
IY= 12    6.407E-01    6.891E-01    6.505E-01    6.282E-01    6.279E-01
IY= 11    6.872E-01    7.421E-01    6.793E-01    6.379E-01    6.229E-01
IY= 10    7.618E-01    8.287E-01    7.249E-01    6.511E-01    6.133E-01
IY=  9    8.841E-01    9.801E-01    8.002E-01    6.647E-01    5.872E-01
IY=  8    9.245E-01    1.040E+00    8.314E-01    6.725E-01    5.778E-01
IY=  7    9.781E-01    1.119E+00    8.762E-01    6.894E-01    5.747E-01
IY=  6    9.663E-01    1.286E+00    9.519E-01    6.670E-01    4.860E-01
IY=  5    9.127E-01    1.294E+00    9.427E-01    6.454E-01    4.516E-01
IY=  4    4.448E-01    9.764E-01    7.137E-01    4.477E-01    2.510E-01
IY=  3    6.146E-01    6.555E-02    2.157E-01    1.415E-01    2.470E-02
IY=  2   -2.204E+00   -5.502E-01   -3.321E-01   -1.924E-01   -1.856E-01
IY=  1    1.893E-01   -3.614E-02   -4.543E-03   -1.578E-02   -2.978E-02
 IX=         1            2            3            4            5
IY= 15    7.721E-01
IY= 14    8.800E-01
IY= 13    7.755E-01
IY= 12    6.432E-01
IY= 11    6.157E-01
IY= 10    5.793E-01
IY=  9    5.111E-01
IY=  8    4.803E-01
IY=  7    4.502E-01
IY=  6    2.937E-01
IY=  5    2.387E-01
IY=  4    3.441E-02
IY=  3   -1.208E-01
IY=  2   -2.166E-01
IY=  1   -1.074E-01
 IX=         6
FIELD VALUES OF W1
IY= 16   -2.734E+00   -2.737E+00   -2.661E+00   -2.594E+00   -2.538E+00
IY= 15   -1.392E+00   -1.414E+00   -1.389E+00   -1.363E+00   -1.339E+00
IY= 14    1.492E+00    1.458E+00    1.471E+00    1.479E+00    1.476E+00
IY= 13    4.486E+00    4.437E+00    4.531E+00    4.586E+00    4.598E+00
IY= 12    7.989E+00    7.907E+00    8.190E+00    8.360E+00    8.433E+00
IY= 11    8.816E+00    8.718E+00    9.050E+00    9.247E+00    9.335E+00
IY= 10    1.054E+01    1.039E+01    1.079E+01    1.101E+01    1.112E+01
IY=  9    1.298E+01    1.272E+01    1.309E+01    1.325E+01    1.330E+01
IY=  8    1.448E+01    1.414E+01    1.445E+01    1.455E+01    1.457E+01
IY=  7    1.937E+01    1.878E+01    1.880E+01    1.865E+01    1.853E+01
IY=  6    3.126E+01    2.963E+01    2.762E+01    2.612E+01    2.527E+01
IY=  5    4.097E+01    3.842E+01    3.480E+01    3.216E+01    3.071E+01
IY=  4    6.328E+01    5.811E+01    4.879E+01    4.260E+01    3.941E+01
IY=  3    1.061E+02    7.883E+01    6.155E+01    5.120E+01    4.618E+01
IY=  2    1.031E+02    8.691E+01    6.684E+01    5.428E+01    4.832E+01
IY=  1    1.054E+02    8.766E+01    6.740E+01    5.328E+01    4.757E+01
 IX=         1            2            3            4            5
IY= 16   -2.459E+00
IY= 15   -1.309E+00
IY= 14    1.459E+00
IY= 13    4.585E+00
IY= 12    8.483E+00
IY= 11    9.404E+00
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IY= 10    1.121E+01
IY=  9    1.335E+01
IY=  8    1.458E+01
IY=  7    1.839E+01
IY=  6    2.435E+01
IY=  5    2.914E+01
IY=  4    3.598E+01
IY=  3    4.097E+01
IY=  2    4.281E+01
IY=  1    4.287E+01
 IX=      6
FIELD VALUES OF KE
IY= 16    1.426E+02    1.426E+02    1.421E+02    1.418E+02    1.416E+02
IY= 15    1.671E+02    1.668E+02    1.656E+02    1.646E+02    1.637E+02
IY= 14    3.408E+02    3.389E+02    3.309E+02    3.243E+02    3.186E+02
IY= 13    7.544E+02    7.460E+02    7.145E+02    6.920E+02    6.762E+02
IY= 12    1.492E+03    1.461E+03    1.353E+03    1.281E+03    1.238E+03
IY= 11    1.689E+03    1.651E+03    1.519E+03    1.432E+03    1.381E+03
IY= 10    2.115E+03    2.057E+03    1.864E+03    1.738E+03    1.666E+03
IY=  9    2.699E+03    2.606E+03    2.308E+03    2.117E+03    2.009E+03
IY=  8    3.055E+03    2.937E+03    2.572E+03    2.338E+03    2.207E+03
IY=  7    4.219E+03    4.007E+03    3.413E+03    3.034E+03    2.826E+03
IY=  6    6.501E+03    5.984E+03    4.812E+03    4.090E+03    3.709E+03
IY=  5    8. 96E+03    7.577E+03    5.923E+03    4.917E+03    4.394E+03
IY=  4    1.204E+04    1.003E+04    7.345E+03    5.806E+03    5.060E+03
IY=  3    1.719E+04    1.106E+04    7.668E+03    5.859E+03    5.064E+03
IY=  2    8.721E+03    7.254E+03    5.097E+03    3.990E+03    3.855E+03
IY=  1    4.536E+01    3.233E+01    2.001E+01    1.303E+01    3.194E+03
 IX=      1            2            3            4            5
IY= 16    1.413E+02
IY= 15    1.626E+02
IY= 14    3.107E+02
IY= 13    6.565E+02
IY= 12    1.191E+03
IY= 11    1.324E+03
IY= 10    1.588E+03
IY=  9    1.892E+03
IY=  8    2.066E+03
IY=  7    2.602E+03
IY=  6    3.300E+03
IY=  5    3.835E+03
IY=  4    4.282E+03
IY=  3    4.281E+03
IY=  2    3.740E+03
IY=  1    3.642E+03
 IX=      6
FIELD VALUES OF EP
IY= 16    1.597E+02    1.593E+02    1.580E+02    1.570E+02    1.564E+02
IY= 15    2.156E+02    2.146E+02    2.109E+02    2.081E+02    2.060E+02
IY= 14    6.873E+02    6.793E+02    6.482E+02    6.247E+02    6.068E+02
IY= 13    2.409E+03    2.356E+03    2.164E+03    2.032E+03    1.948E+03
IY= 12    7.195E+03    6.928E+03    6.022E+03    5.434E+03    5.097E+03
IY= 11    8.640E+03    8.294E+03    7.142E+03    6.397E+03    5.973E+03
IY= 10    1.222E+04    1.164E+04    9.788E+03    8.606E+03    7.947E+03
IY=  9    1.815E+04    1.706E+04    1.386E+04    1.185E+04    1.076E+04
IY=  8    2.204E+04    2.058E+04    1.645E+04    1.387E+04    1.248E+04
IY=  7    3.568E+04    3.272E+04    2.523E+04    2.062E+04    1.818E+04
IY=  6    7.075E+04    6.198E+04    4.432E+04    3.394E+04    2.872E+04
IY=  5    1.023E+05    8.719E+04    6.045E+04    4.499E+04    3.737E+04
IY=  4    1.777E+05    1.374E+05    8.795E+04    6.111E+04    4.880E+04
IY=  3    2.930E+05    1.684E+05    1.012E+05    6.683E+04    5.220E+04
IY=  2    1.432E+05    1.102E+05    6.727E+04    4.479E+04    3.813E+04
IY=  1    1.538E+03    9.257E+02    4.508E+02    2.369E+02    2.995E+04
 IX=      1            2            3            4            5
IY= 16    1.556E+02
IY= 15    2.035E+02
IY= 14    5.834E+02
IY= 13    1.848E+03
IY= 12    4.727E+03
IY= 11    5.512E+03
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IY= 10      7.239E+03
IY=  9      9.584E+03
IY=  8      1.099E+04
IY=  7      1.558E+04
IY=  6      2.321E+04
IY=  5      2.934E+04
IY=  4      3.621E+04
IY=  3      3.793E+04
IY=  2      3.211E+04
IY=  1      3.095E+04
 IX=        6
FIELD VALUES OF H1
IY= 16      3.749E+05      3.748E+05      3.742E+05      3.738E+05      3.735E+05
IY= 15      3.722E+05      3.721E+05      3.714E+05      3.708E+05      3.704E+05
IY= 14      3.660E+05      3.655E+05      3.639E+05      3.625E+05      3.613E+05
IY= 13      3.688E+05      3.682E+05      3.659E+05      3.641E+05      3.628E+05
IY= 12      3.803E+05      3.793E+05      3.757E+05      3.732E+05      3.715E+05
IY= 11      3.832E+05      3.822E+05      3.782E+05      3.754E+05      3.737E+05
IY= 10      3.891E+05      3.879E+05      3.831E+05      3.799E+05      3.779E+05
IY=  9      3.963E+05      3.947E+05      3.889E+05      3.850E+05      3.826E+05
IY=  8      4.003E+05      3.986E+05      3.922E+05      3.878E+05      3.852E+05
IY=  7      4.126E+05      4.103E+05      4.022E+05      3.965E+05      3.931E+05
IY=  6      4.309E+05      4.275E+05      4.161E+05      4.080E+05      4.032E+05
IY=  5      4.453E+05      4.408E+05      4.269E+05      4.170E+05      4.111E+05
IY=  4      4.688E+05      4.617E+05      4.420E+05      4.281E+05      4.201E+05
IY=  3      5.065E+05      4.800E+05      4.533E+05      4.353E+05      4.253E+05
IY=  2      5.065E+05      4.882E+05      4.572E+05      4.355E+05      4.242E+05
IY=  1      5.108E+05      4.902E+05      4.577E+05      4.325E+05      4.221E+05
 IX=        1              2              3              4              5
IY= 16      3.732E+05
IY= 15      3.699E+05
IY= 14      3.596E+05
IY= 13      3.610E+05
IY= 12      3.696E+05
IY= 11      3.717E+05
IY= 10      3.757E+05
IY=  9      3.799E+05
IY=  8      3.823E+05
IY=  7      3.893E+05
IY=  6      3.978E+05
IY=  5      4.044E+05
IY=  4      4.110E+05
IY=  3      4.142E+05
IY=  2      4.133E+05
IY=  1      4.129E+05
 IX=        6
FIELD VALUES OF TMP1
IY= 16      3.734E+02      3.733E+02      3.727E+02      3.723E+02      3.721E+02
IY= 15      3.708E+02      3.706E+02      3.699E+02      3.693E+02      3.689E+02
IY= 14      3.645E+02      3.641E+02      3.624E+02      3.610E+02      3.598E+02
IY= 13      3.674E+02      3.668E+02      3.644E+02      3.627E+02      3.613E+02
IY= 12      3.788E+02      3.778E+02      3.742E+02      3.717E+02      3.700E+02
IY= 11      3.817E+02      3.806E+02      3.767E+02      3.739E+02      3.722E+02
IY= 10      3.876E+02      3.863E+02      3.816E+02      3.784E+02      3.764E+02
IY=  9      3.947E+02      3.932E+02      3.874E+02      3.834E+02      3.810E+02
IY=  8      3.987E+02      3.970E+02      3.907E+02      3.863E+02      3.836E+02
IY=  7      4.109E+02      4.087E+02      4.006E+02      3.949E+02      3.916E+02
IY=  6      4.292E+02      4.258E+02      4.144E+02      4.064E+02      4.016E+02
IY=  5      4.435E+02      4.391E+02      4.252E+02      4.153E+02      4.094E+02
IY=  4      4.669E+02      4.598E+02      4.402E+02      4.264E+02      4.184E+02
IY=  3      5.045E+02      4.781E+02      4.515E+02      4.335E+02      4.236E+02
IY=  2      5.045E+02      4.863E+02      4.554E+02      4.338E+02      4.225E+02
IY=  1      5.087E+02      4.882E+02      4.559E+02      4.308E+02      4.205E+02
 IX=        1              2              3              4              5
IY= 16      3.718E+02
IY= 15      3.684E+02
IY= 14      3.581E+02
IY= 13      3.596E+02
IY= 12      3.681E+02
IY= 11      3.702E+02
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IY= 10    3.742E+02
IY=  9    3.7B4E+02
IY=  8    3.807E+02
IY=  7    3.878E+02
IY=  6    3.962E+02
IY=  5    4.027E+02
IY=  4    4.094E+02
IY=  3    4.126E+02
IY=  2    4.116E+02
IY=  1    4.113E+02
 IX=      6
FIELD VALUES OF RHO1
IY= 16    9.487E-01    9.491E-01    9.506E-01    9.516E-01    9.523E-01
IY= 15    9.555E-01    9.560E-01    9.578E-01    9.592E-01    9.603E-01
IY= 14    9.719E-01    9.730E-01    9.774E-01    9.812E-01    9.845E-01
IY= 13    9.642E-01    9.659E-01    9.720E-01    9.767E-01    9.804E-01
IY= 12    9.351E-01    9.375E-01    9.466E-01    9.531E-01    9.573E-01
IY= 11    9.280E-01    9.306E-01    9.404E-01    9.473E-01    9.518E-01
IY= 10    9.139E-01    9.169E-01    9.283E-01    9.363E-01    9.412E-01
IY=  9    8.974E-01    9.010E-01    9.145E-01    9.240E-01    9.297E-01
IY=  8    8.883E-01    8.922E-01    9.068E-01    9.172E-01    9.234E-01
IY=  7    8.619E-01    8.668E-01    8.845E-01    8.971E-01    9.049E-01
IY=  6    8.250E-01    8.322E-01    8.551E-01    8.720E-01    8.823E-01
IY=  5    7.983E-01    8.073E-01    8.336E-01    8.534E-01    8.656E-01
IY=  4    7.574E-01    7.714E-01    8.055E-01    8.314E-01    8.471E-01
IY=  3    7.020E-01    7.417E-01    7.857E-01    8.180E-01    8.370E-01
IY=  2    7.013E-01    7.296E-01    7.791E-01    8.176E-01    8.392E-01
IY=  1    6.962E-01    7.270E-01    7.783E-01    8.234E-01    8.434E-01
 IX=      1            2            3            4            5
IY= 16    9.530E-01
IY= 15    9.617E-01
IY= 14    9.891E-01
IY= 13    9.852E-01
IY= 12    9.624E-01
IY= 11    9.570E-01
IY= 10    9.468E-01
IY=  9    9.363E-01
IY=  8    9.306E-01
IY=  7    9.137E-01
IY=  6    8.943E-01
IY=  5    8.799E-01
IY=  4    8.657E-01
IY=  3    8.591E-01
IY=  2    8.611E-01
IY=  1    8.619E-01
 IX=      6

**********************************************************
TIME STP=     1 SWEEP NO=    550 ZSLAB NO=     16 ITERN NO=       1


FLOW FIELD AT ITHYD=  1, IZ= 16, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16    3.112E+01    3.315E+01    3.194E+01    3.093E+01    3.005E+01
IY= 15    6.877E-01    3.362E+00    3.632E+00    3.857E+00    3.812E+00
IY= 14   -1.871E+01   -1.588E+01   -1.638E+01   -1.670E+01   -1.722E+01
IY= 13   -1.087E+01   -6.057E-01   -1.175E+01   -1.950E+01   -2.510E+01
IY= 12    4.661E+01    7.433E+01    1.509E+01   -1.930E+01   -3.809E+01
IY= 11    8.525E+01    1.193E+02    3.976E+01   -4.546E+00   -2.830E+01
IY= 10    1.937E+02    2.437E+02    1.025E+02    3.137E+01   -4.719E+00
IY=  9    3.806E+02    4.568E+02    1.853E+02    7.101E+01    1.757E+01
IY=  8    5.002E+02    5.776E+02    2.326E+02    9.350E+01    3.013E+01
IY=  7    9.820E+02    1.057E+03    4.565E+02    2.187E+02    1.115E+02
IY=  6    1.832E+03    1.878E+03    7.810E+02    3.706E+02    1.968E+02
IY=  5    2.649E+03    2.637E+03    1.099E+03    5.341E+02    2.973E+02
IY=  4    3.622E+03    3.241E+03    1.247E+03    5.891E+02    3.276E+02
IY=  3    1.354E+03    9.247E+02    6.173E+02    3.859E+02    2.300E+02
IY=  2    5.165E+02    6.022E+02    3.233E+02    2.115E+02    1.289E+02
IY=  1    5.844E+02    6.438E+02    3.454E+02    2.271E+02    1.607E+02
 IX=      1            2            3            4            5
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IY= 16    2.297E+01
IY= 15    4.784E+00
IY= 14   -6.699E+00
IY= 13   -6.202E+00
IY= 12   -3.120E+00
IY= 11    1.271E+00
IY= 10    1.021E+01
IY=  9    1.845E+01
IY=  8    2.318E+01
IY=  7    4.403E+01
IY=  6    6.206E+01
IY=  5    8.074E+01
IY=  4    8.544E+01
IY=  3    7.507E+01
IY=  2    6.110E+01
IY=  1    7.029E+01
 IX=      6
FIELD VALUES OF U1
IY= 16    2.755E-01    7.007E-01    9.363E-01    1.206E+00    1.346E+00
IY= 15    1.065E-01    4.144E-01    5.474E-01    6.582E-01    6.825E-01
IY= 14    5.220E-02    2.356E-01    2.455E-01    1.717E-01    7.888E-02
IY= 13    2.348E-01    9.077E-01    9.700E-01    8.259E-01    6.562E-01
IY= 12    6.845E-01    2.605E+00    2.685E+00    2.321E+00    1.990E+00
IY= 11    7.855E-01    3.046E+00    3.117E+00    2.703E+00    2.358E+00
IY= 10    1.008E+00    4.095E+00    4.086E+00    3.542E+00    3.169E+00
IY=  9    1.356E+00    5.649E+00    5.393E+00    4.605E+00    4.156E+00
IY=  8    1.590E+00    6.497E+00    6.125E+00    5.208E+00    4.720E+00
IY=  7    2.340E+00    8.938E+00    8.302E+00    7.042E+00    6.496E+00
IY=  6    3.654E+00    1.245E+01    1.122E+01    9.292E+00    8.554E+00
IY=  5    4.676E+00    1.472E+01    1.318E+01    1.088E+01    1.007E+01
IY=  4    6.701E+00    1.557E+01    1.362E+01    1.126E+01    1.048E+01
IY=  3    6.285E+00    9.515E+00    9.821E+00    9.436E+00    9.199E+00
IY=  2    2.949E+00    7.838E+00    8.226E+00    8.193E+00    8.069E+00
IY=  1    2.165E+00    7.971E+00    8.194E+00    8.028E+00    8.014E+00
 IX=      1            2            3            4            5
FIELD VALUES OF V1
IY= 15    3.217E+00    3.231E+00    3.265E+00    3.305E+00    3.353E+00
IY= 14    4.546E+00    4.545E+00    4.507E+00    4.490E+00    4.493E+00
IY= 13    5.135E+00    5.141E+00    4.892E+00    4.727E+00    4.639E+00
IY= 12    7.056E+00    7.025E+00    5.917E+00    5.228E+00    4.892E+00
IY= 11    7.631E+00    7.586E+00    6.193E+00    5.347E+00    4.923E+00
IY= 10    8.589E+00    8.521E+00    6.624E+00    5.511E+00    4.951E+00
IY=  9    1.046E+01    1.031E+01    7.341E+00    5.712E+00    4.922E+00
IY=  8    1.091E+01    1.066E+01    7.503E+00    5.734E+00    4.868E+00
IY=  7    1.133E+01    1.100E+01    7.687E+00    5.779E+00    4.828E+00
IY=  6    1.265E+01    1.207E+01    7.648E+00    5.204E+00    4.043E+00
IY=  5    1.159E+01    1.088E+01    6.898E+00    4.671E+00    3.599E+00
IY=  4    5.536E+00    3.394E+00    1.820E+00    1.253E+00    1.022E+00
IY=  3   -6.045E+00   -1.013E+01   -4.556E+00   -2.032E+00   -1.129E+00
IY=  2   -4.600E+00   -4.399E+00   -3.149E+00   -2.010E+00   -1.336E+00
IY=  1   -5.758E-01   -1.111E+00   -8.862E-01   -6.024E-01   -3.673E-01
 IX=      1            2            3            4            5
IY= 15    3.435E+00
IY= 14    4.511E+00
IY= 13    4.557E+00
IY= 12    4.592E+00
IY= 11    4.490E+00
IY= 10    4.361E+00
IY=  9    4.104E+00
IY=  8    3.953E+00
IY=  7    3.787E+00
IY=  6    2.803E+00
IY=  5    2.412E+00
IY=  4    7.753E-01
IY=  3   -2.813E-01
IY=  2   -5.902E-01
IY=  1   -2.679E-01
 IX=      6
FIELD VALUES OF W1
IY= 16   -3.141E+00   -3.124E+00   -2.987E+00   -2.869E+00   -2.772E+00
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IY= 15   -1.354E+00   -1.382E+00   -1.353E+00   -1.317E+00   -1.259E+00
IY= 14    1.598E+00    1.552E+00    1.587E+00    1.630E+00    1.703E+00
IY= 13    4.763E+00    4.704E+00    4.845E+00    4.963E+00    5.097E+00
IY= 12    8.493E+00    8.392E+00    8.839E+00    9.097E+00    9.302E+00
IY= 11    9.306E+00    9.170E+00    9.720E+00    1.001E+01    1.022E+01
IY= 10    1.094E+01    1.066E+01    1.152E+01    1.186E+01    1.205E+01
IY=  9    1.269E+01    1.211E+01    1.382E+01    1.419E+01    1.431E+01
IY=  8    1.374E+01    1.317E+01    1.518E+01    1.554E+01    1.560E+01
IY=  7    1.774E+01    1.709E+01    1.949E+01    1.971E+01    1.955E+01
IY=  6    2.578E+01    2.457E+01    2.734E+01    2.686E+01    2.606E+01
IY=  5    3.318E+01    3.136E+01    3.378E+01    3.260E+01    3.126E+01
IY=  4    4.933E+01    4.556E+01    4.604E+01    4.239E+01    3.961E+01
IY=  3    9.993E+01    7.829E+01    6.156E+01    5.153E+01    4.666E+01
IY=  2    9.954E+01    8.628E+01    6.762E+01    5.528E+01    4.936E+01
IY=  1    1.034E+02    8.830E+01    6.974E+01    5.543E+01    4.906E+01
 IX=        1            2            3            4            5
IY= 16   -2.619E+00
IY= 15   -1.120E+00
IY= 14    1.893E+00
IY= 13    5.403E+00
IY= 12    9.739E+00
IY= 11    1.066E+01
IY= 10    1.243E+01
IY=  9    1.455E+01
IY=  8    1.574E+01
IY=  7    1.932E+01
IY=  6    2.494E+01
IY=  5    2.938E+01
IY=  4    3.614E+01
IY=  3    4.152E+01
IY=  2    4.399E+01
IY=  1    4.419E+01
 IX=        6
FIELD VALUES OF KE
IY= 16    1.793E+02    1.793E+02    1.793E+02    1.793E+02    1.794E+02
IY= 15    2.208E+02    2.206E+02    2.195E+02    2.188E+02    2.183E+02
IY= 14    4.542E+02    4.523E+02    4.438E+02    4.373E+02    4.322E+02
IY= 13    9.078E+02    8.995E+02    8.659E+02    8.424E+02    8.273E+02
IY= 12    1.658E+03    1.629E+03    1.517E+03    1.441E+03    1.399E+03
IY= 11    1.833E+03    1.799E+03    1.667E+03    1.579E+03    1.530E+03
IY= 10    2.213E+03    2.163E+03    1.980E+03    1.858E+03    1.789E+03
IY=  9    2.742E+03    2.664E+03    2.388E+03    2.205E+03    2.103E+03
IY=  8    3.052E+03    2.955E+03    2.623E+03    2.403E+03    2.281E+03
IY=  7    4.004E+03    3.842E+03    3.340E+03    3.006E+03    2.822E+03
IY=  6    5.970E+03    5.580E+03    4.579E+03    3.944E+03    3.609E+03
IY=  5    7.457E+03    6.859E+03    5.501E+03    4.648E+03    4.203E+03
IY=  4    1.038E+04    8.974E+03    6.726E+03    5.424E+03    4.794E+03
IY=  3    1.387E+04    9.513E+03    6.902E+03    5.441E+03    4.792E+03
IY=  2    7.365E+03    6.337E+03    4.625E+03    3.736E+03    3.685E+03
IY=  1    4.368E+01    3.273E+01    2.137E+01    1.409E+01    3.066E+03
 IX=        1            2            3            4            5
IY= 16    1.796E+02
IY= 15    2.177E+02
IY= 14    4.250E+02
IY= 13    8.088E+02
IY= 12    1.352E+03
IY= 11    1.475E+03
IY= 10    1.715E+03
IY=  9    1.992E+03
IY=  8    2.148E+03
IY=  7    2.618E+03
IY=  6    3.240E+03
IY=  5    3.708E+03
IY=  4    4.115E+03
IY=  3    4.133E+03
IY=  2    3.653E+03
IY=  1    3.563E+03
 IX=        6
FIELD VALUES OF EP
IY= 16    2.633E+02    2.627E+02    2.600E+02    2.582E+02    2.574E+02
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IY= 15    3.750E+02    3.734E+02    3.660E+02    3.609E+02    3.578E+02
IY= 14    1.090E+03    1.079E+03    1.033E+03    9.999E+02    9.772E+02
IY= 13    3.160E+03    3.100E+03    2.859E+03    2.696E+03    2.597E+03
IY= 12    8.341E+03    8.075E+03    7.060E+03    6.388E+03    6.014E+03
IY= 11    9.679E+03    9.349E+03    8.122E+03    7.307E+03    6.854E+03
IY= 10    1.302E+04    1.250E+04    1.065E+04    9.417E+03    8.742E+03
IY=  9    1.864E+04    1.770E+04    1.460E+04    1.256E+04    1.146E+04
IY=  8    2.217E+04    2.093E+04    1.702E+04    1.446E+04    1.309E+04
IY=  7    3.357E+04    3.127E+04    2.478E+04    2.053E+04    1.827E+04
IY=  6    6.485E+04    5.801E+04    4.246E+04    3.295E+04    2.818E+04
IY=  5    8.978E+04    7.859E+04    5.615E+04    4.263E+04    3.593E+04
IY=  4    1.532E+05    1.235E+05    8.012E+04    5.677E+04    4.620E+04
IY=  3    2.305E+05    1.394E+05    8.800E+04    6.038E+04    4.841E+04
IY=  2    1.174E+05    9.304E+04    5.910E+04    4.080E+04    3.567E+04
IY=  1    1.454E+03    9.432E+02    4.976E+02    2.665E+02    2.818E+04
 IX=        1            2            3            4            5
IY= 16    2.564E+02
IY= 15    3.543E+02
IY= 14    9.480E+02
IY= 13    2.482E+03
IY= 12    5.602E+03
IY= 11    6.358E+03
IY= 10    8.000E+03
IY=  9    1.025E+04
IY=  8    1.158E+04
IY=  7    1.576E+04
IY=  6    2.292E+04
IY=  5    2.850E+04
IY=  4    3.495E+04
IY=  3    3.630E+04
IY=  2    3.098E+04
IY=  1    2.992E+04
 IX=        6
FIELD VALUES OF H1
IY= 16    3.915E+05    3.913E+05    3.904E+05    3.898E+05    3.895E+05
IY= 15    3.871E+05    3.868E+05    3.862E+05    3.858E+05    3.855E+05
IY= 14    3.819E+05    3.815E+05    3.802E+05    3.791E+05    3.782E+05
IY= 13    3.858E+05    3.852E+05    3.830E+05    3.815E+05    3.803E+05
IY= 12    3.964E+05    3.954E+05    3.918E+05    3.893E+05    3.878E+05
IY= 11    3.987E+05    3.977E+05    3.938E+05    3.911E+05    3.895E+05
IY= 10    4.034E+05    4.023E+05    3.978E+05    3.946E+05    3.928E+05
IY=  9    4.093E+05    4.080E+05    4.025E+05    3.986E+05    3.965E+05
IY=  8    4.123E+05    4.110E+05    4.050E+05    4.009E+05    3.985E+05
IY=  7    4.210E+05    4.194E+05    4.124E+05    4.075E+05    4.046E+05
IY=  6    4.347E+05    4.324E+05    4.233E+05    4.165E+05    4.125E+05
IY=  5    4.446E+05    4.417E+05    4.314E+05    4.234E+05    4.186E+05
IY=  4    4.629E+05    4.584E+05    4.438E+05    4.325E+05    4.259E+05
IY=  3    4.953E+05    4.757E+05    4.538E+05    4.387E+05    4.302E+05
IY=  2    5.008E+05    4.853E+05    4.582E+05    4.393E+05    4.295E+05
IY=  1    5.051E+05    4.876E+05    4.591E+05    4.368E+05    4.277E+05
 IX=        1            2            3            4            5
IY= 16    3.891E+05
IY= 15    3.852E+05
IY= 14    3.769E+05
IY= 13    3.788E+05
IY= 12    3.860E+05
IY= 11    3.877E+05
IY= 10    3.908E+05
IY=  9    3.941E+05
IY=  8    3.959E+05
IY=  7    4.013E+05
IY=  6    4.079E+05
IY=  5    4.130E+05
IY=  4    4.182E+05
IY=  3    4.208E+05
IY=  2    4.200E+05
IY=  1    4.197E+05
 IX=        6
FIELD VALUES OF TMP1
IY= 16    3.900E+02    3.897E+02    3.889E+02    3.883E+02    3.879E+02
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IY= 15    3.855E+02    3.853E+02    3.847E+02    3.842E+02    3.840E+02
IY= 14    3.804E+02    3.800E+02    3.786E+02    3.776E+02    3.767E+02
IY= 13    3.843E+02    3.837E+02    3.815E+02    3.799E+02    3.788E+02
IY= 12    3.948E+02    3.938E+02    3.902E+02    3.878E+02    3.862E+02
IY= 11    3.971E+02    3.961E+02    3.922E+02    3.895E+02    3.879E+02
IY= 10    4.018E+02    4.007E+02    3.962E+02    3.930E+02    3.912E+02
IY=  9    4.076E+02    4.064E+02    4.008E+02    3.971E+02    3.949E+02
IY=  8    4.107E+02    4.093E+02    4.034E+02    3.993E+02    3.969E+02
IY=  7    4.193E+02    4.177E+02    4.108E+02    4.058E+02    4.030E+02
IY=  6    4.330E+02    4.307E+02    4.216E+02    4.149E+02    4.109E+02
IY=  5    4.428E+02    4.400E+02    4.297E+02    4.217E+02    4.170E+02
IY=  4    4.610E+02    4.566E+02    4.420E+02    4.308E+02    4.242E+02
IY=  3    4.933E+02    4.738E+02    4.520E+02    4.369E+02    4.285E+02
IY=  2    4.988E+02    4.834E+02    4.564E+02    4.375E+02    4.277E+02
IY=  1    5.031E+02    4.857E+02    4.573E+02    4.351E+02    4.260E+02
 IX=         1            2            3            4            5
IY= 16    3.875E+02
IY= 15    3.837E+02
IY= 14    3.754E+02
IY= 13    3.773E+02
IY= 12    3.845E+02
IY= 11    3.861E+02
IY= 10    3.892E+02
IY=  9    3.___E+02
IY=  8    3.943E+02
IY=  7    3.997E+02
IY=  6    4.063E+02
IY=  5    4.113E+02
IY=  4    4.166E+02
IY=  3    4.191E+02
IY=  2    4.183E+02
IY=  1    4.180E+02
 IX=         6
FIELD VALUES OF RHO1
IY= 16    9.088E-01    9.094E-01    9.113E-01    9.128E-01    9.136E-01
IY= 15    9.190E-01    9.196E-01    9.210E-01    9.221E-01    9.227E-01
IY= 14    9.313E-01    9.322E-01    9.355E-01    9.381E-01    9.403E-01
IY= 13    9.219E-01    9.234E-01    9.285E-01    9.323E-01    9.350E-01
IY= 12    8.978E-01    9.002E-01    9.080E-01    9.135E-01    9.169E-01
IY= 11    8.929E-01    8.954E-01    9.036E-01    9.094E-01    9.130E-01
IY= 10    8.834E-01    8.862E-01    8.952E-01    9.017E-01    9.055E-01
IY=  9    8.724E-01    8.758E-01    8.854E-01    8.929E-01    8.973E-01
IY=  8    8.669E-01    8.704E-01    8.803E-01    8.881E-01    8.928E-01
IY=  7    8.531E-01    8.570E-01    8.663E-01    8.749E-01    8.802E-01
IY=  6    8.330E-01    8.379E-01    8.468E-01    8.571E-01    8.639E-01
IY=  5    8.210E-01    8.262E-01    8.334E-01    8.445E-01    8.522E-01
IY=  4    7.959E-01    8.008E-01    8.114E-01    8.272E-01    8.378E-01
IY=  3    7.278E-01    7.545E-01    7.886E-01    8.139E-01    8.287E-01
IY=  2    7.139E-01    7.373E-01    7.787E-01    8.115E-01    8.293E-01
IY=  1    7.083E-01    7.341E-01    7.774E-01    8.161E-01    8.329E-01
 IX=         1            2            3            4            5
IY= 16    9.144E-01
IY= 15    9.234E-01
IY= 14    9.437E-01
IY= 13    9.388E-01
IY= 12    9.214E-01
IY= 11    9.175E-01
IY= 10    9.104E-01
IY=  9    9.028E-01
IY=  8    8.987E-01
IY=  7    8.867E-01
IY=  6    8.725E-01
IY=  5    8.620E-01
IY=  4    8.512E-01
IY=  3    8.460E-01
IY=  2    8.475E-01
IY=  1    8.481E-01
 IX=         6

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TIME STP=     1 SWEEP NO=   550 ZSLAB NO=    17 ITERN NO=      1


FLOW FIELD AT ITHYD=  1, IZ= 17, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16    4.164E+01    4.478E+01    4.398E+01    4.335E+01    4.277E+01
IY= 15    1.860E+01    2.304E+01    2.278E+01    2.239E+01    2.195E+01
IY= 14   -6.057E-01    6.623E+00    8.408E+00    9.779E+00    1.100E+01
IY= 13   -1.357E+01    9.575E+00    1.287E+01    1.531E+01    1.762E+01
IY= 12   -3.070E+01    2.455E+01    2.261E+01    2.134E+01    2.165E+01
IY= 11   -3.314E+01    3.177E+01    2.725E+01    2.483E+01    2.429E+01
IY= 10   -2.890E+01    5.580E+01    4.266E+01    3.581E+01    3.236E+01
IY=  9    4.899E+01    1.534E+02    6.035E+01    4.518E+01    3.738E+01
IY=  8    5.249E+01    1.697E+02    6.504E+01    4.527E+01    3.528E+01
IY=  7    1.206E+02    2.750E+02    1.180E+02    7.706E+01    5.487E+01
IY=  6    1.963E+02    3.900E+02    1.719E+02    9.808E+01    6.190E+01
IY=  5    3.224E+02    5.426E+02    2.281E+02    1.258E+02    7.712E+01
IY=  4    4.290E+02    6.928E+02    2.508E+02    1.264E+02    8.230E+01
IY=  3    3.130E+02    4.059E+02   -1.354E+02    5.760E+01    6.294E+01
IY=  2    3.683E+02    4.059E+02    1.383E+02    1.029E+02    8.407E+01
IY=  1    4.029E+02    4.310E+02    1.350E+02    8.800E+01    6.505E+01
 IX=        1            2            3            4            5
IY= 16    3.378E+01
IY= 15    1.680E+01
IY= 14    1.086E+01
IY= 13    2.083E+01
IY= 12    3.499E+01
IY= 11    3.865E+01
IY= 10    4.588E+01
IY=  9    5.264E+01
IY=  8    5.535E+01
IY=  7    6.750E+01
IY=  6    7.460E+01
IY=  5    8.077E+01
IY=  4    7.762E+01
IY=  3    7.019E+01
IY=  2    7.052E+01
IY=  1    6.221E+01
 IX=        6
FIELD VALUES OF U1
IY= 16    4.045E-01    1.043E+00    1.399E+00    1.807E+00    2.017E+00
IY= 15    2.094E-01    7.736E-01    1.042E+00    1.312E+00    1.435E+00
IY= 14    1.950E-01    7.116E-01    8.870E-01    1.013E+00    1.059E+00
IY= 13    4.788E-01    1.726E+00    2.065E+00    2.238E+00    2.278E+00
IY= 12    1.073E+00    3.781E+00    4.325E+00    4.455E+00    4.417E+00
IY= 11    1.188E+00    4.222E+00    4.801E+00    4.922E+00    4.874E+00
IY= 10    1.441E+00    5.211E+00    5.802E+00    5.877E+00    5.803E+00
IY=  9    1.814E+00    6.679E+00    7.075E+00    7.013E+00    6.873E+00
IY=  8    2.003E+00    7.381E+00    7.744E+00    7.619E+00    7.443E+00
IY=  7    2.509E+00    9.213E+00    9.592E+00    9.333E+00    9.088E+00
IY=  6    3.119E+00    1.123E+01    1.152E+01    1.096E+01    1.057E+01
IY=  5    3.506E+00    1.252E+01    1.267E+01    1.193E+01    1.148E+01
IY=  4    3.571E+00    1.237E+01    1.167E+01    1.100E+01    1.066E+01
IY=  3    1.706E+00    3.001E-04    5.606E+00    7.976E+00    8.464E+00
IY=  2    2.480E+00    7.324E+00    7.836E+00    8.425E+00    8.521E+00
IY=  1    2.250E+00    9.019E+00    8.366E+00    8.565E+00    8.520E+00
 IX=        1            2            3            4            5
FIELD VALUES OF V1
IY= 15    5.579E+00    5.586E+00    5.564E+00    5.566E+00    5.596E+00
IY= 14    7.941E+00    7.937E+00    7.841E+00    7.787E+00    7.778E+00
IY= 13    9.513E+00    9.524E+00    9.161E+00    8.915E+00    8.788E+00
IY= 12    1.207E+01    1.208E+01    1.090E+01    1.012E+01    9.709E+00
IY= 11    1.256E+01    1.254E+01    1.113E+01    1.022E+01    9.738E+00
IY= 10    1.333E+01    1.327E+01    1.147E+01    1.034E+01    9.750E+00
IY=  9    1.464E+01    1.452E+01    1.183E+01    1.033E+01    9.563E+00
IY=  8    1.447E+01    1.435E+01    1.179E+01    1.022E+01    9.402E+00
IY=  7    1.439E+01    1.426E+01    1.174E+01    1.010E+01    9.233E+00
IY=  6    1.298E+01    1.278E+01    9.974E+00    8.171E+00    7.254E+00
IY=  5    1.232E+01    1.209E+01    9.194E+00    7.466E+00    6.610E+00
IY=  4    7.458E+00    7.186E+00    4.339E+00    3.453E+00    3.171E+00
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IY=  3    2.818E-05   -3.439E-05   -1.219E+00    2.419E-01    7.974E-01
IY=  2   -9.134E-01   -1.189E+00    1.911E+00    9.804E-01    7.523E-01
IY=  1   -3.167E-03   -2.952E-01    5.303E-01    2.364E-01    1.733E-01
 IX=         1            2            3            4            5
IY= 15    5.653E+00
IY= 14    7.782E+00
IY= 13    8.656E+00
IY= 12    9.296E+00
IY= 11    9.231E+00
IY= 10    9.113E+00
IY=  9    8.751E+00
IY=  8    8.533E+00
IY=  7    8.280E+00
IY=  6    6.266E+00
IY=  5    5.671E+00
IY=  4    2.876E+00
IY=  3    1.243E+00
IY=  2    6.005E-01
IY=  1    2.235E-01
 IX=         6
FIELD VALUES OF W1
IY= 16   -2.942E+00   -2.880E+00   -2.706E+00   -2.560E+00   -2.455E+00
IY= 15   -6.774E-01   -6.540E-01   -6.592E-01   -6.666E-01   -6.691E-01
IY= 14    2.010E+00    2.055E+00    2.151E+00    2.222E+00    2.281E+00
IY= 13    4.553E+00    4.717E+00    5.182E+00    5.500E+00    5.718E+00
IY= 12    6.727E+00    7.053E+00    8.637E+00    9.514E+00    9.969E+00
IY= 11    6.955E+00    7.263E+00    9.206E+00    1.024E+01    1.075E+01
IY= 10    7.133E+00    7.225E+00    1.027E+01    1.166E+01    1.229E+01
IY=  9    7.025E+00    5.878E+00    1.159E+01    1.344E+01    1.420E+01
IY=  8    5.555E+00    5.022E+00    1.230E+01    1.442E+01    1.525E+01
IY=  7    4.606E+00    4.389E+00    1.447E+01    1.732E+01    1.833E+01
IY=  6    6.964E-05    2.501E-04    1.791E+01    2.219E+01    2.341E+01
IY=  5    2.638E-04    1.006E-03    2.096E+01    2.600E+01    2.732E+01
IY=  4    2.840E-04    1.047E-03    2.864E+01    3.373E+01    3.448E+01
IY=  3    8.589E+01    7.957E+01    4.551E+01    4.337E+01    4.192E+01
IY=  2    8.535E+01    7.841E+01    5.869E+01    4.982E+01    4.645E+01
IY=  1    8.678E+01    7.870E+01    6.029E+01    4.968E+01    4.634E+01
 IX=         1            2            3            4            5
IY= 16   -2.318E+00
IY= 15   -6.671E-01
IY= 14    2.371E+00
IY= 13    6.008E+00
IY= 12    1.051E+01
IY= 11    1.136E+01
IY= 10    1.302E+01
IY=  9    1.503E+01
IY=  8    1.614E+01
IY=  7    1.937E+01
IY=  6    2.451E+01
IY=  5    2.843E+01
IY=  4    3.479E+01
IY=  3    4.035E+01
IY=  2    4.356E+01
IY=  1    4.379E+01
 IX=         6
FIELD VALUES OF KE
IY= 16    1.973E+02    1.976E+02    1.981E+02    1.987E+02    1.995E+02
IY= 15    2.567E+02    2.566E+02    2.554E+02    2.548E+02    2.547E+02
IY= 14    5.500E+02    5.481E+02    5.394E+02    5.335E+02    5.301E+02
IY= 13    1.046E+03    1.038E+03    1.007E+03    9.851E+02    9.723E+02
IY= 12    1.767E+03    1.744E+03    1.648E+03    1.582E+03    1.544E+03
IY= 11    1.910E+03    1.883E+03    1.775E+03    1.701E+03    1.657E+03
IY= 10    2.209E+03    2.173E+03    2.029E+03    1.930E+03    1.874E+03
IY=  9    2.615E+03    2.562E+03    2.342E+03    2.201E+03    2.122E+03
IY=  8    2.832E+03    2.768E+03    2.511E+03    2.346E+03    2.255E+03
IY=  7    3.444E+03    3.350E+03    2.992E+03    2.760E+03    2.633E+03
IY=  6    4.522E+03    4.341E+03    3.707E+03    3.310E+03    3.103E+03
IY=  5    5.295E+03    5.041E+03    4.200E+03    3.684E+03    3.423E+03
IY=  4    6.637E+03    6.143E+03    4.638E+03    3.904E+03    3.578E+03
IY=  3    7.055E+03    6.154E+03    3.985E+03    3.532E+03    3.308E+03
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IY=  2    4.311E+03    3.853E+03    2.839E+03    2.467E+03    2.582E+03
IY=  1    3.166E+01    2.654E+01    1.646E+01    1.160E+01    2.178E+03
 IX=      1            2            3            4            5
IY= 16    2.004E+02
IY= 15    2.547E+02
IY= 14    5.265E+02
IY= 13    9.581E+02
IY= 12    1.501E+03
IY= 11    1.609E+03
IY= 10    1.810E+03
IY=  9    2.033E+03
IY=  8    2.152E+03
IY=  7    2.488E+03
IY=  6    2.870E+03
IY=  5    3.128E+03
IY=  4    3.234E+03
IY=  3    3.079E+03
IY=  2    2.716E+03
IY=  1    2.654E+03
 IX=      6
FIELD VALUES OF EP
IY= 16    3.192E+02    3.188E+02    3.159E+02    3.145E+02    3.145E+02
IY= 15    4.939E+02    4.916E+02    4.804E+02    4.731E+02    4.694E+02
IY= 14    1.474E+03    1.461E+03    1.403E+03    1.363E+03    1.340E+03
IY= 13    3.910E+03    3.850E+03    3.596E+03    3.420E+03    3.317E+03
IY= 12    9.008E+03    8.794E+03    7.896E+03    7.271E+03    6.913E+03
IY= 11    1.006E+04    9.807E+03    8.772E+03    8.052E+03    7.638E+03
IY= 10    1.257E+04    1.221E+04    1.077E+04    9.769E+03    9.201E+03
IY=  9    1.654E+04    1.596E+04    1.367E+04    1.215E+04    1.131E+04
IY=  8    1.876E+04    1.805E+04    1.530E+04    1.348E+04    1.248E+04
IY=  7    2.530E+04    2.417E+04    2.009E+04    1.739E+04    1.592E+04
IY=  6    4.055E+04    3.792E+04    2.956E+04    2.427E+04    2.156E+04
IY=  5    5.176E+04    4.782E+04    3.622E+04    2.907E+04    2.551E+04
IY=  4    7.693E+04    6.798E+04    4.547E+04    3.418E+04    2.917E+04
IY=  3    1.028E+05    8.175E+04    4.043E+04    3.224E+04    2.795E+04
IY=  2    5.951E+04    4.952E+04    3.094E+04    2.290E+04    2.145E+04
IY=  1    8.970E+02    6.886E+02    3.362E+02    1.990E+02    1.731E+04
 IX=      1            2            3            4            5
IY= 16    3.149E+02
IY= 15    4.656E+02
IY= 14    1.314E+03
IY= 13    3.202E+03
IY= 12    6.503E+03
IY= 11    7.163E+03
IY= 10    8.547E+03
IY=  9    1.034E+04
IY=  8    1.133E+04
IY=  7    1.420E+04
IY=  6    1.846E+04
IY=  5    2.142E+04
IY=  4    2.377E+04
IY=  3    2.334E+04
IY=  2    2.028E+04
IY=  1    1.968E+04
 IX=      6
FIELD VALUES OF H1
IY= 16    4.014E+05    4.011E+05    4.003E+05    3.997E+05    3.993E+05
IY= 15    3.985E+05    3.982E+05    3.976E+05    3.971E+05    3.969E+05
IY= 14    3.970E+05    3.966E+05    3.956E+05    3.949E+05    3.945E+05
IY= 13    4.039E+05    4.034E+05    4.016E+05    4.004E+05    3.997E+05
IY= 12    4.140E+05    4.133E+05    4.105E+05    4.087E+05    4.076E+05
IY= 11    4.158E+05    4.150E+05    4.121E+05    4.102E+05    4.091E+05
IY= 10    4.189E+05    4.181E+05    4.150E+05    4.129E+05    4.117E+05
IY=  9    4.219E+05    4.211E+05    4.181E+05    4.158E+05    4.145E+05
IY=  8    4.235E+05    4.227E+05    4.197E+05    4.174E+05    4.160E+05
IY=  7    4.279E+05    4.272E+05    4.240E+05    4.216E+05    4.201E+05
IY=  6    4.343E+05    4.334E+05    4.299E+05    4.270E+05    4.252E+05
IY=  5    4.384E+05    4.375E+05    4.339E+05    4.309E+05    4.289E+05
IY=  4    4.430E+05    4.420E+05    4.392E+05    4.358E+05    4.333E+05
IY=  3    4.850E+05    4.809E+05    4.445E+05    4.400E+05    4.368E+05
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IY=   2    4.867E+05    4.800E+05    4.566E+05    4.446E+05    4.393E+05
IY=   1    4.888E+05    4.809E+05    4.584E+05    4.440E+05    4.387E+05
 IX=          1            2            3            4            5
IY= 16    3.990E+05
IY= 15    3.967E+05
IY= 14    3.940E+05
IY= 13    3.990E+05
IY= 12    4.064E+05
IY= 11    4.078E+05
IY= 10    4.103E+05
IY=  9    4.130E+05
IY=  8    4.144E+05
IY=  7    4.183E+05
IY=  6    4.230E+05
IY=  5    4.264E+05
IY=  4    4.303E+05
IY=  3    4.329E+05
IY=  2    4.342E+05
IY=  1    4.342E+05
 IX=          6
FIELD VALUES OF TMP1
IY= 16    3.998E+02    3.995E+02    3.987E+02    3.981E+02    3.978E+02
IY= 15    3.969E+02    3.967E+02    3.960E+02    3.956E+02    3.953E+02
IY= 14    3.954E+02    3.951E+02    3.940E+02    3.933E+02    3.929E+02
IY= 13    4.023E+02    4.018E+02    4.000E+02    3.988E+02    3.981E+02
IY= 12    4.124E+02    4.117E+02    4.089E+02    4.070E+02    4.060E+02
IY= 11    4.141E+02    4.134E+02    4.105E+02    4.085E+02    4.074E+02
IY= 10    4.172E+02    4.165E+02    4.134E+02    4.113E+02    4.101E+02
IY=  9    4.202E+02    4.194E+02    4.164E+02    4.142E+02    4.129E+02
IY=  8    4.218E+02    4.210E+02    4.180E+02    4.157E+02    4.143E+02
IY=  7    4.262E+02    4.255E+02    4.223E+02    4.199E+02    4.184E+02
IY=  6    4.325E+02    4.317E+02    4.282E+02    4.253E+02    4.235E+02
IY=  5    4.367E+02    4.358E+02    4.322E+02    4.291E+02    4.272E+02
IY=  4    4.413E+02    4.402E+02    4.375E+02    4.340E+02    4.316E+02
IY=  3    4.831E+02    4.790E+02    4.427E+02    4.382E+02    4.350E+02
IY=  2    4.847E+02    4.781E+02    4.548E+02    4.429E+02    4.375E+02
IY=  1    4.869E+02    4.790E+02    4.566E+02    4.422E+02    4.369E+02
 IX=          1            2            3            4            5
IY= 16    3.974E+02
IY= 15    3.951E+02
IY= 14    3.925E+02
IY= 13    3.974E+02
IY= 12    4.048E+02
IY= 11    4.062E+02
IY= 10    4.087E+02
IY=  9    4.114E+02
IY=  8    4.127E+02
IY=  7    4.166E+02
IY=  6    4.213E+02
IY=  5    4.247E+02
IY=  4    4.285E+02
IY=  3    4.312E+02
IY=  2    4.325E+02
IY=  1    4.325E+02
 IX=          6
FIELD VALUES OF RHO1
IY= 16    8.866E-01    8.872E-01    8.890E-01    8.904E-01    8.911E-01
IY= 15    8.929E-01    8.934E-01    8.949E-01    8.959E-01    8.964E-01
IY= 14    8.961E-01    8.968E-01    8.993E-01    9.009E-01    9.018E-01
IY= 13    8.806E-01    8.819E-01    8.858E-01    8.885E-01    8.900E-01
IY= 12    8.588E-01    8.608E-01    8.666E-01    8.706E-01    8.729E-01
IY= 11    8.552E-01    8.573E-01    8.633E-01    8.674E-01    8.697E-01
IY= 10    8.489E-01    8.512E-01    8.574E-01    8.617E-01    8.642E-01
IY=  9    8.436E-01    8.460E-01    8.513E-01    8.558E-01    8.584E-01
IY=  8    8.404E-01    8.429E-01    8.481E-01    8.527E-01    8.554E-01
IY=  7    8.322E-01    8.349E-01    8.398E-01    8.444E-01    8.472E-01
IY=  6    8.207E-01    8.238E-01    8.288E-01    8.338E-01    8.371E-01
IY=  5    8.139E-01    8.174E-01    8.216E-01    8.266E-01    8.300E-01
IY=  4    8.063E-01    8.103E-01    8.119E-01    8.173E-01    8.215E-01
IY=  3    7.356E-01    7.426E-01    7.992E-01    8.089E-01    8.149E-01
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IY=   2   7.336E-01      7.440E-01      7.801E-01      8.008E-01      8.104E-01
IY=   1   7.306E-01      7.428E-01      7.770E-01      8.019E-01      8.114E-01
 IX=       1             2              3              4              5
IY= 16    8.918E-01
IY= 15    8.969E-01
IY= 14    9.028E-01
IY= 13    8.917E-01
IY= 12    8.755E-01
IY= 11    8.725E-01
IY= 10    8.672E-01
IY=  9    8.617E-01
IY=  8    8.588E-01
IY=  7    8.509E-01
IY=  6    8.416E-01
IY=  5    8.349E-01
IY=  4    8.273E-01
IY=  3    8.222E-01
IY=  2    8.197E-01
IY=  1    8.196E-01
 IX=       6

*******************************************************************
TIME STP=      1 SWEEP NO=    550 ZSLAB NO=     18 ITERN NO=        1


FLOW FIELD AT ITHYD=   1, IZ= 18, ISWEEP= 550, ISTEP=     1
FIELD VALUES OF P1
IY= 16    8.546E+01      8.591E+01      8.026E+01      7.467E+01      7.116E+01
IY= 15    2.420E+01      2.596E+01      2.635E+01      2.711E+01      2.866E+01
IY= 14    1.844E+01      2.164E+01      2.391E+01      2.669E+01      3.126E+01
IY= 13    5.957E+01      6.677E+01      6.291E+01      6.019E+01      6.184E+01
IY= 12    1.034E+02      1.137E+02      7.428E+01      6.065E+01      6.511E+01
IY= 11    1.282E+02      1.380E+02      9.306E+01      7.808E+01      8.048E+01
IY= 10    2.028E+02      2.023E+02      1.128E+02      9.730E+01      9.984E+01
IY=  9    1.395E+02      1.589E+02      1.249E+00      1.032E+02      1.080E+02
IY=  8    1.378E+02      1.516E+02     -1.563E+00      1.033E+02      1.103E+02
IY=  7    1.329E+02      1.380E+02     -1.341E+01      1.250E+02      1.393E+02
IY=  6    1.218E+02      1.315E+02     -7.146E+01      1.266E+02      1.482E+02
IY=  5    1.198E+00      2.362E+01     -8.164E+01      1.735E+02      1.951E+02
IY=  4   -7.662E+02     -6.761E+02     -7.175E+01      2.377E+02      2.496E+02
IY=  3    5.697E+02      6.055E+02      2.200E+02      3.458E+02      3.161E+02
IY=  2    8.293E+02      8.149E+02      5.337E+02      4.350E+02      3.522E+02
IY=  1    8.245E+02      8.076E+02      5.043E+02      3.968E+02      3.151E+02
 IX=       1             2              3              4              5
IY= 16    5.637E+01
IY= 15    2.589E+01
IY= 14    2.745E+01
IY= 13    4.422E+01
IY= 12    5.400E+01
IY= 11    5.995E+01
IY= 10    6.880E+01
IY=  9    7.491E+01
IY=  8    7.788E+01
IY=  7    9.230E+01
IY=  6    1.002E+02
IY=  5    1.146E+02
IY=  4    1.224E+02
IY=  3    1.310E+02
IY=  2    1.386E+02
IY=  1    1.226E+02
 IX=       6
FIELD VALUES OF U1
IY= 16    6.184E-01      1.727E+00      2.338E+00      2.933E+00      3.290E+00
IY= 15    4.264E-01      1.143E+00      1.479E+00      1.823E+00      2.013E+00
IY= 14    4.719E-01      1.177E+00      1.460E+00      1.751E+00      1.946E+00
IY= 13    9.161E-01      2.328E+00      2.830E+00      3.265E+00      3.533E+00
IY= 12    1.488E+00      4.092E+00      4.713E+00      5.123E+00      5.361E+00
IY= 11    1.513E+00      4.235E+00      4.957E+00      5.453E+00      5.729E+00
IY= 10    1.417E+00      4.157E+00      5.240E+00      6.041E+00      6.425E+00
IY=  9    5.626E-01      1.611E+00      4.952E+00      6.567E+00      7.116E+00
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IY=   8    2.516E-01    1.947E+00    5.056E+00    6.880E+00    7.493E+00
IY=   7   -2.613E-01    1.115E+00    5.517E+00    7.810E+00    8.600E+00
IY=   6   -5.969E-01    7.424E-06    5.950E+00    8.767E+00    9.706E+00
IY=   5   -7.289E-01    2.919E-05    6.179E+00    9.360E+00    1.046E+01
IY=   4   -4.629E-01    3.021E-05    5.594E+00    9.137E+00    1.039E+01
IY=   3    1.610E+00    3.675E+00    5.399E+00    8.761E+00    1.012E+01
IY=   2    2.766E+00    8.174E+00    8.739E+00    1.021E+01    1.105E+01
IY=   1    2.568E+00    9.615E+00    9.291E+00    1.049E+01    1.111E+01
 IX=      1            2            3            4            5
FIELD VALUES OF V1
IY=  15    9.878E+00    9.769E+00    9.352E+00    9.008E+00    9.051E+00
IY=  14    1.267E+01    1.253E+01    1.193E+01    1.146E+01    1.141E+01
IY=  13    1.386E+01    1.367E+01    1.265E+01    1.195E+01    1.176E+01
IY=  12    1.607E+01    1.571E+01    1.354E+01    1.231E+01    1.190E+01
IY=  11    1.641E+01    1.601E+01    1.353E+01    1.228E+01    1.182E+01
IY=  10    1.686E+01    1.639E+01    1.327E+01    1.204E+01    1.156E+01
IY=   9    1.637E+01    1.618E+01    1.182E+01    1.128E+01    1.089E+01
IY=   8    1.711E+01    1.695E+01    1.176E+01    1.103E+01    1.061E+01
IY=   7    1.719E+01    1.713E+01    1.159E+01    1.079E+01    1.034E+01
IY=   6    1.255E+01    1.310E+01    9.430E+00    8.608E+00    8.146E+00
IY=   5    9.798E+00    1.046E+01    8.806E+00    7.996E+00    7.518E+00
IY=   4   -1.219E+00   -2.808E-01    5.424E+00    4.768E+00    4.370E+00
IY=   3    1.124E+01    1.105E+01    4.477E+00    3.137E+00    2.678E+00
IY=   2    2.499E+00    2.288E+00    3.828E+00    2.327E+00    1.687E+00
IY=   1    5.421E-01    3.381E-01    8.875E-01    4.424E-01    3.447E-01
 IX=      1            2            3            4            5
IY=  15    9.188E+00
IY=  14    1.137E+01
IY=  13    1.154E+01
IY=  12    1.148E+01
IY=  11    1.130E+01
IY=  10    1.100E+01
IY=   9    1.036E+01
IY=   8    1.005E+01
IY=   7    9.722E+00
IY=   6    7.508E+00
IY=   5    6.813E+00
IY=   4    3.854E+00
IY=   3    2.178E+00
IY=   2    1.130E+00
IY=   1    3.913E-01
 IX=      6
FIELD VALUES OF W1
IY=  16   -3.764E+00   -3.544E+00   -3.265E+00   -2.900E+00   -2.700E+00
IY=  15   -7.640E-01   -5.709E-01   -5.911E-01   -6.120E-01   -6.783E-01
IY=  14    1.810E+00    2.049E+00    2.115E+00    2.143E+00    2.085E+00
IY=  13    4.143E+00    4.662E+00    5.063E+00    5.344E+00    5.427E+00
IY=  12    5.990E+00    6.752E+00    8.295E+00    9.293E+00    9.615E+00
IY=  11    6.005E+00    6.757E+00    8.541E+00    9.753E+00    1.019E+01
IY=  10    5.547E+00    6.172E+00    8.872E+00    1.082E+01    1.148E+01
IY=   9    1.773E-01    8.857E-01    8.346E+00    1.210E+01    1.309E+01
IY=   8   -8.690E-01   -4.066E-01    8.714E+00    1.288E+01    1.398E+01
IY=   7   -1.179E+00   -1.313E+00    1.025E+01    1.523E+01    1.660E+01
IY=   6   -3.624E+00   -4.169E+00    1.304E+01    1.941E+01    2.111E+01
IY=   5   -3.576E+00   -4.350E+00    1.563E+01    2.267E+01    2.451E+01
IY=   4    7.436E+00    6.261E+00    2.450E+01    3.048E+01    3.167E+01
IY=   3    8.002E+01    7.443E+01    4.445E+01    4.083E+01    3.945E+01
IY=   2    8.118E+01    7.519E+01    5.641E+01    4.768E+01    4.438E+01
IY=   1    8.222E+01    7.505E+01    5.748E+01    4.741E+01    4.430E+01
 IX=      1            2            3            4            5
IY=  16   -2.634E+00
IY=  15   -8.525E-01
IY=  14    1.909E+00
IY=  13    5.402E+00
IY=  12    9.963E+00
IY=  11    1.064E+01
IY=  10    1.209E+01
IY=   9    1.397E+01
IY=   8    1.497E+01
IY=   7    1.780E+01
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IY=   6    2.255E+01
IY=   5    2.591E+01
IY=   4    3.194E+01
IY=   3    3.734E+01
IY=   2    4.058E+01
IY=   1    4.098E+01
 IX=        6
FIELD VALUES OF KE
IY= 16    1.301E+02    1.318E+02    1.335E+02    1.367E+02    1.436E+02
IY= 15    1.990E+02    2.002E+02    1.982E+02    1.982E+02    2.024E+02
IY= 14    4.497E+02    4.508E+02    4.436E+02    4.393E+02    4.395E+02
IY= 13    8.594E+02    8.622E+02    8.522E+02    8.405E+02    8.310E+02
IY= 12    1.349E+03    1.358E+03    1.396E+03    1.384E+03    1.357E+03
IY= 11    1.393E+03    1.404E+03    1.485E+03    1.479E+03    1.451E+03
IY= 10    1.400E+03    1.417E+03    1.669E+03    1.675E+03    1.641E+03
IY=  9    1.021E+03    1.019E+03    1.967E+03    1.930E+03    1.876E+03
IY=  8    8.789E+02    8.764E+02    2.115E+03    2.065E+03    2.001E+03
IY=  7    7.103E+02    7.102E+02    2.522E+03    2.443E+03    2.351E+03
IY=  6    1.247E+03    1.235E+03    3.121E+03    2.975E+03    2.825E+03
IY=  5    1.668E+03    1.629E+03    3.522E+03    3.325E+03    3.137E+03
IY=  4    4.041E+03    3.756E+03    3.883E+03    3.517E+03    3.303E+03
IY=  3    5.984E+03    5.339E+03    3.785E+03    3.267E+03    3.087E+03
IY=  2    3.794E+03    3.432E+03    2.580E+03    2.269E+03    2.408E+03
IY=  1    2.865E+01    2.434E+01    1.515E+01    1.078E+01    2.027E+03
 IX=        1            2            3            4            5
IY= 16    1.539E+02
IY= 15    2.089E+02
IY= 14    4.421E+02
IY= 13    8.237E+02
IY= 12    1.329E+03
IY= 11    1.420E+03
IY= 10    1.600E+03
IY=  9    1.814E+03
IY=  8    1.927E+03
IY=  7    2.244E+03
IY=  6    2.646E+03
IY=  5    2.912E+03
IY=  4    3.061E+03
IY=  3    2.920E+03
IY=  2    2.577E+03
IY=  1    2.518E+03
 IX=        6
FIELD VALUES OF EP
IY= 16    2.356E+02    2.384E+02    2.350E+02    2.359E+02    2.487E+02
IY= 15    4.262E+02    4.280E+02    4.122E+02    4.031E+02    4.078E+02
IY= 14    1.295E+03    1.295E+03    1.237E+03    1.193E+03    1.172E+03
IY= 13    3.289E+03    3.287E+03    3.163E+03    3.042E+03    2.944E+03
IY= 12    6.837E+03    6.841E+03    6.890E+03    6.636E+03    6.331E+03
IY= 11    7.150E+03    7.170E+03    7.497E+03    7.266E+03    6.934E+03
IY= 10    7.472E+03    7.511E+03    8.971E+03    8.746E+03    8.322E+03
IY=  9    5.582E+03    5.483E+03    1.162E+04    1.098E+04    1.032E+04
IY=  8    5.042E+03    4.961E+03    1.300E+04    1.220E+04    1.141E+04
IY=  7    4.965E+03    4.956E+03    1.692E+04    1.567E+04    1.454E+04
IY=  6    1.118E+04    1.096E+04    2.424E+04    2.155E+04    1.967E+04
IY=  5    1.621E+04    1.549E+04    2.917E+04    2.542E+04    2.300E+04
IY=  4    5.319E+04    4.677E+04    3.505E+04    2.914E+04    2.581E+04
IY=  3    8.491E+04    6.984E+04    3.828E+04    2.877E+04    2.519E+04
IY=  2    5.061E+04    4.284E+04    2.711E+04    2.027E+04    1.936E+04
IY=  1    7.724E+02    6.046E+02    2.969E+02    1.783E+02    1.560E+04
 IX=        1            2            3            4            5
IY= 16    2.703E+02
IY= 15    4.184E+02
IY= 14    1.156E+03
IY= 13    2.843E+03
IY= 12    5.978E+03
IY= 11    6.540E+03
IY= 10    7.798E+03
IY=  9    9.528E+03
IY=  8    1.047E+04
IY=  7    1.315E+04
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IY=   6     1.731E+04
IY=   5     2.001E+04
IY=   4     2.196E+04
IY=   3     2.156E+04
IY=   2     1.878E+04
IY=   1     1.823E+04
 IX=        6
FIELD VALUES OF H1
IY= 16     4.217E+05     4.205E+05     4.173E+05     4.146E+05     4.133E+05
IY= 15     4.141E+05     4.132E+05     4.110E+05     4.092E+05     4.088E+05
IY= 14     4.106E+05     4.097E+05     4.070E+05     4.052E+05     4.049E+05
IY= 13     4.169E+05     4.156E+05     4.117E+05     4.093E+05     4.087E+05
IY= 12     4.299E+05     4.279E+05     4.202E+05     4.164E+05     4.152E+05
IY= 11     4.326E+05     4.305E+05     4.215E+05     4.175E+05     4.163E+05
IY= 10     4.403E+05     4.379E+05     4.239E+05     4.195E+05     4.182E+05
IY=  9     4.589E+05     4.573E+05     4.242E+05     4.213E+05     4.202E+05
IY=  8     4.667E+05     4.654E+05     4.249E+05     4.224E+05     4.213E+05
IY=  7     4.803E+05     4.794E+05     4.275E+05     4.253E+05     4.242E+05
IY=  6     4.820E+05     4.809E+05     4.319E+05     4.295E+05     4.283E+05
IY=  5     4.821E+05     4.810E+05     4.350E+05     4.325E+05     4.311E+05
IY=  4     4.826E+05     4.806E+05     4.403E+05     4.373E+05     4.351E+05
IY=  3     4.839E+05     4.790E+05     4.514E+05     4.428E+05     4.391E+05
IY=  2     4.857E+05     4.798E+05     4.582E+05     4.465E+05     4.414E+05
IY=  1     ʌ 877E+05     4.807E+05     4.596E+05     4.458E+05     4.408E+05
 IX=        1             2             3             4             5
IY= 16     4.120E+05
IY= 15     4.084E+05
IY= 14     4.046E+05
IY= 13     4.080E+05
IY= 12     4.141E+05
IY= 11     4.151E+05
IY= 10     4.169E+05
IY=  9     4.190E+05
IY=  8     4.200E+05
IY=  7     4.229E+05
IY=  6     4.266E+05
IY=  5     4.293E+05
IY=  4     4.325E+05
IY=  3     4.352E+05
IY=  2     4.365E+05
IY=  1     4.365E+05
 IX=        6
FIELD VALUES OF TMP1
IY= 16     4.200E+02     4.188E+02     4.157E+02     4.129E+02     4.117E+02
IY= 15     4.125E+02     4.116E+02     4.094E+02     4.076E+02     4.071E+02
IY= 14     4.090E+02     4.080E+02     4.054E+02     4.036E+02     4.033E+02
IY= 13     4.152E+02     4.139E+02     4.101E+02     4.077E+02     4.070E+02
IY= 12     4.282E+02     4.262E+02     4.185E+02     4.147E+02     4.136E+02
IY= 11     4.309E+02     4.288E+02     4.198E+02     4.158E+02     4.146E+02
IY= 10     4.385E+02     4.362E+02     4.223E+02     4.179E+02     4.166E+02
IY=  9     4.571E+02     4.554E+02     4.225E+02     4.197E+02     4.185E+02
IY=  8     4.649E+02     4.635E+02     4.232E+02     4.207E+02     4.196E+02
IY=  7     4.784E+02     4.774E+02     4.258E+02     4.236E+02     4.225E+02
IY=  6     4.800E+02     4.790E+02     4.302E+02     4.278E+02     4.266E+02
IY=  5     4.802E+02     4.790E+02     4.332E+02     4.308E+02     4.294E+02
IY=  4     4.807E+02     4.787E+02     4.386E+02     4.355E+02     4.334E+02
IY=  3     4.820E+02     4.771E+02     4.496E+02     4.410E+02     4.374E+02
IY=  2     4.838E+02     4.779E+02     4.564E+02     4.447E+02     4.396E+02
IY=  1     4.857E+02     4.788E+02     4.578E+02     4.441E+02     4.390E+02
 IX=        1             2             3             4             5
IY= 16     4.104E+02
IY= 15     4.067E+02
IY= 14     4.030E+02
IY= 13     4.064E+02
IY= 12     4.124E+02
IY= 11     4.134E+02
IY= 10     4.153E+02
IY=  9     4.173E+02
IY=  8     4.183E+02
IY=  7     4.212E+02
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IY=   6    4.249E+02
IY=   5    4.276E+02
IY=   4    4.307E+02
IY=   3    4.334E+02
IY=   2    4.348E+02
IY=   1    4.348E+02
 IX=      6
FIELD VALUES OF RHO1
IY= 16    8.442E-01    8.466E-01    8.530E-01    8.587E-01    8.612E-01
IY= 15    8.591E-01    8.610E-01    8.657E-01    8.695E-01    8.704E-01
IY= 14    8.664E-01    8.684E-01    8.741E-01    8.780E-01    8.788E-01
IY= 13    8.538E-01    8.565E-01    8.645E-01    8.695E-01    8.709E-01
IY= 12    8.282E-01    8.322E-01    8.472E-01    8.548E-01    8.572E-01
IY= 11    8.232E-01    8.273E-01    8.446E-01    8.526E-01    8.551E-01
IY= 10    8.096E-01    8.139E-01    8.400E-01    8.486E-01    8.513E-01
IY=  9    7.761E-01    7.791E-01    8.385E-01    8.451E-01    8.474E-01
IY=  8    7.631E-01    7.655E-01    8.372E-01    8.431E-01    8.453E-01
IY=  7    7.416E-01    7.431E-01    8.320E-01    8.375E-01    8.396E-01
IY=  6    7.389E-01    7.407E-01    8.230E-01    8.292E-01    8.318E-01
IY=  5    7.377E-01    7.397E-01    8.171E-01    8.238E-01    8.267E-01
IY=  4    7.314E-01    7.352E-01    8.072E-01    8.153E-01    8.194E-01
IY=  3    7.391E-01    7.470E-01    7.898E-01    8.060E-01    8.125E-01
IY=  2    7.383E-01    7.474E-01    7.804E-01    8.001E-01    8.087E-01
IY=  1    7.353E-01    7.458E-01    7.778E-01    8.009E-01    8.094E-01
 IX=      1            2            3            4            5
IY= 16    8.638E-01
IY= 15    8.713E-01
IY= 14    8.793E-01
IY= 13    8.721E-01
IY= 12    8.595E-01
IY= 11    8.574E-01
IY= 10    8.537E-01
IY=  9    8.496E-01
IY=  8    8.475E-01
IY=  7    8.418E-01
IY=  6    8.345E-01
IY=  5    8.295E-01
IY=  4    8.235E-01
IY=  3    8.184E-01
IY=  2    8.160E-01
IY=  1    8.158E-01
 IX=      6

***********************************************************
TIME STP=    1 SWEEP NO=    550 ZSLAB NO=    19 ITERN NO=      1


FLOW FIELD AT ITHYD=  1, IZ= 19, ISWEEP= 550, ISTEP=    1
FIELD VALUES OF P1
IY= 16    1.040E+02    1.035E+02    9.551E+01    8.567E+01    7.890E+01
IY= 15    3.026E+01    3.078E+01    3.128E+01    3.139E+01    3.222E+01
IY= 14    2.751E+01    2.872E+01    3.156E+01    3.362E+01    3.756E+01
IY= 13    7.240E+01    7.274E+01    7.169E+01    6.843E+01    7.104E+01
IY= 12    1.178E+02    1.180E+02    8.845E+01    8.114E+01    9.137E+01
IY= 11    1.325E+02    1.304E+02    1.009E+02    9.141E+01    1.025E+02
IY= 10    1.563E+02    1.517E+02    1.175E+02    1.062E+02    1.192E+02
IY=  9    1.651E+02    1.620E+02    1.217E+02    1.138E+02    1.341E+02
IY=  8    1.613E+02    1.592E+02    1.237E+02    1.180E+02    1.427E+02
IY=  7    1.282E+02    1.307E+02    1.251E+02    1.312E+02    1.646E+02
IY=  6    1.204E+02    1.281E+02    1.583E+02    1.723E+02    2.063E+02
IY=  5    5.646E+01    8.275E+01    1.713E+02    2.028E+02    2.360E+02
IY=  4    8.262E+01    1.233E+02    2.895E+02    3.098E+02    3.034E+02
IY=  3    7.040E+02    6.845E+02    5.326E+02    4.557E+02    3.838E+02
IY=  2    1.039E+03    9.924E+02    7.070E+02    5.497E+02    4.322E+02
IY=  1    1.058E+03    1.010E+03    7.162E+02    5.514E+02    4.032E+02
 IX=      1            2            3            4            5
IY= 16    6.489E+01
IY= 15    3.147E+01
IY= 14    3.840E+01
IY= 13    6.172E+01
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IY= 12    8.106E+01
IY= 11    8.575E+01
IY= 10    9.503E+01
IY=  9    1.052E+02
IY=  8    1.101E+02
IY=  7    1.261E+02
IY=  6    1.525E+02
IY=  5    1.727E+02
IY=  4    2.093E+02
IY=  3    2.414E+02
IY=  2    2.651E+02
IY=  1    2.176E+02
 IX=      6
FIELD VALUES OF U1
IY= 16    5.642E-01    2.369E+00    3.398E+00    4.110E+00    4.531E+00
IY= 15    5.114E-01    2.034E+00    2.642E+00    3.115E+00    3.282E+00
IY= 14    6.293E-01    2.540E+00    3.222E+00    3.741E+00    3.941E+00
IY= 13    8.344E-01    3.535E+00    4.529E+00    5.454E+00    5.876E+00
IY= 12    8.572E-01    4.415E+00    5.251E+00    6.536E+00    7.260E+00
IY= 11    8.344E-01    4.106E+00    5.178E+00    6.695E+00    7.470E+00
IY= 10    7.439E-01    3.586E+00    4.975E+00    6.979E+00    7.967E+00
IY=  9    4.780E-01    2.325E+00    4.414E+00    7.343E+00    8.608E+00
IY=  8    4.293E-01    1.790E+00    4.312E+00    7.616E+00    8.951E+00
IY=  7    ـ.008E-01    1.292E+00    4.273E+00    8.135E+00    9.833E+00
IY=  6    6.051E-01    9.736E-01    5.446E+00    1.061E+01    1.262E+01
IY=  5    7.206E-01    1.411E+00    6.068E+00    1.169E+01    1.404E+01
IY=  4    2.078E+00    5.922E+00    1.040E+01    1.591E+01    1.835E+01
IY=  3    3.681E+00    1.277E+01    1.566E+01    1.999E+01    2.220E+01
IY=  2    5.285E+00    1.789E+01    2.086E+01    2.372E+01    2.544E+01
IY=  1    5.194E+00    1.883E+01    2.171E+01    2.477E+01    2.594E+01
 IX=      1            2            3            4            5
FIELD VALUES OF V1
IY= 15    1.990E+01    1.980E+01    1.841E+01    1.595E+01    1.504E+01
IY= 14    2.481E+01    2.468E+01    2.259E+01    1.948E+01    1.819E+01
IY= 13    2.695E+01    2.684E+01    2.366E+01    1.994E+01    1.844E+01
IY= 12    2.812E+01    2.817E+01    2.328E+01    1.913E+01    1.770E+01
IY= 11    2.806E+01    2.827E+01    2.282E+01    1.879E+01    1.747E+01
IY= 10    2.795E+01    2.834E+01    2.225E+01    1.837E+01    1.714E+01
IY=  9    2.774E+01    2.838E+01    2.152E+01    1.789E+01    1.674E+01
IY=  8    2.803E+01    2.870E+01    2.163E+01    1.799E+01    1.671E+01
IY=  7    2.839E+01    2.905E+01    2.189E+01    1.818E+01    1.669E+01
IY=  6    3.022E+01    3.066E+01    2.343E+01    1.918E+01    1.692E+01
IY=  5    3.096E+01    3.116E+01    2.411E+01    1.952E+01    1.685E+01
IY=  4    3.408E+01    3.344E+01    2.605E+01    2.035E+01    1.653E+01
IY=  3    3.531E+01    3.383E+01    2.468E+01    1.861E+01    1.464E+01
IY=  2    1.597E+01    1.543E+01    1.406E+01    1.130E+01    8.992E+00
IY=  1    2.549E+00    2.299E+00    2.247E+00    1.708E+00    1.615E+00
 IX=      1            2            3            4            5
IY= 15    1.446E+01
IY= 14    1.729E+01
IY= 13    1.739E+01
IY= 12    1.670E+01
IY= 11    1.645E+01
IY= 10    1.616E+01
IY=  9    1.576E+01
IY=  8    1.562E+01
IY=  7    1.550E+01
IY=  6    1.497E+01
IY=  5    1.460E+01
IY=  4    1.306E+01
IY=  3    1.070E+01
IY=  2    6.324E+00
IY=  1    1.820E+00
 IX=      6
FIELD VALUES OF W1
FIELD VALUES OF KE
IY= 16    4.125E+00    4.713E+00    4.762E+00    9.174E+00    4.845E+01
IY= 15    1.661E+00    1.650E+00    1.430E+00    1.104E+00    6.973E+01
IY= 14    2.184E+00    2.171E+00    1.795E+00    1.352E+00    1.381E+02
IY= 13    2.454E+00    2.461E+00    1.868E+00    1.370E+00    2.312E+02
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IY= 12    2.548E+00      2.589E+00      1.830E+00      1.331E+00      3.892E+02
IY= 11    2.534E+00      2.602E+00      1.753E+00      1.288E+00      4.044E+02
IY= 10    2.506E+00      2.606E+00      1.655E+00      1.238E+00      4.461E+02
IY=  9    2.511E+00      2.628E+00      1.591E+00      1.213E+00      5.091E+02
IY=  8    2.566E+00      2.683E+00      1.609E+00      1.232E+00      5.378E+02
IY=  7    2.754E+00      2.853E+00      1.728E+00      1.311E+00      6.065E+02
IY=  6    2.984E+00      3.044E+00      1.896E+00      1.472E+00      6.997E+02
IY=  5    3.346E+00      3.306E+00      2.103E+00      1.589E+00      7.383E+02
IY=  4    3.786E+00      3.608E+00      2.307E+00      1.825E+00      7.307E+02
IY=  3    2.186E+00      2.196E+00      1.901E+00      1.790E+00      6.689E+02
IY=  2    4.184E-01      7.495E-01      1.481E+00      1.783E+00      4.741E+02
IY=  1    1.580E-01      6.871E-01      1.787E+00      2.294E+00      4.268E+02
 IX=         1              2              3              4              5
IY= 16    9.212E+01
IY= 15    1.202E+02
IY= 14    2.246E+02
IY= 13    3.739E+02
IY= 12    6.246E+02
IY= 11    6.458E+02
IY= 10    7.092E+02
IY=  9    8.027E+02
IY=  8    8.471E+02
IY=  7    9.566E+02
IY=  6    1.118E+03
IY=  5    1.194E+03
IY=  4    1.236E+03
IY=  3    1.199E+03
IY=  2    1.079E+03
IY=  1    1.063E+03
 IX=         6
FIELD VALUES OF EP
IY= 16    1.012E+00      1.517E+00      2.052E+00      6.934E+00      8.684E+01
IY= 15    5.392E-01      5.335E-01      4.308E-01      2.919E-01      1.453E+02
IY= 14    8.127E-01      8.054E-01      6.054E-01      3.956E-01      3.546E+02
IY= 13    9.679E-01      9.719E-01      6.430E-01      4.036E-01      7.252E+02
IY= 12    1.024E+00      1.049E+00      6.236E-01      3.868E-01      1.515E+03
IY= 11    1.016E+00      1.057E+00      5.847E-01      3.683E-01      1.619E+03
IY= 10    9.986E-01      1.059E+00      5.360E-01      3.468E-01      1.899E+03
IY=  9    1.002E+00      1.073E+00      5.053E-01      3.362E-01      2.368E+03
IY=  8    1.035E+00      1.107E+00      5.138E-01      3.445E-01      2.581E+03
IY=  7    1.151E+00      1.213E+00      5.721E-01      3.778E-01      3.094E+03
IY=  6    1.298E+00      1.337E+00      6.573E-01      4.499E-01      4.114E+03
IY=  5    1.541E+00      1.514E+00      7.679E-01      5.044E-01      4.535E+03
IY=  4    1.855E+00      1.726E+00      8.821E-01      6.207E-01      4.896E+03
IY=  3    8.138E-01      8.194E-01      6.599E-01      6.030E-01      4.358E+03
IY=  2    6.815E-02      1.634E-01      4.537E-01      5.997E-01      2.978E+03
IY=  1    1.660E-01      1.506E+00      6.314E+00      9.189E+00      2.580E+03
 IX=         1              2              3              4              5
IY= 16    1.865E+02
IY= 15    2.653E+02
IY= 14    6.002E+02
IY= 13    1.214E+03
IY= 12    2.505E+03
IY= 11    2.654E+03
IY= 10    3.091E+03
IY=  9    3.794E+03
IY=  8    4.126E+03
IY=  7    4.949E+03
IY=  6    6.581E+03
IY=  5    7.320E+03
IY=  4    8.180E+03
IY=  3    8.023E+03
IY=  2    7.069E+03
IY=  1    6.915E+03
 IX=         6
FIELD VALUES OF H1
IY= 16    4.486E+05      4.466E+05      4.416E+05      4.335E+05      4.296E+05
IY= 15    4.492E+05      4.468E+05      4.408E+05      4.318E+05      4.276E+05
IY= 14    4.536E+05      4.510E+05      4.422E+05      4.311E+05      4.268E+05
IY= 13    4.622E+05      4.593E+05      4.467E+05      4.342E+05      4.297E+05
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IY= 12    4.758E+05    4.725E+05    4.522E+05    4.382E+05    4.343E+05
IY= 11    4.773E+05    4.740E+05    4.522E+05    4.386E+05    4.347E+05
IY= 10    4.798E+05    4.765E+05    4.520E+05    4.393E+05    4.357E+05
IY=  9    4.839E+05    4.804E+05    4.519E+05    4.409E+05    4.374E+05
IY=  8    4.842E+05    4.806E+05    4.522E+05    4.418E+05    4.382E+05
IY=  7    4.842E+05    4.806E+05    4.529E+05    4.430E+05    4.398E+05
IY=  6    4.844E+05    4.804E+05    4.583E+05    4.492E+05    4.451E+05
IY=  5    4.841E+05    4.801E+05    4.597E+05    4.507E+05    4.468E+05
IY=  4    4.840E+05    4.797E+05    4.653E+05    4.562E+05    4.515E+05
IY=  3    4.849E+05    4.801E+05    4.683E+05    4.596E+05    4.546E+05
IY=  2    4.864E+05    4.810E+05    4.712E+05    4.625E+05    4.580E+05
IY=  1    4.881E+05    4.820E+05    4.724E+05    4.633E+05    4.585E+05
 IX=         1            2            3            4            5
IY= 16    4.258E+05
IY= 15    4.246E+05
IY= 14    4.239E+05
IY= 13    4.268E+05
IY= 12    4.319E+05
IY= 11    4.323E+05
IY= 10    4.333E+05
IY=  9    4.350E+05
IY=  8    4.358E+05
IY=  7    4.376E+05
IY=  6    4.417E+05
IY=  5    4.436E+05
IY=  4    4.470E+05
IY=  3    4.491E+05
IY=  2    4.506E+05
IY=  1    4.508E+05
 IX=         6
FIELD VALUES OF TMP1
IY= 16    4.468E+02    4.449E+02    4.398E+02    4.318E+02    4.279E+02
IY= 15    4.474E+02    4.451E+02    4.391E+02    4.301E+02    4.259E+02
IY= 14    4.518E+02    4.492E+02    4.404E+02    4.294E+02    4.251E+02
IY= 13    4.603E+02    4.574E+02    4.449E+02    4.325E+02    4.280E+02
IY= 12    4.739E+02    4.706E+02    4.504E+02    4.365E+02    4.326E+02
IY= 11    4.754E+02    4.722E+02    4.504E+02    4.369E+02    4.329E+02
IY= 10    4.779E+02    4.746E+02    4.502E+02    4.375E+02    4.339E+02
IY=  9    4.820E+02    4.785E+02    4.501E+02    4.391E+02    4.357E+02
IY=  8    4.823E+02    4.787E+02    4.504E+02    4.401E+02    4.364E+02
IY=  7    4.823E+02    4.787E+02    4.511E+02    4.412E+02    4.381E+02
IY=  6    4.824E+02    4.784E+02    4.565E+02    4.474E+02    4.433E+02
IY=  5    4.822E+02    4.781E+02    4.579E+02    4.489E+02    4.450E+02
IY=  4    4.821E+02    4.778E+02    4.635E+02    4.544E+02    4.497E+02
IY=  3    4.829E+02    4.782E+02    4.664E+02    4.577E+02    4.528E+02
IY=  2    4.844E+02    4.791E+02    4.693E+02    4.607E+02    4.562E+02
IY=  1    4.862E+02    4.800E+02    4.705E+02    4.615E+02    4.567E+02
 IX=         1            2            3            4            5
IY= 16    4.241E+02
IY= 15    4.229E+02
IY= 14    4.223E+02
IY= 13    4.251E+02
IY= 12    4.302E+02
IY= 11    4.305E+02
IY= 10    4.316E+02
IY=  9    4.333E+02
IY=  8    4.340E+02
IY=  7    4.359E+02
IY=  6    4.400E+02
IY=  5    4.418E+02
IY=  4    4.452E+02
IY=  3    4.473E+02
IY=  2    4.488E+02
IY=  1    4.490E+02
 IX=         6
FIELD VALUES OF RHO1
IY= 16    7.938E-01    7.972E-01    8.063E-01    8.212E-01    8.286E-01
IY= 15    7.922E-01    7.963E-01    8.071E-01    8.239E-01    8.321E-01
IY= 14    7.844E-01    7.889E-01    8.046E-01    8.254E-01    8.338E-01
IY= 13    7.702E-01    7.751E-01    7.969E-01    8.198E-01    8.284E-01
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IY= 12    7.485E-01      7.536E-01      7.872E-01      8.123E-01      8.198E-01
IY= 11    7.462E-01      7.513E-01      7.874E-01      8.117E-01      8.192E-01
IY= 10    7.425E-01      7.477E-01      7.878E-01      8.106E-01      8.174E-01
IY=  9    7.363E-01      7.416E-01      7.880E-01      8.077E-01      8.143E-01
IY=  8    7.358E-01      7.412E-01      7.875E-01      8.060E-01      8.129E-01
IY=  7    7.356E-01      7.411E-01      7.864E-01      8.040E-01      8.100E-01
IY=  6    7.352E-01      7.414E-01      7.774E-01      7.932E-01      8.008E-01
IY=  5    7.352E-01      7.416E-01      7.750E-01      7.909E-01      7.980E-01
IY=  4    7.355E-01      7.424E-01      7.666E-01      7.821E-01      7.901E-01
IY=  3    7.387E-01      7.459E-01      7.635E-01      7.775E-01      7.853E-01
IY=  2    7.389E-01      7.468E-01      7.602E-01      7.732E-01      7.800E-01
IY=  1    7.363E-01      7.454E-01      7.583E-01      7.719E-01      7.789E-01
 IX=       1              2              3              4              5
IY= 16    8.359E-01
IY= 15    8.380E-01
IY= 14    8.394E-01
IY= 13    8.340E-01
IY= 12    8.242E-01
IY= 11    8.236E-01
IY= 10    8.216E-01
IY=  9    8.186E-01
IY=  8    8.172E-01
IY=  7    8.138E-01
IY=  6    8.065E-01
IY=  5    8.033E-01
IY=  4    7.975E-01
IY=  3    7.939E-01
IY=  2    7.914E-01
IY=  1    7.908E-01
 IX=       6
TIME STEP =    1        SWEEP = 550
TOTAL RESIDUAL/( 1.000E-06) FOR P1    IS   1.705E+08
TOTAL RESIDUAL/( 1.000E-06) FOR U1    IS   3.763E+09
TOTAL RESIDUAL/( 1.000E-06) FOR V1    IS   4.547E+09
TOTAL RESIDUAL/( 1.000E-06) FOR W1    IS   1.565E+10
TOTAL RESIDUAL/( 1.000E-06) FOR KE    IS   2.731E+12
TOTAL RESIDUAL/( 1.000E-06) FOR EP    IS   3.728E+14
TOTAL RESIDUAL/( 1.000E-06) FOR H1    IS   3.412E+13
WHOLE-FIELD RESIDUALS BEFORE SOLUTIONS
WHOLE-FIELD SUM OF ABS(VOL.FLOW RESIDUALS)=   1.705E+08
WHOLE-FIELD SUM OF ABS(RESIDUALS) OF U1   =   3.763E+09
WHOLE-FIELD SUM OF ABS(RESIDUALS) OF V1   =   4.547E+09
WHOLE-FIELD SUM OF ABS(RESIDUALS) OF W1   =   1.565E+10
WHOLE-FIELD SUM OF ABS(RESIDUALS) OF KE   =   2.731E+12
WHOLE-FIELD SUM OF ABS(RESIDUALS) OF EP   =   3.728E+14
WHOLE-FIELD SUM OF ABS(RESIDUALS) OF H1   =   3.412E+13
* SUMS HAVE BEEN DIVIDED BY RESREF(NAME)

NET SOURCE OF U1    AT PATCH NAMED: DECK      =-7.825E+00
NET SOURCE OF U1    AT PATCH NAMED: FRONT     =-2.307E-02
NET SOURCE OF U1    AT PATCH NAMED: PRITOP    = 2.257E-02
NET SOURCE OF U1    AT PATCH NAMED: PRIROOF   = 4.083E-02
NET SOURCE OF U1    AT PATCH NAMED: PRIEND    = 1.674E-03
NET SOURCE OF U1    AT PATCH NAMED: PIDTOP    = 4.196E-02
NET SOURCE OF U1    AT PATCH NAMED: PIDBOT    = 4.466E-02
NET SOURCE OF U1    AT PATCH NAMED: PIDLFT    = 1.719E-03
NET SOURCE OF U1    AT PATCH NAMED: PIDRGT    = 1.556E-02
NET SOURCE OF U1    AT PATCH NAMED: PRIINB    = 6.990E-01
NET SOURCE OF U1    AT PATCH NAMED: TROVHD    = 3.115E+00
NET SOURCE OF U1    AT PATCH NAMED: TRLFT     = 2.196E-01
NET SOURCE OF U1    AT PATCH NAMED: PFSIDL    = 1.021E+00
NET SOURCE OF U1    AT PATCH NAMED: PFSIDT    = 8.920E-03
NET SOURCE OF U1    AT PATCH NAMED: PFSIDR    = 7.973E-01
NET SOURCE OF U1    AT PATCH NAMED: FSLLIP    = 2.214E-01
NET SOURCE OF U1    AT PATCH NAMED: FSBOT     = 9.028E-01
NET SOURCE OF U1    AT PATCH NAMED: FSOVHD    = 5.717E-01
NET SOURCE OF U1    AT PATCH NAMED: FSTLIP    = 1.868E-02
NET SOURCE OF U1    AT PATCH NAMED: FSRLIP    = 2.894E-02
NET SOURCE OF U1    AT PATCH NAMED: FSTOP     = 3.261E-01
NET SOURCE OF U1    AT PATCH NAMED: TBREAR    = 2.310E-02
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NET SOURCE OF U1    AT PATCH NAMED: TBOUT      =-1.378E-02
NET SOURCE OF U1    AT PATCH NAMED: TBFRNT     =-1.667E-02
NET SOURCE OF U1    AT PATCH NAMED: TRUPFT     = 4.061E-01
NET SOURCE OF U1    AT PATCH NAMED: TRUBOT     =-1.003E+00
NET SOURCE OF U1    AT PATCH NAMED: TRURER     =-8.077E-02
NET SOURCE OF U1    AT PATCH NAMED: TRLTP      =-1.003E+00
NET SOURCE OF U1    AT PATCH NAMED: TRLRER     =-9.491E-02
NET SOURCE OF U1    AT PATCH NAMED: TRSFT      = 1.802E-01
NET SOURCE OF U1    AT PATCH NAMED: TRSRER     =-1.376E-01
NET SOURCE OF U1    AT PATCH NAMED: EROVHD     =-1.072E+00
NET SOURCE OF U1    AT PATCH NAMED: ERROOF     =-2.617E-01
NET SOURCE OF U1    AT PATCH NAMED: ERUFT      =-6.692E-02
NET SOURCE OF U1    AT PATCH NAMED: ERUBOT     =-6.962E-01
NET SOURCE OF U1    AT PATCH NAMED: ERLFT      =-6.625E-02
NET SOURCE OF U1    AT PATCH NAMED: ERLTOP     =-6.962E-01
NET SOURCE OF U1    AT PATCH NAMED: ERLRER     =-1.084E-01
NET SOURCE OF U1    AT PATCH NAMED: ERSFT      =-6.406E-02
NET SOURCE OF U1    AT PATCH NAMED: ERSRER     =-3.726E-02
NET SOURCE OF U1    AT PATCH NAMED: ASINR      =-1.535E+00
NET SOURCE OF U1    AT PATCH NAMED: ASOUTR     =-9.000E-03
NET SOURCE OF U1    AT PATCH NAMED: ASTOP      =-1.075E-03
NET SOURCE OF U1    AT PATCH NAMED: ASEDFT     =-4.827E-01
NET SOURCE OF U1    AT PATCH NAMED: ASEDTP     =-1.241E-02
NET SOURCE OF U1    AT PATCH NAMED: ASEDRR     =-1.637E+00
NET SOURCE OF U1    AT PATCH NAMED: ASEDBT     =-4.651E-02
NET SOURCE OF U1    AT PATCH NAMED: REARWL     =-4.054E+00
NET SOURCE OF U1    AT PATCH NAMED: WTOP1      = 3.685E-02
NET SOURCE OF U1    AT PATCH NAMED: WTOP2      = 4.982E-02
NET SOURCE OF U1    AT PATCH NAMED: WTOP3      = 1.315E-01
NET SOURCE OF U1    AT PATCH NAMED: WTOP4      =-7.060E-02
NET SOURCE OF U1    AT PATCH NAMED: WTOP5      =-5.914E-03
NET SOURCE OF U1    AT PATCH NAMED: WTOP6      =-5.282E-02
NET SOURCE OF V1    AT PATCH NAMED: FRONT      =-1.430E-02
NET SOURCE OF V1    AT PATCH NAMED: PRIEND     = 2.288E-02
NET SOURCE OF V1    AT PATCH NAMED: PIDLFT     =-7.820E-05
NET SOURCE OF V1    AT PATCH NAMED: PIDRGT     = 5.741E-02
NET SOURCE OF V1    AT PATCH NAMED: TRLFT      = 1.710E-01
NET SOURCE OF V1    AT PATCH NAMED: PFSIDL     = 1.948E+00
NET SOURCE OF V1    AT PATCH NAMED: PFSIDR     = 2.618E+00
NET SOURCE OF V1    AT PATCH NAMED: FSLLIP     = 7.813E-01
NET SOURCE OF V1    AT PATCH NAMED: FSRLIP     = 1.119E-01
NET SOURCE OF V1    AT PATCH NAMED: TBREAR     = 1.433E-01
NET SOURCE OF V1    AT PATCH NAMED: TBOUT      =-9.678E-03
NET SOURCE OF V1    AT PATCH NAMED: TBFRNT     = 7.428E-02
NET SOURCE OF V1    AT PATCH NAMED: TRUPFT     = 6.831E-01
NET SOURCE OF V1    AT PATCH NAMED: TRURER     = 1.015E-01
NET SOURCE OF V1    AT PATCH NAMED: TRLRER     = 9.199E-02
NET SOURCE OF V1    AT PATCH NAMED: TRSFT      = 2.230E-01
NET SOURCE OF V1    AT PATCH NAMED: TRSTP      =-3.517E-01
NET SOURCE OF V1    AT PATCH NAMED: TRSRER     = 2.850E-02
NET SOURCE OF V1    AT PATCH NAMED: ERUFT      =-1.526E-02
NET SOURCE OF V1    AT PATCH NAMED: ERLFT      = 7.183E-03
NET SOURCE OF V1    AT PATCH NAMED: ERLRER     =-5.686E-03
NET SOURCE OF V1    AT PATCH NAMED: ERSFT      =-8.292E-04
NET SOURCE OF V1    AT PATCH NAMED: ERSLIP     = 1.905E-01
NET SOURCE OF V1    AT PATCH NAMED: ERSRER     = 1.342E-03
NET SOURCE OF V1    AT PATCH NAMED: ASINR      =-4.433E+00
NET SOURCE OF V1    AT PATCH NAMED: ASOUTR     =-3.323E-02
NET SOURCE OF V1    AT PATCH NAMED: ASEDFT     =-3.063E+00
NET SOURCE OF V1    AT PATCH NAMED: ASEDRR     =-1.565E+01
NET SOURCE OF V1    AT PATCH NAMED: REARWL     =-2.590E+01
NET SOURCE OF V1    AT PATCH NAMED: SIDE1      = 6.605E-01
NET SOURCE OF V1    AT PATCH NAMED: SIDE2      = 9.944E-01
NET SOURCE OF V1    AT PATCH NAMED: SIDE3      = 5.080E+00
NET SOURCE OF V1    AT PATCH NAMED: SIDE4      =-1.002E-01
NET SOURCE OF V1    AT PATCH NAMED: SIDE5      =-6.007E-01
NET SOURCE OF V1    AT PATCH NAMED: SIDE6      =-1.922E+01
NET SOURCE OF V1    AT PATCH NAMED: OUT1       = 8.506E-02
NET SOURCE OF V1    AT PATCH NAMED: OUT2       = 1.481E-01
NET SOURCE OF V1    AT PATCH NAMED: OUT3       = 2.854E+00
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NET SOURCE OF V1   AT PATCH NAMED: OUT4     = 5.467E-03
NET SOURCE OF V1   AT PATCH NAMED: OUT5     =-5.194E+00
NET SOURCE OF V1   AT PATCH NAMED: OUT6     =-1.350E+01
NET SOURCE OF W1   AT PATCH NAMED: DECK     =-2.504E+02
NET SOURCE OF W1   AT PATCH NAMED: PRITOP   =-1.248E-01
NET SOURCE OF W1   AT PATCH NAMED: PRIROOF  =-2.529E-01
NET SOURCE OF W1   AT PATCH NAMED: PIDTOP   = 1.320E-01
NET SOURCE OF W1   AT PATCH NAMED: PIDBOT   = 2.017E-01
NET SOURCE OF W1   AT PATCH NAMED: PRIINB   = 3.643E-01
NET SOURCE OF W1   AT PATCH NAMED: TROVHD   =-1.844E+01
NET SOURCE OF W1   AT PATCH NAMED: INFLOW1  =-1.770E+03
NET SOURCE OF W1   AT PATCH NAMED: INFLOW2  =-1.505E+03
NET SOURCE OF W1   AT PATCH NAMED: PFSIDT   =-1.843E-02
NET SOURCE OF W1   AT PATCH NAMED: FSBOT    =-5.057E+00
NET SOURCE OF W1   AT PATCH NAMED: FSOVHD   =-4.070E+00
NET SOURCE OF W1   AT PATCH NAMED: FSTLIP   =-2.336E-02
NET SOURCE OF W1   AT PATCH NAMED: FSTOP    =-1.912E+00
NET SOURCE OF W1   AT PATCH NAMED: TRUBOT   =-7.499E+00
NET SOURCE OF W1   AT PATCH NAMED: TRLTP    =-7.499E+00
NET SOURCE OF W1   AT PATCH NAMED: TRSTP    =-7.262E+00
NET SOURCE OF W1   AT PATCH NAMED: JETIN    = 2.746E+05
NET SOURCE OF W1   AT PATCH NAMED: JETOUT   = 8.644E+04
NET SOURCE OF W1   AT PATCH NAMED: EROVHD   =-1.574E+01
NET SOURCE OF W1   AT PATCH NAMED: ERROOF   =-4.233E+00
NET SOURCE OF W1   AT PATCH NAMED: ERUBOT   =-6.154E+00
NET SOURCE OF W1   AT PATCH NAMED: ERLTOP   =-6.154E+00
NET SOURCE OF W1   AT PATCH NAMED: ERSLIP   =-3.451E+00
NET SOURCE OF W1   AT PATCH NAMED: ASTOP    = 3.855E-03
NET SOURCE OF W1   AT PATCH NAMED: ASEDTP   = 2.510E-02
NET SOURCE OF W1   AT PATCH NAMED: ASEDBT   =-9.814E-02
NET SOURCE OF W1   AT PATCH NAMED: SIDE1    =-3.777E+00
NET SOURCE OF W1   AT PATCH NAMED: SIDE2    =-2.785E+00
NET SOURCE OF W1   AT PATCH NAMED: SIDE3    =-3.145E+01
NET SOURCE OF W1   AT PATCH NAMED: SIDE4    =-2.744E+01
NET SOURCE OF W1   AT PATCH NAMED: SIDE5    =-2.492E+01
NET SOURCE OF W1   AT PATCH NAMED: SIDE6    =-2.787E+00
NET SOURCE OF W1   AT PATCH NAMED: OUT1     =-1.565E+00
NET SOURCE OF W1   AT PATCH NAMED: OUT2     =-6.098E-01
NET SOURCE OF W1   AT PATCH NAMED: OUT3     =-1.519E+01
NET SOURCE OF W1   AT PATCH NAMED: OUT4     =-1.964E+01
NET SOURCE OF W1   AT PATCH NAMED: OUT5     =-2.218E+01
NET SOURCE OF W1   AT PATCH NAMED: OUT6     =-2.535E+00
NET SOURCE OF W1   AT PATCH NAMED: WTOP1    =-2.341E-02
NET SOURCE OF W1   AT PATCH NAMED: WTOP2    =-9.821E-03
NET SOURCE OF W1   AT PATCH NAMED: WTOP3    =-1.377E-01
NET SOURCE OF W1   AT PATCH NAMED: WTOP4    =-3.938E-01
NET SOURCE OF W1   AT PATCH NAMED: WTOP5    = 1.541E-03
NET SOURCE OF W1   AT PATCH NAMED: WTOP6    = 2.017E-03
NET SOURCE OF R1   AT PATCH NAMED: JETIN    =-8.750E+01
NET SOURCE OF R1   AT PATCH NAMED: JETOUT   = 8.750E+01
NET SOURCE OF R1   AT PATCH NAMED: SKY      =-1.370E+02
NET SOURCE OF R1   AT PATCH NAMED: SKY1     = 1.418E+02
NET SOURCE OF R1   AT PATCH NAMED: SKYLEFT  = 3.393E+01
NET SOURCE OF R1   AT PATCH NAMED: SKYRT    =-4.109E+01
NET SOURCE OF KE   AT PATCH NAMED: KESOURCE = 1.365E+07
NET SOURCE OF KE   AT PATCH NAMED: DECK     =-6.509E+10
NET SOURCE OF KE   AT PATCH NAMED: FRONT    =-8.544E+09
NET SOURCE OF KE   AT PATCH NAMED: JETOUT   = 0.000E+00
NET SOURCE OF KE   AT PATCH NAMED: ASEDRR   = 1.578E+09
NET SOURCE OF KE   AT PATCH NAMED: REARWL   =-7.925E+10
NET SOURCE OF KE   AT PATCH NAMED: SKY      =-1.763E+04
NET SOURCE OF KE   AT PATCH NAMED: SKY1     =-1.319E+06
NET SOURCE OF KE   AT PATCH NAMED: SKYLEFT  = 4.140E+02
NET SOURCE OF KE   AT PATCH NAMED: SKYRT    =-8.852E+02
NET SOURCE OF EP   AT PATCH NAMED: KESOURCE = 2.720E+08
NET SOURCE OF EP   AT PATCH NAMED: DECK     =-4.576E+12
NET SOURCE OF EP   AT PATCH NAMED: FRONT    =-1.442E+10
NET SOURCE OF EP   AT PATCH NAMED: JETOUT   = 0.000E+00
NET SOURCE OF EP   AT PATCH NAMED: ASEDRR   = 7.804E+08
NET SOURCE OF EP   AT PATCH NAMED: REARWL   =-1.188E+12
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NET SOURCE OF EP    AT PATCH NAMED: SKY       =-2.647E+04
NET SOURCE OF EP    AT PATCH NAMED: SKY1      =-8.776E+06
NET SOURCE OF EP    AT PATCH NAMED: SKYLEFT   = 1.301E+03
NET SOURCE OF EP    AT PATCH NAMED: SKYRT     =-1.483E+03
NET SOURCE OF H1    AT PATCH NAMED: JETIN     =-2.597E+07
NET SOURCE OF H1    AT PATCH NAMED: JETOUT    = 1.757E+08
NET SOURCE OF H1    AT PATCH NAMED: SKY       =-6.746E+07
NET SOURCE OF H1    AT PATCH NAMED: SKY1      =-7.676E+07
NET SOURCE OF H1    AT PATCH NAMED: SKYLEFT   = 1.005E+07
NET SOURCE OF H1    AT PATCH NAMED: SKYRT     =-1.808E+07

***************************************************************
SPOT VALUES VS. SWEEP (/ITHYD IF PARAB)
   IXMON=     2    IYMON=     5    IZMON=      5

TABULATION OF ABSCISSA AND ORDINATES...
      ISWP         P1         U1         V1         W1         KE
   5.100E+02  -8.605E+01 -3.803E+00 -1.121E+01  5.431E+00  1.318E+01
   5.250E+02  -9.289E+01 -3.836E+00 -1.171E+01  5.732E+00  2.149E+01
   5.400E+02  -8.370E+01 -3.664E+00 -1.147E+01  5.136E+00  1.502E+01
      ISWP         EP         H1
   5.100E+02   2.498E+01  2.964E+05
   5.250E+02   3.781E+01  2.964E+05
   5.400E+02   2.924E+01  2.964E+05
   VARIABLE        P1         U1         V1         W1         KE
    MINVAL= -9.289E+01 -3.836E+00 -1.171E+01  5.136E+00  1.318E+01
    MAXVAL= -8.370E+01 -3.664E+00 -1.121E+01  5.732E+00  2.149E+01
    CELLAV= -8.755E+01 -3.768E+00 -1.147E+01  5.433E+00  1.656E+01
   VARIABLE        EP         H1
    MINVAL=  2.498E+01  2.964E+05
    MAXVAL=  3.781E+01  2.964E+05
    CELLAV=  3.068E+01  2.964E+05

1.00 V....+....+....+....+....E....+....+....+....+....H
0.90 +                        H                        +
0.80 +                                                 +
0.70 P                                                 +
0.60 +                                                 +
0.50 W                                                 V
0.40 +                                                 +
0.30 +                                                 E
0.20 U                                                 K
0.10 +                                                 +
0.00 H....+....+....+....+....V....+....+....+....+....W
     0    .1    .2    .3    .4    .5    .6    .7    .8    .9   1.0
THE ABSCISSA IS       ISWP.   MIN= 5.10E+02 MAX= 5.40E+02
***************************************************************


***************************************************************
RESIDUALS VS. SWEEP (/ITHYD IF PARAB)

TABULATION OF ABSCISSA AND ORDINATES...
      ISWP         P1         U1         V1         W1         KE
   5.100E+02   1.061E+08  3.335E+09  3.845E+09  1.161E+10  1.988E+12
   5.250E+02   8.928E+07  3.748E+09  3.925E+09  1.757E+10  2.783E+12
   5.400E+02   1.118E+08  4.121E+09  4.698E+09  1.678E+10  2.394E+12
      ISWP         EP         H1
   5.100E+02   3.604E+14  1.418E+13
   5.250E+02   3.470E+14  2.645E+13
   5.400E+02   3.406E+14  2.557E+13
   VARIABLE        P1         U1         V1         W1         KE
    MINVAL=  1.831E+01  2.193E+01  2.207E+01  2.318E+01  2.832E+01
    MAXVAL=  1.853E+01  2.214E+01  2.227E+01  2.359E+01  2.865E+01
   VARIABLE        EP         H1
    MINVAL=  3.346E+01  3.028E+01
    MAXVAL=  3.352E+01  3.091E+01

1.00 E....+....+....+....+....H....+....+....+....+....V
0.90 +                                                 H
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0.80 P                                                     +
0.70 +                                                     +
0.60 +                              U                      K
0.50 +                                                     +
0.40 +                                                     +
0.30 +                              E                      +
0.20 +                                                     +
0.10 +                              V                      +
0.00 H....+....+....+....+....P....+....+....+....+....E
     0   .1   .2   .3   .4   .5   .6   .7   .8   .9  1.0
THE ABSCISSA IS      ISWP.  MIN= 5.10E+02 MAX= 5.40E+02
*************************************************************

DATA FOR RE-STARTS AND PLOTTING SAVED ON DF09
RUN NO.   1  ENDED AT ISWEEP=   550  AND ISTEP=        1

*************************************************************
SATLIT RUN NUMBER =    1
MACHINE-CLOCK TIME OF RUN =        0 SECONDS.
TIME/(VARIABLES*CELLS*TSTEPS*SWEEPS*ITS) = 0.000E+00
*************************************************************
 NORMAL STOP REACHED IN PROGRAM
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LIST OF REFERENCES

1. Salinas, D. and C. Kodres., *Modeling the Aerothermal Characteristics of Jet Engine Test Cells*, Department of Mechanical Engineering, Naval Postgraduate School, Monterey, CA, October 1987.

2. Brunner, Donald E., Project Leader, *Project Master Plan for Aviation Gas Turbine Engine Test Facilities (AGTETF)*, Naval Civil Engineering Laboratory, Port Hueneme, CA, March 1984.

3. CHAM of North America, Inc, *PHOENICS Instruction Course Notes*, CHAM, Huntsville, AL, 1986.

4. Rosten, H.I. and D. Brian Spalding, *PHOENICS User Manual*, CHAM Ltd., Wimbledon, London, England, October 1986.

5. B.E. Launder and D.B. Spalding, *Lectures in Mathematical Models of Turbulence*, Academic Press, London, 1976.

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