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A BRIEF DOCUMENTATION OF THE NORPAX OCEAN MODEL,(U)
APR 77 J C HUANG, W SHAW, J S CHING N00014-76-C-0141

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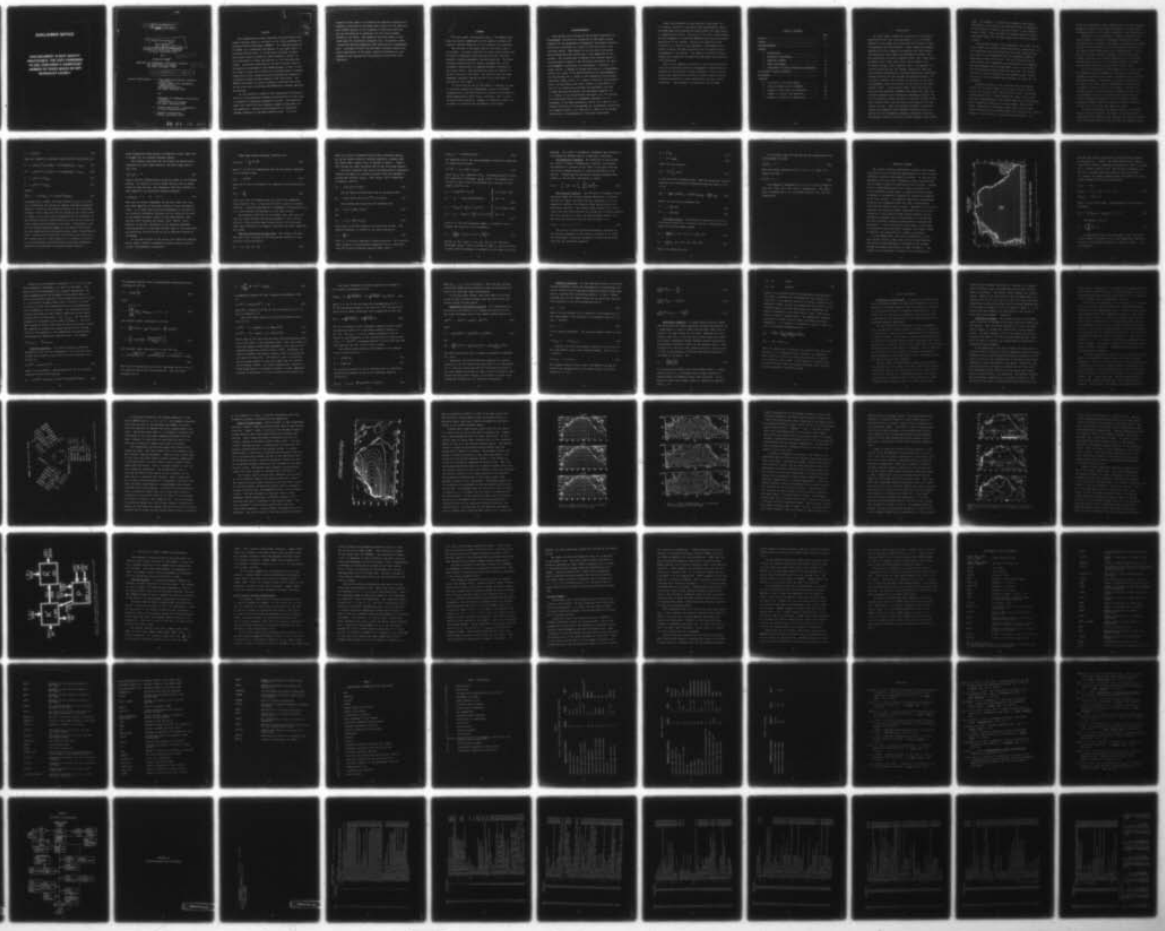

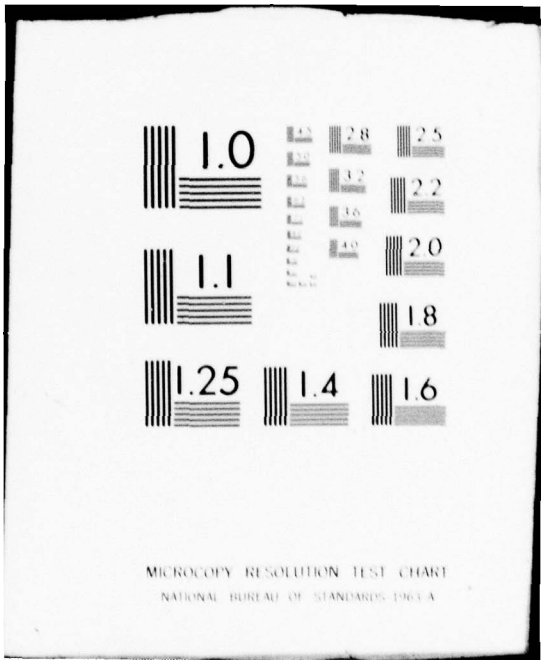
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(6) A BRIEF DOCUMENTATION OF THE NORPAX OCEAN MODEL

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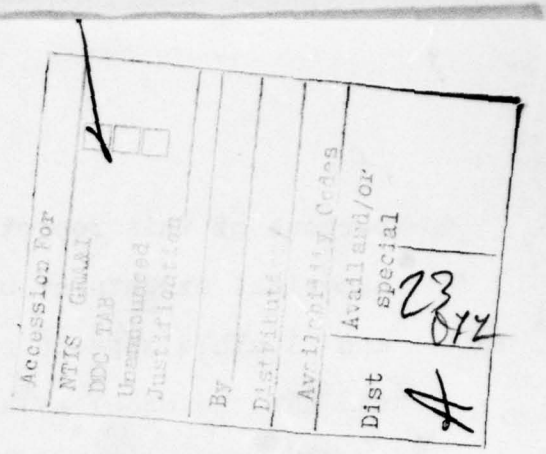

PREFACE

This documentation briefly describes the multi-layer, non-linear, regional model of the North Pacific Ocean developed for the North Pacific Experiment (NORPAX). The long-term objective of NORPAX is to understand fluctuations in the upper layers of the North Pacific Ocean, in a time scale of months to years and a space scale in excess of 1,000 kilometers, as well as the relationship of these fluctuations to the overlying atmosphere. Large-scale modelling for the North Pacific Ocean is an essential sub-program of the NORPAX program in that it sets the stage for more local studies by indicating areas of maximum sensitivity and/or variability and by showing the dynamic relationship between diverse regions of the ocean basin. The NORPAX ocean model is based on primitive equations and serves as the first step in pursuing the NORPAX goal through numerical simulations.

In the simulation studies we have emphasized the physical nature of the large-scale abnormal characteristics of the ocean in response to anomalous atmospheric forcing. The simulation model also identifies the anomalous dynamics responsible for the generation, evolution, and dissipation of large-scale thermal anomalies in the North Pacific Ocean. It is the

purpose of this report to illustrate the physical processes and numerical structures of the model and to point out the efficient and flexible aspects of the software to facilitate those who may use the model as an essential tool for future dynamic studies in the ocean. The numerical solutions shown in this report are for illustrative purposes only. No specific effort is made for detailed comparison with observational oceanographic data. Although an effort has been made to ensure accurate and smooth description of the model, detailed information on the program is not required for the purposes of this brief documentation.

SUMMARY

For this report, the physical bases of the NORPAX ocean model are briefly summarized and the numerical schemes and computer software necessary for its execution are presented.

Two versions of the model exist at the final stage of the project. One model simulates the ocean under steady, mean forcing of atmospheric conditions and the other simulates seasonal, varying atmospheric forcing conditions. The major difference between the two computer programs lies in the peripheral input/output of imposing boundary conditions at the ocean surface. Each program can easily be modified to fulfill the role of the other. For brevity, only the time-dependant, seasonal varying version of the ocean model is described in this report.

To facilitate the use of this model, a computer listing of the model program and subprograms is given in FORTRAN language with a brief description of constants and parameters. Input exemplifying initial start, continuous runs, and updating are also presented. Samples of simulated results are included to illustrate the performance of the model.

ACKNOWLEDGEMENTS

This project was initiated at the Scripps Institution of Oceanography, University of California at San Diego and was completed at the Department of Atmospheric and Oceanic Sciences, University of Michigan as a result of the relocation of the principal author. Many people in La Jolla and in Ann Arbor were involved and have contributed to the completion of this project. The authors wish to express their sincere thanks to all with special thanks to the following individuals for their encouragement, discussions, and assistances: Professor J.D. Isaacs and Dr. J. Namias of Scripps Institution of Oceanography and Dr. W.L. Gates of the Rand Corporation for encouragements and discussions; Dr. K. Bryan of the Geophysical Fluid Dynamic Laboratory, NOAA, and Dr. R.L. Haney of the Naval Post-Graduate School for providing their early version of ocean model, and also Dr. R.L. Haney for providing the atmospheric data and for many spirited discussions and invaluable comments; Dr. J.J. O'Brien of the Florida State University, Dr. W.R. Holland of the National Center for Atmospheric Research, Dr. R.C. Allexander of the Rand Corporation, and Dr. W.B. White of the Scripps Institution of Oceanography for instrumental discussions and comments; Messrs. J.M. Park and R.A. Wylie of the Scripps Institution of Oceanography for their able assistances.

After the relocation of this project to Ann Arbor, Dr. E.J. Aubert, Director of the Great Lakes Environmental Laboratory/NOAA generously granted the senior author the time needed to complete this project. His and Dr. D.B. Rao's understanding and encouragement to finish the NORPAX-related work are greatly appreciated by the authors. We have also benefitted from Professor S.J. Jacobs of the Department of Atmospheric and Oceanic Sciences for many discussions and for administrative arrangements of the project. Our thanks to Frances Forrestel Zingale who helped edit the paper and Pam Downie who typed the final manuscript.

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1. Introduction

In recent years, substantial deviations of sea-surface temperatures from their long-term means, i.e., the thermal anomalies in the ocean, have attracted the attention of many oceanographers and meterologists. These anomalous phenomena, together with their temporal correlations and their spatial teleconnections with oceanic and atmospheric changes, have been extensively studied by Bjerknes (1962, 1966, 1969, 1972), by Namias (1959, 1965, 1969, 1970), and by others (e.g., Petterssen, et al., 1962; Rodewald, 1963). The general conclusions ascertain that the thermal anomalies in the ocean are constantly modifying the overlying atmospheric circulation, thereby altering the wind systems and weather patterns. Observations indicate that climatic fluctuations in the ocean and atmosphere occur in all parts of the world at all times (Namias, 1965). In the Pacific Ocean, field data from the North Pacific Experiment (NORPAX) have shown that large temperature anomalies with intensities sometimes as high as 2°C to 5°C frequently occupy one-third to one-half or more of the North Pacific Ocean, and that they usually persist for long periods of time. Aside from possible feedback to the atmosphere, the anomalies cause abnormal advections which, together with the atmospheric anomalous variations, influence the general oceanic circulation patterns (Namias, 1965, Arthur,

1966). For example, in 1957-1958 an anomalous sea-surface temperature in the Pacific was associated with the weakening of the California Current which was forced to swing offshore (Isaacs, 1968). This resulted in a strong invasion of warm, subtropical water into the west coast as far north as British Columbia.

The physical natures of the atmosphere, the ocean, and the biota therein are closely coupled and mutually interacting. In the large-scale air/sea interactions the ocean primarily supplies heat to the atmosphere while the atmosphere supplies momentum and heat to the ocean. The heat released from the ocean modifies the atmospheric circulation while the momentum and heat exchange from the atmosphere to the ocean determine the flow pattern and heat content in the ocean. The oceanic circulation, then, redistributes the thermal energy, thereby setting up a closed feedback system between the ocean and the atmosphere.

Simulation studies of the ocean have been successfully carried out by Takano (1969), Il'in, et al. (1969), O'Brien (1971), Bye and Sag (1972), Bryan and Cox (1972), and Holland and Hirschman (1973). These authors have taken into account realistic configurations of the basins under their investigation with a simplified formulation of the systems. Bryan (1963, 1969b), Gormatyuk and Sarkisyan (1965), Bryan and Cox (1967, 1968), Crowley (1970), and Haney (1974) have included the complete dynamics in their models of certain idealized domains. Cox

(1970) has used Bryan's model (1969b), which includes the whole dynamics as well as the irregular boundaries, to investigate the monsoon effect on circulation patterns in the Indian Ocean.

Although it is not realistic to employ a regional atmospheric model for studies of planetary responses and global teleconnections, a regional ocean model is tolerable for dynamic studies in the ocean due to its solid boundary enclosure and the semi-isolated characteristics of certain basins. If one addresses the more specific problems of physical processes, thermal structures, and dynamic responses in an ocean under meteorological forcing, it is probably feasible to examine a semi-enclosed domain such as the North Pacific Ocean.

In the investigation of the anomalous state in the ocean, the anomalies can be considered as perturbation quantities, though not necessarily very small, superimposed upon the basic long-term averages. In general, the oceanic anomalies are, at least to the lower order of approximation, generated by atmospheric anomalies such as the anomalous pressure, the anomalous wind, the anomalous heat-exchange and water flux. An approximate method for estimating the large-scale sea-surface temperature anomalies due to atmospheric changes, proposed by Namias (1965) and extended by Arthur (1966) and Jacobs (1967), has shown some degree of success.

We have investigated the anomaly dynamics in the North Pacific Ocean by numerical simulation. The ocean model we developed for the anomaly study considers the actual configuration of the North Pacific Ocean and takes the complete dynamic

equations with all large-scale physical processes into consideration. The basic numerical scheme used in the model is a modification of Haney's idealized ocean model (1974). The space-staggered grid and the spacing differencing scheme used in the present model follows that of the UCLA atmospheric general circulation model (Gates, et al., 1971). In addition, the present model has improved the treatment of the upper boundary conditions. The heat flux variation between the ocean and the atmosphere is not only a function of the combined air-sea temperatures but it is also a summation of all heating and interacting components calculated from empirical formulae for the heat balance at the naviface. In computing wind stress, the near surface atmospheric stability is also taken into consideration. Both the longitudinal component and the meridional component of wind stress are used as the boundary conditions in the momentum equation. Furthermore, since it is well-known that salinity plays an important role in the ocean dynamics at high latitudes, a prognostic equation for salinity conservation is also included in the hydrodynamic system.

Our study originated from the objective of NORPAX to understand the low-frequency fluctuations in the upper layer of the North Pacific Ocean and their relations to the overlying atmosphere. The major goal of our study is to investigate the anomaly dynamics and to describe the configuration and evolution of the thermal anomalies in the North Pacific by numerical simulations. Because the anomalies are generally small, it is necessary to follow a systematic step-by-step approach from

the spin-up of an ocean model to the final anomaly experiments. A set of three papers are in progress to report the sequence of numerical dynamic study for the North Pacific Ocean. The first paper describes briefly the basic physics in the numerical model which is the basic tool for our thermal anomaly investigations, and shows the simulated long-term mean state in the North Pacific Ocean. Our major interest is in the large-scale (more than 1000 km) and long-term (months to years) fluctuations in the North Pacific Ocean relative to the overlying atmosphere. The following paper, II, will present the seasonal fluctuations in the North Pacific Ocean, and III will discuss the dynamic mechanisms and results of anomaly experiments based on real-time specifications in the North Pacific model. This report summaries briefly the discussions in the aforementioned papers with emphasis on the physical model itself and on its computational applications.

2. Theoretical Background

The formulation of the model is based on primitive equations relative to the right-hand spherical coordinate system (λ,ϕ,z) on the surface of the earth with z taken positive upward from the mean sea level. The Navier-Stokes equations for incompressible and nonhomogeneous fluid with some basic physical approximations, namely, the Boussinesq approximation, the hydrostatic approximation, the eddy viscosity approximation, and the traditional approximation (Eckart, 1960), are integrated with time. All symbols are defined in Table 1. Let (u,v) be the horizontal component of velocity W and define an advective flux operator as:

$$\mathcal{L}(q) = \frac{\sec\phi}{a}\left[(uq)_\lambda + (vq\cos\phi)_\phi\right] + (wq)_z \tag{1}$$

where q is any scalar quantity. The governing equations are:

$$u_t = \mathcal{L}u + v\sin\phi(2\Omega + a^{-1}u\sec\phi) - (\rho_o a)^{-1}\sec\phi p_\lambda + F^\lambda \tag{2}$$

$$v_t = \mathcal{L}v - u\sin\phi(2\Omega + a^{-1}u\sec\phi) - (\rho_o a)^{-1}p_\phi + F^\phi \tag{3}$$

$$p_z = -\rho g \tag{4}$$

$$a^{-1}\sec\phi[u_\lambda + (v\cos\phi)_\phi] + w_z = 0 \tag{5}$$

$$T_t = \mathcal{L}T + Q \tag{6}$$

$$S_t = \mathcal{L}S + H \tag{7}$$

$$\rho = \rho(T,S,p) \tag{8}$$

where all alphabetic subscripts denote partial derivatives and

$$F^{\lambda} = \nu_1[\nabla^2 u + a^{-2}(1-\tan^2\phi)u - 2a^{-2}\tan\phi\sin\phi v_{\lambda}] + \nu_2 u_{zz} \tag{9}$$

$$F^{\phi} = \nu_1[\nabla^2 v + a^{-2}(1-\tan^2\phi)v + 2a^{-2}\tan\phi\sin\phi u_{\lambda}] + \nu_2 v_{zz} \tag{10}$$

$$Q = k_1\nabla^2 T + h^{-1}k_2 T_{zz} \tag{11}$$

$$H = k_1\nabla^2 S + h^{-1}k_2 S_{zz} \tag{12}$$

wherein

$$\nabla^2(q) = a^{-2}\sec^2\phi q_{\lambda\lambda} + a^{-1}\sec\phi(a^{-k}\cos\phi q_{\phi})_{\phi} \tag{13}$$

Following Bryan (1969b), the step function $h(-\rho'_z)$ in (11) and (12) incorporates the convective density adjustment mechanism wherein ρ' indicates the potential density of the ocean water. Although in most cases the vertical column of the oceanic water is stable, notice that static instability due to inversions in the potential density stratification can occur at any level and cause strong vertical mixing in the ocean. Nevertheless, most of the unstable phenomena happen in the surface layers where all the atmosphere-ocean interactions and energy transformations occur. Since static instability in the real ocean lasts only for a short period of time (hours), it is simplest to treat it as an instantaneous convective density adjustment mechanism. Whenever the instability is detected between layers, a

quasi-homogeneous mixed density of marginally stable lapse rate is assumed for all unstable adjacent layers.

The boundary conditions for the lateral and bottom solid boundaries are zero normal velocity, and zero normal heat or salt flux;

$$V_n, T_n, S_n = 0 \tag{14}$$

where n denotes differentiation along the normal of the boundary surface. In addition to the no normal velocity and no normal fluxes of heat and salt, the tangential free-slip condition is also imposed on the equatorial southern boundary,

$$v, u_\phi, T_\phi, S_\phi = 0 \quad \text{at} \quad \phi = 0 \ . \tag{15}$$

Note that the bottom topography and the geothermal heat flux have been neglected at the lower boundary in this preliminary study. It is known that the bottom topography is important to the vertically integrated transport and can influence the path of the western boundary current in the ocean (Warren, 1963; Holland, 1967; Schulman and Niiler, 1970; O'Brien, 1971). However, we are more interested in the anomalous phenomena existing generally in the upper shallow layer of the ocean where the baroclinic velocity field may not be markedly affected by topography.

At the upper surface of the ocean, the "rigid-lid" approximation (Bryan, 1969b) is employed in order to gain a more efficient time-dependent calculation.

Other upper surface boundary conditions are:

$$\nu_2(u_z, v_z) = \frac{1}{\rho_o}(\tau^\lambda, \tau^\phi) \tag{16}$$

where τ^λ, τ^ϕ are the longitudinal and the latitudinal components of the surface stress:

$$\kappa_2 S_z = S_1(E-R) \tag{17}$$

where E-R is the net difference of evaporation and precipitation; and

$$\kappa_2 T_z = \frac{Q_S}{\rho_o c} \tag{18}$$

where Q_S is the net downward heat flux across the atmosphere/ocean interface and c is the specific heat of water at constant pressure. A detailed description of atmospheric forcing functions, i.e., wind stresses and heating is in the next section.

The boundary conditions of zero normal flow, zero heat and salinity fluxes through the lateral boundaries, zero vertical velocity at the balanced upper surface and at the bottom guarantee the satisfaction of integral constraints for mass, momentum, and energy.

The wind stress and the heat flux. The synoptic net downward heat flux, according to the heat balance equation at the naviface, can be written as

$$Q_S = Q_I - Q_B - Q_H - Q_E \tag{19}$$

where Q_I is the net downward flux of solar insolation and Q_B, Q_H, Q_E are upward fluxes of infrared radiation, sensible heat, and latent heat, respectively, as defined in Table 1. Table 1 also defines all other notations used in the following formulae.

The solar radiation flux can be calculated from a simplified formula with empirical constants obtained from the atmospheric climatology (Johnson, et al., 1958; London, 1957; Vonder-Haar and Hanson, 1969) as

$$Q_I = 0.95\, Q_o(0.74-0.6N_c) \,. \tag{20}$$

The net upward infrared heat flux is calculated from

$$Q_B = 0.985\, cT_s^{\,4}(0.39-0.06\, e_a^{\,1/2})\,(1-0.6\, N_c^{\,2}) \,. \tag{21}$$

The sensible and latent heat are computed from

$$Q_H = \rho_a\, C_H\, C_a\, |V_a|\, (T_s-T_a) \tag{22}$$

and

$$Q_L = \rho_a\, C_E\, L\, |V_a|\, (q_s-q_a) \tag{23}$$

where $|V_a|$ is the wind speed at 10 m above the surface. The specific humidity is related to the vapor pressure by

$$q = \frac{.622}{P_a}\, e \tag{24}$$

where P_a is the mean atmospheric surface pressure. The saturated vapor pressure at ocean-surface temperature can be calculated from the Clausius-Clapeyron equation (Hess, 1959).

$$\text{Log}_{10}\, e_s = (9.4051 - 2353/T_s) \,. \tag{25}$$

The momentum flux at the ocean-atmosphere interface is expressed as surface wind stresses,

$$(\tau^{\lambda}, \tau^{\phi}) = \rho_a\, C_p\, |W_a|\, (u_a, v_a) \tag{26}$$

where (u_a, v_a) are components of W_a. Following Deardorff (1968) and using data of Bussinger, et al. (1971), the exchange coefficients of heat, water, and momentum are a function of atmospheric stability as,

$$\left.\begin{aligned} C_D &= (C_D)_N \exp(-2\, \beta_v\, Ri) \\ C_H &= C_E = (C_H)_N \exp[-(\beta_v + \beta_T) Ri] \end{aligned}\right\} \quad \text{for stable cases } (Ri > 0) \tag{27a}$$

$$\left.\begin{aligned} C_D &= (C_D)_N \left[1 + \frac{7}{b_1} \ln (1 - b_1\, Ri)\right] \\ C_H &= C_E = (C_H)_N \left[1 + \frac{11}{b_2} \ln (1 - b_2\, Ri)\right] \end{aligned}\right\} \quad \text{for unstable cases } (Ri < 0) \tag{27b}$$

where Ri is the bulk Richardson number, a parameter used to measure the stability of the atmosphere,

$$Ri = \frac{g Z_{10}}{T_{vo} W_a^2} \left[(T_a - T_s) + 0.38\, T_a\, \frac{e_a - e_s}{P_a}\right] , \tag{28}$$

wherein β_v, β_T, $(C_D)_N$, b_1, b_2, Z_{10}, and T_{vo} are constants (Bussinger, et al., 1971) as listed in Table 2. The coefficient of water particle-exchange is assumed to be the same as the heat

exchange. All values of atmospheric parameters are provided by Fleet Numerical Weather Central at Monterey, California.

The hydrostatic equation. The equations of state define the density in terms of temperature, salinity, and pressure. The departure of pressure at any level in the ocean from the vertically averaged pressure is uniquely determined by the density. Integrating the hydrostatic equation downward with respect to the vertical coordinate, we obtain

$$p'(z) = \int_z^0 \rho g dz - \frac{1}{D} \int_{-D}^0 \left(\int_z^0 \rho g d\xi \right) dz \ . \qquad (29)$$

The vorticity equation. The exclusion of kinematic surface variations makes the surface pressure impossible to calculate. Instead, we compute the shear velocity components (u',v') as prognostic variables with pressure terms substituted by the hydrostatic equation. The vertical mean velocity $(\hat{u},\hat{v})$ is obtained from the stream function by solving the vorticity equation. The total velocity is, then, the vertical mean velocity corrected by the deviation from the vertical mean, i.e.,

$$(u,v) = (\hat{u} + u', \hat{v} + v') \ . \qquad (30)$$

The effect of surface and bottom boundary conditions on the vertical component of the current (w) permit us to define the nondivergent vertically integrated stream function which satisfies the continuity equation,

$$\hat{u} = -a^{-1}\psi_{\phi} \tag{31}$$

$$\hat{v} = a^{-1}\sec\phi\psi_{\lambda} \tag{32}$$

where, for any scalar q,

$$(\hat{q}) = \frac{1}{D}\int_{-D}^{0}(q)dz \tag{33}$$

is the vertically integrated mean. Then the predictive vorticity equation can be obtained by eliminating pressure terms in (2), (3) as

$$\nabla^2\psi_t = \frac{\sec\phi}{a}\{(\hat{G}^{\phi}+\hat{F}^{\phi})_{\lambda} - [(\hat{G}^{\lambda}+\hat{F}^{\lambda})\cos\phi]_{\phi}\} - \frac{\sec\phi}{a^2}f_{\phi}\psi_{\lambda} \tag{34}$$

where f is the Coriolis parameter and

$$G^{\lambda} = u + \frac{uv}{a}\tan\phi \tag{35}$$

$$G^{\phi} = v - \frac{uv}{a}\tan\phi \tag{36}$$

The shear current. The predictive equations for the vertical shear current (u',v') from (2) and (3), subtracting their respective vertical means, become

$$u'_t = \frac{-\sec\phi}{\rho_o a}p'_{\lambda} + fv' + F^{\lambda} + G^{\lambda} - (\hat{F}^{\lambda} + \hat{G}^{\lambda}) \tag{37}$$

$$v'_t = \frac{-1}{\rho_o a}p'_{\phi} - fu' + F^{\phi} + G^{\phi} - (\hat{F}^{\phi} + \hat{G}^{\phi}) \tag{38}$$

where p' is defined in (29).

It is obvious from (37) and (38) and the definition of the vertical mean (33) that

$$(\hat{u}'_t, \hat{v}'_t) = 0 . \tag{39}$$

With the initial condition $(u',v') = 0$ at $t = 0$, then, it is always true that

$$(\hat{u}', \hat{v}') = 0 . \tag{40}$$

The prognostic variables are u', v', ψ, T, and S predicted from (37), (38), (34), (6), and (7), respectively. The diagnostic variables are w, ρ, p obtained from (5), (8), and (29), respectively.

3. Numerical Schemes

The system of partial differential equations and boundary conditions in the continuum are approximated by a set of finite-difference equations and boundary conditions. As the grid size approaches zero, the finite difference solution obtained with any convergent scheme will approach the true solution. However, since no infinitesimal grid size is used in practice, the finite difference scheme chosen to compute the solution must be capable of economically reaching the statistical asymptote of the true solution. In numerical simulations the governing equations are integrated beyond the limit of mathematical justification based on local accuracy. Therefore, it is vitally important that certain integral constraints such as the conservation of total kinetic energy during adiabatic and non-dissipative processes and the conservation of total entropy and total potential enthalpy during adiabatic processes are maintained. In the construction of the model, we have used the quadradic conserving method (Arakawa, 1966; Bryan, 1969b) to maintain the conservation of integral constraints.

In the NORPAX model, the actual configuration of the North Pacific Ocean is taken into account by approximating the coastline with meridians or latitude-circles passing through the nearest grid points as shown in Figure 1. The origin of the coordinates is placed on the intersection of

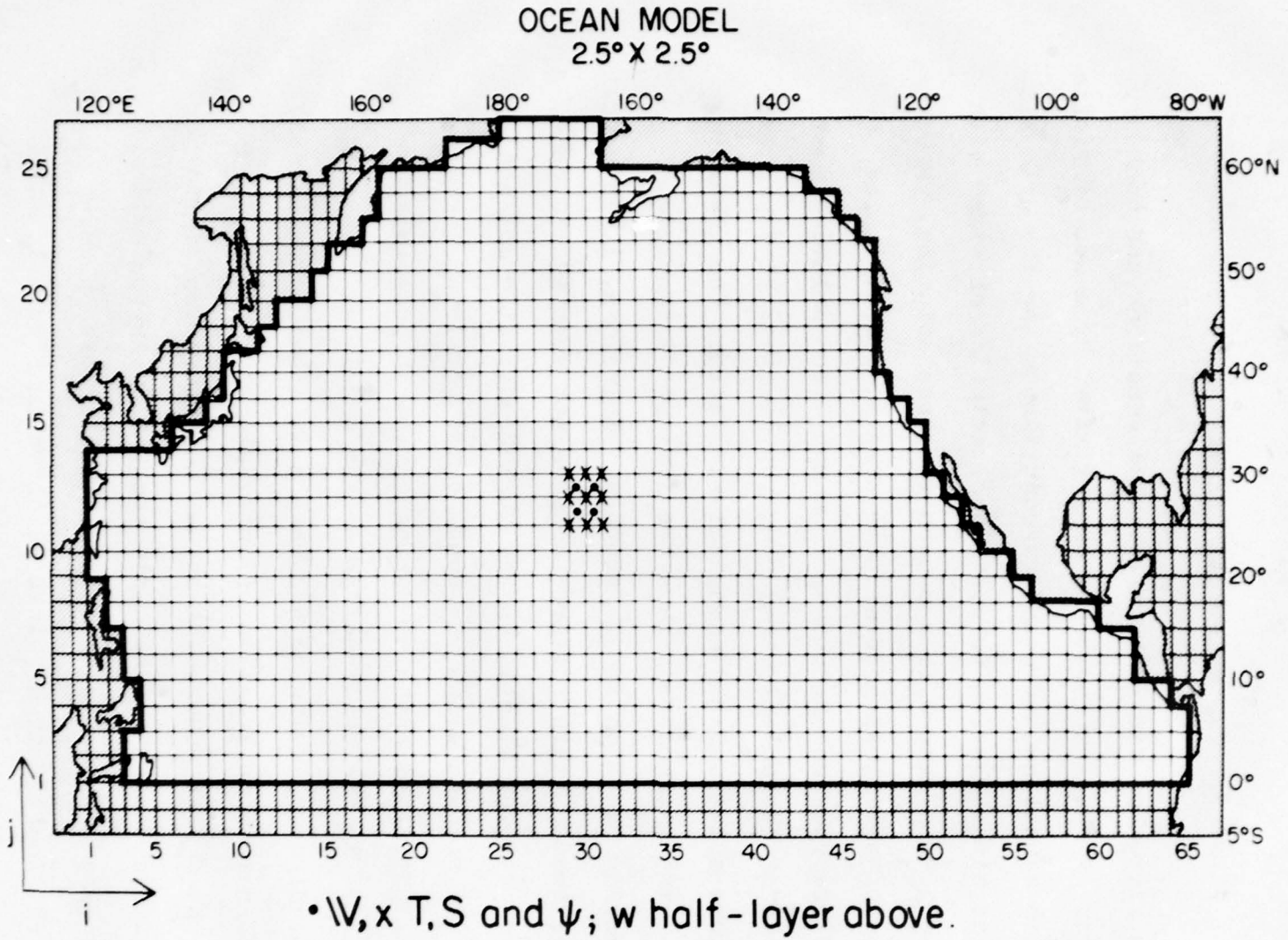

Figure 1. NORPAX model 2.5-degree x 2.5-degree grid mesh and parameters computing points of temperature, salinity, and velocity.

the mean sea surface, the equator, and the western boundary of the ocean ($\lambda_o = 120^0$E). The whole North Pacific domain is from 120^0E to 80^0W in longitude and from 0^0N to 65^0N in latitude with a constant depth of 4 km. The vertical coordinate z is set for 10 variable-thickness layers as shown in Figure 2. If z denotes the height, negative below the surface, the thicknesses between the levels are defined as

$$\Delta z_{1/2} = -2z_1 ,$$

$$\Delta z_{k+1/2} = z_{k-1} - z_k, \quad k = 2,\ldots,K , \tag{41}$$

$$\Delta z_{K+1/2} = 2(z_K + D)$$

where D is the total depth. The thickness of the kth level is defined as

$$\Delta z_k = \frac{1}{2} (\Delta z_{k-1/2} + \Delta z_{k+1/2}), \quad k = 1,\ldots,K . \tag{42}$$

The analog to (33) is

$$\hat{q} = \frac{1}{D} \sum_{k=1}^{K} (q) \; z_k \quad . \tag{43}$$

A computational box is one subvolume of the ocean with a finite angular difference of $\Delta\lambda$ in the longitudinal direction and $\Delta\phi$ in the meridional direction is shown in Figure 3. We have defined

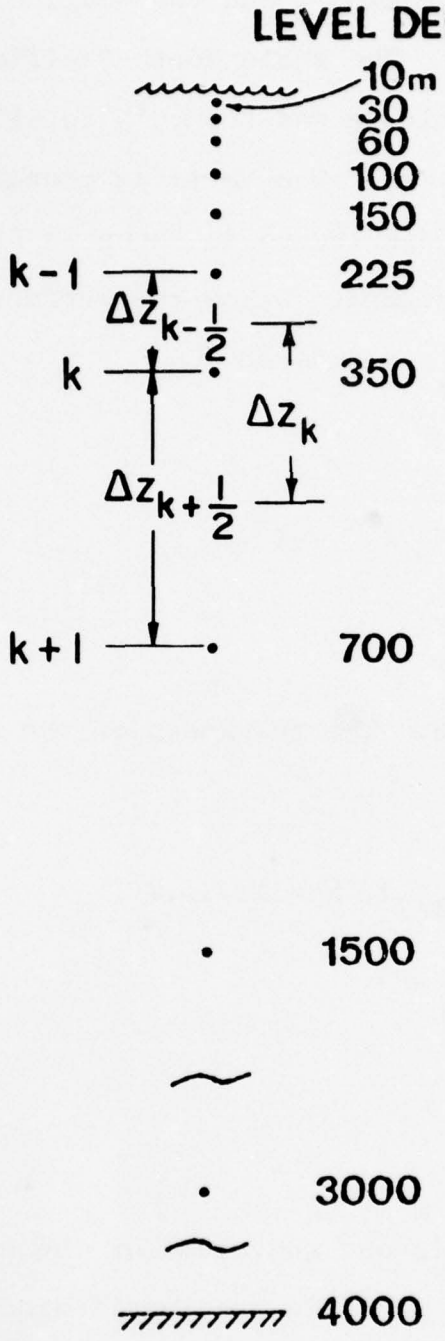

Figure 2. Level depths for vertical layers and layer thicknesses at the integer k and the half integer k+1/2.

$$\Delta x_{j'} = a\cos\phi_{j'}\Delta\lambda \quad ,$$

$$\Delta y = a\Delta\phi \tag{44}$$

where j' may refer to the integer grid points or to the half-integer grid points. Notice that, based on the definition of (44), the x-component is equivalent to λ-component and y-component is equivalent to ϕ-component. Since the computation is carried out in flux form, the areas constituting one sub-volume in the ocean can be designated as

$$A_1 = \Delta y\Delta z_k \quad ,$$

$$A_2 = \Delta x_{j'}\Delta z_k \quad , \tag{45}$$

$$A_3 = \Delta x_{j'}\Delta y \quad .$$

The subvolume under computation is

$$\sigma_{j',k} = \Delta x_{j'}\Delta y\Delta z_k \quad . \tag{46}$$

For convenience, let us define

$$\overline{q}^{\ell} = \frac{1}{2}\left[(q)_{\ell+1/2} + (q)_{\ell-1/2}\right] \tag{47}$$

and

$$\delta^{\ell} q = \left[(q)_{\lambda+1/2} - (q)_{\ell-1/2}\right] \tag{48}$$

where ℓ may be any of the spatial indices. For instance,

$$\delta^{i}(\overline{\Psi}^{j})_{1+1/2,j+1/2} = \frac{1}{2}\left(\Psi_{i+1,j+1} + \Psi_{i+1,j}\right) - \frac{1}{2}\left(\Psi_{k,j+1} + \Psi_{i,j}\right) .$$

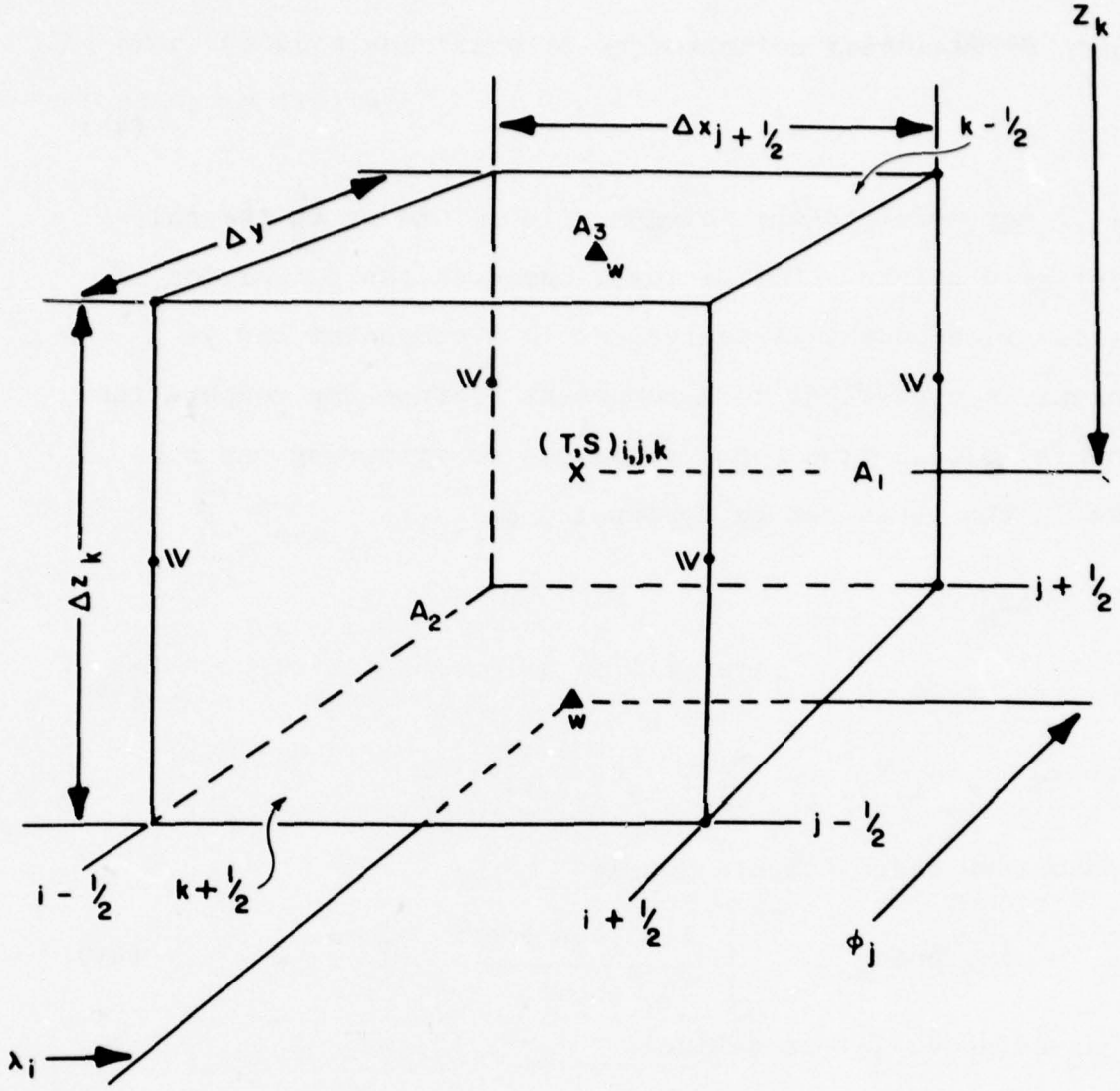

Figure 3. A typical computational box, i.e., a subvolume.

There are five prognostic variables, u', v', ψ, T, S and three diagnostic variables, w, ρ, and p in the model. Consistent with the requirements for integral constraints, the space-staggered grids are arranged in such manner that T, S, and ρ are basically computed at the integer grid points (i,j,k); u, v at the half integer points (i+1/2, j+1/2,k); w at the (i,j,k+1/2) points. The stream function ψ is two-dimensional and is computed at the (i,j) points. All variables are subscripted according to their spatial positions and are superscripted with the time step n, e.g., $T^n_{i,j,k}$. The horizontal placement of variables is also shown in Figure 3. All variables needed at points other than the basic grid points during the computation process are usually defined by the average values of the parameter at the immediately available points surrounding the temporarily required point. For example,

$$u_{i+1/2,j,k} = \bar{u}^{j}_{i+1/2,j,k} .$$

Momentum equations. The finite difference equations analogous to (37) for the x-component of the vertical shear current with respect to the (i+1/2,j+1/2,k) subvolume can be written as,

$$(u'\sigma)^{n+1} - 2b\Delta t f(v'\sigma)^{n+1} = A \qquad (49)$$

where b is the implicit stabilizing factor for the Coriolis terms, Δt the unit time step and

$$A = (u'\sigma)^{n-1} + 2\Delta t(1-b)\, f(v'\sigma)^{n-1} + 2\Delta t(B^n + F^{n-1} + G^n - \hat{U}) . \qquad (50)$$

The pressure gradient force is approximated from density alone according to (29) as,

$$B = -\delta^i(\bar{p}^j)\,\frac{A_1}{\rho_o} \tag{51}$$

where

$$P = \begin{cases} 0, & k = 1 \\ \displaystyle\sum_{k=1}^{K-1} \overline{\rho}^k_{k+1/2}\, g\Delta z_{k+1/2}, & k = 2,\ldots,K \end{cases} \tag{52}$$

The friction terms, according to (11) are,

$$F = \frac{\nu_1 A_1}{\Delta x}\,\delta^i(\delta^i u) + \frac{1}{\Delta y}\,\delta^j(\nu_1 A_2 \delta^j u) + \frac{\delta^k}{\Delta z}\,(\nu_2 A_3 \delta^k u)$$

$$+ \nu_1\left[(1-\tan\phi)\,\frac{u\sigma}{a^2} - \frac{2\tan\phi\; A_1 \delta^i(\bar{v}^i)}{a^2\cos\phi}\right]. \tag{53}$$

The nonlinear terms, according to (1) and (35) are,

$$G = -\delta^i\{\bar{u}^i[(\overline{\bar{u}^i A_1})^i]\}^j - \delta^j\{\bar{u}^i[(\overline{\bar{v}^i A_2})^j]\}^i + \delta^k\{\bar{u}^k[\bar{w}^j A_3]\}^i - uv\delta^j A_2 \tag{54}$$

Note that the right-hand side of (54) excluding the last term, is the negative form of the flux operator $\mathcal{L}$. The vertically averaged term is

$$\hat{U} = \frac{1}{D} \sum_{k=1}^{K} (B^n + F^{n-1} + G^n)\Delta z_k \quad . \tag{55}$$

A prognostic equation for the v'-equation according to (38) is,

$$(v'\sigma)^{n+1} + 2b\Delta tf(u'\sigma)^{n+1} = A^* \quad , \tag{56}$$

Where A* is similar to A; B*, F*, G* are similar to B, F, G; and $\hat{V}$ is similar to $\hat{U}$.

Thus, the shear current at all half grid points (i+1/2, j+1/2,k) is,

$$(u')^{n+1} = G + 2b\Delta tfG^* / (1 + 4b^2(\Delta t)^2 f^2)\sigma \tag{57}$$

$$(v')^{n+1} = G^* - 2b\Delta tfG / (1 + 4b^2(\Delta t)^2 f^2)\sigma \tag{58}$$

Notice that in (57) and (58) the basic time differencing scheme used in the model is the leapfrog scheme. This time scheme can cause the temporal "splitting" phenomena in the solution for a long-term integration process (Lilly, 1965). Therefore, the implicit backward time scheme (Matsuno, 1966) is periodically used every 25 time steps. The Coriolis term is treated implicitly which permits a time step longer than the inertial period (Bryan, 1969b). For linear computational stability, a stabilizing factor b is chosen to provide a slight damping of inertial oscillations, b = 0.55 is used for the present run.

The finite difference vorticity equation with respect to (i,j) points according to (34) is

$$\nabla^2(\psi D)_t = \delta^i\left[\overline{\frac{1}{\Delta x}(\hat{G}^*+\hat{F}^*)}\right]^j - \delta^j\left[\overline{\frac{1}{\Delta y}(\hat{G}+\hat{F})}\right]^i - \frac{1}{2}\delta^i f \delta^{2i}\psi \qquad (59)$$

where G, F, G*, F* are the vertically averaged mean of G^λ, F^λ, G^ϕ, F^ϕ equivalently shown in (53) and (54), $\delta^{2i}\psi$ indicates the derivative of center difference with a separation of $2\Delta x$, and

$$\nabla^2\psi = \delta^i\left[\overline{\frac{\Delta y}{\Delta x}\delta^i(\bar{\psi})^j}\right]^j + \delta^j\left[\overline{\frac{\Delta x}{\Delta y}\delta^j(\bar{\psi}^i)}\right]^i \quad . \qquad (60)$$

This is a nine-point finite difference Lapacian operator which can easily be reduced to a five-point Lapacian operator if $\Delta x = \Delta y$. With $\psi_{i,j} = 0$ on all lateral boundaries, (59) is solved by over-relaxation in the interior with an initial guess of $\psi_t = 0$. The ψ^{n+1} is advanced from ψ^{n-1} in pace with the same time step used for the vertical shear current.

The vertical mean velocity, with respect to the computed points (i+1/2,j+1/2) is,

$$\hat{u} = -\delta^j(\bar{\psi})^i/\Delta y \qquad (61)$$

$$\hat{v} = \delta^i(\bar{\psi})^j/\Delta x \qquad (62)$$

The vertical velocity (w) can be obtained from the continuity equation with respect to the (i,j,k) subvolume index as (i,j,k+1/2),

$$w_{k+1/2} = w_{k-1/2} - \frac{\Delta z}{\sigma}\left[A_1\delta^i(\bar{u}^j) + \delta^j(A_2\bar{v}^i)\right] \qquad (63)$$

where $w_{i,j,\ 1/2} = 0$ at the surface. Note that the vertical velocity is diagnostically defined at the top and bottom surface of the subvolume under consideration.

It has been shown (Huang, 1973) that there is no false source or sink of kinetic energy using the above finite difference scheme indicated above.

Temperature and salinity equation. The temperature and salinity are calculated at all integer grid points (i,j,k). The finite difference form of the thermal energy equation is

$$(T\sigma)^{n+1} = (T\sigma)^{n-1} + 2\Delta t[Q^n + (Q^*)^{n-1}] \tag{64}$$

where

$$Q = -[A_1\delta^i(\bar{T}^i\bar{u}^j) + \delta^j[A_2\bar{T}^j\bar{v}^i] + A_3\delta^k(\bar{T}^k w) \tag{65}$$

and

$$Q^* = \frac{\kappa_1 A_1}{\Delta x_j}\,\delta^i(\delta^i T) + \frac{1}{\Delta y}\,\delta^j[\kappa_1 A_2\delta^j T] - A_3\delta^k[\frac{\kappa_2}{\Delta z_{k+1/2}}\,\delta^k T]\ .$$

The eddy diffusivities may be treated as parameters depending on j and k.

Similarly, the finite difference equation for salinity analogous to (7) has exactly the same form if S is substituted for T. The only source and sink for the potential energy in the ocean domain, excluding the small portion internally transformed from the kinetic energy, are the heat and water input through the naviface and the diffusive dissipations.

Boundary conditions. All the mesh grid points on the solid lateral boundaries, which are approximated by the meridians and by the latitude circles passing through the nearest integer grid points, coincide with calculating points ψ, T, and S. Understanding that the two dummy indices are not specified, the zero flux condition at all solid boundaries lead to

$$q_{\ell+1} = q_{\ell-1} \tag{66}$$

where q is the variable (T,S) computed at the boundary and ℓ is the index normal to the boundary at the boundary such as i*, I, and J. However,

$$\psi_{i,j} = 0 \tag{67}$$

at all lateral boundaries. The no-slip boundary condition leads to

$$(u,v)_{\ell+1/2} = -(u,v)_{\ell-1/2} \quad . \tag{68}$$

However, the free slip boundary condition is also used for the longitudinal flow at the southern boundary. That is, for j indices,

$$(u,v)_{1/2} = (u,-v)_{3/2} \tag{69}$$

The downward fluxes of heat, water, and momentum through the naviface are parameterized as the upper boundary conditions indexed at k = 1/2,

$$\frac{\kappa_2}{\Delta z_{1/2}} \delta^k T_{1/2} = \frac{Q_s}{\rho_o C} , \tag{70}$$

$$\frac{\kappa_2}{\Delta z_{1/2}} \delta^i S_{1/2} = S_1(E-R) , \tag{71}$$

$$\frac{\nu_2}{\Delta z_{1/2}} \delta^k (u,v)_{1/2} = \left(\frac{\tau^\lambda, \tau^\phi}{\rho_o}\right) . \tag{72}$$

Hydrostatic stability. At places where excessive upward heat flux occurs and where evaporation exceeds precipitation by a large amount, a layer of heavy cold and salty water will be formed in the upper layers of the ocean. Whenever the local density lapse rate is less than the vertical lapse rate, which will ensure a marginally stable vertical density distribution, a hydrostatic instability exists in the adjacent layers. Since instability in the real ocean usually lasts for a short period of time, an instantaneous convective adjustment mechanism is activated in the model. Let

$$\gamma_\rho = -\left(\frac{\rho_{k-1}-\rho_k}{\Delta z_{k-1/2}}\right) \tag{73}$$

be the equivalent density lapse rate between layers. A small positive value, ε_ρ, is assumed since a slight inversion in density within the marginal stable limit may exist. In the model the lapse rate between layers is computed and compared with ε_ρ. If

$$-\gamma_\rho > \varepsilon_\rho \qquad \text{stable}$$

$$-\gamma_\rho < \varepsilon_\rho \qquad \text{unstable} \tag{74}$$

where ε_ρ is estimated from the average density distribution in the ocean. Assuming that the temperature and salinity contributions to the density variation are equally important, the marginally stable criteria for temperature and salinity can be estimated from ε_ρ and the coefficients for temperature and salinity expansions in the mean state of ocean. When instability is detected between layers, the temperature, salinity, and density in these vertical layers are mixed into quasi-homogeneity. For instance, if instability exists in layer k-1 and k, the adjusted temperature will be

$$T_k^* = \frac{T_k \Delta z_k + (T_{k-1} - \varepsilon_T \Delta z_{k-1/2}) \Delta z_{k-1}}{\Delta z_{k-1} + \Delta z_k}$$

$$T_{k-1}^* = T_k^* + \varepsilon_T \Delta z_{k-1/2} \tag{75}$$

where the superscript * indicates the adjusted value after mixing and ε_T is the marginal stable criterion for temperature. These stability criteria and adjusting processes are applied to all layers in the column. The procedure is repeated whenever there is more than one unstable subcolumn until stability has been reached for the whole column.

4. Model Performance

Flexibility and efficiency. In simulation studies using finite difference schemes for long-term integrations, the conservation of integral properties and the accuracy of solution in the statistical sense are essential considerations. The flexibility in choosing grid separations and the efficiency in carrying out the computation are also important factors in designing numerical experiments.

For the flexibility of the model, we have programmed in such a manner that the whole domain is computed in a sequence of blocks which consist of many computational boxes independent of vertical layers. We are able to execute the experiment with one version of the model which possesses reasonably small space separations, as small as 20 km in both longitudinal and meridional directions with as many layers as necessary. This is important in the long run for our purpose of carrying out much-finer-mesh experiments in the later stage of our investigation which may involve the meso-scale dynamics.

We also think our algorithm and computational sequences are optimized in such a manner that most unnecessary recurrent computations such as derivatives and areas are computed only once in the starting run. Restarting the model run from one specified day to another as well as the selections of climatological output either on tape or in print for any time

interval can be handled conveniently. Because it is independent of vertical layers, the model may have as many vertical layers as necessary. The present version employs ten vertical layers. Depths of the ten levels in the 2.5-degree model are placed at 10, 30, 60, 100, 150, 225, 350, 700, 1500, and 3000m, respectively, below the naviface and the constant maximum depth of the ocean is assumed at 4000 m as shown in Figure 2. It is obvious that much emphasis has been placed on the column of water above the permanent thermocline.

Integration programs. The present version of the NORPAX model is written in FORTRAN and has been executed on NCAR's CDC 7600 machine. With horizontal separations of 2.5^0, the North Pacific domain is divided into three blocks of many 23-by-27 arrays. The model requires a 48.7 K core memory and about 14 seconds of CPU time in CDC 7600 for each simulated day. With CDC's 60 bytes of accuracy, all computations are performed in single-precision arithmetic.

At the beginning of the spin-up stage, the model ocean is motionless with a selected, layered, homogeneous density pattern. Together with the controlling and monitoring constants, all the specifications for the configurations of the model such as grid separations, layer thicknesses, ocean depths, indexes for computational points and others are entered for the "cold start." The atmosphere forcing functions for the annual mean steady state are also entered at the beginning. The seasonal varying forcing boundary conditions are, of course, stored in a file and fed into the model at each specified time interval at the

later stage of integration. A constant file is generated in the first iteration which stores all constant parameters as well as derivatives and cross-sectional areas which are not a function of any variables such as temperature, velocity.

One of the most important set of constants in the constant file is the indices which designate the surrounding boundary conditions of the computational point. Indices for the regular and irregular points are summarized in Figure 4. All interior points bear the index of 0 while all boundary points are non-zero positive numbers (1-12). The land points which are not in the domain of interest have a negative number index smaller than -10. All positive indexed points are treated differently in accordance with the boundary they represent. The artificial boundaries between the blocks are indexed by a small negative number (-1, -2, -3, -4 for the two ficticious boundaries of one block's domain). The domain of interest is divided into three blocks as shown in Figure 5. Computations are carried out in each time step by sequence.

The main computational control is in the subroutine MAINCL where six temporarily assigned files are called as formal parameters. The last two files are used to store the vertically integrated data for the relaxation method in solving the vorticity equation. The remaining four files control the rotary input and output of values of all variables for the previous, present, and advanced time stop. The rotary manipulation of files in the subroutine MAINCL are briefly demonstrated in Figure 6. As we recall, for example, the advection terms in

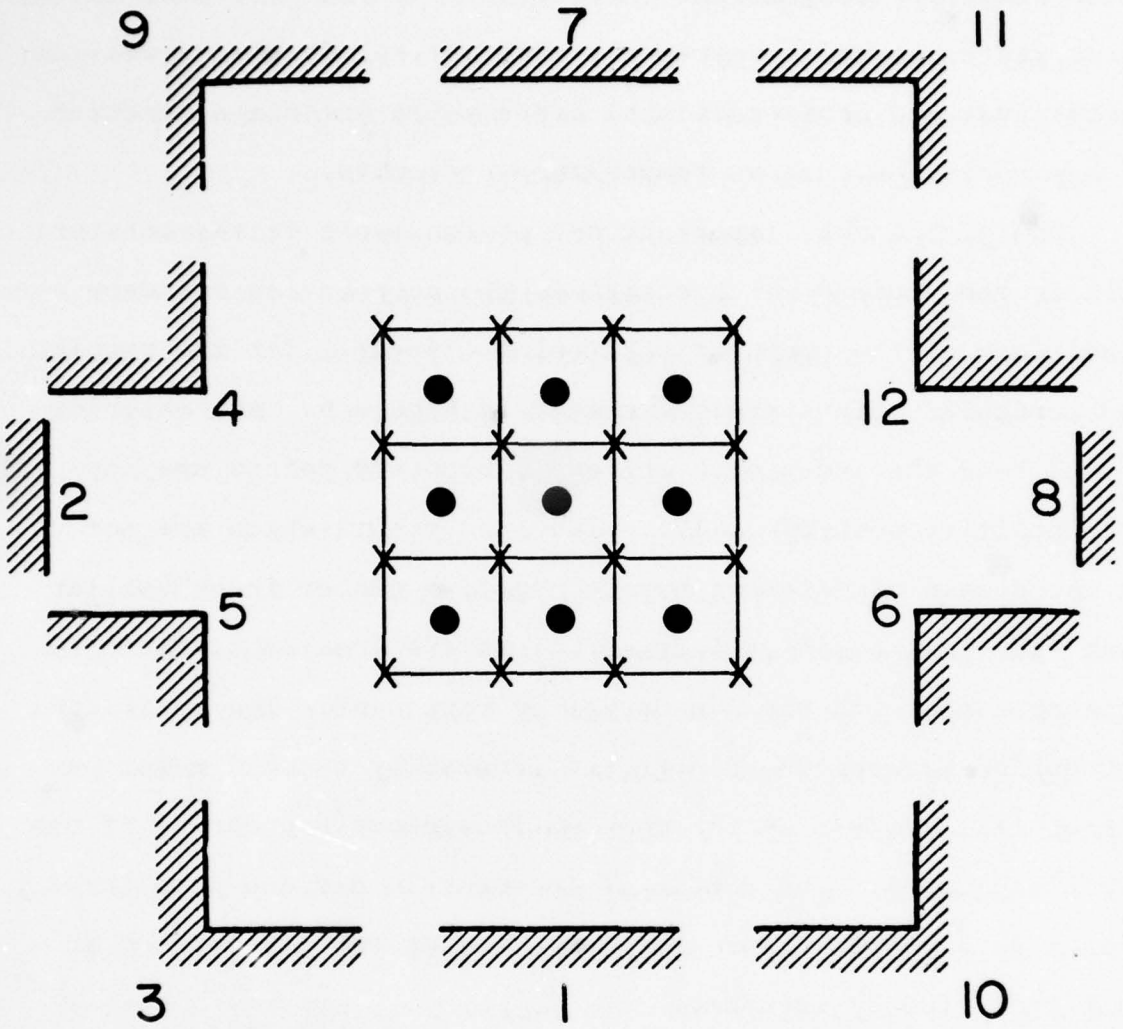

Figure 4. Indices for irregular boundary points and relative locations of variables.

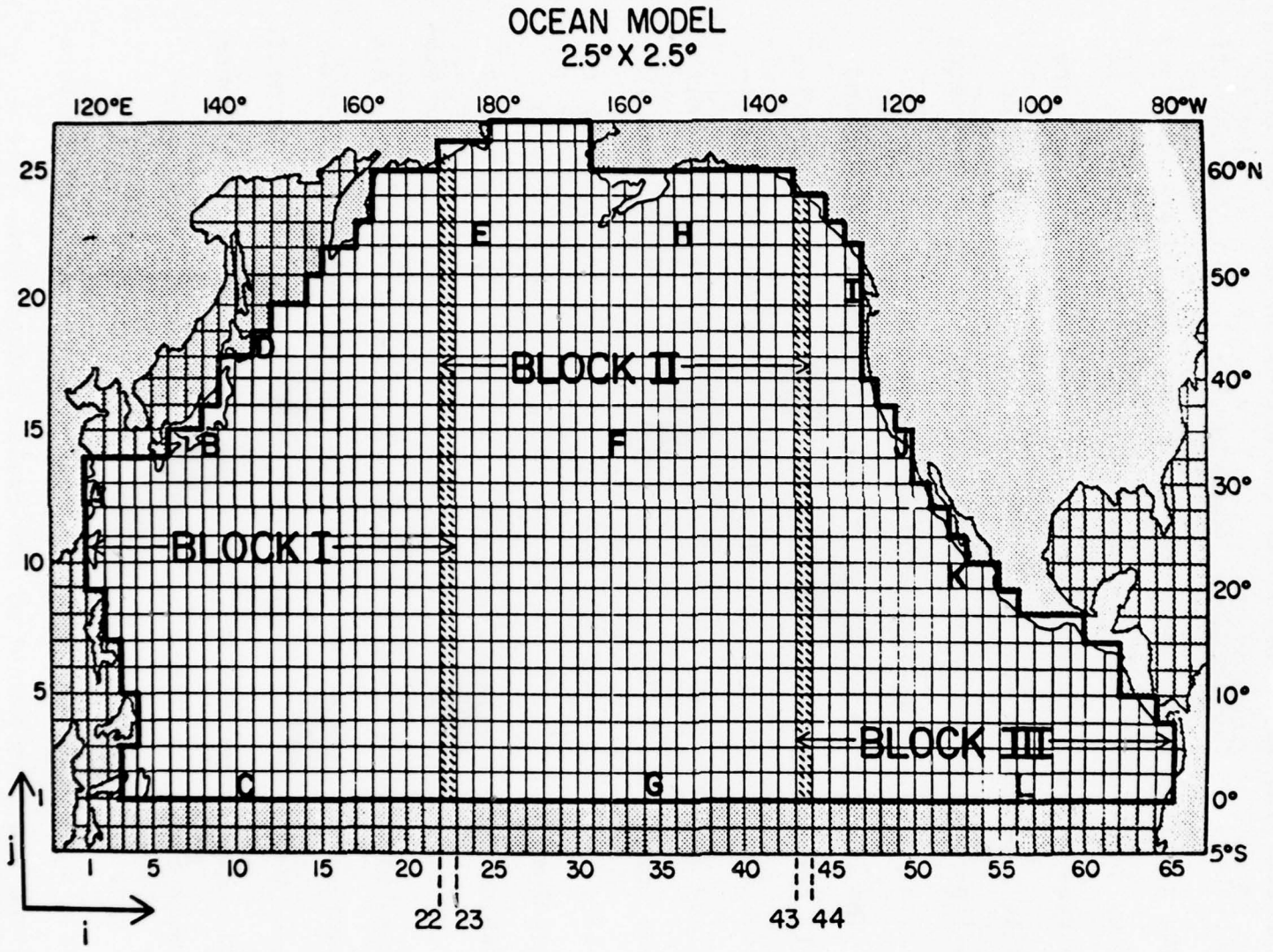

Figure 5. Block separations of the ocean domain and their respective fictitious boundaries.

the momentum and heat equations are computed with respect to the present (n) time step while the diffusion terms are computed with respect to the previous time step (n-1). In the subroutine MAINCL the file parameters fp, fx, fy, fz, are rotary assigned to four temporary files, say 1, 2, 3, and 4. For example, if at a time step n, variable values for the (n-1) time step are in file 1 and those for the n step are in file 2. Then the formal parameters in calling subroutine MAINCL are in sequence (1, 2, 3, 4, 6, 7) as indicated in Figure 6a.

The subroutine MAINCL will call subroutines ACALK32 and NONLIN for the advection terms, and FCALK32 for the diffusive terms. The sequence of formal parameters called at all subroutines is important. File 2, which stores the n-step values, is the input file in subroutines ACALK32 and NONLIN while in FCALK32, Files 1 and 3 are input files; file 1 stores the (n-1) step values and File 3 stores the rate of change values of variables from the previous output (NONLIN). In File 6 or 7, the vertically-integrated values are stored for use in the subroutine RELAX from which the stream function is obtained. All variables are advanced to (n+1) step in subroutine CNTX. Subroutine WUVCAL computes the vertical velocity and all energetic terms while subroutine WFLOUT checks the output. The sequence followed above completes one time step of computation. The next step in the cycle is indicated in Figure 6b. The previous n-step file (File 2) will be in the (n-1) step file location and the last output of the cyclic computation, File 3 from the subroutine WFLOUT, will occupy the n-step location.

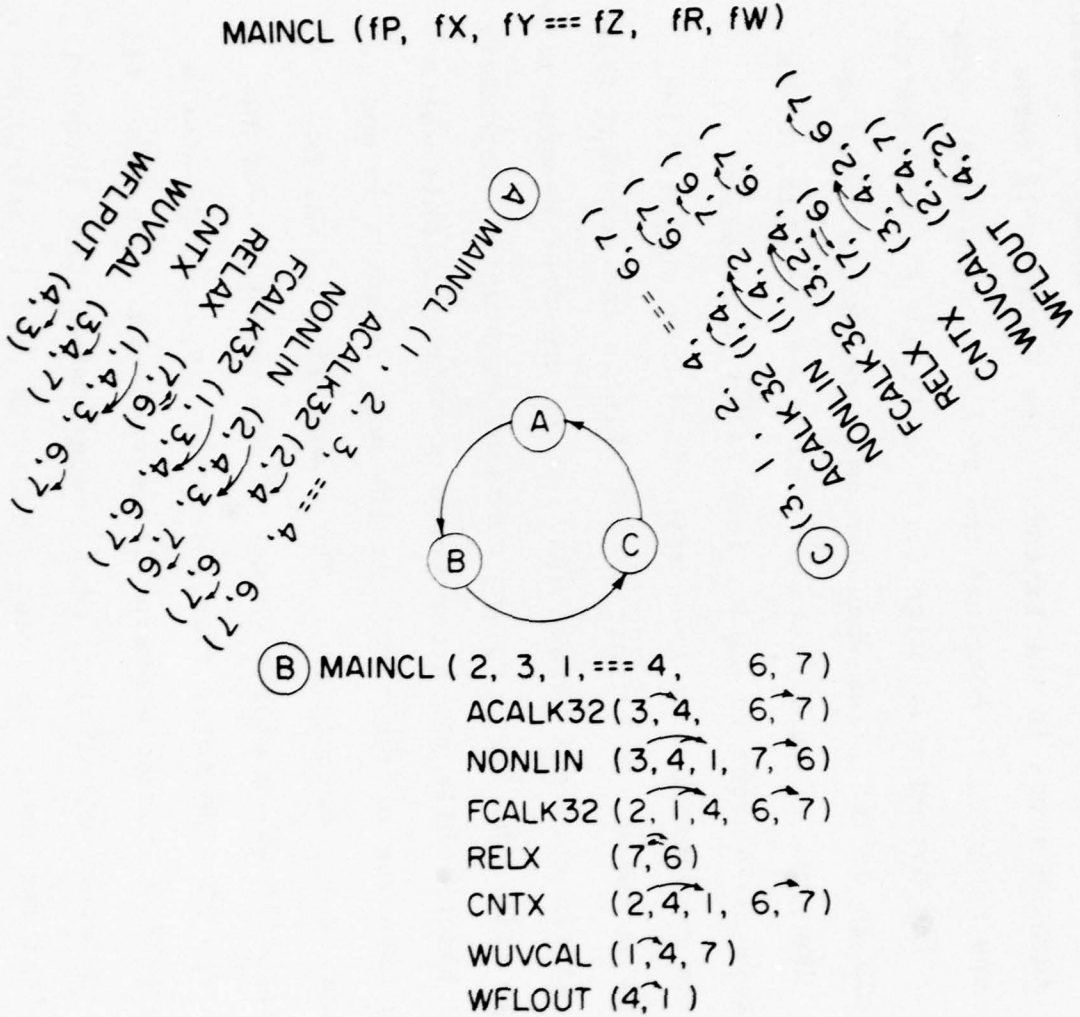

Figure 6. The rotary sequence of temporary files in the subroutine MAINCL.

In the second iteration, the formal parameters of subroutine MAINCL are (2, 3, 1, 4, 6, 7). For randomly accessible files such as those in the Extended Core Memory only three files are required to complete the cyclic computational rotations. The dotted equal sign (:::) in Figure 6 indicates the equivalence of two files when randomly accessible files are used. However, if tape files or disk files are used, it is much more convenient to employ four files in rotation.

For convenience, we have maintained four output files, usually on tapes. The first output file is the constant file which stores constant parameters. There are four records within this file; the first record contains constants independent of the blocks while the other three contain constants which depend upon the blocks. This is the most frequent in and out file during the computation. The second file is the restarting file which stores values of all variables for two time steps at a selected time interval. Thus, a continuous run is easily started whenever it is required. The third file keeps the model climatology at a predetermined time interval convenient for future analyses. A fourth file is maintained to store a continuous (every time step or every day) record of energetics for the entire basin and of values of all variables at specific locations. The energetics are: the total energy, the potential energy, the total kinetic energy, the barotropic energy, and the baroclinic energy. The selected points of special interest can be varied. We have chosen twelve points as indicated

by the alphabets in Figure 6. Detailed information about the integration program is presented in the Appendices.

Sample of model output. After 60 years of time integration, the model reached a quasi-equilibrium state under a mean forcing condition. Figure 7 shows a contour plot of the mass transport stream function under annual mean surface wind stresses and heating. Three large-scale gyral circulations are well developed, similar to the Munk solution (Munk, 1950). The anticyclonic subtropical gyre is realistically portrayed and the western intensification of the boundary current is clearly demonstrated. A major part of the mid-latitude west drift current constitutes the northern portion of the subtropical gyre. The California Current, the North Equatorial Current, as well as the Western Boundary Current are all included in this gyral current system. The maximum total transport in the Kuroshio region near Japan reaches 56 Sverdrups (56×10^6 m^3/sec).

Two cyclonic gyres are also well simulated, one of which is in the subarctic region, the other in the tropic region. The subarctic cyclonic gyre consists of the west drift current, the Alaskan Current, the Aleutian Current with its extension through the Bering Sea, the Kamchatka Current, and the Oyashio Current. The mass transport of the model output in the Kamchatka Current region has a southward transport of 21 Sverdrups and about 2 Sverdrups in the Oyashio region. The mass transport in the tropical cyclonic gyre under the annual mean atmospheric forcing reaches a maximum value of 25 Sverdrups. The gross feature of the stream function patterns

STREAMFUNCTION

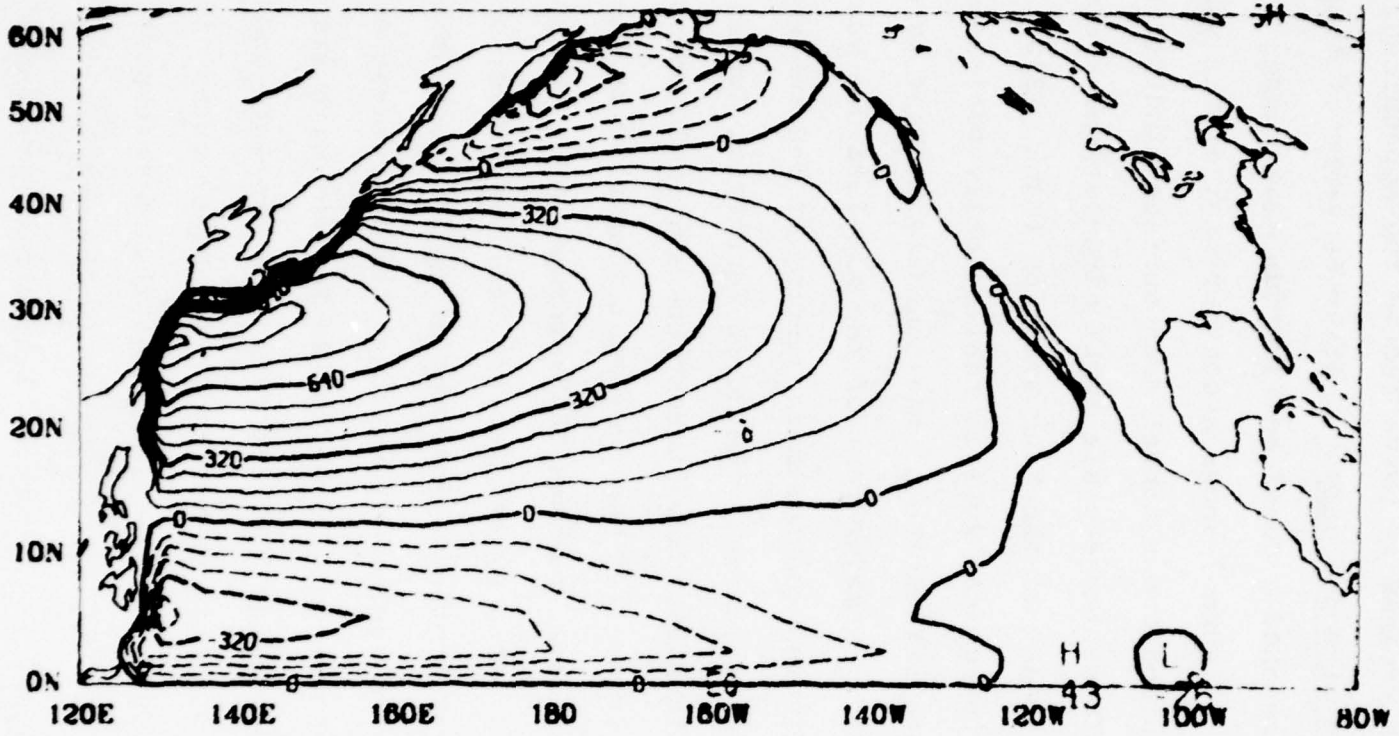

Figure 7. Contour plot of mass transport stream function in 10^6 D cm^3/sec.

show a distribution similar to that of the wind stress curl. The barotropic current deduced from the stream function is generally small, less than 1 cm/sec everywhere in the basin, except in the western boundary region.

Figures 8a,b,c show current vector plots for the layers at a depth of 10 m, 250 m, and 2500 m, respectively. Figures 9a,b,c show streamline plots for these same levels. In the surface layer the major swift currents occur in the equatorial region as well as in the western boundary region. The maximum current is shown in the eastern central Pacific near the equator with a speed of 95 cm/sec. The Kuroshio Current only reaches 64 cm/sec due mostly to the course grid meshes. We notice that the western boundary current is only barely resolved at a horizontal separation of about 175 km. Thus, the coarse grid separations have led to smaller current values than the observed velocities while the transport values are comparable. The surface currents in the tropics generally flow westward. The equatorial countercurrent is not clearly shown, most probably a result of the coarse grid. The Oyashio merges into the extension of the Kuroshio to form the North Pacific drifting current. A streamline plot for the surface layer is shown in Figure 9a. It is evident that the surface is dominated by the wind pattern. In the equatorial region, the flow pattern splits into a northward branch to form the Kuroshio and a southward branch of the equatorial current system near the Phillipine Sea. The existence of the subarctic convergence zone is clearly shown along the mean track of the Kuroshio and

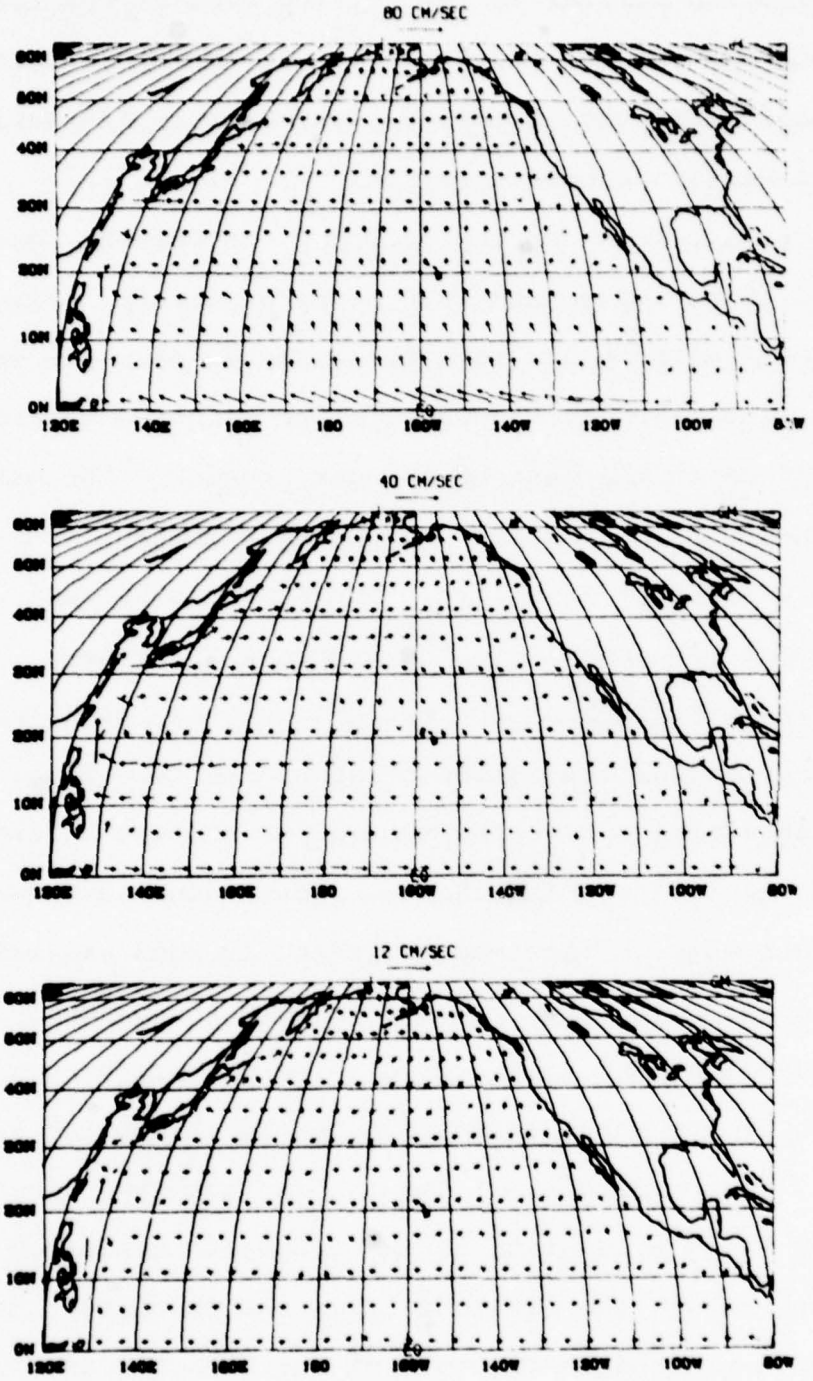

Figure 8. Current vector plots: (a) at 10-m depth; (b) at 250-m depth; (c) at 1500-m depth.

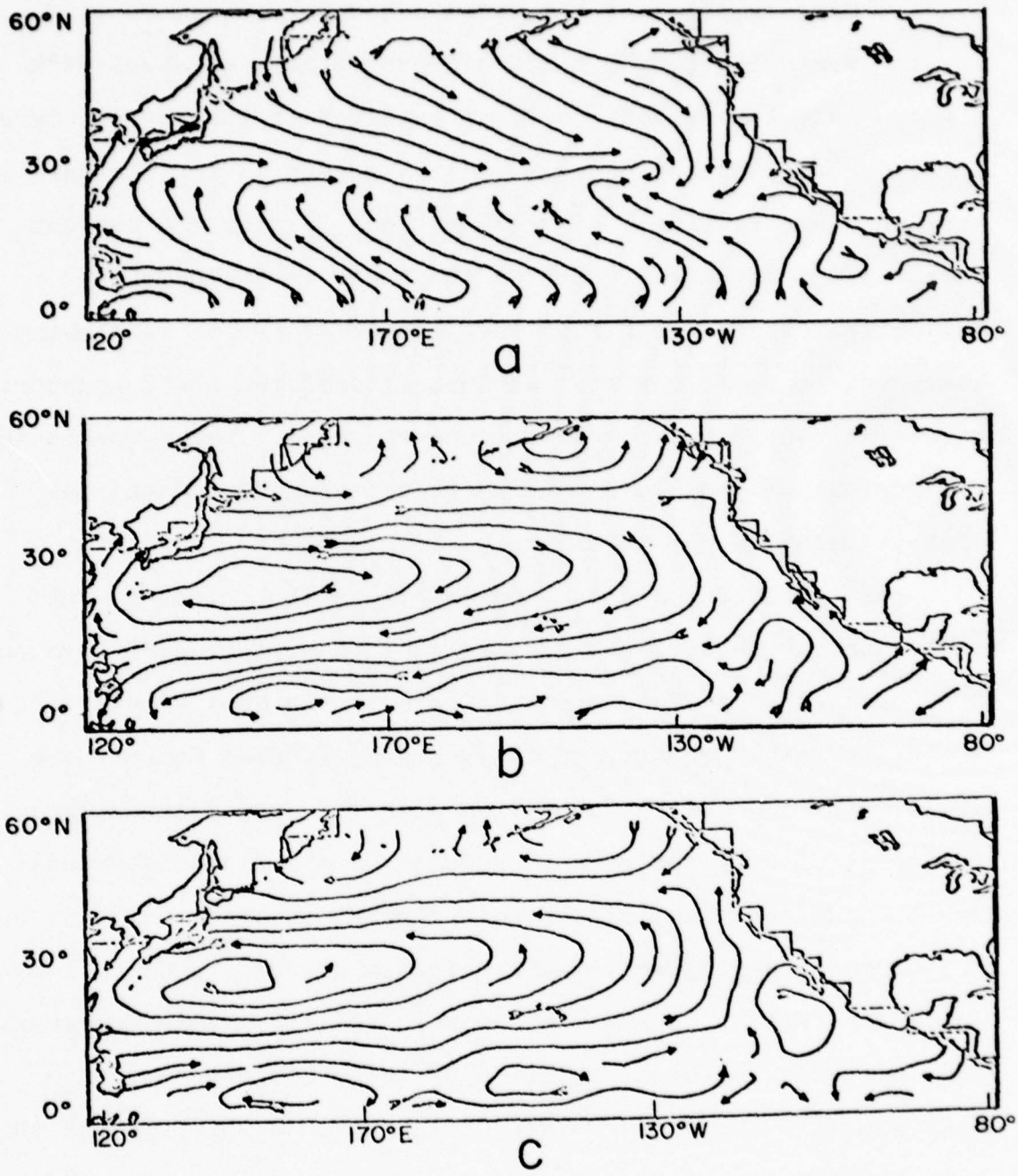

Figure 9. Current streamline plots: (a) at 10-m depth; (b) at 250-m depth; (c) at 1500-m depth.

Oyashio merging zone off the western boundary at about 40°N, leaning southward to the eastern North Pacific at about 35°N. A meso-scale anticyclonic eddy, recognized as the Eastern Gyral by Sverdrup (Sverdrup, et al., 1942), exists in the mid-latitude eastern North Pacific. Figures 8 and 9 show the current vector and a streamline plot of the layer at 250 m depth. Notice that the current near the equatorial region is flowing eastward, representing the combined flow of the north equatorial countercurrent and the Cromwell undercurrent. The Kuroshio is well developed and has a maximum velocity of 35 cm/sec, the highest value in the layer.

A surface convergence line exists at the center of the geostrophic gyre at 250 m and the eastern surface gyre does not show up at depth. The Kuroshio Current, the west wind drift, the California Current, and the North Equatorial Current are predominant and easily identified with the anticyclonic gyre. The tropical cyclonic gyre consisting of the North Equatorial Current and the equatorial countercurrent combined with the equatorial undercurrent, is clearly demonstrated. Other less obvious currents, such as the Oyashio and the Alaska Currents, are indicated in the circulation pattern. Figures 8a,b and 9a,b simulate the gross nature of the circulation patterns in the upper layers of the North Pacific Ocean. The simulated current near 700 m is rather weak and the circulation indicates a different pattern (figure not shown). The deep layer currents are slightly stronger than in layer 7 and the circulation pattern below a depth of 1500 m, as shown in Figure 8c and 9c, is

opposite that of the upper layers. The current beneath the Kuroshio is flowing southward at a much slower speed of 4 cm/sec and there is clearly a weak cyclonic circulation in the subtropical region. Deep water is slowly flowing southward from the high latitudes in the western North Pacific and northward in the eastern North Pacific which generally agrees with the deep circulation pattern deduced from the geostrophic calculations of Reid (1976, personal communication).

Figure 10 shows the vertical velocity contours at the bottoms of the aforementioned three layers (i.e., at 20 m, 300 m, and 2200 m in depth, respectively) in the model ocean. The solid contour indicates upwellings and the dotted line represents downwelling. There are, in general, strong upwellings along the equator, especially in the eastern part of the mid-tropic region where the maximum upwelling reaches 5 m/day. Upwellings in the mid-latitude western boundary region are relatively weak in the surface layer. There also exist weak upwellings along the California coast and in most subtropical and eastern tropical regions away from the equator. This pattern of equatorial upwellings and subtropic downwellings extends to a depth of more than 700 m. Upwellings along the western boundary and downwellings in the high latitudes and north-western part of the Nort Pacific become even stronger at a depth of 1500 m. The maximum upwelling reached 3.5 m/day in the western boundary at a depth of 200 m and a maximum downwelling of approximately 1 m/day occurred

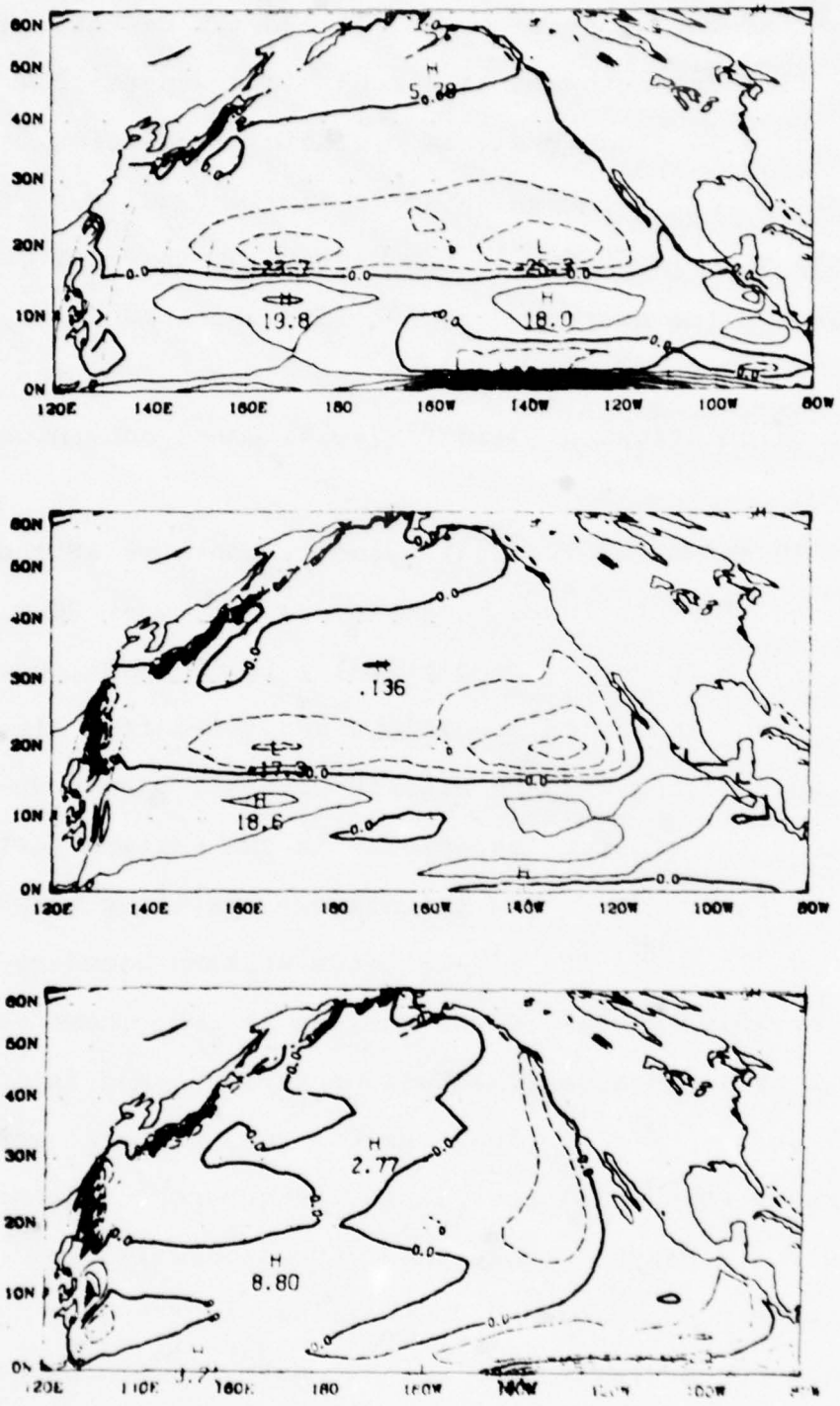

Figure 10. Vertical velocity contours at different levels in the North Pacific Ocean: (a) at 20-m depth; (b) at 300-m depth; (c) at 2200-m depth.

in the high latitude region at a depth of 550 m. The equatorial upwelling decreases below 200 m and a slight upwelling was indicated in the tropics at the 1500 m depth. However, below 1500 m, the general trend of upwelling and downwelling generally changed signs. Moderate downwellings exist at a depth of 1000 m in the western boundary and weak upwellings exist in the high latitudes. At a depth of 2500 m, weak upwellings become evident in most of the northern boundaries and moderate downwellings exist in the equatorial region. There are weak but broad upwellings in the interior of the tropics. From the previous figures we notice that major large-scale features in the model match nicely with observed mean current patterns and upwelling distributions in the North Pacific Ocean.

Figure 11 shows temperature patterns at depth of 10 m, 250 m, and 3000 m, respectively. The surface temperature distribution (Figure 11a) shows an equatorial cool region extending from the east boundary to 180° which corresponds to the equatorial upwelling region. The broadest cold water area extends to 5°N with a minimum of 23°C at the equator. There is a broad warm water region in the western tropic and a narrow one near the eastern boundary north of the equator. A sharp meridional temperature gradient exists in the mid-latitudes off the western boundary along 35°N. The upwelling along the equator does not penetrate deeply around 300 m, warm water masses in the western and eastern tropics can still be clearly discerned, and a sharp temperature gradient

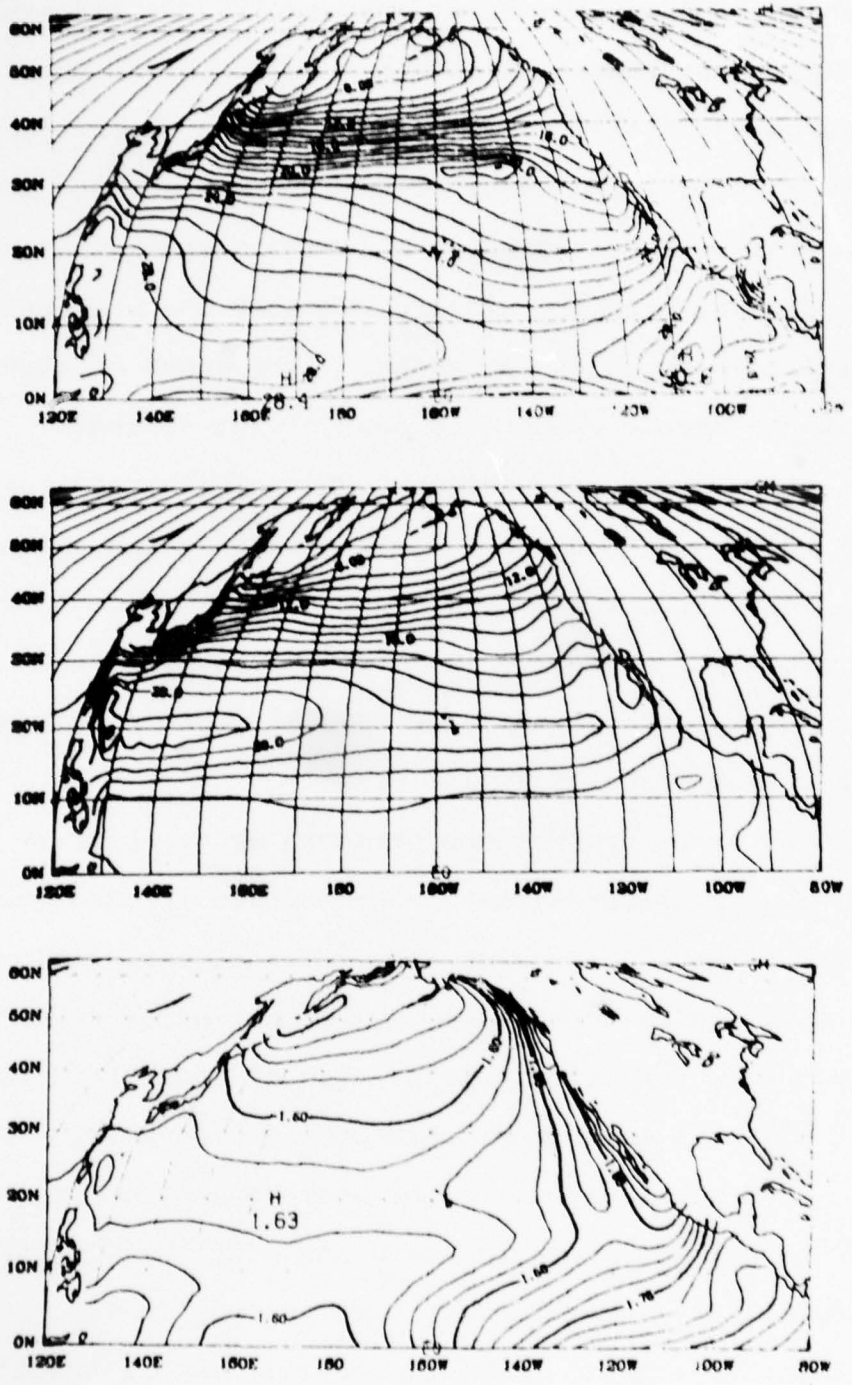

Figure 11. Temperature distribution at different layers: (a) 10 m; (b) 250 m; (c) 3000 m.

develops along the western boundary. At 1000 m (figure not shown), the temperature is quasi-homogenous and slightly warmer in the south. The deep water at 3000 m shown in Figure 11c indicates a spatial homogeneity with a slight cooling in the north.

Simulated salinity distributions for three layers (at surface, 350 m, and near bottom (3000 m)) are shown in Figures 12a,b,c, respectively. The surface salinity shows an elongated maximum zone above 35‰ between 20^{0}N and 30^{0}N which declines polarward and equatorward as indicated in Figure 12a. In the eastern tropics, there is also a high salinity tongue near the boundary and extending westward and a north-south homogeneity is indicated in the western boundary region. At the depth of intermediate water level, salinity values are slightly higher, around 34.4‰ to 35.2‰, than the surface layer but have a similar pattern as shown in Figure 12b. The salinity in the bottom water is rather homogenous with a slight high in the northwest.

The energetic diagram showing the magnitude and direction of work done per unit volume in ergs cm^{-1} day^{-1}, the total potential energy, and the total barotropic and baroclinic energy in erg/cm^{2} is shown in Figure 13. Potential energy is computed with reference to the ocean bottom. It is clear from Figure 13 that the kinetic energy, from both the barotropic and baroclinic modes, has reached a steady state while the potential energy is still losing energy at a rate of 2.5 $ergs/cm^{3}/day$.

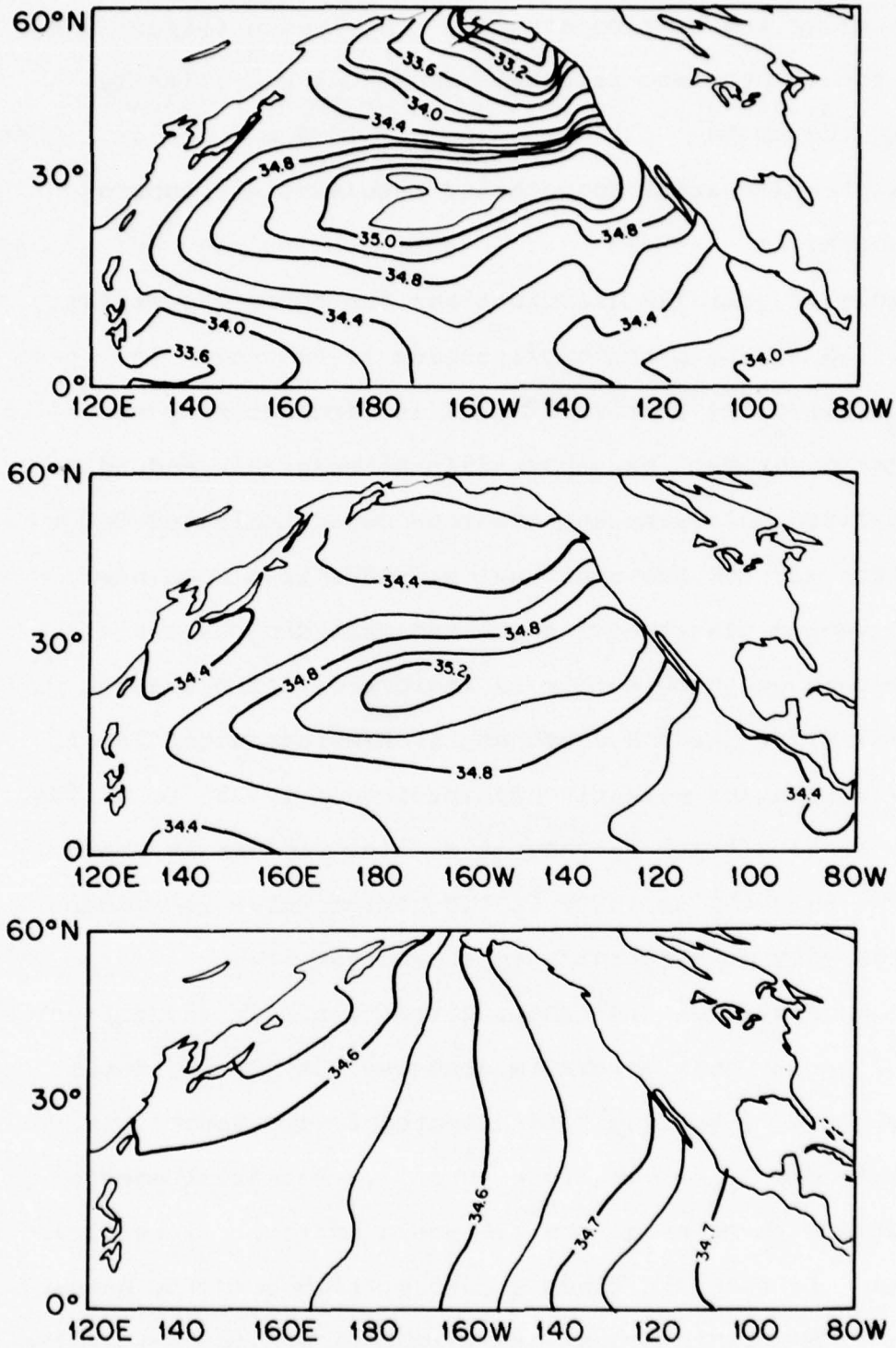

Figure 12. Salinity distributions of layers at depths of (a) 10 m; (b) 250 m; (c) 3300 m.

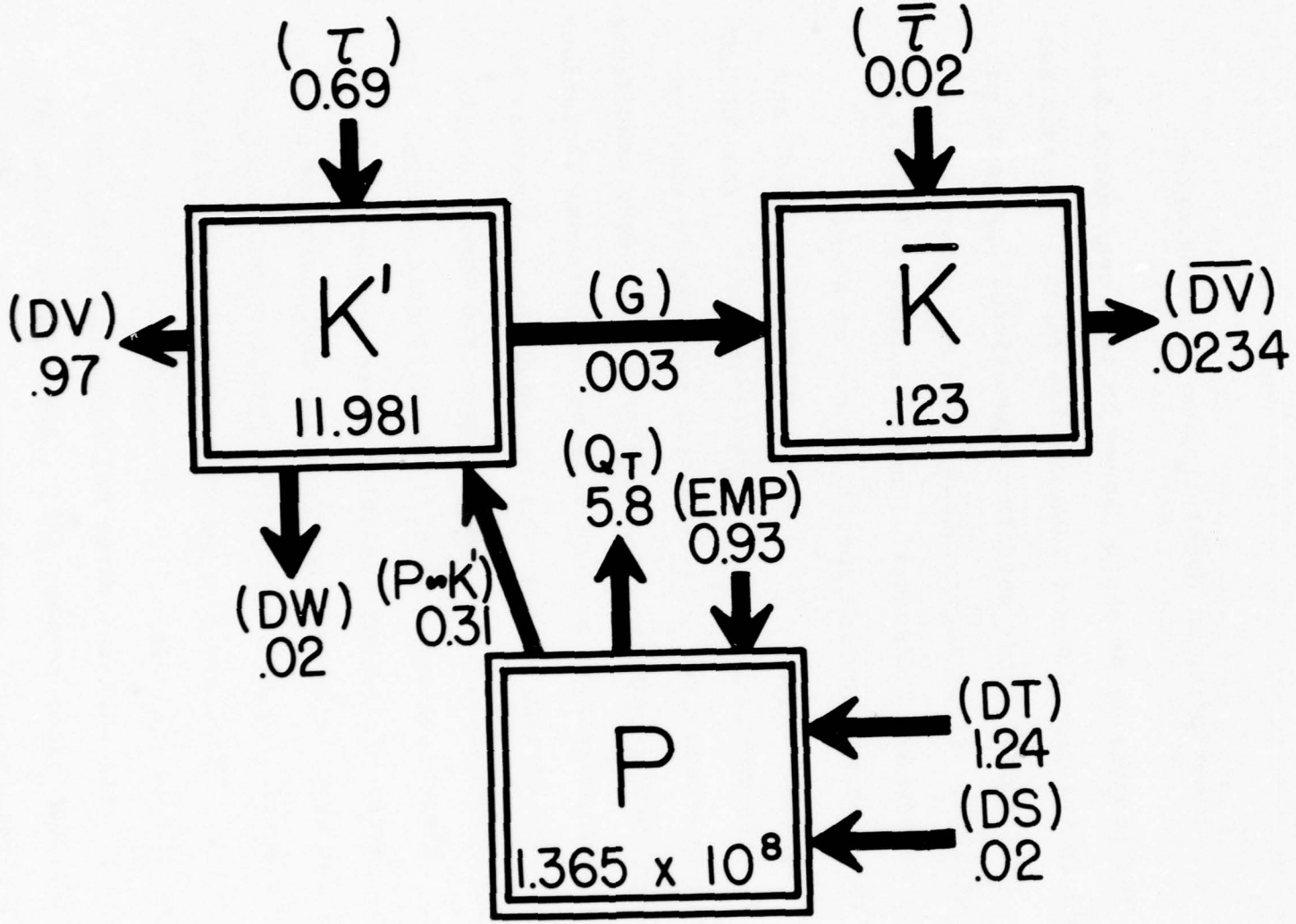

Figure 13. Energetic diagrams in the NORPAX model. Units for energy are ergs/cm^3, and for the rate of energy transformation, ergs/cm^3/day.

5. Description of Model Program and Subprograms

The program is developed based on the ocean model described in the previous sections of this report. In this section, program structure and its computational applications are detailed. Since major computations are undertaken at NCAR, the program controls will be documented in accordance with the system operation specifications at NCAR.

Deck Description. Two separate programs, OCENLNZ and TOCNLNZ, are made available for the ocean model. The OCENLNZ is used to compute the long-term mean atmospheric state of the North Pacific at the air-sea interface boundary conditions. The TOCNLNZ program is used to compute the seasonal variations. A flow chart of the two programs is presented in Appendix A.

The North Pacific Ocean is divided into three identical blocks. Each block contains 621 (23 × 27) grid points. Along the boundaries of the adjacent blocks are four artificial boundaries which will be removed during the unblocked process. In the execution phase, the program computes each block independently. There are a total of 1755 (65 × 27) grid points covering the entire ocean.

The program contains three major commons (CMN1, CMN2, CMN3) and four minor commons (NLCM, BDYL, ENSL, QTST). All control parameters, all variable change rates (e.g. $\frac{\partial W}{\partial t}$), and all vertically integrated quantities are stored in common

/CMN1/. This requires 6,600 decimal locations. Common /CMN2/ stores all constants, including overall used constants (about 2812 decimal locations) and block-dependent constants (about 2013 decimal locations). Common /CMN3/ stores three levels of prognostic variables, namely, ψ, u, v, w, S, T, and requires 9942 decimal locations.

The four minor commons are principally set up for convenience. Common /NLCM/ stores all LCM-related information. Common /BDYL/ stores the four fictitious boundary values. Common /ENSL/ stores all energetic terms and the values of all prognostic variables at the points selected. Common /QTST/ stores the seasonal varying atmospheric boundary conditions.

Data Structure and Tape Manipulations

Four groups of tapes serve as binary input/output data storage for OCENLNZ and TOCNLNZ. For an initial run or a run with the intention of rebuilding the constant file, the data set which is needed for generating the constant file has to be input by cards following the designated control parameter cards. A regular restart run may be initiated with only a set of control parameter cards since all necessary information such as boundary conditions and initial conditions are self-provided in these input/output files.

Four separate records are contained in the constant file for the program OCENLNZ(or TOCNLNZ). Record 1 stores all block-independent data, from DAYB to TBISX(27) in the common /CMN2/, and has a length of 3082 words (2812 for TOCNLNZ). The second record

stores constants and parameters relative to block 1, from IBI to the end of common /CMN2/. This record has a length of 5118 words (2013 for TOCNLNZ). The structure of records 3 and 4 is identical to that of record 2 and they store constants and parameters relative to blocks 2 and 3, respectively. In TOCNLNZ, an additional 66 records follow those listed above. Record 5 stores Fourier coefficients for latitude dependent data and is 270 words long. Records 6 through 70 store Fourier coefficients for Ta, ea, Ug, and Vg and is 540 words in length.

Data in the history starting file are used as initial conditions for restarting a run. Each group record contains all variables (ψ, u, v, w, S, T) for every grid point. Since the leap-frog scheme is used here, values of two time-steps are required to start the computation. Two consecutive group records (at $t = t_i$ and $t = t_i + \Delta t$) form a restarting file to initiate a continuous computational run. At each time-step, 33 records led by the appropriate identification words are used to store all necessary data and are arranged in the following manner. For records 1, 12, and 23, word 1 denotes the model simulation day; word 2 holds the date of record creation; word 3 contains the block number (1, 2, or 3); and words 4 through 624 contain stream function values for 23 × 27 grid points. In records 2 through 11, 13 through 22, and 24 through 33, the first word denotes the layer number while words 2 through 3106 contain (23 × 27) × 5 values of variables u, v,

w, S, and T for the layer indicated in word 1. Plase note that two consecutive group records for the 2 time-step values (66 records total) are always necessary to restart a run. Periodic outputs of the starting file are provided at specific time intervals as protection against machine malfunction.

The data structure of the history output file (OCENLNZ and TOCNLNZ) is identical to the history starting file. The time interval of the history output file printout is specified in the control parameter cards.

The energy and selected point file allows the program output five energy values: deviated kinetic energy, vertical mean kinetic energy, total kinetic energy, potential energy, and total energy (sum of potential energy and kinetic energy). This file also contains values of all variables (ψ, u, v, w, S, T) at specific points which can be selected through control parameters. The structure of a single record is as follows: model simulation day, date of run, and energy values (1-5) followed by values of ψ, u, v, w, S and T. The length of the record is $7 + m \times 5 \times 10 \times 3 + m \times 3$ or 153 m, where m is the number of points selected in each block. One record for each specified time interval in the output of this file is necessary for program OCENLNZ. Three additional records which store the data of Ta, Qt, Tx, and Ty at $t = t_{output}$ are printed for program TOCNLNZ. Their leading words are Day, Date, and Block Number followed in order by Ta, Qt, Tx, and Ty. These three additional records have a length of 2487 words. In

TOCNLNZ, the three additional records are followed by the energy record.

Two types of output are formed for each run in addition to the binary files. The first output contains relevant information generated by input control parameters and is listed in the printout where energy tables and plotting will also appear. Optional outputs due to input control parameters such as starting file and constant file are also available. The second output contains a tabulated form of variables (ψ, u, v, w, S, T) at each grid point for a specified time interval which can be produced in the form of microfilm through DD80.

Routines Summary

Subroutines used in the simulation will be briefly described in this section. We have classified these subroutines into three categories: 1) control and execution routines; 2) input/output data, display, and file manipulation routines; and 3) plotting routines.

During the control and execution routine, TOCNLNZ (or OCNLNZ) establishes indices for problem range, reads control parameters, and prints out all information concerning initialization, tape arrangement, and execution preparation. When finished, it calls for energy data and overall energy plottings. The normal end of a job should terminate at this point. Within the control and execution routine, MAINCL coordinates the preparation phase and the computation phase as well as controls

the sequence of computations. ACALK32 prepares for the calculation of advection terms when called by MAINCL and calls for CMPTA and NONLIN to do the calculations. CMPTA also computes the pressure gradient terms and the advection terms. NONLIN computes the horizontal nonlinear terms in the momentum equations. FCAL32 prepares all necessary steps for the calculation of friction terms. It is called by MAINCL and summons CMPTF to do the computations. CMPTF computes the friction terms and is called by FCALK32. ADVCO calculates the advanced time-step (n+1) values of variables u', v', S, T and is called from CNTX where ψ is advanced. CALCAJ adjusts the density of the vertical water columns whenever unstable layers are detected. The vertically integrated terms are also calculated similtaneously in CMPTA and CMPTF and the stream function, ψ, is obtained after RELAX. RELAX solves the vorticity equation by using the relaxation method.

CNTX, mentioned above, is a routine for time-step advancing. It also computes the Coriolis terms and calls CALCAJ and ADVCO to calculate the necessary density adjustments and advance the computation. COLDST is a routine specifically designed to implement cold start runs. It zeros the velocity field and sets S and T uniformly. In the event of a restart run, this routine will not be engaged.

GRDCST builds the constant file and reads all necessary data from the card reader to generate the constant files which it then stores in a constant file for the computation phases.

WUVCAL computes vertical velocity using the continuity equation. WFLOUT checks and controls all binary output files and listing files.

In the TOCNLNZ program only, FRCST reads in Fourier coefficients for seasonal variations of boundary conditions from the card input and stores those data in the constant file. QTSTXY is a routine which computes the time-dependent Q_t, T_x, T_y with data from FRCST which is in the constant file. The latter routine is also unique to TOCNLNZ. QTEMPF computes Q_t from Q_1, Q_2, and T_a and takes the mean of Q_t and EMP.

The following routines are included within the classification of input/output data and file manipulation routines. BINCPMA is used to begin the computation of all advection terms, it will erase the previous locations, reinitial tapes and disks, etc. CALCKO lists out the stream function values and residue values when non-convergence occurs in the relaxation process. CHGTAPE changes to another tape when the preceding tape is full. CSTOUT computes time intervals to the equivalent number of time steps. CRDINP reads cards and checks the sequence for certain standard format inputs while FLYDST searches for specific days in any of the binary files and collects the necessary data for starting the integration.

FRPRT prints out all Fourier coefficients when required, GTABOUT prints out data in tabulated form, and INDTABL prints out all indices in tabulated form. INDINTG changes the indices of the fictitious boundaries from the specified negative value

to the real indices and vice versa. LSTCSTI lists out initial data in the group, LSTOUT lists ψ, u, v, w, S, and T values in group, PRTDJK lists cross-sectional data, PRTENGX prints out the five energetic values in time sequence and in tabulated form, and REQLCM requests large core memory.

The function of UNBLOCK is to unblock data stored in 3 separated blocks in order to form the original North Pacific grid. This process is taken before making plots for ψ, u, v, w, S and T. The function of GENPLOT is to plot ψ, u, v, w, S and T using data unblocked from program UNBLOCK. Five separate tapes storing complete data for the entire ocean are called for mounting. The plots are drawn automatically in DD80 microfilm. These programs will be provided upon request.

The buffers include RDBUF which buffers in data from regular input devices and RDBUFL which buffers in data from LCM. WTBUF buffers out routine to regular output devices (tapes, cards, etc.) and WTBUFL buffers out data to LCM. REWDTP rewinds the tapes, ZEROBF zeros out values of all variables from the called layer, DATPLT specifies the unit scale in drawing the grid lines in the output plotting and MPLOT sets up adjustable scales for multi-line plotting and plots.

DICTIONARY OF MAJOR VARIABLES*

DAYS, DAYT, DAYB, DAYSE, DAYFR	Model simulation days
KDAT, KDATT, KDATB, KDATSE, KDATFR	The date of the job run
DIFDAY	Δt in days
DTIME	Δt in seconds
DAYEND	Last day of job
MAXI	Maximum I of the entire domain
IMAX, IMX	Maximum I of a block
JMAX, JMX	Maximum J of a block
KMAX	Maximum K of the ocean
NCARD	Sequential number of input cards
KSYB	A three character alphabetic symbol to identify input data cards
ITIL(8)	80 character title
NAMT(3,4)	30 character name of four input/output binary files
NTAP(4)	Logical number for four input/output binary files
NRT(4)	Maximum group records can store in one tape of the four files
KNR(4)	Counter for number of records stored in one tape of each of the four files
MWT(4)	Number of time-steps elapsed for writing on tape for four files
LDW(4)	Counter for writing on tape for four files
LSTP(4)	Counter for listing of four files

*No attempt has been made to list and define all variables used in this program and associated subprograms.

BG(4)	The beginning days of each run for four files
DOUT(4)	Number of time-stpes for output of four files
NOTAP(4)	Number of tapes assigned to four files
ITAP(4)	The number of the first tape in the assigned sequence of the four files to be used at start of this run
MTLAB(10,4)	The labels of tapes assigned for the four files
PRTDAY	Time interval for a print-out in days
LDWP	Number of time-steps for one print output
IDMDA	Number of locations in CMN2 from beginning to IBI, except IBI
IDMDB	Number of locations in CMN2 from IBI to the end
IDMDC	Number of locations in CMN1 from PPT to the end
NDIM	Number of locations for (IMX × JMX)
IDMDD	Number of locations for (4 × NDIM)
NDIM1	Number of locations for (NDIM + 3 identifiers)
NDIM2	Number of locations for (5 × NDIM + 1 identifier)
NDSK1...NDSK8	Logical units of rotary files for computations
MSUN	Counter for Mutsuno steps
MSUI	Time-steps for interval to apply the Mutsuno scheme
IBSCAN	Number of scans in a block during relaxation
MSCAN	Maximum number of scans in S.O.R.
EPSL	Criterion to control convergence in S.O.R.

ALPHAR	Over-relaxation factor
ALPHA1	(1t + ALPHAR)
MSWP	Maximum times for density adjustments
MCOUNT	Maximum unsatisfied density points allowed
MSLCT(3)	Maximum selected points for each of three blocks
LGLTIJ(2,4,3)	The (I,J) values of selected points
IB, IBI, IBT, IBFR	Block numbers
PT(23,27)	$\frac{\partial \psi}{\partial t}$
KB, KT	Layer index
UT, VT, ST, TT(23,27)	$\frac{\partial u}{\partial t}$, etc.
PPT(23,27)	Temporary storage of $\frac{\partial \psi}{\partial t}$
RES(23,27)	Residues for the stream function
UTM, VTM(23,27)	Vertically integrated values of $\frac{\partial V}{\partial t}$
XUVR(2884)	Dimension for buffers of PPT, RES, UTM, VTM
BT(624)	Stores $\frac{\partial \psi}{\partial t}$ plus three identifiers
OT(3106)	Stores time rate of change of (u, v, w, S, T) plus layer identification
NIB	Maximum number of blocks
IUNDF	Undefined integer value (-99)
RUNDF	Undefined float point value (-0.0)
FLAT1	Western latitude of the domain
FLAT2	Eastern latitude of the domain
FLONG1	Southern longitude of the domain
FLONG2	Northern longitude of the domain
SO	Reference salinity (34.72‰)
TO	Reference temperature (5°C)

RØO	Reference density (1.0276 $\frac{gm}{cm^3}$)
ALPHA	Thermal expansion coefficient
B	Salinity coefficient
HEATC	Specific heat at constant pressure for ocean water
PI	π
RE	Radius of earth
G	Gravity
VISY	Horizontal viscosity
SVISY	Horizontal diffusivity for salinity
TVISY	Horizontal diffusivity for temperature
VISZ	Vertical viscosity
SVISZ	Vertical diffusivity for salinity
TVISZ	Vertical diffusivity for temperature
PØWER	Exponential power for the horizontal viscosity (4/3)
TAREA, UAREA	Area of a block
TVØL	Total volume
TKK	$273.2^{0}K$
CSTQ	Equivalent constant of heat for adjusting unit to C.G.S.
CSTE	Equivalent constant of water for adjusting unit to C.G.S.
SECDAY	86400
DXT(27), DXU(27)	Unit horizontal separation distance in x-direction in C.G.S.
RDXU2(27)	1/(2 × DXU(J))
DYT, DYU	Unit horizontal separation in y-direction in C.G.S.

RDYU2(27)	$1/(2 \times DYU)$
EPSSK(10)	$\varepsilon_{s(k)}$
EPSTK(10)	$\varepsilon_{t(k)}$
ROCRIT(10)	$\varepsilon_{\rho(k)}$
DZ(10)	Δz_k
DZMH(10)	$\Delta z_{k+\frac{1}{2}}$
Z(10)	Set in layer depth
DEPTH	Total depth
BETA(27)	$\partial f/\partial y$
F(27)	Coriolis force
DG(27)	$G\Delta z_{k+\frac{1}{2}}$
AYZT(10)	$\Delta y\ \Delta z_k$
AUXY(27)	$\Delta x_{j+\frac{1}{2}}\Delta y$
AXZT(27,10)	$\Delta x_j \Delta z_k$
AXZU(27,10)	$\Delta x_{j+\frac{1}{2}}\Delta z_k$
AX(27,10)	$\nu_1 \Delta y \Delta z_k$
AY(27,10)	$\nu_1 \Delta x_j \Delta z_k$
AZ(27,10)	$\nu_2 \Delta x_{j+\frac{1}{2}}\Delta y/\Delta z_{k+\frac{1}{2}}$
CSX(27,10)	$\kappa_1 \Delta y \Delta z_k$
CSY(27,10)	$\kappa_1 \Delta x_{j+\frac{1}{2}}\Delta z_k$
CSZ(10)	$\kappa_2/\Delta z_{k+\frac{1}{2}}$
CTX(27,10)	$\kappa_1 \Delta y \Delta z_k/\Delta x_j$
CTY(27,10)	$\kappa_1 \Delta x_{j+\frac{1}{2}}\Delta z_k/\Delta y$
CTZ(27,10)	$\kappa_2/\Delta z_{k+\frac{1}{2}}$
VISX(27)	$\nu_1(\Delta x_{j+\frac{1}{2}}/\Delta x_o)^{4/3}$
SVISX(27)	$\kappa_1(\Delta x_j/\Delta x_o)^{4/3}$
TVISX(27)	$\kappa_1(\Delta x_j/\Delta x_o)^{4/3}$

IMEF1	Minimum I in the western boundary of the domain
IMEF2	Maximum I in the western boundary of the domain
JMEF1	Minimum J in the southern boundary of the domain
JMEF2	Maximum J in the southern boundary of the domain
LAN(2)	The sequential number of the fictitious boundary of the block
ING(2)	The index of I for the fictitious left and right boundaries of the block
INDBL(27)	Indices of the left boundary of the block
INDBR(27)	Indices of the right boundary of the block
LSBY(23)	Alphabetic symbols of coordinate
IEF1(27)	The starting I of jth row of the computational domain
IEF2(27)	The ending I of the jth row of the computational domain
IND(23,27)	The index of every point
AREAT	Total surface area
AREAB	The block surface area
ATXY(23,27)	Surface area of every computational box with respect to the temperature point
X(2812)	Dimension of constants for the convenience of buffer
Y(2013)	Dimension of constants for the convenience of buffer
BP(624)	Stream function in a block plus three identifiers
OA, DB, OC(3106)	Variable values (V, w, S, T) in a block and layer identifier

UA,VA,WA,SA,TA(23,27)	Variable values of the upper layer
UB,VB,WB,SB,TB(23,27)	Variable values of the middle layer
UC,VC,WC,SC,TC(23,27)	Variable values of the lower layer
LCMNAN(33,7)	Identifiers for the LCM requested
LCNT(7)	Counters for the LCM records in the 7 rotary files
NR1234, NR567	Lengths of records in file 1234 and file 567
ENGE(5)	Stores 5 energetic terms
PCH(4,3)	Stores stream function at selected points in block
UCH,VCH,WCH,SCH, TCH(4,10,3)	Stores variable values at selected points in three blocks
ITEM	Energetic term identifier
NWDS	Maximum locations provided for energy plot
LEL	Counter for NWDS has been stored
ENGL(6,100)	Maximum storage space for energy plot once
FAC(6)	Normalizing factor for energetic terms for plotting
IPL(6)	Controls the sequence to be plotted
IR	Controls the item to be listed in y-axis on plot
NPLX	Number of curves to be plotted on one chart
KTPR(8)	For TLIB specifications at NCAR
TAIR(23,27)	Stores air temperature
QT(23,27)	Stores total heat fluxes
STX(23,27)	Stores x-component of wind stresses
STY(23,27)	Stores y-component of wind stresses
ZDMQT	Number of locations for heat storage

IDMF2	Number of locations for Fourier coefficients I
IDMF4	Number of locations for Fourier coefficients II
LCMFR(65)	LCM identifier for Fourier coefficients
LCMFRØ	LCM identifier for zeroth order Fourier coefficients
NORDER	Order of Fourier coefficients
PERIOD	The period of imposed atmospheric boundary conditions
MAXFR	Maximum sets of Fourier coefficients
IOFR	Switch for control output of Fourier coefficients
START	The starting day of this run (-1.00 for coldstart)
LSTAR	Switch to control whether the starting file is to be listed (0=no, 1=yes)
DOUT(4)	Specify time intervals for output of 4 binary files
LDW(4)	Time-steps for outputs of 4 binary files
MWT(4)	Counters of time-steps for LDW(4)

TABLE 1

DESCRIPTION OF SYMBOLS IN THE OCEAN MODEL

t	time
λ	longitude
ϕ	latitude
z	height
Ω	angular speed of the earth
a	radius of the earth
g	acceleration of gravity
u	zonal component of the current
v	meridional component of the current
V	reference horizontal velocity
w	vertical component of the current
T	temperature
S	salinity
ρ	density
F^{λ}	eastward frictional force per unit volume
F^{ϕ}	northward frictional force per unit volume
∇	horizontal gradient operator
h	step function incorporated with density stability
G^{λ}	nonlinear component in the zonal direction
G^{ϕ}	nonlinear component in the meridional direction
Q_S	downward heat flux
Q_I	incoming solar radiation
Q_B	back radiation

TABLE 1 (Concluded)

Q_H	sensible heat
Q_E	latent heat
Q_o	incoming solar radiation with a clear sky
N_c	cloudiness in tenths
e_a	vapor pressure of air
e_s	saturated vapor pressure
T_s	ocean surface temperature
T_a	air temperature
c	Stefan-Boltzmann constant
L	latent heat of evaporation
ρ_a	air density
V_a	wind velocity
q	specific humidity
P_a	air pressure
C_D, C_E, C_H	drag coefficient for momentum, latent heat, and sensible heat, respectively
Ri	bulk Richardson number
τ^λ	longitudinal component of wind stress
τ^ϕ	latitudinal component of wind stress

TABLE 2

VALUES OF PARAMETERS AND CONSTANTS IN THE OCEAN MODEL

Parameter of constant	Symbol	Value	Unit
reference temperature	To	278.2	°C
reference salinity	So	34.72	°/oo
reference density	ρ_o	1.0276	gm/cm^3
thermal expansion coefficient	α	2.75×10^{-4}	K^{o-1}
saline contraction coefficient	γ	7.5×10^{-4}	$(parts/million)^{-1}$
longitudinal separation	$\Delta\lambda$	2.5	degree
latitudinal separation	$\Delta\phi$	2.5	degree
longitude at the western boundary	λ_o	varies	°W
longitude at the eastern boundary	λ_i	varies	°E
latitude of the northern boundary	ϕ_j	varies	°N
total depth	D	4	km
horizontal eddy viscosity	ν_1	2.5×10^8	cm^2/sec
horizontal eddy diffusivity	κ_1	10^7	cm^2/sec

preparation phase and the computation time

TABLE 2 (Continued)

Parameter or constant	Symbol	Value	Unit
vertical eddy viscosity	ν_2	1.5	cm^2/sec
vertical eddy diffusivity	κ_2	1	cm^2/sec
earth rotation rate	Ω	7.27×10^{-5}	sec^{-1}
specific heat of sea water	C_p	0.958	cal/gm K
time-step	Δt	4.2	hours
Ekman number	E	1.63×10^{-6}	nondimensional
Rossby number	Ro	2.03×10^{-5}	nondimensional
Reynolds number	Re	10	nondimensional
Péclét number	Pé	100	nondimensional
lateral wdith of frictional boundary layer	L_F	1.2×10^{-2}	nondimensional
lateral width of inertia boundary layer	L_I	4.5×10^{-3}	nondimensional
drag coefficient under neutral state	$(C_D)_N$	2.5×10^{-3}	ergs
constants in drag coefficients	b_1	52.9	ergs
constants in drag coefficients	b_2	53.2	ergs

...which exists in a constant file for the computation phases.

TABLE 2 (Concluded)

Parameter or constant	Symbol	Value	Unit
constant in Richardson number	β_V, β_T	4.7	
constant in Richardson number	Z_{10}	10^3	cm
constant in Richardson number	T_{vo}	290	K

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*No attempt has been made to list and define all variables used in this program and associated subprograms.

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APPENDICES

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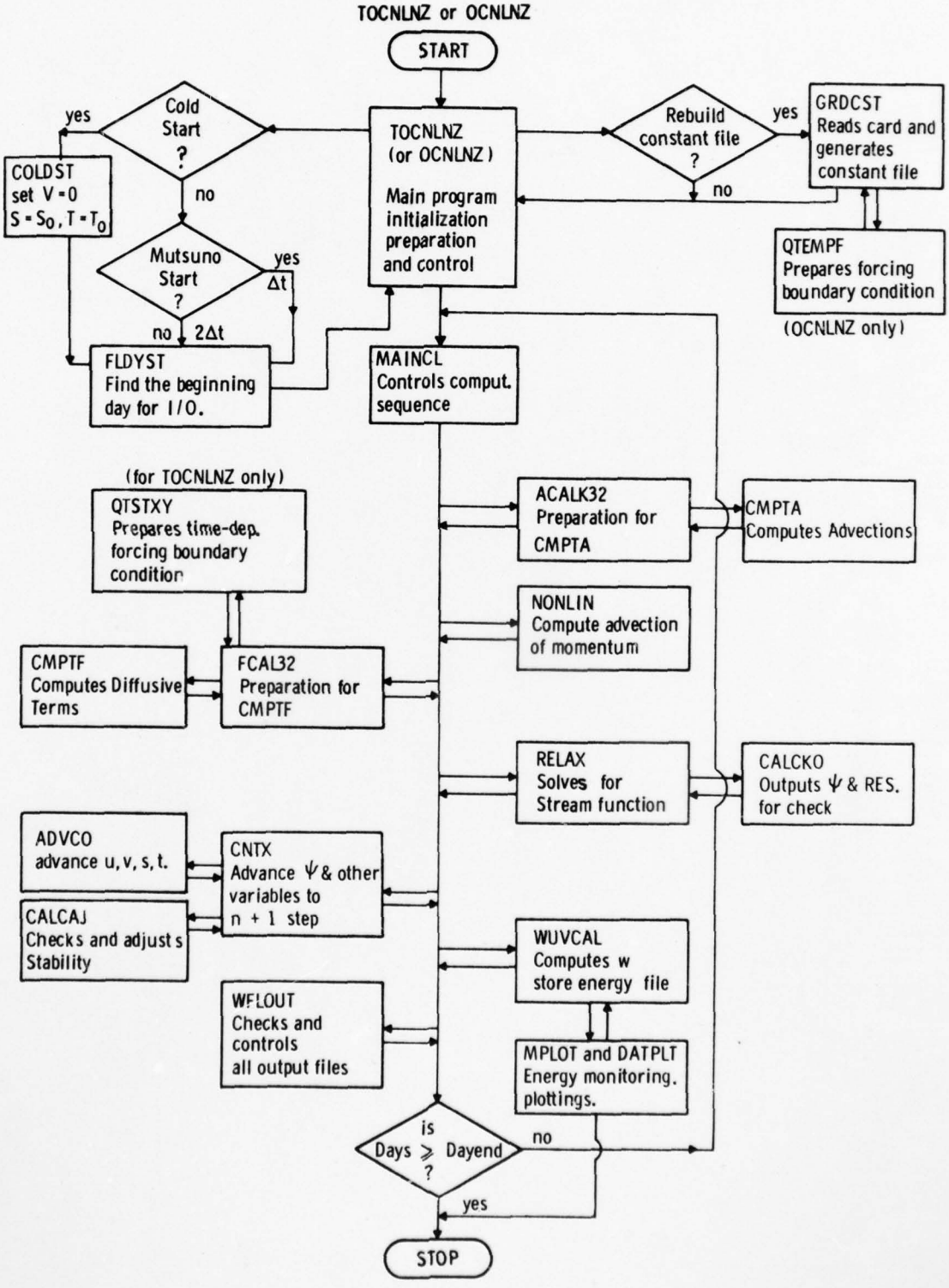
APPENDIX A

FLOW CHART OF THE OCEAN MODEL



APPENDIX B

FORTRAN PROGRAM LIST OF TOCENLNZ

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```
        *SEQUENCE,249154                    DATE  12/31/75      TIME  15/17/53
        *JOB,5066,35631002,HUANG,SHIEH
WARNING -  90 PERCENT OF CRUS ALLOCATED HAVE BEEN USED.
CRUS ALLOCATED =     178000.00
     CRUS USED =     170926.85
        *LIMIT,PT=5,PR=300
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                    *FORTRAN,S=PLIB,N=TOCNLNZ,FL
                    TOCNLNZ     VERSION   17        FILE GENERATED ON 08/ 4 AT  18. 3 HRS
CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
   1                  0          PROGRAM TOCNLNZ
   2                  0     C  **************FOR TIME-DEPENDENT BOUNDARY CONDITION******************
   3                  0     C  ---- CALCULATE QT(I,J), STX(I,J) AND STY(I,J) FROM PERIODIC FOURIER
   4                  0     C  ---- CONSTANTS.
   5                  0     C  ========== BEGINING OF DIMENSION CHANGE  ==========                    NEWP.4
   6                  0          COMMON  BPT(27,4),BJT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
                      0         1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
   8                  0          COMMON/CMN1/DAYS,KDAT,DTDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,NEWP.5
   9                  0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(3)NEWP.6
  10                  0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)NEWP.7
  11                  0         3,LSTP(4),RG(4),DDJT(4),NUTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  NEWP.8
  12                  0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,NEWP.9
  13                  0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANNEWP.10
  14                  0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),NEWP.11
  15                  0         4LGLTIJ(2,4,3),XXX(30)                                                NEWP.12
  16                  0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, NEWP.13
  17                  0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)           NEWP.14
  18                  0          DIMENSION XJVR(2484)                                                 NEWP.15
  19                  0          EQUIVALENCE (PPT(1),XJVR(1))                                         NEWP.16
  20                  0          DIMENSION BT(624),DT(3106),NAM1(3),NAM2(3),NAM3(3),NAM4(3)           NEWP.17
  21                  0          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                  NEWP.18
  22                  0          EQUIVALENCE (NAMT(1),NAM1(1)),(NAMT(4),NAM2(1)),(NAMT(7),NAM3(1)),NEWP.19
  23                  0         1(NAMT(10),NAM4(1))                                                   NEWP.20
  24                  0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     NEWP.21
  25                  0         1FLONG1,FLONG2,SD,TD,RDO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,     NEWP.22
  26                  0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,NEWP.23
  27                  0         3DXT(27),DXJ(27),RDXJ2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITNEWP.24
  28                  0         4(10),DZ(10),DZH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),    NEWP.25
  29                  0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),    NEWP.26
  30                  0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  NEWP.27
  31                  0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,     NEWP.28
  32                  0         8LAN(2),IND(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(   NEWP.29
  33                  0         923,27),AREAT,AREAJ,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)NEWP.30
  34                  0         1,EPD(23,27)
  35                  0          DIMENSION X(2812),Y(2013)
  36                  0          EQUIVALENCE (DAYB,X(1)),(IBI,Y(1))                                   NEWP.33
  37                  0          COMMON/CMN3/BP(624),DA(3106),DB(3106),DC(3106)                       NEWP.34
  38                  0          DIMENSION P(23,27)                                                   NEWP.35
  39                  0          DIMENSION JA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)          NEWP.36
  40                  0          DIMENSION JB(23,27),VB(23,27),WB(23,27),SB(23,27),TB(23,27)          NEWP.37
  41                  0          DIMENSION JC(23,27),VC(23,27),WC(23,27),SC(23,27),TC(23,27)          NEWP.38
  42                  0          EQUIVALENCE (BP(1),DAYX),(BP(2),KDATX),(BP(3),IB),(BP(4),P(1))       NEWP.39
  43                  0          EQUIVALENCE (DA(1),KA),(DA(2),UA(1)),(DA(623),VA(1)),(DA(1244),WA(NEWP.40
  44                  0         11)),(DA(1865),SA(1)),(DA(2486),TA(1))                                NEWP.41
  45                  0          EQUIVALENCE (DB(1),KB),(DB(2),UB(1)),(DB(623),VB(1)),(DB(1244),WB(NEWP.42
  46                  0         11)),(DB(1865),SB(1)),(DB(2486),TB(1))                                NEWP.43
  47                  0          EQUIVALENCE (DC(1),KC),(DC(2),UC(1)),(DC(623),VC(1)),(DC(1244),WC(NEWP.44
  48                  0         11)),(DC(1865),SC(1)),(DC(2486),TC(1))                                NEWP.45
  49                  0          COMMON/NLCM/LCMNAM(33,7),LCNT(7),NR1234,NR567                        NEWP.46
  50                  0          COMMON/ENSL/DAYSE,KDATSE,ENGE(5),PCH(4,3),UCH(4,10,3),VCH(4,10,3),NEWP.49
  51                  0         1WCH(4,10,3),SCH(4,10,3),TCH(4,10,3),ITEM,NWDS,LEL,ENGL(6,100)       NEWP.50
  52                  0         1,FAC(6),IPL(6),IR,NPLX                                               NEWP.51
  53                  0          DIMENSION KTPR(8)
```

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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
  54                0          EQUIVALENCE (KDAT,FDAT)
  55                0          DATA MXPTS,ITEM,NWDS,LEL,IR,NPLX/4,6,100,0,1,5/                    NEWP.52
  56                0          DATA IPL/2,3,5,4,6,0/                                              NEWP.53
  57                0          DATA FAC/1.0,1.0E23,1.0E24,1.0E24,1.0E32,1.0E32/                   NEWP.54
  58                0          DATA NDSK1,NDSK2,NDSK3,NDSK4,NDSK5,NDSK6,NDSK7/1,2,3,4,5,6,7/      NEWP.55
  59                0          DATA MAXI,NIB,IMAX,JMAX,KMAX,SECDAY,PWGT/65,3,23,27,10,86400.0,4./NEWP.56
  60                0          DATA NCARD1,NTP01,NTP02,MSUND/ 441,6,40,30/
  61                0     C    ********** ENDING OF DIMENSION CHANGE **********
  62                0          DATA NAM1/3HH $$$  CONSTANT-DATA  FILE $$$ /
  63                0          DATA NAM2/3HH ***HISTORY-STARTING FILE *** /                       NEWP.60
  64                0          DATA NAM3/3HH === HISTORY-OUTPUT  FILE === /                       NEWP.61
  65                0          DATA NAM4/3HH ---  ENERGY-SELECT  FILE --- /                       NEWP.62
  66                0          DATA (KTPR(I),I=1,7)/5H*TLIB,1H ,2HBN,4HBK=2,4HMS=1,2H  ,2H  /
  67                0          DATA KTPR(8)/0/
  68                0          FDAT=DATEF(1.0)
  69               15          ENCODE (10,1,KDAT) FDAT
  70               15     CRKY CALL DATE (KDAT)                                                   NEWP.65
  71               25          NTPOT=NTP02
  72               25          NTAPF=NTAP(1)
  73               25          LF2=2                                                              NEWP.67
  74               25          RUNDF=-0.0
  75               25          NCARD=0                                                            NEWP.70
  76               25          NDIM=IMAX*JMAX $ NDIM1=NDIM+3 $ NDIM2=5*NDIM+1                     NEWP.71
  77               25          IDMDA=9*JMAX*KMAX+9*JMAX+10*KMAX+39                                NEWP.72
  78               25          IDMDB=3*NDIM+IMAX+4*JMAX+19 $ IDMDC=4*NDIM
  79               25          IDMDD=(5*KMAX+1)*MXPTS*NIB+ITEM+1                                  NEWP.74
  80               25          NIBT=2*(NIB-1)                                                     NEWP.75
  81               25          KNR(1)=NIB+MAXI+2$KNR(2)=(KMAX+1)*NIB $KNR(3)=KNR(2) $KNR(4)=NIB+1
  82               25     C    ****************SET LCM**************************                  NEWP.77
  83               25          NR1234=KNR(2) $ NR567=NIB                                          NEWP.78
  84               25          CALL       REQLCM (NIB,KMAX,NDIM1,NDIM2,IDMDB,IDMDC,MAXI)
  85              103          I1=J1=1 $ I2=IMAX $ J2=JMAX                                        NEWP.80
  86              103          READ 1, ITIL                                                       NEWP.81
  87              117        1 FORMAT (8A10)                                                      NEWP.82
  88              117          PRINT 6, ITIL, KDAT                                                NEWP.83
  89              130        6 FORMAT (1H1,20X,8A10//10X,*DATE OF JOB RUN --*A10//                NEWP.84
  90              130         135X,*=========INPUT DATA AND CALCULATED CONSTANTS==========*/)     NEWP.85
  91              130          PRINT 3, MAXI, NIB, IMAX, JMAX, KMAX                               NEWP.86
  92              147        3 FORMAT (15X,*  MAXI, NIB, IMAX, JMAX, KMAX =*516/)                 NEWP.87
  93              147          PRINT 9,IDMDA,IDMDB,IDMDC,IDMDD, NDIM,NDIM1,NDIM2                  NEWP.88
  94              172        9 FORMAT (/15X,*IDMDA,IDMDB,IDMDC,IDMDD, NDIM,NDIM1,NDIM2=*718/)     NEWP.89
  95              172          READ 2, DAYEND,DIFDAY, START,LSTART,PRTDAY                         NEWP.90
  96              211        2 FORMAT (3F10.3,I2,F8.3)                                            NEWP.91
  97              211          DTIME1=DIFDAY*SECDAY $ DTIME2=DTIME1+DTIME1                        NEWP.92
  98              211          CALL CSTOUT (DIFDAY,PRTDAY,LDWP)                                   NEWP.93
  99              221          LPSTP=0                                                            NEWP.94
 100              221          PRINT 4,  DAYEND,DIFDAY,DTIME1,START,LSTART, PRTDAY,LDWP           NEWP.95
 101              245        4 FORMAT (15X,*ENDING DAYS = DAYEND =*F12.5 * (DAYS)*/               NEWP.96
 102              245         115X,*TIME STEP IN  DAYS    = DIFDAY =*F12.5, * (DAYS)*/           NEWP.97
 103              245         115X,*TIME STEP IN SECONDS = DTIME1 =*E16.8, *(SEC)*/              NEWP.98
 104              245         315X,*CONTROL NO. OF STARTING-DAYS = START =*F12.5,* (DAYS)*/      NEWP.99
 105              245         415X,*     -----COLD START (DAYS=0.0), IF START .LT. 0.0 -----*/  NEWP.100
 106              245         115X,*CONTROL NO. WHETHER (RE-) START INPUT VALUE OF P,U,V,W,S,T IDNEWP.101
 107              245         2 BE LISTED = LSTART =*I3/                                         NEWP.102
 108              245         515X,*NO. OF  ==DAYS==  PER PRINT-OUTPUT = PRTDAY =*F15.5,* (DAYS)*NEWP.103
 109              245         5/15X,*NO. OF TIME-STEPS PER PRINT-OUTPUT =  LDWP  =*I10/)         NEWP.104
```

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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
  110              245          READ 54, MSUN,IBSCAN,MSCAN,ALPHAR,EPSL                                  NEWP.105
  111              254       54 FORMAT (3I5, F10.4,E15.7)                                               NEWP.106
  112              265          IF (MSUN .NE. 0) GO TO 76                                               NEWP.107
  113              267          MSUN=MSUND                                                              NEWP.108
  114              267          PRINT 75, MSUND                                                         NEWP.109
  115              300       75 FORMAT (//10X,5H*****,* INPUT MSUN =0, DEFAULT VALUE TO BE USED,        NEWP.110
  116              300         1MSUN = MSUND =*I5/)                                                    NEWP.111
  117              300       76 CONTINUE                                                               NEWP.112
  118              300          ALPHA1=(1.0+ALPHAR)/PWGT                                                NEWP.113
  119              300          PRINT 55, MSUN,IBSCAN,MSCAN,ALPHAR,EPSL,PWGT                            NEWP.114
  120              324       55 FORMAT (15X,*NO. OF TIME-STEPS PER STABLIZING (MATSUNO) CALCULATIO
  121              324         1N = MSUN =*I5/20X,*---- MSUN = (POSITIVE, NEGATIVE) = (NORMAL STARNEWP.116
  122              324         2T, MATSUNO START) ----*//
  123              324         2                 15X,*MAXIMUM NO. OF SCANNING (RELAXATION) PER BLOCKNEWP.118
  124              324         2 = IBSCAN =*I5/15X,*MAXIMUM NO. OF BLOCK SCANNING = MSCAN =*I5/        NEWP.119
  125              324         2     15X,*SCANNING AJUSTABLE PARAMETER = ALPHAR =*F10.4/                NEWP.120
  126              324         315X,*MAXIMUM ERROR ALLOWED IN RELAXATION = EPSL =*E16.8/                NEWP.121
  127              324         415X,*WEIGHT FACTOR = PWGT =*F10.4/)                                    NEWP.122
  128              324          READ 56, MSWP,MCOUNT, IOFR
  129              337       56 FORMAT (3I5)
  130              337          PRINT 57, MSWP,MCOUNT, IOFR
  131              352       57 FORMAT (15X,*DENSITY ADJUST PARAMETER, MSWP = MAXIMUM NO. OF ADJUSNEWP.126
  132              352         1T PER POINT =*I5/15X,*DENSITY ADJUST PARAMETER, MCOUNT = MAXIMUM NNEWP.127
  133              352         20. OF UNSTABLE POINTS PER BLOCK ALLOWED =*I5//
  134              352         315X,*========WHETHER FOURIER CONSTANTS TO BE LISTED, IOFR =*I4/)
  135              352          DO 15 I=1,4                                                             NEWP.129
  136              352          READ 5, NTAP(I),NOTAP(I),NRT(I),ITAP(I),BG(I),DOUT(I)                   NEWP.130
  137              402        5 FORMAT (I2,I3,I5,I3,1X,2F13.4)                                          NEWP.131
  138              402          PRINT 6, (NAMT(J,I),J=1,3),I,NTAP(I),I,NOTAP(I),I,NRT(I),I,ITAP(I)NEWP.132
  139              402         1,I,KNR(I),I,BG(I)                                                      NEWP.133
  140              455        6 FORMAT (/10X,*CONTROL DATA FOR TAPE OF *3A10//                         NEWP.134
  141              455         115X,*TAPE LOGICAL UNIT = NTAP(*I1,3H) =,I2/                            NEWP.135
  142              455         315X,*NO. OF TAPES ASSIGNED TO THIS FILE = NOTAP(*I1,3H) =,I3/15X,      NEWP.136
  143              455         2 *MAXIMUM NO. OF USER#S GROUP-RECORD PER TAPE = NRT(*I1,3H) =,I5/      NEWP.137
  144              455         415X,*SEQUENCE NO. OF THE TAPE FOR STARTING = ITAP(*,I1,3H) =,I2/       NEWP.138
  145              455         415X,*NO. OF LOGICAL RECORDS PER USER#S GROUP-RECORD = KNR(*I1,3H)       NEWP.139
  146              455         4=,I4/15X,*BEGINING-CONTROL NO. IN DAYS = BG(*I1,3H) =,F15.5)           NEWP.140
  147              460          IF (NOTAP(I) .LE. 0) GO TO 13                                           NEWP.141
  148              462          NOMT=NOTAP(I)                                                           NEWP.142
  149              462          READ 12, (MTLAB(J,I),J=1,NOMT)                                          NEWP.143
  150              503       12 FORMAT (10A8)                                                           NEWP.144
  151              503          PRINT 16, (J,MTLAB(J,I),J=1,NOMT)                                       NEWP.145
  152              523       16 FORMAT (/15X,*LABEL OF MAGNETIC TAPE(S) ASSIGNED TO THIS FILE ARE*NEWP.146
  153              523         1/(20X,5(4X,I3,2H) ,A8)))                                               NEWP.147
  154              524       13 IF (I .NE. 1) GO TO 7                                                   NEWP.148
  155              526          LSTDA=INT(DOUT(1))                                                      NEWP.149
  156              531          IF (LSTDA .LT. 0) LSTDA=-LSTDA                                          NEWP.150
  157              532          PRINT 17, DOUT(1), LSTDA                                                NEWP.151
  158              543       17 FORMAT (/15X,*CONTROL NO. WHETHER CONSTANTS-FILE TO BE LISTED = DONEWP.152
  159              543         1UT(1) =*F14.5/15X,*----CARD-INPUT NEEDED IF DOUT(1) .LT. 0.0----*/NEWP.153
  160              543         215X,*WHICH PART NEEDED TO BE LISTED = LSTDA =*I4/)                     NEWP.154
  161              543          GO TO 15                                                                NEWP.155
  162              543        7 CALL CSTOUT (DIFDAY,DOUT(I),LDW(I))                                    NEWP.156
  163              554          PRINT 14, I,DOUT(I),I,LDW(I)                                            NEWP.157
  164              573       14 FORMAT(/15X,*NO. OF DAYS PER OUTPUT (TO TAPE)  = DOUT(*I1,3H) =,       NEWP.158
  165              573         1F15.5/15X,*NO. OF TIME-STEPS OUTPUT TO TAPE = LDW(*I1,3H) =,I4/)       NEWP.159
```

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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
  166              573      15  CONTINUE                                                          NEWP.160
  167              575          DO 62 IB=1,NIB                                                  NEWP.161
  168              575          READ 58, MSLCT(IB)                                              NEWP.162
  169              607      58  FORMAT (I4)                                                       NEWP.163
  170              607          PRINT 59, IB,IB,MSLCT(IB)                                       NEWP.164
  171              623      59  FORMAT (/10X,*FOR BLOCK*I3,*, NO. OF (I,J) POINTS TO BE SELECTED =NEWP.165
  172              623         1 MSLCT(*I2,2H)=,I4/)                                            NEWP.166
  173              625          IF (MSLCT(IB) .LE. 0) GO TO 62                                  NEWP.167
  174              630          MSLCTX=MSLCT(IB)                                                NEWP.168
  175              630          READ 60, ((LGLTIJ(L,I,IB),L=1,2),I=1,MSLCTX)                    NEWP.169
  176              655      60  FORMAT ((10(2X,2I3)))                                             NEWP.170
  177              655          PRINT 61,  (I,(LGLTIJ(L,I,IB),L=1,2),I=1,MSLCTX)                NEWP.171
  178              701      61  FORMAT ((5X,10(I4,2H (,I2,1H,,I2,1H))))                          NEWP.172
  179              701      62  CONTINUE                                                          NEWP.173
  180              703          DAYS=START                                                      NEWP.174
  181              707          IF (START .LT. 0.0) DAYS=0.0                                    NEWP.175
  182              711          L=1
  183              712          DO 18 J=1,3                                                     NEWP.177
  184              712      18  NAMX(J)=NAMT(J,L)                                                 NEWP.178
  185              721          NTAPE=NTAP(1)
  186              721          ITS=ITAP(L) $ LABEL=ITLAB(ITS,L)                                NEWP.179
  187              721          KTPR(6)=2HRT
  188              721          SWFR=DOUT(1)
  189              735          IF (DOUT(1) .GE. 0.0) GO TO 810
  190              736          KTPR(7)=2HDT
  191              742          IF (BG(1) .LT. 0.0) KTPR(6)=2HNS
  192              744          GO TO 811
  193              744      810 KTPR(7)=0
  194              745      811 CONTINUE
  195              746          CALL FLDYST (KDAT,NAMX,NTAP(L),ITAP(L),LABEL,KNR(L),BG(L),DAYX,   NEWP.180
  196              746         1ISTOP,MWT(L),KTPR)
  197              773          IF (DOUT(1) .GE. 0.0) GO TO 26                                  NEWP.183
  198              775          CALL GRDCST                                                     NEWP.184
  199              775          MWT(1)=MWT(1)+1                                                 NEWP.185
  200              776          CALL WTBUF (NTAP(1),IOMDA,X)                                    NEWP.186
  201             1004          CALL REWDTP (NDSK5)                                             NEWP.187
  202             1007      24  CALL RDBUFL(NDSK5,IOMDB,Y)                                      NEWP.188
  203             1014          CALL WTBUF  (NTAP(1),IOMDB,Y)                                   NEWP.189
  204             1023          IF (IBI .LT. NIB) GO TO 24                                      NEWP.190
  205             1025          CALL FRCST (NTAPE, SWFR,IOFR)
  206             1032          NAMX(1)=NAMT(1,L) $ NAMX(2)=NAMT(2,L) $ NAMX(3)=NAMT(3,L)       NEWP.191
  207             1032          PRINT 25, MWT(L),DAYB, NAMX, NTAP(L), LABEL                     NEWP.192
  208             1061      25  FORMAT(/ 5X,*======*I5,*-TH GROUP-RECORD (DAYB=*F14.5,*) OF *   NEWP.193
  209             1061         13A10,* HAS BEEN WRITTEN ON TAPE*I2,4H == ,A8/)                  NEWP.194
  210             1061          GO TO 850
  211             1061      25  MWT(L)=MWT(L)+1                                                 NEWP.197
  212             1062          IB=0                                                            NEWP.198
  213             1065          CALL RDBUF (NTAP(1),IOMDA,X)                                    NEWP.199
  214             1072          PRINT 29, MWT(1),DAYB,NTAP(1)                                   NEWP.200
  215             1105      29  FORMAT (/10X,*THE *I5,*-TH GROUP-RECORD OF DAYB=*F14.5,* (OF TAPE*NEWP.201
  216             1105         1,I2*) TO BE USED AS CONSTANT DATA INPUT.*/)                     NEWP.202
  217             1105          CALL LSTCSTI (IB)                                               NEWP.203
  218             1110      28  IB=IB+1                                                         NEWP.204
  219             1111          CALL RDBUF (NTAP(1),IOMDB,Y)                                    NEWP.205
  220             1116          CALL WTBUFL(NDSK5,IOMDB,Y)                                      NEWP.206
  221             1123          CALL LSTCSTI (IB)                                               NEWP.207
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
  222          1127          IF (IB .NE. NIB) GO TO 28                                                    NEWP.208
  223          1131          CALL FRCST (NTAPF, SWFR,IOFR)
  224          1131     C    ***** RETURN TAPE NTAP(1) CONSTANT-TAPE.                                      NEWP.209
  225          1135      850 CALL CHGTAPE(L,2)
  226          1142          L=2
  227          1143          DO 852 J=1,3
  228          1143      852 NAMX(J)=NAMT(J,L)
  229          1155          ITS=ITAP(L) $ LABEL=MTLAB(ITS,L) $ KTPR(6)=2HRT $ KTPR(7)=2HOT
  230          1170          IF (BS(2) .LT. 0.0 .AND. DAYS .EQ. 0.0) KTPR(6)=2HNS
  231          1173          CALL FLDYST (KDAT,NAMX,NTAP(L),ITAP(L),LABEL,KNR(L),BG(L),DAYX,
  232          1173         1ISTOP,MWT(L),KTPR)
  233          1220       19 IF (START .GE. 0.0) GO TO 37                                                 NEWP.212
  234          1222          MWT(L)=MWT(L)+1                                                              NEWP.213
  235          1222          CALL COLDST (NDSK1,NDSK6)                                                    NEWP.214
  236          1231          PRINT 25, MWT(L),DAYX, NAM2, NTAP(L), LABEL                                  NEWP.215
  237          1252          CALL REWDTP (NDSK1)                                                          NEWP.216
  238          1255          CALL REWDTP (NDSK2)                                                          NEWP.217
  239          1261          IF (LSTART .NE. 0) CALL REWDTP (NDSK5)                                       NEWP.218
  240          1265          MWT(L)=MWT(L)+1                                                              NEWP.219
  241          1265          NAMX(2)=10H (INPUT FO $ NAMX(3)=10HR START)    $ LFE=1                       NEWP.220
  242          1265       52 CALL RDBUFL (NDSK1,NDIM1,BP)                                                 NEWP.221
  243          1301          LFE=1 $ LF2=2 $ NAMX(1)=10H P(I,J)
  244          1305          IF (LSTART .NE. 0) CALL RDBUFL (NDSK5,IDMDB,Y)                               NEWP.222
  245          1313          CALL WTBUFL (NDSK2,NDIM1,BP)                                                 NEWP.223
  246          1320          CALL WTBUF (NTAP(L),NDIM1,BP)                                                NEWP.224
  247          1330          IF (LSTART .NE. 0) CALL GTABOUT (NAMX,NTPOT,KDAT,IMAX,JMAX,DAYX,            NEWP.225
  248          1330         1IB,0,LF2,LSBY,P)                                                             NEWP.226
  249          1346       36 CALL RDBUFL (NDSK1,NDIM2,DA)                                                 NEWP.227
  250          1353          CALL WTBUFL (NDSK2,NDIM2,DA)                                                 NEWP.228
  251          1360          CALL WTBUF (NTAP(L),NDIM2,DA)                                                NEWP.229
  252          1370          IF (LSTART .NE. 0) CALL LSTOUT (NAMX,NTPOT,KDAT,IMAX,JMAX,LSBY,LFENEWP.230
  253          1370         1,DAYX,IB,KA,UA,VA,WA,SA,TA)                                                  NEWP.231
  254          1413          IF (KA .NE. KMAX) GO TO 36                                                   NEWP.232
  255          1416          IF (IB .NE. NIB) GO TO 52                                                    NEWP.233
  256          1420          PRINT 25, MWT(L),DAYX, NAM2, NTAP(L), LABEL                                  NEWP.234
  257          1441          GO TO 43                                                                     NEWP.235
  258          1441       37 CONTINUE                                                                     NEWP.236
  259          1442          NDSKX=NDSK1                                                                  NEWP.237
  260          1442          NAMX(2)=10H(INPUT FOR $ NAMX(3)=10H RE-START) $ LFE=1                        NEWP.238
  261          1442       39 MWT(L)=MWT(L)+1                                                              NEWP.239
  262          1447          CALL REWDTP(NDSKX)                                                           NEWP.240
  263          1456          IF (LSTART .NE. 0) CALL REWDTP (NDSK5)                                       NEWP.241
  264          1462       53 CALL RDBUF (NTAP(L),NDIM1,BP)                                                NEWP.242
  265          1471          LFE=1 $ LF2=2 $ NAMX(1)=10H P(I,J)
  266          1475          IF (LSTART .NE. 0) CALL RDBUFL (NDSK5,IDMDB,Y)                               NEWP.243
  267          1503          KDATX=KDAT
  268          1503          CALL WTBUFL (NDSKX,NDIM1,BP)                                                 NEWP.244
  269          1512          IF (LSTART .NE. 0) CALL GTABOUT (NAMX,NTPOT,KDAT,IMAX,JMAX,DAYX,            NEWP.245
  270          1512         1IB,0,LF2,LSBY,P)                                                             NEWP.246
  271          1530       40 CALL RDBUF (NTAP(L),NDIM2,DA)                                                NEWP.247
  272          1537          CALL WTBUFL (NDSKX,NDIM2,DA)                                                 NEWP.248
  273          1545          IF (LSTART .NE. 0) CALL LSTOUT (NAMX,NTPOT,KDAT,IMAX,JMAX,LSBY,LFENEWP.249
  274          1545         1,DAYX,IB,KA,UA,VA,WA,SA,TA)                                                  NEWP.250
  275          1570          IF (KA .NE. KMAX) GO TO 40                                                   NEWP.251
  276          1573          IF (IB .NE. NIB) GO TO 53                                                    NEWP.252
  277          1576          IF (NDSKX .EQ. NDSK2) GO TO 41                                               NEWP.253
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
  278          1600          DAYX1=DAYX $ NDSKX=NDSK2                                                    NEWP.254
  279          1600          GO TO 39                                                                    NEWP.255
  280          1607       41 IF (ABS(DAYX-DAYS) .LT. 1.0E-8) GO TO 45
  281          1611          PRINT 44, DAYS, DAYX                                                        NEWP.257
  282          1622       44 FORMAT (/10X,5H*****,* INCONSISTENT STARTING DAYS, DAYS ASSIGNED =NEWP.258
  283          1622         1*,F14.4,*,  DAYS OF STARTING-FILE USED =*,F14.4/                         NEWP.259
  284          1622         225X,*-----JOB TERMINATES ABNORMALLY-----*/)                              NEWP.260
  285          1622          CALL EXIT                                                                  NEWP.261
  286          1623       45 DIFD=DAYX-DAYX1                                                          NEWP.262
  287          1623          PRINT 81,DAYX1,DAYX,DIFD,DAYX,DIFDAY                                       NEWP.263
  288          1644       81 FORMAT (//15X,*RE-START INPUT BLOCKED DATA OF (P,U,V,W,S,T) BELONGNEWP.264
  289          1644         1 TO*,F14.4,* DAYS, AND*,F14.4,* DAYS*/                                  NEWP.265
  290          1644         215X,*TIME-STEP BETWEEN THE INPUT DATA =*F14.4,* DAYS*//                  NEWP.266
  291          1644         315X, *------ FOR MONSUND-RESTART (MSUN .LT. 0), ONLY THE DATA OF*,NEWP.267
  292          1644         4F14.4,* DAYS IS USED AS INITIAL VALUE -----*/                           NEWP.268
  293          1644         515X,* AND  TIME-STEP = DIFDAY =*,F14.4,* DAYS*/)                        NEWP.269
  294          1645          IF (MSUN .LT. 0) GO TO 63                                                  NEWP.270
  295          1652          IF (DIFD .EQ. 0.0 .AND. DAYX .EQ. 0.0) GO TO 63                            NEWP.271
  296          1660          IF (ABS(DIFD-DIFDAY) .LT. 1.0E-8) GO TO 63
  297          1662          PRINT 42, NTAP(L),DAYX,DAYX1,DIFD,DIFDAY                                   NEWP.273
  298          1702       42 FORMAT (/10X,*-----TIME-STEP CALCULATED FROM INPUT TAPE*I2,3H IS, NEWP.274
  299          1702         1F15.5,1H-,F15.5,2H =,F15.5,* (DAYS) *//20X,*WHICH IS DIFERENT FROM NEWP.275
  300          1702         1*F15.5*, THE ASSIGNED VALUE.*/20X,*-----JOB TERMINATES ABNORALLY*)NEWP.276
  301          1702          CALL EXIT                                                                  NEWP.277
  302          1702       C  -------CALCULATION OF INITIAL VALUE OF PPT AND WRITE ON DISK NDSK6NEWP.278
  303          1703       63 K=0 $ LF2=2
  304          1703          CALL REWDTP (NDSK5)                                                        NEWP.280
  305          1716          CALL REWDTP (NDSK1) $ CALL REWDTP (NDSK2) $ CALL REWDTP(NDSK6)             NEWP.281
  306          1721       64 CALL RDBUFL (NDSK5,IDMDB,Y)                                                NEWP.282
  307          1725          CALL RDBUFL (NDSK1,NDIM1,BP)                                               NEWP.283
  308          1733          CALL RDBUFL (NDSK2,NDIM1,BT)                                               NEWP.284
  309          1740          LR=1                                                                       NEWP.285
  310          1740          CALL INDINTG (IMAX,JMAX,IND,INDFL,LR,ING)                                  NEWP.286
  311          1751          LR=2                                                                       NEWP.287
  312          1751          CALL INDINTG (IMAX,JMAX,IND,INDBR,LR,ING)                                  NEWP.288
  313          1751       C  -----CALCULATION OF INITIAL PPT FOR RESTART---------                       NEWP.289
  314          1752          DO 68 J=1,JMAX                                                             NEWP.290
  315          1752          DO 68 I=1,IMAX                                                             NEWP.291
  316          1763          IF (IND(I,J)) 65,67,66                                                     NEWP.292
  317          1763       65 PPT(I,J)=RUNDF                                                             NEWP.293
  318          1763          GO TO 68                                                                   NEWP.294
  319          1763       66 PPT(I,J)=0.0                                                               NEWP.295
  320          1763          GO TO 68                                                                   NEWP.296
  321          1763       67 PPT(I,J)=(PT(I,J)-P(I,J))/DTIME1                                           NEWP.297
  322          1763       68 CONTINUE                                                                   NEWP.298
  323          2005          CALL WTBUFL (NDSK6,IDMDC,XUVR)                                             NEWP.299
  324          2013          NAMX(1)=10H PPT(I,J)
  325          2015          IF (LSTART .NE. 0) CALL GTABOUT (NAMX,NTPOT,KDAT,IMAX,JMAX,DAYX,  NEWP.301
  326          2015         1IB,K,LF2,LSBY,PPT)                                                         NEWP.302
  327          2034          IF (IBT .EQ. NIB) GO TO 43                                                 NEWP.303
  328          2036       69 CALL RDBUFL (NDSK1,NDIM2,DT)                                               NEWP.304
  329          2043          CALL RDBUFL (NDSK2,NDIM2,DT)                                               NEWP.305
  330          2051          IF (KT .NE. KMAX) GO TO 69                                                 NEWP.306
  331          2053          GO TO 64                                                                   NEWP.307
  332          2053       43 CALL CHGTAPE(L,1)                                                          NEWP.308
  333          2060          KTPR(7)=2HDT
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CARD            APPROXIMATE
NUMBER          PROGRAM LOCATION
  334                2060            DO 35 L=3,4                                                                    NEWP.310
  335                2060            DO 32 J=1,3                                                                    NEWP.311
  336                2062         32 NAMX(J)=NAMT(J,L)                                                              NEWP.312
  337                2072            ITS=ITAP(L)                                                                    NEWP.313
  338                2075            LABEL=ATLAB(ITS,L)                                                             NEWP.314
  339                2075            KTPR(6)=2HRT
  340                2105            IF (BG(L) .LT. 0.0) KTPR(6)=2HNS
  341                2110            CALL FLDYST (KDAT,NAMX,NTAP(L),ITAP(L),LABEL,KNR(L),BG(L),DAYX,                NEWP.315
  342                2110           1ISTOP,NWT(L),KTPR)
  343                2133            STDL =DAYS+DIFDAY*FLOAT(LDW(L))                                                NEWP.317
  344                2141            IF (BG(L) .GE. 0.0) GO TO 38                                                   NEWP.318
  345                2143            BG(L)=DAYS                                                                     NEWP.319
  346                2143            GO TO 34                                                                       NEWP.320
  347                2151         38 IF (STDL .GT. BG(L)) GO TO 34                                                  NEWP.321
  348                2153            PRINT 33, NTAP(L),NAMX,STDL,BG(L)                                              NEWP.322
  349                2172         33 FORMAT (//10X,*---1ST RECORD TO BE WRITTEN ON TAPE*I2,1X,3A10,                 NEWP.323
  350                2172           14H IS ,F15.5/10X,* WHICH IS .LE. * F15.5,*, THE PREVIOUS RECORD*/              NEWP.324
  351                2172           325X,*-----JOB TERMINATES ABNORMALLY-----*//)                                   NEWP.325
  352                2172            CALL EXIT                                                                      NEWP.326
  353                2173         34 CALL CHGTAPE (L,1)                                                             NEWP.327
  354                2177         35 CONTINUE                                                                       NEWP.328
  355                2177            C                                                                              NEWP.329
  356                2201            CALL DATPLT (ITEM)                                                             NEWP.330
  357                2205            LDW(1)=LOW? $ LDW(2)=LDW(2)-1                                                  NEWP.331
  358                2205            NAMT(1,1)=10HPRINT OUTP $ NAMT(2,1)=10HUT DATA OF $ NAMT(3,1)=1H               NEWP.332
  359                2205            MSJI=0                                                                         NEWP.333
  360                2220            IF (MSJN .GT. 0) GO TO 72                                                      NEWP.334
  361                2220            C  ********* MONSUNO START *********                                          NEWP.335
  362                2221            MSJN=-MSUN                                                                     NEWP.336
  363                2221            MSJI=MSUN-1                                                                    NEWP.337
  364                2221         72 CONTINUE                                                                       NEWP.338
  365                2224            DO 73 I=1,4                                                                    NEWP.339
  366                2224         73 LSTP(I)=0                                                                      NEWP.340
  367                2224            C  -------MAIN CALCULATION LOOP--------                                        NEWP.341
  368                2231            J1=1 $ J2=JMAX                                                                 NEWP.342
  369                2231            DAYS1=DAYS $ DTIME=DTIME2 $ DAYS=DAYS+DIFDAY                                   NEWP.343
  370                2244         70 IF (DAYS .GT. DAYEND) GO TO 101                                                NEWP.344
  371                2245        111 CALL MAINCL (NDSK1,NDSK2,NDSK3,NDSK4,NDSK6,NDSK7)                              NEWP.345
  372                2260            IF (DAYS .GT. DAYEND) GO TO 102                                                NEWP.346
  373                2260            C ******* FOR NDSK1,2,3,4 ARE ALL OR SOME ARE DISKS**********************      NEWP.347
  374                2260           C112 CALL MAINCL (NDSK2,NDSK3,NDSK4,NDSK1,NDSK6,NDSK7)                          NEWP.348
  375                2260            C      IF (DAYS .GT. DAYEND) GO TO 103                                         NEWP.349
  376                2260           C113 CALL MAINCL (NDSK3,NDSK4,NDSK1,NDSK2,NDSK6,NDSK7)                          NEWP.350
  377                2260            C      IF (DAYS .GT. DAYEND) GO TO 104                                         NEWP.351
  378                2260           C114 CALL MAINCL (NDSK4,NDSK1,NDSK2,NDSK3,NDSK6,NDSK7)                          NEWP.352
  379                2260            C      GO TO 70                                                                NEWP.353
  380                2260           .C101 ASSIGN 111 TO LSWCH                                                        NEWP.354
  381                2260            C      GO TO 105                                                               NEWP.355
  382                2260           C102 ASSIGN 112 TO LSWCH                                                         NEWP.356
  383                2260            C      GO TO 105                                                               NEWP.357
  384                2260           C103 ASSIGN 113 TO LSWCH                                                         NEWP.358
  385                2260            C      GO TO 105                                                               NEWP.359
  386                2260           C104 ASSIGN 114 TO LSWCH                                                         NEWP.360
  387                2260           C105 IF (LSTP(2)) 107,108,106                                                    NEWP.361
  388                2260           C106 LSTP(2)=-2                                                                  NEWP.362
  389                2260           C107 GO TO LSWCH, (111,112,113,114)                                              NEWP.363
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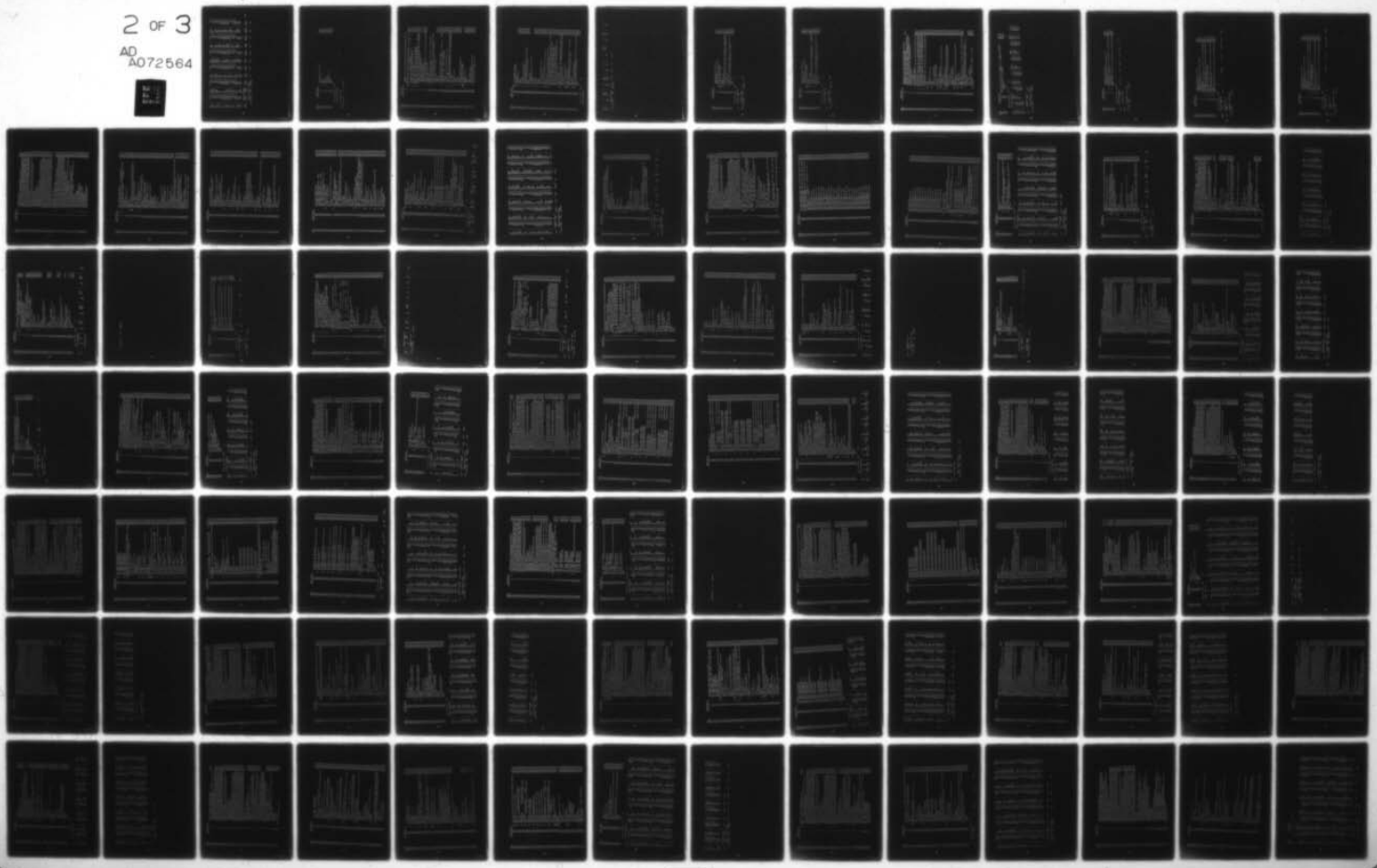
CARD          APPROXIMATE
NUMBER       PROGRAM LOCATION
 390               2260     C ******* FOR NDSK1,2,3,4 ARE ALL OR SOME ARE DISKS*****END**********NEWP.364
 391               2260     C ******* FOR NDSK1,2,3,4,6,7 ARE LCM **********************************  NEWP.365
 392               2261      112  CALL MAINCL (NDSK2,NDSK3,NDSK1,NDSK4,NDSK6,NDSK7)                  NEWP.366
 393               2274           IF (DAYS .GT. DAYEND) GO TO 103                                   NEWP.367
 394               2275      113  CALL MAINCL (NDSK3,NDSK1,NDSK2,NDSK4,NDSK6,NDSK7)                  NEWP.368
 395               2305           GO TO 70                                                          NEWP.369
 396               2305      101  ASSIGN 111 TO LSWCH                                               NEWP.370
 397               2306           GO TO 105                                                         NEWP.371
 398               2307      102  ASSIGN 112 TO LSWCH                                               NEWP.372
 399               2310           GO TO 105                                                         NEWP.373
 400               2311      103  ASSIGN 113 TO LSWCH                                               NEWP.374
 401               2312      105  IF (LSTP(2)) 107,108,106                                          NEWP.375
 402               2314      106  LSTP(2)=-2                                                        NEWP.376
 403               2315      107  GO TO LSWCH, (111,112,113)                                        NEWP.377
 404               2315     C  **********FOR NDSK1,2,3,4 ARE ALL DISKS*********END**************    NEWP.378
 405               2322      108  IF (LEL .EQ. 0) GO TO 110                                         NEWP.379
 406               2324           CALL PRTENGX (NTP01,KDAT,ITEM,NWDS,LEL,ENGL)                      NEWP.380
 407               2334           XMIN=2.0 $ XMAX=1.0 $ KF=1                                        NEWP.381
 408               2334           CALL MPLOT (NTP01,KDAT,ITEM,NWDS,LEL,ENGL,XMIN,XMAX,IR,NPLX,IPL,  NEWP.382
 409               2334          1FAC,KF)                                                           NEWP.383
 410               2356           XMIN=-1.0 $ XMAX=-2.0 $ KF=0                                      NEWP.384
 411               2356           CALL MPLOT (NTP01,KDAT,ITEM,NWDS,LEL,ENGL,XMIN,XMAX,IR,NPLX,IPL,  NEWP.385
 412               2356          1FAC,KF)                                                           NEWP.386
 413               2400      110  CONTINUE                                                          NEWP.387
 414               2400           DO 118 L=2,4                                                      NEWP.388
 415               2400           IF (MWT(L) .EQ. 0) GO TO 118                                      NEWP.389
 416               2400           CALL CHGTAPE (L,2)                                                NEWP.390
 417               2411      118  CONTINUE                                                          NEWP.391
 418               2411     C  ******** NORMAL END OF JOB **********                                 NEWP.392
 419               2413           PRINT 120                                                         NEWP.393
 420               2421      120  FORMAT (///30X, 37H**********NORMAL END OF JOB**********//)       NEWP.394
 421               2421           END                                                               NEWP.395

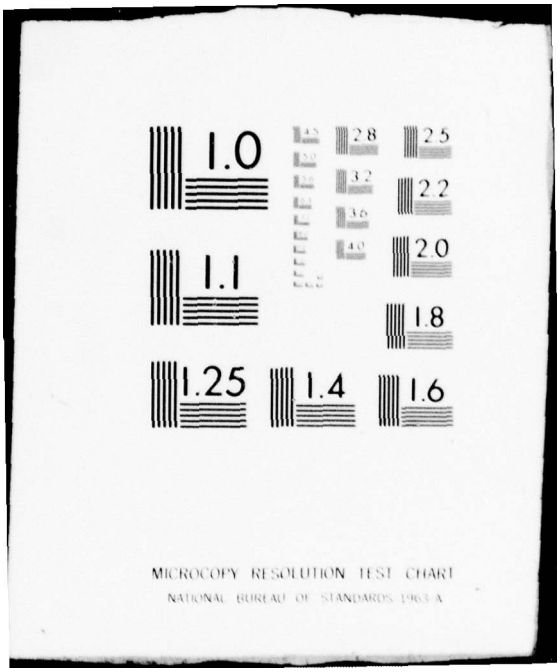
        LENGTH OF ROUTINE   TOCNLNZ     3344

        VARIABLE ASSIGNMENTS
XUVR  -  10015C 1  BT    -   574C 1  DT    -  1754C 1  NAM1  -    46C 1  NAM2  -    51C 1  NAM3  -    54C 1
NAM4  -     57C 1  X     -    0C 2  Y     -  5374C 2  P     -     3C 3  UA    -  1161C 3  VA    -  2336C 3
WA    -   3513C 3  SA    -  4670C 3  TA    -  6045C 3  UB    -  7223C 3  VB    - 10400C 3  WB    - 11555C 3
SB    -  12732C 3  TB    - 14107C 3  UC    - 15265C 3  VC    - 16442C 3  WC    - 17617C 3  SC    - 20774C 3
TC    -  22151C 3  KTPR  -     0     BPT   -    0C 0  BUT   -   154C 0  BVT   -  2244C 0  BST   -  4334C 0
BTT   -   6424C 0  BUTM  -  10514C 0  BVTM  -  10670C 0  BPTEP -  11044C 0  DAYS  -    0C 1  KDAT  -    1C 1
DIFDAY -     2C 1  DTIME -    3C 1  DAYEND -    4C 1  MAXI  -    5C 1  IMAX  -    6C 1  JMAX  -    7C 1
KMAX  -     10C 1  IM1   -   11C 1  JM1   -   12C 1  IP1   -   13C 1  JP1   -   14C 1  I1    -   15C 1
J1    -     15C 1  I2    -   17C 1  J2    -   20C 1  I     -   21C 1  J     -   22C 1  K     -   23C 1
NCARD1 -    24C 1  NCARD -   25C 1  KSYB  -   26C 1  INKD  -   27C 1  INDEX -   30C 1  ITIL  -   31C 1
NAMX  -     41C 1  NTP01 -   44C 1  NTP02 -   45C 1  NAMT  -   46C 1  NTAP  -   62C 1  NRT   -   66C 1
KNR   -     72C 1  MWT   -   75C 1  LDW   -  102C 1  LSTP  -  106C 1  BG    -  112C 1  DOUT  -  116C 1
NOTAP -    122C 1  ITAP  -  126C 1  MTLAB -  132C 1  PRTDAY -  442C 1  LDWP  -  443C 1  LPSTP -  444C 1
LSTDA -    445C 1  IDMDA -  446C 1  IDMDB -  447C 1  IDMDC -  450C 1  IDMDD -  451C 1  NDIM  -  452C 1
NDIM1 -    453C 1  NDIM2 -  454C 1  NDSK1 -  455C 1  NDSK2 -  456C 1  NDSK3 -  457C 1  NDSK4 -  460C 1
NDSK5 -    461C 1  NDSK6 -  462C 1  NDSK7 -  463C 1  NDSK8 -  464C 1  MSUN  -  465C 1  MSJI  -  466C 1
LMIN1 -    467C 1  LMIN2 -  470C 1  IBSCAN -  471C 1  MSCAN -  472C 1  EPSL  -  473C 1  ALPHAR -  474C 1
ALPHA1 -   475C 1  PWGT  -  476C 1  DTIME1 -  477C 1  DTIME2 -  500C 1  MSWP  -  501C 1  MCOUNT -  502C 1
MSLCT -    503C 1  LGLTIJ -  506C 1  XXX   -  536C 1  DAYT  -  574C 1  KDATT -  575C 1  IBT   -  576C 1
PT    -    577C 1  KT    -  1754C 1  JT    -  1755C 1  VT    -  3132C 1  WT    -  4307C 1  ST    -  5464C 1
```

AD-A072 564 MICHIGAN UNIV ANN ARBOR DEPT OF ATMOSPHERIC AND OCE--ETC F/G 8/10
A BRIEF DOCUMENTATION OF THE NORPAX OCEAN MODEL,(U)
APR 77 J C HUANG, W SHAW, J S CHING N00014-76-C-0141
UNCLASSIFIED NL

2 OF 3
AD A072564




1.0
1.1
1.25
1.4
1.6
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.8
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

```
TT      -   6641C 1   PPT     -  10016C 1   RES     -  11173C 1   UTM     -  12350C 1   VTM     -  13525C 1   DAYB    -      0C 2
KDATB   -      1C 2   IMAXT   -      2C 2   NIB     -      3C 2   NIBT    -      4C 2   IUNDF   -      5C 2   RUNDF   -      6C 2
FLAT1   -      7C 2   FLAT2   -     10C 2   FLONG1  -     11C 2   FLONG2  -     12C 2   SO      -     13C 2   TO      -     14C 2
RDO     -     15C 2   ALPHA   -     16C 2   B       -     17C 2   HEATC   -     20C 2   PI      -     21C 2   RE      -     22C 2
G       -     23C 2   VISY    -     24C 2   SVISY   -     25C 2   TVISY   -     26C 2   VISZ    -     27C 2   SVISZ   -     30C 2
TVISZ   -     31C 2   POWER   -     32C 2   TAREA   -     33C 2   UAREA   -     34C 2   TVOL    -     35C 2   UVOL    -     36C 2
TKK     -     37C 2   CSTQ    -     40C 2   CSTE    -     41C 2   SECDAY  -     42C 2   DXT     -     43C 2   DXU     -     76C 2
RDXU2   -    131C 2   DYT     -    164C 2   DYU     -    165C 2   RDYU2   -    166C 2   EPSSK   -    167C 2   EPSTK   -    201C 2
RUCRIT  -    213C 2   DZ      -    225C 2   DZMH    -    237C 2   Z       -    251C 2   DEPTH   -    263C 2   BETA    -    264C 2
F       -    317C 2   DG      -    352C 2   AYZT    -    364C 2   AUXY    -    376C 2   AXZT    -    431C 2   AXZU    -   1047C 2
AX      -   1465C 2   AY      -   2103C 2   AZ      -   2521C 2   CSX     -   3137C 2   CSY     -   3555C 2   CSZ     -   4173C 2
CTX     -   4205C 2   CTY     -   4623C 2   CTZ     -   5241C 2   VISX    -   5253C 2   SVISX   -   5306C 2   TVISX   -   5341C 2
IBI     -   5374C 2   IMX     -   5375C 2   IMEF1   -   5376C 2   IMEF2   -   5377C 2   JMX     -   5400C 2   JMEF1   -   5401C 2
JMEF2   -   5402C 2   LAN     -   5403C 2   ING     -   5405C 2   INDBL   -   5407C 2   INDBR   -   5442C 2   LSBY    -   5475C 2
IEF1    -   5524C 2   IEF2    -   5557C 2   IND     -   5612C 2   AREAT    -   6767C 2   AREAU   -   6770C 2   VOLT    -   6771C 2
VOLJ    -   6772C 2   AREATB  -   6773C 2   AREAUB  -   6774C 2   VOLTB   -   6775C 2   VOLUB   -   6776C 2   ATXY    -   6777C 2
SPD     -  10154C 2   BP      -      0C 3   DA      -   1160C 3   DB      -   7222C 3   DC      -  15264C 3   LCMNAM  -      0C 4
LCNT    -    347C 4   NR1234  -    356C 4   NR567   -    357C 4   DAYSE   -      0C 5   KDATSE  -      1C 5   ENGE    -      2C 5
PCH     -      7C 5   UCH     -     23C 5   VCH     -     213C 5   WCH     -    403C 5   SCH     -    573C 5   TCH     -    763C 5
ITEM    -   1153C 5   NWDS    -   1154C 5   LEL     -   1155C 5   ENGL    -   1156C 5   FAC     -   2306C 5   IPL     -   2314C 5
IR      -   2322C 5   NPLX    -   2323C 5   DAYX    -      0C 3   KDATX   -      1C 3   IB      -      2C 3   KA      -   1160C 3
KB      -   7222C 3   KC      -  15254C 3   FDAT    -      1C 1   MXPTS   -     10      MSUND   -     11      NTPOT   -   2452
NTAPE   -   2451       LF2     -   2450       START   -   2447       LSTART  -   2446       IOFR    -   2445       NUMT    -   2444
MSLCTX  -   2443       L       -   2442       ITS     -   2441       LABEL   -   2440       SWFR    -   2437       ISTOP   -   2436
LFE     -   2435       NOSKX   -   2434       DAYX1   -   2433       DIFD    -   2432       LR      -   2431       STOL    -   2430
DAYS1   -   2427       LSWCH   -   2426       XMIN    -   2425       XMAX    -   2424       KF      -   2423
```

SUBROUTINES CALLED

```
DATEF       OUTPTS      REQLCM      INPUTC      OUTPTC      CSTOUT      FLDYST      GRDCST      WTBUF       REWDTP      RDBUFL      FRCST       RDBUF
LSTCSTI     WTBUFL      CHGTAPE     COLDST      STABOUT     LSTOUT      EXIT        INDINTG     DATPLT      MAINCL      PRTENGX     MPLOT
```

COMMON BLOCKS AND LENGTHS

```
   -  11220      CMN1   -  14702      CMN2   -  11331      CMN3   -  23326      NLCM   -    360      ENSL   -  2324
COMPILE TIME =    705    MILLISECS
```

```
CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
 422                     0          SUBROUTINE CSTOUT (O,X,N)                                  CSTO.2
 423                     0          IF (X) 1,2,3                                               CSTO.3
 424                     3       1  N=0                                                        CSTO.4
 425                     4          RETURN                                                     CSTO.5
 426                     5       2  N=1                                                        CSTO.6
 427                     6          RETURN                                                     CSTO.7
 428                     7       3  Y=(X/O)+0.5                                                CSTO.8
 429                    10          N=INT(Y)                                                   CSTO.9
 430                    14          IF (N .EQ. 0) N=1                                          CSTO.10
 431                    15          RETURN                                                     CSTO.11
 432                    15          END                                                        CSTO.12

         LENGTH OF ROUTINE   CSTOUT        37

         VARIABLE ASSIGNMENTS
O       -      0     X       -      0     N       -      0     Y       -     24

         SUBROUTINES CALLED
OEQRSO
    COMPILE TIME =     10    MILLISECS
```

```
CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
  433                )          SUBROUTINE FLDYST (KDAT,NAMX,NTPX,ITS,LABEL,KNR,DAYF,DAYX,ISTOP,N,
  434                )         1KTPR)
  435                )     C INPUT VALUE NTPX = LOGICAL UNIT NO. OF TAPE NTPX.                        FLDY.3
  436                )     C INPUT VALUE DAYF =(-1, 0, .GT. 0)=(START NEW TAPE, START BEFORE EOF,     FLDY.4
  437                )     C                    START AT DAY=DAYF)                                    FLDY.5
  438                )     C    **************RETURN VALUES*******************                        FLDY.6
  439                )     C ------DAYX = DAYS OF LAST GROUP-RECORD READ.                              FLDY.7
  440                )     C   ISTOP=1, START A NEW TAPE.                                             FLDY.8
  441                )     C   ISTOP=2, DAYF .LT. DAYX, END OF FILE NOT REACHED.                      FLDY.9
  442                )     C   ISTOP=3, DAYF .EQ. DAYX, END OF FILE NOT REACHED.                      FLDY.10
  443                )     C   ISTOP=4, DAYF .GT. DAYX, END OF FILE REACHED, DAYF .NE. 999999999.,    FLDY.11
  444                )     C   ISTOP=5, DAYF .GT. DAYX, END OF FILE REACHED, DAYF .EQ. 999999999.,    FLDY.12
  445                )          DIMENSION NL(4),DAYL(4),LDAY(4),NPE(4)                                FLDY.13
  446                )          DIMENSION XX(2),NBUF(3),KTPR(8)
  447                )          EQUIVALENCE (XX(2),MDAY)                                              FLDY.15
  448                )          DATA LMX,KSY,IDM/4,2H *,2/                                            FLDY.16
  449                )       29 FORMAT (/10X,*---READ PARITY ERROR AT *I5,*-TH RECORD, GROUP-RECORFLDY.17
  450                )         1D*,I4,*, SUB-RECORD*,I4,*---*)                                       FLDY.18
  451                )          ENCODE (2,3,KTPR(2)) NTPX
  452               36        3 FORMAT (I2)
  453               36     C    ********WCARE******STAGING IN TAPE NTPX OF LABEL = LABEL*********
  454               36          PRINT 60,ITS,NTPX,LABEL,KTPR
  455               53       60 FORMAT (/10X,*----------BEGIN TO USE THE*,I4,*-TH REEL OF TAPE*I2,
  456               53         1* LABEL =*A8/ 20X,*TLIB TO BE ASSIGNED ----- *,7A8,I8/)
  457               53          CALL NEWVOL (NTPX,LABEL,1,KTPR)
  458               61          KEND=54 HOT                                                           FLDY.20
  459               61          ISTOP=0                                                               FLDY.21
  460               61          NT=N=L=0                                                              FLDY.22
  461               61          PRINT 27, KDAT, NTPX, NAMX, ITS, LABEL                                FLDY.23
  462              104       27 FORMAT(1H1/15X,A10,15X,*(DAYS) -- LISTING OF TAPE*I2,4H,   ,3A10//FLDY.24
  463              104         120X,*TAPE SEQUENCE NO. =*I2,5X,*LABEL=*A8//                        FLDY.25
  464              104         1  5X,4(30H     NO.      DAYS      RUN-DATE ))                      FLDY.26
  465              104          PRINT 23                                                              FLDY.27
  466              104     C    IF (DAYF .NE. 7777777777777777777B) GO TO 9                           FLDY.28
  467              104     C    PRINT 4, DAYF                                                         FLDY.29
  468              104     C  4 FORMAT (//15X,54H*****, *ASSIGNED DAYS FOR THIS TAPE =*F8.3,* WHICHFLDY.30
  469              104     C    1 IS BLANK AND IS NOT ALLOWED.*/20X,*-----JOB TERMINATES ABNORMALLYFLDY.31
  470              104     C    2-----*/)                                                             FLDY.32
  471              104     C    CALL EXIT                                                             FLDY.33
  472              111        9 IF (DAYF) 5,10,10                                                    FLDY.34
  473              112        5 ISTOP=1                                                              FLDY.35
  474              113          K=KNR                                                                FLDY.36
  475              113          GO TO 22                                                             FLDY.37
  476              116       10 KPAR=0                                                               FLDY.38
  477              116          BUFFER IN (NTPX,1) (XX(1),XX(IDM))                                   FLDY.39
  478              126       15 IF (UNIT,NTPX) 15,12,20,26
  479              126     CBKY IF (UNIT(NTPX)) 12,20,26
  480              131       25 KPAR=1                                                               FLDY.41
  481              132          PRINT 29, NT,N,K                                                     FLDY.42
  482              146       12 NT=NT+1                                                              FLDY.43
  483              146          K=1                                                                  FLDY.44
  484              146          N=N+1 $ L=L+1                                                        FLDY.45
  485              146          DAYX=XX(1) $ NPE(L)=1H                                               FLDY.46
  486              146          NL(L)=N $ DAYL(L)=DAYX $ LDAY(L)=MDAY                                FLDY.47
  487              163       40 IF (K .EQ. KNR) GO TO 43                                             FLDY.48
  488              165          BUFFER IN (NTPX,1) (XX(1),XX(IDM))                                   FLDY.49
```

```
CARD          APPROXIMATE
NUMBER      PROGRAM LOCATION
  489             165     CBKY  IF (UNIT(NTPX)) 42,20,41
  490             174       16  IF (UNIT,NTPX) 16,42,20,41
  491             177       41  KPAR=KPAR+1                                                    FLDY.51
  492             200           PRINT 29, NT,N,K                                               FLDY.52
  493             215       42  K=K+1                                                          FLDY.53
  494             215           NT=NT+1                                                        FLDY.54
  495             215           GO TO 40                                                       FLDY.55
  496             221       43  IF (KPAR .NE. 0) NPE(L)=KSY                                    FLDY.56
  497             225           IF (L .NE. LMX) GO TO 45                                       FLDY.57
  498             227           PRINT 44, (NPE(I),NL(I),DAYL(I),LDAY(I),I=1,LMX)               FLDY.58
  499             254       44  FORMAT (5X,4(A2,I5,F12.3,1X,A10))                              FLDY.59
  500             254           L=0                                                            FLDY.60
  501             254       45  DIFXF=DAYX-DAYF
  502             262           IF (ABS(DIFXF) .LT. 1.0E-8) GO TO 46
  503             263           IF (DIFXF) 10,46,47
  504             265       46  ISTOP=3                                                        FLDY.62
  505             265           GO TO 21                                                       FLDY.63
  506             265       47  ISTOP=2                                                        FLDY.64
  507             267           GO TO 21                                                       FLDY.65
  508             270       20  KEND=1H                                                        FLDY.66
  509             271           ISTOP=4                                                        FLDY.67
  510             275           IF (DAYF .EQ. 9999999.9) ISTOP=5                               FLDY.68
  511             277           BACK SPACE NTPX                                                FLDY.69
  512             301       21  IF (L .EQ. 0) GO TO 22                                         FLDY.70
  513             303           PRINT 44, (NPE(I),NL(I),DAYL(I),LDAY(I),I=1,L)                 FLDY.71
  514             330       22  PRINT 23                                                       FLDY.72
  515             335       23  FORMAT (5X,4(3H   ===== ========== ==========))                FLDY.73
  516             335           PRINT 24, NTPX,NT,N,KNR,DAYX,DAYF,KEND                         FLDY.74
  517             360       24  FORMAT (//20X,*INPUT FILE READ FROM TAPE*I2/20X,*TOTAL NO. OF RECORFLDY.75
  518             360          1DS READ =*I5/20X,*NO. OF USER*S GROUP-RECORDS READ =*I5/        FLDY.76
  519             360          220X,*NO. OF RECORDS PER USER*S GROUP-RECORD =*I5//             FLDY.77
  520             360          320X,*---DAYS--- OF LAST GROUP-RECORD READ =*F12.4/             FLDY.78
  521             360          420X,*FINAL ---DAYS--- ASSIGNED TO BE READ =*F12.4//            FLDY.79
  522             360          520X,*========END OF FILE HAS* A5,*BEEN REACHED.========*//)     FLDY.80
  523             361           IF (K .EQ. KNR) GO TO 36                                       FLDY.81
  524             363           PRINT 25, K, KNR                                               FLDY.82
  525             374       25  FORMAT (//15X,*-----STOP AT THE INCOMPLETE SET OF THE GROUP-----*/FLDY.83
  526             374          125X,*K, KNR =*2I5/10X,*-----CALL FROM SUBROUTINE FLDST, JOB TERMINFLDY.84
  527             374          1ATES ABNORMALLY-----*/)                                       FLDY.85
  528             374           CALL EXIT                                                      FLDY.86
  529             375       36  GO TO (34,32,34,32,31) ISTOP                                   FLDY.87
  530             412       31  IF (N .GT. 0) GO TO 37                                         FLDY.88
  531             414       32  PRINT 33, DAYF,NTPX                                            FLDY.89
  532             425       33  FORMAT (//20X,*DAYF =*F14.5,* HAS NOT BEEN FOUND IN TAPE*I2/   FLDY.90
  533             425          120X,*-----JOB TERMINATES ABNORMALLY-----*/)                    FLDY.91
  534             425           CALL EXIT                                                      FLDY.92
  535             426       37  DAYF=DAYX                                                      FLDY.93
  536             426       34  PRINT 35, NTPX,NAMX,N,DAYF,DAYX                                FLDY.94
  537             447       35  FORMAT (/10X,*TAPE*I2,3A10,* HAS BEEN READ TILL *I4,*-TH GROUP-RECFLDY.95
  538             447          1ORD OF DAYF=*F14.5,*, DAYX=*F14.5/)                           FLDY.96
  539             447           RETURN                                                         FLDY.97
  540             447           END                                                            FLDY.98

      LENGTH OF ROUTINE   FLDYST       766

      VARIABLE ASSIGNMENTS
```

```
KDAT  -     0     NAMX  -     0     NTPX  -     0     ITS   -     0     LABEL -     0     KNR   -     0
DAYF  -     0     DAYX  -     0     ISTOP -     0     N     -     0     KIPK  -     0     NL    -     0
DAYL  -     4     LDAY  -    10     NPE   -    14     XX    -    20     MDAY  -    21     LMX   -    22
KSY   -    23     IDM   -    24     KEND  -   463     NT    -   462     L     -   461     K     -   460
KPAR  -   457     I     -   456     DIFKP -   435

          SUBROUTINES CALLED
OUTPTS    OUTPTC    NEWVOL    BUFFEI    IOCHEK    BACKSP    EXIT      QBORSO
    COMPILE TIME =    117   MILLISECS
```

```
CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
  541                  0          SUBROUTINE RDBUF (NTPX,IDM,X)                                          RDBF.2
  542                  0          DIMENSION X(IDM)                                                       RDBF.3
  543                  0          BUFFER IN (NTPX,1) (X(1),X(IDM))                                       RDBF.4
  544                 11       11  IF (UNIT,NTPX) 11,12,13,14                                            RDBF.5
  545                 11     CBKY  IF (UNIT(NTPX)) 12,13,14                                               RDBF.6
  546                 14       12  RETURN                                                                 RDBF.7
  547                 15       13  PRINT 15, NTPX                                                         RDBF.8
  548                 25       15  FORMAT (10X,*========== END OF FILE OF TAPE *I2,* HAS BEEN REACHED    RDBF.9
  549                 25          1, DURING  INPUT==========*/25X,*---JOB TERMINATES ABNORMALLY---*)     RDBF.10
  550                 25          CALL EXIT                                                              RDBF.11
  551                 26       14  PRINT 16, NTPX                                                         RDBF.12
  552                 35       16  FORMAT (10X,*-----PARITY ERROR DURING INPUT OF TAPE *I2,*-----*/       RDBF.13
  553                 35          125X,*----------JOB TERMINATES ABNORMALLY----------*/)                RDBF.14
  554                 35          CALL EXIT                                                              RDBF.15
  555                 36          END                                                                    RDBF.16

      LENGTH OF ROUTINE   RDBUF        107

      VARIABLE ASSIGNMENTS
NTPX  -      0     IDM   -      0     X     -      0

      SUBROUTINES CALLED
BUFFEI    IOCHEK    OUTPTC    EXIT      JBQKSD
   COMPILE TIME =     12    MILLISECS
```

```
CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
  556                0          SUBROUTINE *TBUF (NTPX,IDM,X)                                          *TBF.2
  557                0          DIMENSION X(IDM)                                                       *TBF.3
  558                0          BUFFER OUT (NTPX,1) (X(1),X(IDM))                                      *TBF.4
  559               11       11  IF (UNIT,NTPX) 11,12,13,14                                            *TBF.5
  560               11     CBKY  IF (UNIT(NTPX)) 12,13,14                                               *TBF.6
  561               14       12  RETURN                                                                 *TBF.7
  562               15       13  PRINT 15, NTPX                                                         *TBF.8
  563               25       15  FORMAT (10X,*********** END OF FILE OF TAPE *I2,* HAS BEEN REACHED*TBF.9
  564               25          1, DURING OUTPUT************/25X,*---JOB TERMINATES ABNORMALLY---*) *TBF.10
  565               25           CALL EXIT                                                             *TBF.11
  566               25       14  PRINT 16, NTPX                                                         *TBF.12
  567               35       16  FORMAT (10X,*------PERITY ERROR DURING OUTPUT OF TAPE *I2,*------*/ *TBF.13
  568               35          125X,*----------JOB TERMINATES ABNORMALLY----------*/)                *TBF.14
  569               35           CALL EXIT                                                             *TBF.15
  570               36           END                                                                   *TBF.16

        LENGTH OF ROUTINE   *TBUF        107

        VARIABLE ASSIGNMENTS
NTPX  -      0     IDM   -      0     X     -      0

        SUBROUTINES CALLED
BUFFIO    IOCHEK    OUTPTC    EXIT      SBORSO
   COMPILE TIME =     18    MILLISECS
```

```
CARD      APPROXIMATE
NUMBER   PROGRAM LOCATION
  571                 0          SUBROUTINE REQLCM (NIB,KMAX,NDIM1,NDIM2,IDMDB,IDMDC,MAXI)
  572                 0          COMMON/NLCM/LCMNAM(33,7),LCNT(7),NR1234,NR567                                  RQLM.3
  573                 0          COMMON/QTST/DAYFR,KDATFR,IBFR,TAIR(23,27),QT(23,27),STX(23,27),
  574                 0         1STY(23,27), IDMQT,IDMF2,IDMF4,LCMFR(65),LCMFRD,NORDER,PERIOD,MAXFR
  575                 0         1,RPERD(2),KIND2,KIND4,CAG1,CAG2,CRB1,CRB2,BB2,BB12,AA2,AA12,BVT,
  576                 0         2BV2,CI2,CI3,CB2,CB3,CB4,CH1,CE1,CTX1,DAYSC,XABF(541)
  577                 0          LCMFRD=LCMREQ(IDMF2)
  578                 5          DO 2 I=1,MAXI
  579                 5        2 LCMFR(I)=LCMREQ(IDMF4)
  580                 5      C   ***************FOR NDSK1,2,3,4 ARE ALL LCM*******************************RQLM.4
  581                15          DO 2002 L=1,3                                                               RQLM.5
  582                15      C   ***************FOR NDSK1,2,3,4 ARE ALL LCM******END*********************RQLM.6
  583                15      C   ***************FOR NDSK1,2,3,4 ARE ALL DISK*****************************RQLM.7
  584                15      C   --------BY PASS ALL STATEMENT TILL STATEMENT 2002 (INCLUDED)----------RQLM.8
  585                15      C   ***************FOR NDSK1,2,3,4 ARE ALL DISK*********END*****************RQLM.9
  586                15      C   ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM*****************RQLM.10
  587                15      C     DO 2002 L=3,4                                                             RQLM.11
  588                15      C   ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM******END******RQLM.12
  589                15          I=J=0                                                                       RQLM.13
  590                15       2001 J=J+1                                                                     RQLM.14
  591                15          I=I+1 $ K=0                                                                 RQLM.15
  592                15          LCMNAM(I,L)=LCMREQ(NDIM1)                                                   RQLM.16
  593                15       2003 K=K+1                                                                     RQLM.17
  594                15          I=I+1                                                                       RQLM.18
  595                15          LCMNAM(I,L)=LCMREQ(NDIM2)                                                   RQLM.19
  596                15          IF (K .LT. KMAX) GO TO 2003                                                 RQLM.20
  597                15          IF (J .LT. NIB) GO TO 2001                                                  RQLM.21
  598                15       2002 CONTINUE                                                                  RQLM.22
  599                54          DO 2004 I=1,NIB                                                            RQLM.23
  600                54       2004 LCMNAM(I,5)=LCMREQ(IDMDB)                                                 RQLM.24
  601                54      C  *********FOR NDSK5, NDSK7 ARE DISKS ********************                   RQLM.25
  602                54      C     DO 2005 L=6,7                                                            RQLM.26
  603                54      C     DO 2005 I=1,NIB                                                          RQLM.27
  604                54      C2005 LCMNAM(I,L)=LCMREQ(IDMDC)                                                RQLM.28
  605                54      C   ****END******NDSK6,7 ARE DISKS***************************                RQLM.29
  606                54      C  *********FOR NDSK5, NDSK7 ARE LCM **********************                   RQLM.30
  607                66          L=6 $ LP1=7                                                                 RQLM.31
  608                66          DO 2005 I=1,NIB                                                             RQLM.32
  609                66          LCMNAM(I,L)=LCMREQ(IDMDC)                                                   RQLM.33
  610                66          LCMNAM(I,LP1)=LCMNAM(I,L)                                                   RQLM.34
  611                66       2005 CONTINUE                                                                  RQLM.35
  612                66      C   ****END******NDSK6,7 ARE LCM*****************************                RQLM.36
  613               103          DO 2006 L=1,7                                                               RQLM.37
  614               103       2006 CALL REWDTP (L)                                                           RQLM.38
  615               112          IRMX=(KMAX+1)*NIB                                                           RQLM.39
  616               112          PRINT 2010                                                                  RQLM.40
  617               123       2010 FORMAT (1H1/20X,*========== LCM ADDRESS TABLE FOR BOTH BKY-FTN AND RQLM.41
  618               123         1 NCAR SYSTEMS ==========*/)                                              RQLM.42
  619               123          PRINT 3, LCMFRD,LCMFRD, (I,LCMFR(I),LCMFR(I),I=1,MAXI)
  620               150         3  FORMAT (/3X,*LCMFRD =*I10,2X,O20//3X,*LCMFR(I) =*/(2X,3(I6,3H)  ,
  621               150           1I10,2X,O20)))
  622               150          DO 2009 L=1,7                                                               RQLM.43
  623               150          IF (L .GT. 4) IRMX=NIB                                                      RQLM.44
  624               150          PRINT 2007, L,LCNT(L), IRMX                                                 RQLM.45
  625               172          PRINT 2008, (I, LCMNAM(I,L), LCMNAM(I,L),I=1,IRMX)                          RQLM.46
  626               215       2009 CONTINUE                                                                  RQLM.47
```

```
CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
 627                  217      2007 FORMAT (/10X,*LCM NAME REQUEST --- L, LCNT(L), IRMX =*3I6/)        RQLM.48
 628                  217      2008 FORMAT (2X,3(4H     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.)/        RQLM.49
 629                  217          1(2X,3(I6,3H)  ,I10,2X,O20)))                                       RQLM.50
 630                  217           RETURN                                                             RQLM.51
 631                  220           END                                                                RQLM.52

          LENGTH OF ROUTINE   REQLCM       317

          VARIABLE ASSIGNMENTS
VIB    -       0     KMAX   -       0     NDIM1  -       0     NDIM2  -       0     IDMDB  -       0     IDMDC  -       0
MAXI   -       0     LCMNAM -      0C 0   LCNT   -     347C 0  NR1234 -     356C 0  NR567  -     357C 0  DAYFR  -      0C 1
KDATFR -      1C 1   IBFR   -      2C 1   TAIR   -      3C 1   QT     -    1160C 1  STX    -    2335C 1  STY    -    3512C 1
IDMJT  -    4667C 1  IDMF2  -    4670C 1  IDMF4  -    4671C 1  LCMFR  -    4672C 1  LCMFRD -    4773C 1  NORDER -    4774C 1
PERIOD -    4775C 1  MAXFR  -    4776C 1  RPERD  -    4777C 1  KIND2  -    5001C 1  KIND4  -    5002C 1  CAG1   -    5003C 1
CAG2   -    5004C 1  CRB1   -    5005C 1  CRB2   -    5006C 1  BB2    -    5007C 1  BB12   -    5010C 1  AA2    -    5011C 1
AA12   -    5012C 1  BVT    -    5013C 1  BV2    -    5014C 1  CI2    -    5015C 1  CI3    -    5016C 1  CB2    -    5017C 1
CB3    -    5020C 1  C34    -    5021C 1  CH1    -    5022C 1  CE1    -    5023C 1  CTX1   -    5024C 1  DAYSC  -    5025C 1
XABF   -    5026C 1  I      -     233     L      -     232     J      -     231     K      -     230     LP1    -     227
IRMX   -     225

          SUBROUTINES CALLED
LCMRED     REWDTP     OUTPTC     ABORSD

          COMMON BLOCKS AND LENGTHS
BLC4   -      36D     QTST   -    6053
     COMPILE TIME =      77    MILLISECS
```

```
CARD            APPROXIMATE
NUMBER        PROGRAM LOCATION
  632                 0          SUBROUTINE REWDTP (NDSKX)                                                    REWD.2
  633                 0          COMMON/NLCM/LCMNAM(33,7),LCNT(7),NR1234,NR567                                REWD.3
  634                 0          LCNT(NDSKX)=0                                                                REWD.4
  635                 0     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM*****************REWD.5
  636                 0     C      IF (NDSKX .GT. 2) RETURN                                                   DKLC.34
  637                 0     C      REWIND NDSKX                                                               DKLC.35
  638                 0     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM*******END*******REWD.8
  639                 2          END                                                                          REWD.9

        LENGTH OF ROUTINE   REWDTP        14

        VARIABLE ASSIGNMENTS
NDSKX  -       0     LCMNAM -      0C 0  LCNT   -    347C 0  NR1234 -    356C 0  NR567  -    357C 0

        SUBROUTINES CALLED
COMPASS

        COMMON BLOCKS AND LENGTHS
NLCM   -    360
    COMPILE TIME =      4    MILLISECS.
```

```
CARD             APPROXIMATE
NUMBER          PROGRAM LOCATION
 640                    0          SUBROUTINE RDBUFL (NDSKX,IDM,X)                                        RDBL.2
 641                    0          DIMENSION X(IDM)                                                       RDBL.3
 642                    0          COMMON/NLCM/LCMNAM(33,7),LCNT(7),NR1234,NR567                          RDBL.4
 643                    0          LCNT(NDSKX)=LCNT(NDSKX)+1                                              RDBL.5
 644                    2          I=LCNT(NDSKX)                                                          RDBL.6
 645                    2     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM*****************RDBL.7
 646                    2     C      IF (NDSKX .LT. 3) GO TO 30                                           RDBL.8
 647                    2     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM*******END*******RDBL.9
 648                    2          CALL LCMRD (LCMNAM(I,NDSKX),X,IDM)                                     RDBL.10
 649                    2     CBKY CALL READEC (X,LCMNAM(I,NDSKX),IDM)                                    RDBL.11
 650                   14          RETURN                                                                 RDBL.12
 651                   14     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM*****************RDBL.13
 652                   14     C 30 CALL RDBUF (NDSKX,IDM,X)                                               RDBL.14
 653                   14     C    RETURN                                                                 RDBL.15
 654                   14     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM*******END*******RDBL.16
 655                   14          END                                                                    RDBL.17

        LENGTH OF ROUTINE   RDBUFL         30

        VARIABLE ASSIGNMENTS
NDSKX  -        0     IDM    -        0     X      -        0     LCMNAM -      0C 0  LCNT   -    347C 0  NR1234 -    356C 0
NR567  -    357C 0  I      -       22

        SUBROUTINES CALLED
LCMRD     QBORSD

        COMMON BLOCKS AND LENGTHS
NLCM   -     360
    COMPILE TIME =       8    MILLISECS
```

```
CARD             APPROXIMATE
NUMBER          PROGRAM LOCATION
 656                    0          SUBROUTINE #TBUFL (NDSKX,IDM,X)                                    #TBL.2
 657                    0          DIMENSION X(1D4)                                                   #TBL.3
 658                    0          COMMON/NLCM/LCMNAM(33,7),LCNT(7),NR1234,NR567                      #TBL.4
 659                    0          LCNT(NDSKX)=LCNT(NDSKX)+1                                          #TBL.5
 660                    2          I=LCNT(NDSKX)                                                      #TBL.6
 661                    2     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM***************#TBL.7
 662                    2     C      IF (NDSKX .LT. 3) GO TO 30                                       #TBL.8
 663                    2     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM******END******#TBL.9
 664                    2          CALL LCMWT (LCMNAM(I,NDSKX),X,IDM)                                 #TBL.10
 665                    2     CBKY CALL #RITEC (X,LCMNAM(I,NDSKX),IDM)                                #TBL.11
 666                   14          RETURN                                                             #TBL.12
 667                   14     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM***************#TBL.13
 668                   14     C 30 CALL #TBUF (NDSKX,ID4,X)                                           #TBL.14
 669                   14     C    RETURN                                                             #TBL.15
 670                   14     C    ***************FOR NDSK1,2 ARE DISK AND NDSK3,4 ARE LCM******END******#TBL.16
 671                   14          END                                                                #TBL.17

         LENGTH OF ROUTINE   #TBUFL         30

         VARIABLE ASSIGNMENTS
NDSKX  -        0     IDM    -       0     X      -       0     LCMNAM -      0C 0  LCNT   -    347C 0  NR1234 -    356C 0
NR567  -    357C 0   I      -      22

         SUBROUTINES CALLED
LCMWT     QBORSD

         COMMON BLOCKS AND LENGTHS
NLCM   -     36D
    COMPILE TIME =       9    MILLISECS
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CARD      APPROXIMATE
NUMBER  PROGRAM LOCATION
  672                0          SUBROUTINE GRDCST                                                    GRDC.2
  673                0      C   ========== BEGINING OF DIMENSION CHANGE  ==========                  GRDC.3
  674                0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,GRDC.4
  675                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)GRDC.5
  676                0         2,NAMX(3),NTPO1,NTPO2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)GRDC.6
  677                0         3,LSTP(4),BG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  GRDC.7
  678                0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,GRDC.8
  679                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANGRDC.9
  680                0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),GRDC.10
  681                0         4LGLTIJ(2,4,3),XXX(30)                                               GRDC.11
  682                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, GRDC.12
  683                0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)          GRDC.13
  684                0          EQUIVALENCE (NCARD,N)                                               GRDC.14
  685                0          DIMENSION XUVR(2484)                                                GRDC.15
  686                0          EQUIVALENCE (PPT(1),XUVR(1))                                        GRDC.16
  687                0          DIMENSION BT(624),DT(3106)                                          GRDC.17
  688                0          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                 GRDC.18
  689                0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     GRDC.19
  690                0         1FLONG1,FLONG2,SO,TO,RDO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    GRDC.20
  691                0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,GRDC.21
  692                0         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITGRDC.22
  693                0         4(10),DZ(10),DZMH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   GRDC.23
  694                0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   GRDC.24
  695                0         6CSK(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  GRDC.25
  696                0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    GRDC.26
  697                0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  GRDC.27
  698                0         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)GRDC.28
  699                0         1,EPD(23,27)
  700                0          DIMENSION X(2812),Y(2013)
  701                0          EQUIVALENCE (DAYB,X(1)),(IBI,Y(1))                                  GRDC.31
  702                0      C   ********** ENDING OF DIMENSION CHANGE  ****************             GRDC.32
  703                0          EQUIVALENCE (XXX(1),COS1,H1,RCRP,AURO),(XXX(2),COS2,H2,RCPT),(XXX(GRDC.33
  704                0         13),RPI,AXM),(XXX(4),OMEGA,AYS),(XXX(5),DLONG,AYH),(XXX(6),DLAT,AMYGRDC.34
  705                0         2),(XXX(7),RDLON,AMZ),(XXX(8),EPST),(XXX(9),EPSS),(XXX(10),EPSTA), GRDC.35
  706                0         3(XXX(11),ZEUN),(XXX(12),FLAT),(XXX(13),KM1),(XXX(14),RCPU),(XXX(15GRDC.36
  707                0         4),AYM),(XXX(16),AXS),(XXX(17),AXH),(XXX(18),AZM),(XXX(19),BL),(XXXGRDC.37
  708                0         5(20),ICARD),(XXX(21),ISYB),(XXX(22),IGDTO),(XXX(23),III),(XXX(24),GRDC.38
  709                0         6II2),(XXX(25),LFE),(XXX(26),UNDEF),(XXX(27),IIB)                    GRDC.39
  710                0          DATA PI,G,RE,TKK/3.1415926,981.0,6.375E8,273.1/                     GRDC.40
  711                0          DATA C1,C2,C3,PC,POWER,IUNDF/0.25,0.5,0.75,1.0E8,1.3333333333,-99/GRDC.41
  712                0      C   RDXU2(J)=0.5/DXU(J) $ RDYU2=0.5/DYU                                 GRDC.42
  713                0      C   BETA(J)=(F(J)-F(J-1))*0.5 FOR J .GE. 2  AND BETA(1)=0.0             GRDC.43
  714                0          DATA PI,G,RE,TKK/3.1415926,981.0,6.375E8,273.2/                     GRDC.44
  715                0      C   ATXY(I,J)=DXT(J)*DYT*(1.0,0.25,0.5,0.75)  DEPENDS ON IND(I,J)      GRDC.45
  716                0      C   AUXY(J)=DXU(J)*DYU      DYU=DYT                                     GRDC.46
  717                0      C   AYZT(K)=DYT*DZ(K)                                                   GRDC.47
  718                0      C   AXZT(J,K)=DXT(J)*DZ(K)                                              GRDC.48
  719                0      C   AXZU(J,K)=DXU(J)*DZ(K)                                              GRDC.49
  720                0      C   CSX(J,K)=SVISX(J)*AYZT(K)/DXT(J)                                    GRDC.50
  721                0      C   CTX(J,K)=TVISX(J)*AYZT(K)/DXT(J)                                    GRDC.51
  722                0      C   CSY(J,K)=SVISY*AXZU(J,K)/DYT                                        GRD00722
  723                0      C   CTY(J,K)=TVISY*AXZU(J,K)/DYT                                        GRDC.53
  724                0      C   CSZ(K)=SVISZ/DZMH(K)                                                GRDC.54
  725                0      C   CTZ(K)=TVISZ/DZMH(K)                                                GRDC.55
  726                0      C   AX(J,K)=VISX(J)*AYZT(K)/DXU(J)                                      GRDC.56
  727                0      C   AY(J,K)=VISY*AXZT(J,K)/DYT                                          GRDC.57
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
 728          0     C      AZ(J,K)=VISZ*AJXY(J)/DZMH(K)                                                    GRDC.58
 729          0     C      EPST =TO/DEPTH (DEPTH IN CM)    $   EPSS=ALPHA*EPST/B                           GRDC.59
 730          0     C      EPSSK(K)=EPSS*DZMH(K)  $  EPSTK(K)=EPST*DZMH(K)  (IN COMMON)                    GRDC.60
 731          0     C      RDCRIT(K)=2.0*ALPHA*EPST*DZMH(K)        (IN COMMON)                             GRDC.61
 732          0            NTPDT=NTPD1                                                                     GRDC.62
 733          6            DAYB=DAYS+DIFDAY                                                                GRDC.63
 734         13            IF (DAYS .EQ. 0.0) DAYB=0.0                                                     GRDC.64
 735         14            KDATB=KDAT                                                                      GRDC.65
 736         14            ZERO=0.0                                                                        GRDC.66
 737         14       80   FORMAT (6F10.4)                                                                 GRDC.67
 738         14       82   FORMAT (/10X,*Z(K), DEPTH  (IN UNIT OF METER)*/(20X,10F10.4))                   GRDC.68
 739         14       84   FORMAT (/10X,* VISY,SVISY,TVISY,VISZ,SVISZ,TVISZ =*6F10.4)                      GRDC.69
 740         14            READ 80, FLAT1,FLAT2, FLONG1,FLONG2                                             GRDC.70
 741         33            READ 80, Z,DEPTH                                                                GRDC.71
 742         44            PRINT 82, Z,DEPTH                                                               GRDC.72
 743         55            READ 81, TO,SO,ROO,HEATC,ALPHA,B                                                GRDC.73
 744         76       81   FORMAT (4F10.4,2F10.7)                                                          GRDC.74
 745         76            READ 80, VISY,SVISY,TVISY,VISZ,SVISZ,TVISZ                                      GRDC.75
 746        117            PRINT 84,  VISY,SVISY,TVISY,VISZ,SVISZ,TVISZ                                    GRDC.76
 747        140            RPI=PI/180.0                                                                    GRDC.77
 748        140            FLONG1=FLONG1*RPI $ FLONG2=FLONG2*RPI                                           GRDC.78
 749        140            FLAT1=FLAT1*RPI $ FLAT2=FLAT2*RPI                                               GRDC.79
 750        140            OMEGA=4.0*PI/SECDAY                                                             GRDC.80
 751        140            DLONG=(FLONG2-FLONG1)/FLOAT(MAXI-1)                                             GRDC.81
 752        140            IMAXT=MAXI                                                                      GRDC.82
 753        140            DLAT=(FLAT2-FLAT1)/FLOAT(JMAX-1)                                                GRDC.83
 754        140            OMEGA=OMEGA/DLAT                                                                GRDC.84
 755        140            RDLON=RE*DLONG                                                                  GRDC.85
 756        140            COS2=COS(FLAT1)                                                                 GRDC.86
 757        167            DXT(1)=RDLON*COS2                                                               GRDC.87
 758        167            FLAT=FLAT1                                                                      GRDC.88
 759        167            DO 50 J=2,JMAX                                                                  GRDC.89
 760        167            JM1=J-1                                                                         GRDC.90
 761        167            COS1=COS2                                                                       GRDC.91
 762        167            FLAT=FLAT+DLAT $ COS2=COS(FLAT)                                                 GRDC.92
 763        167            DXT(J)=RDLON*COS2                                                               GRDC.93
 764        167            DXJ(JM1)=0.5*(DXT(JM1)+DXT(J))                                                  GRDC.94
 765        167            F(JM1)=OMEGA*(COS1-COS2)                                                        GRDC.95
 766        167       50   CONTINUE                                                                        GRDC.96
 767        220            DXJ(JMAX)=0.0 $ F(JMAX)=F(JM1)                                                  GRDC.97
 768        220            DYT=RE*DLAT                                                                     GRDC.98
 769        220            DYJ=DYT $ RDYU2=0.5/DYU                                                         GRDC.99
 770        220            K=1 $ Z(K)=Z(K)*100.0 $ H1=Z(K)                                                 GRDC.100
 771        220            DEPTH=DEPTH*100.0                                                               GRDC.101
 772        220            EPST=(TO+T(K))/(DEPTH*10000.)$EPSS=ALPHA*EPST/B$EPSTA=2.*ALPHA*EPST
 773        220            DZMH(1)=EPSSK(1)=EPSTK(1)=RDCRIT(1)=ZERO                                        GRDC.103
 774        220            DO 2 K=2,KMAX                                                                   GRDC.104
 775        220            KM1=K-1 $ Z(K)=Z(K)*100.0 $ DZMH(K)=Z(K)-Z(KM1)                                 GRDC.105
 776        220            H2=0.5*DZMH(K) $ DZ(KM1)=H1+H2 $ H1=H2                                          GRDC.106
 777        220            EPSSK(K)=EPSS*DZMH(K) $ EPSTK(K)=EPST*DZMH(K)                                   GRDC.107
 778        220            RDCRIT(K)=EPSTA*DZMH(K)                                                         GRDC.108
 779        220        2   CONTINUE                                                                        GRDC.109
 780        275            DZ(KMAX)=H1+DEPTH-Z(KMAX)                                                       GRDC.110
 781        275            VISY=VISY*PC $ SVISY=SVISY*PC $ TVISY=TVISY*PC                                  GRDC.111
 782        275            DO 5 J=J1,J2                                                                    GRDC.112
 783        275            RCPU=(DXJ(J)/DYU)**POWER $ VISX(J)=VISY*RCPU                                    GRDC.113
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
 784            275          RCPT=(DXT(J)/DYT)**POWER                                                    GRDC.114
 785            275          SVISX(J)=SVISY*RCPT $ TVISX(J)=TVISY*RCPT                                   GRDC.115
 786            275          IF (J .NE. JMAX) RDXU2(J)=0.5/DXU(J)                                        GRDC.116
 787            275        5 CONTINUE                                                                    GRDC.117
 788            344          RDXU2(JMAX)=0.0                                                             GRDC.118
 789            344          AYS=SVISY/DYT $ AYH=TVISY/DYT $ AYM=VISY/DYT                                GRDC.119
 790            344          DO 10 K=1,KMAX                                                              GRDC.120
 791            344          AYZT(K)=DYT*DZ(K) $ DG(K)=DZMH(K)*G                                         GRDC.121
 792            344          IF (DZMH(K) .EQ. 0.0) GO TO 11                                              GRDC.122
 793            344          CSZ(K)=SVISZ/DZMH(K) $ CTZ(K)=TVISZ/DZMH(K)                                 GRDC.123
 794            344          GO TO 10                                                                    GRDC.124
 795            344       11 CSZ(K)=CTZ(K)=ZERO                                                          GRDC.125
 796            344       10 CONTINUE                                                                    GRDC.126
 797            374          DO 20 J=J1,J2                                                               GRDC.127
 798            374          IF (J .EQ. 1) GO TO 8                                                       GRDC.128
 799            374          BETA(J)=(F(J)-F(J-1))*0.5                                                   GRDC.129
 800            374          GO TO 9                                                                     GRDC.130
 801            374        8 BETA(J)=0.0                                                                 GRDC.131
 802            374        9 AJXY(J)=DXJ(J)*DYT                                                          GRDC.132
 803            374          IF (DXT(J) .EQ. 0.0) GO TO 15                                               GRDC.133
 804            374          AXS=SVISX(J)/DXT(J) $ AXH=TVISX(J)/DXT(J)                                   GRDC.134
 805            374          GO TO 16                                                                    GRDC.135
 806            374       15 AXS=AXH=0.0                                                                 GRDC.136
 807            374       16 IF (DXJ(J) .EQ. 0.0) GO TO 17                                              GRDC.137
 808            374          AXM=VISX(J)/DXJ(J)                                                          GRDC.138
 809            374          GO TO 18                                                                    GRDC.139
 810            374       17 AXM=0.0                                                                     GRDC.140
 811            374       18 AZM=VISZ*AJXY(J)                                                            GRDC.141
 812            374          DO 20 K=1,KMAX                                                              GRDC.142
 813            440          AXZT(J,K)=DXT(J)*DZ(K) $ AXZU(J,K)=DXU(J)*DZ(K)                             GRDC.143
 814            440          CSX(J,K)=AXS*AYZT(K) $ CTX(J,K)=AXH*AYZT(K)                                 GRDC.144
 815            440          CSY(J,K)=AXZU(J,K)*AYS $ CTY(J,K)=AXZU(J,K)*AYH                             GRDC.145
 816            440          AX(J,K)=AYZT(K)*AXM  $  AY(J,K)=AXZT(J,K)*AYM                               GRDC.146
 817            440          IF (DZMH(K) .EQ. 0.0) GO TO 19                                              GRDC.147
 818            440          AZ(J,K)=AZM/DZMH(K)                                                         GRDC.148
 819            440          GO TO 20                                                                    GRDC.149
 820            440       19 AZ(J,K)=ZERO                                                                GRDC.150
 821            440       20 CONTINUE                                                                    GRDC.151
 822            505          CSTE=SECDAY*90.0
 823            505          CST2=R00*HEATC
 824            505     C  ***************START READ IN NIB BLOCKS OF DATA OF (I,J)*************          GRDC.153
 825            505          IB=0                                                                        GRDC.154
 826            505          CALL LSTCSTI (IB)                                                           GRDC.155
 827            515            TVOL=UVOL=TAREA=JAREA=0.0                                                 GRDC.156
 828            515        200 IB=IB+1                                                                   GRDC.157
 829            520          BL=FLOAT(IB)                                                                GRDC.158
 830            520          VOLT=VOLU=AREAT=AREAJ=0.0 $ K=0                                             GRDC.159
 831            525          AREATB=AREAJB=VOLTB=VOLUB=0.0                                               GRDC.160
 832            525        301 FORMAT (I4,A4,I2,6X,16I4)                                                 GRDC.161
 833            525          ISYB=4HEFIJ                                                                 GRDC.162
 834            525          N=N+1                                                                       GRDC.163
 835            525          READ 301, ICARD,ISYB,IBI, IMX, IMEF1,IMEF2,JMX,JMEF1,JMEF2,                GRDC.164
 836            525         1 (LAN(I),ING(I),I=1,2)                                                      GRDC.165
 837            575          IGOTO=1                                                                     GRDC.166
 838            575          GO TO 210                                                                   GRDC.167
 839            600        111 IF (IMX .NE. IMAX) GO TO 220                                              GRDC.168
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
  840          603          IF (JMX .NE. JMAX) GO TO 220                                          GRDC.169
  841          605          KSYB=4HINDL $ INKD=2 $ J=1                                            GRDC.170
  842          610          CALL CRDINP (N,KSYB,IB,INKD,JMAX,J,  INDBL)                           GRDC.171
  843          621          KSYB=4HINDR $ INKD=2 $ J=1                                            GRDC.172
  844          624          CALL CRDINP (N,KSYB,IB,INKD,JMAX,J,  INDBR)                           GRDC.173
  845          635          KSYB=4HSYBL $ INKD=1 $ J=1                                            GRDC.174
  846          640          CALL    CRDINP (N,KSYB,IB,INKD,IMAX,J,  LSBY)                         GRDC.175
  847          651          KSYB=4HIEFJ $ II2=0 $ IGOTO=2                                         GRDC.176
  848          655      113 IF (II2 .EQ. JMAX) GO TO 114                                          GRDC.177
  849          660          II1=II2+1  $ II2=II2+8                                                GRDC.178
  850          665          IF (II2 .GT. JMAX) II2=JMAX                                           GRDC.179
  851          667          N=N+1                                                                 GRDC.180
  852          667          READ 301, ICARD,ISYB,IB1, (IEF1(I),IEF2(I),I=II1,II2)                 GRDC.181
  853          717          GO TO 210                                                             GRDC.182
  854          720      114 INKD=2 $ KSYB=4HINDX                                                  GRDC.183
  855          720          CALL    CRDINP (N,KSYB,IB,INKD,IMAX,JMAX,IND)                         GRDC.184
  856          733          NAMX(1)=10HINPUTDATA  $ NAMX(3)=10H                                   GRDC.185
  857          733          KSYB=4HEPIJ $ INKD=3 $ LFE=1
  858          733          NAMX(2)=10H EMP(I,J)                                                  GRDC.199
  859          733          CALL    CRDINP (N,KSYB,IB,INKD,IMAX,JMAX,EPD)                         GRDC.200
  860          754          CALL GTABOUT (NAMX,NTPOT,KDAT,IMAX,JMAX,DAYS,IB,K,LFE,LSBY,EPD)       GRDC.201
  861          771          DO 54 J=J1,J2                                                         GRDC.210
  862          771          DO 54 I=I1,I2                                                         GRDC.212
  863          772          ATXY(I,J)=UNDEF                                                       GRDC.213
  864          772          IF (IND(I,J) .EQ. IUNDF) GO TO 54                                     GRDC.214
  865          772          IF (IND(I,J) .GE. 0) GO TO 21                                         GRDC.215
  866          772          IIB=ING(1)-1                                                          GRDC.216
  867          772          IF (I .NE. IIB) GO TO 22                                              GRDC.217
  868          772          INDEX=INDBL(J)                                                        GRDC.218
  869          772          GO TO 24                                                              GRDC.219
  870          772       22 IIB=ING(2)+1                                                          GRDC.220
  871          772          IF (I .EQ. IIB) GO TO 23                                              GRDC.221
  872          772     C  XXXXXXXXXXX PRINT ERROR MESSAGE XXXXXXXXXX                              GRDC.222
  873          772          PRINT 26,IB,ING,(INDBL(N),INDBR(N),N=1,JMAX)                          GRDC.223
  874         1053       26 FORMAT (//10X,*XXXXX INCONSISTENT OF ING(I) AND INDBL(J),INDBR(J)    GRDC.224
  875         1053         1XXXXX CALLED FROM GRDCSD*//15X,*-----JOB TERMINATES ABNORMALLY----GRDC.225
  876         1053         1-*//     20X,* FOR BLOCK IB =*I4, *  ING(1),ING(2) =*2I5/           GRDC.226
  877         1053         1 8X,*(INDBL(J),INDBR(J),J=1,JMAX)=*10(I5,I4)/(37X,10(I5,I4)))        GRDC.227
  878         1053          CALL EXIT                                                            GRDC.228
  879         1054       23 INDEX=INDBR(J)                                                       GRDC.229
  880         1061       24 IF (INDEX .LT. 0) GO TO 54                                           GRDC.230
  881         1062          ATXY(I,J)=DXT(J)*DYT                                                 GRDC.231
  882         1071          IF (INDEX .EQ. 0) GO TO 34                                           GRDC.232
  883         1072          GO TO 25                                                             GRDC.233
  884         1072       21 ATXY(I,J)=DXT(J)*DYT                                                 GRDC.234
  885         1073          INDEX=IND(I,J)                                                       GRDC.235
  886         1102          IF (INDEX    .EQ. 0) GO TO 34                                        GRDC.236
  887         1104       25 GO TO (32,32,31,33,33,33,32,32,31,31,31,33) INDEX                    GRDC.237
  888         1126       31 ATXY(I,J)=ATXY(I,J)*C1                                               GRDC.238
  889         1126          GO TO 34                                                             GRDC.239
  890         1133       32 ATXY(I,J)=ATXY(I,J)*C2                                               GRDC.240
  891         1134          GO TO 34                                                             GRDC.241
  892         1141       33 ATXY(I,J)=ATXY(I,J)*C3                                               GRDC.242
  893         1151       34 IF (INDEX .GT.6) GO TO 36                                            GRDC.243
  894         1153          AREAU=AREAJ+AUXY(J)                                                  GRDC.244
  895         1153          DO 35 K=1,KMAX                                                       GRDC.246
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CARD            APPROXIMATE
NUMBER        PROGRAM LOCATION
 896                1153       35  VOLU=VOLU+AUXY(J)*DZ(K)                                                    GRDC.247
 897                1167       36  AREAT=AREAT+ATXY(I,J)                                                      GRDC.248
 898                1170           EPD(I,J)=EPD(I,J)*ATXY(I,J)/CSTE                                       GRDC.250
 899                1170           DO 37 K=1,KMAX                                                         GRDC.251
 900                1170       37  VOLT=VOLT+ATXY(I,J)*DZ(K)                                                  GRDC.252
*01                1220           IF (IND(I,J) .LT. 0) GO TO 54                                          GRDC.253
*02                1227           IF (IND(I,J) .GT. 6) GO TO 39                                          GRDC.254
*03                1231           JAREA=JAREA+AJXY(J) $ AREAUB=AREAUB+AUXY(J)                            GRDC.255
*04                1231           DO 38 K=1,KMAX                                                         GRDC.256
*05                1231           VXYZU=AJXY(J)*DZ(K)                                                    GRDC.257
*06                1231           VOLUB=VOLUB+VXYZU $ UVOL=UVOL+VXYZU                                    GRDC.258
*07                1231       38  CONTINUE                                                               GRDC.259
*08                1252       39  TAREA=TAREA+ATXY(I,J) $ AREATB=AREATB+ATXY(I,J)                        GRDC.260
*09                1252           DO 40 K=1,KMAX                                                         GRDC.261
*10                1252           VXYZT=ATXY(I,J)*DZ(K)                                                  GRDC.262
*11                1252           VOLTB=VOLTB+VXYZT $ TVOL=TVOL+VXYZT                                    GRDC.263
*12                1252       40  CONTINUE                                                               GRDC.264
*13                1276       54  CONTINUE                                                               GRDC.265
*14                1304           CALL WTBUFL(NDSK5,IO4DB,Y)                                             GRDC.266
*15                1312           CALL LSTCSTI (IB)                                                      GRDC.267
*16                1315           IF (IB .NE. NIB) GO TO 200                                             GRDC.268
*17                1320           PRINT 122, TAREA,TVOL, JAREA,UVOL                                      GRDC.269
*18                1335      122  FORMAT (1H1//                                                          GRDC.270
*19                1335          120X,*TOTAL EFFECTIVE  AREA  ABOUT FULL-GRID POINT (FOR ALL BLOCKS)GRDC.271
*20                1335          1 = TAREA =*E16.8,6H CM**2/                                            GRDC.272
*21                1335          120X,*TOTAL EFFECTIVE VOLUME ABOUT HALF-GRID POINT (FOR ALL BLOCKS)GRDC.273
*22                1335          1 =  TVOL =*E16.8,6H CM**3/                                            GRDC.274
*23                1335          120X,*TOTAL EFFECTIVE  AREA  ABOUT HALF-GRID POINT (FOR ALL BLOCKS)GRDC.275
*24                1335          1 = JAREA =*E16.8,6H CM**2/                                            GRDC.276
*25                1335          120X,*TOTAL EFFECTIVE VOLUME ABOUT FULL-GRID POINT (FOR ALL BLOCKS)GRDC.277
*26                1335          1 =  UVOL =*E16.8,6H CM**3/)                                           GRDC.278
*27                1335           RETURN                                                                GRDC.279
*28                1337      210  IF (ICARD .NE. N) GO TO 209                                            GRDC.280
*29                1342           IF (ISYB .NE. KSYB) GO TO 209                                          GRDC.281
*30                1345           IF (IBI .NE. IB) GO TO 209                                             GRDC.282
*31                1347           GO TO (111,113) IGOTO                                                  GRDC.283
*32                1357      209  PRINT 218, N,KSYB, IB, ICARD,ISYB,IBI                                  GRDC.284
*33                1400      218  FORMAT (1H1//10X,100(1H*)//20X,*INPUT DATA-CARDS NOT IN ORDER*//       GRDC.285
*34                1400          120X,*CARD NO., SYMBOL, BLOCK NO. SHOULD BE *I5,2X,A10,I5/             GRDC.286
*35                1400          120X,*                      BUT, NOW THEY ARE   *I5,2X,A10,I5/         GRDC.287
*36                1400          2/25X,*==========JOB TERMINATES ABNORMALLY==========*/)                 GRDC.288
*37                1400           CALL EXIT                                                             GRDC.289
*38                1401      220  PRINT 230, IMAX,JMAX, IMX,JMX                                          GRDC.290
*39                1416      230  FORMAT (///20X,100(1H*)//20X,*IMAX, JMAX SHOULD BE *2I5//              GRDC.291
*40                1416          1 29X,*NOW THEY ARE *2I5/                                              GRDC.292
*41                1416          2/25X,*==========JOB TERMINATES ABNORMALLY==========*/)                 GRDC.293
*42                1416           CALL EXIT                                                             GRDC.294
*43                1417           END                                                                   GRDC.295

        LENGTH OF ROUTINE   GRDCST      1701

        VARIABLE ASSIGNMENTS
XDVR  -  100160 0  BT    -    5740 0  DT    -   17540 0  X     -      0C 1  Y     -   53740 1  DAYS  -      0C 0
XDAT  -      1C 0  DIFDAY -      2C 0  DTIME -      3C 0  DAYEND -     4C 0  MAXI  -      5C 0  IMAX  -      6C 0
JMAX  -      7C 0  KMAX  -     10C 0  IM1   -     11C 0  JM1   -     12C 0  IP1   -     13C 0  JP1   -     14C 0
I1    -     15C 0  J1    -     16C 0  I2    -     17C 0  J2    -     20C 0  1     -     21C 0  J     -     22C 0
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K       -     23C 0  NCARD1  -     24C 0  NCARD   -     25C 0  KSYB    -     26C 0  INKD    -     27C 0  INDEX   -     30C 0
ITIL    -     31C 0  NAMX    -     41C 0  NTPD1   -     44C 0  NTPD2   -     45C 0  NAMT    -     46C 0  NTAP    -     62C 0
NRT     -     66C 0  KNR     -     72C 0  NWT     -     76C 0  LDW     -    102C 0  LSTP    -    106C 0  BG      -    112C 0
DOUT    -    115C 0  NDTAP   -    122C 0  ITAP    -    126C 0  MTLAB   -    132C 0  PRTDAY  -    442C 0  LDWP    -    443C 0
LPSTP   -    444C 0  LSTDA   -    445C 0  IDMDA   -    446C 0  IDMDB   -    447C 0  IDMDC   -    450C 0  IDMDD   -    451C 0
NDIM    -    452C 0  NDIM1   -    453C 0  NDIM2   -    454C 0  NDSK1   -    455C 0  NDSK2   -    456C 0  NDSK3   -    457C 0
NDSK4   -    460C 0  NDSK5   -    461C 0  NDSK6   -    462C 0  NDSK7   -    463C 0  NDSK8   -    464C 0  MSUN    -    465C 0
MSUI    -    466C 0  LMIN1   -    467C 0  LMIN2   -    470C 0  IBSCAN  -    471C 0  MSCAN   -    472C 0  EPSL    -    473C 0
ALPHAR  -    474C 0  ALPHA1  -    475C 0  PWGT    -    476C 0  DTIME1  -    477C 0  DTIME2  -    500C 0  MSWP    -    501C 0
MCOUNT  -    502C 0  MSLCT   -    503C 0  LGLTIJ  -    506C 0  XXX     -    536C 0  DAYT    -    574C 0  KDATT   -    575C 0
IBT     -    576C 0  PT      -    577C 0  KT      -   1754C 0  UT      -   1755C 0  VT      -   3132C 0  WT      -   4307C 0
ST      -   5464C 0  TT      -   6641C 0  PPT     -  10016C 0  RES     -  11173C 0  UTM     -  12350C 0  VTM     -  13525C 0
DAYB    -     0C 1  KDATB   -     1C 1  IMAXT   -     2C 1  NIB     -     3C 1  NIBT    -     4C 1  IUNDF   -     5C 1
RUNDF   -     6C 1  FLAT1   -     7C 1  FLAT2   -    10C 1  FLONG1  -    11C 1  FLONG2  -    12C 1  SO      -    13C 1
TU      -    14C 1  ROD     -    15C 1  ALPHA   -    16C 1  B       -    17C 1  HEATC   -    20C 1  PI      -    21C 1
RE      -    22C 1  G       -    23C 1  VISY    -    24C 1  SVISY   -    25C 1  TVISY   -    26C 1  VISZ    -    27C 1
SVISZ   -    30C 1  TVISZ   -    31C 1  POWER   -    32C 1  TAREA   -    33C 1  UAREA   -    34C 1  TVOL    -    35C 1
UVOL    -    36C 1  TKK     -    37C 1  CSTQ    -    40C 1  CSTE    -    41C 1  SECDAY  -    42C 1  DXT     -    43C 1
DXU     -    76C 1  RDXU2   -   131C 1  DYT     -   164C 1  DYU     -   165C 1  RDYU2   -   166C 1  EPSSK   -   167C 1
EPSTK   -   201C 1  RDCRIT  -   213C 1  DZ      -   225C 1  DZMH    -   237C 1  Z       -   251C 1  DEPTH   -   263C 1
BETA    -   264C 1  F       -   317C 1  DG      -   352C 1  AYZT    -   364C 1  AUXY    -   376C 1  AXZT    -   431C 1
AXZU    -  1047C 1  AX      -  1465C 1  AY      -  2103C 1  AZ      -  2521C 1  CSX     -  3137C 1  CSY     -  3555C 1
CSZ     -  4173C 1  CTX     -  4205C 1  CTY     -  4623C 1  CTZ     -  5241C 1  VISX    -  5253C 1  SVISX   -  5306C 1
TVISX   -  5341C 1  IBI     -  5374C 1  IMX     -  5375C 1  IMEF1   -  5376C 1  IMEF2   -  5377C 1  JMX     -  5400C 1
JMEF1   -  5401C 1  JMEF2   -  5402C 1  LAN     -  5403C 1  ING     -  5405C 1  INDBL   -  5407C 1  INDBR   -  5442C 1
LSBY    -  5475C 1  IEF1    -  5524C 1  IEF2    -  5557C 1  IND     -  5612C 1  AREAT   -  6767C 1  AREAU   -  6770C 1
VOLT    -  6771C 1  VOLU    -  6772C 1  AREATB  -  6773C 1  AREAUB  -  6774C 1  VOLTB   -  6775C 1  VOLUB   -  6776C 1
ATXY    -  6777C 1  EPD     -  10154C 1 N       -    25C 0  COS1    -   536C 0  H1      -   536C 0  RCRP    -   536C 0
AURD    -   536C 0  COS2    -   537C 0  H2      -   537C 0  RCPT    -   537C 0  RPI     -   540C 0  AXM     -   540C 0
OMEGA   -   541C 0  AYS     -   541C 0  DLONG   -   542C 0  AYH     -   542C 0  DLAT    -   543C 0  AMY     -   543C 0
RDLON   -   544C 0  AMZ     -   544C 0  EPST    -   545C 0  EPSS    -   546C 0  EPSTA   -   547C 0  ZEJN    -   550C 0
FLAT    -   551C 0  KM1     -   552C 0  RCPU    -   553C 0  AYM     -   554C 0  AXS     -   555C 0  AXH     -   556C 0
AZM     -   557C 0  BL      -   560C 0  ICARD   -   561C 0  ISYB    -   562C 0  IGOTO   -   563C 0  III     -   564C 0
II2     -   565C 0  LFE     -   566C 0  UNDEF   -   567C 0  IIB     -   570C 0  C1      -     0      C2      -     1
C3      -     2    PC      -     3    NTPOT   -  1425       IB      -  1424       VXYZU   -  1423       VXYZT   -  1422

          SUBROUTINES CALLED
INPUTC    OUTPTC    COSF      RBAREX    LSTCSTI   CRDINP    GTABOUT   EXIT      WTBUFL

          COMMON BLOCKS AND LENGTHS
CMN1    -  14702      CMN2    -  11331
     COMPILE TIME =     490    MILLISECS
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```
CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
 ≠44                0          SUBROUTINE CRDINP (N,KSYB,IB,INKD,IMX,JMX,X)                          CRDI.2
 ≠45                0     C    ****READ INPUT DATA-CARDS FOR X(I,J) IN SEQUENCE****                  CRDI.3
 ≠46                0     C         ==========FOR INPUT DATA OF TYPE INKD==========                  CRDI.4
 ≠47                0     C    -----VARIALE FOR TEMP. USE ARE I,J,III,II2,ICARD,ISYB,IBI-----        CRDI.5
 ≠48                0          DIMENSION X(IMX,JMX)                                                  CRDI.6
 ≠49                0          DIMENSION IFMT(3)                                                     CRDI.7
 ≠50                5          IFMT(1)=10H(I4,A4,I2, $ IFMT(2)=10H6X,                                CRDI.8
 ≠51                5          GO TO (11,12,13) INKD                                                 CRDI.9
 ≠52               21       11  IFMT(3)=8H3A8)                                                        CRDI.10
 ≠53               21           NIC=8                                                                 CRDI.11
 ≠54               21           GO TO 15                                                              CRDI.12
 ≠55               24       12  IFMT(3)=8H16I4)                                                       CRDI.13
 ≠56               24           NIC=16                                                                CRDI.14
 ≠57               24           GO TO 15                                                              CRDI.15
 ≠58               27       13  IFMT(3)=8H3F8.3)                                                      CRDI.16
 ≠59               27           NIC=8                                                                 CRDI.17
 ≠60               27       15  J=0                                                                   CRDI.18
 ≠61               32       30  J=J+1                                                                 CRDI.19
 ≠62               33           II2=0                                                                 CRDI.20
 ≠63               33       20  III=II2+1                                                             CRDI.21
 ≠64               36           II2=II2+NIC                                                           CRDI.22
 ≠65               43           IF (II2 .GT. IMX) II2=IMX                                             CRDI.23
 ≠66               45           READ IFMT, ICARD,ISYB,IBI,(X(I,J),I=III,II2)                          CRDI.24
 ≠67               72       10  N=N+1                                                                 CRDI.25
 ≠68               74           IF (ICARD .NE. N) GO TO 50                                            CRDI.26
 ≠69               77           IF (IBI .NE. IB) GO TO 50                                             CRDI.27
 ≠70              102           IF (ISYB .NE. KSYB) GO TO 50                                          CRDI.28
 ≠71              105           IF (II2 .NE. IMX) GO TO 20                                            CRDI.29
 ≠72              110           IF (J .NE. JMX) GO TO 30                                              CRDI.30
 ≠73              112           RETURN                                                                CRDI.31
 ≠74              112       50  PRINT 51, N,KSYB, IB, ICARD,ISYB,IBI                                 CRDI.32
 ≠75              134       51  FORMAT (1H1//10X,100(1H*)//20X,*INPUT DATA-CARDS NOT IN ORDER*//      CRDI.33
 ≠76              134          120X,*CARD NO., SYMBOL, BLOCK NO. SHOULD BE *I5,2X,A10,I5/             CRDI.34
 ≠77              134          120X,*                      BUT, NOW THEY ARE   *I5,2X,A10,I5/         CRDI.35
 ≠78              134          2/25X,*==========JOB TERMINATES ABNORMALLY==========*/)                CRDI.36
 ≠79              134           CALL EXIT                                                            CRDI.37
 ≠80              135           END                                                                  CRDI.38

        LENGTH OF ROUTINE   CRDINP       232

        VARIABLE ASSIGNMENTS
N       -       0     KSYB   -       0     IB     -       0     INKD   -       0     IMX    -       0     JMX    -       0
X       -       0     IFMT   -       0     NIC    -     152     J      -     151     II2    -     150     III    -     147
ICARD   -     148     ISYB   -     145     IBI    -     144     I      -     143

        SUBROUTINES CALLED
INPUTC    OUTPTC    EXIT      QBORSD
    COMPILE TIME =      44    MILLISECS
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CARD          APPROXIMATE
NUMBER       PROGRAM LOCATION
  981                 0          SUBROUTINE  LSTCSTI (IB)                                                    LSTC.2
  982                 0     C  ********** BEGINING OF DIMENSION CHANGE  **********                           LSTC.3
  983                 0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,LSTC.4
  984                 0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)LSTC.5
  985                 0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)LSTC.6
  986                 0         3,LSTP(4),BG(4),DOUT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  LSTC.7
  987                 0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,LSTC.8
  988                 0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANLSTC.9
  989                 0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),LSTC.10
  990                 0         4LGLTIJ(2,4,3),XXX(30)                                                    LSTC.11
  991                 0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, LSTC.12
  992                 0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)               LSTC.13
  993                 0          DIMENSION XJVR(2484)                                                     LSTC.14
  994                 0          EQUIVALENCE (PPT(1),XUVR(1))                                             LSTC.15
  995                 0          DIMENSION BT(624),DT(3106)                                               LSTC.16
  996                 0          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                      LSTC.17
  997                 0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,   LSTC.18
  998                 0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    LSTC.19
  999                 0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,LSTC.20
 1000                 0         3DXT(27),DXJ(27),RDXJ2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITLSTC.21
 1001                 0         4(10),DZ(10),DZMH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   LSTC.22
 1002                 0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   LSTC.23
 1003                 0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  LSTC.24
 1004                 0         727),SVISX(27),TVISX(27),   IB1,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    LSTC.25
 1005                 0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  LSTC.26
 1006                 0         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)LSTC.27
 1007                 0         1,EPD(23,27)
 1008                 0     C  ********** ENDING OF DIMENSION CHANGE  ****************                     LSTC.29
 1009                 0       81  FORMAT (/10X,*FLAT1,FLAT2, FLONG1,FLONG2    =*4F10.4)                   LSTC.30
 1010                 0       83  FORMAT (/10X,*TO,SO,ROO,ALPHA,B,HEATC=*6E15.7)                          LSTC.31
 1011                 0       85  FORMAT (/10X,*CONSTANTS DEFINED IN DATA STATEMENT IN SUBROUTINE GRLSTC.32
 1012                 0          1OCST ---*/20X,*G = GRAVITATIONAL ACCELERATION =*F8.3,* (CM/SEC/SECLSTC.33
 1013                 0          2)*/20X,*RE= RADIUS OF EARTH =*E16.8,* (CM)*/19X,*TKK=0.0 DEGREE C LSTC.34
 1014                 0          3=*F8.3,* (DEGREE KELVIN)*/ 20X,3HPI=,F14.8)                             LSTC.35
 1015                 0       86  FORMAT (/10X,*CSTQ, CSTE, SECDAY, POWER  =*4E16.8)                      LSTC.36
 1016                 0       88  FORMAT (/10X,*DAYB, KDATB =*F12.4,5X,A10/                               LSTC.37
 1017                 0          1         /10X,*IMAXT, NIB, NIBT, IUNDF=(IUNDF),*,25X,*RUNDF=(RUNDF)LSTC.38
 1018                 0          1*            /10X,3I5,I8,2H=(,D20,1H),E16.8,2H=(,D20,1H)/)              LSTC.39
 1019                 0          NTPDT=NTPD1                                                              LSTC.40
 1020                 4          IF (IB .NE. 0) GO TO 10                                                  LSTC.41
 1021                11          IF (LSTDA .EQ. 0 .OR. LSTDA .EQ. 2) RETURN                               LSTC.42.
 1022                13          PRINT 81,  FLAT1,FLAT2, FLONG1,FLONG2                                    LSTC.43
 1023                30          PRINT 83,  TO,SO,ROO,ALPHA,B,HEATC                                       LSTC.44
 1024                51          PRINT 85, G,RE,TKK,PI                                                    LSTC.45
 1025                66          PRINT 86, CSTQ,CSTE,SECDAY,POWER                                         LSTC.46
 1026               104          IF (IMAXT .EQ. MAXI) GO TO 5                                             LSTC.47
 1027               105          PRINT 4, IMAXT, MAXI                                                     LSTC.48
 1028               117        4  FORMAT (///10X,100(1H-)/20X,*IMAXT, MAXI =*2I5,*  SHOULD BE THE SAMLSTC.49
 1029               117          1E*/25X,*-----JOB TERMINATES ABNORMALLY-----*/)                          LSTC.50
 1030               117          CALL EXIT                                                                LSTC.51
 1031               120        5  CONTINUE                                                                 LSTC.52
 1032               120          PRINT 88, DAYB,KDATB,IMAXT, NIB, NIBT, IUNDF, IUNDF, RUNDF, RUNDF LSTC.53
 1033               147          PRINT 122, TAREA,TVOL, UAREA,UVOL                                        LSTC.54
 1034               164      122  FORMAT (//                                                               LSTC.55
 1035               164          120X,*TOTAL EFFECTIVE  AREA  ABOUT FULL-GRID POINT (FOR ALL BLOCKS)LSTC.56
 1036               164          1 = TAREA =*E16.8,6H CM**2/                                              LSTC.57
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CARD      APPROXIMATE
NUMBER  PROGRAM LOCATION
1037              164          120X,*TOTAL EFFECTIVE VOLUME ABOUT HALF-GRID POINT (FOR ALL BLOCKS)LSTC.58
1038              164          1 =  TVOL =*E16.8,6H CM**3/                                       LSTC.59
1039              164          120X,*TOTAL EFFECTIVE  AREA  ABOUT HALF-GRID POINT (FOR ALL BLOCKS)LSTC.60
1040              164          1 = UAREA =*E16.8,6H CM**2/                                       LSTC.61
1041              164          120X,*TOTAL EFFECTIVE VOLUME ABOUT FULL-GRID POINT (FOR ALL BLOCKS)LSTC.62
1042              164          1 =  UVOL =*E16.8,6H CM**3/)                                      LSTC.63
1043              164           NAMX(1)=10HDYT         $ NAMX(2)=2H    $ NAMX(3)=2H    $ J=K=1    LSTC.64
1044              164           CALL PRTDJK (NAMX,J,K,DYT)                                       LSTC.65
1045              177           NAMX(1)=10HDYU                                                   LSTC.66
1046              177           CALL PRTDJK (NAMX,J,K,DYU)                                       LSTC.67
1047              206           NAMX(1)=10HRDYJ2                                                 LSTC.68
1048              206           CALL PRTDJK (NAMX,J,K,RDYU2)                                     LSTC.69
1049              215           NAMX(1)=10HDXT(J)                                                LSTC.70
1050              215           CALL PRTDJK (NAMX,JMAX,K, DXT)                                   LSTC.71
1051              224           NAMX(1)=10HDXU(J)                                                LSTC.72
1052              224           CALL PRTDJK (NAMX,JMAX,K, DXU)                                   LSTC.73
1053              233           NAMX(1)=10HRDXJ2(J)                                              LSTC.74
1054              233           CALL PRTDJK (NAMX,JMAX,K,RDXU2)                                  LSTC.75
1055              242           NAMX(1)=10HAUXY(J)                                               LSTC.76
1056              242           CALL PRTDJK (NAMX,JMAX,K,AUXY)                                   LSTC.77
1057              251           NAMX(1)=10H    F(J)                                              LSTC.78
1058              251           CALL PRTDJK (NAMX,JMAX,K,F)                                      LSTC.79
1059              260           NAMX(1)=10HBETA(J)                                               LSTC.80
1060              260           CALL PRTDJK (NAMX,JMAX,K,BETA)                                   LSTC.81
1061              267           NAMX(1)=10HSVISX(J)                                              LSTC.82
1062              267           CALL PRTDJK (NAMX,JMAX,K,SVISX)                                  LSTC.83
1063              276           NAMX(1)=10HSVISY                                                 LSTC.84
1064              276           CALL PRTDJK (NAMX,J,K,SVISY)                                     LSTC.85
1065              305           NAMX(1)=10HSVISZ                                                 LSTC.86
1066              305           CALL PRTDJK (NAMX,J,K,SVISZ)                                     LSTC.87
1067              314           NAMX(1)=10HTVISX(J)                                              LSTC.88
1068              314           CALL PRTDJK (NAMX,JMAX,K,TVISX)                                  LSTC.89
1069              323           NAMX(1)=10HTVISY                                                 LSTC.90
1070              323           CALL PRTDJK (NAMX,J,K,TVISY)                                     LSTC.91
1071              332           NAMX(1)=10HTVISZ                                                 LSTC.92
1072              332           CALL PRTDJK (NAMX,J,K,TVISZ)                                     LSTC.93
1073              341           NAMX(1)=10H VISX(J)                                              LSTC.94
1074              341           CALL PRTDJK (NAMX,JMAX,K, VISX)                                  LSTC.95
1075              350           NAMX(1)=10H VISY                                                 LSTC.96
1076              350           CALL PRTDJK (NAMX,J,K, VISY)                                     LSTC.97
1077              357           NAMX(1)=10H VISZ                                                 LSTC.98
1078              357           CALL PRTDJK (NAMX,J,K, VISZ)                                     LSTC.99
1079              366           NAMX(1)=10H Z(K)                                                 LSTC.100
1080              366           CALL PRTDJK (NAMX,KMAX,J,Z)                                      LSTC.101
1081              375           NAMX(1)=10HDEPTH                                                 LSTC.102
1082              375           CALL PRTDJK (NAMX,J,K,DEPTH)                                     LSTC.103
1083              404           NAMX(1)=10HDZ(K)                                                 LSTC.104
1084              404           CALL PRTDJK (NAMX,KMAX,J,DZ)                                     LSTC.105
1085              413           NAMX(1)=10HDZMH(K)                                               LSTC.106
1086              413           CALL PRTDJK (NAMX,KMAX,J,DZMH)                                   LSTC.107
1087              422           NAMX(1)=10HEPSSK(K)                                              LSTC.108
1088              422           CALL PRTDJK (NAMX,KMAX,J,EPSSK)                                  LSTC.109
1089              431           NAMX(1)=10HEPSTK(K)                                              LSTC.110
1090              431           CALL PRTDJK (NAMX,KMAX,J,EPSTK)                                  LSTC.111
1091              440           NAMX(1)=10HRDCRIT(K)                                             LSTC.112
1092              440           CALL PRTDJK (NAMX,KMAX,J,RDCRIT)                                 LSTC.113
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CARD      APPROXIMATE
NUMBER  PROGRAM LOCATION
1093          447          NAMX(1)=10HDG(K)                                                    LSTC.114
1094          447          CALL PRTDJK (NAMX,KMAX,J,DG)                                        LSTC.115
1095          456          NAMX(1)=10HAYZT(K)                                                  LSTC.116
1096          456          CALL PRTDJK (NAMX,KMAX,J,AYZT)                                      LSTC.117
1097          465          NAMX(1)=10HAXZT(J,K)                                                LSTC.118
1098          465          CALL PRTDJK (NAMX,JMAX,KMAX,AXZT)                                   LSTC.119
1099          474          NAMX(1)=10HAXZJ(J,K)                                                LSTC.120
1100          474          CALL PRTDJK (NAMX,JMAX,KMAX,AXZJ)                                   LSTC.121
1101          503          NAMX(1)=10HCSX(J,K)                                                 LSTC.122
1102          503          CALL PRTDJK (NAMX,JMAX,KMAX,CSX)                                    LSTC.123
1103          512          NAMX(1)=10HCSY(J,K)                                                 LSTC.124
1104          512          CALL PRTDJK (NAMX,JMAX,KMAX,CSY)                                    LSTC.125
1105          521          NAMX(1)=10H CSZ(K)                                                  LSTC.126
1106          521          CALL PRTDJK (NAMX,KMAX,J,CSZ)                                       LSTC.127
1107          530          NAMX(1)=10HCTX(J,K)                                                 LSTC.128
1108          530          CALL PRTDJK (NAMX,JMAX,KMAX,CTX)                                    LSTC.129
1109          537          NAMX(1)=10HCTY(J,K)                                                 LSTC.130
1110          537          CALL PRTDJK (NAMX,JMAX,KMAX,CTY)                                    LSTC.131
1111          546          NAMX(1)=10H CTZ(K)                                                  LSTC.132
1112          546          CALL PRTDJK (NAMX,KMAX,J,CTZ)                                       LSTC.133
1113          555          NAMX(1)=10HAX(J,K)                                                  LSTC.134
1114          555          CALL PRTDJK (NAMX,JMAX,KMAX,AX)                                     LSTC.135
1115          564          NAMX(1)=10HAY(J,K)                                                  LSTC.136
1116          564          CALL PRTDJK (NAMX,JMAX,KMAX,AY)                                     LSTC.137
1117          573          NAMX(1)=10HAZ(J,K)                                                  LSTC.138
1118          573          CALL PRTDJK (NAMX,JMAX,KMAX,AZ)                                     LSTC.139
1119          602          RETURN                                                              LSTC.140
1120          604       10 IF (IB .NE. IBI) GO TO 20                                           LSTC.141
1121          607          IF (IMX .NE. IMAX) GO TO 30                                         LSTC.142
1122          612          IF (JMX .NE. JMAX) GO TO 30                                         LSTC.143
1123          617          IF (LSTDA .EQ. 0 .OR. LSTDA .EQ. 1) RETURN                          LSTC.144
1124          621          CALL INDTABL(KDAT,IMAX,JMAX,IB,LSBY,IEF1,IEF2,IMEF1,IMEF2,JMEF1,    LSTC.145
1125          621         1 JMEF2,IND)                                                         LSTC.146
1126          637          PRINT 305, IMAX,IMEF1,IMEF2,JMAX,JMEF1,JMEF2                        LSTC.147
1127          660      305 FORMAT (25X,*IMAX, IMEF1, IMEF2 = *3I9/25X,*JMAX, JMEF1, JMEF2 = *LSTC.148
1128          660         1316)                                                               LSTC.149
1129          660          PRINT 306, (LAN(I),ING(I),I=1,2)                                    LSTC.150
1130          677      306 FORMAT (24X,* (LAN(I),ING(I),I=1,2)*,4I8/)                          LSTC.151
1131          677          PRINT 307, (INDBL(I),I=1,JMAX)                                      LSTC.152
1132          713      307 FORMAT (10X,* LEFT BOUNDARY INDEX = INDBL(J) =*20I4/(43X,20I4))     LSTC.153
1133          713          PRINT 308, (INDBR(I),I=1,JMAX)                                      LSTC.154
1134          727      308 FORMAT (10X,*RIGHT BOUNDARY INDEX = INDBR(J) =*20I4/(43X,20I4))     LSTC.155
1135          727          PRINT 1000, (LSBY(I),I=1,IMAX)                                      LSTC.156
1136          743     1000 FORMAT (10X,*LSBY=*14A8/(15X,14A8))                                 LSTC.157
1137          743          LFE=2 $ K=0                                                         LSTC.158
1138          743          NAMX(1)=10HCALCULATE) $ NAMX(3)=10H                                 LSTC.159
1139          743          NAMX(2)=10H ATXY(I,J)                                               LSTC.164
1140          743          CALL GTABOUT (NAMX,NTPOT,KDAT,IMAX,JMAX,DAYB,IB,K,LFE,LSBY,ATXY)   LSTC.165
1141          766          PRINT 121, AREATB,AREAT, VOLTB,VOLT, AREAUB,AREAU, VOLUB,VOLU       LSTC.166
1142         1013      121 FORMAT (/69X,12H(NO OVERLAP),10X,13H(HAS OVERLAP)/                  LSTC.167
1143         1013         115X,*TOTAL  AREA  ABOUT FULL-GRID POINT OF THIS BLOCK =*2(E16.8,    LSTC.168
1144         1013         27H CM**2 )/                                                        LSTC.169
1145         1013         115X,*TOTAL VOLUME ABOUT FULL-GRID POINT OF THIS BLOCK =*2(E16.8,    LSTC.170
1146         1013         27H CM**3 )/                                                        LSTC.171
1147         1013         115X,*TOTAL  AREA  ABOUT HALF-GRID POINT OF THIS BLOCK =*2(E16.8,    LSTC.172
1148         1013         27H CM**2 )/                                                        LSTC.173
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
1149               1013          115X,*TOTAL VOLUME ABOUT HALF-GRID POINT OF THIS BLOCK =*2(E16.8,  LSTC.174
1150               1013          27H CM**3 ))                                                      LSTC.175
1151               1013           RETURN                                                           LSTC.184
1152               1013       20  PRINT 21, IB, IBI                                               LSTC.185
1153               1025       21  FORMAT (//10X,100(1H-)/20X,*IB, IBI =*2I5 *  WHICH ARE NOT THE SAMLSTC.186
1154               1025          1E.*//20X,*--------JOB TERMINATES ABNORMALLY--------*/)          LSTC.187
1155               1025           CALL EXIT                                                        LSTC.188
1156               1026       30  PRINT 22, IMX, IMAX, JMX, JMAX                                   LSTC.189
1157               1043       22  FORMAT(/10X,* IMX, IMAX, JMX, JMAX =*4I6 *  (NOT CONSISTENT)*/  LSTC.190
1158               1043          125X,*--------JOB TERMINATES ABNORMALLY--------*/)               LSTC.191
1159               1043           CALL EXIT                                                        LSTC.192
1160               1044           END                                                              LSTC.193

          LENGTH OF ROUTINE   LSTCSTI     1514

          VARIABLE ASSIGNMENTS
IB      -        0      XOVR    -  10016C 0  BT      -     574C 0  DT      -    1754C 0  DAYS    -      0C 0  KDAT    -      1C 0
DIFDAY  -       2C 0    DTIME   -      3C 0  DAYEND  -      4C 0  MAXI    -      5C 0  IMAX    -      6C 0  JMAX    -      7C 0
KMAX    -      10C 0    I41     -     11C 0  JM1     -     12C 0  IP1     -     13C 0  JP1     -     14C 0  I1      -     15C 0
J1      -      16C 0    I2      -     17C 0  J2      -     20C 0  I       -     21C 0  J       -     22C 0  K       -     23C 0
NCARD1  -      24C 0    NCARD   -     25C 0  KSYB    -     26C 0  INKD    -     27C 0  INDEX   -     30C 0  ITIL    -     31C 0
NAMX    -      41C 0    NTPO1   -     44C 0  NTPO2   -     45C 0  NAMT    -     46C 0  NTAP    -     62C 0  NRT     -     66C 0
KNR     -      72C 0    MWT     -     76C 0  LDW     -    102C 0  LSTP    -    106C 0  BG      -    112C 0  DOUT    -    116C 0
NOTAP   -     122C 0    ITAP    -    126C 0  ITLAB   -    132C 0  PRTDAY  -    442C 0  LDWP    -    443C 0  LPSTP   -    444C 0
LSTDA   -     445C 0    IDMDA   -    446C 0  IDMDB   -    447C 0  IDMDC   -    450C 0  IDMDD   -    451C 0  NDIM    -    452C 0
NDIM1   -     453C 0    NDIM2   -    454C 0  NDSK1   -    455C 0  NDSK2   -    456C 0  NDSK3   -    457C 0  NDSK4   -    460C 0
NDSK5   -     461C 0    NDSK6   -    462C 0  NDSK7   -    463C 0  NDSK8   -    464C 0  MSUN    -    465C 0  MSJI    -    466C 0
LMIN1   -     467C 0    LMIN2   -    470C 0  IBSCAN  -    471C 0  MSCAN   -    472C 0  EPSL    -    473C 0  ALPHAR  -    474C 0
ALPHA1  -     475C 0    PWGT    -    476C 0  DTIME1  -    477C 0  DTIME2  -    500C 0  MSWP    -    501C 0  MCOUNT  -    502C 0
MSLCT   -     503C 0    LGLTIJ  -    506C 0  XXX     -    536C 0  DAYT    -    574C 0  KDATT   -    575C 0  IBT     -    576C 0
PT      -     577C 0    KT      -   1754C 0  UT      -   1755C 0  VT      -   3132C 0  WT      -   4307C 0  ST      -   5464C 0
TT      -    5541C 0    PPT     -  10016C 0  RES     -  11173C 0  UTM     -  12350C 0  VTM     -  13525C 0  DAYB    -      0C 1
KDATB   -       1C 1    IMAXT   -      2C 1  NIB     -      3C 1  NIBT    -      4C 1  IUNDF   -      5C 1  RUNDF   -      6C 1
FLAT1   -       7C 1    FLAT2   -     10C 1  FLONG1  -     11C 1  FLONG2  -     12C 1  SO      -     13C 1  TO      -     14C 1
RHO     -      15C 1    ALPHA   -     16C 1  B       -     17C 1  HEATC   -     20C 1  PI      -     21C 1  RE      -     22C 1
G       -      23C 1    VISY    -     24C 1  SVISY   -     25C 1  TVISY   -     26C 1  VISZ    -     27C 1  SVISZ   -     30C 1
TVISZ   -      31C 1    POWER   -     32C 1  TAREA   -     33C 1  UAREA   -     34C 1  TVOL    -     35C 1  UVOL    -     36C 1
TKK     -      37C 1    CSTQ    -     40C 1  CSTE    -     41C 1  SECDAY  -     42C 1  DXT     -     43C 1  DXU     -     76C 1
RDXU2   -     131C 1    DYT     -    164C 1  DYU     -    165C 1  RDYU2   -    166C 1  EPSSK   -    167C 1  EPSTK   -    201C 1
RICRIT  -     213C 1    DZ      -    225C 1  DZMH    -    237C 1  Z       -    251C 1  DEPTH   -    263C 1  BETA    -    264C 1
F       -     317C 1    DG      -    352C 1  AYZT    -    364C 1  AUXY    -    376C 1  AXZT    -    431C 1  AXZU    -   1047C 1
AX      -    1465C 1    AY      -   2103C 1  AZ      -   2521C 1  CSX     -   3137C 1  CSY     -   3555C 1  CSZ     -   4173C 1
CTX     -    4205C 1    CTY     -   4523C 1  CTZ     -   5241C 1  VISX    -   5253C 1  SVISX   -   5306C 1  TVISX   -   5341C 1
IBI     -    5774C 1    IMX     -   5375C 1  IMEF1   -   5376C 1  IMEF2   -   5377C 1  JMX     -   5400C 1  JMEF1   -   5401C 1
JMEF2   -    5402C 1    LAN     -   5403C 1  ING     -   5405C 1  INDBL   -   5407C 1  INDBR   -   5442C 1  LSBY    -   5475C 1
IEF1    -    5524C 1    IEF2    -   5557C 1  IND     -   5612C 1  AREAT   -   6767C 1  AREAU   -   6770C 1  VOLT    -   6771C 1
VOLJ    -    6772C 1    AREATB  -   6773C 1  AREAUB  -   6774C 1  VOLTB   -   6775C 1  VOLUB   -   6776C 1  ATXY    -   6777C 1
PPO     -   10154C 1    NTPOT   -   1052       LFE     -   1051

          SUBROUTINES CALLED
OUTPIC     EXIT       PRTOUT     INDTABL    STABOUT    QBQRSD

          COMMON BLOCKS AND LENGTHS
CMN1    -   14702      CMN2    -   11331
     COMPILE TIME =     263    MILLISECS
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CARD          APPROXIMATE
NUMBER       PROGRAM LOCATION
1161                  0          SUBROUTINE INDTABL (KDAT,I2,J2,IB,LSBY,IEF1,IEF2,IMEF1,IMEF2,JMEF1INDT.2
1162                  0         1,JMEF2,IND)                                                        INDT.3
1163                  0          DIMENSION IND(I2,J2),LSBY(I2),IEF1(J2),IEF2(J2)                    INDT.4
1164                  0          I1=J1=1                                                            INDT.5
1165                  2       78  FORMAT (3X,10HRANGE OF I,4X,9(1H*),3X,20(5H ----))                INDT.6
1166                  2       81  FORMAT (/4X,I3,3H TO, I3,4X,6HFOR J=,I3,2X,20I5)                  INDT.7
1167                  2      175  FORMAT (1H1,    30X,*4AP OF GRID-POINTS AND DISTRIBUTION OF CORNER INDT.8
1168                  2          1POINTS FOR BLOCK*I3/31X,65(1H*),14X,*DATE --*A10//                INDT.9
1169                  2          2 3X,9HEFFECTIVE,5X,12HOVER-ALL (I),1X,20A5)                       INDT.10
1170                  2      177  FORMAT (21X,2HI=,5X,20I5)                                          INDT.11
1171                  2          II2=0                                                              INDT.12
1172                  2      600  III=II2+1                                                          INDT.13
1173                  5          II2=III+19                                                         INDT.14
1174                 12          IF (II2 .GT. I2) II2=I2                                            INDT.15
1175                 14          PRINT 176, IB,KDAT, (LSBY(I),I=III,II2)                            INDT.16
1176                 35          PRINT 78                                                           INDT.17
1177                 42          J=J2+1                                                             INDT.18
1178                 42      180  J=J-1                                                              INDT.19
1179                 44          PRINT 81, IEF1(J),IEF2(J), J, (IND(I,J),I=III,II2)                 INDT.20
1180                 76          IF (J .NE. J1) GO TO 180                                           INDT.21
1181                100          PRINT 78                                                           INDT.22
1182                105          PRINT 177, (I,I=III,II2)                                           INDT.23
1183                122          IF (II2 .NE. I2) GO TO 600                                         INDT.24
1184                124          PRINT 190, IMEF1,IMEF2, JMEF1,JMEF2                                INDT.25
1185                141      190  FORMAT (//                                                         INDT.26
1186                141         1 30X,42H WEST - EAST  DIRECTION,  EFFECTIVE I FROM,I3,3H TO,I3/    INDT.27
1187                141         1 30X,42HSOUTH - NORTH DIRECTION,  EFFECTIVE J FROM,I3,3H TO,I3/)  INDT.28
1188                141          RETURN                                                             INDT.29
1189                141          END                                                                INDT.30

        LENGTH OF ROUTINE   INDTABL      265

        VARIABLE ASSIGNMENTS
KDAT    -       0     I2      -       0     J2      -       0     IB      -       0     LSBY    -       0     IEF1    -       0
IEF2    -       0     IMEF1   -       0     IMEF2   -       0     JMEF1   -       0     JMEF2   -       0     IND     -       0
I1      -     155     J1      -     154     II2     -     153     III     -     152     I       -     151     J       -     150

        SUBROUTINES CALLED
OUTPTC    OBJRSO
    COMPILE TIME =    42    MILLISECS
```

```
CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
1190                0          SUBROUTINE CHGTAPE (L,LLX)                                          CTAP.2
1191                0      C   ****LLX = (1,2) = (STAGE ONLY IF MWT(L) .GE. NRT(L), STAGE ANYWAY)  CTAP.3
1192                0      C   ========== BEGINING OF DIMENSION CHANGE  ==========                 CTAP.4
1193                0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,CTAP.5
1194                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)CTAP.6
1195                0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)CTAP.7
1196                0         3,LSTP(4),BG(4),DOUT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  CTAP.8
1197                0         3LPSTP,LSTDA,ID4DA,ID4DB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,CTAP.9
1198                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANCTAP.10
1199                0         4,MSCAN,EPSL,ALPHAR,ALPHAI,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),CTAP.11
1200                0         4LGLTIJ(2,4,3),XXX(30)                                              CTAP.12
1201                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, CTAP.13
1202                0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)         CTAP.14
1203                0      C   ********** ENDING OF DIMENSION CHANGE  ******************           CTAP.15
1204                0          DIMENSION KTPR(8)
1205                0          DIMENSION LFP(2)                                                    CTAP.16
1206                0          DATA LFP/8H   FULL ,8HPARTIAL /                                     CTAP.17
1207                0          DATA (KTPR(I),I=1,7)/5H*TLIB,1H ,2HBN,4HBK=2,4HMS=1,2HNS,2HDT/
1208                0          DATA KTPR(8)/0/
1209                0          LLY=LLX
1210               14          GO TO (5,4) LLX                                                     CTAP.19
1211               30        4 IF (MWT(L) .GE. NRT(L)) LLX=1                                       CTAP.20
1212               32          GO TO 6                                                             CTAP.21
1213               36        5 IF (MWT(L) .LT. NRT(L)) RETURN                                      CTAP.22
1214               40        6 CONTINUE                                                            CTAP.23
1215               40          LTP=NTAP(L) $ IL=ITAP(L)                                            CTAP.24
1216               40          LAB=MTLAB(IL,L)
1217               40          PRINT 10,LFP(LLX),(NAMT(I,L),I=1,3),NTAP(L),IL,MTLAB(IL,L),LAB,     CTAP.29
1218               40         1NRT(L),MWT(L)                                                       CTAP.30
1219              111       10 FORMAT (//10X,*======*48,*FILLED TAPE OF *3A10,3X,*TAPE LOGICAL NO.CTAP.31
1220              111          1=*I2/ 5X,*REEL NO.=*I4,* (LABEL=*A8,1H=,A8,*)  NO. OF MAXIMUM GROUCTAP.32
1221              111          2P-RECORDS PER TAPE=*I6,*,  NO. OF GROUP-RECORDS WRITTEN=*I6/)      CTAP.33
1222              111          GO TO (11,12) LLY
1223              121       12 CONTINUE
1224              121          PRINT 15, LTP
1225              130       15 FORMAT (/10X,15H********** TAPE,I2,* IS NO LONGER NEEDED FOR THIS
1226              130         1RUN.*/)
1227              130          RETURN
1228              130       11 ITAP(L)=ITAP(L)+1
1229              131          IL=ITAP(L)
1230              140          IF (IL .GT. NDTAP(L)) GO TO 100
1231              141          ENCODE (2,3,KTPR(2)) LTP
1232              150        3 FORMAT (I2)
1233              150          PRINT 80, IL,LTP,MTLAB(IL,L),KTPR
1234              170       80 FORMAT (/10X,*----------BEGIN TO USE THE*,I4,*-TH REEL OF TAPE*I2,
1235              170         1* LABEL =*A8/ 20X,*TLIB TO BE ASSIGNED ----- *,7A8,I8/)
1236              170          CALL NEWVOL (LTP,MTLAB(IL,L),1,KTPR)
1237              202          MWT(L)=0
1238              202          RETURN                                                              CTAP.45
1239              204      100 PRINT 110, (NAMT(I,L),I=1,3)                                        CTAP.46
1240              221      110 FORMAT (//10X,10H**********,3A10,*  NEEDS MORE REEL--- JOB TERMINACTAP.47
1241              221         1TES ABNORMALLY------*/)                                            CTAP.48
1242              221          CALL EXIT                                                           CTAP.49
1243              222          END                                                                 CTAP.50

     LENGTH OF ROUTINE   CHGTAPE      344
```

VARIABLE ASSIGNMENTS

L	-	0	LLX	-	0	KTPR	-	0	LFP	-	10	DAYS	-	0C 0	KDAT	-	1C 0		
DAYDAY	-	2C 0	DTIME	-	3C 0	DAYEND	-	4C 0	MAX1	-	5C 0	IMAX	-	6C 0	JMAX	-	7C 0		
KMAX	-	10C 0	IM1	-	11C 0	JM1	-	12C 0	IP1	-	13C 0	JP1	-	14C 0	I1	-	15C 0		
J1	-	16C 0	I2	-	17C 0	J2	-	20C 0	I	-	21C 0	J	-	22C 0	K	-	23C 0		
NCARD1	-	24C 0	NCARD	-	25C 0	KSYB	-	26C 0	INKD	-	27C 0	INDEX	-	30C 0	IFIL	-	31C 0		
NAMX	-	41C 0	NTPD1	-	44C 0	NTPD2	-	45C 0	NAMT	-	46C 0	NTAP	-	62C 0	NRT	-	66C 0		
KWR	-	72C 0	MWT	-	76C 0	LOW	-	102C 0	LSTP	-	106C 0	BG	-	112C 0	DOUT	-	116C 0		
NUTAP	-	122C 0	ITAP	-	126C 0	ATLAB	-	132C 0	PRTDAY	-	442C 0	LOWP	-	443C 0	LPSTP	-	444C 0		
LSTDA	-	445C 0	IDMDA	-	446C 0	IDMDB	-	447C 0	IDMDC	-	450C 0	IDMDD	-	451C 0	NDIM	-	452C 0		
NDIM1	-	453C 0	NDIM2	-	454C 0	NDSK1	-	455C 0	NDSK2	-	456C 0	NDSK3	-	457C 0	NDSK4	-	460C 0		
NDSK5	-	461C 0	NDSK6	-	462C 0	NDSK7	-	463C 0	NDSK8	-	464C 0	MSUN	-	465C 0	MSJI	-	466C 0		
LMIN1	-	467C 0	LMIN2	-	470C 0	IBSCAN	-	471C 0	MSCAN	-	472C 0	EPSL	-	473C 0	ALPHAR	-	474C 0		
ALPHA1	-	475C 0	PWGT	-	476C 0	DTIME1	-	477C 0	DTIME2	-	500C 0	MSWP	-	501C 0	MCOUNT	-	502C 0		
NSLCT	-	503C 0	LGLTIJ	-	506C 0	XXX	-	535C 0	DAYT	-	574C 0	KDATT	-	575C 0	IBT	-	576C 0		
PI	-	577C 0	KT	-	17540C 0	JT	-	17555C 0	VT	-	31320C 0	WT	-	43070C 0	ST	-	54640C 0		
TT	-	66410C 0	PPT	-	100160C 0	RES	-	111730C 0	UTM	-	123500C 0	VTM	-	135250C 0	LLY	-	232		
LTP	-	231	IL	-	230	LAB	-	227											

SUBROUTINES CALLED

OUTPTC OUTPTS NEWVOL EXIT DBQRSD

COMMON BLOCKS AND LENGTHS

CMN1 - 14702

COMPILE TIME = 79 MILLISECS

```
CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
1244                0          SUBROUTINE GTABOUT (NAMX,NTPX,KDAT,IMAX,JMAX,DAYS,IB,K,LFE,LSBY,X)GTAB.2
1245                0      C *** LFE = (0,1,2) = TABLE VALUES PRINTED IN FORMAT NOT CHANGED,      GTAB.3
1246                0      C                       F-FORMAT, E-FORMAT)                           GTAB.4
1247                0      C     ********** RETURN VALUE OF LFE=0 ALWAYS **********              GTAB.5
1248                0          DIMENSION X(IMAX,JMAX),LSBY(IMAX)                                 GTAB.6
1249                0          DIMENSION NAMX(3), KFMT(3),LIN(13)
1250                0          DATA MX,MYTOP,MYINC/ 0, 1010, 16/
1251                0          DATA KFMT(1),KFMT(2)/10H(2X,2HJ=, ,10HI2,2X,    /                GTAB.8
1252                0       10 FORMAT (    8X,8HDATE -- ,A10,12X,11HLISTING OF ,3A10,F10.3,      GTAB.9
1253                0          118H DAYS ---FOR BLOCK,I3,9H,   LEVEL,I3,3H---)                   GTAB.10
1254                0       15 FORMAT (12H OVERALL I= ,A6,11(4X,A6))                             GTAB.11
1255                0       11 FORMAT (8H  BLK I=,12(5H  ===,I2,3H===))                          GTAB.12
1256               26          IF (LFE .EQ. 0) GO TO 3                                           GTAB.13
1257               30          GO TO (1,2) LFE                                                   GTAB.14
1258               40        1 KFMT(3)=8H12F10.4)                                                GTAB.15
1259               40          LFE=0                                                             GTAB.16
1260               40          GO TO 3                                                           GTAB.17
1261               42        2 KFMT(3)=8H12E10.3)                                                GTAB.18
1262               43          LFE=0                                                             GTAB.19
1263               43        3 CONTINUE                                                          GTAB.20
1264               45          MY = MYTOP
1265               45          ENCODE(125,10,LIN)KDAT,NAMX,DAYS,IB,K
1266               66          CALL PWRT(MX,MY, LIN,125,0,0)
1267               76          MY = MY - MYINC
1268               76          I2=0                                                              GTAB.22
1269               76        5 I1=I2+1                                                           GTAB.23
1270              101          I2=I2+12                                                          GTAB.24
1271              106          IF (I2 .GT. IMAX) I2=IMAX                                         GTAB.25
1272              110          ENCODE(128,15,LIN)(LSBY(I),I=I1,I2)
1273              125          MY = MY - MYINC
1274              125          CALL PWRT(MX,MY,LIN,128,0,0)
1275              136          MY = MY - MYINC
1276              136          J=JMAX+1                                                          GTAB.27
1277              136          DO 40 JJ=1,JMAX                                                   GTAB.28
1278              136          J=J-1                                                             GTAB.29
1279              136          ENCODE(128,KFMT,LIN)J,( X(I,J),I=I1,I2 )
1280              166          CALL PWRT(MX,MY,LIN,128,0,0)
1281              176          MY = MY - MYINC
1282              176       40 CONTINUE                                                          GTAB.31
1283              202          ENCODE(128, 11 ,LIN)(I,I=I1,I2)
1284              217          CALL PWRT(MX,MY,LIN,128,0,0)
1285              227          MY = MY - MYINC
1286              232          IF (I2 .NE. IMAX) GO TO 5                                         GTAB.33
1287              234          CALL FRAME
1288              235          RETURN                                                            GTAB.34
1289              235          END                                                               GTAB.35

        LENGTH OF ROUTINE   GTABOUT      331

        VARIABLE ASSIGNMENTS
NAMX  -     0   NTPX  -     0   KDAT  -     0   IMAX  -     0   JMAX  -     0   DAYS  -     0
IB    -     0   K     -     0   LFE   -     0   LSBY  -     0   X     -     0   KFMT  -     0
LIN   -     3   MX    -    20   MYTOP -    21   MYINC -    22   MY    -   251   I2    -   250
I1    -   247   I     -   246   J     -   245   JJ    -   244

        SUBROUTINES CALLED
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OUTPTS    PART      FRAME    3BGR5D
COMPILE TIME =      57     MILLISECS
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CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
1290                     0          SUBROUTINE LSTOUT (NAMX,NTPX,KDAT,IMAX,JMAX,LSBY,LFE,DAYX,IB,K,U,VLSTA.2
1291                     0         1,W,S,T)                                                              LSTA.3
1292                     0          DIMENSION LSBY(IMAX),U(IMAX,JMAX),V(IMAX,JMAX),W(IMAX,JMAX),S(IMAXLSTA.4
1293                     0         1,JMAX),T(IMAX,JMAX),NAMX(3)                                          LSTA.5
1294                     0          NAMX(1)=10H U(I,J)                                                   LSTA.6
1295                     2          LFE=1
1296                     2          CALL STABOUT (NAMX,NTPX,KDAT,IMAX,JMAX,DAYX,IB,K,LFE,LSBY,U)        LSTA.7
1297                    21          NAMX(1)=10H V(I,J)                                                   LSTA.8
1298                    21          CALL STABOUT (NAMX,NTPX,KDAT,IMAX,JMAX,DAYX,IB,K,LFE,LSBY,V)        LSTA.9
1299                    37          NAMX(1)=10H W(I,J)                                                   LSTA.10
1300                    37          LFE=2
1301                    37          CALL STABOUT (NAMX,NTPX,KDAT,IMAX,JMAX,DAYX,IB,K,LFE,LSBY,W)        LSTA.11
1302                    56          NAMX(1)=10H S(I,J)                                                   LSTA.12
1303                    56          LFE=1
1304                    56          CALL STABOUT (NAMX,NTPX,KDAT,IMAX,JMAX,DAYX,IB,K,LFE,LSBY,S)        LSTA.13
1305                    75          NAMX(1)=10H T(I,J)                                                   LSTA.14
1306                    75          CALL STABOUT (NAMX,NTPX,KDAT,IMAX,JMAX,DAYX,IB,K,LFE,LSBY,T)        LSTA.15
1307                   113          RETURN                                                               LSTA.16
1308                   113          END                                                                  LSTA.17

          LENGTH OF ROUTINE   LSTOUT       227

          VARIABLE ASSIGNMENTS
NAMX   -       0     NTPX   -       0     KDAT   -       0     IMAX   -       0     JMAX   -       0     LSBY   -       0
LFE    -       0     DAYX   -       0     IB     -       0     K      -       0     U      -       0     V      -       0
W      -       0     S      -       0     T      -       0

          SUBROUTINES CALLED
STABOUT   OBERSD
     COMPILE TIME =     24    MILLISECS
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```
CARD            APPROXIMATE
NUMBER        PROGRAM LOCATION
1309                   0          SUBROUTINE PRTENGX (NTPO,KDAT,ITEM,NJMAX, NJ,XXP)                PENG.2
1310                   0     C     ************ PRINT TABLE OF INPUT DATA XXP(I,J) ****************   PENG.3
1311                   0     C     WHERE I=1,ITEM, J=1,NJ  (BUT THE MAXIMUM VALUE OF J IS NJMAX)     PENG.4
1312                   0     C       ----- I.E. DIMENSION XXP(ITEM,NJMAX) -------------               PENG.5
1313                   0     C      SUCH THAT -- (YYP(I,JJ),I=1,ITEM),JJ=1,NCOL)                      PENG.6
1314                   0     C      WHER YYP(I,JJ)=XXP(I,JX) AND JX=(JJ-1)*LIN+JJ                     PENG.7
1315                   0     C      WHERE YYP(I,JJ)=XXP(I,JX) AND JX=(JJ-1)*LIN+JJ                    PENG.8
1316                   0     C      AND (LIN=1,NLIN) IS THE LINE SEQUENSE NO.                         PENG.9
1317                   0     C      NLIN=MAXIMUM LINES ALLOWED TO BE PRINTED ON ONE PAGE.             PENG.10
1318                   0     C      (THEREFORE NLIN SHOULD BE PRE-SETTED, SEE DATA STATEMENT)         PENG.11
1319                   0     C     NTPO=LOGICAL NO. OF THIS OUTPUT FILE TAPE.                         PENG.12
1320                   0     C      KDAT = DATE OF PROGRAM RUN.                                       PENG.13
1321                   0          DIMENSION XXP(ITEM,NJMAX)                                         PENG.14
1322                   0          DIMENSION YYP(12)                                                 PENG.15
1323                   0     C  ****************REAL KDAT,  FOR NCAR ONLY*******************          PENG.16
1324                   0          DATA NLIN,NCOL/50,2/                                              PENG.17
1325                   0       30 FORMAT (1H1/25X,*OVER ALL  -- ENERGY --  TABLE AS A FUNCTION OF TIPENG.18
1326                   0         1ME SEQUENCE*/25X,60(1H*)/                                        PENG.19
1327                   0         192X,*DATE OF PROGRAM RUN --- *A10/                               PENG.20
1328                   0         14X,62(1H=),3X,62(1H=)/                                           PENG.21
1329                   0         21X, 2(65H   SEQUENCE     OVER ALL KINETIC ENERGY       OVER ALL   PENG.22
1330                   0         2 TOTAL  )/                                                       PENG.23
1331                   0         31X, 2(65H      IN       ----------------------------    POTENTIAL  PENG.24
1332                   0         2 ENERGY )/                                                       PENG.25
1333                   0         41X, 2(65H     DAYS     VT. MEAN  DEVIATED    TOTAL      ENERGY    PENG.26
1334                   0         2(KE+PE) )/                                                       PENG.27
1335                   0         51X, 2(65H   ========= ========  ========  ========    ========   PENG.28
1336                   0         2========))                                                       PENG.29
1337                   0       20 FORMAT (1X,2(F12.3,3E10.3,   E12.4,E11.3))                       PENG.30
1338                   0       31 FORMAT (4X,62(1H*),3X,62(1H*))                                   PENG.31
1339                  21          IF (NJ .EQ. 0) GO TO 81                                          PENG.32
1340                  23          IJMAX=NCOL*ITEM                                                  PENG.33
1341                  23          NK=NJ/NCOL                                                       PENG.34
1342                  30          IF (NJ .NE. NK*NCOL) NK=NK+1                                     PENG.35
1343                  33          WRITE (NTPO,30) KDAT                                             PENG.36
1344                  43          K=0                                                              PENG.37
1345                  43       10 K=K+1                                                            PENG.38
1346                  44          IJ=0                                                             PENG.39
1347                  44          J=K-NK                                                           PENG.40
1348                  44       13 J=J+NK                                                           PENG.41
1349                  53          IF (J .GT. NJ) GO TO 16                                          PENG.42
1350                  55       14 I=0                                                              PENG.43
1351                  55       15 I=I+1                                                            PENG.44
1352                  56          IJ=IJ+1                                                          PENG.45
1353                  56          YYP(IJ)=XXP(I,J)                                                 PENG.46
1354                  66          IF (I .NE. ITEM) GO TO 15                                        PENG.47
1355                  70          IF (IJ .NE. IJMAX) GO TO 13                                      PENG.48
1356                  73       16 IF (IJ .EQ. 0) GO TO 17                                          PENG.49
1357                  75          WRITE (NTPO,20) (YYP(I),I=1,IJ)                                  PENG.50
1358                 113          IF (K .NE. NK) GO TO 10                                          PENG.51
1359                 115       17 WRITE (NTPO,31)                                                  PENG.52
1360                 123       81 CONTINUE                                                         PENG.53
1361                 123          RETURN                                                           PENG.54
1362                 123          END                                                              PENG.55

        LENGTH OF ROUTINE   PRTENGX      301
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```
          VARIABLE ASSIGNMENTS
NTPO   -       0     KOAT   -       0     ITEM   -       0     NJMAX  -       0     NJ     -       0     XXP    -       0
YYP    -       0     NLIN   -      14     NCOL   -      15     IJMAX  -     137     NK     -     136     K      -     135
IJ     -     134     J      -     133     I      -     132

          SUBROUTINES CALLED
OUTPTC    QBORSO
    COMPILE TIME =     46    MILLISECS
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CARD            APPROXIMATE
NUMBER          PROGRAM LOCATION
1363                    0          SUBROUTINE DATPLT (ITEM)                                                    DAPL.2
1364                    0          COMMON/CPL/NAM(3,6),IUNI(6),ISG(6),MASKA(10),NWD,NSCAL,JDAS,IDOT            DAPL.3
1365                    0          DATA NWD,JDAS,IDOT/12,20,3/                                                 DAPL.4
1366                    0          DATA ISG/1H ,1HM,1HD,1HK,1HP,1HT/                                           DAPL.5
1367                    0     C    JDAS = FOR  EVERY JDAS VERTICAL DATA DRAW A HORIZONTAL GRID-LINE.           DAPL.6
1368                    0     C    DAS .LE. 0 FOR THE CASE OF ELIMINATING SUCH HORIZONTAL GRID-LINE.           DAPL.7
1369                    0     C    IDOT = FOR EVERY IDOT*10 HORIZONTAL UNIT SCALE DRAW A VERTICAL              DAPL.8
1370                    0     C         DOT LINE, IDOT=0 VERTICAL DOT-LINE NOT WANTED.                         DAPL.9
1371                    0          DATA (NAM(I),I= 1, 9)/9HDAYS                              VERTICAL MDAPL.10
1372                    0         1EAM-HORIZONTAL K.E. DEVIATED-HORIZONTAL K.E.     /                        DAPL.11
1373                    0          DATA (NAM(I),I=10,18)/9H TOTAL KINETIC ENERGY          POTENTIAL-DAPL.12
1374                    0         1ENERGY                TOTAL ENERGY (K.E.+P.E.)     /                      DAPL.13
1375                    0          DATA IUNI/5H DAYS      ERGS      ERGS      ERGS      ERGS      ERDAPL.14
1376                    0         1GS     /                                                                    DAPL.15
1377                    4          IF (JDAS .LE. 0) JDAS=9999999999                                            DAPL.16
1378                   10          IF (IDOT .EQ. 0) IDOT=9999999999                                            DAPL.17
1379                   13          NSCAL=NWD*10-1                                                              DAPL.18
1380                   13          DO 20 J=1,ITEM                                                              DAPL.19
1381                   13          DO 10 I=1,10                                                                DAPL.20
1382                   16       10 MASKA(I)=ISG(J)                                                             DAPL.21
1383                   25          ENCODE (10,11,ISG(J)) (MASKA(I),I=1,10)                                     DAPL.22
1384                   43       11 FORMAT (10A1)                                                               DAPL.23
1385                   43       20 CONTINUE                                                                    DAPL.24
1386                   43     C    I=10           **********ORIGINAL, FROM HERE BELOW******                   DAPL.25
1387                   43     C    MASKA(1)=7777777777777777700B                                               DAPL.26
1388                   43     C 15 I=I-1                                                                       DAPL.27
1389                   43     C    IWD=MASKA(I+1)                                                              DAPL.28
1390                   43     C    MASKA(I)=SHIFT(IWD,6)                                                       DAPL.29
1391                   43     C    IF (I .NE. 1) GO TO 15           ******FROM HERE ABOVE********              DAPL.30
1392                   43     C    **********************NCAR VERSION************************************** DAPL.31
1393                   45          MASKA(1)=007777777777777777777B $ MASKA(2)=770077777777777777777B          DAPL.32
1394                   45          MASKA(3)=777700777777777777777B $ MASKA(4)=777777007777777777777B          DAPL.33
1395                   45          MASKA(5)=777777777007777777777B $ MASKA(6)=777777777700777777777B          DAPL.34
1396                   45          MASKA(7)=777777777777007777777B $ MASKA(8)=777777777777700777777B          DAPL.35
1397                   45          MASKA(9)=777777777777777700777B $ MASKA(10)=7777777777777777700B           DAPL.36
1398                   45     C    **************************NCAR DOES NOT HAVE SHIFTT ROUTINE**********        DAPL.37
1399                   45          RETURN                                                                      DAPL.38
1400                   52          END                                                                         DAPL.39

        LENGTH OF ROUTINE   DATPLT       110

        VARIABLE ASSIGNMENTS
ITEM    -       0     NAM     -      0C 0  IUNI    -     22C 0  ISG     -     30C 0  MASKA  -     36C 0  NWD     -     50C 0
NSCAL   -     51C 0   JDAS    -     52C 0  IDOT    -     53C 0  J       -     71     I      -     70

        SUBROUTINES CALLED
OUTPTS    QBORSD

        COMMON BLOCKS AND LENGTHS
CPL     -      54
    COMPILE TIME =     36    MILLISECS
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
1401                0          SUBROUTINE MPLOT (NTPO,KDAT,ITEM,NJMAX,NJ,XXP,XMIN,XMAX,IR,NPLX,  PLOT.2
1402                0         1 IPL,FAC,KFASW)                                                    PLOT.3
1403                0     C     **********MULTIPLE-LINE PLOT**********                            PLOT.4
1404                0     C     NJ=TOTAL NO. OF POINTS TO BE PLOTTED FOR EACH LINE.               PLOT.5
1405                0     C          (I.E. TOTAL OF OF J VALUES OF XXP(I,J) FOR EACH I )          PLOT.6
1406                0     C     XMIN=MINIMUM VALUE OF THE DATA XXP(I,J) TO BE PLOTTED.            PLOT.7
1407                0     C     XMAX=MAXIMUM VALUE OF THE DATA XXP(I,J) TO BE PLOTTED.            PLOT.8
1408                0     C** XMAX .GE. XMIN FOR NORMAL CASE (I.E. PLOT NPLX CURVES ON SAME PAGE  PLOT.9
1409                0     C            AND XMAX, XMIN ARE THE KNOWN MAXIMUM AND MINIMUM VALUES.  PLOT.10
1410                0     C** XMAX .LT. XMIN AND XMAX .GT. 0 AND XMIN .GT. 0, FOR THE CASE OF     PLOT.11
1411                0     C    PLOTTING NPLX CURVES (WITH MAXIMUM AND MINIMUM VALUES UN-KNOWN) ON  PLOT.12
1412                0     C    SAME PAGE.                                                         PLOT.13
1413                0     C** XMAX .LT. XMIN AND XMAX .LT. 0 AND XMIN .LT. 0, FOR THE CASE OF     PLOT.14
1414                0     C    PLOTTING NPLX CURVES (WITH MAXIMUM AND MINIMUM VALUES UN-KNOWN) ON  PLOT.15
1415                0     C    NPLX PAGES. (I.E. ONE CURVE PER PLOT)                              PLOT.16
1416                0     C     IR IS DEFINED SUCH THAT XXP(IR,J) FOR ALL J ARE PRINTED ON Y-AXIS PLOT.17
1417                0     C     XXP(I,J) (WHERE I .NE. IR AND I BELONGS TO IPL(II) FOR SOME II)    PLOT.18
1418                0     C      ARE PRINTED ON X-AXIS.                                            PLOT.19
1419                0     C     NPL=NO. OF LINES TO BE PLOTTED. (I.E. NO. OF I#S OF XXP(I,J))      PLOT.20
1420                0     C     IPL(K)=I, THE K-TH LINE TO BE PLOTTED IS THE I-TH ITEM.            PLOT.21
1421                0     C  ---(FAC(I),I=1,ITEM) CONSTANT FACTOR WHICH XXP(I,J)=XXP(I,J)/FAC(I)   PLOT.22
1422                0     C     FOR PLOT.                                                          PLOT.23
1423                0     C    ------KFASW=0, DO NOT CALCULATE XXP(I,J)/FAC(I), SINCE IT IS DONE   PLOT.24
1424                0     C                   BEFORE CALL THIS SUBROUTINE.                        PLOT.25
1425                0     C  -----KFASW=1, CALCULATE XXP(I,J)=XXP(I,J)/FAC(I) IN SUBROUTINE MPLOT PLOT.26
1426                0     C  -------CALL SUBROUTINE DATPLT BEFORE THE 1ST CALL OF THIS SUBROUTINE PLOT.27
1427                0     C     SET THE PLOTTING DATA IN SUBROUTINE DATPLT.                        PLOT.28
1428                0          COMMON/CPL/NAM(3,6),IUNI(6),ISG(6),MASKA(10),NWD,NSCAL,JDAS,IDOT   PLOT.29
1429                0          DIMENSION XXP(ITEM,NJMAX),IPL(ITEM),FAC(ITEM)                      PLOT.30
1430                0          DIMENSION IA(13),TIL(20)                                           PLOT.31
1431               44          IF (KFASW .EQ. 0) GO TO 71                                         PLOT.32
1432               46          II=NFAC=0                                                          PLOT.33
1433               46       60 II=II+1                                                            PLOT.34
1434               53          IF(II .GT. NPLX) GO TO 70                                          PLOT.35
1435               55          I=IPL(II)                                                          PLOT.36
1436               61          IF (FAC(I) .NE. 0.0) GO TO 61                                      PLOT.37
1437               63          FAC(I)=1.0                                                         PLOT.38
1438               63          GO TO 60                                                           PLOT.39
1439               71       61 IF (FAC(I) .EQ. 1.0) GO TO 60                                      PLOT.40
1440               72          NFAC=NFAC+1                                                        PLOT.41
1441               72          J=0                                                                PLOT.42
1442               72       62 J=J+1                                                              PLOT.43
1443              100          IF (J .GT. NJ) GO TO 60                                            PLOT.44
1444              102          XXP(I,J)=XXP(I,J)/FAC(I)                                           PLOT.45
1445              102          GO TO 62                                                           PLOT.46
1446              111       70 IF (NFAC .EQ. 0) GO TO 71                                          PLOT.47
1447              115          IF (XMAX .LT. XMIN) GO TO 71                                       PLOT.48
1448              117          XMIN=2.0 $ XMAX=1.0                                                PLOT.49
1449              117       71 CONTINUE                                                           PLOT.50
1450              122          UNIT=XMAX-XMIN                                                     PLOT.51
1451              126          IF (UNIT .GE. 0.0) GO TO 2                                         PLOT.52
1452              131          IF (XMIN .LT. 0.0) GO TO 1                                         PLOT.53
1453              133          NPL=NPLX                                                           PLOT.54
1454              133          JCHK=1                                                            *PLOT.55
1455              133          GO TO 21                                                           PLOT.56
1456              135        1 NPL=0                                                              PLOT.57
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CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
1457              136          JCHK=-1                                                          PLOT.58
1458              136          GO TO 21                                                         PLOT.59
1459              140        2 NPL=NPLX                                                         PLOT.60
1460              141          III=1                                                            PLOT.61
1461              141          JCHK=0                                                           PLOT.62
1462              141          GO TO 29                                                         PLOT.63
1463              145       21 III=0                                                            PLOT.64
1464              146       22 XMIN=1.0E50 $ XMAX=-1.0E50                                       PLOT.65
1465              146       23 III=III+1                                                        PLOT.66
1466              150          I=IPL(III)                                                       PLOT.67
1467              155          IF (NPL .NE. NPLX) NPL=III                                       PLOT.68
1468              160          J=0                                                              PLOT.69
1469              160       24 J=J+1                                                            PLOT.70
1470              170          IF (XXP(I,J) .LT. XMIN) XMIN=XXP(I,J)                            PLOT.71
1471              203          IF (XXP(I,J) .GT. XMAX) XMAX=XXP(I,J)                            PLOT.72
1472              211          IF (J .NE. NJ) GO TO 24                                          PLOT.73
1473              214          IF (III .NE. NPL) GO TO 23                                       PLOT.74
1474              220          IF (JCHK .GT. 0) III=1                                           PLOT.75
1475              222          UNIT=XMAX-XMIN                                                   PLOT.76
1476              225       29 IF (UNIT .NE. 0.0) GO TO 7773                                    PLOT.77
1477              227          XMAX=XMIN+1.0                                                    PLOT.78
1478              227          UNIT=1.0                                                         PLOT.79
1479              227     7773 UNIT=UNIT/FLOAT(NSCAL)                                         PLOT.80
1480              232          TUNO=10.0*UNIT                                                   PLOT.81
1481              232          I=1                                                              PLOT.82
1482              236          TIL(I)=XMIN+5.0*UNIT                                             PLOT.83
1483              236        4 I=I+1                                                            PLOT.84
1484              243          TIL(I)=TIL(I-1)+TUNO                                             PLOT.85
1485              250          IF (I .NE. NWO) GO TO 4                                          PLOT.86
1486              251          NSCA=NSCAL+1                                                     PLOT.87
1487              251          NWO1=NWO                                                         PLOT.88
1488              251          WRITE (NTPO,40) XXP(IR,1),XXP(IR,NJ),KDAT                        PLOT.89
1489              274       40 FORMAT (1H1,26X,*OVER ALL ENERGY PLOT FROM*F10.3,* DAYS TO*F10.3, PLOT.90
1490              274         1* DAYS*/27X,58(1H*),10X,*DATE OF PROGRAM RUN --*A10/)           PLOT.91
1491              274          II=III-1                                                         PLOT.92
1492              275        5 II=II+1                                                          PLOT.93
1493              302          IF (II .GT. NPL) GO TO 9                                         PLOT.94
1494              303          I=IPL(II)                                                        PLOT.95
1495              305          WRITE (NTPO,41) ISG(I),(NAM(L,I),L=1,3), FAC(I),IUNI(I)          PLOT.96
1496              334       41 FORMAT (25X,1H(,A1,3H)  ,3A10.*-- IN UNIT OF -- *E16.8,1X,A10)   PLOT.97
1497              334          GO TO 5                                                          PLOT.98
1498              334        9 WRITE (NTPO,43) XMIN, XMAX                                       PLOT.99
1499              347       43 FORMAT (//27X,* MINIMUM SCALE =*E16.8,4X,*MAXIMUM SCALE =*E16.8/) PLOT.100
1500              347          WRITE (NTPO,42) N4M(1,IR), (TIL(I),I=1,NWO)                      PLOT.101
1501              367       42 FORMAT (3X,A5,12E10.3/10H =========*,12(10H****I*****),1H*)     PLOT.102
1502              367          JEVEN=0                                                          PLOT.103
1503              371          J=1 $ IAI=55555555555555555558                                   PLOT.104
1504              371          GO TO 14                                                         PLOT.105
1505              373       13 J=J+1                                                            PLOT.106
1506              402          IF (MJO(J,JDAS) .NE. 0 .OR. J .EQ. NJ) GO TO 12                  PLOT.107
1507              404          IAI=46554655465546556558                                         PLOT.108
1508              404          GO TO 14                                                         PLOT.109
1509              406       12 IAI=55555555555555555558                                         PLOT.110
1510              406       14 DO 10 I=1,NWO1                                                   PLOT.111
1511              406          IF (MJO(I,IDDT) .EQ. 0) GO TO 18                                 PLOT.112
1512              406          IAJ=IAI                                                          PLOT.113
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
1513                405          GO TO 19                                                                    PLOT.114
1514                406      18  IAJ=IAI .AND. 7777777770077777777B .OR. 0000000005700000000B               PLOT.115
1515                406      19  IA(I)=IAJ                                                                   PLOT.116
1516                406      10  CONTINUE                                                                    PLOT.117
1517                431          II=III-1                                                                    PLOT.118
1518                432      20  II=II+1                                                                     PLOT.119
1519                434          I=IPL(II)                                                                   PLOT.120
1520                435          JND=(XXP(I,J)-XMIN)/UNIT                                                    PLOT.121
1521                436          L=JND+1.5                                                                   PLOT.122
1522                451          IF (L .GT. NSCA) L=NSCA                                                     PLOT.123
1523                453          WD=FLOAT(L)/10.0                                                            PLOT.124
1524                453          IWRD=WD                                                                     PLOT.125
1525                453          JCHT=L-IWRD*10                                                              PLOT.126
1526                460          IF (JCHT .NE. 0) GO TO 15                                                   PLOT.127
1527                462          JCHT=10                                                                     PLOT.128
1528                462          GO TO 17                                                                    PLOT.129
1529                463      15  IWRD=IWRD+1                                                                 PLOT.130
1530                464      17  MASKD=.NOT. MASKA(JCHT) .AND. ISG(I)                                        PLOT.131
1531                466          IA(IWRD)=IA(IWRD) .AND. MASKA(JCHT)                                         PLOT.132
1532                465          IA(IWRD)=IA(IWRD) .OR. MASKD                                                PLOT.133
1533                476          IF (II .NE. NPL) GO TO 20                                                   PLOT.134
1534                503          IF (J .EQ. NJ .OR. JEVEN .EQ. 0) GO TO 51                                   PLOT.135
1535                505          WRITE (NTPO,52) (IA(I),I=1,NWD1)                                            PLOT.136
1536                522      52  FORMAT (9X,1H*,12A10,1H*)                                                   PLOT.137
1537                522          JEVEN=0                                                                     PLOT.138
1538                522          GO TO 30                                                                    PLOT.139
1539                523      51  WRITE (NTPO,50) XXP(IR,J),(IA(I),I=1,NWD1)                                  PLOT.140
1540                546      50  FORMAT (   F9.2,1H*,12A10,1H*)                                              PLOT.141
1541                546          JEVEN=1                                                                     PLOT.142
1542                550      30  IF (J .NE. NJ) GO TO 13                                                     PLOT.143
1543                552          WRITE (NTPO,44) NAM(1,IR), (TIL(I),I=1,NWD)                                 PLOT.144
1544                572      44  FORMAT (10H =========*,12(10H****I*****),1H*/ 3X,A5,12E10.3//)               PLOT.145
1545                572          II=III-1                                                                    PLOT.146
1546                573      65  II=II+1                                                                     PLOT.147
1547                600          IF (II .GT. NPL) GO TO 69                                                   PLOT.148
1548                601          I=IPL(II)                                                                   PLOT.149
1549                603          WRITE (NTPO,41) ISG(I),(NAM(L,I),L=1,3), FAC(I),IUNI(I)                     PLOT.150
1550                632          GO TO 65                                                                    PLOT.151
1551                632      69  WRITE (NTPO,43) XMIN, XMAX                                                  PLOT.152
1552                645          WRITE (NTPO,45) KDAT                                                        PLOT.153
1553                655      45  FORMAT (/40X,*========PROGRAM RUN AT *A10,*=========*/)                     PLOT.154
1554                656          IF (NPL .NE. NPLX) GO TO 22                                                 PLOT.155
1555                660          RETURN                                                                      PLOT.156
1556                660          END                                                                         PLOT.157

        LENGTH OF ROUTINE   PLOT       1133

        VARIABLE ASSIGNMENTS
NTPO  -       0    KDAT  -       0    ITEM  -       0    NJMAX -       0    NJ    -       0    XXP   -       0
XMIN  -       0    XMAX  -       0    IR    -       0    NPLX  -       0    IPL   -       0    FAC   -       0
KPASK -       0    IA    -       0    TIL   -      15    NAM   -      0C 0  IUNI  -     22C 0  ISG   -     30C 0
MASKA -     35C 0  NWD   -     50C 0  NSCAL -     51C 0  JDAS  -     52C 0  IDOT  -     53C 0  II    -     713
NFAC  -     712    I     -     711    J     -     710    UNIT  -     707    NPL   -     706    JCHK  -     705
III   -     704    TJND  -     703    NSCA  -     702    NWD1  -     701    L     -     700    JEVEN -     677
IAI   -     676    IAJ   -     675    JND   -     674    WD    -     673    IWRD  -     672    JCHT  -     671
MASKD -     670
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          SUBROUTINES CALLED
OUTPTC    QBORSD

          COMMON BLOCKS AND LENGTHS
CPL    -      54
    COMPILE TIME =    209    MILLISECS
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CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
1557                     0          SUBROUTINE PRTDJK (NAMX,JM,KM,X)                                  PRJK.2
1558                     0          DIMENSION NAMX(3),X(JM,KM)                                        PRJK.3
1559                     0       20 FORMAT (/5X,3A10)                                                 PRJK.4
1560                     0       22 FORMAT (5X,A10,5(I5,1H),E16.8)/(15X,5(I5,1H),E16.8)))             PRJK.5
1561                     0          PRINT 20, NAMX                                                    PRJK.6
1562                    11          K=1                                                               PRJK.7
1563                    13          IF (KM .NE. 1) GO TO 10                                           PRJK.8
1564                    15          LSK=10H                                                           PRJK.9
1565                    15          GO TO 15                                                          PRJK.10
1566                    17       10 ENCODE (10,12,LSK) K                                              PRJK.11
1567                    26       12 FORMAT (3H(K=,I3,4H)   )                                          PRJK.12
1568                    26       15 PRINT 22, LSK, (J,X(J,K),J=1,JM)                                  PRJK.13
1569                    51          IF (K .EQ. KM) GO TO 16                                           PRJK.14
1570                    53          K=K+1                                                             PRJK.15
1571                    54          GO TO 10                                                          PRJK.16
1572                    55       16 RETURN                                                            PRJK.17
1573                    55          END                                                               PRJK.18

          LENGTH OF ROUTINE   PRTDJK       114

          VARIABLE ASSIGNMENTS
NAMX    -      0     JM     -      0     KM     -      0     X      -      0     K            66     LSK    -     65
J       -     64

          SUBROUTINES CALLED
OJTPTC     OJTPTS     QBQRSD
     COMPILE TIME =     20    MILLISECS
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
1574                0          SUBROUTINE COLDST (NDSKX,NDSKR)                                          COLD.2
1575                0      C   ========== BEGINING OF DIMENSION CHANGE  ==========                      COLD.3
1576                0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,COLD.4
1577                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(6)COLD.5
1578                0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)COLD.6
1579                0         3,LSTP(4),RG(4),DDJT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  COLD.7
1580                0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,COLD.8
1581                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANCOLD.9
1582                0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),COLD.10
1583                0         4LGLTIJ(2,4,3),XXX(30)                                                   COLD.11
1584                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  COLD.12
1585                0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)              COLD.13
1586                0          DIMENSION XJVR(2484)                                                    COLD.14
1587                0          EQUIVALENCE (PPT(1),XJVR(1))                                            COLD.15
1588                0          DIMENSION BT(624),DT(3106)                                              COLD.16
1589                0          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                     COLD.17
1590                0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,    COLD.18
1591                0         1FLONG1,FLONG2,SO,TO,ROD,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    COLD.19
1592                0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTG,CSTE,SECDAY,COLD.20
1593                0         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITCOLD.21
1594                0         4(10),DZ(10),DZ4H(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   COLD.22
1595                0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   COLD.23
1596                0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  COLD.24
1597                0         727),SVISX(27),TVISX(27),    IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,   COLD.25
1598                0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  COLD.26
1599                0         923,27),AREAT,AREAJ,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)COLD.27
1600                0         1,EPD(23,27)
1601                0          DIMENSION X(2812),Y(2013)
1602                0          EQUIVALENCE (DAYB,X(1)),(IBI,Y(1))                                      COLD.30
1603                0          COMMON/CMN3/BP(624),DA(3106),DB(3106),DC(3106)                          COLD.31
1604                0          DIMENSION P(23,27)                                                      COLD.32
1605                0          DIMENSION  U(23,27), V(23,27), W(23,27), S(23,27), T(23,27)             COLD.33
1606                0          EQUIVALENCE (DA(1),KA),(DA(2), U(1)),(DA(623), V(1)),(DA(1244), W(COLD.34
1607                0         11)),(DA(1865), S(1)),(DA(2486), T(1))                                   COLD.35
1608                0          DIMENSION SOJK(27,10),TOJK(27,10)                                       COLD.36
1609                0      C   ********** ENDING OF DIMENSION CHANGE  ****************                COLD.37
1610                0          EQUIVALENCE (DB(1),SOJK(1)),(DC(1),TOJK(1))                             COLD.38
1611                0          DATA ZERO/-0.0/                                                         COLD.39
1612             1166          CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKX) $ CALL REWDTP (NDSKR)         COLD.40
1613             1171          PRINT 25, DAYS, ZERO, RUNDF, RUNDF                                      COLD.41
1614             1206       25 FORMAT (//10X,*---------- COLD START AT DAYS=*F12.3,10(1H-)//          COLD.42
1615             1206         1/15X,*INITIAL VALUE OF P(I,J), U(I,J), V(I,J), W(I,J) =*E16.8,2X,    COLD.43
1616             1206         2*FOR ALL LEVEL AND ALL BLOCK*/25X, *INITIAL VALUE FOR POINT OUTSIDCOLD.44
1617             1206         2E BOUNDARY = RUNDF =*E16.8,4H = (,D20.1H)//25X,*CARD-INPUT INITIALCOLD.45
1618             1206         1 VALUES FOR  SOJK(J,K) AND TOJK(J,K) ARE*)                             COLD.46
1619             1207          IF (NCARD .EQ. 0) NCARD=NCARD1                                         COLD.47
1620             1212          IB=0 $ INKD=3 $ NAMX(2)=NAMX(3)=1H                                     COLD.48
1621             1212          KSYB=4HSOJK  $ NAMX(1)=10HSOJK(J,K)                                    COLD.49
1622             1212          CALL CRDINP (NCARD,KSYB,IB,INKD,JMAX,KMAX,SOJK)                        COLD.50
1623             1232          CALL PRTOJK (NAMX,JMAX,KMAX,SOJK)                                      COLD.51
1624             1240          KSYB=4HTOJK  $ NAMX(1)=10HTOJK(J,K)                                    COLD.52
1625             1240          CALL CRDINP (NCARD,KSYB,IB,INKD,JMAX,KMAX,TOJK)                        COLD.53
1626             1254          CALL PRTOJK (NAMX,JMAX,KMAX,TOJK)                                      COLD.54
1627             1262          I1=J1=1 $ I2=IMAX $ J2=JMAX                                            COLD.55
1628             1262          DAYX=DAYS $ KDATX=KDAT                                                 COLD.56
1629             1262        1 CALL RDBUFL(NDSK5,IDMDB,Y)                                             COLD.57
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CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
1630              1276          IB=IBI                                                                    COLD.58
1631              1275          LR=1                                                                      COLD.59
1632              1276          CALL INDINTG (IMAX,JMAX,IND,INDBL,LR,ING)                                 COLD.60
1633              1310          LR=2                                                                      COLD.61
1634              1310          CALL INDINTG (IMAX,JMAX,IND,INDBR,LR,ING)                                 COLD.62
1635              1321          DO 10 J=J1,J2                                                             COLD.63
1636              1321          DO 10 I=I1,I2                                                             COLD.64
1637              1322          INDEX=IND(I,J)                                                            COLD.65
1638              1322          IF (INDEX) 3,9,7                                                          COLD.66
1639              1322        3 U(I,J)=V(I,J)=W(I,J)=P(I,J)=PPT(I,J)=RUNDF                                COLD.67
1640              1322          GO TO 10                                                                  COLD.68
1641              1322        7 W(I,J)=P(I,J)=PPT(I,J)=ZERO                                               COLD.69
1642              1322          IF (INDEX .GT. 6) GO TO 8                                                 COLD.70
1643              1322          U(I,J)=V(I,J)=ZERO                                                        COLD.71
1644              1322          GO TO 10                                                                  COLD.72
1645              1322        8 U(I,J)=V(I,J)=RUNDF                                                       COLD.73
1646              1322          GO TO 10                                                                  COLD.74
1647              1322        9 U(I,J)=V(I,J)=W(I,J)=P(I,J)=PPT(I,J)=ZERO                                 COLD.75
1648              1322       10 CONTINUE                                                                  COLD.76
1649              1350          CALL WTBUFL (NDSKR,IDMDC,XUVR)                                            COLD.77
1650              1366          CALL WTBUFL (NDSKX,NDIM1,BP)                                              COLD.78
1651              1373          CALL WTBUF (NTAP(2),NDIM1,BP)                                             COLD.79
1652              1400          DO 20 KA=1,KMAX                                                           COLD.80
1653              1400          DO 15 J=J1,J2                                                             COLD.81
1654              1401          DO 15 I=I1,I2                                                             COLD.82
1655              1402          IF (IND(I,J) .NE. IUNDF) GO TO 12                                         COLD.83
1656              1402          S(I,J)=T(I,J)=RUNDF                                                       COLD.84
1657              1402          GO TO 15                                                                  COLD.85
1658              1402      C --------DEFINE INITIAL S(I,J) AND T(I,J) FOR K=KA AND BLOCK=IB-----        COLD.86
1659              1402       12 S(I,J)=SOJK(J,KA)                                                         COLD.87
1660              1402          T(I,J)=TOJK(J,KA)                                                         COLD.88
1661              1402       15 CONTINUE                                                                  COLD.89
1662              1430          CALL WTBUFL (NDSKX,NDIM2,DA)                                              COLD.90
1663              1436          CALL WTBUF (NTAP(2),NDIM2,DA)                                             COLD.91
1664              1443       20 CONTINUE                                                                  COLD.92
1665              1447          IF (IBI .NE. NIB) GO TO 1                                                 COLD.93
1666              1451          RETURN                                                                    COLD.94
1667              1451          END                                                                       COLD.95

        LENGTH OF ROUTINE   COLDST      1536

        VARIABLE ASSIGNMENTS
NDSKX  -      0    NDSKR  -      0    XUVR   -  100180 0  BT     -    574C 0  DT     -   1754C 0  X      -     0C 1
Y      -   5374C 1  P      -      0    J      -    1161C 2  V      -   2336C 2  W      -   3513C 2  S      -  4670C 2
I      -   6045C 2  SOJK   -   7222C 2  TOJK   -  152640 2  DAYS   -     0C 0  KDAT   -     1C 0  DIFDAY -     2C 0
STIME  -      3C 0  DAYEND -      4C 0  KMAXI  -      5C 0  IMAX   -     6C 0  JMAX   -     7C 0  KMAX   -    10C 0
IM1    -     11C 0  JM1    -     12C 0  IP1    -     13C 0  JP1    -    14C 0  I1     -    15C 0  J1     -    16C 0
I2     -     17C 0  J2     -     20C 0  I      -     21C 0  J      -    22C 0  K      -    23C 0  NCARD1 -    24C 0
NCARD  -     25C 0  KSYB   -     26C 0  INKD   -     27C 0  INDEX  -    30C 0  ITIL   -    31C 0  NAMX   -    41C 0
NTPD1  -     44C 0  NTPD2  -     45C 0  NAMT   -     45C 0  NTAP   -    62C 0  NRT    -    66C 0  KNR    -    72C 0
NXT    -     76C 0  LOW    -    102C 0  LSTP   -    106C 0  BG     -   112C 0  DOUT   -   116C 0  NDTAP  -   122C 0
ITAP   -    126C 0  MTLAB  -    132C 0  PRTDAY -    442C 0  LOWP   -   443C 0  LPSTP  -   444C 0  LSTDA  -   445C 0
IDMD1  -    446C 0  IDMD8  -    447C 0  IDMDC  -    450C 0  IDMDD  -   451C 0  NDIM   -   452C 0  NDIM1  -   453C 0
NDIM2  -    454C 0  NDSK1  -    455C 0  NDSK2  -    456C 0  NDSK3  -   457C 0  NDSK4  -   460C 0  NDSK5  -   461C 0
NDSK6  -    462C 0  NDSK7  -    463C 0  NDSK8  -    464C 0  MSUN   -   465C 0  MSUI   -   466C 0  LMIN1  -   467C 0
LMIN2  -    470C 0  IBSCAN -    471C 0  MSCAN  -    472C 0  EPSL   -   473C 0  ALPHAR -   474C 0  ALPHA1 -   475C 0
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PWGT   -    476C 0   DTIME1 -    477C 0   DTIME2 -    500C 0   MSWP   -    501C 0   MCOUNT -    502C 0   MSLCT  -    503C 0
LGLTIJ -    506C 0   XXX    -    536C 0   DAYT   -    574C 0   KDATT  -    575C 0   IBT    -    576C 0   PT     -    577C 0
KT     -   1754C 0   UT     -   1755C 0   VT     -   3132C 0   WT     -   4307C 0   ST     -   5464C 0   TT     -   6641C 0
PPT    -  10016C 0   RES    -  11173C 0   UTM    -  12350C 0   VTM    -  13525C 0   DAYB   -      0C 1   KDATB  -      1C 1
IMAXT  -      2C 1   NIB    -      3C 1   NIBT   -      4C 1   IUNDF  -      5C 1   RUNDF  -      6C 1   FLAT1  -      7C 1
FLAT2  -     10C 1   FLONG1 -     11C 1   FLONG2 -     12C 1   SO     -     13C 1   TO     -     14C 1   RDO    -     15C 1
ALPHA  -     16C 1   B      -     17C 1   HEATC  -     20C 1   PI     -     21C 1   RE     -     22C 1   G      -     23C 1
VISY   -     24C 1   SVISY  -     25C 1   TVISY  -     26C 1   VISZ   -     27C 1   SVISZ  -     30C 1   TVISZ  -     31C 1
POWER  -     32C 1   TAREA  -     33C 1   JAREA  -     34C 1   TVOL   -     35C 1   UVOL   -     36C 1   TKK    -     37C 1
CSTQ   -     40C 1   CSTE   -     41C 1   SECDAY -     42C 1   DXT    -     43C 1   DXU    -     76C 1   RDXU2  -    131C 1
DYT    -    164C 1   DYU    -    165C 1   RDYU2  -    166C 1   EPSSK  -    167C 1   EPSTK  -    201C 1   RDCRIT -    213C 1
DZ     -    225C 1   DZMH   -    237C 1   Z      -    251C 1   DEPTH  -    263C 1   BETA   -    264C 1   F      -    317C 1
DG     -    352C 1   AYZT   -    364C 1   AUXY   -    376C 1   AXZT   -    431C 1   AXZU   -   1047C 1   AX     -   1465C 1
AY     -   2103C 1   AZ     -   2521C 1   CSX    -   3137C 1   CSY    -   3555C 1   CSZ    -   4173C 1   CTX    -   4205C 1
CTY    -   4623C 1   CTZ    -   5241C 1   VISX   -   5253C 1   SVISX  -   5306C 1   TVISX  -   5341C 1   IBI    -   5374C 1
IMX    -   5375C 1   IMEF1  -   5376C 1   IMEF2  -   5377C 1   JMX    -   5400C 1   JMEF1  -   5401C 1   JMEF2  -   5402C 1
LAN    -   5403C 1   ING    -   5405C 1   INDBL  -   5407C 1   INDBR  -   5442C 1   LSBY   -   5475C 1   IEF1   -   5524C 1
IEF2   -   5557C 1   IND    -   5612C 1   AREAT  -   6767C 1   AREAU  -   6770C 1   VOLT   -   6771C 1   VOLU   -   6772C 1
AREATB -   6773C 1   AREAUB -   6774C 1   VOLTB  -   6775C 1   VOLUB  -   6776C 1   ATXY   -   6777C 1   EPD    -  10154C 1
BP     -      0C 2   DA     -  1160C 2   DB     -  7222C 2   DC     -  15264C 2   KA     -  1160C 2   ZERO   -   1155
IB     -   1462       DAYX   -   1461       KDATX  -   1460       LR     -   1457

          SUBROUTINES CALLED
REWDTP     OUTPTC     CRDINP     PRTOUK     RDBUFL     INDINTG    WTBUFL     WTBUF      QBORSO

          COMMON BLOCKS AND LENGTHS
CMN1   -   14702      CMN2   -   11331      CMN3   -   23326
     COMPILE TIME =     149    MILLISECS
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CARD          APPROXIMATE
NUMBER       PROGRAM LOCATION
1668                  0          SUBROUTINE INDINTG (IMAX,JMAX,IND,INDB,L,ING)                    INDC.2
1669                  0          DIMENSION IND(IMAX,JMAX),INDB(JMAX), ING(2)                      INDC.3
1670                  0     C  ***INTERCHANGE INDEX AT OVERLAP BOUNDARY BETWEEN IND(I,J) AND INDB(J)INDC.4
1671                  0     C  ----- L=(1,2) = (LEFT, RIGHT) OVERLAP BOUNDARY                      INDC.5
1672                  0          I=ING(L)                                                         INDC.6
1673                  5          IF (I .EQ. 0) RETURN                                             INDC.7
1674                  7          LL=1                                                             INDC.8
1675                 12          IF (L .EQ. 2) LL=-1                                              INDC.9
1676                 14          I=I-LL                                                           INDC.10
1677                 14          DO 4 J=1,JMAX                                                    INDC.11
1678                 14          INDEX=IND(I,J)                                                   INDC.12
1679                 14          IND(I,J)=INDB(J)  $ INDB(J)=INDEX                                INDC.13
1680                 14        4 CONTINUE                                                         INDC.14
1681                 30          RETURN                                                           INDC.15
1682                 31          END                                                              INDC.16

        LENGTH OF ROUTINE   INDINTG       56

        VARIABLE ASSIGNMENTS
IMAX    -      0     JMAX    -      0     IND     -      0     INDB    -      0     L       -      0     ING     -      0
I       -     43     LL      -     42     J       -     41     INDEX   -     40

        SUBROUTINES CALLED
QBQRSD
    COMPILE TIME =     16    MILLISECS
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CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
1683                0          SUBROUTINE MAINCL (NDSKP,NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                MAIN.2
1684                0    C  ========== BEGINING OF DIMENSION CHANGE  ==========                        MAIN.3
1685                0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,MAIN.4
1686                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)MAIN.5
1687                0         2,NAMX(3),NTPO1,NTPO2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)MAIN.6
1688                0         3,LSTP(4),BG(4),DOUT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  MAIN.7
1689                0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,MAIN.8
1690                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANMAIN.9
1691                0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),MAIN.10
1692                0         4LGLTIJ(2,4,3),XXX(30)                                                 MAIN.11
1693                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  MAIN.12
1694                0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)            MAIN.13
1695                0          COMMON/NLCM/LCMNAM(33,7),LCNT(7),NR1234,NR567                         MAIN.14
1696                0    C  ********** ENDING OF DIMENSION CHANGE  *****************                  MAIN.15
1697                0    C   *************FOR NDSK1,2,3,4 ARE ALL LCM*********************************MAIN.16
1698                0          DO 500 I=1,NR1234                                                      MAIN.17
1699                2     500  LCMNAM(I,NDSKZ)=LCMNAM(I,NDSKY)                                        MAIN.18
1700                2    C   *************FOR NDSK1,2,3,4 ARE ALL LCM********END*******************MAIN.19
1701               13          DAYT=DAYS $ KDATT=KDAT                                                 MAIN.20
1702               13          DO 5 I=1,4                                                             MAIN.21
1703               13        5  LSTP(I)=LSTP(I)+1                                                     MAIN.22
1704               25          IF (LSTP(1) .EQ. LDW(1)) LSTP(1)=0                                     MAIN.23
1705               30          IF (LSTP(2) .EQ. LDW(2)) LSTP(2)=-1                                    MAIN.24
1706               33          DO 6 I=3,4                                                             MAIN.25
1707               35        6  IF (LSTP(I) .EQ. LDW(I)) LSTP(I)=0                                    MAIN.26
1708               43          MSUI=MSUI+1                                                            MAIN.27
1709               46          IF (MSUI .EQ. MSUN) GO TO 10                                           MAIN.28
1710               46    C  ****************** NORMAL CALCULATION **********                          MAIN.29
1711               46    C ----- TO CALL CMPTA -----                                                  MAIN.30
1712               50          CALL ACALK32 (       NDSKX,       NDSKZ,NDSKR,NDSKW)                MAIN.31
1713               56          CALL NONLIN  (       NDSKX,NDSKZ,NDSKY,NDSKW,NDSKR)                    MAIN.32
1714               56    C ----- TO CALL CMPTF -----                                                  MAIN.33
1715               65          CALL FCALK32 (       NDSKP,NDSKY,NDSKZ,NDSKR,NDSKW)                    MAIN.34
1716               74          CALL RELAX (NDSKW,NDSKR)                                               MAIN.35
1717              100          CALL CNTX (NDSKP,NDSKZ,NDSKY,NDSKR,NDSKW)                              MAIN.36
1718              107          CALL WUVCAL (NDSKY,NDSKZ,NDSKW)                                        MAIN.37
1719              114          CALL WFLOUT (NDSKZ,NDSKY)                                              MAIN.38
1720              120          DAYS=DAYS+DIFDAY                                                       MAIN.39
1721              120          RETURN                                                                 MAIN.40
1722              120    C     ************ MONSUNO STABLIZING  CALCULATION **********                 MAIN.41
1723              122       10  DTIME=DTIME1                                                          MAIN.42
1724              123          MSUI=-1                                                                MAIN.43
1725              123    C ----- TO CALL CMPTA -----                                                  MAIN.44
1726              123          CALL ACALK32 (       NDSKX,       NDSKZ,NDSKR,NDSKW)                MAIN.45
1727              133          CALL NONLIN  (       NDSKX,NDSKZ,NDSKY,NDSKW,NDSKR)                    MAIN.46
1728              133    C ----- TO CALL CMPTF -----                                                  MAIN.47
1729              142          CALL FCALK32 (       NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                    MAIN.48
1730              151          CALL RELAX (NDSKW,NDSKR)                                               MAIN.49
1731              155          CALL CNTX (NDSKX,NDSKZ,NDSKY,NDSKR,NDSKW)                              MAIN.50
1732              164          CALL WUVCAL (NDSKY,NDSKZ,NDSKW)                                        MAIN.51
1733              171          CALL WFLOUT (NDSKZ,NDSKP)                                              MAIN.52
1734              171    C  ------------ MONSUNO BACK-WARD ----------                                  MAIN.53
1735              175          DAYT=DAYS                                                              MAIN.54
1736              175          MSUI=0                                                                 MAIN.55
1737              175    C ----- TO CALL CMPTA -----                                                  MAIN.56
1738              175          CALL ACALK32 (       NDSKP,       NDSKZ,NDSKR,NDSKW)                MAIN.57
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CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
1739                  205          CALL NONLIN (      NDSKP,NDSKZ,NDSKY,NDSKW,NDSKR)                MAIN.58
1740                  205     C ----- TO CALL CMPTF -----                                            MAIN.59
1741                  214          CALL FCALK32 (      NDSKP,NDSKY,NDSKZ,NDSKR,NDSKW)               MAIN.60
1742                  223          CALL RELAX (NDSKW,NDSKR)                                         MAIN.61
1743                  227          CALL CNTX (NDSKX,NDSKZ,NDSKY,NDSKR,NDSKW)                        MAIN.62
1744                  235          CALL WUVCAL (NDSKY,NDSKZ,NDSKW)                                  MAIN.63
1745                  243          CALL WFLOUT (NDSKZ,NDSKY)                                        MAIN.64
1746                  247          DTIME=DTIME2                                                     MAIN.65
1747                  247          DAYS=DAYS+DIFDAY                                                 MAIN.66
1748                  247          RETURN                                                           MAIN.67
1749                  252          END                                                              MAIN.68

        LENGTH OF ROUTINE   MAINCL       402

        VARIABLE ASSIGNMENTS
NDSKP  -       0    NDSKX  -       0    NDSKY  -       0    NDSKZ  -       0    NDSKR  -       0    NDSKW  -       0
DAYS   -      0C 0  KDAT   -      1C 0  DIFDAY -      2C 0  DTIME  -      3C 0  DAYEND -      4C 0  MAXI   -      5C 0
IMAX   -      6C 0  JMAX   -      7C 0  KMAX   -     10C 0  IM1    -     11C 0  JM1    -     12C 0  IP1    -     13C 0
JP1    -     14C 0  I1     -     15C 0  J1     -     16C 0  I2     -     17C 0  J2     -     20C 0  I      -     21C 0
J      -     22C 0  K      -     23C 0  NCARD1 -     24C 0  NCARD  -     25C 0  KSYB   -     26C 0  INKD   -     27C 0
INDEX  -     30C 0  ITIL   -     31C 0  NAMX   -     41C 0  NTPO1  -     44C 0  NTPO2  -     45C 0  NAMT   -     46C 0
NTAP   -     62C 0  NRT    -     66C 0  KNR    -     72C 0  MWT    -     76C 0  LDW    -    102C 0  LSTP   -    106C 0
BG     -    112C 0  DOUT   -    116C 0  NOTAP  -    122C 0  ITAP   -    126C 0  MTLAB  -    132C 0  PRTDAY -    442C 0
LDWP   -    443C 0  LPSTP  -    444C 0  LSTDA  -    445C 0  IDMDA  -    446C 0  IDMDB  -    447C 0  IDMDC  -    450C 0
IDMDD  -    451C 0  NDIM   -    452C 0  NDIM1  -    453C 0  NDIM2  -    454C 0  NDSK1  -    455C 0  NDSK2  -    456C 0
NDSK3  -    457C 0  NDSK4  -    460C 0  NDSK5  -    461C 0  NDSK6  -    462C 0  NDSK7  -    463C 0  NDSK8  -    464C 0
MSUN   -    465C 0  MSUI   -    466C 0  LMIN1  -    467C 0  LMIN2  -    470C 0  IBSCAN -    471C 0  MSCAN  -    472C 0
EPSL   -    473C 0  ALPHAR -    474C 0  ALPHA1 -    475C 0  PWGT   -    476C 0  DTIME1 -    477C 0  DTIME2 -    500C 0
MSWP   -    501C 0  MCOUNT -    502C 0  MSLCT  -    503C 0  LGLTIJ -    506C 0  XXX    -    536C 0  DAYT   -    574C 0
KDATT  -    575C 0  IBT    -    576C 0  PT     -    577C 0  KT     -   1754C 0  UT     -   1755C 0  VT     -   3132C 0
WT     -   4307C 0  ST     -   5454C 0  TT     -   6641C 0  PPT    -  10016C 0  RES    -  11173C 0  UTM    -  12350C 0
VTM    -  13525C 0  LCMNAM -     0C 1  LCNT   -    347C 1  NR1234 -    356C 1  NR567  -    357C 1

        SUBROUTINES CALLED
ACALK32   NONLIN    FCALK32   RELAX     CNTX      WUVCAL    WFLOUT    QBORSD

        COMMON BLOCKS AND LENGTHS
CMN1   -  14702     NLCM   -     36D
    COMPILE TIME =      88    MILLISECS
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
1750                  0          SUBROUTINE ACALK32 (NDSKX, NDSKZ,NDSKR,NDSKW)                          ACAL.2
1751                  0    C  ========== BEGINING OF DIMENSION CHANGE  ==========                       ACAL.3
1752                  0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,ACAL.4
1753                  0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(6)ACAL.5
1754                  0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)ACAL.6
1755                  0         3,LSTP(4),BG(4),DOUT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  ACAL.7
1756                  0         3LPSTP,LSTDA,ID4DA,ID4DB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,ACAL.8
1757                  0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IESCANACAL.9
1758                  0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),ACAL.10
1759                  0         4LGLTIJ(2,4,3),XXX(30)                                                 ACAL.11
1760                  0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  ACAL.12
1761                  0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)            ACAL.13
1762                  0          DIMENSION XUVR(2484)                                                  ACAL.14
1763                  0          EQUIVALENCE (PPT(1),XUVR(1))                                          ACAL.15
1764                  0          DIMENSION BT(624),DT(3106)                                            ACAL.16
1765                  0          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                   ACAL.17
1766                  0          COMMON/CMN2/X(2812),Y(2013)
1767                  0          EQUIVALENCE (X(4),NI3), (Y(1),IBI)                                    ACAL.19
1768                  0          COMMON/CMN3/BP(624),DA(3106),DB(3106),DC(3106)                        ACAL.20
1769                  0          DIMENSION P(23,27)                                                    ACAL.21
1770                  0          DIMENSION UA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)           ACAL.22
1771                  0          DIMENSION UB(23,27),VB(23,27),WB(23,27),SB(23,27),TB(23,27)           ACAL.23
1772                  0          DIMENSION UC(23,27),VC(23,27),WC(23,27),SC(23,27),TC(23,27)           ACAL.24
1773                  0          EQUIVALENCE (BP(1),DAYX),(BP(2),KDATX),(BP(3),IB),(BP(4),P(1))        ACAL.25
1774                  0          EQUIVALENCE (DA(1),KA),(DA(2),UA(1)),(DA(623),VA(1)),(DA(1244),WA(ACAL.26
1775                  0         11)),(DA(1865),SA(1)),(DA(2486),TA(1))                                 ACAL.27
1776                  0          EQUIVALENCE (DB(1),KB),(DB(2),UB(1)),(DB(623),VB(1)),(DB(1244),WB(ACAL.28
1777                  0         11)),(DB(1865),SB(1)),(DB(2486),TB(1))                                 ACAL.29
1778                  0          EQUIVALENCE (DC(1),KC),(DC(2),UC(1)),(DC(623),VC(1)),(DC(1244),WC(ACAL.30
1779                  0         11)),(DC(1865),SC(1)),(DC(2486),TC(1))                                 ACAL.31
1780                  0    C  ********** ENDING OF DIMENSION CHANGE  **********                         ACAL.32
1781                 10          CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKX) $ CALL REWDTP (NDSKZ)       ACAL.33
1782                 16          CALL REWDTP (NDSKR) $ CALL REWDTP (NDSKW)                             ACAL.34
1783                 21       10 CALL RDBUFL(NDSK5,ID4DB,Y)                                            ACAL.35
1784                 26          CALL RDBUFL (NDSKX,NDIM1,BP)                                          ACAL.36
1785                 33          CALL RDBUFL (NDSKR,IDMDC,XUVR)                                        ACAL.37
1786                 40          KA=0 $ IBT=IB                                                         ACAL.38
1787                 40          CALL BINCPMA (KA,UA,VA,WA,SA,TA)                                      ACAL.39
1788                 52          DAYX=DAYT                                                             ACAL.40
1789                 52          CALL WTBUFL (NDSKZ,NDIM1,BP)                                          ACAL.41
1790                 60          CALL RDBUFL (NDSKX,NDIM2,DB)                                          ACAL.42
1791                 66          IF (KB .NE. KMAX) GO TO 11                                            ACAL.43
1792                 70       9  CALL ZEROBF  (KC,UC,VC,WC,SC,TC)                                      ACAL.44
1793                100          GO TO 12                                                              ACAL.45
1794                100       11 CALL RDBUFL (NDSKX,NDIM2,DC)                                          ACAL.46
1795                106       12 CALL  CMPTA  (      DAYX,P,KA,UA,VA,WA,SA,TA,KB,UB,VB,WB,SB,TB,KC,ACAL.47
1796                106         1UC,VC,WC,SC,TC)                                                    ACAL.48
1797                134          CALL WTBUFL (NDSKZ,NDIM2,DT)                                          ACAL.49
1798                142          IF (KB .EQ. KMAX) GO TO 20                                            ACAL.50
1799                145          IF (KC .NE. KMAX) GO TO 13                                            ACAL.51
1800                147          CALL ZEROBF  (KA,UA,VA,WA,SA,TA)                                      ACAL.52
1801                157          GO TO 14                                                              ACAL.53
1802                157       13 CALL RDBUFL (NDSKX,NDIM2,DA)                                          ACAL.54
1803                165       14 CALL  CMPTA  (      DAYX,P,KB,UB,VB,WB,SB,TB,KC,UC,VC,WC,SC,TC,KA,ACAL.55
1804                165         1UA,VA,WA,SA,TA)                                                    ACAL.56
1805                213          CALL WTBUFL (NDSKZ,NDIM2,DT)                                          ACAL.57
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
1806                221          IF (KC .EQ. KMAX) GO TO 20                                          ACAL.58
1807                224          IF (KA .NE. KMAX) GO TO 15                                          ACAL.59
1808                226          CALL ZERODBF  (KB,UB,VB,WB,SB,TB)                                   ACAL.60
1809                236          GO TO 16                                                            ACAL.61
1810                236       15 CALL RDBUFL (NDSKK,NDIM2,DB)                                        ACAL.62
1811                244       16 CALL  CMPTA  (      DAYX,P,KC,UC,VC,WC,SC,TC,KA,UA,VA,WA,SA,TA,KB,ACAL.63
1812                244          1UB,VB,WB,SB,TB)                                                    ACAL.64
1813                272          CALL WTBUFL (NDSKZ,NDIM2,DT)                                        ACAL.65
1814                300          IF (KA .EQ. KMAX) GO TO 20                                          ACAL.66
1815                303          IF (KB .NE. KMAX) GO TO 11                                          ACAL.67
1816                305          GO TO 9                                                             ACAL.68
1817                305       20 CALL WTBUFL (NDSKW,IDMDC,XUVR)                                      ACAL.69
1818                314          IF (IBI .NE. NIB) GO TO 10                                          ACAL.70
1819                315          RETURN                                                              ACAL.71
1820                315          END                                                                 ACAL.72

        LENGTH OF ROUTINE   ACAL<32      345

        VARIABLE ASSIGNMENTS
NDSKK  -       0     NDSKZ  -       0     NDSKR  -       0     NDSKW  -       0     XUVR   -  10016C 0  BT     -     574C 0
DT     -    1754C 0  P      -      3C 2  JA     -    1161C 2  VA     -    2336C 2  WA     -    3513C 2  SA     -    4670C 2
TA     -    6045C 2  UB     -    7223C 2  VB     -    1040DC 2  WB     -   11555C 2  SB     -   12732C 2  TB     -   14107C 2
UC     -   15265C 2  VC     -   16442C 2  WC     -   17617C 2  SC     -   20774C 2  TC     -   22151C 2  DAYS   -      0C 0
KDAT   -      1C 0  DIFDAY  -      2C 0  DTIME  -      3C 0  DAYEND -      4C 0  MAXI   -      5C 0  IMAX   -      6C 0
JMAX   -      7C 0  KMAX   -     10C 0  IM1    -     11C 0  JM1    -     12C 0  IP1    -     13C 0  JP1    -     14C 0
I1     -     15C 0  J1     -     16C 0  I2     -     17C 0  J2     -     20C 0  I      -     21C 0  J      -     22C 0
K      -     23C 0  NCARD1  -     24C 0  NCARD  -     25C 0  KSYS   -     26C 0  INKD   -     27C 0  INDEX  -     30C 0
ITIL   -     31C 0  NAMX   -     41C 0  NTPD1  -     44C 0  NTPD2  -     45C 0  NAMT   -     46C 0  NTAP   -     62C 0
NRT    -     65C 0  KNR    -     72C 0  NWT    -     76C 0  LDW    -    102C 0  LSTP   -    106C 0  BG     -    112C 0
DUUT   -    115C 0  NDTAP  -    122C 0  ITAP   -    126C 0  MTLAB  -    132C 0  PRTDAY -    442C 0  LDWP   -    443C 0
LPSTP  -    444C 0  LSTDA  -    445C 0  IDMDA  -    446C 0  IDMDB  -    447C 0  IDMDC  -    450C 0  IDMDD  -    451C 0
NDIM   -    452C 0  NDIM1  -    453C 0  NDIM2  -    454C 0  NDSK1  -    455C 0  NDSK2  -    456C 0  NDSK3  -    457C 0
NDSK4  -    460C 0  NDSK5  -    461C 0  NDSK6  -    462C 0  NDSK7  -    463C 0  NDSK8  -    464C 0  MSJN   -    465C 0
MSUI   -    466C 0  LMIN1  -    467C 0  LMIN2  -    470C 0  IBSCAN -    471C 0  MSCAN  -    472C 0  EPSL   -    473C 0
ALPHAR -    474C 0  ALPHA1 -    475C 0  PWGT   -    476C 0  DTIME1 -    477C 0  DTIME2 -    500C 0  MSWP   -    501C 0
MCOUNT -    502C 0  MSLCT  -    503C 0  LGLTIJ -    506C 0  XXX    -    536C 0  DAYT   -    574C 0  KDATT  -    575C 0
IBT    -    576C 0  PT     -    577C 0  KT     -   1754C 0  UT     -   1755C 0  VT     -   3132C 0  WT     -   4307C 0
ST     -   5464C 0  TT     -   6641C 0  PPT    -  10016C 0  RES    -  11173C 0  UTM    -  12350C 0  VTM    -  13525C 0
X      -      0C 1  Y      -   5374C 1  BP     -      0C 2  DA     -   1160C 2  DB     -   7222C 2  DC     -  15264C 2
NIB    -      3C 1  IBI    -   5374C 1  DAYX   -      0C 2  KDATX  -      1C 2  IB     -      2C 2  KA     -   1160C 2
KB     -   7222C 2  KC     -  15264C 2

        SUBROUTINES CALLED
REWDTP    RDBUFL    BINCPMA   WTBUFL    ZERODBF   CMPTA     QBQRSD

        COMMON BLOCKS AND LENGTHS
CMN1   -  14702     CMN2   -  11331     CMN3   -  23326
    COMPILE TIME =    103    MILLISECS
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
1021              0          SUBROUTINE CAPTA (DAYX,   P,KM1,UA,VA,WA,SA,TA,KB,UB,VB,WB,SB,TB, CPTA.2
1022              0         1KP1,UC,VC,WC,SC,TC)                                               CPTA.3
1023              0     C  ========== BEGINING OF DIMENSION CHANGE  ==========                 CPTA.4
1024              0          COMMON  BPT(27,4),BUT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
1025              0         1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
1026              0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,CPTA.5
1027              0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)CPTA.6
1028              0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)CPTA.7
1029              0         3,LSTP(4),BS(4),DOUT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  CPTA.8
1030              0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,CPTA.9
1031              0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANCPTA.10
1032              0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3);CPTA.11
1033              0         4LGLTIJ(2,4,3),XXX(30)                                             CPTA.12
1034              0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, CPTA.13
1035              0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)        CPTA.14
1036              0          DIMENSION XUVR(2484)                                              CPTA.15
1037              0          EQUIVALENCE (PPT(1),XUVR(1))                                      CPTA.16
1038              0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,    CPTA.17
1039              0         1FLONG1,FLONG2,SO,TO,RDO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,   CPTA.18
1040              0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,CPTA.19
1041              0         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITCPTA.20
1042              0         4(10),DZ(10),DZH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   CPTA.21
1043              0         1AUX(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   CPTA.22
1044              0         5CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX( CPTA.23
1045              0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,   CPTA.24
1046              0         8LAN(2),IND(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  CPTA.25
1047              0         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)CPTA.26
1048              0         1,EPD(23,27)
1049              0          DIMENSION P(23,27)                                                CPTA.30
1050              0          DIMENSION UA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)       CPTA.31
1051              0          DIMENSION UB(23,27),VB(23,27),WB(23,27),SB(23,27),TB(23,27)       CPTA.32
1052              0          DIMENSION UC(23,27),VC(23,27),WC(23,27),SC(23,27),TC(23,27)       CPTA.33
1053              0          DIMENSION PP(23,27)                                               CPTA.34
1054              0     C  ********** ENDING OF DIMENSION CHANGE  *****************             CPTA.35
1055              0     C  ****** INPUT PPT(I,J) (INCLUDING BLOCK OVERLAP BOUNDARY) = PT(I,J) DFCPTA.36
1056              0     C  ****** LAST TIME STEP.                                             CPTA.37
1057              0          EQUIVALENCE(XXX(1),AVS),(XXX(2),AVT),(XXX(3),DENSTY),(XXX(4),XFACTCPTA.38
1058              0         1),(XXX(5),AYZT2),(XXX(6),AUXY8),(XXX(7),AXZU2),(XXX(8),ATXY2),    CPTA.39
1059              0         2(XXX(9),UT1),(XXX(10),UT2),(XXX(11),UT3),(XXX(12),UT4),(XXX(13),  CPTA.40
1060              0         3UT12),(XXX(14),VT1),(XXX(15),VT2),(XXX(16),VT3),(XXX(17),VT4),    CPTA.41
1061              0         4(XXX(18),VT12),(XXX(19),AVWA),(XXX(20),AVWB),(XXX(21),PP1),(XXX(22CPTA.42
1062              0         5),PP2),(XXX(23),AYZT4),(XXX(24),AXZU4),(XXX(25),AXZUM4),(XXX(26), CPTA.43
1063              0         6ST1),(XXX(27),ST2),(XXX(28),ST3),(XXX(29),TT1),(XXX(30),TT2)      CPTA.44
1064              0          EQUIVALENCE (EPD(1),PP(1))
1065              0          DATA C1,C2/1.6,0.4/
1066              0     C *** WHERE C1=2.0*C, C2=2.0*(1.0-C) AND C .GE. 0.5, USE C=.8, .7 OR .6
1067              0     C      CALCULATION OF PRESSURE, PP.                                   CPTA.46
1068              0          KT=KB                                                             CPTA.47
1069              7          IF (KB .EQ. 1) GO TO 51                                           CPTA.48
1070             11          DO 50 J=J1,J2                                                     CPTA.49
1071             11          I1=IEF1(J)-1 $ I2=IEF2(J)+1                                       CPTA.50
1072             11          IF (I1 .LT. 1) I1=1  $ IF (I2 .GT. IMAX) I2=IMAX                  CPTA.51
1073             11          DO 50 I=I1,I2                                                     CPTA.52
1074             30          IF (IND(I,J) .EQ. IUNDF) GO TO 50                                 CPTA.53
1075             30          AVS=(SB(I,J)+SA(I,J))*0.5 $ AVT=(TB(I,J)+TA(I,J))*0.5             CPTA.54
1076             30          DENSTY=1.0-ALPHA*(AVT-TO)+B*(AVS-SO)                              CPTA.55
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CARD      APPROXIMATE
NUMBER  PROGRAM LOCATION
1877            30          PP(I,J)=PP(I,J)+DG(KB)*DENSTY                                                    CPTA.56
1878            30      50  CONTINUE                                                                         CPTA.57
1879            65      51  AYZT2=AYZT(KB)*0.5 $ AYZT4=AYZT(KB)*0.25 $ AXZU4=0.0                            CPTA.58
1880            65          DO 100 J=J1,J2                                                                   CPTA.59
1881            65          JP1=J+1 $ JM1=J-1                                                                CPTA.60
1882            65          AUXY8=AUXY(J)*0.125 $ AXZU2=AXZU(J,KB)*0.5                                       CPTA.61
1883            65          AXZUM4=AXZU4 $ AXZU4=AXZU(J,KB)*0.25                                             CPTA.62
1884            65          IF (J .NE. JMAX) XFACT=AXZT(J,KB)-AXZT(JP1,KB)                                   CPTA.63
1885            65          I1=IEF1(J) $ I2=IEF2(J)                                                          CPTA.64
1886            65          DO 100 I=I1,I2                                                                   CPTA.65
1887           124          IP1=I+1 $ IM1=I-1                                                                CPTA.66
1888           124          IF (IND(I,J)) 100,95,80                                                          CPTA.67
1889           124      C   CALCULATION OF (DSJ/DX), (DTU/DX), (DSV/DY), (DTV/DY)                           CPTA.68
1890           124      C  AXZU4=AXZU(J,KB)/4.0 $ AXZUM4=AXZU(J-1,KB)/4.0 $ AYZT4=AYZT(KB)/4.0           CPTA.69
1891           124      80  INDEX=IND(I,J)                                                                   CPTA.70
1892           124          GO TO (81,82,83,84,85,86,87,88,89,90,91,92) INDEX                                CPTA.71
1893           124      81  ST1=((SB(I,J)+SB(IM1,J))* UB(IM1,J)              -(SB(IP1,J)+SB(I,JCPTA.72
1894           124         1))* UB(I,J)            )*AYZT4                                                   CPTA.73
1895           124          TT1=((TB(I,J)+TB(IM1,J))* UB(IM1,J)              -(TB(IP1,J)+TB(I,JCPTA.74
1896           124         1))* UB(I,J)            )*AYZT4                                                   CPTA.75
1897           124          ST2=-(SB(I,JP1)+SB(I,J))*(VB(I,J)+VB(IM1,J))*AXZU4                               CPTA.76
1898           124          TT2=-(TB(I,JP1)+TB(I,J))*(VB(I,J)+VB(IM1,J))*AXZU4                               CPTA.77
1899           124          GO TO 96                                                                         CPTA.78
1900           124      82  ST1=-(SB(IP1,J)+SB(I,J))*(UB(I,J)+UB(I,JM1))*AYZT4                              CPTA.79
1901           124          TT1=-(TB(IP1,J)+TB(I,J))*(UB(I,J)+UB(I,JM1))*AYZT4                              CPTA.80
1902           124          ST2=(SB(I,J)+SB(I,JM1))* VB(I,JM1)             *AXZUM4-(SB(I,JP1)+CPTA.81
1903           124         1SB(I,J))* VB(I,J)           *AXZU4                                               CPTA.82
1904           124          TT2=(TB(I,J)+TB(I,JM1))* VB(I,JM1)             *AXZUM4-(TB(I,JP1)+CPTA.83
1905           124         1TB(I,J))* VB(I,J)           *AXZU4                                               CPTA.84
1906           124          GO TO 96                                                                         CPTA.85
1907           124      83  ST1=-(SB(IP1,J)+SB(I,J))*UB(I,J)*AYZT4                                          CPTA.86
1908           124          TT1=-(TB(IP1,J)+TB(I,J))*UB(I,J)*AYZT4                                          CPTA.87
1909           124          ST2=-(SB(I,JP1)+SB(I,J))*VB(I,J)*AXZU4                                          CPTA.88
1910           124          TT2=-(TB(I,JP1)+TB(I,J))*VB(I,J)*AXZU4                                          CPTA.89
1911           124          GO TO 96                                                                         CPTA.90
1912           124      84  ST1=((SB(I,J)+SB(IM1,J))*           UB(IM1,JM1) -(SB(IP1,J)+SB(I,JCPTA.91
1913           124         1))*(UB(I,J)+UB(I,JM1)))*AYZT4                                                   CPTA.92
1914           124          TT1=((TB(I,J)+TB(IM1,J))*           UB(IM1,JM1) -(TB(IP1,J)+TB(I,JCPTA.93
1915           124         1))*(UB(I,J)+UB(I,JM1)))*AYZT4                                                   CPTA.94
1916           124          ST2=(SB(I,J)+SB(I,JM1))*(VB(I,JM1)+VB(IM1,JM1))*AXZUM4-(SB(I,JP1)+CPTA.95
1917           124         1SB(I,J))* VB(I,J)*AXZU4                                                         CPTA.96
1918           124          TT2=(TB(I,J)+TB(I,JM1))*(VB(I,JM1)+VB(IM1,JM1))*AXZUM4-(TB(I,JP1)+CPTA.97
1919           124         1TB(I,J))* VB(I,J)*AXZU4                                                         CPTA.98
1920           124          GO TO 96                                                                         CPTA.99
1921           124      85  ST1=((SB(I,J)+SB(IM1,J))* UB(IM1,J)              -(SB(IP1,J)+SB(I,JCPTA.100
1922           124         1))*(UB(I,J)+UB(I,JM1)))*AYZT4                                                   CPTA.101
1923           124          TT1=((TB(I,J)+TB(IM1,J))* UB(IM1,J)              -(TB(IP1,J)+TB(I,JCPTA.102
1924           124         1))*(UB(I,J)+UB(I,JM1)))*AYZT4                                                   CPTA.103
1925           124          ST2=(SB(I,J)+SB(I,JM1))* VB(I,JM1)             *AXZUM4-(SB(I,JP1)+CPTA.104
1926           124         1SB(I,J))*(VB(I,J)+VB(IM1,J))*AXZU4                                              CPTA.105
1927           124          TT2=(TB(I,J)+TB(I,JM1))* VB(I,JM1)             *AXZUM4-(TB(I,JP1)+CPTA.106
1928           124         1TB(I,J))*(VB(I,J)+VB(IM1,J))*AXZU4                                              CPTA.107
1929           124          GO TO 96                                                                         CPTA.108
1930           124      86  ST1=((SB(I,J)+SB(IM1,J))*(UB(IM1,J)+UB(IM1,JM1))-(SB(IP1,J)+SB(I,JCPTA.109
1931           124         1))* UB(I,J))*AYZT4                                                               CPTA.110
1932           124          TT1=((TB(I,J)+TB(IM1,J))*(UB(IM1,J)+UB(IM1,JM1))-(TB(IP1,J)+TB(I,JCPTA.111
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APPROXIMATE
PROGRAM LOCATION
      124          1))* UB(I,J))*AYZT4                                                                CPTA.112
      124           ST2=(SB(I,J)+SB(I,JM1))*           VB(IM1,JM1) *AXZUM4-(SB(I,JP1)+CPTA.113
      124          1SB(I,J))*(VB(I,J)+VB(IM1,J))*AXZU4                                               CPTA.114
      124           TT2=(TB(I,J)+TB(I,JM1))*           VB(IM1,JM1) *AXZUM4-(TB(I,JP1)+CPTA.115
      124          1TB(I,J))*(VB(I,J)+VB(IM1,J))*AXZU4                                               CPTA.116
      124           GO TO 96                                                                          CPTA.117
      124       87  ST1=((SB(I,J)+SB(IM1,J))*            UB(IM1,JM1) -(SB(IP1,J)+SB(I,JCPTA.118
      124          1))*          JB(I,JM1) )*AYZT4                                                    CPTA.119
      124           TT1=((TB(I,J)+TB(IM1,J))*            UB(IM1,JM1) -(TB(IP1,J)+TB(I,JCPTA.120
      124          1))*          JB(I,JM1) )*AYZT4                                                    CPTA.121
      124           ST2=(SB(I,J)+SB(I,JM1))*(VB(I,JM1)+VB(IM1,JM1))*AXZUM4                            CPTA.122
      124           TT2=(TB(I,J)+TB(I,JM1))*(VB(I,JM1)+VB(IM1,JM1))*AXZUM4                            CPTA.123
      124           GO TO 96                                                                          CPTA.124
      124       88  ST1= (SB(I,J)+SB(IM1,J))*(UB(IM1,J)+UB(IM1,JM1))*AYZT4                            CPTA.125
      124           TT1= (TB(I,J)+TB(IM1,J))*(UB(IM1,J)+UB(IM1,JM1))*AYZT4                            CPTA.126
      124           ST2=(SB(I,J)+SB(I,JM1))*           VB(IM1,JM1) *AXZUM4-(SB(I,JP1)+CPTA.127
      124          1SB(I,J))*          VB(IM1,J) *AXZU4                                              CPTA.128
      124           TT2=(TB(I,J)+TB(I,JM1))*           VB(IM1,JM1) *AXZUM4-(TB(I,JP1)+CPTA.129
      124          1TB(I,J))*          VB(IM1,J) *AXZU4                                              CPTA.130
      124           GO TO 96                                                                          CPTA.131
      124       89  ST1=-(SB(IP1,J)+SB(I,J))*UB(I,JM1)*AYZT4                                          CPTA.132
      124           TT1=-(TB(IP1,J)+TB(I,J))*UB(I,JM1)*AYZT4                                          CPTA.133
      124           ST2=(SB(I,J)+SB(I,JM1))* VB(I,JM1)*AXZUM4                                         CPTA.134
      124           TT2=(TB(I,J)+TB(I,JM1))* VB(I,JM1)*AXZUM4                                         CPTA.135
      124           GO TO 96                                                                          CPTA.136
      124       90  ST1= (SB(I,J)+SB(IM1,J))* UB(IM1,J)*AYZT4                                         CPTA.137
      124           TT1= (TB(I,J)+TB(IM1,J))* UB(IM1,J)*AYZT4                                         CPTA.138
      124           ST2=-(SB(I,JP1)+SB(I,J))*VB(IM1,J)*AXZU4                                          CPTA.139
      124           TT2=-(TB(I,JP1)+TB(I,J))*VB(IM1,J)*AXZU4                                          CPTA.140
      124           GO TO 96                                                                          CPTA.141
      124       91  ST1= (SB(I,J)+SB(IM1,J))*UB(IM1,JM1)*AYZT4                                        CPTA.142
      124           TT1= (TB(I,J)+TB(IM1,J))*UB(IM1,JM1)*AYZT4                                        CPTA.143
      124           ST2=(SB(I,J)+SB(I,JM1))*VB(IM1,JM1)*AXZUM4                                        CPTA.144
      124           TT2=(TB(I,J)+TB(I,JM1))*VB(IM1,JM1)*AXZUM4                                        CPTA.145
      124           GO TO 96                                                                          CPTA.146
      124       92  ST1=((SB(I,J)+SB(IM1,J))*(UB(IM1,J)+UB(IM1,JM1))-(SB(IP1,J)+SB(I,JCPTA.147
      124          1))*          JB(I,JM1)) *AYZT4                                                    CPTA.148
      124           TT1=((TB(I,J)+TB(IM1,J))*(UB(IM1,J)+UB(IM1,JM1))-(TB(IP1,J)+TB(I,JCPTA.149
      124          1))*          JB(I,JM1)) *AYZT4                                                    CPTA.150
      124           ST2=(SB(I,J)+SB(I,JM1))*(VB(I,JM1)+VB(IM1,JM1))*AXZUM4-(SB(I,JP1)+CPTA.151
      124          1SB(I,J))*          VB(IM1,J) *AXZU4                                              CPTA.152
      124           TT2=(TB(I,J)+TB(I,JM1))*(VB(I,JM1)+VB(IM1,JM1))*AXZUM4-(TB(I,JP1)+CPTA.153
      124          1TB(I,J))*          VB(IM1,J) *AXZU4                                              CPTA.154
      124           GO TO 96                                                                          CPTA.155
      124       95  ST1=((SB(I,J)+SB(IM1,J))*(UB(IM1,J)+UB(IM1,JM1))-(SB(IP1,J)+SB(I,JCPTA.156
      124          1))*(UB(I,J)+JB(I,JM1)))*AYZT4                                                    CPTA.157
      124           TT1=((TB(I,J)+TB(IM1,J))*(UB(IM1,J)+UB(IM1,JM1))-(TB(IP1,J)+TB(I,JCPTA.158
      124          1))*(UB(I,J)+JB(I,JM1)))*AYZT4                                                    CPTA.159
      124           ST2=(SB(I,J)+SB(I,JM1))*(VB(I,JM1)+VB(IM1,JM1))*AXZUM4-(SB(I,JP1)+CPTA.160
      124          1SB(I,J))*(VB(I,J)+VB(IM1,J))*AXZU4                                               CPTA.161
      124           TT2=(TB(I,J)+TB(I,JM1))*(VB(I,JM1)+VB(IM1,JM1))*AXZUM4-(TB(I,JP1)+CPTA.162
      124          1TB(I,J))*(VB(I,J)+VB(IM1,J))*AXZU4                                               CPTA.163
      124     C     CALCULATION OF (DSW/DZ) AND (DTW/DZ)                                              CPTA.164
      124       96  ATXY2=ATXY(I,J)*0.5                                                               CPTA.165
      124           ST3=((SB(I,J)+SC(I,J))*WB(I,J)-(SB(I,J)+SA(I,J))*WA(I,J))*ATXY2                   CPTA.166
      124           TT3=((TB(I,J)+TC(I,J))*WB(I,J)-(TB(I,J)+TA(I,J))*WA(I,J))*ATXY2                   CPTA.167
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
1989                124          ST(I,J)=ST1+ST2+ST3 $ TT(I,J)=TT1+TT2+TT3                                  CPTA.168
1990                124          IF (IND(I,J) .GT. 6) GO TO 100                                             CPTA.169
1991                124    C     CALCULATION OF NON-LINEAR TERMS, UT1, VT1.                                 CPTA.170
1992                124    C     XFACT=AXZT(J,K)-AXZT(JP1,K)                                                CPTA.171
1993                124          XFACTU=XFACT*UB(I,J)                                                       CPTA.172
1994                124          JT2=VB(I,J)*XFACTU $ VT2=-UB(I,J)*XFACTU                                   CPTA.173
1995                124    C  *********UT1, VT1 RESERVED FOR NON-LINEAR TERMS                                CPTA.174
1996                124    C     JT12=JT1+JT2 $ VT12=VT1+VT2                                                CPTA.175
1997                124    C     JTM(I,J)=UTM(I,J)+JT12 $ VTM(I,J)=VTM(I,J)+VT12                            CPTA.176
1998                124          UTM(I,J)=UTM(I,J)+JT2  $ VTM(I,J)=VTM(I,J)+VT2                             CPTA.177
1999                124    C     CALCULATION OF (DUW/DZ) AND (DVW/DZ)                                       CPTA.178
2000                124    C     AUXY8=AUXY(J)/8.0                                                          CPTA.179
2001                124          AVWB=WB(I,J)+WB(I,JP1)+WB(IP1,JP1)+WB(IP1,J)                               CPTA.180
2002                124          AVWA=WA(I,J)+WA(I,JP1)+WA(IP1,JP1)+WA(IP1,J)                               CPTA.181
2003                124          UT3=((UB(I,J)+UC(I,J))*AVWB-(UB(I,J)+UA(I,J))*AVWA)*AUXY8                  CPTA.182
2004                124          VT3=((VB(I,J)+VC(I,J))*AVWB-(VB(I,J)+VA(I,J))*AVWA)*AUXY8                  CPTA.183
2005                124    C     AYZT2=AYZT(KB)/2.0 $ AXZU2=AXZU(J,KB)/2.0                                  CPTA.184
2006                124    C     CALCULATION OF (DPRS/DX) AND (DPRS/DY), PRS=PRESSURE.                      CPTA.185
2007                124          PP1=PP(I,JP1)-PP(IP1,J) $ PP2=PP(I,J)-PP(IP1,JP1)                          CPTA.186
2008                124          UT4=(PP2+PP1)*AYZT2 $ VT4=(PP2-PP1)*AXZU2                                  CPTA.187
2009                124    C     JT(I,J)=UT12+UT3+JT4 $ VT(I,J)=VT12+VT3+VT4                                CPTA.188
2010                124          JT(I,J)=UT2 +UT3+JT4 $ VT(I,J)=VT2 +VT3+VT4                               CPTA.189
2011                124     100  CONTINUE                                                                   CPTA.190
2012               1046          IF (IBI .EQ. NIB) GO TO 104                                                CPTA.191
2013               1046    C **FOR IBI .NE. NIB                                                             CPTA.192
2014               1046    C **STORE UB(II,J),VB(II,J) FOR ALL J, IN BUT(J,IB+1,KB), BVT(J,IB+1,KB)         CPTA.193
2015               1046    C **TO BE USED IN SUBROUTINE NONLIN. (WHERE II=IMEF2-1)                          CPTA.194
2016               1050          IBP1=IBI+1 $ I=IMEF2-1                                                     CPTA.195
2017               1053          DO 120 J=1,JMAX                                                            CPTA.196
2018               1053          BUT(J,IBP1,KB)=UB(I,J) $ BVT(J,IBP1,KB)=VB(I,J)                            CPTA.197
2019               1053     120  CONTINUE                                                                   CPTA.198
2020               1074     104  IF (KB .NE. KMAX) RETURN                                                   CPTA.199
2021               1076          DO 110 J=J1,J2                                                             CPTA.200
2022               1076          JP1=J+1 $ JM1=J-1                                                          CPTA.201
2023               1076          I1=IEF1(J) $ I2=IEF2(J)                                                    CPTA.202
2024               1076          DO 110 I=I1,I2                                                             CPTA.203
2025               1103          IF (IND(I,J)) 110,106,105                                                  CPTA.204
2026               1103     105  RES(I,J)=0.0                                                               CPTA.205
2027               1103          GO TO 110                                                                  CPTA.206
2028               1103     106  IP1=I+1 $ IM1=I-1                                                          CPTA.207
2029               1103          RES(I,J)=PPT(IP1,J)+PPT(IM1,J)+PPT(I,JP1)+PPT(I,JM1)-PPT(I,J)*PWGTCPTA.208
2030               1103          RES(I,J)=RES(I,J)+(C1*(P(IP1,J)-P(I,J))+C2*(P(I,J)-P(IM1,J)))*BETA
2031                              1(J)
2032               1103     110  CONTINUE                                                                   CPTA.210
2033               1163          RETURN                                                                     CPTA.211
2034               1164          END                                                                        CPTA.212

        LENGTH OF ROUTINE   CMPTA       1643

        VARIABLE ASSIGNMENTS
DAYX  -      0    P     -      0    K41   -      0    UA    -      0    VA    -      0    WA    -      0
SA    -      0    TA    -      0    KB    -      0    UB    -      0    VB    -      0    WB    -      0
SB    -      0    TB    -      0    KP1   -      0    UC    -      0    VC    -      0    WC    -      0
SC    -      0    TC    -      0    XUVR  -  10016C 1  PP    -  10154C 2  BPT   -     0C 0  BUT   -    154C 0
BVT   -  2244C 0  BST   -  4334C 0  BTT   -  6424C 0  BUTM  -  10514C 0  BVTM  -  10670C 0  BPTEP -  11044C 0
DAYS  -     0C 1  KDAT  -     1C 1  DIFDAY -     2C 1  DTIME -     3C 1  DAYEND -     4C 1  MAXI  -     5C 1
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IMAX   -      6C 1  JMAX   -      7C 1  KMAX   -     10C 1  IM1    -     11C 1  JM1    -     12C 1  IP1    -     13C 1
JP1    -     14C 1  I1     -     15C 1  J1     -     16C 1  I2     -     17C 1  J2     -     20C 1  I      -     21C 1
J      -     22C 1  K      -     23C 1  NCARD1 -     24C 1  NCARD  -     25C 1  KSYB   -     26C 1  INKD   -     27C 1
INDEX  -     30C 1  ITIL   -     31C 1  NAMX   -     41C 1  NTPO1  -     44C 1  NTPO2  -     45C 1  NAMT   -     46C 1
NTAP   -     62C 1  NRT    -     55C 1  KNR    -     72C 1  MWT    -     76C 1  LDW    -    102C 1  LSTP   -    106C 1
BG     -    112C 1  DOUT   -    116C 1  NOTAP  -    122C 1  ITAP   -    126C 1  MTLAB  -    132C 1  PRTDAY -    442C 1
LDWP   -    443C 1  LPSTP  -    444C 1  LSTDA  -    445C 1  IDMDA  -    446C 1  IDMDB  -    447C 1  IDMDC  -    450C 1
IDMDD  -    451C 1  NDIM   -    452C 1  NDIM1  -    453C 1  NDIM2  -    454C 1  NDSK1  -    455C 1  NDSK2  -    456C 1
NDSK3  -    457C 1  NDSK4  -    460C 1  NDSK5  -    461C 1  NDSK6  -    462C 1  NDSK7  -    463C 1  NDSK8  -    464C 1
MSUN   -    465C 1  MSUI   -    466C 1  LMIN1  -    467C 1  LMIN2  -    470C 1  IBSCAN -    471C 1  MSCAN  -    472C 1
EPSL   -    473C 1  ALPHAR -    474C 1  ALPHA1 -    475C 1  PWGT   -    476C 1  DTIME1 -    477C 1  DTIME2 -    500C 1
MSWP   -    501C 1  MCOUNT -    502C 1  MSLCT  -    503C 1  LGLTIJ -    506C 1  XXX    -    536C 1  DAYT   -    574C 1
KDATT  -    575C 1  IBT    -    576C 1  PT     -    577C 1  KT     -   1754C 1  UT     -   1755C 1  VT     -   3132C 1
KT     -   4307C 1  ST     -   5464C 1  TT     -   6641C 1  PPT    -  10016C 1  RES    -  11173C 1  UTM    -  12350C 1
VTM    -  13525C 1  DAYB   -     0C 2  KDATB  -     1C 2  IMAXT  -     2C 2  NIB    -     3C 2  NIBT   -     4C 2
IUNDF  -      5C 2  RUNDF  -     6C 2  FLAT1  -     7C 2  FLAT2  -    10C 2  FLONG1 -    11C 2  FLONG2 -    12C 2
SO     -     13C 2  TO     -    14C 2  RDO    -    15C 2  ALPHA  -    16C 2  B      -    17C 2  HEATC  -    20C 2
PI     -     21C 2  RE     -    22C 2  G      -    23C 2  VISY   -    24C 2  SVISY  -    25C 2  TVISY  -    26C 2
VISZ   -     27C 2  SVISZ  -    30C 2  TVISZ  -    31C 2  POWER  -    32C 2  TAREA  -    33C 2  JAREA  -    34C 2
TVOL   -     35C 2  UVOL   -    36C 2  TKK    -    37C 2  CSTQ   -    40C 2  CSTE   -    41C 2  SECDAY -    42C 2
DXT    -     43C 2  DXJ    -    76C 2  RDXU2  -   131C 2  DYT    -   164C 2  DYU    -   165C 2  RDYU2  -   166C 2
EPSSK  -    167C 2  EPSTK  -   201C 2  RDCRIT -   213C 2  DZ     -   225C 2  DZMH   -   237C 2  Z      -   251C 2
DEPTH  -    263C 2  BETA   -   264C 2  F      -   317C 2  DG     -   352C 2  AYZT   -   364C 2  AUXY   -   376C 2
AXZT   -    431C 2  AXZU   -  1047C 2  AX     -  1465C 2  AY     -  2103C 2  AZ     -  2521C 2  CSX    -  3137C 2
CSY    -   3555C 2  CSZ    -  4173C 2  CTX    -  4205C 2  CTY    -  4623C 2  CTZ    -  5241C 2  VISX   -  5253C 2
SVISX  -   5305C 2  TVISX  -  5341C 2  IBI    -  5374C 2  IMX    -  5375C 2  IMEF1  -  5376C 2  IMEF2  -  5377C 2
JMX    -   5400C 2  JMEF1  -  5401C 2  JMEF2  -  5402C 2  LAN    -  5403C 2  ING    -  5405C 2  INDBL  -  5407C 2
INDBR  -   5442C 2  LSBY   -  5475C 2  IEF1   -  5524C 2  IEF2   -  5557C 2  IND    -  5612C 2  AREAT  -  6767C 2
AREAJ  -   6770C 2  VOLT   -  6771C 2  VOLU   -  6772C 2  AREATB -  6773C 2  AREAUB -  6774C 2  VOLTB  -  6775C 2
VOLUB  -   6776C 2  ATXY   -  6777C 2  EPD    - 10154C 2  AVS    -   536C 1  AVT    -   537C 1  DENSTY -   540C 1
XFACT  -    541C 1  AYZT2  -   542C 1  AUXYB  -   543C 1  AXZU2  -   544C 1  ATXY2  -   545C 1  UT1    -   546C 1
UT2    -    547C 1  UT3    -   550C 1  UT4    -   551C 1  UT12   -   552C 1  VT1    -   553C 1  VT2    -   554C 1
VT3    -    555C 1  VT4    -   556C 1  VT12   -   557C 1  AVWA   -   560C 1  AVWB   -   561C 1  PP1    -   562C 1
PP2    -    563C 1  AYZT4  -   564C 1  AXZU4  -   565C 1  AXZUM4 -   566C 1  ST1    -   567C 1  ST2    -   570C 1
ST3    -    571C 1  TT1    -   572C 1  TT2    -   573C 1  C1     -     0    C2     -     1    TT3    -  1175
XFACTJ -   1174     IBP1   -  1173

        SUBROUTINES CALLED
SORSD

        COMMON BLOCKS AND LENGTHS
      -  11220     CMN1   -  14702     CMN2   -  11331
   COMPILE TIME =     858    MILLISECS
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
2035                0          SUBROUTINE BINCPMA (KA,JA,VA,WA,SA,TA)                                  BINA.2
2036                0      C   ========== BEGINING OF DIMENSION CHANGE  ==========                     BINA.3
2037                0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,BINA.4
2038                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(3)BINA.5
2039                0         2,NAMX(3),NTPO1,NTPO2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)BINA.6
2040                0         3,LSTP(4),BG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  BINA.7
2041                0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,BINA.8
2042                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANBINA.9
2043                0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),BINA.10
2044                0         4LGLTIJ(2,4,3),XXX(30)                                                  BINA.11
2045                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  BINA.12
2046                0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)             BINA.13
2047                0          DIMENSION XUVR(2484)                                                   BINA.14
2048                0          EQUIVALENCE (PPT(1),XUVR(1))                                           BINA.15
2049                0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,    BINA.16
2050                0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    BINA.17
2051                0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,BINA.18
2052                0         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITBINA.19
2053                0         4(10),DZ(10),DZ4H(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   BINA.20
2054                0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   BINA.21
2055                0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  BINA.22
2056                0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    BINA.23
2057                0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),INDI  BINA.24
2058                0         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)BINA.25
2059                0         1,EPD(23,27)
2060                0          DIMENSION JA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)            BINA.27
2061                0          DIMENSION PP(23,27)                                                    BINA.28
2062                0      C   ********** ENDING OF DIMENSION CHANGE  ****************                BINA.29
2063                0          EQUIVALENCE (EPD(1),PP(1))
2064                0          KDATT=KDAT                                                             BINA.31
2065                2          DO 110 J=J1,J2                                                         BINA.32
2066                2          DO 110 I=1,IMAX                                                        BINA.33
2067                4          IF (IND(I,J) .EQ. IUNDF) GO TO 110                                     BINA.34
2068                4          PP(I,J)=0.0                                                            BINA.35
2069                4          IF (IND(I,J) .LT. 0 .OR. IND(I,J) .GT. 6) GO TO 110                    BINA.36
2070                4          UTM(I,J)=VTM(I,J)=0.0                                                  BINA.37
2071                4      110 CONTINUE                                                               BINA.38
2072               33          CALL ZEROBF (KA,JA,VA,WA,SA,TA)                                        BINA.39
2073               44          RETURN                                                                 BINA.40
2074               44          END                                                                    BINA.41

          LENGTH OF ROUTINE - BINCPMA       62

          VARIABLE ASSIGNMENTS
KA     -      0     UA     -      0     VA     -      0     WA     -      0     SA     -      0     TA     -      0
XUVR   -  10016C 0  PP     -  10154C 1  DAYS   -     0C 0  KDAT   -     1C 0  DIFDAY -     2C 0  DTIME  -     3C 0
DAYEND -     4C 0  MAXI   -     5C 0  IMAX   -     6C 0  JMAX   -     7C 0  KMAX   -    10C 0  IM1    -    11C 0
JM1    -    12C 0  IP1    -    13C 0  JP1    -    14C 0  I1     -    15C 0  J1     -    16C 0  I2     -    17C 0
J2     -    20C 0  I      -    21C 0  J      -    22C 0  K      -    23C 0  NCARD1 -    24C 0  NCARD  -    25C 0
KSYB   -    26C 0  INKD   -    27C 0  INDEX  -    30C 0  ITIL   -    31C 0  NAMX   -    41C 0  NTPO1  -    44C 0
NTPO2  -    45C 0  NAMT   -    46C 0  NTAP   -    62C 0  NRT    -    66C 0  KNR    -    72C 0  MWT    -    76C 0
LDW    -   102C 0  LSTP   -   106C 0  BG     -   112C 0  DOUT   -   116C 0  NOTAP  -   122C 0  ITAP   -   126C 0
MTLAB  -   132C 0  PRTDAY -   442C 0  LDWP   -   443C 0  LPSTP  -   444C 0  LSTDA  -   445C 0* IDMDA  -   446C 0
IDMDB  -   447C 0  IDMDC  -   450C 0  IDMDD  -   451C 0  NDIM   -   452C 0  NDIM1  -   453C 0  NDIM2  -   454C 0
NDSK1  -   455C 0  NDSK2  -   456C 0  NDSK3  -   457C 0  NDSK4  -   460C 0  NDSK5  -   461C 0  NDSK6  -   462C 0
NDSK7  -   463C 0  NDSK8  -   464C 0  MSUN   -   465C 0  MSUI   -   466C 0  LMIN1  -   467C 0  LMIN2  -   470C 0
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IBSCAN -    471C 0  MSCAN  -    472C 0  EPSL   -    473C 0  ALPHAR -    474C 0  ALPHA1 -    475C 0  PWGT   -    476C 0
DTIME1 -    477C 0  DTIME2 -    500C 0  MSWP   -    501C 0  MCOUNT -    502C 0  MSLCT  -    503C 0  LGLTIJ -    506C 0
XXX    -    535C 0  DAYT   -    574C 0  KDATT  -    575C 0  IBT    -    576C 0  PT     -    577C 0  KT     -   1754C 0
JT     -   1755C 0  VT     -   3132C 0  WT     -   4307C 0  ST     -   5464C 0  TT     -   6641C 0  PPT    -  10016C 0
RES    -  11173C 0  UTM    -  12350C 0  VTM    -  13525C 0  DAYB   -     0C 1  KDATB  -     1C 1  IMAXT  -     2C 1
NIB    -     3C 1  NIBT   -     4C 1  IUNDF  -     5C 1  RUNDF  -     6C 1  FLAT1  -     7C 1  FLAT2  -    10C 1
FLONG1 -    11C 1  FLONG2 -    12C 1  SO     -    13C 1  TO     -    14C 1  RUO    -    15C 1  ALPHA  -    16C 1
B      -    17C 1  HEATC  -    20C 1  PI     -    21C 1  RE     -    22C 1  G      -    23C 1  VISY   -    24C 1
SVISY  -    25C 1  TVISY  -    26C 1  VISZ   -    27C 1  SVISZ  -    30C 1  TVISZ  -    31C 1  POWER  -    32C 1
TAREA  -    33C 1  UAREA  -    34C 1  TVOL   -    35C 1  UVOL   -    36C 1  TKK    -    37C 1  CSTQ   -    40C 1
CSTE   -    41C 1  SECDAY -    42C 1  DXT    -    43C 1  DXU    -    76C 1  RDXU2  -   131C 1  DYT    -   164C 1
DYJ    -   165C 1  RDYJ2  -   166C 1  EPSSK  -   167C 1  EPSTK  -   201C 1  RDCRIT -   213C 1  DZ     -   225C 1
DZMH   -   237C 1  Z      -   251C 1  DEPTH  -   263C 1  BETA   -   264C 1  F      -   317C 1  DG     -   352C 1
AYZT   -   364C 1  AJXY   -   376C 1  AXZT   -   431C 1  AXZU   -  1047C 1  AX     -  1465C 1  AY     -  2103C 1
AZ     -  2521C 1  CSX    -  3137C 1  CSY    -  3555C 1  CSZ    -  4173C 1  CTX    -  4205C 1  CTY    -  4623C 1
CTZ    -  5241C 1  VISX   -  5253C 1  SVISX  -  5305C 1  TVISX  -  5341C 1  IBI    -  5374C 1  IMX    -  5375C 1
IMEF1  -  5376C 1  IMEF2  -  5377C 1  JMX    -  5400C 1  JMEF1  -  5401C 1  JMEF2  -  5402C 1  LAN    -  5403C 1
IMG    -  5405C 1  INDBL  -  5407C 1  INDBR  -  5442C 1  LSBY   -  5475C 1  IEF1   -  5524C 1  IEF2   -  5557C 1
IND    -  5612C 1  AREAT  -  6757C 1  AREAU  -  6770C 1  VOLT   -  6771C 1  VOLU   -  6772C 1  AREATB -  6773C 1
AREAJB -  6774C 1  VOLT3  -  6775C 1  VOLUB  -  6776C 1  ATXY   -  6777C 1  EPD    - 10154C 1

        SUBROUTINES CALLED
ZERODF    QBORSD

        COMMON BLOCKS AND LENGTHS
CMN1   -  14702     CMN2   -  11331
    COMPILE TIME =     65    MILLISECS
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
2075                  0          SUBROUTINE ZEROBF (KA,UA,VA,WA,SA,TA)                                    ZROF.2
2076                  0    C  ========== BEGINING OF DIMENSION CHANGE  ==========                         ZROF.3
2077                  0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,ZROF.4
2078                  0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)ZROF.5
2079                  0         2,NAMX(3),NTPO1,NTPO2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)ZROF.6
2080                  0         3,LSTP(4),BG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  ZROF.7
2081                  0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,ZROF.8
2082                  0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANZROF.9
2083                  0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),ZROF.10
2084                  0         4LGLTIJ(2,4,3),XXX(30)                                                   ZROF.11
2085                  0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, ZROF.12
2086                  0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)              ZROF.13
2087                  0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     ZROF.14
2088                  0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    ZROF.15
2089                  0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTO,CSTE,SECDAY,ZROF.16
2090                  0         3DXT(27),DXJ(27),RDXJ2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),ROCRITZROF.17
2091                  0         4(10),DZ(10),DZMH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   ZROF.18
2092                  0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   ZROF.19
2093                  0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  ZROF.20
2094                  0         727),SVISX(27),TVISX(27),    IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,   ZROF.21
2095                  0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  ZROF.22
2096                  0         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)ZROF.23
2097                  0         1,EPD(23,27)
2098                  0          DIMENSION UA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)              ZROF.25
2099                  0          DO 120 J=J1,J2                                                          ZROF.26
2100                  2          I1=IEF1(J)-1 $ I2=IEF2(J)+1                                             ZROF.27
2101                  2          IF (I1 .LT. 1) I1=1                                                     ZROF.28
2102                  2          IF (I2 .GT. IMAX) I2=IMAX                                               ZROF.29
2103                  2          DO 120 I=I1,I2                                                          ZROF.30
2104                 20      111  IF (IND(I,J) .EQ. IUNDF) GO TO 120                                     ZROF.31
2105                 20           WA(I,J)=SA(I,J)=TA(I,J)=0.0                                             ZROF.32
2106                 20      113  IF (IND(I,J) .GT. 6) GO TO 120                                          ZROF.33
2107                 20      114  UA(I,J)=VA(I,J)=0.0                                                     ZROF.34
2108                 20      120  CONTINUE                                                                ZROF.35
2109                 46           RETURN                                                                  ZROF.36
2110                 47           END                                                                     ZROF.37

          LENGTH OF ROUTINE   ZEROBF        64

          VARIABLE ASSIGNMENTS
KA      -       0     UA      -       0     VA      -       0     WA      -       0     SA      -       0     TA      -       0
DAYS    -      0C 0   KDAT    -      1C 0   DIFDAY  -      2C 0   DTIME   -      3C 0   DAYEND  -      4C 0   MAXI    -      5C 0
IMAX    -      6C 0   JMAX    -      7C 0   KMAX    -     10C 0   IM1     -     11C 0   JM1     -     12C 0   IP1     -     13C 0
JP1     -     14C 0   I1      -     15C 0   J1      -     16C 0   I2      -     17C 0   J2      -     20C 0   I       -     21C 0
J       -     22C 0   K       -     23C 0   NCARD1  -     24C 0   NCARD   -     25C 0   KSYB    -     26C 0   INKD    -     27C 0
INDEX   -     30C 0   ITIL    -     31C 0   NAMX    -     41C 0   NTPO1   -     44C 0   NTPO2   -     45C 0   NAMT    -     46C 0
NTAP    -     62C 0   NRT     -     66C 0   KNR     -     72C 0   MWT     -     76C 0   LDW     -    102C 0   LSTP    -    106C 0
BG      -    112C 0   DOUT    -    116C 0   NOTAP   -    122C 0   ITAP    -    126C 0   MTLAB   -    132C 0   PRTDAY  -    442C 0
LDWP    -    443C 0   LPSTP   -    444C 0   LSTDA   -    445C 0   IDMDA   -    446C 0   IDMDB   -    447C 0   IDMDC   -    450C 0
IDMDD   -    451C 0   NDIM    -    452C 0   NDIM1   -    453C 0   NDIM2   -    454C 0   NDSK1   -    455C 0   NDSK2   -    456C 0
NDSK3   -    457C 0   NDSK4   -    460C 0   NDSK5   -    461C 0   NDSK6   -    462C 0   NDSK7   -    463C 0   NDSK8   -    464C 0
MSUN    -    465C 0   MSUI    -    466C 0   LMIN1   -    467C 0   LMIN2   -    470C 0   IBSCAN  -    471C 0   MSCAN   -    472C 0
EPSL    -    473C 0   ALPHAR  -    474C 0   ALPHA1  -    475C 0   PWGT    -    476C 0   DTIME1  -    477C 0   DTIME2  -    500C 0
MSWP    -    501C 0   MCOUNT  -    502C 0   MSLCT   -    503C 0   LGLTIJ  -    506C 0   XXX     -    536C 0   DAYT    -    574C 0
KDATT   -    575C 0   IBT     -    576C 0   PT      -    577C 0   KT      -   1754C 0   UT      -   1755C 0   VT      -   3132C 0
WT      -   4307C 0   ST      -   5464C 0   TT      -   6641C 0   PPT     -  10016C 0   RES     -  11173C 0   UTM     -  12350C 0
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VTM     -  13525C 0  DAYB    -      0C 1  KDATB   -      1C 1  IMAXT   -      2C 1  NIB     -      3C 1  NIBT    -      4C 1
IUNDF   -      5C 1  RUNDF   -      6C 1  FLAT1   -      7C 1  FLAT2   -     10C 1  FLONG1  -     11C 1  FLONG2  -     12C 1
SQ      -     13C 1  TO      -     14C 1  RDD     -     15C 1  ALPHA   -     16C 1  B       -     17C 1  HEATC   -     20C 1
PI      -     21C 1  RE      -     22C 1  G       -     23C 1  VISY    -     24C 1  SVISY   -     25C 1  TVISY   -     26C 1
VISZ    -     27C 1  SVISZ   -     30C 1  TVISZ   -     31C 1  POWER   -     32C 1  TAREA   -     33C 1  UAREA   -     34C 1
TVOL    -     35C 1  UVOL    -     36C 1  TKK     -     37C 1  CSTQ    -     40C 1  CSTE    -     41C 1  SECDAY  -     42C 1
DXT     -     43C 1  DXU     -     76C 1  RDXU2   -    131C 1  DYT     -    164C 1  DYU     -    165C 1  RDYU2   -    166C 1
EPSSK   -    167C 1  EPSTK   -    201C 1  RDCRIT  -    213C 1  DZ      -    225C 1  DZMH    -    237C 1  Z       -    251C 1
DEPTH   -    263C 1  BETA    -    264C 1  F       -    317C 1  DG      -    352C 1  AYZT    -    364C 1  AUXY    -    376C 1
AXZT    -    431C 1  AXZU    -   1047C 1  AX      -   1465C 1  AY      -   2103C 1  AZ      -   2521C 1  CSX     -   3137C 1
CSY     -   3555C 1  CSZ     -   4173C 1  CTX     -   4205C 1  CTY     -   4623C 1  CTZ     -   5241C 1  VISX    -   5253C 1
SVISX   -   5306C 1  TVISX   -   5341C 1  IBI     -   5374C 1  IMX     -   5375C 1  IMEF1   -   5376C 1  IMEF2   -   5377C 1
JMX     -   5400C 1  JMEF1   -   5401C 1  JMEF2   -   5402C 1  LAN     -   5403C 1  ING     -   5405C 1  INDBL   -   5407C 1
INDBR   -   5442C 1  LSBY    -   5475C 1  IEF1    -   5524C 1  IEF2    -   5557C 1  IND     -   5612C 1  AREAT   -   6767C 1
AREAU   -   6770C 1  VOLT    -   6771C 1  VOLU    -   6772C 1  AREATB  -   6773C 1  AREAUB  -   6774C 1  VOLTB   -   6775C 1
VOLUB   -   6776C 1  ATXY    -   6777C 1  EPD     -  10154C 1

          SUBROUTINES CALLED
QBQRSD

          COMMON BLOCKS AND LENGTHS
CMN1    -  14702      CMN2    -  11331
     COMPILE TIME =      66    MILLISECS
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
2111                 D          SUBROUTINE NONLIN (NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                    NONL.2
2112                 D     C  ********** BEGINING OF DIMENSION CHANGE  **********                     NONL.3
2113                 D          COMMON  BPT(27,4),BJT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
2114                 D         1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
2115                 D          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,NONL.4
2116                 D         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)NONL.5
2117                 D         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)NONL.6
2118                 D         3,LSTP(4),BG(4),DDJT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,   NONL.7
2119                 D         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,NONL.8
2120                 D         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANNONL.9
2121                 D         4,MSCAN,EPSL,ALPHAR,ALPHAI,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),NONL.10
2122                 D         4LOLTIJ(2,4,3),XXX(30)                                               NONL.11
2123                 D         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  NONL.12
2124                 D         527),TT(23,27),  PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)         NONL.13
2125                 D          DIMENSION XUVR(2484)                                                NONL.14
2126                 D          EQUIVALENCE (PPT(1),XUVR(1))                                        NONL.15
2127                 D          DIMENSION BT(624),DT(3106)                                          NONL.16
2128                 D          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                 NONL.17
2129                 D          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     NONL.18
2130                 D         1FLONG1,FLONG2,SO,TO,RDD,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,     NONL.19
2131                 D         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,NONL.20
2132                 D         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITNONL.21
2133                 D         4(10),DZ(10),DZMH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),    NONL.22
2134                 D         1AUXY(27),  AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   NONL.23
2135                 D         5CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISK(   NONL.24
2136                 D         727),SVISX(27),TVISX(27),    IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    NONL.25
2137                 D         3LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(   NONL.26
2138                 D         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)NONL.27
2139                 D         1,EPD(23,27)
2140                 D          DIMENSION X(2812),Y(2013)
2141                 D          EQUIVALENCE (DAYB,X(1)),(IBI,Y(1))                                  NONL.30
2142                 D          COMMON/CMN3/BP(624),DA(3106),DB(3106),DC(3106)                      NONL.31
2143                 D          DIMENSION P(23,27)                                                  NONL.32
2144                 D          DIMENSION UA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)         NONL.33
2145                 D          EQUIVALENCE (BP(1),DAYX),(BP(2),KDATX),(BP(3),IB),(BP(4),P(1))      NONL.34
2146                 D          EQUIVALENCE (DA(1),KA),(DA(2),UA(1)),(DA(623),VA(1)),(DA(1244),WA(NONL.35
2147                 D         11)),(DA(1865),SA(1)),(DA(2486),TA(1))                               NONL.36
2148                 D          DIMENSION UX(23,27),VX(23,27),UY(23,27),VY(23,27),US(23,27),VS(23,NONL.37
2149                 D         127),XM(23,27),YM(23,27)                                             NONL.38
2150                 D          EQUIVALENCE (DB(1),UNL),(DB(2),US(1)),(DB(623),VS(1)),(DB(1244),XMNONL.39
2151                 D         1(1)),(DB(1865),YM(1)),(DB(2486),UX(1))                              NONL.40
2152                 D          EQUIVALENCE (DC(1),VNL),(DC(2),VX(1)),(DC(623),UY(1)),(DC(1244),VYNONL.41
2153                 D         1(1))                                                                NONL.42
2154                 D     C  ********** ENDING OF DIMENSION CHANGE  **********                      NONL.45
2155                 D          EQUIVALENCE (XXX(1),UX1),(XXX(2),UX2),(XXX(3),VX1),(XXX(4),VX2),    NONL.46
2156                 D         1(XXX(5),UY1),(XXX(6),UY2),(XXX(7),VY1),(XXX(8),VY2),(XXX(9),XM1),   NONL.47
2157                 D         2(XXX(10),XM2),(XXX(11),XM3),(XXX(12),XM4),(XXX(13),YM1),(XXX(14),   NONL.48
2158                 D         3YM2),(XXX(15),YM3),(XXX(16),YM4),(XXX(17),XM12),(XXX(18),XM34),     NONL.49
2159                 D         4(XXX(19),YM23),(XXX(20),YM14),(XXX(21),AREX),(XXX(22),AREY),(XXX(   NONL.50
2160                 D         523),UAIM1),(XXX(24),VAIM1)                                          NONL.51
2161                 D          DATA P1,P2/0.666666666666666,1.3333333333333333/                    NONL.52
2162                 D     C *** CORNER POINTS OF INDEX 4,5,6,12 CAN NOT BE CONTINUOUSLY ARRANGED,  NONL.53
2163                 D     C *** DUE TO THIS KIND OF ADJUSTMENTS.                                    NONL.54
2164                 D     C    ---INPUT BUT(J,IB,KA)=JA(II2,J) OF BLOCK IB-1, II2=IMEF2(IB-1)-1    NONL.55
2165                 D     C    ---INPUT BVT(J,IB,KA)=VA(II2,J) OF BLOCK IB-1, II2=IMEF2(IB-1)-1    NONL.56
2166                12          CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKX) $ CALL REWDTP (NDSKY)     NONL.57
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CARD              APPROXIMATE
NUMBER -        PROGRAM LOCATION
2167                  23          CALL REWDTP (NDSKZ) $ CALL REWDTP (NDSKR) $ CALL REWDTP (NDSKW)   NONL.58
2168                  26     1000 CALL RDBUFL (NDSKS,IDMDB,Y)                                       NONL.59
2169                  33          CALL RDBUFL (NDSKX,NDIM1,BP)                                      NONL.60
2170                  40          CALL RDBUFL (NDSKR,IDMDC,XUVR)                                    NONL.61
2171                  45          CALL RDBUFL (NDSKY,NDIM1,BT)                                      NONL.62
2172                  52          CALL WTBUFL (NDSKZ,NDIM1,BT)                                      NONL.63
2173                  57     1500 CALL RDBUFL (NDSKX,NDIM2,DA)                                      NONL.64
2174                  64          CALL RDBUFL (NDSKY,NDIM2,DT)                                      NONL.65
2175                  64     C  ************ CALCULATION OF NON-LINEAR TERMS **********           NONL.66
2176                  64     C CALCULATION OF US,VS,UX,VX,UY,VY, INCLUDING ALL OVERLAP BLOCK BOUNDARYNONL.67
2177                  71          AREY=AYZT(KA)*0.5 $ I1=IMEF1-1 $ I2=IMEF2+1                       NONL.68
2178                 102          IF (I1 .LT. 1) I1=1                                               NONL.69
2179                 105          IF (I2 .GT. IMAX) I2=IMAX                                         NONL.70
2180                 110          DO 500 J=J1,J2                                                    NONL.71
2181                 110          AREX=AXZT(J,KA)*0.5 $ JM1=J-1                                     NONL.72
2182                 110          DO 500 I=I1,I2                                                    NONL.73
2183                 111          INDEX=IND(I,J)  $ IM1=I-1                                         NONL.74
2184                 111          IF (INDEX) 282,291,281                                            NONL.75
2185                 111     281  IF (IM1 .NE. 0) GO TO 291                                         NONL.76
2186                 111          UAIM1=RUNDF $ VAIM1=RUNDF                                         NONL.77
2187                 111          GO TO 320                                                         NONL.78
2188                 111     282  IF (INDEX .EQ. IUNDF) GO TO 500                                   NONL.79
2189                 111          IF (I .NE. I1) GO TO 290                                          NONL.80
2190                 111          INDEX=INDBL(J) $ UAIM1=BUT(J,IB,KA) $ VAIM1=BVT(J,IB,KA)          NONL.81
2191                 111          GO TO 292                                                         NONL.82
2192                 111     290  INDEX=INDBR(J)                                                    NONL.83
2193                 111     291  UAIM1=UA(IM1,J) $ VAIM1=VA(IM1,J)                                 NONL.84
2194                 111     292  IF (INDEX) 500,400,320                                            NONL.85
2195                 111     320  GO TO (301,302,303,304,400,301,307,308,307,308,500,312) INDEX     NONL.86
2196                 111     301  UX(I,J)=UA(I,J) $ VX(I,J)=0.0                                     NONL.87
2197                 111          UY(I,J)=(UA(I,J)+UAIM1     )*0.5 $ VY(I,J)=(VA(I,J)+VAIM1     )*0.5 NONL.88
2198                 111          US(I,J)=UX(I,J)*AREY          $ VS(I,J)=VY(I,J)*AXZT(J,KA)        NONL.89
2199                 111          GO TO 500                                                         NONL.90
2200                 111     302  UX(I,J)=(UA(I,J)+UA(I,JM1))*0.5 $ VX(I,J)=(VA(I,J)+VA(I,JM1))*0.5 NONL.91
2201                 111          UY(I,J)=0.0 $ VY(I,J)=VA(I,J)                                     NONL.92
2202                 111          US(I,J)=UX(I,J)*AYZT(KA)     $ VS(I,J)=VY(I,J)*AREX               NONL.93
2203                 111          GO TO 500                                                         NONL.94
2204                 111     303  UX(I,J)=UA(I,J) $ VX(I,J)=0.0                                     NONL.95
2205                 111          UY(I,J)=0.0 $ VY(I,J)=VA(I,J)                                     NONL.96
2206                 111          US(I,J)=UX(I,J)*AREY          $ VS(I,J)=VY(I,J)*AREX              NONL.97
2207                 111          GO TO 500                                                         NONL.98
2208                 111     304  UX(I,J)=(UA(I,J)+UA(I,JM1))*0.5 $ VX(I,J)=(VA(I,J)+VA(I,JM1))*0.5 NONL.99
2209                 111          UY(I,J)=0.0 $ VY(I,J)=VA(I,J)                                     NONL.100
2210                 111          US(I,J)=UX(I,J)*AYZT(KA)     $ VS(I,J)=VY(I,J)*AREX               NONL.101
2211                 111          GO TO 500                                                         NONL.102
2212                 111     307  UX(I,J)=UA(I,JM1) $ VX(I,J)=0.0                                   NONL.103
2213                 111          US(I,J)=UX(I,J)*AREY                                              NONL.104
2214                 111          GO TO 500                                                         NONL.105
2215                 111     308  UY(I,J)=0.0 $ VY(I,J)=VAIM1                                       NONL.106
2216                 111          VS(I,J)=VY(I,J)*AREX                                              NONL.107
2217                 111          GO TO 500                                                         NONL.108
2218                 111     312  UX(I,J)=UA(I,JM1) $ VX(I,J)=0.0                                   NONL.109
2219                 111          UY(I,J)=0.0 $ VY(I,J)=VAIM1                                       NONL.110
2220                 111          US(I,J)=UX(I,J)*AREY          $ VS(I,J)=VY(I,J)*AREX              NONL.111
2221                 111          GO TO 500                                                         NONL.112
2222                 111     400  UX(I,J)=(UA(I,J)+UA(I,JM1))*0.5 $ VX(I,J)=(VA(I,J)+VA(I,JM1))*0.5 NONL.113
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
2223            111          UY(I,J)=(UA(I,J)+UAIM1    )*0.5 $ VY(I,J)=(VA(I,J)+VAIM1    )*0.5 NONL.114
2224            111          US(I,J)=UX(I,J)*AYZT(KA)    $ VS(I,J)=VY(I,J)*AXZT(J,KA)          NONL.115
2225            111      500 CONTINUE                                                              NONL.116
2226            111     C** CALCULATION OF XM,YM INCLUDING THE RIGHT (NOT LEFT) OVERLAP BOUNDARYNONL.117
2227            353          I2=IMEF2+1                                                           NONL.118
2228            357          IF (I2 .GT. IMAX) I2=IMAX                                            NONL.119
2229            362          DO 200 J=J1,J2                                                       NONL.120
2230            362          I1=IEF1(J) $ JM1=J-1                                                 NONL.121
2231            362          DO 200 I=I1,I2                                                       NONL.122
2232            370          IM1=I-1                                                              NONL.123
2233            370          INDEX=IND(I,J)                                                       NONL.124
2234            370          IF (INDEX) 29,28,20                                                  NONL.125
2235            370       29 IF (I .NE. I2 .OR. INDEX .EQ. IUNDF) GO TO 200                       NONL.126
2236            370          INDEX=INDBR(J)                                                       NONL.127
2237            370          IF (INDEX) 200,28,20                                                 NONL.128
2238            370       20 GO TO (21,22,23,24,25,26,21,22,23,23,23,27) INDEX                    NONL.129
2239            370       21 XM(I,J)=US(I,J)+US(IM1,J)                                            NONL.130
2240            370          YM(I,J)=0.0                                                          NONL.131
2241            370          GO TO 200                                                            NONL.132
2242            370       22 XM(I,J)=0.0                                                          NONL.133
2243            370          YM(I,J)=VS(I,J)+VS(I,JM1)                                            NONL.134
2244            370          GO TO 200                                                            NONL.135
2245            370       23 XM(I,J)=0.0                                                          NONL.136
2246            370          YM(I,J)=0.0                                                          NONL.137
2247            370          GO TO 200                                                            NONL.138
2248            370       24 XM(I,J)=(US(I,J)+2.0*US(IM1,J))*0.5                                  NONL.139
2249            370          YM(I,J)=(VS(I,J)*2.0+VS(I,JM1))*0.5                                  NONL.140
2250            370          GO TO 200                                                            NONL.141
2251            370       25 XM(I,J)=(US(I,J)+2.0*US(IM1,J))*0.5                                  NONL.142
2252            370          YM(I,J)=(VS(I,J)+2.0*VS(I,JM1))*0.5                                  NONL.143
2253            370          GO TO 200                                                            NONL.144
2254            370       26 XM(I,J)=(US(I,J)*2.0+US(IM1,J))*0.5                                  NONL.145
2255            370          YM(I,J)=(VS(I,J)+2.0*VS(I,JM1))*0.5                                  NONL.146
2256            370          GO TO 200                                                            NONL.147
2257            370       27 XM(I,J)=(US(I,J)*2.0+US(IM1,J))*0.5                                  NONL.148
2258            370          YM(I,J)=(VS(I,J)*2.0+VS(I,JM1))*0.5                                  NONL.149
2259            370          GO TO 200                                                            NONL.150
2260            370       28 XM(I,J)=(US(I,J)+US(IM1,J))*0.5                                      NONL.151
2261            370          YM(I,J)=(VS(I,J)+VS(I,JM1))*0.5                                      NONL.152
2262            370      200 CONTINUE                                                             NONL.153
2263            370     C CALCULATION OF NON-LINEAR TERM UNL, VNL NOT INCLUDING OVERLAP BOUNDARYNONL.154
2264            370     C    *****INTERCHANGE INDEX AT OVERLAP BOUNDARY BETWEEN IND(I,J) AND     NONL.155
2265            370     C    *****INDBL(J), INDBR(J)                                            NONL.156
2266            527          L=1                                                                  NONL.157
2267            527          CALL     INDINTS (IMAX,JMAX,IND,INDBL,L,ING)                         NONL.158
2268            540          L=2                                                                  NONL.159
2269            540          CALL     INDINTS (IMAX,JMAX,IND,INDBR,L,ING)                         NONL.160
2270            551          DO 300 J=J1,J2                                                       NONL.161
2271            551          I1=IEF1(J) $ I2=IEF2(J) $ JP1=J+1 $ JM1=J-1                          NONL.162
2272            551          DO 300 I=I1,I2                                                       NONL.163
2273            562          IP1=I+1 $ IM1=I-1                                                    NONL.164
2274            562          IF (IND(I,J) .LT. 0 .OR. IND(I,J) .GT. 6) GO TO 300                  NONL.165
2275            562          XM1=XM(I,J) $ YM1=YM(I,J) $ XM2=XM(I,JP1) $ YM2=YM(I,JP1)            NONL.166
2276            562          XM3=XM(IP1,JP1) $ YM3=YM(IP1,JP1) $ XM4=XM(IP1,J) $ YM4=YM(IP1,J)    NONL.167
2277            562          UY1=UY(I,J) $ UY2=UY(IP1,J) $ VY1=VY(I,J) $ VY2=VY(IP1,J)            NONL.168
2278            562          UX1=UX(I,J) $ UX2=UX(I,JP1) $ VX1=VX(I,J) $ VX2=VX(I,JP1)            NONL.169
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CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
2279                  562           IF (IND(I,J) .NE. 4) GO TO 61                                          NONL.170
2280                  562           XM1=X41*P1 $ Y41=YM1*P2 $ UY1=UY(I,JM1) $ VY1=VY(I,JM1)                NONL.171
2281                  562           GO TO 64                                                               NONL.172
2282                  562        61 IF (IND(I,J) .NE. 5) GO TO 62                                          NONL.173
2283                  562           XM1=X41*P1 $ Y41=Y41*P1                                                NONL.174
2284                  562           GO TO 64                                                               NONL.175
2285                  562        62 IF (IND(I,J) .NE. 6) GO TO 64                                          NONL.176
2286                  562           XM1=X41*P2 $ Y41=YM1*P1 $ UX1=UX(IM1,J) $ VX1=VX(IM1,J)                NONL.177
2287                  562        64 IF (IND(I,JP1) .NE. 4) GO TO 65                                        NONL.178
2288                  562           XM2=X42*P1 $ Y42=YM2*P1                                                NONL.179
2289                  562           GO TO 67                                                               NONL.180
2290                  562        65 IF (IND(I,JP1) .NE. 5) GO TO 66                                        NONL.181
2291                  562           XM2=X42*P1 $ Y42=Y42*P2 $ UY1=UY(I,JP1) $ VY1=VY(I,JP1)                NONL.182
2292                  562           GO TO 67                                                               NONL.183
2293                  562        66 IF (IND(I,JP1) .NE. 12) GO TO 67                                       NONL.184
2294                  562           XM2=X42*P2 $ Y42=Y42*P1 $ UX2=UX(IM1,JP1) $ VX2=VX(IM1,JP1)            NONL.185
2295                  562        67 IF (IND(IP1,JP1) .NE. 4) GO TO 68                                      NONL.186
2296                  562           XM3=X43*P2 $ Y43=YM3*P1 $ UX2=UX(IP1,JP1) $ VX2=VX(IP1,JP1)            NONL.187
2297                  562           GO TO 70                                                               NONL.188
2298                  562        68 IF (IND(IP1,JP1) .NE. 5) GO TO 69                                      NONL.189
2299                  562           XM3=X43*P1 $ Y43=Y43*P2 $ UY2=UY(IP1,JP1) $ VY2=VY(IP1,JP1)            NONL.190
2300                  562        69 IF (IND(IP1,JP1) .NE. 12) GO TO 70                                     NONL.191
2301                  562           XM3=X43*P1 $ Y43=Y43*P1                                                NONL.192
2302                  562        70 IF (IND(IP1,J) .NE. 5) GO TO 71                                        NONL.193
2303                  562           XM4=X44*P2 $ Y44=YM4*P1 $ UX1=UX(IP1,J) $ VX1=VX(IP1,J)                NONL.194
2304                  562           GO TO 73                                                               NONL.195
2305                  562        71 IF (IND(IP1,J) .NE. 6) GO TO 72                                        NONL.196
2306                  562           XM4=X44*P1 $ Y44=YM4*P1                                                NONL.197
2307                  562           GO TO 73                                                               NONL.198
2308                  562        72 IF (IND(IP1,J) .NE. 12) GO TO 73                                       NONL.199
2309                  562           XM4=X44*P1 $ Y44=YM4*P2 $ UY2=UY(IP1,JM1) $ VY2=VY(IP1,JM1)            NONL.200
2310                  562        73 XM12=XM1+X42 $ XM34=XM3+XM4 $ YM23=YM2+YM3 $ YM14=YM1+YM4               NONL.201
2311                  562           UNL=(XM12*UY1-XM34*UY2+YM14*UX1-YM23*UX2)*0.5                          NONL.202
2312                  562           VNL=(XM12*VY1-XM34*VY2+YM14*VX1-YM23*VX2)*0.5                          NONL.203
2313                  562           UT(I,J)=UT(I,J)+UNL $ VT(I,J)=VT(I,J)+VNL                              NONL.204
2314                  562           UTM(I,J)=UTM(I,J)+UNL $ VTM(I,J)=VTM(I,J)+VNL                          NONL.205
2315                  562       300 CONTINUE                                                               NONL.206
2316                  562         C *****INTERCHANGE INDEX AT OVERLAP BOUNDARY BETWEEN IND(I,J) AND         NONL.207
2317                  562         C *****INDBL(J), INDBR(J)                                                NONL.208
2318                 1105           L=1                                                                    NONL.209
2319                 1105           CALL     INDINTS (IMAX,JMAX,IND,INDBL,L,ING)                           NONL.210
2320                 1117           L=2                                                                    NONL.211
2321                 1117           CALL     INDINTS (IMAX,JMAX,IND,INDBR,L,ING)                           NONL.212
2322                 1117         C ************** END OF NON-LINEAR CALCULATION **********                NONL.213
2323                 1130           CALL WTBUFL (NDSKZ,NDIM2,DT)                                           NONL.214
2324                 1136           IF (KA .NE. KMAX) GO TO 1500                                           NONL.215
2325                 1140           CALL WTBUFL (NDSKW,IDMDC,XUVR)                                         NONL.216
2326                 1146           IF (IB .NE. NIB) GO TO 1000                                            NONL.217
2327                 1150           RETURN                                                                 NONL.218
2328                 1150           END                                                                    NONL.219

        LENGTH OF ROUTINE   NONLIN      1203

        VARIABLE ASSIGNMENTS
NDSKX  -      0     NDSKY  -      0     NDSKZ  -      0     NDSKR  -      0     NDSKW  -      0     XUVR   -  10016C 1
BT     -   574C 1   DT     -  1754C 1   X      -     0C 2   Y      -   5374C 2   P      -     BC 3   UA     -   1161C 3
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VA      -   2335C 3   WA      -   3513C 3   SA      -   4670C 3   TA      -   6045C 3   UX      -  14107C 3   VX      -  15265C 3
UY      -  16442C 3   VY      -  17517C 3   US      -   7223C 3   VS      -  10400C 3   XM      -  11555C 3   YM      -  12732C 3
BPT     -      0C 0   BUT     -    154C 0   BVT     -   2244C 0   BST     -   4334C 0   BTT     -   6424C 0   BUTM    -  10514C 0
BVTM    -  10670C 0   BPTEP   -  11044C 0   DAYS    -      0C 1   KDAT    -      1C 1   DIFDAY  -      2C 1   DTIME   -      3C 1
DAYEND  -      4C 1   MAXI    -      5C 1   IMAX    -      6C 1   JMAX    -      7C 1   KMAX    -     10C 1   IM1     -     11C 1
JM1     -     12C 1   IP1     -     13C 1   JP1     -     14C 1   I1      -     15C 1   J1      -     16C 1   I2      -     17C 1
J2      -     20C 1   I       -     21C 1   J       -     22C 1   K       -     23C 1   NCARD1  -     24C 1   NCARD   -     25C 1
KSYB    -     25C 1   INKD    -     27C 1   INDEX   -     30C 1   ITIL    -     31C 1   NAMX    -     41C 1   NTPD1   -     44C 1
NTPD2   -     45C 1   NAMT    -     46C 1   NTAP    -     62C 1   NRT     -     66C 1   KNR     -     72C 1   MWT     -     76C 1
LDW     -    102C 1   LSTP    -    106C 1   BG      -    112C 1   DOUT    -    116C 1   NOTAP   -    122C 1   ITAP    -    126C 1
MTLAB   -    132C 1   PRTDAY  -    442C 1   LDWP    -    443C 1   LPSTP   -    444C 1   LSTDA   -    445C 1   IDMDA   -    446C 1
IDMDB   -    447C 1   IDMDC   -    450C 1   IDMDD   -    451C 1   NDIM    -    452C 1   NDIM1   -    453C 1   NDIM2   -    454C 1
NDSK1   -    455C 1   NDSK2   -    456C 1   NDSK3   -    457C 1   NDSK4   -    460C 1   NDSK5   -    461C 1   NDSK6   -    462C 1
NDSK7   -    463C 1   NDSK8   -    464C 1   MSUN    -    465C 1   MSU1    -    466C 1   LMIN1   -    467C 1   LMIN2   -    470C 1
IBSCAN  -    471C 1   MSCAN   -    472C 1   EPSL    -    473C 1   ALPHAR  -    474C 1   ALPHA1  -    475C 1   PWGT    -    476C 1
DTIME1  -    477C 1   DTIME2  -    500C 1   MSWP    -    501C 1   MCOUNT  -    502C 1   MSLCT   -    503C 1   LGLTIJ  -    506C 1
MAX     -    536C 1   DAYT    -    574C 1   KDATT   -    575C 1   IBT     -    576C 1   PT      -    577C 1   KT      -   1754C 1
UT      -   1755C 1   VT      -   3132C 1   WT      -   4307C 1   ST      -   5464C 1   TT      -   6641C 1   PPT     -  10016C 1
RES     -  11173C 1   UTM     -  12350C 1   VTM     -  13525C 1   DAYB    -      0C 2   KDATB   -      1C 2   IMAXT   -      2C 2
NIB     -      3C 2   NIBT    -      4C 2   IUNDF   -      5C 2   RUNDF   -      6C 2   FLAT1   -      7C 2   FLAT2   -     10C 2
FLONG1  -     11C 2   FLONG2  -     12C 2   SO      -     13C 2   TO      -     14C 2   RDO     -     15C 2   ALPHA   -     16C 2
B       -     17C 2   HEATC   -     20C 2   PI      -     21C 2   RE      -     22C 2   G       -     23C 2   VISY    -     24C 2
SVISY   -     25C 2   TVISY   -     26C 2   VISZ    -     27C 2   SVISZ   -     30C 2   TVISZ   -     31C 2   POWER   -     32C 2
TAREA   -     33C 2   UAREA   -     34C 2   TVOL    -     35C 2   UVOL    -     36C 2   TKK     -     37C 2   CSTQ    -     40C 2
CSTE    -     41C 2   SECDAY  -     42C 2   DXT     -     43C 2   DXU     -     76C 2   RDXU2   -    131C 2   DYT     -    164C 2
DYU     -    165C 2   RDYU2   -    166C 2   EPSSK   -    167C 2   EPSTK   -    201C 2   RDCRIT  -    213C 2   DZ      -    225C 2
DZMH    -    237C 2   Z       -    251C 2   DEPTH   -    263C 2   BETA    -    264C 2   F       -    317C 2   DG      -    352C 2
AYZT    -    364C 2   AUXY    -    376C 2   AXZT    -    431C 2   AXZU    -   1047C 2   AX      -   1465C 2   AY      -   2103C 2
AZ      -   2521C 2   CSX     -   3137C 2   CSY     -   3555C 2   CSZ     -   4173C 2   CTX     -   4205C 2   CTY     -   4623C 2
CTZ     -   5241C 2   VISX    -   5253C 2   SVISX   -   5306C 2   TVISX   -   5341C 2   IBI     -   5374C 2   IMX     -   5375C 2
IMEF1   -   5376C 2   IMEF2   -   5377C 2   JMX     -   5400C 2   JMEF1   -   5401C 2   JMEF2   -   5402C 2   LAN     -   5403C 2
ING     -   5405C 2   INDBL   -   5407C 2   INDBR   -   5442C 2   LSBY    -   5475C 2   IEF1    -   5524C 2   IEF2    -   5557C 2
IND     -   5612C 2   AREAT   -   6767C 2   AREAU   -   6770C 2   VOLT    -   6771C 2   VOLU    -   6772C 2   AREATB  -   6773C 2
AREAJB  -   6774C 2   VOLTB   -   6775C 2   VOLUB   -   6776C 2   ATXY    -   6777C 2   EPD     -  10154C 2   BP      -      0C 3
DA      -   1160C 3   DB      -   7222C 3   DC      -  15264C 3   DAYX    -      0C 3   KDATX   -      1C 3   IB      -      2C 3
KA      -   1160C 3   UNL     -   7222C 3   VNL     -  15264C 3   UX1     -    536C 1   UX2     -    537C 1   VX1     -    540C 1
VX2     -    541C 1   UY1     -    542C 1   UY2     -    543C 1   VY1     -    544C 1   VY2     -    545C 1   XM1     -    546C 1
XM2     -    547C 1   XM3     -    550C 1   XM4     -    551C 1   YM1     -    552C 1   YM2     -    553C 1   YM3     -    554C 1
YM4     -    555C 1   XM12    -    556C 1   XM34    -    557C 1   YM23    -    560C 1   YM14    -    561C 1   AREX    -    562C 1
AREY    -    563C 1   UAIM1   -    564C 1   VAIM1   -    565C 1   P1      -      0     P2      -      1     L       -   1157

        SUBROUTINES CALLED
REWDTP    RDBUFL    WTBUFL    INDINTG   QBQRSD

        COMMON BLOCKS AND LENGTHS
      -  11220     CMN1    -  14702     CMN2    -  11331     CMN3    -  23326
   COMPILE TIME =     530    MILLISECS
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CARD      APPROXIMATE
NUMBER  PROGRAM LOCATION
2329              0          SUBROUTINE FCALK32 (NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                    FCAL.2
2330              0    C  ========== BEGINING OF DIMENSION CHANGE  ==========                      FCAL.3
2331              0         COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,FCAL.4
2332              0        1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD2,KSYB,INKD,INDEX,ITIL(8)FCAL.5
2333              0        2,NAMX(3),NTPO1,NTPO2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)FCAL.6
2334              0        3,LSTP(4),BG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDMP,  FCAL.7
2335              0        3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,FCAL.8
2336              0        3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LM1N1,LM1N2,IBSCANFCAL.9
2337              0        4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),FCAL.10
2338              0        4LGLTIJ(2,4,3),XXX(30)                                                FCAL.11
2339              0        4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, FCAL.12
2340              0        627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)           FCAL.13
2341              0         DIMENSION XUVR(2484)                                                 FCAL.14
2342              0         EQUIVALENCE (PPT(1),XUVR(1))                                         FCAL.15
2343              0         DIMENSION BT(624),DT(3106)                                           FCAL.16
2344              0         EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                  FCAL.17
2345              0         COMMON/CMN2/X(2812),Y(2013)
2346              0         EQUIVALENCE (X(4),NIB), (Y(1),IBI)                                   FCAL.19
2347              0         COMMON/CMN3/BP(624),DA(3106),DB(3106),DC(3106)                       FCAL.20
2348              0         DIMENSION P(23,27)                                                   FCAL.21
2349              0         DIMENSION UA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)          FCAL.22
2350              0         DIMENSION UB(23,27),VB(23,27),WB(23,27),SB(23,27),TB(23,27)          FCAL.23
2351              0         DIMENSION UC(23,27),VC(23,27),WC(23,27),SC(23,27),TC(23,27)          FCAL.24
2352              0         EQUIVALENCE (BP(1),DAYX),(BP(2),KDATX),(BP(3),IB),(BP(4),P(1))       FCAL.25
2353              0         EQUIVALENCE (DA(1),KA),(DA(2),UA(1)),(DA(623),VA(1)),(DA(1244),WA(FCAL.26
2354              0        11)),(DA(1865),SA(1)),(DA(2486),TA(1))                                FCAL.27
2355              0         EQUIVALENCE (DB(1),KB),(DB(2),UB(1)),(DB(623),VB(1)),(DB(1244),WB(FCAL.28
2356              0        11)),(DB(1865),SB(1)),(DB(2486),TB(1))                                FCAL.29
2357              0         EQUIVALENCE (DC(1),KC),(DC(2),UC(1)),(DC(623),VC(1)),(DC(1244),WC(FCAL.30
2358              0        11)),(DC(1865),SC(1)),(DC(2486),TC(1))                                FCAL.31
2359              0         COMMON/QTST/DAYFR,KDATFR,IBFR,TAIR(23,27),QT(23,27),STX(23,27),
2360              0        1STY(23,27), IDMQT,IDMF2,IDMF4,LCMFR(65),LCMFRD,NORDER,PERIOD,MAXFR
2361              0        1,RPERD(2),KIND2,KIND4,CAG1,CAG2,CRB1,CRB2,BB2,BB12,AA2,AA12,BVPT,
2362              0        18V2,CI2,CI3,CB2,CB3,CB4,CH1,CE1,CTX1,DAYSC,XABF(541)
2363              0    C  ********** ENDING OF DIMENSION CHANGE  **********                        FCAL.32
2364             10         CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKX) $ CALL REWDTP (NDSKZ)      FCAL.33
2365             16         CALL REWDTP (NDSKR) $ CALL REWDTP (NDSKW)                            FCAL.34
2366             21         CALL REWDTP (NDSKY)                                                  FCAL.35
2367             24         JSWC=0
2368             24      10 CALL RDBUFL(NDSK5,IDMDB,Y)                                           FCAL.36
2369             32         CALL RDBUFL (NDSKX,NDIM1,BP)                                         FCAL.37
2370             37         CALL RDBUFL (NDSKR,IDMDC,XUVR)                                       FCAL.38
2371             44         KA=0                                                                 FCAL.39
2372             44         CALL RDBUFL (NDSKY,NDIM1,BT)                                         FCAL.40
2373             52         CALL WTBUFL (NDSKZ,NDIM1,BT)                                         FCAL.41
2374             57         CALL RDBUFL (NDSKX,NDIM2,DB)                                         FCAL.42
2375             64         CALL QTSTXY (JSWC,TB)
2376             71         IF (KB .EQ. KMAX) GO TO 12                                           FCAL.43
2377             73      11 CALL RDBUFL (NDSKX,NDIM2,DC)                                         FCAL.44
2378            100      12 CALL RDBUFL (NDSKY,NDIM2,DT)                                         FCAL.45
2379            105         CALL  CMPTF  (      DAYX,P,KA,UA,VA,WA,SA,TA,KB,UB,VB,WB,SB,TB,KC,FCAL.46
2380            105        1UC,VC,WC,SC,TC)                                                      FCAL.47
2381            133         CALL WTBUFL (NDSKZ,NDIM2,DT)                                         FCAL.48
2382            141         IF (KB .EQ. KMAX) GO TO 20                                           FCAL.49
2383            144         IF (KC .EQ. KMAX) GO TO 14                                           FCAL.50
2384            146         CALL RDBUFL (NDSKX,NDIM2,DA)                                         FCAL.51
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
2385                153      14  CALL RDBUFL (NDSKY,NDIM2,DT)                                                    FCAL.52
2386                160          CALL  CMPTF  (      DAYX,P,KB,UB,VB,WB,SB,TB,KC,UC,VC,WC,SC,TC,KA,FCAL.53
2387                160         1UA,VA,WA,SA,TA)                                                                 FCAL.54
2388                205          CALL WTBUFL (NDSKZ,NDIM2,DT)                                                    FCAL.55
2389                214          IF (KC .EQ. KMAX) GO TO 20                                                      FCAL.56
2390                217          IF (KA .EQ. KMAX) GO TO 16                                                      FCAL.57
2391                221          CALL RDBUFL (NDSKX,NDIM2,DB)                                                    FCAL.58
2392                226      16  CALL RDBUFL (NDSKY,NDIM2,DT)                                                    FCAL.59
2393                233          CALL  CMPTF  (      DAYX,P,KC,UC,VC,WC,SC,TC,KA,UA,VA,WA,SA,TA,KB,FCAL.60
2394                233         1JB,VB,WB,SB,TB)                                                                 FCAL.61
2395                261          CALL WTBUFL (NDSKZ,NDIM2,DT)                                                    FCAL.62
2396                267          IF (KA .EQ. KMAX) GO TO 20                                                      FCAL.63
2397                272          IF (KB .NE. KMAX) GO TO 11                                                      FCAL.64
2398                274          GO TO 12                                                                        FCAL.65
2399                274      20  CALL WTBUFL (NDSKW,IDMDC,XUVR)                                                  FCAL.66
2400                303          IF (IBI .NE. NIB) GO TO 10                                                      FCAL.67
2401                305          RETURN                                                                          FCAL.68
2402                305          END                                                                             FCAL.69

          LENGTH OF ROUTINE   FCAL<32      342

          VARIABLE ASSIGNMENTS
NDSKX  -       0     NDSKY  -       0     NDSKZ  -       0     NDSKR  -       0     NDSKW  -       0     XUVR   -   10016C 0
BT     -    574C 0   DT     -   1754C 0   P      -      3C 2   UA     -   1161C 2   VA     -   2336C 2   WA     -    3513C 2
SA     -   4670C 2   TA     -   6045C 2   JB     -   7223C 2   VB     -  10400C 2   WB     -  11555C 2   SB     -   12732C 2
TB     -  14107C 2   UC     -  15255C 2   VC     -  16442C 2   WC     -  17617C 2   SC     -  20774C 2   TC     -   22151C 2
DAYS   -      0C 0   KDAT   -      1C 0   DIFDAY -      2C 0   DTIME  -      3C 0   DAYEND -      4C 0   MAXI   -       5C 0
IMAX   -      6C 0   JMAX   -      7C 0   KMAX   -     10C 0   IM1    -     11C 0   JM1    -     12C 0   IP1    -      13C 0
JP1    -     14C 0   I1     -     15C 0   J1     -     16C 0   I2     -     17C 0   J2     -     20C 0   I      -      21C 0
J      -     22C 0   K      -     23C 0   NCARD1 -     24C 0   NCARD  -     25C 0   KSYB   -     26C 0   INKD   -      27C 0
INDEX  -     30C 0   ITIL   -     31C 0   NAMX   -     41C 0   NTP01  -     44C 0   NTP02  -     45C 0   NAMT   -      46C 0
NTAP   -     62C 0   NRT    -     66C 0   KNR    -     72C 0   MWT    -     76C 0   LDW    -    102C 0   LSTP   -     106C 0
BG     -    112C 0   DOUT   -    116C 0   NOTAP  -    122C 0   ITAP   -    126C 0   MTLAB  -    132C 0   PRTDAY -     442C 0
LOWP   -    443C 0   LPSTP  -    444C 0   LSTDA  -    445C 0   IDMDA  -    446C 0   IDMDB  -    447C 0   IDMDC  -     450C 0
IDMDD  -    451C 0   NDIM   -    452C 0   NDIM1  -    453C 0   NDIM2  -    454C 0   NDSK1  -    455C 0   NDSK2  -     456C 0
NDSK3  -    457C 0   NDSK4  -    460C 0   NDSK5  -    461C 0   NDSK6  -    462C 0   NDSK7  -    463C 0   NDSK8  -     464C 0
MSUV   -    465C 0   MSUI   -    466C 0   LMIN1  -    467C 0   LMIN2  -    470C 0   IBSCAN -    471C 0   MSCAN  -     472C 0
EPSL   -    473C 0   ALPHAR -    474C 0   ALPHA1 -    475C 0   PWGT   -    476C 0   DTIME1 -    477C 0   DTIME2 -     500C 0
MSAP   -    501C 0   MCOUNT -    502C 0   MSLCT  -    503C 0   LGLTIJ -    506C 0   XXX    -    536C 0   DAYT   -     574C 0
KDATT  -    575C 0   IBT    -    576C 0   PT     -    577C 0   KT     -   1754C 0   UT     -   1755C 0   VT     -    3132C 0
WT     -   4307C 0   ST     -   5454C 0   TT     -   6641C 0   PPT    -  10016C 0   RES    -  11173C 0   UTM    -   12350C 0
VTM    -  13525C 0   X      -     0C 1   Y      -   5374C 1   BP     -      0C 2   DA     -   1160C 2   DB     -    7222C 2
DC     -  15264C 2   DAYFR  -     0C 3   KDATFR -      1C 3   IBFR   -      2C 3   TAIR   -      3C 3   QT     -    1160C 3
STX    -   2335C 3   STY    -   3512C 3   IDMQT  -   4667C 3   IDMF2  -   4670C 3   IDMF4  -   4671C 3   LCMFR  -    4672C 3
LCMFRD -   4773C 3   NORDER -   4774C 3   PERIOD -   4775C 3   MAXFR  -   4776C 3   RPERD  -   4777C 3   KIND2  -    5001C 3
KIND4  -   5002C 3   CAG1   -   5003C 3   CAG2   -   5004C 3   CRB1   -   5005C 3   CRB2   -   5006C 3   BB2    -    5007C 3
BB12   -   5010C 3   AA2    -   5011C 3   AA12   -   5012C 3   BVPT   -   5013C 3   BV2    -   5014C 3   CI2    -    5015C 3
CI3    -   5016C 3   CB2    -   5017C 3   CB3    -   5020C 3   CB4    -   5021C 3   CH1    -   5022C 3   CE1    -    5023C 3
CTX1   -   5024C 3   DAYSC  -   5025C 3   XABF   -   5026C 3   NIB    -      3C 1   IBI    -   5374C 1   DAYX   -       0C 2
KDATX  -      1C 2   IB     -      2C 2   KA     -   1160C 2   KB     -   7222C 2   KC     -  15264C 2   JSWC   -     313

          SUBROUTINES CALLED
REWDTP     RDBUFL     WTBUFL     QTSTXY     CMPTF      QBORSD

          COMMON BLOCKS AND LENGTHS
CMN1   -  14702      CMN2   -  11331      CMN3   -  23326      QTST   -   6063
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COMPILE TIME =    114    MILLISECS
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
2403                0          SUBROUTINE CMPTF (DAYX,P,KA,UA,VA,WA,SA,TA,KB,UB,VB,WB,SB,TB,KC,UCCPTF.2
2404                0         1,VC,WC,SC,TC)                                                        CPTF.3
2405                0     C  ========== BEGINING OF DIMENSION CHANGE  ==========                    CPTF.4
2406                0          COMMON  BPT(27,4),BUT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
2407                0         1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
2408                0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,CPTF.5
2409                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)CPTF.6
2410                0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LOW(4)CPTF.7
2411                0         3,LSTP(4),BS(4),DOUT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  CPTF.8
2412                0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,CPTF.9
2413                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANCPTF.10
2414                0         4,MSCAN,EPSL,ALPHAR,ALPHAI,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),CPTF.11
2415                0         4LGLTIJ(2,4,3),XXX(30)                                                CPTF.12
2416                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  CPTF.13
2417                0         527),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)           CPTF.14
2418                0          DIMENSION XUVR(2484)                                                 CPTF.15
2419                0          EQUIVALENCE (PPT(1),XUVR(1))                                         CPTF.16
2420                0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,       CPTF.17
2421                0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,     CPTF.18
2422                0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,CPTF.19
2423                0         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITCPTF.20
2424                0         4(10),DZ(10),DZH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),    CPTF.21
2425                0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),    CPTF.22
2426                0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(   CPTF.23
2427                0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,     CPTF.24
2428                0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(   CPTF.25
2429                0         923,27),AREAT,AREAJ,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)CPTF.26
2430                0         1,EPD(23,27)
2431                0          COMMON/QTST/DAYFR,KDATFR,IBFR,TAIR(23,27),QT(23,27),STX(23,27),
2432                0         1STY(23,27),  XYXYF(636)
2433                0          DIMENSION P(23,27)                                                   CPTF.30
2434                0          DIMENSION UA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)          CPTF.31
2435                0          DIMENSION UB(23,27),VB(23,27),WB(23,27),SB(23,27),TB(23,27)          CPTF.32
2436                0          DIMENSION UC(23,27),VC(23,27),WC(23,27),SC(23,27),TC(23,27)          CPTF.33
2437                0     C  ********** ENDING OF DIMENSION CHANGE  **********                      CPTF.35
2438                0          EQUIVALENCE (XXX(1),SO,II),(XXX(2),TO,N),(XXX(3),SLAP,SLAPZ),(XXX(CPTF.36
2439                0         14),TLAP,TLAPZ),(XXX(5),ULAP,ULAPZ),(XXX(6),VLAP,VLAPZ),(XXX(7),S1,CPTF.37
2440                0         2JJ1),(XXX(8),S2,JJ2),(XXX(9),S3,UU3),(XXX(10),S4,UU4),(XXX(11),T1,CPTF.38
2441                0         3VV1),(XXX(12),T2,VV2),(XXX(13),T3,VV3),(XXX(14),T4,VV4),(XXX(15), CPTF.39
2442                0         4CSYJ,CSZIJK),(XXX(16),CTYJ,CTZIJK),(XXX(17),CSYJ1,CSZKP1),(XXX(18)CPTF.40
2443                0         5,CTYJ1,CTZKP1),(XXX(19),CSXJ),(XXX(20),CTXJ),(XXX(21),JDEX)         CPTF.41
2444                0     C      CALCULATION OF LAPLAC. (U,V,S,T)                                   CPTF.43
2445                0          CSYJ=CTYJ=RUNDF                                                      CPTF.44
2446                2          DO 50 J=J1,J2                                                        CPTF.45
2447                2          I1=IEF1(J) $ I2=IEF2(J) $ JM1=J-1 $ JP1=J+1                          CPTF.46
2448                2          CSXJ=CSX(J,KB) $ CSYJ1=CSYJ $ CSYJ=CSY(J,KB)                         CPTF.47
2449                2          CTXJ=CTX(J,KB) $ CTYJ1=CTYJ $ CTYJ=CTY(J,KB)                         CPTF.48
2450                2          DO 50 I=I1,I2                                                        CPTF.49
2451                5          INDEX=IND(I,J)                                                       CPTF.50
2452                5          IM1=I-1 $ IP1=I+1                                                    CPTF.51
2453                5          IF (INDEX) 50,17,18                                                  CPTF.52
2454                5       18 SO=SB(I,J) $ TO=TB(I,J)                                              CPTF.53
2455                5          S1=S2=S3=S4=T1=T2=T3=T4=RUNDF                                        CPTF.54
2456                5          IF (IM1 .LT. 1) GO TO 13                                             CPTF.55
2457                5          S1=SB(IM1,J) $ T1=TB(IM1,J)                                          CPTF.56
2458                5       13 IF (JM1 .LT. 1) GO TO 14                                             CPTF.57
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CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
2459              5          S2=SB(I,JM1) $ T2=TB(I,JM1)                                                    CPTF.58
2460              5       14 IF (IP1 .GT. IMAX) GO TO 15                                                    CPTF.59
2461              5          S3=SB(IP1,J) $ T3=TB(IP1,J)                                                    CPTF.60
2462              5       15 IF (JP1 .GT. JMAX) GO TO 16                                                    CPTF.61
2463              5          S4=SB(I,JP1) $ T4=TB(I,JP1)                                                    CPTF.62
2464              5       16 GO TO (1,2,3,4,5,6,7,8,9,10,11,12) INDEX                                       CPTF.63
2465              5        1 SLAP=(S3-SJ-SO +S1)*CSXJ*0.5+(S4-SO)*CSYJ                                      CPTF.64
2466              5          TLAP=(T3-TJ-TO +T1)*CTXJ*0.5+(T4-TO)*CTYJ                                      CPTF.65
2467              5          GO TO 23                                                                       CPTF.66
2468              5        2 SLAP=(S3-SO)*CSXJ+((S4-SO)*CSYJ+(S2-SO)*CSYJ1)*0.5                             CPTF.67
2469              5          TLAP=(T3-TO)*CTXJ+((T4-TO)*CTYJ+(T2-TO)*CTYJ1)*0.5                             CPTF.68
2470              5          GO TO 23                                                                       CPTF.69
2471              5        3 SLAP=((S3-SO)*CSXJ+(S4-SO)*CSYJ)*0.5                                           CPTF.70
2472              5          TLAP=((T3-TO)*CTXJ+(T4-TO)*CTYJ)*0.5                                           CPTF.71
2473              5          GO TO 23                                                                       CPTF.72
2474              5        4 SLAP=(S3-SO+(S1-SO)*0.5)*CSXJ+(S4-SO)*CSYJ*0.5+(S2-SO)*CSYJ1                   CPTF.73
2475              5          TLAP=(T3-TO+(T1-TO)*0.5)*CTXJ+(T4-TO)*CTYJ*0.5+(T2-TO)*CTYJ1                   CPTF.74
2476              5          GO TO 23                                                                       CPTF.75
2477              5        5 SLAP=(S3-SO+(S1-SO)*0.5)*CSXJ+(S4-SO)*CSYJ+(S2-SO)*CSYJ1*0.5                   CPTF.76
2478              5          TLAP=(T3-TO+(T1-TO)*0.5)*CTXJ+(T4-TO)*CTYJ+(T2-TO)*CTYJ1*0.5                   CPTF.77
2479              5          GO TO 23                                                                       CPTF.78
2480              5        6 SLAP=((S3-SO)*0.5-SO+S1)*CSXJ+(S4-SO)*CSYJ+(S2-SO)*CSYJ1*0.5                   CPTF.79
2481              5          TLAP=((T3-TO)*0.5-TO+T1)*CTXJ+(T4-TO)*CTYJ+(T2-TO)*CTYJ1*0.5                   CPTF.80
2482              5          GO TO 23                                                                       CPTF.81
2483              5        7 SLAP=(S3-SJ-SO +S1)*CSXJ*0.5+(S2-SO)*CSYJ1                                     CPTF.82
2484              5          TLAP=(T3-TJ-TO +T1)*CTXJ*0.5+(T2-TO)*CTYJ1                                     CPTF.83
2485              5          GO TO 49                                                                       CPTF.84
2486              5        8 SLAP=(S1-SO)*CSXJ+((S4-SO)*CSYJ+(S2-SO)*CSYJ1)*0.5                             CPTF.85
2487              5          TLAP=(T1-TJ)*CTXJ+((T4-TO)*CTYJ+(T2-TO)*CTYJ1)*0.5                             CPTF.86
2488              5          GO TO 49                                                                       CPTF.87
2489              5        9 SLAP=((S3-SO)*CSXJ+(S2-SO)*CSYJ1)*0.5                                          CPTF.88
2490              5          TLAP=((T3-TO)*CTXJ+(T2-TO)*CTYJ1)*0.5                                          CPTF.89
2491              5          GO TO 49                                                                       CPTF.90
2492              5       10 SLAP=((S1-SO)*CSXJ+(S4-SO)*CSYJ )*0.5                                          CPTF.91
2493              5          TLAP=((T1-TO)*CTXJ+(T4-TO)*CTYJ )*0.5                                          CPTF.92
2494              5          GO TO 49                                                                       CPTF.93
2495              5       11 SLAP=((S1-SO)*CSXJ+(S2-SO)*CSYJ1)*0.5                                          CPTF.94
2496              5          TLAP=((T1-TO)*CTXJ+(T2-TO)*CTYJ1)*0.5                                          CPTF.95
2497              5          GO TO 49                                                                       CPTF.96
2498              5       12 SLAP=((S3-SJ)*0.5-SJ+S1)*CSXJ+(S4-SO)*CSYJ*0.5+(S2-SO)*CSYJ1                  CPTF.97
2499              5          TLAP=((T3-TO)*0.5-TO+T1)*CTXJ+(T4-TO)*CTYJ*0.5+(T2-TO)*CTYJ1
2500              5          GO TO 49                                                                       CPTF.99
2501              5       17 SLAP=(SB(IP1,J)-SB(I,J)-SB(I,J)+SB(IM1,J))*CSXJ+(SB(I,JP1)-SB(I,J)CPTF.100
2502              5         1)*CSYJ+(SB(I,JM1)-SB(I,J))*CSYJ1                                             CPTF.101
2503              5          TLAP=(TB(IP1,J)-TB(I,J)-TB(I,J)+TB(IM1,J))*CTXJ+(TB(I,JP1)-TB(I,J)CPTF.102
2504              5         1)*CTYJ+(TB(I,JM1)-TB(I,J))*CTYJ1                                             CPTF.103
2505              5       23 DO 45 JDEX=1,4                                                                CPTF.104
2506            457          IMP=I                                                                          CPTF.105
2507            457          GO TO (24,25,26,27) JDEX                                                       CPTF.106
2508            457       24 IF (IM1 .LT. 1) GO TO 41                                                       CPTF.107
2509            457          INDEX=IND(IM1,J)                                                               CPTF.108
2510            457          IMP=IM1                                                                        CPTF.109
2511            457          GO TO 28                                                                       CPTF.110
2512            457       25 IF (JM1 .LT. 1) GO TO 42                                                       CPTF.111
2513            457          INDEX=IND(I,JM1)                                                               CPTF.112
2514            457          GO TO 28                                                                       CPTF.113
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CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
2515                  457       26  INDEX=IND(IP1,J)                                                          CPTF.114
2516                  457           IMP=IP1                                                                   CPTF.115
2517                  457           GO TO 28                                                                  CPTF.116
2518                  457       27  INDEX=IND(I,JP1)                                                          CPTF.117
2519                  457       28  IF (INDEX) 29,35,34                                                       CPTF.118
2520                  457       29  IF (INDEX .EQ. IJNDF) GO TO 40                                            CPTF.119
2521                  457           II=ING(1)-1                                                               CPTF.120
2522                  457           IF (IMP .NE. II) GO TO 30                                                 CPTF.121
2523                  457           INDEX=INDBL(J)                                                            CPTF.122
2524                  457           GO TO 33                                                                  CPTF.123
2525                  457       30  II=ING(2)+1                                                               CPTF.124
2526                  457           IF (IMP.EQ. II) GO TO 32                                                  CPTF.125
2527                  457     C  XXXXXXXXXX PRINT ERROR MESSAGE XXXXXXXXXX                                    CPTF.126
2528                  457           PRINT 31,IBI,ING,(INDBL(N),INDBR(N),N=1,JMAX)                             CPTF.127
2529                  637       31  FORMAT (//10X,*XXXXX INCONSISTENT OF ING(I) AND INDBL(J),INDBR(J)         CPTF.128
2530                  637          1XXXXX CALLED FROM CMPFN *//15X,*-----JOB TERMINATES ABNORMALLY----CPTF.129
2531                  637          1-*//     20X,* FOR BLOCK IB =*I4, *  ING(1),ING(2) =*2I5/                CPTF.130
2532                  637          1 8X,*(INDBL(J),INDBR(J),J=1,JMAX)=*10(I5,I4)/(37X,10(I5,I4)))            CPTF.131
2533                  637           CALL EXIT                                                                 CPTF.132
2534                  640       32  INDEX=INDBR(J)                                                           CPTF.133
2535                  645       33  IF (INDEX .LT. 0) GO TO 40                                                CPTF.134
2536                  650       34  IF (INDEX .GT. 6) GO TO 40                                                CPTF.135
2537                  652       35  GO TO (36,37,38,39) JDEX                                                  CPTF.136
2538                  664       36  JJ1=UB(IM1,J) $ VV1=VB(IM1,J)                                             CPTF.137
2539                  664           GO TO 45                                                                  CPTF.138
2540                  673       37  UU2=UB(I,JM1) $ VV2=VB(I,JM1)                                             CPTF.139
2541                  673           GO TO 45                                                                  CPTF.140
2542                  702       38  UU3=UB(IP1,J) $ VV3=VB(IP1,J)                                             CPTF.141
2543                  702           GO TO 45                                                                  CPTF.142
2544                  711       39  JJ4=UB(I,JP1) $ VV4=VB(I,JP1)                                             CPTF.143
2545                  711           GO TO 45                                                                  CPTF.144
2546                  717       40  GO TO (41,42,43,44) JDEX                                                  CPTF.145
2547                  732       41  JJ1=-UB(I,J) $ VV1=VB(I,J)                                                CPTF.146
2548                  732           GO TO 45                                                                  CPTF.147
2549                  741       42  JJ2=UB(I,J) $ VV2=-VB(I,J)                                                CPTF.148
2550                  741           GO TO 45                                                                  CPTF.149
2551                  750       43  UU3=-UB(I,J) $ VV3=VB(I,J)                                                CPTF.150
2552                  750           GO TO 45                                                                  CPTF.151
2553                  757       44  UU4=UB(I,J) $ VV4=-VB(I,J)                                                CPTF.152
2554                  757       45  CONTINUE                                                                  CPTF.153
2555                  767           ULAP=(UU4-UB(I,J))*AY(JP1,KB)-(UB(I,J)-UU2)*AY(J,KB)+(UU3-UB(I,J)-CPTF.154
2556                  767          1UB(I,J)+UU1)*AX(J,K3)                                                     CPTF.155
2557                  767           VLAP=(VV4-VB(I,J))*AY(JP1,KB)-(VB(I,J)-VV2)*AY(J,KB)+(VV3-VB(I,J)-CPTF.156
2558                  767          1VB(I,J)+VV1)*AX(J,K3)                                                     CPTF.157
2559                  767           UT(I,J)=UT(I,J)+ULAP $ VT(I,J)=VT(I,J)+VLAP                               CPTF.158
2560                  767           UTM(I,J)=UTM(I,J)+ULAP $ VTM(I,J)=VTM(I,J)+VLAP                           CPTF.159
2561                 1032       49  ST(I,J)=ST(I,J)+SLAP $ TT(I,J)=TT(I,J)+TLAP                               CPTF.160
2562                 1032       50  CONTINUE                                                                  CPTF.161
2563                 1032     C     CALCULATION OF VERTICAL DIFUSE TERMS.     (U,V,S,T)                       CPTF.162
2564                 1050           IF (KB .NE. 1) GO TO 61                                                   CPTF.163
2565                 1050     C   ******** CALL SUBROUTINE QTEMP TO GET QT, EPD AND AVERAGE QT, EPD          CPTF.164
2566                 1052           CALL QTEMPF (SB,TB,QTAV,EMPAV)                                            CPTF.165
2567                 1060           DO 60 J=J1,J2                                                             CPTF.166
2568                 1060           AJRD=AJXY(J)/RDD                                                          .
2569                 1060           I1=IEF1(J) $ I2=IEF2(J)                                                   CPTF.167
2570                 1060           DO 60 I=I1,I2                                                             CPTF.168
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
2571           1061          IF (IND(I,J) .LT. 0) GO TO 60                                                    CPTF.169
2572           1061          QT(I,J)=QT(I,J)*ATXY(I,J)/CSTQ                                                   CPTF.170
2573           1061    C     **********DROP THE FOLLOWING CARD IF AVERAGE NOT WANTED.                           CPTF.171
2574           1061          EPD(I,J)=EPD(I,J)-EMPAV*ATXY(I,J)
2575           1061          CSZKP1=CSZ(KC)*ATXY(I,J) $ CTZKP1=CTZ(KC)*ATXY(I,J)                              CPTF.172
2576           1061          TLAPZ=          QT(I,J)-(TB(I,J)-TC(I,J))*CTZKP1                                 CPTF.173
2577           1061          SLAPZ=        EPD(I,J)-(SB(I,J)-SC(I,J))*CSZKP1                                  CPTF.174
2578           1061          ST(I,J)=ST(I,J)+SLAPZ $ TT(I,J)=TT(I,J)+TLAPZ                                    CPTF.175
2579           1061          IF (IND(I,J) .GT. 6) GO TO 60                                                    CPTF.176
2580           1061          STX(I,J)=STX(I,J)*AURD $ STY(I,J)=STY(I,J)*AURD
2581           1061          ULAPZ=STX(I,J)-(UB(I,J)-UC(I,J))*AZ(J,KC)                                        CPTF.177
2582           1061          VLAPZ=STY(I,J)-(VB(I,J)-VC(I,J))*AZ(J,KC)                                        CPTF.178
2583           1061          UT(I,J)=UT(I,J)+ULAPZ $ VT(I,J)=VT(I,J)+VLAPZ                                    CPTF.179
2584           1061          UTM(I,J)=UTM(I,J)+STX(I,J) $ VTM(I,J)=VTM(I,J)+STY(I,J)                          CPTF.180
2585           1061       60 CONTINUE                                                                         CPTF.181
2586           1163          RETURN                                                                           CPTF.182
2587           1166       61 IF (KB .EQ. KMAX) GO TO 63                                                       CPTF.183
2588           1170          DO 62 J=J1,J2                                                                    CPTF.184
2589           1170          I1=IEF1(J) $ I2=IEF2(J)                                                          CPTF.185
2590           1170          DO 62 I=I1,I2                                                                    CPTF.186
2591           1171          IF (IND(I,J) .LT. 0) GO TO 62                                                    CPTF.187
2592           1171          CSZIJK=CSZ(KB)*ATXY(I,J) $ CTZIJK=CTZ(KB)*ATXY(I,J)                              CPTF.188
2593           1171          CSZKP1=CSZ(KC)*ATXY(I,J) $ CTZKP1=CTZ(KC)*ATXY(I,J)                              CPTF.189
2594           1171          SLAPZ=(SA(I,J)-SB(I,J))*CSZIJK-(SB(I,J)-SC(I,J))*CSZKP1                          CPTF.190
2595           1171          TLAPZ=(TA(I,J)-TB(I,J))*CTZIJK-(TB(I,J)-TC(I,J))*CTZKP1                          CPTF.191
2596           1171          ST(I,J)=ST(I,J)+SLAPZ $ TT(I,J)=TT(I,J)+TLAPZ                                    CPTF.192
2597           1171          IF (IND(I,J) .GT. 6) GO TO 62                                                    CPTF.193
2598           1171          ULAPZ=(UA(I,J)-UB(I,J))*AZ(J,KB)-(UB(I,J)-UC(I,J))*AZ(J,KC)                      CPTF.194
2599           1171          VLAPZ=(VA(I,J)-VB(I,J))*AZ(J,KB)-(VB(I,J)-VC(I,J))*AZ(J,KC)                      CPTF.195
2600           1171          UT(I,J)=UT(I,J)+ULAPZ $ VT(I,J)=VT(I,J)+VLAPZ                                    CPTF.196
2601           1171       62 CONTINUE                                                                         CPTF.197
2602           1271          RETURN                                                                           CPTF.198
2603           1272       63 DO 64 J=J1,J2                                                                    CPTF.199
2604           1272          I1=IEF1(J) $ I2=IEF2(J)                                                          CPTF.200
2605           1272          DO 64 I=I1,I2                                                                    CPTF.201
2606           1274          IF (IND(I,J) .LT. 0) GO TO 64                                                    CPTF.202
2607           1274          CSZIJK=CSZ(KB)*ATXY(I,J) $ CTZIJK=CTZ(KB)*ATXY(I,J)                              CPTF.203
2608           1274          SLAPZ=(SA(I,J)-SB(I,J))*CSZIJK                                                   CPTF.204
2609           1274          TLAPZ=(TA(I,J)-TB(I,J))*CTZIJK                                                   CPTF.205
2610           1274          ST(I,J)=ST(I,J)+SLAPZ $ TT(I,J)=TT(I,J)+TLAPZ                                    CPTF.206
2611           1274          IF (IND(I,J) .GT. 6) GO TO 64                                                    CPTF.207
2612           1274          ULAPZ=(UA(I,J)-UB(I,J))*AZ(J,KB)                                                 CPTF.208
2613           1274          VLAPZ=(VA(I,J)-VB(I,J))*AZ(J,KB)                                                 CPTF.209
2614           1274          UT(I,J)=UT(I,J)+ULAPZ $ VT(I,J)=VT(I,J)+VLAPZ                                    CPTF.210
2615           1274       64 CONTINUE                                                                         CPTF.211
2616           1274    C     VERTICAL MEAN OF UTM, VTM                                                        CPTF.212
2617           1354          DO 310 J=J1,J2                                                                   CPTF.213
2618           1354          I1=IEF1(J) $ I2=IEF2(J)                                                          CPTF.214
2619           1354          DO 310 I=I1,I2                                                                   CPTF.215
2620           1356          IF (IND(I,J) .LT. 0 .OR. IND(I,J) .GT. 6) GO TO 310                              CPTF.216
2621           1356          UTM(I,J)=UTM(I,J)/DEPTH $ VTM(I,J)=VTM(I,J)/DEPTH                                CPTF.217
2622           1356      310 CONTINUE                                                                         CPTF.218
2623           1356    C ******** STORE OVERLAP BOUNDARY VALUES OF UTM, VTM, SUCH THAT,                       CPTF.219
2624           1356    C ** STORE UTM(ING(L),J),VTM(ING(L),J) IN BUTM(J,LAN(L)),BVTM(J,LAN(L)),               CPTF.220
2625           1356    C ** FOR ING(L) .NE. 0,  WHERE L=1,2                                                   CPTF.221
2626           1407          DO 316 L=1,2                                                                     CPTF.222
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
2627                1407          I=ING(L)                                                                  CPTF.223
2628                1407          IF (I .EQ. 0) GO TO 316                                                   CPTF.224
2629                1407          I1=LAN(L)                                                                 CPTF.225
2630                1407          DO 315 J=1,JMAX                                                           CPTF.226
2631                1416          BUTM(J,I1)=UTM(I,J) & BVTM(J,I1)=VTM(I,J)                                 CPTF.227
2632                1416     315  CONTINUE                                                                  CPTF.228
2633                1436     316  CONTINUE                                                                  CPTF.229
2634                1441          RETURN                                                                    CPTF.230
2635                1442          END                                                                       CPTF.231

        LENGTH OF ROUTINE   CMPTF       1627

        VARIABLE ASSIGNMENTS
DAYX  -       0     P     -       0     KA    -       0     UA    -       0     VA    -       0     WA    -       0
SA    -       0     TA    -       0     KB    -       0     UB    -       0     VB    -       0     WB    -       0
SB    -       0     TB    -       0     KC    -       0     UC    -       0     VC    -       0     WC    -       0
SC    -       0     TC    -       0     KJVK  -  10016C 1  BPT   -      0C 0  BUT   -    154C 0  BVT   -   2244C 0
BST   -  4334C 0  BTT   -  6424C 0  BUTM  -  10514C 0  BVTM  -  10670C 0  BPTEP -  11044C 0  DAYS  -      0C 1
KDAT  -      1C 1  DIFDAY -      2C 1  DTIME -      3C 1  DAYEND -      4C 1  MAXI  -      5C 1  IMAX  -      6C 1
JMAX  -      7C 1  KMAX  -     10C 1  IM1   -     11C 1  JM1   -     12C 1  IP1   -     13C 1  JP1   -     14C 1
I1    -     15C 1  J1    -     16C 1  I2    -     17C 1  J2    -     20C 1  I     -     21C 1  J     -     22C 1
K     -     23C 1  NCARD1 -     24C 1  NCARD -     25C 1  KSYB  -     26C 1  INKD  -     27C 1  INDEX -     30C 1
ITTL  -     31C 1  NAMX  -     41C 1  NTPD1 -     44C 1  NTPD2 -     45C 1  NAMT  -     46C 1  NTAP  -     62C 1
MRT   -     55C 1  KNR   -     72C 1  MWT   -     76C 1  LDW   -    102C 1  LSTP  -    106C 1  BG    -    112C 1
DOUT  -    116C 1  NDTAP -    122C 1  ITAP  -    126C 1  MTLAB -    132C 1  PRTDAY -    442C 1  LDWP  -    443C 1
LPSTP -    444C 1  LSTDA -    445C 1  IDMDA -    446C 1  IDMDB -    447C 1  IDMDC -    450C 1  IDMDD -    451C 1
NDIM  -    452C 1  NDIM1 -    453C 1  NDIM2 -    454C 1  NDSK1 -    455C 1  NDSK2 -    456C 1  NDSK3 -    457C 1
NDSK4 -    460C 1  NDSK5 -    461C 1  NDSK6 -    462C 1  NDSK7 -    463C 1  NDSK8 -    464C 1  MSUN  -    465C 1
MSUI  -    466C 1  LMIN1 -    467C 1  LMIN2 -    470C 1  IBSCAN -    471C 1  MSCAN -    472C 1  EPSL  -    473C 1
ALPHAR -   474C 1  ALPHA1 -   475C 1  PWGT  -    476C 1  DTIME1 -   477C 1  DTIME2 -   500C 1  MSWP  -    501C 1
MODJNT -   502C 1  MSLCT -    503C 1  LGLTIJ -   506C 1  XXX   -    536C 1  DAYT  -    574C 1  KDATT -    575C 1
IBT   -    576C 1  PT    -    577C 1  KT    -   1754C 1  UT    -   1755C 1  VT    -   3132C 1  WT    -   4307C 1
ST    -   5464C 1  TT    -   6541C 1  PPT   -  10016C 1  RES   -  11173C 1  UTM   -  12350C 1  VTM   -  13525C 1
DAYB  -      0C 2  KDATB -      1C 2  IMAXT -      2C 2  NIB   -      3C 2  NIBT  -      4C 2  IUNDF -      5C 2
RUNDF -      6C 2  FLAT1 -      7C 2  FLAT2 -     10C 2  FLONG1 -     11C 2  FLONG2 -     12C 2  SO    -     13C 2
TC    -     14C 2  RDD   -     15C 2  ALPHA -     16C 2  B     -     17C 2  HEATC -     20C 2  PI    -     21C 2
RE    -     22C 2  G     -     23C 2  VISY  -     24C 2  SVISY -     25C 2  TVISY -     26C 2  VISZ  -     27C 2
SVISZ -     30C 2  TVISZ -     31C 2  POWER -     32C 2  TAREA -     33C 2  UAREA -     34C 2  TVOL  -     35C 2
UVOL  -     36C 2  TKK   -     37C 2  CSTQ  -     40C 2  CSTE  -     41C 2  SECDAY -     42C 2  DXT   -     43C 2
DXU   -     75C 2  RDXU2 -    131C 2  DYT   -    164C 2  DYU   -    165C 2  RDYU2 -    166C 2  EPSSK -    167C 2
EPSTK -    201C 2  RDCRIT -   213C 2  DZ    -   225C 2  DZMH  -   237C 2  Z     -   251C 2  DEPTH -   263C 2
DETA  -    264C 2  F     -    317C 2  DG    -   352C 2  AYZT  -   364C 2  AUXY  -   376C 2  AXZT  -   431C 2
AXZU  -   1047C 2  AX    -   1465C 2  AY    -  2103C 2  AZ    -  2521C 2  CSX   -  3137C 2  CSY   -  3555C 2
CSZ   -   4173C 2  CTX   -   4205C 2  CTY   -  4623C 2  CTZ   -  5241C 2  VISX  -  5253C 2  SVISX -  5306C 2
TVISX -   5341C 2  IBI   -   5374C 2  IMX   -  5375C 2  IMEF1 -  5376C 2  IMEF2 -  5377C 2  JMX   -  5400C 2
JMEF1 -   5401C 2  JMEF2 -   5402C 2  LAN   -  5403C 2  ING   -  5405C 2  INDBL -  5407C 2  INDBR -  5442C 2
LSBY  -   5475C 2  IEF1  -   5524C 2  IEF2  -  5557C 2  IND   -  5612C 2  AREAT -  6767C 2  AREAU -  6770C 2
VOLT  -   6771C 2  VOLU  -   6772C 2  AREATB -  6773C 2  AREAUB -  6774C 2  VOLTB -  6775C 2  VOLUB -  6776C 2
ATXY  -   6777C 2  EPD   -  10154C 2  DAYFR -     0C 3  KDATFR -     1C 3  IBFR  -     2C 3  TAIR  -     3C 3
QT    -   1160C 3  STX   -   2335C 3  STY   -  3512C 3  XYXYF -   4667C 3  SO    -   536C 1  II    -   536C 1
TU    -    537C 1  N     -    537C 1  SLAP  -   540C 1  SLAPZ -   540C 1  TLAP  -   541C 1  TLAPZ -   541C 1
ULAP  -    542C 1  ULAPZ -    542C 1  VLAP  -   543C 1  VLAPZ -   543C 1  S1    -   544C 1  UU1   -   544C 1
S2    -    545C 1  UU2   -    545C 1  S3    -   546C 1  UU3   -   546C 1  S4    -   547C 1  UU4   -   547C 1
T1    -    550C 1  VV1   -    550C 1  T2    -   551C 1  VV2   -   551C 1  T3    -   552C 1  VV3   -   552C 1
T4    -    553C 1  VV4   -    553C 1  CSYJ  -   554C 1  CSZIJK -   554C 1  CTYJ  -   555C 1  CTZIJK -   555C 1
CSYJ1 -    555C 1  CSZKP1 -   556C 1  CTYJ1 -   557C 1  CTZKP1 -   557C 1  CSXJ  -   560C 1  CTXJ  -   561C 1
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JDEX   -    562C 1  I4P    -   1454     QTAV   -   1453     EMPAV  -   1452     AURD   -   1451     L      -   1450

          SUBROUTINES CALLED
OUTPTC     EXIT       QTEMPF     Q8QRSD

          COMMON BLOCKS AND LENGTHS
       -  11220      CMN1   -   14702      CMN2   -   11331      QTST   -   6063
    COMPILE TIME =     678    MILLISECS
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
2635                    2          SUBROUTINE QTEMPF (S,T,QTX,EMPX)                                          QTEP.2
2637                    2      C   ********** BEGINNING OF DIMENSION CHANGE  **********                       QTEP.3
2638                    2          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,QTEP.4
2639                    2         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYS,INKD,INDEX,ITIL(3)QTEP.5
2640                    2         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MMT(4),LOW(4)QTEP.6
2641                    2         3,LSTP(4),EG(4),OUUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LUMP,  QTEP.7
2642                    2         3LPSTP,LSTOA,IOMDA,IOMDB,IOMDC,IOMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,QTEP.8
2643                    2         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANQTEP.9
2644                    2         4,MSCAN,EPSL,ALPHAR,ALPHA1,PHOT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(8),QTEP.10
2645                    2         4LGLTIJ(2,4,3),XXX(30)                                                    QTEP.11
2646                    2         4,DAMT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, QTEP.12
2647                    2         527),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)       QTEP.13
2648                    2          COMMON/CMN2/DAYS,KDATB,IMAXT,N1B,N1BT,IUNDF,RUNDF,FLAT1,FLAT2,    QTEP.14
2649                    2         1FLONG1,FLONG2,SD,TD,ROD,ALPHA,B,HEATC,PI,RE,G,WISX,SWISX,TWISX,    QTEP.15
2650                    2         2WISZ,SWISZ,TWISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,QTEP.16
2651                    2         3DXT(27),DXU(27),RDXU2(27),DXT,DXU,RDXU2,EPSSK(10),EPSTK(10),RDCRITQTEP.17
2652                    2         4(10),DZ(10),DZHH(10),Z(10),DEPTH,BETA(27),F(27),UG(10),AMZT(10),  QTEP.18
2653                    2         1AUXX(27), AMZT(27,10),AMZU(27,10),AX(27,10),AY(27,10),AZ(27,10),  QTEP.19
2654                    2         5CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),WISX(  QTEP.20
2655                    2         727),SWISX(27),TWISX(27),    IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    QTEP.21
2656                    2         BLANK(2),IND(2),INDBL(27),INDB(27),LSBY(23),IEF1(27),IEF2(27),INDI  QTEP.22
2657                    2         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)QTEP.23
2658                    2         1,EPD(23,27)
2659                    2          DIMENSION S(23,27),T(23,27)
2660                    2      C   ********** ENDING OF DIMENSION CHANGE  **********                         QTEP.25
2661                    2          EMPX=0.0                                                                  QTEP.26
2662                    2          DO 10 J=J1,J2                                                             QTEP.27
2663                    2          I1=IEF1(J) $ I2=IEF2(J)                                                   QTEP.28
2664                    2          DO 10 I=I1,I2                                                             QTEP.29
2665                    4          IF (IND(I,J) .LT. 0) GO TO 10                                             QTEP.30
2666                    4          EPD(I,J)=EPD(I,J)*S(I,J)                                                  QTEP.31
2667                    4          EMPX=EMPX+EPD(I,J)                                                        QTEP.32
2668                    4       10 CONTINUE                                                                  QTEP.33
2669                   30          EMPX=EMPX/AREATB                                                          QTEP.34
2670                   30          RETURN                                                                    QTEP.35
2671                   33          END                                                                       QTEP.36

          LENGTH OF ROUTINE   QTEMPF        46

          VARIABLE ASSIGNMENTS
S       -       0     T       -       0     QTX     -       0     EMPX    -       0     DAYS    -      0C 0  KDAT    -      1C 0
DIFDAY  -      2C 0   DTIME   -      3C 0   DAYEND  -      4C 0   MAXI    -      5C 0   IMAX    -      6C 0  JMAX    -      7C 0
KMAX    -     10C 0   IM1     -     11C 0   JM1     -     12C 0   IP1     -     13C 0   JP1     -     14C 0  I1      -     15C 0
J2      -     16C 0   I2      -     17C 0   J2      -     20C 0   I       -     21C 0   J       -     22C 0  K       -     23C 0
NCARD1  -     24C 0   NCARD   -     25C 0   KSYS    -     26C 0   INKD    -     27C 0   INDEX   -     30C 0  ITIL    -     31C 0
NAMX    -     41C 0   NTPD1   -     44C 0   NTPD2   -     45C 0   NAMT    -     46C 0   NTAP    -     52C 0  NRT     -     66C 0
KNR     -     72C 0   MMT     -     75C 0   LOW     -    102C 0   LSTP    -    106C 0   EG      -    112C 0  OUUT    -    116C 0
NOTAP   -    142C 0   ITAP    -    125C 0   MTLAB   -    132C 0   PRTDAY  -    442C 0   LUMP    -    443C 0  LPSTP   -    444C 0
LSTOA   -    445C 0   IOMDA   -    446C 0   IOMDB   -    447C 0   IOMDC   -    450C 0   IOMDD   -    451C 0  NDIM    -    452C 0
NDIM1   -    453C 0   NDIM2   -    454C 0   NDSK1   -    455C 0   NDSK2   -    456C 0   NDSK3   -    457C 0  NDSK4   -    460C 0
NDSK5   -    461C 0   NDSK6   -    462C 0   NDSK7   -    463C 0   NDSK8   -    464C 0   MSUN    -    465C 0  MSUI    -    466C 0
LMIN1   -    467C 0   LMIN2   -    470C 0   IBSCAN  -    471C 0   MSCAN   -    472C 0   EPSL    -    473C 0  ALPHAR  -    474C 0
ALPHA1  -    475C 0   PHOT    -    476C 0   DTIME1  -    477C 0   DTIME2  -    500C 0   MSWP    -    501C 0  MCOUNT  -    502C 0
MSLCT   -    503C 0   LGLTIJ  -    506C 0   XXX     -    536C 0   DAMT    -    574C 0   KDATT   -    575C 0  IBT     -    576C 0
PT      -   1770C 0   KT      -   1754C 0   UT      -   1759C 0   VT      -   3132C 0   WT      -   4307C 0  ST      -   5404C 0
TT      -   5641C 0   PPT     -  100146C 0   RES     -  111736C 0   UTM     -  123506C 0   VTM     -  135256C 0  DAYS    -      0C 1
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KDATA  -      1C 1  IMAXT  -      2C 1  NIB    -      3C 1  NIBT   -      4C 1  IUNDF  -      5C 1  JUNDF  -      6C 1
FLAT1  -      7C 1  FLAT2  -     10C 1  FLONG1 -     11C 1  FLONG2 -     12C 1  SO     -     13C 1  TO     -     14C 1
ADD    -     15C 1  ALPHA  -     16C 1  B      -     17C 1  HEATC  -     20C 1  PI     -     21C 1  RE     -     22C 1
C      -     23C 1  VISY   -     24C 1  SVISY  -     25C 1  TVISY  -     26C 1  VISZ   -     27C 1  SVISZ  -     30C 1
TVISZ  -     31C 1  POWER  -     32C 1  TAREA  -     33C 1  UAREA  -     34C 1  TVOL   -     35C 1  UVOL   -     36C 1
TKK    -     37C 1  CSTQ   -     40C 1  CSTE   -     41C 1  SECDAY -     42C 1  DXT    -     43C 1  DXJ    -     76C 1
RDXU2  -    131C 1  DYT    -    164C 1  DYJ    -    165C 1  RDYU2  -    166C 1  EPSSK  -    167C 1  EPSTK  -    201C 1
RUCRIT -    213C 1  DZ     -    225C 1  DZMH   -    237C 1  Z      -    251C 1  DEPTH  -    263C 1  BETA   -    264C 1
P      -    317C 1  DG     -    352C 1  AYZT   -    364C 1  AUXY   -    376C 1  AXZT   -    431C 1  AXZJ   -   1047C 1
AX     -   1465C 1  AY     -   2103C 1  AZ     -   2521C 1  CSX    -   3137C 1  CSY    -   3555C 1  CSZ    -   4173C 1
CTX    -   4205C 1  CTY    -   4623C 1  CTZ    -   5241C 1  VISX   -   5253C 1  SVISX  -   5306C 1  TVISX  -   5341C 1
IHI    -   5374C 1  IMX    -   5375C 1  IMEF1  -   5376C 1  IMEF2  -   5377C 1  JMX    -   5400C 1  JMEF1  -   5401C 1
JMEF2  -   5402C 1  LAN    -   5403C 1  ING    -   5405C 1  INDBL  -   5407C 1  INDBR  -   5442C 1  LSBY   -   5475C 1
IEF1   -   5724C 1  IEF2   -   5557C 1  IND    -   5612C 1  AREAT  -   6767C 1  AREAU  -   6770C 1  VOLT   -   6771C 1
VOLU   -   6772C 1  AREATB -   6773C 1  AREAUB -   6774C 1  VOLTB  -   6775C 1  VOLUB  -   6776C 1  ATXY   -   6777C 1
END    -  101640 1

        SUBROUTINES CALLED
DURRSD.

        COMMON BLOCKS AND LENGTHS
CMN1   -  14722      CMN2   -  11331
    COMPILE TIME =     60    MILLISECS
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CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
2672                0          SUBROUTINE RELAX (NDSKR,NDSKW)                                          RELX.2
2673                0      C   ***OVERLAP BLOCK BOUNDARY VALUE OF PPT(I,J), RES(I,J) MUST PRE-STORE    RELX.3
2674                0      C   ***IN BPT(J,L), BPTEP(J,L) RESPECTIVELY, BEFORE ENTER THIS ROUTINE.     RELX.4
2675                0      C    ******** OUTPUT PPT(I,J), RES(I,J) INCLUDING OVERLAP BLOCK BOUNDARY    RELX.5
2676                0      C   ========== BEGINING OF DIMENSION CHANGE  ==========                     RELX.6
2677                0           COMMON  BPT(27,4),BUT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
2678                0          1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
2679                0           COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,RELX.7
2680                0          1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)RELX.8
2681                0          2,NAMX(3),NTPO1,NTPO2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)RELX.9
2682                0          3,LSTP(4),BG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LOWP,  RELX.10
2683                0          3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,RELX.11
2684                0          3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSU1, LMIN1,LMIN2,IBSCANRELX.12
2685                0          4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),RELX.13
2686                0          4LG_TIJ(2,4,3),XXX(30)                                                  RELX.14
2687                0          4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  RELX.15
2688                0          627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)             RELX.16
2689                0           DIMENSION XUVR(2484)                                                   RELX.17
2690                0           EQUIVALENCE (PPT(1),XUVR(1))                                           RELX.18
2691                0           COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     RELX.19
2692                0          1FLONG1,FLONG2,SO,TO,R00,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    RELX.20
2693                0          2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTG,CSTE,SECDAY,RELX.21
2694                0          3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITRELX.22
2695                0          4(10),DZ(10),DZMH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   RELX.23
2696                0          1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   RELX.24
2697                0          6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  RELX.25
2698                0          727),SVISX(27),TVISX(27),    IB1,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    RELX.26
2699                0          8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(   RELX.27
2700                0          923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)RELX.28
2701                0          1,EPD(23,27)
2702                0           DIMENSION X(2012),Y(2013)
2703                0           EQUIVALENCE (DAYB,X(1)),(IB1,Y(1))                                     RELX.31
2704                0      C   ========== ENDING OF DIMENSION CHANGE  ================                RELX.34
2705                0           EQUIVALENCE (XXX(1),NDKOUT),(XXX(2),NDSKRW),(XXX(3),CORR),(XXX(4),RELX.35
2706                0          1NSCAN),(XXX(5),ISC),(XXX(6),KCHK),(XXX(7),ICHK),(XXX(8),L),(XXX(9)RELX.36
2707                0          2,LI),(XXX(10),L2I),(XXX(11),LSWH),(XXX(12),LI)                         RELX.37
2708               10           CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKR) $ CALL REWDTP (NDSKW)        RELX.38
2709               13       100 CALL RDBUFL (NDSK5,IDMDB,Y)                                            RELX.39
2710               20           CALL RDBUFL (NDSKR,IDMDC,XUVR)                                         RELX.40
2711               20      C    FILL IN OVERLAP-BOUNDARY VALUES OF UTM,VTM WITH BUTM,BVTM.             RELX.41
2712               25           LI=3                                                                   RELX.42
2713               25           DO 112 L=1,2                                                           RELX.43
2714               25           LI=LI-2 $ L1=LAN(L)                                                    RELX.44
2715               25           IF (L1 .EQ. 0) GO TO 112                                               RELX.45
2716               25           L1=L1+LI $ I1=ING(L)-LI                                                RELX.46
2717               25           DO 111 J=1,JMAX                                                        RELX.47
2718               35           UTM(I1,J)=BUTM(J,L1) $ VTM(I1,J)=BVTM(J,L1)                            RELX.48
2719               35       111 CONTINUE                                                               RELX.49
2720               55       112 CONTINUE                                                               RELX.50
2721               55      C   ------CALCULATION THE FINAL RES(I,J) WITHOUT THE OVERLAP BOUNDARY.      RELX.51
2722               60           DO 150 J=J1,J2                                                         RELX.52
2723               60           I1=IEF1(J) $ I2=IEF2(J) $ JM1=J-1                                      RELX.53
2724               60           DO 150 I=I1,I2                                                         RELX.54
2725               65           IF (IND(I,J) .NE. 0) GO TO 150                                         RELX.55
2726               65           IM1=I-1                                                                RELX.56
2727               65           CIRCT=(VTM(IM1,J)-VTM(I,J))*RDXU2(J)+(VTM(IM1,JM1)-VTM(I,JM1))*        RELX.57
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CARD          APPROXIMATE
NUMBER      PROGRAM LOCATION
2728              65          1RDXJ2(JM1)+(UTM(I,J)-UTM(I,JM1)+UTM(IM1,J)-UTM(IM1,JM1))*RDYU2     RELX.58
2729              65           RES(I,J)=RES(I,J)+CIRCT                                            RELX.59
2730              65     150   CONTINUE                                                           RELX.60
2731              65     C *** STORE THE OVERLAP BOUNDARY VALUE OF RES IN BPTEP FOR OTHER BLOCKS.RELX.61
2732              65     C *** STORE THE OVERLAP BOUNDARY VALUE OF PPT IN  BPT  FOR OTHER BLOCKS.RELX.62
2733             136           DO 122 L=1,2                                                       RELX.63
2734             136           LI=LAN(L)                                                          RELX.64
2735             136           IF (LI .EQ. 0) GO TO 122                                           RELX.65
2736             136           II=ING(L)                                                          RELX.66
2737             136           DO 121 J=1,JMAX                                                    RELX.67
2738             147           BPT(J,LI)=PPT(II,J) $ BPTEP(J,LI)=RES(II,J)                        RELX.68
2739             147     121   CONTINUE                                                           RELX.69
2740             168     122   CONTINUE                                                           RELX.70
2741             170           CALL RTBUFL (NDSKW,IOMOC,XOVR)                                     RELX.71
2742             177           IF (IBI .NE. NIB) GO TO 100                                        RELX.72
2743             201           NSCAN=0                                                            RELX.73
2744             201     C  *****START---BLOCK CALCULATION OF RELAXATION *******                   RELX.74
2745             201        2  NSCAN=NSCAN+1                                                      RELX.75
2746             204        1  NDSKRW=NDSKR # NDSKR=NDSKW $ NDSKW=NDSKRW                          RELX.76
2747             204        4  CONTINUE                                                           RELX.77
2748             215           CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKR) $ CALL REWDTP (NDSKW)    RELX.78
2749             221           KCHK=0                                                             RELX.79
2750             221        3  CALL RDBUFL (NDSK5,IOMOB,Y)                                        RELX.80
2751             227           CALL RDBUFL (NDSKR,IOMOC,XOVR)                                     RELX.81
2752             227     C  ***** FILL IN THE OVERLAP BOUNDARY VALUE OF PPT(I,J), RES(I,J) WITH   RELX.82
2753             227     C  ***** THIER STORE VALUES AT BPT(J,L), BPTEP(J,L)                       RELX.83
2754             234           LSWH=0                                                             RELX.84
2755             234           GO TO 17                                                           RELX.85
2756             234     C  ------CONTINUE CALCULATION------                                      RELX.86
2757             237       15  IF (NSCAN .EQ. 0) GO TO 7                                          RELX.87
2758             241           ISC=0                                                              RELX.88
2759             241       10  ISC=ISC+1                                                          RELX.89
2760             242           ICHK=0                                                             RELX.90
2761             242           DO 20 J=J1,J2                                                      RELX.91
2762             242           I1=IEF1(J) $ I2=IEF2(J) $ JM1=J-1 $ JP1=J+1                        RELX.92
2763             242           DO 20 I=I1,I2                                                      RELX.93
2764             254           IF (IND(I,J) .NE. 0) GO TO 20                                      RELX.94
2765             254           IF (ABS(RES(I,J)) .LT. EPSL) GO TO 20                              RELX.95
2766             254           ICHK=1 $ IM1=I-1 $ IP1=I+1                                         RELX.96
2767             254           CORR=ALPHA1*RES(I,J)                                               RELX.97
2768             254           RES(I,J)=-ALPHAR*RES(I,J) $ PPT(I,J)=PPT(I,J)+CORR                 RELX.98
2769             254           RES(IM1,J)=RES(IM1,J)+CORR $ RES(I,JP1)=RES(I,JP1)+CORR            RELX.99
2770             254           RES(IP1,J)=RES(IP1,J)+CORR $ RES(I,JM1)=RES(I,JM1)+CORR            RELX.100
2771             254       20  CONTINUE                                                           RELX.101
2772             341           IF (ICHK .EQ. 0) GO TO 30                                          RELX.102
2773             345           IF (ISC .LT. IBSCAN) GO TO 10                                      RELX.103
2774             347       30  CALL RTBUFL (NDSKW,IOMOC,XOVR)                                     RELX.104
2775             354           KCHK=KCHK+ICHK                                                     RELX.105
2776             354     C  **STORE OVERLAP BOUNDARY OF PPT(I,J),RES(I,J) AT BPT(J,L),BPTEP(J,L) RELX.106
2777             354           LSWH=1                                                             RELX.107
2778             354     C  ---FROM HERE TO STATEMENT 22 IS A GENERAL BLOCK BOUNDARY INTERCHANGE RELX.108
2779             354     C  ---ROUTINE WITH INPUT LSWH = (0,1)                                    RELX.109
2780             354       17  LI=3                                                               RELX.110
2781             357           DO 22 L=1,2                                                        RELX.111
2782             357           LI=LI-2 $ LI=LAN(L)                                                RELX.112
2783             357           IF (LI .EQ. 0) GO TO 22                                            RELX.113
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
2784              357          I1=ING(L)                                                                    RELX.114
2785              357          L2=L1+LI $ I2=I1-LI                                                          RELX.115
2786              357          IF (LSWH .NE. 0) GO TO 19                                                    RELX.116
2787              357          DO 18 J=1,JMAX                                                               RELX.117
2788              400          PPT(I1,J)=BPT(J,L1) $ RES(I1,J)=BPTEP(J,L1)                                  RELX.118
2789              400          PPT(I2,J)=BPT(J,L2) $ RES(I2,J)=BPTEP(J,L2)                                  RELX.119
2790              400       18 CONTINUE                                                                     RELX.120
2791              423          GO TO 22                                                                     RELX.121
2792              424       19 DO 21 J=1,JMAX                                                               RELX.122
2793              424          BPT(J,L1)=PPT(I1,J) $ BPTEP(J,L1)=RES(I1,J)                                  RELX.123
2794              424          BPT(J,L2)=PPT(I2,J) $ BPTEP(J,L2)=RES(I2,J)                                  RELX.124
2795              424       21 CONTINUE                                                                     RELX.125
2796              450       22 CONTINUE                                                                     RELX.126
2797              455          IF (LSWH .EQ. 0) GO TO 16                                                    RELX.127
2798              460          IF (IBI .NE. NIB) GO TO 3                                                    RELX.128
2799              463          IF (KCHK .EQ. 0) GO TO 6                                                     RELX.129
2800              467          IF (NSCAN .LT. MSCAN) GO TO 2                                                RELX.130
2801              471          PRINT 5, DAYS,IBSCAN,MSCAN                                                   RELX.131
2802              504        5 FORMAT (//5X,*DAYS, IBSCAN, MSCAN =*F14.4,2I5,*,  NOW NO. OF BLOCKRELX.132
2803              504         1 SCANNING EXEEDS MSCAN.*/20X,*----JOB TERMINATES ABNORMALLY----*/)RELX.133
2804              504          NAMX(2)=10HAT RELAXAT  $ NAMX(3)=10HION STOP                                 RELX.134
2805              504          LTYPE=1 $ NDUM=0                                                             RELX.135
2806              504          CALL CALCKD (LTYPE,NDSKR,NDUM)                                               RELX.136
2807              516          CALL CALCKD (LTYPE,NDSKW,NDUM)                                               RELX.137
2808              523          CALL EXIT                                                                    RELX.138
2809              524        6 NSCAN=0                                                                      RELX.139
2810              524          GO TO 1                                                                      RELX.140
2811              525        7 CALL WTBUFL (NDSKW,IDMDC,XOVR)                                               RELX.141
2812              534          IF (IBI .NE. NIB) GO TO 3                                                    RELX.142
2813              535          RETURN                                                                       RELX.143
2814              536          END                                                                          RELX.144

      LENGTH OF ROUTINE   RELAX      606

      VARIABLE ASSIGNMENTS
NDSKR  -      0     NDSKW  -      0     XOVR   -  10016C 1  X      -     0C 2  Y      -  5374C 2  BPT    -     0C 0
BUT    -   154C 0  BVT    -  2244C 0  BST   -   4334C 0  BTT    -  6424C 0  BUTM   - 10514C 0  BVTM   - 10670C 0
BPTEP  - 11044C 0  DAYS   -     0C 1  KDAT  -      1C 1  DIFDAY -     2C 1  DTIME  -     3C 1  DAYEND -     4C 1
MAXI   -     5C 1  IMAX   -     6C 1  JMAX  -      7C 1  KMAX   -    10C 1  IM1    -    11C 1  JM1    -    12C 1
IP1    -    13C 1  JP1    -    14C 1  I1    -     15C 1  J1     -    16C 1  I2     -    17C 1  J2     -    20C 1
I      -    21C 1  J      -    22C 1  K     -     23C 1  NCARD1 -    24C 1  NCARD  -    25C 1  KSYB   -    26C 1
INKD   -    27C 1  INDEX  -    30C 1  ITIL  -     31C 1  NAMX   -    41C 1  NTPD1  -    44C 1  NTPD2  -    45C 1
NAMT   -    45C 1  NTAP   -    52C 1  NRT   -     66C 1  KNR    -    72C 1  MWT    -    76C 1  LDW    -   102C 1
LSTP   -   106C 1  BG     -   112C 1  DOUT  -    116C 1  NOTAP  -   122C 1  ITAP   -   126C 1  MTLAB  -   132C 1
PRTDAY -   442C 1  LDWP   -   443C 1  LPSTP -    444C 1  LSTDA  -   445C 1  IDMDA  -   446C 1  IDMDB  -   447C 1
IDMDC  -   450C 1  IDMDD  -   451C 1  NDIM  -    452C 1  NDIM1  -   453C 1  NDIM2  -   454C 1  NDSK1  -   455C 1
NDSK2  -   456C 1  NDSK3  -   457C 1  NDSK4 -    460C 1  NDSK5  -   461C 1  NDSK6  -   462C 1  NDSK7  -   463C 1
NDSK8  -   464C 1  MSUN   -   465C 1  MSUI  -    466C 1  LMIN1  -   467C 1  LMIN2  -   470C 1  IBSCAN -   471C 1
MSCAN  -   472C 1  EPSL   -   473C 1  ALPHAR -   474C 1  ALPHA1 -   475C 1  PWGT   -   476C 1  DTIME1 -   477C 1
DTIME2 -   500C 1  MSWP   -   501C 1  MCOUNT -   502C 1  MSLCT  -   503C 1  LGLTIJ -   506C 1  XXX    -   536C 1
DAYT   -   574C 1  KDATT  -   575C 1  IBT   -    576C 1  PT     -   577C 1  KT     -  1754C 1  UT     -  1755C 1
VT     -  3132C 1  WT     -  4307C 1  ST    -   5464C 1  TT     -  6641C 1  PPT    - 10016C 1  RES    - 11173C 1
UTM    - 12350C 1  VTM    - 13525C 1  DAYB  -      0C 2  KDATB  -     1C 2  IMAXT  -     2C 2  NIB    -     3C 2
NIBT   -     4C 2  IJNDF  -     5C 2  RJNDF -      6C 2  FLAT1  -     7C 2  FLAT2  -    10C 2  FLONG1 -    11C 2
FLONG2 -    12C 2  SO     -    13C 2  TO    -     14C 2  RDO    -    15C 2  ALPHA  -    16C 2  B      -    17C 2
HEATC  -    20C 2  PI     -    21C 2  RE    -     22C 2  G      -    23C 2  VISY   -    24C 2  SVISY  -    25C 2
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TVISY   -     26C 2  VISZ    -     27C 2  SVISZ   -     30C 2  TVISZ   -     31C 2  POWER   -     32C 2  JAREA   -     33C 2
JAREA   -     34C 2  TVOL    -     35C 2  JVOL    -     36C 2  TKK     -     37C 2  CSTQ    -     40C 2  CSTE    -     41C 2
SECDAY  -     42C 2  DXT     -     43C 2  DXU     -     75C 2  RDXU2   -    131C 2  DYT     -    164C 2  DYJ     -    165C 2
RDYU2   -    166C 2  EPSSX   -    167C 2  EPSTX   -    201C 2  RDCRIT  -    213C 2  DZ      -    225C 2  DZMH    -    237C 2
Z       -    251C 2  DEPTH   -    263C 2  BETA    -    264C 2  F       -    317C 2  DG      -    352C 2  AYZT    -    364C 2
AUXY    -    376C 2  AXZT    -    431C 2  AXZU    -   1047C 2  AX      -   1465C 2  AY      -   2103C 2  AZ      -   2521C 2
CSX     -   3137C 2  CSY     -   3555C 2  CSZ     -   4173C 2  CTX     -   4205C 2  CTY     -   4623C 2  CTZ     -   5241C 2
VISX    -   5253C 2  SVISX   -   5306C 2  TVISX   -   5341C 2  IBI     -   5374C 2  IMX     -   5375C 2  IMEF1   -   5376C 2
IMEF2   -   5377C 2  JMX     -   5400C 2  JMEF1   -   5401C 2  JMEF2   -   5402C 2  LAM     -   5403C 2  ING     -   5405C 2
INDBL   -   5407C 2  INDBR   -   5442C 2  LSBY    -   5475C 2  IEF1    -   5524C 2  IEF2    -   5557C 2  IND     -   5612C 2
AREAT   -   6767C 2  AREAJ   -   6770C 2  VOLT    -   6771C 2  VOLU    -   6772C 2  AREATB  -   6773C 2  AREAUB  -   6774C 2
VOLTB   -   6775C 2  VOLUB   -   6776C 2  ATXY    -   6777C 2  EPD     -  10154C 2  NDKOUT  -    536C 1  NDSKRW  -    537C 1
CORR    -    540C 1  NSCAN   -    541C 1  ISC     -    542C 1  KCHK    -    543C 1  ICHK    -    544C 1  L       -    545C 1
L1      -    546C 1  L2      -    547C 1  LSWH    -    550C 1  LI      -    551C 1  CIRCT   -    546     LTYPE   -    545
NDUM    -    644

        SUBROUTINES CALLED
REWDTP    RDBUFL    WTBUFL    OUTPTC    CALCKD    EXIT      QBORSD

        COMMON BLOCKS AND LENGTHS
      -  11220     CMN1    -  14702     CMN2    -  11331
   COMPILE TIME =    280    MILLISECS
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
2615                )          SUBROUTINE CNTX (NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                          CNTX.2
2616                )     C ** OUTPUT OF CNTX ARE NEW ADJUSTED S, T (WITHOUT OVERLAP BOUNDARY)     CNTX.3
2617                )     C ** AND NEW DEVIATED U, V (WITHOUT OVERLAP BOUNDARY) WITHOUT SUBSTRACT CNTX.4
2618                )     C ** OF THE VERTICAL MEAN U, V, WHICH IS CONCURRENTLY CALCULATED IN THISCNTX.5
2619                )     C ** ROUTINE AND STORED IN UTM, VTM.                                     CNTX.6
2620                )     C ** AND STORE THE BOUNDARY VALUE (FOR OTHER BLOCK) OF U, V, UTM,VTM IN CNTX.7
2621                )     C ** BUT, BVT,  BUTM, BVTM RESPECTIVELY.                                 CNTX.8
2622                )     C  ========== BEGINING OF DIMENSION CHANGE  ==========                   CNTX.9
2623                )          COMMON  BPT(27,4),BUT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
2624                )         1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
2625                )          COMMON/CMN1/DAYS,KDAT,DTDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,CNTX.10
2626                )         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(3)CNTX.11
2627                )         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)CNTX.12
2628                )         3,LSTP(4),RG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  CNTX.13
2629                )         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,CNTX.14
2630                )         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANCNTX.15
2631                )         4,MSCAN,EPSL,ALPHAR,ALPHAI,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),CNTX.16
2632                )         4LGLTIJ(2,4,3),XXX(30)                                             CNTX.17
2633                )         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, CNTX.18
2634                )         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)        CNTX.19
2635                )          DIMENSION KJVR(2484)                                              CNTX.20
2636                )          EQUIVALENCE (PPT(1),KJVR(1))                                      CNTX.21
2637                )          DIMENSION BT(624),JT(3106)                                        CNTX.22
2638                )          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                               CNTX.23
2639                )          COMMON/CMN2/DAYB,KDATB,IMAXT,NIP,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,    CNTX.24
2640                )         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,   CNTX.25
2641                )         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTG,CSTE,SECDAY,CNTX.26
2642                )         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITCNTX.27
2643                )         4(10),DZ(10),DZH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   CNTX.28
2644                )         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),  CNTX.29
2645                )         5CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX( CNTX.30
2646                )         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,   CNTX.31
2647                )         8LAN(2),INC(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND( CNTX.32
2648                )         923,27),AREAT,AREAJ,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)CNTX.33
2649                )         1,EPD(23,27)
2650                )          DIMENSION X(2812),Y(2013)
2651                )          EQUIVALENCE (DAYB,X(1)),(IBI,Y(1))                                CNTX.36
2652                )          COMMON/CMN3/BP(624),DA(3106),DB(3106),DC(3106)                    CNTX.37
2653                )          DIMENSION P(23,27)                                                CNTX.38
2654                )          DIMENSION DA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)       CNTX.39
2655                )          DIMENSION DB(23,27),VB(23,27),WB(23,27),SB(23,27),TB(23,27)       CNTX.40
2656                )          DIMENSION DC(23,27),VC(23,27),WC(23,27),SC(23,27),TC(23,27)       CNTX.41
2657                )          EQUIVALENCE (BP(1),DAYX),(BP(2),KDATX),(BP(3),IB),(BP(4),P(1))    CNTX.42
2658                )          EQUIVALENCE (DA(1),KA),(DA(2),UA(1)),(DA(623),VA(1)),(DA(1244),WA(CNTX.43
2659                )         11)),(DA(1865),SA(1)),(DA(2486),TA(1))                             CNTX.44
2660                )          EQUIVALENCE (DB(1),KB),(DB(2),UB(1)),(DB(623),VB(1)),(DB(1244),WB(CNTX.45
2661                )         11)),(DB(1865),SB(1)),(DB(2486),TB(1))                             CNTX.46
2662                )          EQUIVALENCE (DC(1),KC),(DC(2),UC(1)),(DC(623),VC(1)),(DC(1244),WC(CNTX.47
2663                )         11)),(DC(1865),SC(1)),(DC(2486),TC(1))                             CNTX.48
2664                )          DIMENSION INDB(27,2),JBAR(23,27),VBAR(23,27)                      CNTX.51
2665                )          COMMON/QTST/DAYFR,KDATFR,IBFR,TAIR(23,27),QT(23,27),STX(23,27),
2666                )         1STY(23,27), IDMQT,IDMF2,IDMF4,LCMFR(65),LCMFRD,NORDER,PERIOD,MAXFR
2667                )         1,PPERD(2),KIND2,KIND4,CAG1,CAG2,CRB1,CRB2,BB2,BB12,AA2,AA12,BVPT,
2668                )         1BV2,CI2,CI3,CB2,CB3,CB4,CH1,CE1,CTX1,DAYSC,XABF(541)
2669                )     C  ========== ENDING OF DIMENSION CHANGE  ================               CNTX.52
2670                )          EQUIVALENCE (INDBL(1),INDB(1))                                    CNTX.53
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CARD      APPROXIMATE
NUMBER  PROGRAM LOCATION
2871              0          EQUIVALENCE (STX(1),UBAR(1)),(STY(1),VBAR(1))                          CNTX.54
2872             10          CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKX) $ CALL REWDTP (NDSKZ)        CNTX.55
2873             21          CALL REWDTP (NDSKY) $ CALL REWDTP (NDSKR) $ CALL REWDTP (NDSKW)        CNTX.56
2874             24       10 CALL RDBUFL(NDSK5,IDMDB,Y)                                             CNTX.57
2875             31          CALL RDBUFL (NDSKX,NDIM1,BP)                                           CNTX.58
2876             36          CALL RDBUFL (NDSKY,NDIM1,BT)                                           CNTX.59
2877             43          CALL RDBUFL (NDSKR,IDMDC,XUVR)                                         CNTX.60
2878             50          DAYX=DAYT $ KDATX=KDATT                                                CNTX.61
2879             50     C  CALCULATION OF VERTICAL AVERAGE OF OLD U, V (UBAR, VBAR) FORM INPUT      CNTX.62
2880             50     C   OLD P (NOT INCLUDING OVERLAP BOUNDARY POINTS)                          CNTX.63
2881             50     C  ----- AND STORE IN THE LOCATION OF STX AND STY RESPECTIVELY.             CNTX.64
2882             50     C      RDYU2=0.5/DYU   $   RDXU2(J)=0.5/DXU(J)                            CNTX.65
2883             50          DO 12  J=J1,J2                                                         CNTX.66
2884             50          I1=IEF1(J) $ I2=IEF2(J) $ JP1=J+1                                      CNTX.67
2885             50          DO 12 I=I1,I2                                                          CNTX.68
2886             54          IF (IND(I,J) .LT. 0 .OR. IND(I,J) .GT. 6) GO TO 12                     CNTX.69
2887             54          IP1=I+1                                                                CNTX.70
2888             54          UBAR(I,J)=(P(I,J)+P(IP1,J)-P(I,JP1)-P(IP1,JP1))*RDYU2                  CNTX.71
2889             54          VBAR(I,J)=(P(IP1,J)+P(IP1,JP1)-P(I,J)-P(I,JP1))*RDXU2(J)               CNTX.72
2890             54       12 CONTINUE                                                               CNTX.73
2891             54     C **** CALCULATION OF ADVANCING STREAM FUNCTION P(I,J) OF BLOCK IB          CNTX.74
2892             54     C   ----HERE NEW P(I,J) IN LOCATION OF PT(I,J), OLD P(I,J) IN P(I,J)       CNTX.75
2893             54     C   ----THE REAL PT(I,J) IS IN THE LOCATION OF PPT(I,J) FROM DISK NDSKR.    CNTX.76
2894             54     C   ----ALL  INPUT P(I,J), PPT(I,J) AND OUTPUT PT(I,J) (THE NEW P(I,J)     CNTX.77
2895             54     C   ----ARE INCLUDING THIER OVERLAP BOUNDARY VALUES.                        CNTX.78
2896             54     C  ADVANCE OF STREAM FUNCTION P(I,J) OF BLOCK IB (NOT INCLUDING OVERLAP)   CNTX.79
2897            130          DO 15 J=J1,J2                                                          CNTX.80
2898            130          I1=IEF1(J) $ I2=IEF2(J)                                                CNTX.81
2899            130          DO 15 I=I1,I2                                                          CNTX.82
2900            131          IF (IND(I,J) .LT. 0) GO TO 15                                          CNTX.83
2901            131          PT(I,J)=P(I,J)+DTIME*PPT(I,J)                                          CNTX.84
2902            131       15 CONTINUE                                                               CNTX.85
2903            131     C   ********ADVANCE P AT THE OVERLAP BOUNDARY********                       CNTX.86
2904            157          IL=3                                                                   CNTX.87
2905            157          DO 18 L=1,2                                                            CNTX.88
2906            157          IL=IL-2 $ I=ING(L)                                                     CNTX.89
2907            157          IF (I .EQ. 0) GO TO 18                                                 CNTX.90
2908            157          I=I-IL                                                                 CNTX.91
2909            157          DO 17 J=1,JMAX                                                         CNTX.92
2910            171          IF (INDB(J,L) .LT. 0) GO TO 17                                         CNTX.93
2911            171          PT(I,J)=P(I,J)+DTIME*PPT(I,J)                                          CNTX.94
2912            171       17 CONTINUE                                                               CNTX.95
2913            213       18 CONTINUE                                                               CNTX.96
2914            213     C  *** STORE IN BPTEP(J,IB-1), THE SPECIAL BOUNDARY OF NEW P(I,J) (WHICH    CNTX.97
2915            213     C  *** HAS THE LOCATION OF PT(I,J)) FOR FUTURE USE IN ROUTINE NUVCAL.      CNTX.98
2916            213     C  *** WHERE I=ING(1)+1 FOR ING(1) .NE. 0                                  CNTX.99
2917            217          IF (ING(1) .EQ. 0) GO TO 24                                            CNTX.100
2918            222          I=ING(1)+1 $ IBM1=IB-1                                                 CNTX.101
2919            222          DO 23 J=1,JMAX                                                         CNTX.102
2920            222       23 BPTEP(J,IBM1)=PT(I,J)                                                  CNTX.103
2921            222     C  --- ZERO OUT UTM(I,J), VTM(I,J) ---                                     CNTX.104
2922            241       24 DO 16 J=J1,J2                                                          CNTX.105
2923            241          I1=IEF1(J) $ I2=IEF2(J)                                                CNTX.106
2924            241          DO 16 I=I1,I2                                                          CNTX.107
2925            243          IF (IND(I,J) .LT. 0 .OR. IND(I,J) .GT. 6) GO TO 16                     CNTX.108
2926            243          UTM(I,J)=VTM(I,J)=0.0                                                  CNTX.109
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CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
2927                243        16  CONTINUE                                                                    CNTX.110
2928                272            CALL WTBUFL (NDSKZ,NDIM1,BT)                                                CNTX.111
2929                300            CALL RDBUFL (NDSKX,NDIM2,DA)                                                CNTX.112
2930                305            CALL RDBUFL (NDSKY,NDIM2,DT)                                                CNTX.113
2931                312            CALL ADVCD (DAYX,IB,KA,UA,VA,SA,TA)                                         CNTX.114
2932                323            CALL RDBUFL (NDSKX,NDIM2,DB)                                                CNTX.115
2933                330            CALL RDBUFL (NDSKY,NDIM2,DT)                                                CNTX.116
2934                335            CALL ADVCD (DAYX,IB,KB,UB,VB,SB,TB)                                         CNTX.117
2935                346        20  CALL RDBUFL (NDSKX,NDIM2,DC)                                                CNTX.118
2936                353            CALL RDBUFL (NDSKY,NDIM2,DT)                                                CNTX.119
2937                360            CALL ADVCD (DAYX,IB,KC,UC,VC,SC,TC)                                         CNTX.120
2938                371            CALL CALCAJ (DAYX,IB,KA,SA,TA,KB,SB,TB,KC,SC,TC)                            CNTX.121
2939                406            CALL WTBUFL (NDSKZ,NDIM2,DA)                                                CNTX.122
2940                415            IF (KC .LT. KMAX) GO TO 21                                                  CNTX.123
2941                417            CALL WTBUFL (NDSKZ,NDIM2,DB)                                                CNTX.124
2942                424            CALL WTBUFL (NDSKZ,NDIM2,DC)                                                CNTX.125
2943                431            GO TO 50                                                                    CNTX.126
2944                431        21  CALL RDBUFL (NDSKX,NDIM2,DA)                                                CNTX.127
2945                437            CALL RDBUFL (NDSKY,NDIM2,DT)                                                CNTX.128
2946                444            CALL ADVCD (DAYX,IB,KA,UA,VA,SA,TA)                                         CNTX.129
2947                455            CALL CALCAJ (DAYX,IB,KB,SB,TB,KC,SC,TC,KA,SA,TA)                            CNTX.130
2948                472            CALL WTBUFL (NDSKZ,NDIM2,DB)                                                CNTX.131
2949                501            IF (KA .LT. KMAX) GO TO 22                                                  CNTX.132
2950                503            CALL WTBUFL (NDSKZ,NDIM2,DC)                                                CNTX.133
2951                510            CALL WTBUFL (NDSKZ,NDIM2,DA)                                                CNTX.134
2952                515            GO TO 50                                                                    CNTX.135
2953                515        22  CALL RDBUFL (NDSKX,NDIM2,DB)                                                CNTX.136
2954                523            CALL RDBUFL (NDSKY,NDIM2,DT)                                                CNTX.137
2955                530            CALL ADVCD (DAYX,IB,KB,UB,VB,SB,TB)                                         CNTX.138
2956                541            CALL CALCAJ (DAYX,IB,KC,SC,TC,KA,SA,TA,KB,SB,TB)                            CNTX.139
2957                556            CALL WTBUFL (NDSKZ,NDIM2,DC)                                                CNTX.140
2958                565            IF (KB .LT. KMAX) GO TO 20                                                  CNTX.141
2959                567            CALL WTBUFL (NDSKZ,NDIM2,DA)                                                CNTX.142
2960                574            CALL WTBUFL (NDSKZ,NDIM2,DB)                                                CNTX.143
2961                574        C  ----THINGS CHANGED IN XUVR ARE UTM, VTM----                                  CNTX.144
2962                601        50  CALL WTBUFL (NDSKW,IDMDC,XUVR)                                              CNTX.145
2963                610            IF (IB .LT. VIB) GO TO 10                                                   CNTX.146
2964                612            RETURN                                                                      CNTX.147
2965                612            END                                                                         CNTX.148

          LENGTH OF ROUTINE   CNTX          662

          VARIABLE ASSIGNMENTS
NDSKX  -        0     NDSKY  -        0     NDSKZ  -        0     NDSKR  -        0     NDSKW  -        0     XUVR   -   10016C 1
BT     -     574C 1   DT     -     1754C 1  X      -       0C 2   Y      -     5374C 2  P      -       3C 3  UA     -    1161C 3
VA     -    2338C 3   WA     -    3513C 3   SA     -    4670C 3   TA     -    6045C 3   UB     -    7223C 3  VB     -   10400C 3
WB     -   11555C 3   SB     -   12732C 3   TB     -   14107C 3   UC     -   15265C 3   VC     -   16442C 3  WC     -   17617C 3
SC     -   20774C 3   TC     -   22151C 3   INDB   -    5407C 2   UBAR   -    2335C 4   VBAR   -    3512C 4  BPT    -      0C 0
BUT    -     154C 0   BVT    -    2244C 0   BST    -    4334C 0   BTT    -    6424C 0   BUTM   -   10514C 0  BVTM   -   10670C 0
BPTEP  -   11044C 0   DAYS   -      3C 1   KOAT   -      1C 1   DIFDAY -      2C 1   DTIME  -      3C 1  DAYEND -      4C 1
MAXI   -      5C 1   IMAX   -      6C 1   JMAX   -      7C 1   KMAX   -     10C 1   IM1    -     11C 1  JM1    -     12C 1
IP1    -     13C 1   JP1    -     14C 1   I1     -     15C 1   J1     -     16C 1   I2     -     17C 1  J2     -     20C 1
I      -     21C 1   J      -     22C 1   K      -     23C 1   NCARD1 -     24C 1   NCARD  -     25C 1  KSYB   -     26C 1
INKJ   -     27C 1   INDEX  -     30C 1   ITIL   -     31C 1   NAMX   -     41C 1   NTPD1  -     44C 1  NTPD2  -     45C 1
NAMT   -     48C 1   NTAP   -     52C 1   NRT    -     66C 1   KNR    -     72C 1   MWT    -     76C 1  LOW    -    102C 1
LSTP   -    106C 1   BG     -    112C 1   DOUT   -    116C 1   NOTAP  -    122C 1   ITAP   -    126C 1  MTLAB  -    132C 1
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PRTDAY -    442C 1  LDWP   -    443C 1  LPSTP  -    444C 1  LSTDA  -    445C 1  IDMDA  -    446C 1  IDMDB  -    447C 1
IDMDC  -    450C 1  IDMDD  -    451C 1  NDIM   -    452C 1  NDIM1  -    453C 1  NDIM2  -    454C 1  NDSK1  -    455C 1
NDSK2  -    456C 1  NDSK3  -    457C 1  NDSK4  -    460C 1  NDSK5  -    461C 1  NDSK6  -    462C 1  NDSK7  -    463C 1
NDSK8  -    464C 1  MSUN   -    465C 1  MSUI   -    466C 1  LMIN1  -    467C 1  LMIN2  -    470C 1  IBSCAN -    471C 1
ISCAN  -    472C 1  EPSL   -    473C 1  ALPHAR -    474C 1  ALPHA1 -    475C 1  PWGT   -    476C 1  DTIME1 -    477C 1
DTIME2 -    500C 1  MSWP   -    501C 1  MCOUNT -    502C 1  MSLCT  -    503C 1  LGLTIJ -    506C 1  XXX    -    536C 1
DAYT   -    574C 1  KDATT  -    575C 1  IBT    -    576C 1  PT     -    577C 1  KT     -   1754C 1  UT     -   1755C 1
VT     -   3132C 1  WT     -   4307C 1  ST     -   5464C 1  TT     -   6641C 1  PPT    -  10016C 1  RES    -  11173C 1
JTM    -  12350C 1  VTM    -  13525C 1  DAYB   -     0C 2  KDATB  -     1C 2  IMAXT  -     2C 2  NIB    -     3C 2
NIBT   -     4C 2  IUNDF  -     5C 2  RUNDF  -     6C 2  FLAT1  -     7C 2  FLAT2  -    10C 2  FLONG1 -    11C 2
FLONG2 -    12C 2  SD     -    13C 2  TD     -    14C 2  RDD    -    15C 2  ALPHA  -    16C 2  B      -    17C 2
HEATC  -    20C 2  PI     -    21C 2  RE     -    22C 2  G      -    23C 2  VISY   -    24C 2  SVISY  -    25C 2
TVISY  -    26C 2  VISZ   -    27C 2  SVISZ  -    30C 2  TVISZ  -    31C 2  POWER  -    32C 2  TAREA  -    33C 2
UAREA  -    34C 2  TVOL   -    35C 2  JVOL   -    36C 2  TKK    -    37C 2  CSTW   -    40C 2  CSTE   -    41C 2
SECDAY -    42C 2  DXT    -    43C 2  DXU    -    76C 2  RDXU2  -   131C 2  DYT    -   164C 2  DYJ    -   165C 2
RDYJ2  -   166C 2  EPSSK  -   167C 2  EPSTK  -   201C 2  RDCRIT -   213C 2  DZ     -   225C 2  DZMH   -   237C 2
Z      -   251C 2  DEPTH  -   263C 2  BETA   -   264C 2  F      -   317C 2  DG     -   352C 2  AYZT   -   364C 2
AUXY   -   376C 2  AXZT   -   431C 2  AXZU   -  1047C 2  AX     -  1465C 2  AY     -  2103C 2  AZ     -  2521C 2
CSX    -  3137C 2  CSY    -  3555C 2  CSZ    -  4173C 2  CTX    -  4205C 2  CTY    -  4623C 2  CTZ    -  5241C 2
VISX   -  5263C 2  SVISX  -  5306C 2  TVISX  -  5341C 2  IBI    -  5374C 2  IMX    -  5375C 2  IMEF1  -  5376C 2
IMEF2  -  5377C 2  JMX    -  5400C 2  JMEF1  -  5401C 2  JMEF2  -  5402C 2  LAN    -  5403C 2  ING    -  5405C 2
INDBL  -  5407C 2  INDBR  -  5442C 2  LSBY   -  5475C 2  IEF1   -  5524C 2  IEF2   -  5557C 2  IND    -  5612C 2
AREAT  -  6767C 2  AREAJ  -  6770C 2  VOLT   -  6771C 2  VOLU   -  6772C 2  AREATB -  6773C 2  AREAUB -  6774C 2
VOLTB  -  6775C 2  VOLJB  -  6776C 2  ATXY   -  6777C 2  EPD    -  10154C 2  BP     -     0C 3  DA     -  1160C 3
DB     -  7222C 3  DC     -  15264C 3  DAYFR  -     0C 4  KDATFR -     1C 4  IBFR   -     2C 4  TAIR   -     3C 4
QT     -  1160C 4  STX    -  2335C 4  STY    -  3512C 4  IDMQT  -  4667C 4  IDMF2  -  4670C 4  IDMF4  -  4671C 4
LCMFR  -  4672C 4  LCMFRD -  4773C 4  NGRUER -  4774C 4  PERIOD -  4775C 4  MAXFR  -  4776C 4  RPERD  -  4777C 4
KIND2  -  5001C 4  KIND4  -  5002C 4  CAG1   -  5003C 4  CAG2   -  5004C 4  CRB1   -  5005C 4  CRB2   -  5006C 4
BB2    -  5007C 4  BB12   -  5010C 4  AA2    -  5011C 4  AA12   -  5012C 4  BVPT   -  5013C 4  BV2    -  5014C 4
CI2    -  5015C 4  CI3    -  5016C 4  CB2    -  5017C 4  CB3    -  5020C 4  CB4    -  5021C 4  CH1    -  5022C 4
CE1    -  5023C 4  CTX1   -  5024C 4  DAYSC  -  5025C 4  XABF   -  5026C 4  DAYX   -     0C 3  KDATX  -     1C 3
IB     -     2C 3  KA     -  1160C 3  KB     -  7222C 3  KC     -  15264C 3  IL     -   622     L      -   621
IS41   -   620

        SUBROUTINES CALLED
REWDTP    RDBUFL    WTBUFL    ADVCJ     CALCAJ    QBQRSD

        COMMON BLOCKS AND LENGTHS
      -  11220     CMN1   -  14702     CMN2   -  11331     CMN3   -  23326     QTST   -  6063
   COMPILE TIME =     272    MILLISECS
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CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
2966                0        SUBROUTINE ADVCD (DAYX,IB,KB,U,V,S,T)                                          ADVC.2
2967                0    C  ========== BEGINING OF DIMENSION CHANGE  ==========                             ADVC.3
2968                0        COMMON  BPT(27,4),BUT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
2969                0       1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
2970                0        COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,ADVC.4
2971                0       1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)ADVC.5
2972                0       2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)ADVC.6
2973                0       3,LSTP(4),BG(4),DOUT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  ADVC.7
2974                0       3LPSTP,LSTDA,ID4DA,ID4DB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,ADVC.8
2975                0       3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANADVC.9
2976                0       4,MSCAN,EPSL,ALPHAR,ALPH41,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),ADVC.10
2977                0       4LGLTIJ(2,4,3),XXX(30)                                                         ADVC.11
2978                0       4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, ADVC.12
2979                0       627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)        ADVC.13
2980                0        DIMENSION XJVR(2484)                                                          ADVC.14
2981                0        EQUIVALENCE (PPT(1),XUVR(1))                                                  ADVC.15
2982                0        DIMENSION BT(624),DT(3106)                                                    ADVC.16
2983                0        EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                           ADVC.17
2984                0        COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     ADVC.18
2985                0       1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    ADVC.19
2986                0       2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,ADVC.20
2987                0       3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),KDCRITADVC.21
2988                0       4(10),DZ(10),DZ4H(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   ADVC.22
2989                0       1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   ADVC.23
2990                0       6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  ADVC.24
2991                0       727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    ADVC.25
2992                0       8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  ADVC.26
2993                0       923,27),AREAT,AREAJ,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)ADVC.27
2994                0       1,EPJ(23,27)
2995                0        DIMENSION U(23,27),V(23,27),S(23,27),T(23,27)                                 ADVC.31
2996                0        DIMENSION UBAR(23,27),VBAR(23,27)                                             ADVC.32
2997                0        COMMON/QTST/DAYFR,KDATFR,IBFR,TAIR(23,27),QT(23,27),STX(23,27),
2998                0       1STY(23,27), ID4QT,ID4F2,IDMF4,LCMFR(65),LCMFRQ,NORDER,PERIOD,MAXFR
2999                0       1,RPERD(2),KIND2,KIND4,CAG1,CAG2,CRB1,CRB2,BB2,BB12,AA2,AA12,BVPT,
3000                0       1BV2,C12,C13,CB2,CB3,CB4,CH1,CE1,CTA1,DAYSC,XABF(541)
3001                0    C  ********** ENDING OF DIMENSION CHANGE  **********                             ADVC.33
3002                0        EQUIVALENCE (XXX(1),BTIM),(XXX(2),STIM),(XXX(3),UTIM),(XXX(4),     ADVC.34
3003                0       1CDEAF),(XXX(5),AFJ),(XXX(6),BFJ),(XXX(7),AFX2),(XXX(8),US1),(XXX(  ADVC.35
3004                0       29),US2),(XXX(10),VS1),(XXX(11),VS2),(XXX(12),L),(XXX(13),L1)       ADVC.36
3005                0        EQUIVALENCE (STX(1),UBAR(1)),(STY(1),VBAR(1))                                 ADVC.37
3006                0        DATA CDEA/0.55/                                                               ADVC.38
3007                0    C   CHANGE INPUT U, V INTO U, V DEVIATED FROM VERTICAL MEAN.                       ADVC.39
3008                0        DO 15 J=J1,J2                                                                 ADVC.40
3009                3        I1=IEF1(J) $ I2=IEF2(J)                                                       ADVC.41
3010                3        DO 15 I=I1,I2                                                                 ADVC.42
3011                4        IF (IND(I,J) .LT. 0 .OR. IND(I,J) .GT. 6) GO TO 15                            ADVC.43
3012                4        U(I,J)=U(I,J)-UBAR(I,J) $ V(I,J)=V(I,J)-VBAR(I,J)                             ADVC.44
3013                4     15 CONTINUE                                                                      ADVC.45
3014                4    C   ADVANCE OF U,V,S,T  (NOT INCLUDING BLOCK BOUNDARY)                            ADVC.46
3015               35        BTIM=DTIME/DZ(KB)                                                             ADVC.47
3016               36        DO 50 J=J1,J2                                                                 ADVC.48
3017               36        I1=IEF1(J) $ I2=IEF2(J)                                                       ADVC.49
3018               36        IF (J .NE. JMAX) UTIM=BTIM/AUXY(J)                                            ADVC.50
3019               36        CDEAF=CDEA*F(J) $ AFJ=CDEAF*DTIME $ BFJ=(F(J)-CDEAF)*DTIME                    ADVC.51
3020               36        AFX2=1.0+AFJ*AFJ                                                              ADVC.52
3021               36        DO 50 I=I1,I2                                                                 ADVC.53
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CARD          APPROXIMATE
NUMBER       PROGRAM LOCATION
3022                  54          IF (IND(I,J) .LT. 0) GO TO 50                                                    ADVC.54
3023                  54          STIM=STIM /ATXY(I,J)                                                             ADVC.55
3024                  54          S(I,J)=S(I,J)+STIM*ST(I,J) $ T(I,J)=T(I,J)+STIM*TT(I,J)                          ADVC.56
3025                  54          IF (IND(I,J) .GT. 6) GO TO 50                                                    ADVC.57
3026                  54          US1=U(I,J)+UTIM*UT(I,J) $ VS1=V(I,J)+UTIM*VT(I,J)                                ADVC.58
3027                  54          US2=US1+BFJ*V(I,J) $ VS2=VS1-BFJ*U(I,J)                                          ADVC.59
3028                  54          U(I,J)=(US2+AFJ*VS2)/AFX2 $ V(I,J)=(VS2-AFJ*US2)/AFX2                            ADVC.60
3029                  54          UTM(I,J)=UTM(I,J)+U(I,J)*DZ(KB) $ VTM(I,J)=VTM(I,J)+V(I,J)*DZ(KB)               ADVC.61
3030                  54       50 CONTINUE                                                                         ADVC.62
3031                 144          IF (KB .EQ. KMAX) GO TO 20                                                       ADVC.63
3032                 144       C  -----FOR KB .NE. KMAX, STORE OVERLAP BOUNDARY OF U,V IN BUT,BVT.                 ADVC.64
3033                 145          DO 19 L=1,2                                                                      ADVC.65
3034                 145          L1=LAN(L)                                                                        ADVC.66
3035                 145          IF (L1 .EQ. 0) GO TO 19                                                          ADVC.67
3036                 145          I1=ING(L)                                                                        ADVC.68
3037                 146          DO 18 J=1,JMAX                                                                   ADVC.69
3038                 154          BUT(J,L1,KB)=U(I1,J) $ BVT(J,L1,KB)=V(I1,J)                                      ADVC.70
3039                 154       18 CONTINUE                                                                         ADVC.71
3040                 175       19 CONTINUE                                                                         ADVC.72
3041                 200          RETURN                                                                           ADVC.73
3042                 200       C  ------FOR KB=KMAX                                                               ADVC.74
3043                 200       C   VERTICAL AVERAGE OF DEVIATED U, V, I.E. JTM=UTM/DEPTH,VTM=VTM/DEPTH             ADVC.75
3044                 201       20 DO 25 J=J1,J2                                                                    ADVC.76
3045                 201          I1=IEF1(J) $ I2=IEF2(J)                                                          ADVC.77
3046                 201          DO 25 I=I1,I2                                                                    ADVC.78
3047                 205          IF (IND(I,J) .LT. 0 .OR. IND(I,J) .GT. 6) GO TO 25                               ADVC.79
3048                 206          UTM(I,J)=UTM(I,J)/DEPTH $ VTM(I,J)=VTM(I,J)/DEPTH                                ADVC.80
3049                 206       25 CONTINUE                                                                         ADVC.81
3050                 206       C  -----STORE OVERLAP BOUNDARY OF U,V,UTM,VTM IN BUT,BVT,BUTM,BVTM.                 ADVC.82
3051                 234          DO 22 L=1,2                                                                      ADVC.83
3052                 234          L1=LAN(L)                                                                        ADVC.84
3053                 234          IF (L1 .EQ. 0) GO TO 22                                                          ADVC.85
3054                 234          I1=ING(L)                                                                        ADVC.86
3055                 234          DO 21 J=1,JMAX                                                                   ADVC.87
3056                 245          BUT(J,L1,KB)=U(I1,J) $ BUTM(J,L1)=UTM(I1,J)                                      ADVC.88
3057                 245          BVT(J,L1,KB)=V(I1,J) $ BVTM(J,L1)=VTM(I1,J)                                      ADVC.89
3058                 245       21 CONTINUE                                                                         ADVC.90
3059                 271       22 CONTINUE                                                                         ADVC.91
3060                 274          RETURN                                                                           ADVC.92
3061                 275          END                                                                              ADVC.93

          LENGTH OF ROUTINE   ADVC1        330

          VARIABLE ASSIGNMENTS
DAYX    -       0     I8      -       0     KB      -       0     U       -       0     V       -       0     S       -       0
T       -       0     XUVR    -  100160 1   BT      -     574C 1  DT      -    1754C 1  UBAR    -    2335C 3  VBAR    -    3512C 3
BPT     -      0C 0   BUT     -     154C 0  BVT     -    2244C 0  BST     -    4334C 0  BTT     -    6424C 0  BUTM    -   10514C 0
BVTM    -  10670C 0   BPTEP   -   11044C 0  DAYS    -      0C 1  KDAT    -      1C 1  DIFDAY  -      2C 1  DTIME   -      3C 1
DAYEND  -      4C 1   MAXI    -      5C 1   IMAX    -      6C 1  JMAX    -      7C 1  KMAX    -     10C 1  IM1     -     11C 1
JM1     -     12C 1   IP1     -     13C 1   JP1     -     14C 1  I1      -     15C 1  J1      -     16C 1  I2      -     17C 1
J2      -     20C 1   I       -     21C 1   J       -     22C 1  K       -     23C 1  NCARD1  -     24C 1  NCARD   -     25C 1
KSYS    -     26C 1   INKD    -     27C 1   INDEX   -     30C 1  ITIL    -     31C 1  NAMX    -     41C 1  NTPD1   -     44C 1
NTPD2   -     45C 1   NAMT    -     46C 1   NTAP    -     62C 1  NRT     -     66C 1  KNR     -     72C 1  MWT     -     76C 1
LOW     -    102C 1   LSTP    -    106C 1   BG      -    112C 1  DOUT    -    116C 1  NDTAP   -    122C 1  ITAP    -    126C 1
ATLAS   -    132C 1   PRTDAY  -    442C 1   LOWP    -    443C 1  LPSTP   -    444C 1  IDMDA   -    445C 1  NDIM    -    446C 1
IDMD3   -    447C 1   IDMDC   -    450C 1   IDMDD   -    451C 1  NDIM    -    452C 1  NDIM1   -    453C 1  NDIM2   -    454C 1
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NDSK1  -    455C 1  NDSK2  -    456C 1  NDSK3  -    457C 1  NDSK4  -    460C 1  NDSK5  -    461C 1  NDSK6  -    462C 1
NDSK7  -    463C 1  NDSK8  -    464C 1  MSUN   -    465C 1  MSUI   -    466C 1  LMIN1  -    467C 1  LMIN2  -    470C 1
IBSCAN -    471C 1  MSCAN  -    472C 1  EPSL   -    473C 1  ALPHAR -    474C 1  ALPHA1 -    475C 1  PWGT   -    476C 1
DTIME1 -    477C 1  DTIME2 -    500C 1  MSWP   -    501C 1  MCOUNT -    502C 1  MSLCT  -    503C 1  LGLTIJ -    506C 1
XXX    -    536C 1  DAYT   -    574C 1  KDATT  -    575C 1  IBT    -    576C 1  PT     -    577C 1  KT     -   1754C 1
UT     -   1755C 1  VT     -   3132C 1  WT     -   4307C 1  ST     -   5464C 1  TT     -   6641C 1  PPT    -  10016C 1
RES    -  11173C 1  UTM    -  12350C 1  VTM    -  13525C 1  DAYB   -     0C 2  KDATB  -     1C 2  IMAXT  -     2C 2
NIB    -     3C 2  NIBT   -     4C 2  IUNDF  -     5C 2  RUNDF  -     6C 2  FLAT1  -     7C 2  FLAT2  -    10C 2
FLONG1 -    11C 2  FLONG2 -    12C 2  SO     -    13C 2  TO     -    14C 2  RDO    -    15C 2  ALPHA  -    16C 2
B      -    17C 2  HEATC  -    20C 2  PI     -    21C 2  RE     -    22C 2  G      -    23C 2  VISY   -    24C 2
SVISY  -    25C 2  TVISY  -    26C 2  VISZ   -    27C 2  SVISZ  -    30C 2  TVISZ  -    31C 2  POWER  -    32C 2
TAREA  -    33C 2  UAREA  -    34C 2  TVOL   -    35C 2  UVOL   -    36C 2  TKK    -    37C 2  CSTQ   -    40C 2
CSTE   -    41C 2  SECDAY -    42C 2  DXT    -    43C 2  DXU    -    76C 2  RDXU2  -   131C 2  DYT    -   164C 2
DYU    -   165C 2  RDYU2  -   166C 2  EPSSK  -   167C 2  EPSTK  -   201C 2  RUCKIT -   213C 2  DZ     -   225C 2
DZMH   -   237C 2  Z      -   251C 2  DEPTH  -   263C 2  BETA   -   264C 2  F      -   317C 2  DG     -   352C 2
AYZT   -   364C 2  AUXY   -   376C 2  AXZT   -   431C 2  AXZU   -  1047C 2  AX     -  1465C 2  AY     -  2103C 2
AZ     -  2521C 2  CSX    -  3137C 2  CSY    -  3555C 2  CSZ    -  4173C 2  CTX    -  4205C 2  CTY    -  4623C 2
CTZ    -  5241C 2  VISX   -  5263C 2  SVISX  -  5305C 2  TVISX  -  5341C 2  IBI    -  5374C 2  IMX    -  5375C 2
IMEF1  -  5376C 2  IMEF2  -  5377C 2  JMX    -  5400C 2  JMEF1  -  5401C 2  JMEF2  -  5402C 2  LAN    -  5403C 2
ING    -  5405C 2  INDBL  -  5407C 2  INDBR  -  5442C 2  LSRY   -  5475C 2  IEF1   -  5524C 2  IEF2   -  5557C 2
IND    -  5612C 2  AREAT  -  6767C 2  AREAU  -  6770C 2  VOLT   -  6771C 2  VOLU   -  6772C 2  AREATB -  6773C 2
AREAUB -  6774C 2  VOLTB  -  6775C 2  VOLUB  -  6776C 2  ATXY   -  6777C 2  EPD    - 10154C 2  DAYFR  -    0C 3
KDATFR -     1C 3  IBFR   -     2C 3  TAIR   -     3C 3  QT     -  1160C 3  STX    -  2335C 3  STY    -  3512C 3
IDMXT  -  4667C 3  IDMF2  -  4670C 3  IDMF4  -  4671C 3  LCMFR  -  4672C 3  LCMFRD -  4773C 3  NURDER -  4774C 3
PERIOD -  4775C 3  MAXFR  -  4776C 3  RPERD  -  4777C 3  KIND2  -  5001C 3  KIND4  -  5002C 3  CAG1   -  5003C 3
CAG2   -  5004C 3  CRB1   -  5005C 3  CRB2   -  5006C 3  BB2    -  5007C 3  BB12   -  5010C 3  AA2    -  5011C 3
AA12   -  5012C 3  BVPT   -  5013C 3  BV2    -  5014C 3  CI2    -  5015C 3  CI3    -  5016C 3  CB2    -  5017C 3
CB3    -  5020C 3  CB4    -  5021C 3  CH1    -  5022C 3  CE1    -  5023C 3  CTX1   -  5024C 3  DAYSC  -  5025C 3
AABF   -  5026C 3  BTIM   -   536C 1  STIM   -   537C 1  UTIM   -   540C 1  CUEAF  -   541C 1  AFJ    -   542C 1
BFJ    -   543C 1  AFX2   -   544C 1  JS1    -   545C 1  US2    -   546C 1  VSI    -   547C 1  VS2    -   550C 1
L      -   551C 1  L1     -   552C 1  CUEA   -     0


          SUBROUTINES CALLED
DUMMY

          COMMON BLOCKS AND LENGTHS
        -  11220      CMN1   -  14702      CMN2   -  11331      GTST   -   6063
     COMPILE TIME =     195    MILLISECS
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
3062                 0          SUBROUTINE CALCAJ (DAYX,IB,KA,SA,TA,KB,SB,TB,KC,SC,TC)                    AJST.2
3063                 0     C  ========== BEGINING OF DIMENSION CHANGE  ==========                          AJST.3
3064                 0          COMMON  BPT(27,4),BJT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
3065                 0         1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
3066                 0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,AJST.4
3067                 0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(3)AJST.5
3068                 0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)AJST.6
3069                 0         3,LSTP(4),BG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  AJST.7
3070                 0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,AJST.8
3071                 0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8,MSUN,MSU1,LMIN1,LMIN2,IBSCAN
3072                 0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),AJST.10
3073                 0         4LGLTIJ(2,4,3),XXX(30)                                                  AJST.11
3074                 0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  AJST.12
3075                 0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)             AJST.13
3076                 0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     AJST.14
3077                 0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    AJST.15
3078                 0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,AJST.16
3079                 0         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITAJST.17
3080                 0         4(10),DZ(10),DZMH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   AJST.18
3081                 0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   AJST.19
3082                 0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  AJST.20
3083                 0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    AJST.21
3084                 0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  AJST.22
3085                 0         923,27),AREAT,AREAJ,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)AJST.23
3086                 0         1,EPD(23,27)
3087                 0          DIMENSION SA(23,27),TA(23,27),SB(23,27),TB(23,27),SC(23,27),TC(23,AJST.27
3088                 0         127)                                                                    AJST.28
3089                 0          DIMENSION RHO(10),SH(10),TH(10)                                        AJST.29
3090                 0          EQUIVALENCE (XXX(10),RHO(1)),(XXX(20),SH(1))                           AJST.30
3091                 0     C  ********** ENDING OF DIMENSION CHANGE  ****************                   AJST.31
3092                 0          EQUIVALENCE (XXX(1),DZBAR),(XXX(2),NCOUNT),(XXX(3),NSWP),(XXX(4),  AJST.32
3093                 0         1KM1),(XXX(5),EPSSDZ),(XXX(6),EPSTDZ),(XXX(7),KCHEK),(XXX(8),DROMH)AJST.33
3094                 0     C     EPSSK(K)=EPSS*DZMH(K)  $  EPSTK(K)=EPST*DZMH(K)  (IN COMMON)          AJST.34
3095                 0     C     RDCRIT(K)=2.0*ALPHA*EPST*DZMH(K)        (IN COMMON)                   AJST.35
3096                 0     C     WHERE    EPST =TO/DEPTH (DEPTH IN CM)   $   EPSS=ALPHA*EPST/B       AJST.36
3097                 0     C    OTHER VARIABLES IN COMMON (MSWP,MCOUNT,ALPHA,B,TO,SO,IND,IEF1,IEF2,AJST.37
3098                 0     C      J1,J2)                                                                AJST.38
3099                 0          NCOUNT=0                                                               AJST.39
3100                14          DO 2300 J=J1,J2                                                        AJST.40
3101                14          I1=IEF1(J) $ I2=IEF2(J)                                                AJST.41
3102                14          DO 2300 I=I1,I2                                                        AJST.42
3103                16          IF (IND(I,J) .LT. 0) GO TO 2300                                        AJST.43
3104                16          SH(KA)=SA(I,J) $ TH(KA)=TA(I,J) $ SH(KB)=SB(I,J) $ TH(KB)=TB(I,J)      AJST.44
3105                16          SH(KC)=SC(I,J) $ TH(KC)=TC(I,J)                                        AJST.45
3106                16          NSWP = 0                                                               AJST.46
3107                16     2100 KCHEK=0                                                                AJST.47
3108                16          DO 2200 K=KB,KC                                                        AJST.48
3109                51          KM1 = K-1                                                              AJST.49
3110                51          DROMH =-ALPHA*(TH(KM1)-TH(K)) +B*(SH(KM1)-SH(K))                       AJST.50
3111                51          IF(DROMH.LT.RDCRIT(K))GO TO 2200                                       AJST.51
3112                51          KCHEK=1                                                                AJST.52
3113                51          DZBAR = DZ(KM1)+DZ(K)                                                  AJST.53
3114                51          EPSSDZ=EPSSK(K) $ EPSTDZ=EPSTK(K)                                      AJST.54
3115                51          SH(K)=(SH(K)*DZ(K)+((SH(KM1)+EPSSDZ)*DZ(KM1)))/DZBAR                   AJST.55
3116                51          TH(K) =(TH(K)*DZ(K) + ((TH(KM1) - EPSTDZ)*DZ(KM1)))/DZBAR              AJST.56
3117                51          SH(KM1)=SH(K)-EPSSDZ $ TH(KM1)=TH(K)+EPSTDZ                            AJST.57
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CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
3118                     51      2200 CONTINUE                                                          AJST.58
3119                    115           NSWP = NSWP + 1                                                   AJST.59
3120                    120           IF(NSWP.LT.MSWP)GO TO 2250                                        AJST.60
3121                    122           DO 2230 K=KA,KC                                                   AJST.61
3122                    122      2230 RHO(K)=ROO*(1.0-ALPHA*(TH(K)-TO)+B*(SH(K)-SO))                    AJST.62
3123                    140           PRINT 2001, IB,I,J,MSWP, (K,SH(K),TH(K),RHO(K),K=KA,KC)
3124                    175      2001 FORMAT (1X,* AT IB=*I3,*, (I,J) = (*,I2,1H,I2,*) NO. OF ADJUST EXCAJST.64
3125                    175          1EED MSWP=*I4/20X,*S(K), T(K), DENSITY(K) FOR K=*I3,2X,3E16.8/
3126                    175          2(43X,*FOR K=*I3,2X,3E16.8))
3127                    175           NCOUNT = NCOUNT + 1                                               AJST.66
3128                    200           IF(NCOUNT.LE.MCOUNT)GO TO 2300                                    AJST.67
3129                    202           PRINT 2002, MSWP, MCOUNT                                          AJST.68
3130                    213      2002 FORMAT(///5X,*ADJUST DENSITY  EXCEEDED *I4,* TIMES AT MORE THAN*,I4AJST.69
3131                    213          1,* POINTS ===JOB TERMINATES ABNORMALLY===*//)                     AJST.70
3132                    213           CALL EXIT                                                         AJST.71
3133                    215      2250 IF (KCHEK .NE. 0) GO TO 2100                                      AJST.72
3134                    217           SA(I,J)=SH(KA) $ TA(I,J)=TH(KA) $ SB(I,J)=SH(KB) $ TB(I,J)=TH(KB) AJST.73
3135                    217           SC(I,J)=SH(KC) $ TC(I,J)=TH(KC)                                   AJST.74
3136                    217      2300 CONTINUE                                                          AJST.75
3137                    217      C  **** STORE OVERLAP BOUNDARY VALUE OF SA(I,J), TA(I,J) IN BST, BTT. AJST.76
3138                    245           IF (KC .EQ. KMAX) GO TO 23                                        AJST.77
3139                    247           DO 22 L=1,2                                                       AJST.78
3140                    247           L1=LAN(L)                                                         AJST.79
3141                    247           IF (L1 .EQ. 0) GO TO 22                                           AJST.80
3142                    247           I1=ING(L)
3143                    247           DO 21 J=1,JMAX                                                    AJST.81
3144                    255           BST(J,L1,KA)=SA(I1,J) $ BTT(J,L1,KA)=TA(I1,J)                     AJST.83
3145                    255        21 CONTINUE                                                          AJST.84
3146                    276        22 CONTINUE                                                          AJST.85
3147                    301           RETURN                                                            AJST.86
3148                    302        23 DO 25 L=1,2                                                       AJST.87
3149                    302           L1=LAN(L)                                                         AJST.88
3150                    302           IF (L1 .EQ. 0) GO TO 25                                           AJST.89
3151                    302           I1=ING(L)
3152                    302           DO 24 J=1,JMAX                                                    AJST.90
3153                    313           BST(J,L1,KA)=SA(I1,J) $ BTT(J,L1,KA)=TA(I1,J)                     AJST.92
3154                    313           BST(J,L1,KB)=SB(I1,J) $ BTT(J,L1,KB)=TB(I1,J)                     AJST.93
3155                    313           BST(J,L1,KC)=SC(I1,J) $ BTT(J,L1,KC)=TC(I1,J)                     AJST.94
3156                    313        24 CONTINUE                                                          AJST.95
3157                    345        25 CONTINUE                                                          AJST.96
3158                    350           RETURN                                                            AJST.97
3159                    351           END                                                               AJST.98

          LENGTH OF ROUTINE   CALCAJ      470

          VARIABLE ASSIGNMENTS
DAYX    -       0     IB      -       0     KA      -       0     SA      -       0     TA      -       0     KB      -       0
SB      -       0     TB      -       0     KC      -       0     SC      -       0     TC      -       0     RHO     -    5470 1
SH      -    5810 1   TH      -       0     BPT     -      0C 0   BUT     -    1540 0   BVT     -    2240 0   BST     -    4330 0
BTT     -   64240 0   BUTM    -  105140 0   BVTM    -  106700 0   BPTEP   -  110440 0   DAYS    -      0C 1   KDAT    -      1C 1
DIFDAY  -      2C 1   DTIME   -      3C 1   DAYEND  -      4C 1   MAXI    -      5C 1   IMAX    -      6C 1   JMAX    -      7C 1
KMAX    -     10C 1   IM1     -     11C 1   JM1     -     12C 1   IP1     -     13C 1   JP1     -     14C 1   I1      -     15C 1
J1      -     16C 1   I2      -     17C 1   J2      -     20C 1   I       -     21C 1   J       -     22C 1   K       -     23C 1
NCARD1  -     24C 1   NCARD   -     25C 1   KSYB    -     26C 1   INKD    -     27C 1   INDEX   -     30C 1   ITIL    -     31C 1
NAMX    -     41C 1   NTPD1   -     44C 1   NTPD2   -     45C 1   NAMT    -     46C 1   NTAP    -     62C 1   NRT     -     66C 1
KW2     -     72C 1   MAT     -     75C 1   LOW     -    102C 1   LSTP    -    106C 1   BG      -    112C 1   DOUT    -    116C 1
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NDTAP  -    122C 1  ITAP   -    126C 1  MTLAB  -    132C 1  PRTDAY -    442C 1  LDWP   -    443C 1  LPSTP  -    444C 1
LSTDA  -    445C 1  IDMDA  -    446C 1  IDMDB  -    447C 1  IDMDC  -    450C 1  IDMDD  -    451C 1  NDIM   -    452C 1
NDIM1  -    453C 1  NDIM2  -    454C 1  NDSK1  -    455C 1  NDSK2  -    456C 1  NDSK3  -    457C 1  NDSK4  -    460C 1
NDSK5  -    461C 1  NDSK6  -    462C 1  NDSK7  -    463C 1  NDSK8  -    464C 1  MSUN   -    465C 1  MSJI   -    466C 1
LMIN1  -    467C 1  LMIN2  -    470C 1  IBSCAN -    471C 1  MSCAN  -    472C 1  EPSL   -    473C 1  ALPHAR -    474C 1
ALPHA1 -    475C 1  PWGT   -    476C 1  DTIME1 -    477C 1  DTIME2 -    500C 1  MSWP   -    501C 1  MCOUNT -    502C 1
MSLCT  -    503C 1  LGLTIJ -    506C 1  XXX    -    536C 1  DAYT   -    574C 1  KUATT  -    575C 1  IBT    -    576C 1
PT     -    577C 1  KT     -   1754C 1  JT     -   1755C 1  VT     -   3132C 1  WT     -   4307C 1  ST     -   5464C 1
TT     -   6641C 1  PPT    -  10016C 1  RES    -  11173C 1  UTM    -  12350C 1  VTM    -  13525C 1  DAYB   -     0C 2
KUATB  -     1C 2  IMAXT  -     2C 2  NIB    -     3C 2  NIBT   -     4C 2  IUNDF  -     5C 2  RUNDF  -     6C 2
FLAT1  -     7C 2  FLAT2  -    10C 2  FLONG1 -    11C 2  FLONG2 -    12C 2  SO     -    13C 2  TO     -    14C 2
RDO    -    15C 2  ALPHA  -    16C 2  B      -    17C 2  HEATC  -    20C 2  PI     -    21C 2  RE     -    22C 2
G      -    23C 2  VISY   -    24C 2  SVISY  -    25C 2  TVISY  -    26C 2  VISZ   -    27C 2  SVISZ  -    30C 2
TVISZ  -    31C 2  POWER  -    32C 2  TAREA  -    33C 2  UAREA  -    34C 2  TVOL   -    35C 2  UVOL   -    36C 2
TKK    -    37C 2  CSTU   -    40C 2  CSTE   -    41C 2  SECDAY -    42C 2  DXT    -    43C 2  DXU    -    76C 2
RDXU2  -   131C 2  DYT    -   164C 2  DYU    -   165C 2  RDYU2  -   166C 2  EPSSK  -   167C 2  EPSTK  -   201C 2
RDCRIT -   213C 2  DZ     -   225C 2  DZMH   -   237C 2  Z      -   251C 2  DEPTH  -   263C 2  BETA   -   264C 2
T      -   317C 2  DS     -   352C 2  AYZT   -   364C 2  AUXY   -   376C 2  AXZT   -   431C 2  AXZU   -  1047C 2
AX     -  1465C 2  AY     -  2103C 2  AZ     -  2521C 2  CSX    -  3137C 2  CSY    -  3555C 2  CSZ    -  4173C 2
CTX    -  4205C 2  CTY    -  4623C 2  CTZ    -  5241C 2  VISX   -  5253C 2  SVISX  -  5306C 2  TVISX  -  5341C 2
IGI    -  5374C 2  IMX    -  5375C 2  IMEF1  -  5376C 2  IMEF2  -  5377C 2  JMX    -  5400C 2  JMEF1  -  5401C 2
JMEF2  -  5402C 2  LAN    -  5403C 2  ING    -  5405C 2  INDBL  -  5407C 2  INDBR  -  5442C 2  LSBY   -  5475C 2
IEF1   -  5524C 2  IEF2   -  5557C 2  IWD    -  5612C 2  AREAT  -  6767C 2  AREAU  -  6770C 2  VOLT   -  6771C 2
VOLU   -  6772C 2  AREATB -  6773C 2  AREAUB -  6774C 2  VOLTB  -  6775C 2  VOLUB  -  6776C 2  ATXY   -  6777C 2
RHO    -  10154C 2  DZBAR  -   536C 1  NCOUNT -   537C 1  NSWP   -   540C 1  KM1    -   541C 1  EPSSDZ -   542C 1
EPSTDZ -   543C 1  KCHEK  -   544C 1  DROMH  -   545C 1  L      -   360      L1     -   357


          SUBROUTINES CALLED
OUTPTC     EXIT       ABORSU

          COMMON BLOCKS AND LENGTHS
        -  11220      CMN1   -  14702      CMN2   -  11331
     COMPILE TIME =     199    MILLISECS
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
3160                0          SUBROUTINE WJVCAL (NDSKX,NDSKZ,NDSKR)                                  WJVC.2
3161                0      C  ========== BEGINING OF DIMENSION CHANGE  ==========                      WJVC.3
3162                0          COMMON  BPT(27,4),BUT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
3163                0         1,10),BJTM(27,4),BVTM(27,4),BPTEP(27,4)
3164                0          COMMON/CMN1/DAYS,KDAT,DTFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,WJVC.4
3165                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(3)WJVC.5
3166                0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)WJVC.6
3167                0         3,LSTP(4),BG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  WJVC.7
3168                0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,WJVC.8
3169                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANWJVC.9
3170                0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),WJVC.10
3171                0         4LGLTIJ(2,4,3),XXX(30)                                                 WJVC.11
3172                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  WJVC.12
3173                0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)            WJVC.13
3174                0          DIMENSION XJVR(2484)                                                  WJVC.14
3175                0          EQUIVALENCE (PPT(1),XJVR(1))                                          WJVC.15
3176                0          DIMENSION BT(624),DT(3106)                                            WJVC.16
3177                0          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                   WJVC.17
3178                0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,       WJVC.18
3179                0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,      WJVC.19
3180                0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,WJVC.20
3181                0         3DXT(27),DXJ(27),RDXJ2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITWJVC.21
3182                0         4(10),DZ(10),DZ4H(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   WJVC.22
3183                0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),     WJVC.23
3184                0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  WJVC.24
3185                0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    WJVC.25
3186                0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(   WJVC.26
3187                0         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)WJVC.27
3188                0         1,EPD(23,27)
3189                0          DIMENSION K(2812),Y(2013)
3190                0          EQUIVALENCE (DAYB,X(1)),(IBI,Y(1))                                    WJVC.30
3191                0          COMMON/CMN3/BP(624),DA(3106),DB(3106),DC(3106)                        WJVC.31
3192                0          DIMENSION P(23,27)                                                    WJVC.32
3193                0          DIMENSION  U(23,27), V(23,27), W(23,27), S(23,27), T(23,27)           WJVC.33
3194                0          EQUIVALENCE (BP(1),DAYX),(BP(2),KDATX),(BP(3),IB),(BP(4),P(1))        WJVC.34
3195                0          EQUIVALENCE (DA(1),XA),(DA(2), U(1)),(DA(623), V(1)),(DA(1244), W(WJVC.35
3196                0         11)),(DA(1865), S(1)),(DA(2486), T(1))                                 WJVC.36
3197                0          COMMON/ENSL/DAYSE,KDATSE,ENGE(5),PCH(4,3),UCH(4,10,3),VCH(4,10,3),WJVC.39
3198                0         1WCH(4,10,3),SCH(4,10,3),TCH(4,10,3),ITEM,NWDS,LEL,ENGL(6,100)         WJVC.40
3199                0         1,FAC(6),IPL(6),IR,NPLX                                               WJVC.41
3200                0          DIMENSION WW(23,27),UBAR(23,27),VBAR(23,27),BWT(27,4,10)              WJVC.42
3201                0          COMMON/QTST/DAYFR,KDATFR,IBFR,TAIR(23,27),QT(23,27),STX(23,27),
3202                0         1STY(23,27), IDMQT,IDMF2,IDMF4,LCMFR(65),LCMFRD,NORDER,PERIOD,MAXFR
3203                0         1,RPERD(2),KIND2,KIND4,CAG1,CAG2,CRB1,CRB2,BB2,BB12,AA2,AA12,BVPT,
3204                0         1BV2,CI2,CI3,CB2,CB3,CB4,CH1,CE1,CTX1,DAYSC,XABF(541)
3205                0      C  ********** ENDING OF DIMENSION CHANGE  ****************                  WJVC.43
3206                0          EQUIVALENCE (WT(1),WW(1))                                             WJVC.44
3207                0          EQUIVALENCE (STX(1),UBAR(1)),(STY(1),VBAR(1))                         WJVC.45
3208                0          EQUIVALENCE (DB(1),BWT(1))                                            WJVC.46
3209               10          CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKX) $ CALL REWDTP (NDSKZ)       WJVC.47
3210               13          CALL REWDTP (NDSKR)                                                   WJVC.48
3211               16          DAYSE=DAYS                                                            WJVC.49
3212               16          KDATSE=KDAT                                                           WJVC.50
3213               16          DO 490 I=1,5                                                          WJVC.51
3214               16      490  ENGE(I)=0.0                                                          WJVC.52
3215               26       10  CALL RDBUFL (NDSK5,IDMDB,Y)                                          WJVC.53
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CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
 3215              34          CALL RDBUFL (NDSKX,NDIM1,BP)                                                    WJVC.54
 3217              41          CALL RDBUFL (NDSKR,IDMDC,XJVR)                                                  WJVC.55
 3218              46          DD=0.0                                                                          WJVC.56
 3219              46    C     RDYJ2=0.5/DYJ   $   RDXJ2(J)=0.5/DXU(J)                                         WJVC.57
 3220              46    C     CALCULATION OF UBAR, VBAR  (WITHOUT THE OVERLAP BOUNDARY POINTS)                WJVC.58
 3221              46          DO 14 J=J1,J2                                                                   WJVC.59
 3222              46          I1=IEF1(J) $ I2=IEF2(J) $ JP1=J+1                                               WJVC.60
 3223              46          DO 14 I=I1,I2                                                                   WJVC.61
 3224              50          IF (IND(I,J) .LT. 0 .OR. IND(I,J) .GT. 6) GO TO 14                              WJVC.62
 3225              50          IP1=I+1                                                                         WJVC.63
 3226              50          UBAR(I,J)=(P(I,J)+P(IP1,J)-P(I,JP1)-P(IP1,JP1))*RDYU2                           WJVC.64
 3227              50          VBAR(I,J)=(P(IP1,J)+P(IP1,JP1)-P(I,J)-P(I,JP1))*RDXU2(J)                        WJVC.65
 3228              50       14 CONTINUE                                                                        WJVC.66
 3229              50    C     ----THOSE WITH IND(I,J) .LT. 0, BUT .NE. IUNDF                                  WJVC.67
 3230              50    C     CALCULATION OF UBAR, VBAR AT LEFT BOUNDARY.                                     WJVC.68
 3231             125          IF (ING(1) .EQ. 0) GO TO 16                                                     WJVC.69
 3232             127          IP1=ING(1) $ I=IP1-1                                                            WJVC.70
 3233             131          DO 15 J=J1,J2                                                                   WJVC.71
 3234             131          IF (INDBL(J) .LT. 0 .OR. INDBL(J) .GT. 6) GO TO 15                              WJVC.72
 3235             131          JP1=J+1                                                                         WJVC.73
 3236             131          UBAR(I,J)=(P(I,J)+P(IP1,J)-P(I,JP1)-P(IP1,JP1))*RDYU2                           WJVC.74
 3237             131          VBAR(I,J)=(P(IP1,J)+P(IP1,JP1)-P(I,J)-P(I,JP1))*RDXU2(J)                        WJVC.75
 3238             131       15 CONTINUE                                                                        WJVC.76
 3239             206       16 IF (ING(2) .EQ. 0) GO TO 21                                                     WJVC.77
 3240             206    C     CALCULATION OF UBAR, VBAR AT RIGHT BOUNDARY.                                    WJVC.78
 3241             206    C   **** SPECIAL BOUNDARY VALUE OF NEW P SHOULD BE PRE-STORED IN BPTEP.               WJVC.79
 3242             210          I=ING(2)+1                                                                      WJVC.80
 3243             211          DO 20 J=J1,J2                                                                   WJVC.81
 3244             211          IF (INDBR(J) .LT. 0 .OR. INDBR(J) .GT. 6) GO TO 20                              WJVC.82
 3245             211          JP1=J+1                                                                         WJVC.83
 3246             211          UBAR(I,J)=(P(I,J)+BPTEP(J,IB)-P(I,JP1)-BPTEP(JP1,IB))*RDYU2                     WJVC.84
 3247             211          VBAR(I,J)=(BPTEP(J,IB)+BPTEP(JP1,IB)-P(I,J)-P(I,JP1))*RDXU2(J)                  WJVC.85
 3248             211       20 CONTINUE                                                                        WJVC.86
 3249             262       21 CALL WTBUFL (NDSKZ,NDIM1,PP)                                                    WJVC.87
 3250             270       11 CALL RDBUFL (NDSKX,NDIM2,DA)                                                    WJVC.88
 3251             270    C   *****FILL IN OVERLAP BOUNDARY VALUE OF S(I,J), T(I,J) BY BST, BTT               WJVC.89
 3252             275          DD=DD+DZ(KA)                                                                    WJVC.90
 3253             275          ZH=DEPTH-DD                                                                     WJVC.91
 3254             275          LI=3                                                                            WJVC.92
 3255             275          DO 19 L=1,2                                                                     WJVC.93
 3256             275          LI=LI-2 $ L1=LAN(L)                                                             WJVC.94
 3257             275          IF (L1 .EQ. 0) GO TO 19                                                         WJVC.95
 3258             275          I1=ING(L)-LI $ L1=L1+LI                                                         WJVC.96
 3259             275          DO 18 J=1,JMAX                                                                  WJVC.97
 3260             312          S(I1,J)=BST(J,L1,KA) $ T(I1,J)=BTT(J,L1,KA)                                     WJVC.98
 3261             312       18 CONTINUE                                                                        WJVC.99
 3262             333       19 CONTINUE                                                                        WJVC.100
 3263             333    C                                                                                     WJVC.101
 3264             333    C     (1) CALCULATION OF DEVIATE U,V BY SUBTRACT UTM,VTM, FOR IND .GE. 0            WJVC.102
 3265             333    C     (2) CALCULATION OF DEVIATE U,V BY SUBTRACT UTM,VTM AT THE BOUNDARY.           WJVC.103
 3266             333    C     (3) CALCULATION OF U, V BY ADDING UBAR, VBAR TO DEVIATE U, V.                 WJVC.104
 3267             336          DO 250 J=J1,J2                                                                  WJVC.105
 3268             336          JP1=J+1                                                                         WJVC.106
 3269             336          I1=IEF1(J)-1 $ I2=IEF2(J)+1                                                     WJVC.107
 3270             336          IF (I1 .LT. 1) I1=1                                                             WJVC.108
 3271             336          IF (I2 .GT. IMAX) I2=IMAX                                                       WJVC.109
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CARD      APPROXIMATE
NUMBER   PROGRAM LOCATION
3272           335          DO 250 I=I1,I2                                                          *JVC.110
3273           362          IF (IND(I,J) .EQ. IUNDF) GO TO 250                                      *JVC.111
3274           362          IF (IND(I,J)) 241,243,242                                               *JVC.112
3275           362      241 JBD=-IND(I,J)                                                           *JVC.113
3276           362          II=ING(1)-1                                                             *JVC.114
3277           362          IF (I .NE. II) GO TO 245                                                *JVC.115
3278           362          INDEX=INDBL(J)                                                          *JVC.116
3279           362          GO TO 248                                                               *JVC.117
3280           362      245 II=ING(2)+1                                                             *JVC.118
3281           362          IF (I .EQ. II) GO TO 247                                                *JVC.119
3282           362          PRINT 246, (ING(K),K=1,2),II                                            *JVC.120
3283           436      246 FORMAT (//10X,*ING(1), ING(2), I =*3I6*  NOT AGREE RELATION OF  (I      *JVC.121
3284           436         1 .EQ. ING(1)-1 .OR. I .EQ. ING(2)+1)*/25X,*=====JOB TERMINATES ABN     *JVC.122
3285           436         2ORMALLY=====  CALLED FROM SUBROUTINE WUVCAL  =====*//)                  *JVC.123
3286           436          CALL EXIT                                                               *JVC.124
3287           437      247 INDEX=INDBR(J)                                                          *JVC.125
3288           445      248 IF (INDEX .LT. 0 .OR. INDEX .GT. 6) GO TO 250                           *JVC.126
3289           450          U(I,J)=BUT(J,JBD,KA)-BUTM(J,JBD) $V(I,J)=BVT(J,JBD,KA)-BVTM(J,JBD)     *JVC.127
3290           450          U(I,J)=U(I,J)+UBAR(I,J) $ V(I,J)=V(I,J)+VBAR(I,J)                       *JVC.128
3291           450          GO TO 250                                                               *JVC.129
3292           475      242 IF (IND(I,J) .GT. 6) GO TO 250                                          *JVC.130
3293           500      243 U(I,J)=U(I,J)-UTM(I,J) $ V(I,J)=V(I,J)-VTM(I,J)                         *JVC.131
3294           511          IF (MSJI .GE. 0) GO TO 244                                              *JVC.132
3295           512          U(I,J)=U(I,J)+UBAR(I,J) $ V(I,J)=V(I,J)+VBAR(I,J)                       *JVC.133
3296           512          GO TO 250                                                               *JVC.134
3297           521      244 VOL4=DZ(KA)*AUKY(J)                                                     *JVC.135
3298           522          IP1=I+1                                                                 *JVC.136
3299           527          TAV=(T(I,J)+T(I,JP1)+T(IP1,JP1)+T(IP1,J))*0.25                          *JVC.137
3300           527          SAV=(S(I,J)+S(I,JP1)+S(IP1,JP1)+S(IP1,J))*0.25                          *JVC.138
3301           527          RHSS=VOLM*(1.0-ALPHA*(TAV-T0)+B*(SAV-S0))                               *JVC.139
3302           527          EK1=RHSS*(UBAR(I,J)*UBAR(I,J)+VBAR(I,J)*VBAR(I,J))                      *JVC.140
3303           527          EK2=RHSS*(U(I,J)*U(I,J)+V(I,J)*V(I,J))                                  *JVC.141
3304           527          U(I,J)=U(I,J)+UBAR(I,J) $ V(I,J)=V(I,J)+VBAR(I,J)                       *JVC.142
3305           527          EK3=RHSS*(U(I,J)*U(I,J)+V(I,J)*V(I,J))                                  *JVC.143
3306           527          ENGE(1)=ENGE(1)+EK1 $ ENGE(2)=ENGE(2)+EK2 $ ENGE(3)=ENGE(3)+EK3         *JVC.144
3307           527          ENGE(4)=ENGE(4)+RHSS*ZH                                                 *JVC.145
3308           527      250 CONTINUE                                                                *JVC.146
3309           527        C CALCULATION OF W    (WITHOUT BOUNDARY OVERLAP)                          *JVC.147
3310           614          IF (KA .NE. KMAX) GO TO 5000
3311           615          DO 4000 J=J1,J2
3312           615          II=IEF1(J) $ I2=IEF2(J)
3313           615          DO 4000 I=I1,I2
3314           622     4000 W(I,J)=0.0
3315           640          GO TO 4500
3316           641     5000 CONTINUE
3317           641          AYZT2=AYZT(KA)*0.5 $ AXZJ2=0.0                                          *JVC.148
3318           641          DO 350 J=J1,J2                                                          *JVC.149
3319           641          AXZJM2=AXZJ2 $ AXZJ2=AXZU(J,KA)*0.5                                     *JVC.150
3320           641          II=IEF1(J) $ I2=IEF2(J) $ JM1=J-1                                       *JVC.151
3321           641          DO 350 I=I1,I2                                                          *JVC.152
3322           655          IM1=I-1                                                                 *JVC.153
3323           655          IF (IND(I,J)) 350,320,300                                               *JVC.154
3324           655      300 INDEX=IND(I,J)                                                          *JVC.155
3325           655          GO TO (301,302,303,304,305,306,307,308,309,310,311,312) INDEX           *JVC.156
3326           655      301 DUS=(U(IM1,J)-U(I,J))*AYZT2 $ DVS=-(V(I,J)+V(IM1,J))*AXZJ2              *JVC.157
3327           655          GO TO 321                                                               *JVC.15
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CARD          APPROXIMATE
NUMBER      PROGRAM LOCATION
3328              655      302  DUS=-(J(I,J)+U(I,JM1))*AYZT2 $ DVS=V(I,JM1)*AXZUM2-V(I,J)*AXZU2    WJVC.159
3329              655           GO TO 321                                                          WJVC.160
3330              655      303  DUS=-U(I,J)*AYZT2 $ DVS=-V(I,J)*AXZU2                              WJVC.161
3331              655           GO TO 321                                                          WJVC.162
3332              655      304  DUS=          (U(IM1,JM1)-U(I,J)-U(I,JM1))*AYZT2                   WJVC.163
3333              655           DVS=(V(I,JM1)+V(IM1,JM1))*AXZUM2- V(I,J)*AXZU2                     WJVC.164
3334              655           GO TO 321                                                          WJVC.165
3335              655      305  DUS=(U(IM1,J)           -U(I,J)-U(I,JM1))*AYZT2                    WJVC.166
3336              655           DVS= V(I,JM1)            *AXZUM2-(V(I,J)+V(IM1,J))*AXZU2           WJVC.167
3337              655           GO TO 321                                                          WJVC.168
3338              655      306  DUS=(U(IM1,J)+J(IM1,JM1)-U(I,J)          )*AYZT2                   WJVC.169
3339              655           DVS=          V(IM1,JM1) *AXZUM2-(V(I,J)+V(IM1,J))*AXZU2           WJVC.170
3340              655           GO TO 321                                                          WJVC.171
3341              655      307  DUS=(J(IM1,JM1)-J(I,JM1))*AYZT2                                    WJVC.172
3342              655           DVS=(V(I,JM1)+V(IM1,JM1))*AXZUM2                                   WJVC.173
3343              655           GO TO 321                                                          WJVC.174
3344              655      308  DUS=(J(IM1,J)+J(IM1,JM1))*AYZT2                                    WJVC.175
3345              655           DVS=V(IM1,JM1)*AXZUM2-V(IM1,J)*AXZU2                               WJVC.176
3346              655           GO TO 321                                                          WJVC.177
3347              655      309  DUS=-J(I,JM1)*AYZT2 $ DVS=V(I,JM1)*AXZUM2                          WJVC.178
3348              655           GO TO 321                                                          WJVC.179
3349              655      310  DUS=U(IM1,J)*AYZT2 $ DVS=-V(IM1,J)*AXZU2                           WJVC.180
3350              655           GO TO 321                                                          WJVC.181
3351              655      311  DUS=U(IM1,JM1)*AYZT2 $ DVS=V(IM1,JM1)*AXZUM2                       WJVC.182
3352              655           GO TO 321                                                          WJVC.183
3353              655      312  DUS=(J(IM1,J)+U(IM1,JM1)        -U(I,JM1))*AYZT2                   WJVC.184
3354              655           DVS=(V(I,JM1)+V(IM1,JM1))*AXZUM2-         V(IM1,J) *AXZU2         WJVC.185
3355              655           GO TO 321                                                          WJVC.186
3356              655      320  DUS=(J(IM1,J)+J(IM1,JM1)-U(I,J)-U(I,JM1))*AYZT2                    WJVC.187
3357              655           DVS=(V(I,JM1)+V(IM1,JM1))*AXZUM2-(V(I,J)+V(IM1,J))*AXZU2           WJVC.188
3358              655      321  IF (KA .NE. 1) GO TO 322                                           WJVC.189
3359              655           WW(I,J)=      -(DUS+DVS)/ATXY(I,J)                                 WJVC.190
3360              655           GO TO 323                                                          WJVC.191
3361              655      322  WW(I,J)=WW(I,J)-(DUS+DVS)/ATXY(I,J)                                WJVC.192
3362              655      323  W(I,J)=WW(I,J)                                                     WJVC.193
3363              655      350  CONTINUE                                                           WJVC.194
3364             1107     4500 CONTINUE
3365             1107     C    ***** STORE BOUNDARY VALUE OF W IN BWT.                            WJVC.195
3366             1110          DO 352 L=1,2                                                       WJVC.196
3367             1110          L1=LAN(L)                                                          WJVC.197
3368             1110          IF (L1 .EQ. 0) GO TO 352                                           WJVC.198
3369             1110          I1=ING(L)                                                          WJVC.199
3370             1110          DO 351 J=1,JMAX                                                    WJVC.200
3371             1120      351 BWT(J,L1,KA)=W(I1,J)                                               WJVC.201
3372             1136      352 CONTINUE                                                           WJVC.202
3373             1141          CALL WTBUFL (NDSKZ,NDIM2,DA)                                       WJVC.203
3374             1150          IF (KA .NE. KMAX) GO TO 11                                         WJVC.204
3375             1153          IF (IB .NE. NIB) GO TO 10                                          WJVC.205
3376             1157          IF (MSUI .LT. 0) RETURN                                            WJVC.206
3377             1160          LEL=LEL+1                                                          WJVC.207
3378             1160          RD5=RDD*0.5                                                        WJVC.208
3379             1160          DO 500 I=1,3                                                       WJVC.209
3380             1160          ENGE(I)=RD5*ENGE(I)                                                WJVC.210
3381             1160      500 CONTINUE                                                           WJVC.211
3382             1171          ENGE(4)=RDD*G*ENGE(4) $ ENGE(5)=ENGE(3)+ENGE(4)                    WJVC.212
3383             1171          ENGL(1,LEL)=DAYS                                                   WJVC.213
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CARD          APPROXIMATE
NUMBER      PROGRAM LOCATION
3384              1171          DO 540 I=2,ITEM                                          WJVC.214
3385              1171          IM1=I-1                                                  WJVC.215
3386              1171          ENGL(I,LEL)=ENGE(IM1)                                    WJVC.216
3387              1171      540 CONTINUE                                                 WJVC.217
3388              1216          IF (LEL .LT. NWDS) RETURN                                WJVC.218
3389              1220          CALL PRTENGX (NTPO1,KDAT,ITEM,NWDS,LEL,ENGL)             WJVC.219
3390              1230          XMIN=2.0 $ XMAX=1.0 $ KF=1                               WJVC.220
3391              1230          CALL MPLOT (NTPO1,KDAT,ITEM,NWDS,LEL,ENGL,XMIN,XMAX,IR,NPLX,IPL,  WJVC.221
3392              1230         1FAC,KF)                                                  WJVC.222
3393              1252          XMIN=-1.0 $ XMAX=-2.0 $ KF=0                             WJVC.223
3394              1252          CALL MPLOT (NTPO1,KDAT,ITEM,NWDS,LEL,ENGL,XMIN,XMAX,IR,NPLX,IPL,  WJVC.224
3395              1252         1FAC,KF)                                                  WJVC.225
3396              1274          LEL=0                                                    WJVC.226
3397              1274          RETURN                                                   WJVC.227
3398              1275          END                                                      WJVC.228

          LENGTH OF ROUTINE   WJVCAL      1373

          VARIABLE ASSIGNMENTS
NDSKX  -      0      NDSKZ  -      0      NDSKR  -      0      XUVR   -  10016C 1   BT     -    574C 1   DT     -   1754C 1
X      -     0C 2    Y      -   5374C 2   Z      -     3C 3   U      -   1161C 3   V      -   2336C 3   W      -   3513C 3
S      -   4670C 3   T      -   6045C 3   WW     -   4307C 1   UBAR   -   2335C 5   VBAR   -   3512C 5   BWT    -   7222C 3
BPT    -     0C 0   BJT    -    154C 0   BVT    -   2244C 0   BST    -   4334C 0   BTT    -   6424C 0   BJTM   -  10514C 0
BVTM   -  10670C 0   BPTEP  -  11044C 0   DAYS   -     0C 1   KDAT   -     1C 1   DIFDAY -     2C 1   DTIME  -     3C 1
DAYEND -     4C 1   MAXI   -     5C 1   IMAX   -     6C 1   JMAX   -     7C 1   KMAX   -    10C 1   IM1    -    11C 1
JM1    -    12C 1   IP1    -    13C 1   JP1    -    14C 1   I1     -    15C 1   J1     -    16C 1   I2     -    17C 1
J2     -    20C 1   I      -    21C 1   J      -    22C 1   K      -    23C 1   NCARD1 -    24C 1   NCARD  -    25C 1
KSYB   -    26C 1   INKD   -    27C 1   INDEX  -    30C 1   ITIL   -    31C 1   NAMX   -    41C 1   NTPO1  -    44C 1
NTPO2  -    45C 1   NAMT   -    46C 1   NTAP   -    62C 1   NRT    -    66C 1   KNR    -    72C 1   MWT    -    76C 1
LDW    -   102C 1   LSTP   -   106C 1   BG     -   112C 1   DOUT   -   116C 1   NDTAP  -   122C 1   ITAP   -   126C 1
MTLAB  -   132C 1   PRTDAY -   442C 1   LDWP   -   443C 1   LPSTP  -   444C 1   LSTDA  -   445C 1   IDMDA  -   446C 1
IDMDB  -   447C 1   IDMDC  -   450C 1   IDMDD  -   451C 1   NDIM   -   452C 1   NDIM1  -   453C 1   NDIM2  -   454C 1
NDSK1  -   455C 1   NDSK2  -   456C 1   NDSK3  -   457C 1   NDSK4  -   460C 1   NDSK5  -   461C 1   NDSK6  -   462C 1
NDSK7  -   463C 1   NDSK8  -   464C 1   MSUN   -   465C 1   MSUI   -   466C 1   LMIN1  -   467C 1   LMIN2  -   470C 1
IBSCAN -   471C 1   MSCAN  -   472C 1   EPSL   -   473C 1   ALPHAR -   474C 1   ALPHA1 -   475C 1   PWGT   -   476C 1
DTIME1 -   477C 1   DTIME2 -   500C 1   MSWP   -   501C 1   MCOUNT -   502C 1   MSLCT  -   503C 1   LGLTIJ -   506C 1
KXX    -   536C 1   DAYT   -   574C 1   KDATT  -   575C 1   IBT    -   576C 1   PT     -   577C 1   KT     -  1754C 1
JT     -  1755C 1   VT     -  3132C 1   WT     -  4307C 1   ST     -  5464C 1   TT     -  6641C 1   PPT    -  10016C 1
RES    -  11173C 1  UTM    -  12350C 1  VTM    -  13525C 1  DAYB   -     0C 2   KDATB  -     1C 2   IMAXT  -     2C 2
NIB    -     3C 2   NIBT   -     4C 2   IUNDF  -     5C 2   RUNDF  -     6C 2   FLAT1  -     7C 2   FLAT2  -    10C 2
FLONG1 -    11C 2   FLONG2 -    12C 2   SD     -    13C 2   TD     -    14C 2   RDD    -    15C 2   ALPHA  -    16C 2
B      -    17C 2   HEATC  -    20C 2   PI     -    21C 2   RE     -    22C 2   G      -    23C 2   VISY   -    24C 2
SVISY  -    25C 2   TVISY  -    26C 2   VISZ   -    27C 2   SVISZ  -    30C 2   TVISZ  -    31C 2   POWER  -    32C 2
TAREA  -    33C 2   UAREA  -    34C 2   TVOL   -    35C 2   UVOL   -    36C 2   TKK    -    37C 2   CSTQ   -    40C 2
CSTE   -    41C 2   SECDAY -    42C 2   DXT    -    43C 2   DXU    -    76C 2   RDXU2  -   131C 2   DYT    -   164C 2
DYU    -   165C 2   RDYU2  -   166C 2   EPSSK  -   167C 2   EPSTK  -   201C 2   RDCRIT -   213C 2   DZ     -   225C 2
DZMH   -   237C 2   Z      -   251C 2   DEPTH  -   263C 2   BETA   -   264C 2   F      -   317C 2   DG     -   352C 2
AYZT   -   364C 2   AUXY   -   376C 2   AXZT   -   431C 2   AXZU   -  1047C 2   AX     -  1465C 2   AY     -  2103C 2
AZ     -  2521C 2   CSX    -  3137C 2   CSY    -  3555C 2   CSZ    -  4173C 2   CTX    -  4205C 2   CTY    -  4623C 2
CTZ    -  5241C 2   VISX   -  5253C 2   SVISX  -  5306C 2   TVISX  -  5341C 2   IBI    -  5374C 2   IMX    -  5375C 2
IMEF1  -  5376C 2   IMEF2  -  5377C 2   JMX    -  5400C 2   JMEF1  -  5401C 2   JMEF2  -  5402C 2   LAN    -  5403C 2
ING    -  5405C 2   INDBL  -  5407C 2   INDBP  -  5442C 2   LSBY   -  5475C 2   IEF1   -  5524C 2   IEF2   -  5557C 2
IND    -  5612C 2   AREAT  -  6767C 2   AREAU  -  6770C 2   VOLT   -  6771C 2   VOLU   -  6772C 2   AREATB -  6773C 2
AREAUB -  6774C 2   VOLTB  -  6775C 2   VOLUB  -  6776C 2   ATXY   -  6777C 2   EPD    -  10154C 2  BP     -     0C 3
DA     -  11160C 3  DUB    -  7222C 3   DC     -  15264C 3  DAYSE  -     0C 4   KDATSE -     1C 4   ENGE   -     2C 4
PCH    -     7C 4  UCH    -    23C 4   VCH    -   213C 4   WCH    -   403C 4   SCH    -   573C 4   TCH    -   763C 4
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ITEM    -   1153C 4  NWDS    -   1154C 4  LEL     -   1155C 4  ENGL    -   1156C 4  FAC     -   2306C 4  IPL     -   2314C 4
IR      -   2322C 4  NPLX    -   2323C 4  DAYFR   -     0C 5  KDATFR  -     1C 5  IBFR    -     2C 5  TAIR    -     3C 5
QT      -   1160C 5  STX     -   2335C 5  STY     -   3512C 5  IDMQT   -   4667C 5  IDMF2   -   4670C 5  IDMF4   -   4671C 5
LCMFR   -   4672C 5  LCMFRD  -   4773C 5  NORDER  -   4774C 5  PERIOD  -   4775C 5  MAXFR   -   4776C 5  RPERD   -   4777C 5
KIND2   -   5001C 5  KIND4   -   5002C 5  CAG1    -   5003C 5  CAG2    -   5004C 5  CKB1    -   5005C 5  CKB2    -   5006C 5
BB2     -   5007C 5  BB12    -   5010C 5  AA2     -   5011C 5  AA12    -   5012C 5  BVPT    -   5013C 5  BV2     -   5014C 5
CI2     -   5015C 5  CI3     -   5016C 5  CB2     -   5017C 5  CB3     -   5020C 5  CB4     -   5021C 5  CH1     -   5022C 5
CE1     -   5023C 5  CTX1    -   5024C 5  DAYSC   -   5025C 5  XABF    -   5026C 5  DAYX    -     0C 3  KDATX   -     1C 3
IB      -     2C 3  K4      -   1150C 3  DD      -   1331     ZH      -   1330     LI      -   1327     L       -   1326
L1      -   1325     JBD     -   1324     II      -   1323     VOLM    -   1322     TAV     -   1321     SAV     -   1320
RMSS    -   1317     EK1     -   1316     EK2     -   1315     EK3     -   1314     AYZT2   -   1313     AXZU2   -   1312
AXZU*2  -   1311     DUS     -   1310     DVS     -   1307     RD5     -   1306     XMIN    -   1305     XMAX    -   1304
KF      -   1303

        SUBROUTINES CALLED
REWDTP    RDBUFL    WTBUFL    OUTPTC    EXIT      PRTENGX   MPLOT     QBQRSD

        COMMON BLOCKS AND LENGTHS
      -  11220     CMN1    -  14702     CMN2    -  11331     CMN3    -  23326     ENSL    -   2324     QTST    -   6063
   COMPILE TIME =    629    MILLISECS
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CARD        APPROXIMATE
NUMBER      PROGRAM LOCATION
3399                0          SUBROUTINE WFLOUT (NDSKX,NDSKZ)                                          WFLO.2
3400                0      C  *****FILL W BOUNDARY AND OUTPUT***************                            WFLO.3
3401                0      C  ========== BEGINING OF DIMENSION CHANGE  ==========                        WFLO.4
3402                0          COMMON  BPT(27,4),BJT(27,4,10),BVT(27,4,10),BST(27,4,10),BTT(27,4
3403                0         1,10),BUTM(27,4),BVTM(27,4),BPTEP(27,4)
3404                0          COMMON/CMN1/DAYS,KDAT,DTDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,WFLO.5
3405                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYS,INKD,INDEX,ITIL(3)WFLO.6
3406                0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)WFLO.7
3407                0         3,LSTP(4),PG(4),DDJT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  WFLO.8
3408                0         3LPSTP,LSTDA,ID4DA,ID4DB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,WFLO.9
3409                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANWFLO.10
3410                0         4,MSCAN,EPSL,ALPHAR,ALPHAI,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),WFLO.11
3411                0         4LGLTIJ(2,4,3),XXX(30)                                                   WFLO.12
3412                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, WFLO.13
3413                0         527),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)              WFLO.14
3414                0          DIMENSION XUVR(2484)                                                    WFLO.15
3415                0          EQUIVALENCE (PPT(1),XUVR(1))                                            WFLO.16
3416                0          DIMENSION BT(624),JT(3106)                                              WFLO.17
3417                0          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                     WFLO.18
3418                0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,          WFLO.19
3419                0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,        WFLO.20
3420                0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,WFLO.21
3421                0         3DXT(27),DXJ(27),RDXJ2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITWFLO.22
3422                0         4(10),DZ(10),DZH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),  WFLO.23
3423                0         1AJXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),  WFLO.24
3424                0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),WISX( WFLO.25
3425                0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    WFLO.26
3426                0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND( WFLO.27
3427                0         923,27),AREAT,AREAJ,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)WFLO.28
3428                0         1,EPD(23,27)
3429                0          DIMENSION X(2812),Y(2013)
3430                0          EQUIVALENCE (DAYB,X(1)),(IBI,Y(1))                                      WFLO.31
3431                0          COMMON/CMN3/BP(624),JA(3106),JB(3106),JC(3106)                          WFLO.32
3432                0          DIMENSION P(23,27)                                                      WFLO.33
3433                0          DIMENSION JA(23,27),VA(23,27),WA(23,27),SA(23,27),TA(23,27)             WFLO.34
3434                0          EQUIVALENCE (BP(1),DAYX),(BP(2),KDATX),(BP(3),IB),(BP(4),P(1))          WFLO.35
3435                0          EQUIVALENCE (JA(1),XA),(JA(2),UA(1)),(JA(623),VA(1)),(JA(1244),WA(WFLO.36
3436                0         11)),(JA(1865),SA(1)),(JA(2486),TA(1))                                   WFLO.37
3437                0          COMMON/ENSL/DAYSE,KDATSE,ENGE(5),PCH(4,3),UCH(4,10,3),VCH(4,10,3),WFLO.40
3438                0         1WCH(4,10,3),SCH(4,10,3),TCH(4,10,3),ITEM,NWDS,LEL,ENGL(6,100)           WFLO.41
3439                0         1,FAC(6),IPL(6),IR,NPLX                                                  WFLO.42
3440                0          DIMENSION BWT(27,4,10)                                                  WFLO.43
3441                0          DIMENSION ENSLT(619)                                                    WFLO.44
3442                0      C  ********** ENDING OF DIMENSION CHANGE  ****************                  WFLO.45
3443                0          EQUIVALENCE (DAYSE,ENSLT(1))                                            WFLO.46
3444                0          EQUIVALENCE (DB(1),BWT(1))                                              WFLO.47
3445                0          DIMENSION NAM1(3),NAM2(3),NAM3(3),NAM4(3)                               WFLO.48
3446                0          EQUIVALENCE (NAMT(1),NAM1(1)),(NAMT(4),NAM2(1)),(NAMT(7),NAM3(1)),WFLO.49
3447                0         1(NAMT(10),NAM4(1))                                                      WFLO.50
3448               10          CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKX) $ CALL REWDTP (NDSKZ)         WFLO.51
3449               13          NAMX(2)=10HCALCULATED $ NAMX(3)=10H OUTPUT                              WFLO.52
3450               13       10 CALL RDBUFL (NDSK5,IDMDB,Y)                                             WFLO.53
3451               23          CALL RDBUFL (NDSKX,NDIM1,BP)                                            WFLO.54
3452               30          CALL WTBUFL (NDSKZ,NDIM1,BP)                                            WFLO.55
3453               37          IF (MSUI .LT. 0) GO TO 12                                               WFLO.56
3454               40          LFE=2 $ NAMX(1)=10H P(I,J)                                              WFLO.57
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CARD          APPROXIMATE
NUMBER       PROGRAM LOCATION
3455                44          IF (LSTP(1) .EQ. 0)CALL GTABOUT (NAMX,NTP02,KDAT,IMAX,JMAX,DAYX,IBWFLD.58
3456                44         1,0,LFE,LSBY,P)                                                    WFLD.59
3457                63          IF (LSTP(2) .LE. 0) CALL WTBUF (NTAP(2),NDIM1,BP)                 WFLD.60
3458                72          IF (LSTP(3) .EQ. 0) CALL WTBUF (NTAP(3),NDIM1,BP)                 WFLD.61
3459               100          LFE=1                                                             WFLD.62
3460               100       12 CONTINUE                                                          WFLD.63
3461               101       11 CALL RDBUFL (NDSKX,NDIM2,DA)                                      WFLD.64
3462               101     C  ******* FILL IN OVERLAP BOUNDARY VALUE OF WA(I,J) BY BWT.           WFLD.65
3463               106          LI=3                                                              WFLD.66
3464               106          DO 19 L=1,2                                                       WFLD.67
3465               106          LI=LI-2 $ L1=LAV(L)                                               WFLD.68
3466               106          IF (L1 .EQ. 0) GO TO 19                                           WFLD.69
3467               106          I=ING(L)-LI $ L1=L1+LI                                            WFLD.70
3468               106          DO 18 J=1,JMAX                                                    WFLD.71
3469               116       18 WA(I,J)=BWT(J,L1,KA)                                              WFLD.72
3470               136       19 CONTINUE                                                          WFLD.73
3471               141          CALL WTBUFL (NDSKZ,NDIM2,DA)                                      WFLD.74
3472               151          IF (MSUI .LT. 0) GO TO 50                                         WFLD.75
3473               153          IF (LSTP(1) .EQ. 0) CALL LSTOUT (NAMX,NTP02,KDAT,IMAX,JMAX,LSBY, WFLD.76
3474               153         1LFE,DAYX,IB,KA,JA,VA,WA,SA,TA)                                    WFLD.77
3475               175          DO 25 LTP=2,3                                                     WFLD.78
3476               175          IF (LSTP(LTP) .GT. 0) GO TO 25                                    WFLD.79
3477               175          CALL WTBUF (NTAP(LTP),NDIM2,DA)                                   WFLD.80
3478               212       25 CONTINUE                                                          WFLD.81
3479               215          IF (LSTP(4)   .NE. 0) GO TO 50                                    WFLD.82
3480               216     C    ENERGY-SELECTED POINT OUTPUT.                                     WFLD.83
3481               220          MXSL=NSLCT(IB)                                                    WFLD.84
3482               220          DO 30 L=1,MXSL                                                    WFLD.85
3483               220          I=LGLTIJ(1,L,IB) $ J=LGLTIJ(2,L,IB)                              WFLD.86
3484               220          IF (KA .EQ. 1) PCH(L,IB)=P(I,J)                                   WFLD.87
3485               220          UCH(L,KA,IB)=UA(I,J) $ VCH(L,KA,IB)=VA(I,J) $ WCH(L,KA,IB)=WA(I,J)WFLD.88
3486               220          SCH(L,KA,IB)=SA(I,J) $ TCH(L,KA,IB)=TA(I,J)                       WFLD.89
3487               220       30 CONTINUE                                                          WFLD.90
3488               273       50 CONTINUE                                                          WFLD.91
3489               274          IF (KA .NE. KMAX) GO TO 11                                        WFLD.92
3490               277          IF (IB .NE. NIB) GO TO 10                                         WFLD.93
3491               303          IF (MSUI .LT. 0) RETURN                                           WFLD.94
3492               305          IF (LSTP(4) .EQ. 0) CALL WTBUF (NTAP(4),IOMOD,ENSLT)              WFLD.95
3493               313          L=1                                                               WFLD.96
3494               314          DO 55 LTP=2,4                                                     WFLD.97
3495               314          IF (LSTP(LTP) .GT. 0) GO TO 55                                    WFLD.98
3496               314          ITP=ITAP(LTP)                                                     WFLD.99
3497               314          MWT(LTP)=MWT(LTP)+1                                               WFLD.100
3498               314          PRINT 53, LTP,(NAMT(I,LTP),I=1,3),NTAP(LTP),ITP,MTLAB(ITP,LTP),   WFLD.101
3499               314         1MWT(LTP),DAYX                                                     WFLD.102
3500               366       53 FORMAT (I6,2H) ,3A10,* TAPE*I2,*, TAPE REEL NO.=*I3,*, LABEL=*A10,WFLD.103
3501               366         1*  GROUP-RECORD NO.=*I5,*, DAYS=*F12.4)                          WFLD.104
3502               366          CALL CHGTAPE (LTP,L)                                              WFLD.105
3503               372       55 CONTINUE                                                          WFLD.106
3504               374          RETURN                                                            WFLD.107
3505               375          END                                                               WFLD.108

        LENGTH OF ROUTINE   WFLOUT       441

        VARIABLE ASSIGNMENTS
NDSKX -       0     NDSKZ -       0     XJVR   - 10015C 1  BT     -    574C 1  CT     -    1754C 1  X      -
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Y       -   5974C 2   P       -     3C 3   JA      -   1161C 3   VA      -   2336C 3   WA      -   3513C 3   SA      -   4670C 3
TA      -   6045C 3   BWT     -   7222C 3   ENSLT   -     0C 4   NAM1    -     46C 1   NAM2    -     51C 1   NAM3    -     54C 1
NAM4    -     57C 1   BPT     -     0C 0   BUT     -    154C 0   BVT     -   2244C 0   BST     -   4334C 0   BTT     -   6424C 0
BUT4    -  10514C 0   BVTM    -  10670C 0   BPTEP   -  11044C 0   DAYS    -     0C 1   KDAT    -     1C 1   DIFDAY  -     2C 1
DTIME   -     3C 1   DAYEND  -     4C 1   MAXI    -     5C 1   IMAX    -     6C 1   JMAX    -     7C 1   KMAX    -     10C 1
IM1     -    11C 1   JM1     -    12C 1   IP1     -    13C 1   JP1     -    14C 1   I1      -    15C 1   J1      -    16C 1
I2      -    17C 1   J2      -    20C 1   I       -    21C 1   J       -    22C 1   K       -    23C 1   NCARD1  -    24C 1
NCARD   -    25C 1   KSYB    -    25C 1   INKD    -    27C 1   INDEX   -    30C 1   ITIL    -    31C 1   NAMX    -    41C 1
NTPD1   -    44C 1   NTPD2   -    45C 1   NAMT    -    46C 1   NTAP    -    62C 1   NRT     -    66C 1   KNR     -    72C 1
MWT     -    75C 1   LDW     -   102C 1   LSTP    -   106C 1   BG      -   112C 1   DOUT    -   116C 1   NDTAP   -   122C 1
ITAP    -   126C 1   MTLAB   -   132C 1   PRTDAY  -   442C 1   LDWP    -   443C 1   LPSTP   -   444C 1   LSTDA   -   445C 1
IDMD1   -   445C 1   IDMD3   -   447C 1   IDMDC   -   450C 1   IDMDD   -   451C 1   NDIM    -   452C 1   NDIM1   -   453C 1
NDIM2   -   454C 1   NDSK1   -   455C 1   NDSK2   -   456C 1   NDSK3   -   457C 1   NDSK4   -   460C 1   NDSK5   -   461C 1
NDSK6   -   462C 1   NDSK7   -   463C 1   NDSK8   -   464C 1   MSUN    -   465C 1   MSUI    -   466C 1   LMIN1   -   467C 1
LMIN2   -   470C 1   IBSCAN  -   471C 1   ASCAN   -   472C 1   EPSL    -   473C 1   ALPHAR  -   474C 1   ALPHA1  -   475C 1
PWGT    -   476C 1   DTIME1  -   477C 1   DTIME2  -   500C 1   MSWP    -   501C 1   MCOUNT  -   502C 1   MSLCT   -   503C 1
EGLTIJ  -   506C 1   XXX     -   536C 1   DAYT    -   574C 1   KDATT   -   575C 1   IBT     -   576C 1   PT      -   577C 1
KT      -  1754C 1   UT      -  1755C 1   VT      -  3132C 1   WT      -  4307C 1   ST      -  5464C 1   TT      -  6641C 1
PPT     -  10015C 1  RES     -  11173C 1  UTM     -  12350C 1  VTM     -  13525C 1  DAYB    -     0C 2   KDATB   -     1C 2
IMAXT   -     2C 2   NIB     -     3C 2   NIBT    -     4C 2   IUNDF   -     5C 2   RUNDF   -     6C 2   FLAT1   -     7C 2
FLAT2   -    10C 2   FLONG1  -    11C 2   FLONG2  -    12C 2   SO      -    13C 2   TO      -    14C 2   RDO     -    15C 2
ALPHA   -    16C 2   B       -    17C 2   HEATC   -    20C 2   PI      -    21C 2   RE      -    22C 2   G       -    23C 2
VISY    -    24C 2   SVISY   -    25C 2   TVISY   -    26C 2   VISZ    -    27C 2   SVISZ   -    30C 2   TVISZ   -    31C 2
POWER   -    32C 2   TAREA   -    33C 2   JAREA   -    34C 2   TVOL    -    35C 2   UVOL    -    36C 2   TKK     -    37C 2
CSTJ    -    40C 2   CSTE    -    41C 2   SECDAY  -    42C 2   DXT     -    43C 2   DXU     -    76C 2   RDXU2   -   131C 2
DYT     -   164C 2   DYJ     -   165C 2   RDYJ2   -   166C 2   EPSSK   -   167C 2   EPSTK   -   201C 2   RJCRIT  -   213C 2
DZ      -   225C 2   DZMH    -   237C 2   Z       -   251C 2   DEPTH   -   263C 2   BETA    -   2o4C 2   F       -   317C 2
DG      -   352C 2   AYZT    -   354C 2   AUXY    -   376C 2   AXZT    -   431C 2   AXZU    -  1047C 2   AX      -  1465C 2
SY      -  2103C 2   AZ      -  2521C 2   CSX     -  3137C 2   CSY     -  3555C 2   CSZ     -  4173C 2   CTX     -  4205C 2
CTY     -  4623C 2   CTZ     -  5241C 2   VISX    -  5253C 2   SVISX   -  5306C 2   TVISX   -  5341C 2   IBI     -  5374C 2
IMX     -  5375C 2   IMEF1   -  5376C 2   IMEF2   -  5377C 2   JMX     -  5400C 2   JMEF1   -  5401C 2   JMEF2   -  5402C 2
LAM     -  5403C 2   ING     -  5405C 2   INDBL   -  5407C 2   INDBR   -  5442C 2   LSBY    -  5475C 2   IEF1    -  5524C 2
IEF2    -  5557C 2   IND     -  5613C 2   AREAT   -  6757C 2   AREAU   -  6770C 2   VOLT    -  6771C 2   VOLU    -  6772C 2
AREATB  -  6773C 2   AREAJB  -  6774C 2   VOLTB   -  6775C 2   VOLUB   -  6776C 2   ATXY    -  6777C 2   EPO     -  10154C 2
SP      -     0C 3   DA      -  11600 3   DB      -  7222C 3   DC      -  15264C 3   DAYSE   -     0C 4   KDATSE  -     1C 4
ENCE    -     2C 4   PCH     -     7C 4   JCH     -    23C 4   VCH     -    213C 4   WCH     -    403C 4   SCH     -    573C 4
FCH     -   763C 4   ITE1    -  1153C 4   NWDS    -  1154C 4   LEL     -  1155C 4   ENGL    -  1156C 4   FAC     -  2306C 4
IPL     -  2 14C 4   IR      -  2322C 4   NPLX    -  2323C 4   DAYX    -     0C 3   KDATX   -     1C 3   IB      -    2C 3
KA      -  1160C 3   LFE     -   411       LI      -   413       L       -   407       L1      -   406       LTP     -   405
KASL    -   404       ITP     -   403

        SUBROUTINES CALLED
REWDTP    RDBUFL    WTBUFL    GTABOUT   WTBUF     LSTOUT    OUTPTC    CHGTAPE   QBORSD

        COMMON BLOCKS AND LENGTHS
      -  11220     CMN1    -  14702     CMN2    -  11331     CMN3    -  23326     ENSL    -  2324
   COMPILE TIME =    199    MILLISECS
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CARD.       APPROXIMATE
NUMBER      PROGRAM LOCATION
3506              0          SUBROUTINE FRCST (NTPF, SWFR,IOFR)
3507              0          COMMON/QTST/DAYFR,KDATFR,IBFR,TAIR(23,27),QT(23,27),STX(23,27),
3508              0         1STY(23,27), IDMQT,IDMF2,IDMF4,LCMFR(65),LCMFRD,NORDER,PERIOD,MAXFR
3509              0         1,RPERD(2),KIND2,KIND4,CAG1,CAG2,CRB1,CRB2,BB2,BB12,AA2,AA12,BVPT,
3510              0         1BV2,CI2,CI3,CB2,CB3,CB4,CH1,CE1,CTX1,DAYSC,XABF(541)
3511              0          DIMENSION ABFD(5,2,27),ABF(5,4,27),XABFD(271),QATXY(2487)
3512              0          EQUIVALENCE (XABF(1),XABFD(1)),(XABFD(2),ABFD(1)),(DAYFR,QATXY(1))
3513              0          EQUIVALENCE (XABF(1),II),(XABF(2),ABF(1),ABFD(1))
3514              0          DIMENSION NAMFR2(2),NAMFR4(4)
3515              0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,NEWP.5
3516              0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)NEWP.6
3517              0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)NEWP.7
3518              0         3,LSTP(4),BG(4),DOUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  NEWP.8
3519              0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,NEWP.9
3520              0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANEWP.10
3521              0         4,MSCAN,EPSL,ALPHAR,ALPHAI,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),NEWP.11
3522              0         4LGLTIJ(2,4,3),XXX(30)                                          NEWP.12
3523              0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, NEWP.13
3524              0         527),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)      NEWP.14
3525              0          EQUIVALENCE (XXX(1),NYEARX),(XXX(2),TDAYS)
3526              0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     NEWP.21
3527              0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,    NEWP.22
3528              0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,NEWP.23
3529              0         3DXT(27),DXJ(27),RDXJ2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITNEWP.24
3530              0         4(10),DZ(10),DZMH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   NEWP.25
3531              0         1AJKY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   NEWP.26
3532              0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  NEWP.27
3533              0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    NEWP.28
3534              0         BLAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  NEWP.29
3535              0         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)NEWP.30
3536              0         1,EPD(23,27)
3537              0          DATA NAMFR2/2H4  QD(J)    CLOUD(J) /
3538              0          DATA NAMFR4/4H4 TAIR(I,J) EA(I,J)   UG(I,J)   VG(I,J)  /
3539              0          DATA NORDER,PERIOD,KIND2,KIND4,IDMF2,IDMF4/2,365.0,2,4,271,541/
3540              0          DATA PRS,HEATL,DNSA,CP/1013.25,595.0,1.23E-3,0.24/
3541              0          DATA CDN,CHEN,IDMQT/1.23E-3, 0.74,2487/
3542              0          DATA ANG,GAMAC,BV,BT,BB1,AA1/15.0,0.9, 4.7,4.7,11.0,7.0/
3543              0          DATA CQI1,CQI2,CQI3,ZIO,TVD/0.95,0.74,0.6,1000.0,290.0/
3544              0          DATA CQB1,CQB2,CQB3,CB4,BSIG/0.985,0.39,0.05,0.6,1.354204491E-12/
3545             35          TDAYS=DAYS+DIFDAY $ NYEARX=INT(TDAYS/PERIOD)
3546             35          DAYSC=PERIOD*FLOAT(NYEARX) $ DAYSC=TDAYS-DAYSC
3547             35          DAYSC=DAYSC-DIFDAY
3548             35          MAXFR=2*NORDER+1
3549             35          DO 10 I=1,NORDER
3550             35       10 RPERD(I)=2.0*PI*FLOAT(I)/PERIOD
3551             62          CHN=CDN/CHEN $ CFN=CHN $ CQIO=CQI1/SECDAY
3552             62          CI2=CQIO*CQI2 $ CI3=CQIO*CQI3 $ BVPT=-(BV+BT) $ BV2=-2.0*BV
3553            111          BB2=0.25/CDN**0.8 $ BB12=BB1/BB2 $ AA2=0.83/CDN**0.62$AA12=AA1/AA2
3554            111          CRB1=G*Z10/TVD $ CRB2=0.61*0.622/PRS
3555            125          ANG=PI*ANG/180.0 $ CAG1=GAMAC*COS(ANG) $ CAG2=GAMAC*SIN(ANG)
3556            130          CAG1=CAG1*100.0 $ CAG2=CAG2*100.0
3557            130          CQB1=CQB1*BSIG $ CB2=CQB1*CQB2 $ CB3=CQB1*CQB3
3558            130          CH1=DNSA*CP*CHN $ CE1=DNSA*HEATL*CEN*0.622/PRS $ CTX1=DNSA*CDN
3559            130       21 FORMAT (I4,2I3,5F7.1,5F7.3)
3560            130       23 FORMAT (I4,2I3,10F7.3)
3561            130          KDATFR=KDAT
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CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
3562                 154           IF ( SWFR .GE. 0.0) GO TO 30
3563                 155           N=I=0
3564                 156           DO 20 J=1,JMAX
3565                 156           READ 21, NN,II,JJ, ((ABFD(M,KK,J),M=1,MAXFR),KK=1,KIND2)
3566                 212           N=N+1
3567                 214           IF (NN .NE. N) GO TO 80
3568                 217           IF (II .NE. I) GO TO 80
3569                 222           IF (JJ .NE. J) GO TO 80
3570                 224        20 CONTINUE
3571                 230           IF (IOFR .NE. 0) CALL FRPRT (KDAT,I,JMAX,MAXFR,KIND2,NAMFR2,ABFD)
3572                 230     C  ***** WRITE LCM
3573                 242           CALL LCMWT (LC4FR0,XABFD,IOMF2)
3574                 242     C  ***** WRITE BINARY TAPE
3575                 247           CALL WTBUF (NTPF,IOMF2,XABFD)
3576                 254           DO 25 I=1,MAXI
3577                 254           DO 24 J=1,JMAX
3578                 255           KK2=0
3579                 255        22 KK1=KK2+1
3580                 255           KK2=KK2+2
3581                 255           IF (KK2 .GT. KIND4) KK2=KIND4
3582                 255           READ 23, NN,II,JJ, ((ABF(M,KK,J),M=1,MAXFR),KK=KK1,KK2)
3583                 320           N=N+1
3584                 325           IF (NN .NE. N .OR. II .NE. I .OR. JJ .NE. J) GO TO 80
3585                 331           IF (KK2 .NE. KIND4) GO TO 22
3586                 333        24 CONTINUE
3587                 337           IF (IOFR .NE. 0) CALL FRPRT (KDAT,I,JMAX,MAXFR,KIND4,NAMFR4,ABF)
3588                 337     C  ***** WRITE LCM
3589                 351           CALL LCMWT (LC4FR(I),XABF,IOMF4)
3590                 351     C  ***** WRITE BINARY TAPE
3591                 360           CALL WTBUF (NTPF,IOMF4,XABF)
3592                 365        25 CONTINUE
3593                 367           RETURN
3594                 370        30 CONTINUE
3595                 371           I=0
3596                 371           CALL RDBUF (NTPF,IOMF2,XABFD)
3597                 400           IF (II .NE. I) GO TO 40
3598                 402           CALL LCMWT (LC4FR0,  XABFD,IOMF2)
3599                 410           IF (IOFR .NE. 0) CALL FRPRT (KDAT,I,JMAX,MAXFR,KIND2,NAMFR2,ABFD)
3600                 422           DO 35 I=1,MAXI
3601                 422           CALL RDBUF (NTPF,IOMF4,XABF)
3602                 431           IF (II .NE. I) GO TO 40
3603                 433           CALL LCMWT (LC4FR(I),XABF,IOMF4)
3604                 443           IF (IOFR .NE. 0) CALL FRPRT (KDAT,I,JMAX,MAXFR,KIND4,NAMFR4,ABF)
3605                 455        35 CONTINUE
3606                 457           RETURN
3607                 460        40 PRINT 41, NTPF, I, II
3608                 474        41 FORMAT (///25X,51H*****, * FOURIER CONSTANTS READ FROM TAPE*I2,
3609                 474           1* IS INCONSISTENT WITH OVERALL I NO.*//30X,* I SHOULD BE*I4,
3610                 474           2* BUT THE VALUE READ IS*I4//25X,*-----JOB TERMINATES ABNORMALLY---
3611                 474           1--*//)
3612                 474           CALL EXIT
3613                 475           RETURN
3614                 475        80 PRINT 81, N,I,J, NN,II,JJ
3615                 517        81 FORMAT (/10X,*=====INPUT FOURIER CONSTANTS NOT IN ORDER, JOB TERMI
3616                 517           1NATES ABNORMALLY=====*//20X,*N, I, J (SHOULD) =*3I6,*,  BUT INPUT
3617                 517           2VALUES OF N, I, J =*3I6/)
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CARD          APPROXIMATE
NUMBER        PROGRAM LOCATION
3618                517          CALL EXIT
3619                520          END

        LENGTH OF ROUTINE   FRCST        637

        VARIABLE ASSIGNMENTS
NTPF    -       0     SWFR    -       0     IDFR    -       0     ABFD    -    5027C 0  ABF     -    5027C 0  XABFD   -    5026C 0
DATKY   -      0C 0   NAMFR2  -       0     NAMFR4  -       2     DAYFR   -      0C 0  KDATFR  -      1C 0  IBFR    -      2C 0
TAIR    -      3C 0   QT      -    1160C 0  STX     -    2335C 0  STY     -    3512C 0  IDMQT   -    4667C 0  IDMF2   -    4670C 0
IDMF4   -    4671C 0  LCMFR   -    4672C 0  LCMFRD  -    4773C 0  NORDER  -    4774C 0  PERIOD  -    4775C 0  MAXFR   -    4776C 0
PPERD   -    4777C 0  KIND2   -    5001C 0  KIND4   -    5002C 0  CAG1    -    5003C 0  CAG2    -    5004C 0  CR81    -    5005C 0
CR82    -    5006C 0  BB2     -    5007C 0  BB12    -    5010C 0  AA2     -    5011C 0  AA12    -    5012C 0  BVPT    -    5013C 0
BV2     -    5014C 0  CI2     -    5015C 0  CI3     -    5016C 0  CB2     -    5017C 0  CB3     -    5020C 0  CB4     -    5021C 0
CH1     -    5022C 0  CE1     -    5023C 0  CTX1    -    5024C 0  DAYSC   -    5025C 0  XABF    -    5026C 0  DAYS    -      0C 1
KDAT    -      1C 1   DIFDAY  -      2C 1   DTIME   -      3C 1   DAYEND  -      4C 1   MAXI    -      5C 1   IMAX    -      6C 1
JMAX    -      7C 1   KMAX    -     10C 1   IM1     -     11C 1   JM1     -     12C 1   IP1     -     13C 1   JP1     -     14C 1
I1      -     15C 1   J1      -     16C 1   I2      -     17C 1   J2      -     20C 1   I       -     21C 1   J       -     22C 1
K       -     23C 1   NCARD1  -     24C 1   NCARD   -     25C 1   KSYB    -     26C 1   INKD    -     27C 1   INDEX   -     30C 1
ITIL    -     31C 1   NAMX    -     41C 1   NTPD1   -     44C 1   NTPD2   -     45C 1   NAMT    -     46C 1   NTAP    -     62C 1
VRT     -     65C 1   KNR     -     72C 1   NWT     -     76C 1   LDW     -    102C 1   LSTP    -    106C 1   BG      -    112C 1
DOUT    -    116C 1   NOTAP   -    122C 1   ITAP    -    126C 1   MTLAB   -    132C 1   PRTDAY  -    442C 1   LDWP    -    443C 1
LPSTP   -    444C 1   LSTDA   -    445C 1   IDMDA   -    446C 1   IDMDB   -    447C 1   IDMDC   -    450C 1   IDMDD   -    451C 1
NDIM    -    452C 1   NDIM1   -    453C 1   NDIM2   -    454C 1   NDSK1   -    455C 1   NDSK2   -    456C 1   NDSK3   -    457C 1
NDSK4   -    460C 1   NDSK5   -    461C 1   NDSK6   -    462C 1   NDSK7   -    463C 1   NDSK8   -    464C 1   MSJN    -    465C 1
MSJI    -    466C 1   LMIN1   -    467C 1   LMIN2   -    470C 1   IBSCAN  -    471C 1   MSCAN   -    472C 1   EPSL    -    473C 1
ALPHAR  -    474C 1   ALPHA1  -    475C 1   PWGT    -    476C 1   DTIME1  -    477C 1   DTIME2  -    500C 1   NSWP    -    501C 1
NCOUNT  -    502C 1   MSLCT   -    503C 1   LGLTIJ  -    506C 1   XXX     -    536C 1   DAYT    -    574C 1   KDATT   -    575C 1
IBT     -    576C 1   PT      -    577C 1   KT      -   1754C 1   UT      -   1755C 1   VT      -   3132C 1   WT      -   4307C 1
ST      -   5464C 1   TT      -   6641C 1   PPT     -  10016C 1   RES     -  11173C 1   UTM     -  12350C 1   VTM     -  13525C 1
DAYB    -      0C 2   KDATB   -      1C 2   IMAXT   -      2C 2   NIB     -      3C 2   NIBT    -      4C 2   IJNDF   -      5C 2
RUNDF   -      6C 2   FLAT1   -      7C 2   FLAT2   -     10C 2   FLONG1  -     11C 2   FLONG2  -     12C 2   SD      -     13C 2
TD      -     14C 2   RDD     -     15C 2   ALPHA   -     16C 2   B       -     17C 2   HEATC   -     20C 2   PI      -     21C 2
PE      -     22C 2   G       -     23C 2   VISY    -     24C 2   SVISY   -     25C 2   TVISY   -     26C 2   VISZ    -     27C 2
SVISZ   -     30C 2   TVISZ   -     31C 2   POWER   -     32C 2   TAREA   -     33C 2   UAREA   -     34C 2   TVOL    -     35C 2
JVOL    -     36C 2   TKK     -     37C 2   CSTD    -     40C 2   CSTE    -     41C 2   SECDAY  -     42C 2   DXT     -     43C 2
DXU     -     76C 2   RDXU2   -    131C 2   DYT     -    164C 2   DYU     -    165C 2   RDYU2   -    166C 2   EPSSK   -    167C 2
EPSTK   -    201C 2   RDCRIT  -    213C 2   DZ      -    225C 2   DZMH    -    237C 2   Z       -    251C 2   DEPTH   -    263C 2
BETA    -    264C 2   F       -    317C 2   DG      -    352C 2   AYZT    -    364C 2   AUXY    -    376C 2   AXZT    -    431C 2
AXZU    -   1047C 2   AX      -   1455C 2   AY      -   2103C 2   AZ      -   2521C 2   CSX     -   3137C 2   CSY     -   3555C 2
CSZ     -   4173C 2   CTX     -   4205C 2   CTY     -   4623C 2   CTZ     -   5241C 2   VISX    -   5253C 2   SVISX   -   5306C 2
TVISX   -   5341C 2   IBI     -   5374C 2   IMX     -   5375C 2   IMEF1   -   5376C 2   IMEF2   -   5377C 2   JMX     -   5400C 2
JMEF1   -   5401C 2   JMEF2   -   5402C 2   LAN     -   5403C 2   ING     -   5405C 2   INDBL   -   5407C 2   INDBR   -   5442C 2
LSBY    -   5475C 2   IEF1    -   5524C 2   IEF2    -   5557C 2   IND     -   5612C 2   AREAT   -   6767C 2   AREAU   -   6770C 2
VOLT    -   5771C 2   VOLJ    -   6772C 2   AREATB  -   6773C 2   AREAUB  -   6774C 2   VOLTB   -   6775C 2   VOLUB   -   6776C 2
ATXY    -   6777C 2   EPD     -  10154C 2   II      -   5025C 0   NYEARX  -    536C 1   TDAYS   -    537C 1   PRS     -      6
HEATL   -      7     DWSA    -     10       CP      -     11       CDN     -     12       CHEN    -     13       ANG     -     14
SAMAC   -     15     BV      -     15       BT      -     17       BB1     -     20       AA1     -     21       CQI1    -     22
CQI2    -     23     CQI3    -     24       ZIO     -     25       TVO     -     26       CQB1    -     27       CQB2    -     30
CQB3    -     31     BSIG    -     32       CHN     -    536       CEN     -    535       CQIO    -    534       N       -    533
NN      -    532     JJ      -    531       M       -    530       KK      -    527       KK2     -    526       KK1     -    525

        SUBROUTINES CALLED
SUBBFR    COSF      SINF      INPUTC    FRPRT     LCMWT     WTBUF     RDBUF     OUTPTC    EXIT      QBQRSD

        COMMON BLOCKS AND LENGTHS
CMN0    -   6763    CMN1    -  14702    CMN2    -  11331
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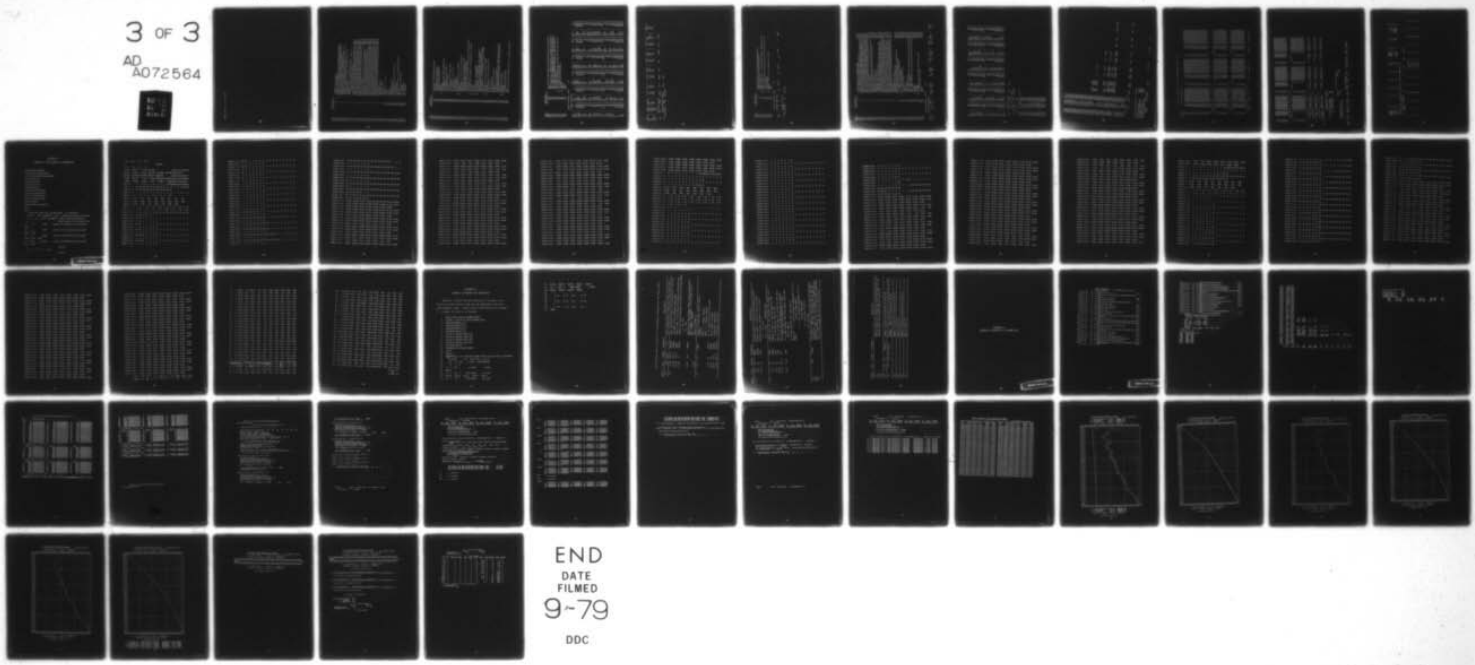
AD-A072 564 MICHIGAN UNIV ANN ARBOR DEPT OF ATMOSPHERIC AND OCE--ETC F/G 8/10
A BRIEF DOCUMENTATION OF THE NORPAX OCEAN MODEL,(U)
APR 77 J C HUANG, W SHAW, J S CHING N00014-76-C-0141

UNCLASSIFIED NL

3 OF 3
AD A072564



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DATE FILMED
9-79
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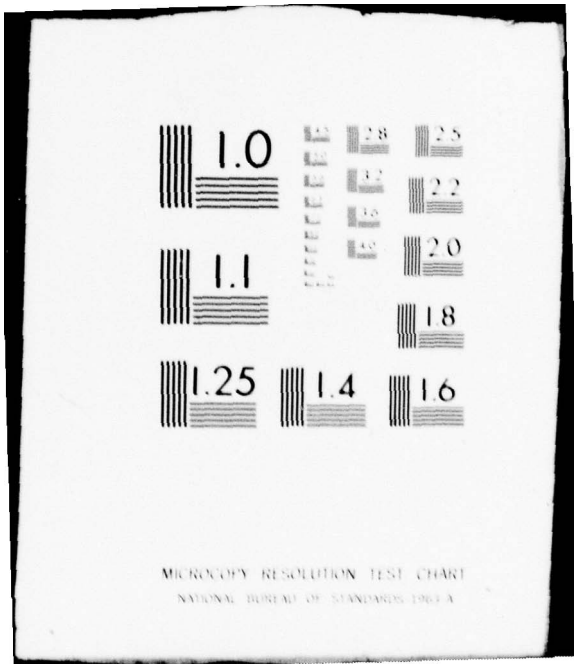
1.0
1.1
1.25
1.4
1.6
2.0
1.8
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

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COMPILE TIME =    223    MILLISECS
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CARD          APPROXIMATE
NUMBER      PROGRAM LOCATION
3620                  0          SUBROUTINE QTSTXY (JSWC,T)
3621                  0      C   --- RPERD(N) =2.0*PI*N/PERIOD
3622                  0          COMMON/QTST/DAYFR,KDATFR,IBFR,TAIR(23,27),QT(23,27),STX(23,27),
3623                  0         1STY(23,27), ID4QT,ID4F2,IDMF4,LCMFR(65),LCMFRD,NORDER,PERIOD,MAXFR
3624                  0         1,RPERD(2),KIND2,KIND4,CAG1,CAG2,CRB1,CRB2,BB2,BB12,AA2,AA12,BVPT,
3625                  0         1BV2,CI2,CI3,CB2,CB3,CB4,CH1,CE1,CTX1,DAYSC,XABF(541)
3626                  0          DIMENSION ABFD(5,2,27),ABF(5,4,27),XABFD(271),QATXY(2487)
3627                  0          EQUIVALENCE (XABF(1),XABFD(1)),(XABFD(2),ABFD(1)),(DAYFR,QATXY(1))
3628                  0          EQUIVALENCE (XABF(1),II),(XABF(2),ABF(1),ABFD(1))
3629                  0          DIMENSION FF4(4),FF2(2), CLOUD(27),CLOUD2(27),QD(27),QI(27)
3630                  0          DIMENSION COSNM(5)
3631                  0          EQUIVALENCE (CLOUD(1),CLOUD2(1)),(QI(1),QD(1))
3632                  0          EQUIVALENCE (FF4(1),TAR),(FF4(2),EA),(FF4(3),UG),(FF4(4),VG),
3633                  0         1       (QB,QH,QE),(VHF,VHFA),(QBHE,EA2)
3634                  0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,NEWP.5
3635                  0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYB,INKD,INDEX,ITIL(8)NEWP.6
3636                  0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)NEWP.7
3637                  0         3,LSTP(4),BG(4),DDUT(4),NOTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LDWP,  NEWP.8
3638                  0         3LPSTP,LSTDA,ID4DA,ID4DB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,NEWP.9
3639                  0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANNEWP.10
3640                  0         4,MSCAN,EPSL,ALPHAR,ALPHA1,PWGT,DTIME1,DTIME2,MSWP,MCOUNT,MSLCT(3),NEWP.11
3641                  0         4LGLTIJ(2,4,3),XXX(30)                                            NEWP.12
3642                  0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23, NEWP.13
3643                  0         527),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)       NEWP.14
3644                  0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,    NEWP.21
3645                  0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,   NEWP.22
3646                  0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTU,CSTE,SECDAY,NEWP.23
3647                  0         3DXT(27),DXU(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITNEWP.24
3648                  0         4(10),DZ(10),DZH(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   NEWP.25
3649                  0         1AJKY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),  NEWP.26
3650                  0         5CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  NEWP.27
3651                  0         727),SVISX(27),TVISX(27),    IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,   NEWP.28
3652                  0         8LAN(2),INC(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  NEWP.29
3653                  0         923,27),AREAT,AREAU,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)NEWP.30
3654                  0         1,EPD(23,27)
3655                  0          DIMENSION T(23,27)
3656                  0          EQUIVALENCE (IBI,IB)
3657                  0          DATA COSNM(1)/1.0/
3658                  0          IBFR=IB
3659                111           IF (JSWC .EQ. 0) GO TO 18
3660                112           IRE=IRE-1
3661                112           GO TO 10
3662                114        18 IRE=0
3663               .114           DAYFR=DAYS
3664                117           IF(MSUI.EQ.0) GO TO 10
3665                121           DAYSC=DAYSC+DIFDAY
3666                125           IF (DAYSC .GT. PERIOD) DAYSC=DAYSC-PERIOD
3667                127           DO 2 J=1,NORDER
3668                127           WTJ=RPERD(J)*DAYSC
3669                127           M=J+1 $ COSNM(M)=COS(WTJ) $ COSNM(M+NORDER)=SIN(WTJ)
3670                127         2 CONTINUE
3671                151           CALL LCMRD (LCMFRD,XABFD,IDMF2)
3672                156           DO 5 J=1,JMAX
3673                156           DO 4 KK=1,KIND2
3674                157           FF2(KK)=ABFD(1,KK,J)
3675                157           DO 3 M=2,MAXFR
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CARD      APPROXIMATE
NUMBER  PROGRAM LOCATION
3676          160        3  FF2(KK)=FF2(KK)+ABFD(M,KK,J)*COSNM(M)
3677          200        4  CONTINUE
3678          203           QD(J)=FF2(1) $ CLOUD(J)=FF2(2)
3679          203           QI(J)=QD(J)*(CI2-CI3*CLOUD(J))
3680          203           CLOUD2(J)=CLOUD(J)*CLOUD(J)
3681          203        5  CONTINUE
3682          215       10  CONTINUE
3683          217           CALL INDINTG (IMAX,JMAX,IND,INDBR,2,ING)
3684          227           IMEF21=IMEF2+1
3685          232           IF (ING(2) .EQ. 0) IMEF21=IMEF2
3686          235           DO 20 I=IMEF1,IMEF21
3687          235           IRE=IRE+1
3688          235           CALL LCMRD (LCMFR(IRE),XABF,IDMF4)
3689          247           DO 20 J=1,JMAX
3690          247           IF (IND(I,J) .LT. 0) GO TO 19
3691          247           DO 16 KK=1,KIND4
3692          256           FF4(KK)=ABF(1,KK,J)
3693          256           DO 15 M=2,MAXFR
3694          257       15  FF4(KK)=FF4(KK)+ABF(M,KK,J)*COSNM(M)
3695          300       16  CONTINUE
3696          303           TWIJ=T(I,J)+TKK $ TAIR(I,J)=TAR $ TAR=TAR+TKK
3697          303           EA2=SQRT(EA)
3698          315           UAR=CAG1*UG-CAG2*VG $ VAR=CAG1*VG+CAG2*UG
3699          315           VH2=UAR*UAR+VAR*VAR $ VH=SQRT(VH2)
3700          326           ES=9.4051-2353.0/TWIJ   $ ES=10.0**ES
3701          336           ESMEA=ES-EA $ RB=1.-CRB2*ESMEA $ RB=TAR*RB-TWIJ $ RB=CRB1*RB/VH2
3702          336           IF (RB) 11,12,13
3703          353       11  FH=1.0+BB12*ALOG(1.0-BB2*RB) $ FA=1.0+AA12*ALOG(1.0-AA2*RB)
3704          360           GO TO 14
3705          363       12  FH=FA=1.0
3706          363           GO TO 14
3707          370       13  FH=EXP(BVPT*RB) $ FA=EXP( BV2*RB)
3708          374       14  TW2= TWIJ*TWIJ     $ TW4=TW2*TW2
3709          374           QB=(CB2-CB3*EA2)*(1.0-CB4*CLOUD2(J))*TW4   $ QBHE=QB
3710          374           VHF=VH*FH $ QH=CH1*VHF*(TWIJ-TAR) $ QBHE=QBHE+QH
3711          374           QE=CE1*VHF*ESMEA    $ QBHE=QBHE+QE $ QT(I,J)=QI(J)-QBHE
3712          374           VHFA=CTX1*FA*VH $ STX(I,J)=VHFA*UAR $ STY(I,J)=VHFA*VAR
3713          374           GO TO 20
3714          431       19  TAIR(I,J)=QT(I,J)=STX(I,J)=STY(I,J)=RUNDF
3715          431       20  CONTINUE
3716          444           CALL INDINTG (IMAX,JMAX,IND,INDBR,2,ING)
3717          455           DO 26 J=1,JMAX
3718          455           JP1=J+1
3719          455           DO 26 I=IMEF1,IMEF2
3720          456           IF (IND(I,J) .LT. 0) GO TO 25
3721          456           IP1=I+1
3722          456           IF (IND(I,J) .GT. 6) GO TO 25
3723          456           STX(I,J)=(STX(I,J)+STX(IP1,J)+STX(I,JP1)+STX(IP1,JP1))*0.25
3724          456           STY(I,J)=(STY(I,J)+STY(IP1,J)+STY(I,JP1)+STY(IP1,JP1))*0.25
3725          456           GO TO 26
3726          456       25  STX(I,J)=STY(I,J)=RUNDF
3727          455       26  CONTINUE
3728          531           IF (MSUI .LT. 0) GO TO 30
3729          534           IF (LSTP(1) .NE. 0) GO TO 28
3730          536           LFE=1
3731          536           NAMX(1)=10HTAIR(I,J) $NAMX(2)=10HIN UNIT -  $NAMX(3)=10HDEGREE C
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CARD          APPROXIMATE
NUMBER       PROGRAM LOCATION
3732                536          CALL GTABOUT (NAMX,NTPO2,KDAT,IMAX,JMAX,DAYS,IB,0,LFE,LSBY,TAIR)
3733                560          LFE=2
3734                560          NAMX(1)=10H QT(I,J)  $NAMX(2)=10HUNIT = CAL $NAMX(3)=10H/CM**2/SEC
3735                560          CALL GTABOUT (NAMX,NTPO2,KDAT,IMAX,JMAX,DAYS,IB,0,LFE,LSBY,QT)
3736                602          NAMX(1)=10HSTX(I,J)  $NAMX(2)=10HIN UNIT -  $NAMX(3)=10HDYNE/CM**2
3737                602          CALL GTABOUT (NAMX,NTPO2,KDAT,IMAX,JMAX,DAYS,IB,0,LFE,LSBY,STX)
3738                623          NAMX(1)=10H STY(I,J)
3739                623          CALL GTABOUT (NAMX,NTPO2,KDAT,IMAX,JMAX,DAYS,IB,0,LFE,LSBY,STY)
3740                642       28 IF (LSTP(4) .NE. 0) GO TO 30
3741                644          CALL WTBUF (NTAP(4),IDMOT,QATXY)
3742                651       30 CONTINUE
3743                651          JSWC=1
3744                651          RETURN
3745                652          END

          LENGTH OF ROUTINE   QTSTXY       730

          VARIABLE ASSIGNMENTS
JSWC  -       0     T     -       0     ABFD  -    5027C 0  ABF   -    5027C 0  XABFD -    5026C 0  QATXY -      0C 0
FF4   -       0     FF2   -       4     CLOUD -       6     CLOUD2 -       6     QO    -      41     QI    -      41
COSNN -      74     DAYFR -      0C 0   KDATFR -      1C 0   IBFR  -      2C 0   TAIR  -      3C 0   QT    -    1160C 0
STX   -    2335C 0  STY   -    3512C 0  IDMQT -    4667C 0  IDMF2 -    4670C 0  IDMF4 -    4671C 0  LCMFR -    4672C 0
LCMFRD -   4773C 0  NORDER -   4774C 0  PERIOD -   4775C 0  MAXFR -   4776C 0  RPERD -   4777C 0  KIND2 -    5001C 0
KIND4 -    5002C 0  CAG1  -    5003C 0  CAG2  -    5004C 0  CRB1  -    5005C 0  CRB2  -    5006C 0  BB2   -    5007C 0
BB12  -    5010C 0  AA2   -    5011C 0  AA12  -    5012C 0  BVPT  -    5013C 0  BV2   -    5014C 0  CI2   -    5015C 0
CI3   -    5016C 0  CB2   -    5017C 0  CB3   -    5020C 0  CB4   -    5021C 0  CH1   -    5022C 0  CE1   -    5023C 0
CTX1  -    5024C 0  DAYSC -    5025C 0  XABF  -    5026C 0  DAYS  -      0C 1   KDAT  -      1C 1   DIFDAY -     2C 1
DTIME -      3C 1   DAYEND -     4C 1   MAXI  -      5C 1   IMAX  -      6C 1   JMAX  -      7C 1   KMAX  -     10C 1
IM1   -     11C 1   JM1   -     12C 1   IP1   -     13C 1   JP1   -     14C 1   I1    -     15C 1   J1    -     16C 1
I2    -     17C 1   J2    -     20C 1   I     -     21C 1   J     -     22C 1   K     -     23C 1   NCARD1 -    24C 1
NCARD -     25C 1   KSYB  -     26C 1   INKD  -     27C 1   INDEX -     30C 1   ITIL  -     31C 1   NAMX  -     41C 1
NTPO1 -     44C 1   NTPO2 -     45C 1   NAMT  -     46C 1   NTAP  -     62C 1   NRT   -     66C 1   KNR   -     72C 1
MWT   -     75C 1   LOW   -    102C 1   LSTP  -    106C 1   BG    -    112C 1   DOUT  -    116C 1   NOTAP -    122C 1
ITAP  -    126C 1   MTLAB -    132C 1   PRTDAY -   442C 1   LDWP  -    443C 1   LPSTP -    444C 1   LSTDA -    445C 1
IDMDA -    446C 1   IDMDB -    447C 1   IDMDC -    450C 1   IDMDD -    451C 1   NDIM  -    452C 1   NDIM1 -    453C 1
NDIM2 -    454C 1   NDSK1 -    455C 1   NDSK2 -    456C 1   NDSK3 -    457C 1   NDSK4 -    460C 1   NDSK5 -    461C 1
NDSK6 -    462C 1   NDSK7 -    463C 1   NDSK8 -    464C 1   MSUN  -    465C 1   MSUI  -    466C 1   LMIN1 -    467C 1
LMIN2 -    470C 1   IBSCAN -   471C 1   MSCAN -    472C 1   EPSL  -    473C 1   ALPHAR -   474C 1   ALPHA1 -   475C 1
PWGT  -    476C 1   DTIME1 -   477C 1   DTIME2 -   500C 1   MSWP  -    501C 1   MCOUNT -   502C 1   MSLCT -    503C 1
LGLTIJ -   506C 1   XXX   -    536C 1   DAYT  -    574C 1   KDATT -    575C 1   IBT   -    576C 1   PT    -    577C 1
KT    -   1754C 1   UT    -   1755C 1   VT    -   3132C 1   WT    -   4307C 1   ST    -   5464C 1   TT    -   6641C 1
PPT   -  10016C 1   RES   -  11173C 1   UTM   -  12350C 1   VTM   -  13525C 1   DAYB  -      0C 2   KDATB -      1C 2
IMAXT -      2C 2   NIB   -      3C 2   NIBT  -      4C 2   IUNDF -      5C 2   RUNDF -      6C 2   FLAT1 -      7C 2
FLAT2 -     10C 2   FLONG1 -    11C 2   FLONG2 -    12C 2   SO    -    13C 2   TO    -    14C 2   ROO   -    15C 2
ALPHA -     16C 2   B     -     17C 2   HEATC -     20C 2   PI    -    21C 2   RE    -    22C 2   G     -    23C 2
VISY  -     24C 2   SVISY -     25C 2   TVISY -     26C 2   VISZ  -    27C 2   SVISZ -    30C 2   TVISZ -    31C 2
POWER -     32C 2   TAREA -     33C 2   UAREA -     34C 2   TVOL  -    35C 2   UVOL  -    36C 2   TKK   -    37C 2
CSTQ  -     40C 2   CSTE  -     41C 2   SECDAY -    42C 2   DXT   -    43C 2   DXU   -    76C 2   RDXU2 -    131C 2
DYT   -    164C 2   DYU   -    165C 2   RDYU2 -    166C 2   EPSSK -    167C 2   EPSTK -    201C 2   ROCRIT -   213C 2
DZ    -    225C 2   DZMH  -    237C 2   Z     -    251C 2   DEPTH -    263C 2   BETA  -    264C 2   F     -    317C 2
DG    -    352C 2   AYZT  -    364C 2   AJXY  -    376C 2   AXZT  -    431C 2   AXZU  -   1047C 2   AX    -   1465C 2
AY    -   2103C 2   AZ    -   2521C 2   CSX   -   3137C 2   CSY   -   3555C 2   CSZ   -   4173C 2   CTX   -   4205C 2
CTY   -   4623C 2   CTZ   -   5241C 2   VISX  -   5253C 2   SVISX -   5306C 2   TVISX -   5341C 2   IBI   -   5374C 2
IMX   -   5375C 2   IMEF1 -   5376C 2   IMEF2 -   5377C 2   JMX   -   5400C 2   JMEF1 -   5401C 2   JMEF2 -   5402C 2
LAN   -   5403C 2   ING   -   5405C 2   INDBL -   5407C 2   INDBR -   5442C 2   LSBY  -   5475C 2   IEF1  -   5524C 2
IEF2  -   5557C 2   IND   -   5612C 2   AREAT -   6767C 2   AREAU -   6770C 2   VOLT  -   6771C 2   VOLU  -   6772C 2
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AREATB -   5773C 2  AREAJB -   6774C 2  VOLTB  -   6775C 2  VOLUB  -   6776C 2  ATXY   -   6777C 2  EPO    -  10154C 2
II     -   5026C 0  TAR    -      0     EA     -      1     UG     -      2     VG     -      3     QB     -    101
QH     -    101    QE     -    101     VHF    -    102     VHFA   -    102     QBHE   -    103     EA2    -    103
IB     -   5374C 2  IRE    -    701     RTJ    -    700     M      -    677     KK     -    676     IMEF21 -    675
TWIJ   -    674    UAR    -    673     VAR    -    672     VH2    -    671     VH     -    670     ES     -    667
ESMEA  -    666    RB     -    665     FH     -    664     FA     -    663     T#2    -    662     T#4    -    661
LFE    -    660

          SUBROUTINES CALLED
COSF       SINF       LCMRD      INDINTG    SQRTF      RBAREX     LOGF       EXPF       GTABOUT    WTBUF      QBQRSO

          COMMON BLOCKS AND LENGTHS
QTST   -   6063       CMN1   -  14702       CMN2   -  11331
     COMPILE TIME =     303    MILLISECS
```

```
CARD              APPROXIMATE
NUMBER          PROGRAM LOCATION
3746                     0          SUBROUTINE FRPRT (KDAT,I,JMAX,MAXFR,KIND,NAMFR,XAB)
3747                     0          DIMENSION XAB(MAXFR,KIND,JMAX),NAMFR(KIND)
3748                     0          PRINT 10, KDAT, I
3749                    13       10  FORMAT (// 10X,*DATE -- *A10,12X,*INPUT FOURIER CONSTANTS FOR OVER
3750                    13          1 ALL I =*I4/)
3751                    13       11  FORMAT (/9X,I4,2X,A10,I4,1X,7(I5,1H),F8.3)/(30X,7(I5,1H),F8.3)))
3752                    13          DO 20 K=1,KIND
3753                    13          DO 20 M=1,MAXFR
3754                    14       20  PRINT 11,I,NAMFR(K),M, (J,XAB(M,K,J),J=1,JMAX)
3755                    53          RETURN
3756                    54          END

        LENGTH OF ROUTINE   FRPRT        127

        VARIABLE ASSIGNMENTS
KDAT   -      0    I      -      0    JMAX   -      0    MAXFR  -      0    KIND   -      0    NAMFR  -      0
XAB    -      0    K      -     67    M      -     66    J      -     65

        SUBROUTINES CALLED
OUTPTC   OBORSD
    COMPILE TIME =     19    MILLISECS
```

```
CARD      APPROXIMATE
NUMBER    PROGRAM LOCATION
3757                0          SUBROUTINE CALCKD (LTYPE,NDSKR,NDSKW)                                    CALD.2
3758                0      C  ********** BEGINING OF DIMENSION CHANGE  **********                        CALD.3
3759                0          COMMON/CMN1/DAYS,KDAT,DIFDAY,DTIME,DAYEND,MAXI,IMAX,JMAX,KMAX,IM1,CALD.4
3760                0         1JM1,IP1,JP1,I1,J1,I2,J2,I,J,K,NCARD1,NCARD,KSYS,INKD,INDEX,ITIL(3)CALD.5
3761                0         2,NAMX(3),NTPD1,NTPD2,NAMT(3,4),NTAP(4),NRT(4),KNR(4),MWT(4),LDW(4)CALD.6
3762                0         3,LSTP(4),BS(4),JOUT(4),NDTAP(4),ITAP(4),MTLAB(50,4),PRTDAY,LUWP.  CALD.7
3763                0         3LPSTP,LSTDA,IDMDA,IDMDB,IDMDC,IDMDD,NDIM,NDIM1,NDIM2, NDSK1,NDSK2,CALD.8
3764                0         3NDSK3,NDSK4,NDSK5,NDSK6,NDSK7,NDSK8, MSUN,MSUI, LMIN1,LMIN2,IBSCANCALD.9
3765                0         4,MSCAN,EPSL,ALPHAR,ALPHAI,PWGT,DTIME1,DTIME2,MSWP,NCOUNT,MSLCT(3),CALD.10
3766                0         4LGLTIJ(2,4,3),KKK(30)                                                   CALD.11
3767                0         4,DAYT,KDATT,IBT,PT(23,27),KT,UT(23,27),VT(23,27),WT(23,27),ST(23,  CALD.12
3768                0         627),TT(23,27), PPT(23,27),RES(23,27),UTM(23,27),VTM(23,27)              CALD.13
3769                0          DIMENSION XUVR(2484)                                                    CALD.14
3770                0          EQUIVALENCE (PPT(1),XUVR(1))                                            CALD.15
3771                0          DIMENSION BT(624),DT(3106)                                              CALD.16
3772                0          EQUIVALENCE (DAYT,BT(1)),(KT,DT(1))                                     CALD.17
3773                0          COMMON/CMN2/DAYB,KDATB,IMAXT,NIB,NIBT,IUNDF,RUNDF,FLAT1,FLAT2,     CALD.18
3774                0         1FLONG1,FLONG2,SO,TO,ROO,ALPHA,B,HEATC,PI,RE,G,VISY,SVISY,TVISY,     CALD.19
3775                0         2VISZ,SVISZ,TVISZ,POWER,TAREA,UAREA,TVOL,UVOL,TKK,CSTQ,CSTE,SECDAY,CALD.20
3776                0         3DXT(27),DXJ(27),RDXU2(27),DYT,DYU,RDYU2,EPSSK(10),EPSTK(10),RDCRITCALD.21
3777                0         4(10),DZ(10),DZMM(10),Z(10),DEPTH,BETA(27),F(27),DG(10),AYZT(10),   CALD.22
3778                0         1AUXY(27), AXZT(27,10),AXZU(27,10),AX(27,10),AY(27,10),AZ(27,10),   CALD.23
3779                0         6CSX(27,10),CSY(27,10),CSZ(10),CTX(27,10),CTY(27,10),CTZ(10),VISX(  CALD.24
3780                0         727),SVISX(27),TVISX(27),   IBI,IMX,IMEF1,IMEF2,JMX,JMEF1,JMEF2,    CALD.25
3781                0         8LAN(2),ING(2),INDBL(27),INDBR(27),LSBY(23),IEF1(27),IEF2(27),IND(  CALD.26
3782                0         923,27),AREAT,AREAJ,VOLT,VOLU,AREATB,AREAUB,VOLTB,VOLUB,ATXY(23,27)CALD.27
3783                0         1,EPD(23,27)
3784                0          DIMENSION X(2812),Y(2013)
3785                0          EQUIVALENCE (DAYB,X(1)),(IBI,Y(1))                                      CALD.30
3786                0      C  ********** ENDING OF DIMENSION CHANGE  ****************                  CALD.33
3787                5          CALL REWDTP (NDSK5) $ CALL REWDTP (NDSKR)                               CALD.34
3788               11          IF (NDSKW .NE. 0) CALL REWDTP (NDSKW)                                   CALD.35
3789               15       10 CALL RDBUFL (NDSK5,IDMDB,Y)                                             CALD.36
3790               22          CALL RDBUFL (NDSKR,IDMDC,XUVR)                                          CALD.37
3791               27          GO TO (1,2,3) LTYPE                                                     CALD.38
3792               40        1 CONTINUE                                                                CALD.39
3793               40          KPP=0 $ LFE=2                                                           CALD.40
3794               40          NAMX(1)=104 PPT(I,J)                                                    CALD.41
3795               40          CALL STABDJT (NAMX,NTPD1,KDAT,IMAX,JMAX,DAYS,IBI,KPP,LFE,LSBY,PPT)CALD.42
3796               60          NAMX(1)=104 RES(I,J)                                                    CALD.43
3797               60          CALL STABDJT (NAMX,NTPD1,KDAT,IMAX,JMAX,DAYS,IBI,KPP,LFE,LSBY,RES)CALD.44
3798               75          GO TO 20                                                                CALD.45
3799               76        2 CONTINUE                                                                CALD.46
3800               77          GO TO 20                                                                CALD.47
3801               77        3 CONTINUE                                                                CALD.48
3802              101       20 IF (NDSKW .NE. 0) CALL WTBUFL (NDSKW,IDMDC,XUVR)                        CALD.49
3803              113          IF (IBI .NE. NIB) GO TO 10                                              CALD.50
3804              112          RETURN                                                                  CALD.51
3805              112          END                                                                     CALD.52

          LENGTH OF ROUTINE   CALCKD       135

          VARIABLE ASSIGNMENTS
LTYPE  -      0     NDSKR  -      0     NDSKW  -      0     XUVR   -  10016C 0  BT     -    5374C 0  DT     -   1754C 0
X      -     0C 1   Y      -   5374C 1  DAYS   -     0C 0  KDAT   -     1C 0  DIFDAY -     2C 0  DTIME  -     3C 0
DAYEND -     4C 0   MAXI   -     5C 0  IMAX   -     6C 0  JMAX   -     7C 0  KMAX   -    10C 0  IM1    -    11C 0
```

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JM1     -     12C 0  IP1     -     13C 0  JP1     -     14C 0  I1      -     15C 0  J1      -     16C 0  I2      -     17C 0
J2      -     20C 0  I       -     21C 0  J       -     22C 0  K       -     23C 0  NCARD1  -     24C 0  NCARD   -     25C 0
KSWB    -     25C 0  INKD    -     27C 0  INDEX   -     30C 0  ITIL    -     31C 0  NAMX    -     41C 0  NTPD1   -     44C 0
NTPD2   -     45C 0  NAMT    -     46C 0  NTAP    -     62C 0  NRT     -     66C 0  KNR     -     72C 0  MWT     -     76C 0
LOW     -    102C 0  LSTP    -    106C 0  BS      -    112C 0  DOUT    -    116C 0  NUTAP   -    122C 0  ITAP    -    126C 0
MTL&B   -    132C 0  PRTDAY  -    442C 0  LOWP    -    443C 0  LPSTP   -    444C 0  LSTDA   -    445C 0  IDMDA   -    446C 0
IDMD8   -    447C 0  IDMDC   -    450C 0  IDMDD   -    451C 0  NDIM    -    452C 0  NDIM1   -    453C 0  NDIM2   -    454C 0
NDSK1   -    455C 0  NDSK2   -    456C 0  NDSK3   -    457C 0  NDSK4   -    460C 0  NDSK5   -    461C 0  NDSK6   -    462C 0
NDSK7   -    463C 0  NDSK8   -    464C 0  MSUN    -    465C 0  MSUI    -    466C 0  LMIN1   -    467C 0  LMIN2   -    470C 0
IBSCAN  -    471C 0  MSCAN   -    472C 0  EPSL    -    473C 0  ALPHAR  -    474C 0  ALPHA1  -    475C 0  PWST    -    476C 0
DTIME1  -    477C 0  DTIME2  -    500C 0  MSWP    -    501C 0  MCOUNT  -    502C 0  MSLCT   -    503C 0  LGLTIJ  -    506C 0
XXX     -    536C 0  DAYT    -    574C 0  KDATT   -    575C 0  IBT     -    576C 0  PT      -    577C 0  KT      -   1754C 0
JT      -   1755C 0  VT      -   3132C 0  WT      -   4307C 0  ST      -   5464C 0  TT      -   6641C 0  PPT     -  10016C 0
RES     -  11173C 0  UTM     -  12355C 0  VTM     -  13525C 0  DAYB    -     0C 1  KDATB   -     1C 1  IMAXT   -     2C 1
NIB     -     3C 1  NIBT    -     4C 1  IUNDF   -     5C 1  RUNDF   -     6C 1  FLAT1   -     7C 1  FLAT2   -    10C 1
FLDVS1  -    11C 1  FLDVS2  -    12C 1  SD      -    13C 1  TD      -    14C 1  RDD     -    15C 1  ALPHA   -    16C 1
B       -    17C 1  HEATC   -    20C 1  PI      -    21C 1  RE      -    22C 1  G       -    23C 1  VISY    -    24C 1
SWISY   -    25C 1  TVISY   -    26C 1  VISZ    -    27C 1  SWISZ   -    30C 1  TVISZ   -    31C 1  POWER   -    32C 1
TAREA   -    33C 1  UAREA   -    34C 1  TVOL    -    35C 1  UVOL    -    36C 1  TKK     -    37C 1  CSTW    -    40C 1
CSTE    -    41C 1  SECDAY  -    42C 1  DXT     -    43C 1  DXU     -    76C 1  RDXU2   -   131C 1  DYT     -   164C 1
DYU     -   165C 1  RDYU2   -   166C 1  EPSSK   -   167C 1  EPSTK   -   201C 1  RDCKIT  -   213C 1  DZ      -   225C 1
DZMM    -   237C 1  Z       -   251C 1  DEPTH   -   263C 1  BETA    -   264C 1  F       -   317C 1  DG      -   352C 1
AWZT    -   364C 1  AUXY    -   376C 1  AXZT    -   431C 1  AXZU    -  1047C 1  AX      -  1465C 1  AY      -  2103C 1
AZ      -  2521C 1  CSX     -  3137C 1  CSY     -  3555C 1  CSZ     -  4173C 1  CTX     -  4205C 1  CTY     -  4623C 1
CTZ     -  5241C 1  VISX    -  5253C 1  SWISX   -  5306C 1  TVISX   -  5341C 1  IBI     -  5374C 1  IMX     -  5375C 1
IMEF1   -  5375C 1  IMEF2   -  5377C 1  JMX     -  5400C 1  JMEF1   -  5401C 1  JMEF2   -  5402C 1  LAN     -  5403C 1
ING     -  5405C 1  INDBL   -  5407C 1  INDBR   -  5442C 1  LSBY    -  5475C 1  IEF1    -  5524C 1  IEF2    -  5557C 1
IND     -  5612C 1  AREAT   -  6757C 1  AREAU   -  6770C 1  VULT    -  6771C 1  VULU    -  6772C 1  AREATB  -  6773C 1
AREAUB  -  6774C 1  VOLTB   -  6775C 1  VOLUB   -  6776C 1  ATXY    -  6777C 1  EPD     - 101546C 1  KPP     -   121
LFE     -   123

          SUBROUTINES CALLED
REWDTP    RDBUFL    GTABDUT   WTBUFL    DBGKSD

          COMMON BLOCKS AND LENGTHS
CMN1    -  14702      CMN2    -  11331
    COMPILE TIME =      75    MILLISECS

  PROGRAM SPACE IS 137726

ORIGIN     ENTRY POINTS AND LOCATIONS
 11224      TRCNLNZ  11235
 71255      CSTOUT   71255
 71314      FLDVST   71341
 72302      RDBUF    72302
 72411      WTBUF    72411
 72520      REWLCM   72520
101122      REWDTP  101122
101136      RDBUFL  101136
101166      WTBUFL  101166
101215      GRDCST  101222
103117      CPDINP  103122
103351      LSTCSTI 103351
105065      INDTABL 105065
105352      CMGTAPE 105364
105716      GTABDUT 105741
106247      LSTOUT  106247
106476      PRTENGX 106514
106777      DATPLT  106777
107153      MPLOT   107224
110316      PRTOJK  110316
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112170     INDINTG 112170
112246     MAINCL  112246
112650     ACALK32 112650
113215     CMPTA   113217
115060     BINCPMA 115060
115142     ZERDBF  115142
115226     NONLIN  115230
116431     FCALK32 116431
116773     CMPTF   116773
120622     QTEMPF  120622
120670     RELAX   120670
121476     CNTX    121476
122360     ADVCD   122361
122710     CALCAJ  122722
123400     MUVCAL  123400
124773     MFLOUT  124773
125434     FRCST   125467
126273     QTSTXY  126377
127223     FRPRT   127223
127352     CALCKD  127352
127507     Q8QERR  127507
127521     Q8QIOU  127521      IJ003   127744
127754     Q8QRSD  127767      NUMP    130000
130003     ALOG    130004      LOGF    130004
130046     EXIT    130061      END     130061      STOP    130051
130066     EXP     130076      EXPF    130076
130146     INPUTC  130146
130571     KODER   130571
131621     KRAKER  131621
132421     OUTPTC  132421
133052     COS     133052      SIN     133056      COSF    133052      SINF    133056
133137     SQRT    133137      SQRTF   133137
133170     ALOG10  133171
133244     BACKSP  133244      REWINM  133321      IFENDF  133331
133370     BUFFEI  133370      BUFFED  133412      LENGTHF 133450      IOCHEK  133470
133655     CLOCKF  133662      DATEF   133655
133667     LCMRD   133724      LCMWT   133727      LCMREQ  133667
133744     NEWVOL  133747      NEWLAB  133744
135033     FRSTPT  135053      VECTOR  135126      POINT   135137      CURVE   135150      LINE    135211      Q8QTRN  135231
           Q8QP42  135311      Q8QFLB  135324      Q8QWRB  135374      Q8QERP  135450
136403     OUTPTS  136403
136676     FRAME   136676
136745     DPTN    136753
137134     PWRI    137140
137457     PWRT    137457
137514     Q8QSOA  137514
137523     RBAREX  137542
137645     ULIBER  137645

    COMMON BLOCKS     LOCATION
                 4       CMN1     14570      CMN2     31472      CMN3     43023      NLCM     66351      ENSL     66731
           QTST     73037       CPL     107107      Q8QPPC  135461


OVERALL CORE USE STATISTICS   (DECIMAL)

THE MAXIMUM SCM IS                54144
THE PROGRAM CURRENTLY USES        49126
THE LOADING PROCESS USED          52258
THE MAXIMUM LCM IS               449600
THE PROGRAM CURRENTLY USES        52965
 LCM AREA MAP BY BUFFER TYPE
        MISC          185  SYSIOU          6  PR           2048  RANFO          64  SYSSAT        512
        SYSMI        1024  SYSSCM      49126
```

********** LCM ADDRESS TABLE FOR BOTH BKY-FTN AND NCAR SYSTEMS **********

LCMFRD = 0 0000000000000000000

LCMFR(I) =

1)	271	0000000000000000417	2)	812	0000000000000001454	3)	1553	0000000000000002511
4)	1894	0000000000000003546	5)	2435	0000000000000004603	6)	2976	0000000000000005640
7)	3517	0000000000000006675	8)	4058	0000000000000007732	9)	4599	0000000000000010767
10)	5140	0000000000000012024	11)	5681	0000000000000013061	12)	6222	0000000000000014116
13)	6763	0000000000000015153	14)	7304	0000000000000016210	15)	7845	0000000000000017245
16)	8386	0000000000000020302	17)	8927	0000000000000021337	18)	9468	0000000000000022374
19)	10009	0000000000000023431	20)	10550	0000000000000024466	21)	11091	0000000000000025523
22)	11632	0000000000000026560	23)	12173	0000000000000027615	24)	12714	0000000000000030652
25)	13255	0000000000000031707	26)	13796	0000000000000032744	27)	14337	0000000000000034001
28)	14878	0000000000000035036	29)	15419	0000000000000036073	30)	15960	0000000000000037130
31)	16501	0000000000000040165	32)	17042	0000000000000041222	33)	17583	0000000000000042257
34)	18124	0000000000000043314	35)	18665	0000000000000044351	36)	19206	0000000000000045406
37)	19747	0000000000000046443	38)	20288	0000000000000047500	39)	20829	0000000000000050535
40)	21370	0000000000000051572	41)	21911	0000000000000052627	42)	22452	0000000000000053664
43)	22993	0000000000000054721	44)	23534	0000000000000055756	45)	24075	0000000000000057013
46)	24616	0000000000000060050	47)	25157	0000000000000061105	48)	25698	0000000000000062142
49)	26239	0000000000000063177	50)	26780	0000000000000064234	51)	27321	0000000000000065271
52)	27862	0000000000000066326	53)	28403	0000000000000067363	54)	28944	0000000000000070420
55)	29485	0000000000000071455	56)	30026	0000000000000072512	57)	30567	0000000000000073547
58)	31108	0000000000000074604	59)	31649	0000000000000075641	60)	32190	0000000000000076676
61)	32731	0000000000000077733	62)	33272	0000000000000100770	63)	33813	0000000000000102025
64)	34354	0000000000000103052	65)	34895	0000000000000104117			

LCM NAME REQUEST --- L, LCNT(L), IRMX = 1 0 33

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.
1)	35436	0000000000000105154	2)	36060	0000000000000106334	3)	39166	0000000000000114376
4)	42272	0000000000000122440	5)	45378	0000000000000130502	6)	48484	0000000000000136544
7)	51590	0000000000000144606	8)	54696	0000000000000152650	9)	57802	0000000000000160712
10)	60908	0000000000000166754	11)	64014	0000000000000175016	12)	67120	0000000000000203060
13)	67744	0000000000000204240	14)	70850	0000000000000212302	15)	73956	0000000000000220344
16)	77062	0000000000000225406	17)	80168	0000000000000234450	18)	83274	0000000000000242512
19)	86380	0000000000000250554	20)	89486	0000000000000256616	21)	92592	0000000000000264660
22)	95698	0000000000000272722	23)	98804	0000000000000300764	24)	99428	0000000000000302144
25)	102534	0000000000000310206	26)	105640	0000000000000316250	27)	108746	0000000000000324312
28)	111852	0000000000000332354	29)	114958	0000000000000340416	30)	118064	0000000000000346460
31)	121170	0000000000000354522	32)	124276	0000000000000362564	33)	127382	0000000000000370626

LCM NAME REQUEST --- L, LCNT(L), IRMX = 2 0 33

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.
1)	130488	0000000000000376670	2)	131112	0000000000000400050	3)	134218	0000000000000406112
4)	137324	0000000000000414134	5)	140430	0000000000000422216	6)	143536	0000000000000430260
7)	146642	0000000000000435322	8)	149748	0000000000000444364	9)	152854	0000000000000452426
10)	155960	0000000000000460470	11)	159066	0000000000000466532	12)	162172	0000000000000474574
13)	162796	0000000000000475734	14)	165902	0000000000000504016	15)	169008	0000000000000512060
16)	172114	0000000000000520122	17)	175220	0000000000000526164	18)	178326	0000000000000534226
19)	181432	0000000000000542270	20)	184538	0000000000000550332	21)	187644	0000000000000556374
22)	190750	0000000000000564436	23)	193856	0000000000000572500	24)	194480	0000000000000573660
25)	197586	0000000000000601722	26)	200692	0000000000000607764	27)	203798	0000000000000616026
28)	206904	0000000000000624070	29)	210010	0000000000000632132	30)	213116	0000000000000640174
31)	216222	0000000000000645236	32)	219328	0000000000000654300	33)	222434	0000000000000662342

LCM NAME REQUEST --- L, LCNT(L), IRMX = 3 0 33

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.

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 1)      225540  000000000000670404     2)      226164  000000000000671564     3)      229270  000000000000677626
 4)      232376  000000000000705670     5)      235482  000000000000713732     6)      238588  000000000000721774
 7)      241694  000000000000733036     8)      244800  000000000000736100     9)      247906  000000000000744142
10)      251012  000000000000752204    11)      254118  000000000000760246    12)      257224  000000000000766310
13)      257848  000000000000767470    14)      260954  000000000000775532    15)      264060  000000000001003574
16)      267166  000000000001011636    17)      270272  000000000001017700    18)      273378  000000000001025742
19)      276484  000000000001034004    20)      279590  000000000001042046    21)      282696  000000000001050110
22)      285802  000000000001056152    23)      288908  000000000001064214    24)      289532  000000000001065374
25)      292638  000000000001073436    26)      295744  000000000001101500    27)      298850  000000000001107542
28)      301956  000000000001115604    29)      305062  000000000001123646    30)      308168  000000000001131710
31)      311274  000000000001137752    32)      314380  000000000001146014    33)      317486  000000000001154056

    LCM NAME REQUEST --- L, LCNT(L), IRMX =       4       0      33

 I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.
 1)            0  000000000000000000000     2)            0  000000000000000000000     3)            0  000000000000000000000
 4)            0  000000000000000000000     5)            0  000000000000000000000     6)            0  000000000000000000000
 7)            0  000000000000000000000     8)            0  000000000000000000000     9)            0  000000000000000000000
10)            0  000000000000000000000    11)            0  000000000000000000000    12)            0  000000000000000000000
13)            0  000000000000000000000    14)            0  000000000000000000000    15)            0  000000000000000000000
16)            0  000000000000000000000    17)            0  000000000000000000000    18)            0  000000000000000000000
19)            0  000000000000000000000    20)            0  000000000000000000000    21)            0  000000000000000000000
22)            0  000000000000000000000    23)            0  000000000000000000000    24)            0  000000000000000000000
25)            0  000000000000000000000    26)            0  000000000000000000000    27)            0  000000000000000000000
28)            0  000000000000000000000    29)            0  000000000000000000000    30)            0  000000000000000000000
31)            0  000000000000000000000    32)            0  000000000000000000000    33)            0  000000000000000000000

    LCM NAME REQUEST --- L, LCNT(L), IRMX =       5       0       3

 I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.
 1)       320592  000000000001162120     2)       322605  000000000001166055     3)       324618  000000000001172012

    LCM NAME REQUEST --- L, LCNT(L), IRMX =       6       0       3

 I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.
 1)       326631  000000000001175747     2)       329115  000000000001202633     3)       331599  000000000001207517

    LCM NAME REQUEST --- L, LCNT(L), IRMX =       7       0       3

 I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.     I  LCMNAM(I,L)   LCMNAM(I,L) IN OCT.
 1)       326631  000000000001175747     2)       329115  000000000001202633     3)       331599  000000000001207517
-END-FILE ON INPUT

                TERMINATION DATE = 12/31/76
                TERMINATION TIME = 15/21/23

  TOTAL CPU TIME IN MILLISECONDS =      7827
        PPU TIME IN MILLISECONDS =      1369
                   PAGES PRINTED =       117
              TOTAL RESOURCES USED =      5.70


                                DISK BLOCK USAGE SUMMARY
                              ODD UNITS                    EVEN UNITS
                                DISK  0                      DISK  1
    LIMIT ON BLOCKS ALLOWED       4095                         4095
    MAXIMUM BLOCKS USED              4                            1
    FILE BLOCKS FOR THIS PROJECT     2


                                TAPE ACTIVITY SUMMARY
TAPE  PHYSICAL  CHANNEL PARITY ERRORS      READ     WRITE    RECORDS     WORDS    FILE MARKS RECORDS     WORDS  FILE MARKS
LABEL   UNIT      ON CHAN 10,  CHAN 11.   ERRORS    ERRORS    READ       READ        READ    WRITTEN   WRITTEN  WRITTEN

 RD D    0            0          0         0         0         1          12      0          0          0    0
```

SLIB	D	1	0	0	0	0	15	48379	0	0	0	0
PLIB	D	1	0	0	0	0	9	17168	0	0	0	0
SSCR	B	0	0	0	0	0	161	41216	0	161	41216	0
SSCR	D	0	0	0	0	0	0	0	0	0	0	0
PR	D	0	0	0	0	0	0	0	0	14	28672	0
LGO	B	0	0	0	0	0	138	51552	2	69	25776	0
LGO	D	1	0	0	0	0	6	61440	0	3	30720	0

SYSTEM TAPE D73 GENERATED 12/29/76 AT 16/32 FROM SOURCE TAPE E21

LIST OF ROUTINES MODIFIED

BTC STAT	DBC	STC	DTL	TTC	CBD	CBD1	QBSTAT				
$	$	$	$$	$	$	$ 249154	$	$	$	$$	$	$	$
$	$	$	$$	$	$	$ 249154	$	$	$	$$	$	$	$
$	$	$	$$	$	$	$ 249154	$	$	$	$$	$	$	$
$	$	$	$$	$	$	$ 249154	$	$	$	$$	$	$	$
$	$	$	$$	$	$	$ 249154	$	$	$	$$	$	$	$

APPENDIX C

EXAMPLE OF COLD START JOB SUBMISSION

```
$COPY *SOURCE* TOCENLNZ
*JOB,5066,35631002,SHAW-WM,TD
*LIMIT,T#2P,PT#20,PR#350,DD80#1200
*ASSIGN,CNSTF#11,D
*ASSIGN,STRTF#12,D
*ASSIGN,HOUTF#13,D
*ASSIGN,EGSLF#14,D
*TLIB,11,3N,BK#2,MS#1,NS
*TLIB,12,8N,BK#2,MS#1,NS
*TLIB,13,8N,BK#2,MS#1,NS
*TLIB,14,8N,BK#2,MS#1,NS
*ASSIGN,DD80#40
*FORTRAN,S#PLIB,N#TOCNLNZ,FL
*COSY
*RUN,I
   ******%1<***** SAMPLE TEST TIME-DEPT. MODEL  ----- NCAR VERS.
  3515.000      0.150  3500.000 0    3.000     DAYEND,DIFDAY,START,LSTART,PRTDAY
  -25     1  400     0.7200  1.0000000E-04  MSUN, IBSCAN,MSCAN,ALPHAR,EPSL
   30     5    1                          %DENSITY ADJUST-- MSWP, MCOUNT<, IOFR
11  1   60  1        -1.0000      -3.0000  %1< NTAP,NOTAP,NRT,ITAP,BG,DOUT
B5077
12  2   22  1        -1.0000       15.0000  %2< NTAP,NOTAP,NRT,ITAP,BG,DOUT
B5410   B5322
13  3   22  1        -1.0000        3.0000  %3< NTAP,NOTAP,NRT,ITAP,BG,DOUT
B5091   B5082   B5083
14  2  680  1        -1.0000        1.5000  %4< NTAP,NOTAP,NRT,ITAP,BG,DOUT
B5365   B5385
   4                                      MSLCT%1<
    1 12    8 14   10  1   11 18
   4                                      MSLCT%2<
```


PRECEDING PAGE BLANK

```
 3 22   11 14   13  1   15 22
4                                        MSLCT%3<
 4 23    7 14   10  9   14  1
 0.0000   65.0000    0.0000  160.0000                    %LAT1,LAT2,LOG1,LOG2
10.5000   30.0000   60.0000  100.0000  150.0000  225.0000 %Z%K<,K#1,6<
350.0000  700.0000 1500.0000 3000.0000 4000.0000          %Z%K<,K#7,KM<,DEPTH
 5.0000   34.7200    1.0276    0.9580 0.0002750 0.0007500TO,SO,P00,HT,ALPHA,B
 2.5000    0.2000    0.3000    1.5000    0.8000    1.0000 %VISC.-Y,Z-M,S,M<
1EFIJ 1-  -   23  1  22  27  1  26  0  0  2  22I/J%MAX,EF1,EF2<,LAN,ING
2INDL 1-  -1 -99 -99 -99 -99 -99 -99 -99 -99 -99  3  2  2  2  9 -99 -99
3INDL 1-  -2 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
4INDR 1-  -1   1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
5INDR 1-  -2   0  0  0  0  0  0  0  0  0  7 -99
6SYBL 1-  -1 %1<    %2<    %3<    %4<    %5<    %6<    %7<    %8<
7SYBL 1-  -2 %9<    %10<   %11<   %12<   %13<   %14<   %15<   %16<
8SYBL 1-  -3 %17<   %18<   %19<   %20<   %21<   %22<   *23*
9IEFJ 1-  -1   3 22  3 22  3 22  4 22  4 22  3 22  3 22  2 22
10IEFJ 1- -2   2 22  1 22  1 22  1 22  1 22  1 22  6 22  8 22
11IEFJ 1- -3   9 22  9 22 11 22 12 22 14 22 15 22 17 22 18 22
12IEFJ 1- -4  18 22 22 22  1  1
13INDX 1- 1-1 -99 -99  3  1  1  1  1  1  1  1  1  1  1  1  1  1
14INDX 1- 1-2   1  1  1  1  1  1 -1
15INDX 1- 2-1 -99 -99  2  0  0  0  0  0  0  0  0  0  0  0  0  0
16INDX 1- 2-2   0  0  0  0  0  0 -1
17INDX 1- 3-1 -99 -99  9  4  0  0  0  0  0  0  0  0  0  0  0  0
18INDX 1- 3-2   0  0  0  0  0  0 -1
19INDX 1- 4-1 -99 -99 -99  2  0  0  0  0  0  0  0  0  0  0  0  0
20INDX 1- 4-2   0  0  0  0  0  0 -1
21INDX 1- 5-1 -99 -99 -99  2  0  0  0  0  0  0  0  0  0  0  0  0
22INDX 1- 5-2   0  0  0  0  0  0 -1
```

```
23INDX 1- 6-1  -99 -99   3   5   0   0   0   0   0   0   0   0   0   0   0   0
24INDX 1- 6-2    0   0   0   0   0   0  -1
25INDX 1- 7-1  -99 -99   2   0   0   0   0   0   0   0   0   0   0   0   0   0
26INDX 1- 7-2    0   0   0   0   0   0  -1
27INDX 1- 8-1  -99   3   5   0   0   0   0   0   0   0   0   0   0   0   0   0
28INDX 1- 8-2    0   0   0   0   0   0  -1
29INDX 1- 9-1  -99   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0
30INDX 1- 9-2    0   0   0   0   0   0  -1
31INDX 1-10-1    3   5   0   0   0   0   0   0   0   0   0   0   0   0   0   0
32INDX 1-10-2    0   0   0   0   0   0  -1
33INDX 1-11-1    2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
34INDX 1-11-2    0   0   0   0   0   0  -1
35INDX 1-12-1    2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
36INDX 1-12-2    0   0   0   0   0   0  -1
37INDX 1-13-1    2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
38INDX 1-13-2    0   0   0   0   0   0  -1
39INDX 1-14-1    9   7   7   7   7   4   0   0   0   0   0   0   0   0   0   0
40INDX 1-14-2    0   0   0   0   0   0  -1
41INDX 1-15-1  -99 -99 -99 -99 -99   9   7   4   0   0   0   0   0   0   0   0
42INDX 1-15-2    0   0   0   0   0   0  -1
43INDX 1-16-1  -99 -99 -99 -99 -99 -99 -99   9   4   0   0   0   0   0   0   0
44INDX 1-16-2    0   0   0   0   0   0  -1
45INDX 1-17-1  -99 -99 -99 -99 -99 -99 -99 -99   2   0   0   0   0   0   0   0
46INDX 1-17-2    0   0   0   0   0   0  -1
47INDX 1-18-1  -99 -99 -99 -99 -99 -99 -99 -99   9   7   4   0   0   0   0   0
48INDX 1-18-2    0   0   0   0   0   0  -1
49INDX 1-19-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99   9   4   0   0   0   0
50INDX 1-19-2    0   0   0   0   0   0  -1
51INDX 1-20-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99   9   7   4   0   0
52INDX 1-20-2    0   0   0   0   0   0  -1
```

```
53INDX 1-21-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99   9   4   0
54INDX 1-21-2    0   0   0   0   0   0  -1
55INDX 1-22-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99   9   7
56INDX 1-22-2    4   0   0   0   0   0  -1
57INDX 1-23-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
58INDX 1-23-2    9   4   0   0   0   0  -1
59INDX 1-24-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
60INDX 1-24-2  -99   2   0   0   0   0  -1
61INDX 1-25-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
62INDX 1-25-2  -99   9   7   7   7   4  -1
63INDX 1-26-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
64INDX 1-26-2  -99 -99 -99 -99 -99   9  -1
65INDX 1-27-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
66INDX 1-27-2  -99 -99 -99 -99 -99 -99 -99
67EPIJ 1- 1-1   -0.000  -0.000 -17.659 -17.362 -17.393 -17.793 -18.443 -19.058
68EPIJ 1- 1-2  -19.363 -19.094 -18.241 -17.078 -15.891 -14.966 -14.462 -14.246
69EPIJ 1- 1-3  -14.152 -14.009 -13.674 -13.132 -12.406 -11.521 -10.502
70EPIJ 1- 2-1   -0.000  -0.000 -18.211 -17.939 -17.765 -17.715 -17.722 -17.668
71EPIJ 1- 2-2  -17.438 -16.920 -16.122 -15.183 -14.249 -13.465 -12.909 -12.507
72EPIJ 1- 2-3  -12.156 -11.791 -11.299 -10.663  -9.868  -8.902  -7.759
73EPIJ 1- 3-1   -0.000  -0.000 -18.512 -18.245 -17.881 -17.392 -16.789 -16.105
74EPIJ 1- 3-2  -15.372 -14.622 -13.879 -13.153 -12.459 -11.807 -11.200 -10.619
75EPIJ 1- 3-3  -10.041  -9.443  -8.800  -8.071  -7.211  -6.173  -4.922
76EPIJ 1- 4-1   -0.000  -0.000  -0.000 -18.012 -17.463 -16.578 -15.435 -14.198
77EPIJ 1- 4-2  -13.026 -12.077 -11.387 -10.854 -10.373  -9.837  -9.181  -8.435
78EPIJ 1- 4-3   -7.639  -6.835  -6.050  -5.234  -4.316  -3.224  -1.896
79EPIJ 1- 5-1   -0.000  -0.000  -0.000 -16.969 -16.244 -15.026 -13.449 -11.772
80EPIJ 1- 5-2  -10.258  -9.161  -8.522  -8.151  -7.843  -7.397  -6.695  -5.805
81EPIJ 1- 5-3   -4.821  -3.838  -2.924  -2.029  -1.065    .056   1.413
82EPIJ 1- 6-1   -0.000  -0.000 -15.280 -14.846 -13.957 -12.493 -10.618  -8.656
```

83EPIJ 1- 6-2	-6.929	-5.750	-5.161	-4.908	-4.721	-4.333	-3.587	-2.582
84EPIJ 1- 6-3	-1.449	-.320	.702	1.665	2.660	3.777	5.099	
85EPIJ 1- 7-1	-0.000	-0.000	-12.030	-11.446	-10.408	-8.800	-6.796	-4.732
86EPIJ 1- 7-2	-2.947	-1.765	-1.223	-1.037	-.907	-.535	.249	1.333
87EPIJ 1- 7-3	2.567	3.797	4.905	5.922	6.927	7.999	9.209	
88EPIJ 1- 8-1	-0.000	-9.390	-7.869	-7.038	-5.934	-4.278	-2.294	-.290
89EPIJ 1- 8-2	1.421	2.541	3.046	3.217	3.349	3.737	4.549	5.670
90EPIJ 1- 8-3	6.947	8.226	9.383	10.429	11.417	12.402	13.432	
91EPIJ 1- 9-1	-0.000	-4.101	-3.333	-2.370	-1.112	.514	2.369	4.199
92EPIJ 1- 9-2	5.748	6.769	7.255	7.456	7.638	8.064	8.883	9.991
93EPIJ 1- 9-3	11.249	12.514	13.670	14.706	15.642	16.499	17.299	
94EPIJ 1-10-1	-.924	.027	1.039	2.170	3.482	5.016	6.671	8.261
95EPIJ 1-10-2	9.603	10.518	11.011	11.284	11.551	12.023	12.822	13.860
96EPIJ 1-10-3	15.026	16.205	17.238	18.271	19.111	19.803	20.340	
97EPIJ 1-11-1	2.340	3.512	4.709	5.953	7.269	8.670	10.092	11.425
98EPIJ 1-11-2	12.558	13.386	13.921	14.303	14.678	15.194	15.934	16.840
99EPIJ 1-11-3	17.837	18.847	19.799	20.643	21.333	21.825	22.084	
100EPIJ 1-12-1	4.602	5.887	7.169	8.443	9.705	10.949	12.144	13.246
101EPIJ 1-12-2	14.211	14.997	15.616	16.137	16.634	17.178	17.814	19.518
102EPIJ 1-12-3	19.262	20.012	20.735	21.369	21.850	22.111	22.095	
103EPIJ 1-13-1	5.815	7.099	8.362	9.583	10.740	11.814	12.803	13.717
104EPIJ 1-13-2	14.563	15.349	16.080	16.751	17.362	17.909	18.396	18.840
105EPIJ 1-13-3	19.262	19.681	20.104	20.469	20.699	20.712	20.441	
106EPIJ 1-14-1	6.215	7.412	8.578	9.684	10.700	11.600	12.406	13.165
107EPIJ 1-14-2	13.923	14.727	15.565	16.368	17.064	17.578	17.880	18.029
108EPIJ 1-14-3	18.095	18.150	18.244	18.321	18.292	18.071	17.581	
109EPIJ 1-15-1	-0.000	-0.000	-0.000	-0.000	-0.000	10.653	11.297	11.926
110EPIJ 1-15-2	12.611	13.422	14.333	15.218	15.946	16.384	16.474	16.313
111EPIJ 1-15-3	15.022	15.721	15.501	15.311	15.056	14.640	13.982	
112EPIJ 1-16-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	10.336

113EPIJ 1-16-2	10.944	11.727	12.644	13.531	14.215	14.525	14.382	13.922
114EPIJ 1-16-3	13.305	12.697	12.221	11.827	11.412	10.871	10.112	
115EPIJ 1-17-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
116EPIJ 1-17-2	9.238	9.930	10.757	11.536	12.079	12.198	11.913	11.086
117EPIJ 1-17-3	10.210	9.379	8.746	8.254	7.782	7.211	6.433	
118EPIJ 1-18-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
119EPIJ 1-18-2	7.667	8.204	8.841	9.404	9.714	9.589	8.964	8.016
120EPIJ 1-18-3	6.961	6.012	5.334	4.858	4.439	3.937	3.221	
121EPIJ 1-19-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
122EPIJ 1-19-2	-0.000	-0.000	6.954	7.235	7.258	6.869	6.021	4.905
123EPIJ 1-19-3	3.745	2.742	2.126	1.749	1.463	1.100	.509	
124EPIJ 1-20-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
125EPIJ 1-20-2	-0.000	-0.000	-0.000	5.122	4.847	4.204	3.171	1.943
126EPIJ 1-20-3	.742	-.203	-.744	-.970	-1.078	-1.260	-1.691	
127EPIJ 1-21-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
128EPIJ 1-21-2	-0.000	-0.000	-0.000	-0.000	-0.000	1.764	.601	-.680
129EPIJ 1-21-3	-1.845	-2.739	-3.142	-3.198	-3.118	-3.108	-3.361	
130EPIJ 1-22-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
131EPIJ 1-22-2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-1.504	-2.776
132EPIJ 1-22-3	-3.896	-4.664	-4.933	-4.835	-4.587	-4.404	-4.487	
133EPIJ 1-23-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
134EPIJ 1-23-2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
135EPIJ 1-23-3	-5.260	-5.903	-6.060	-5.844	-5.472	-5.154	-5.087	
136EPIJ 1-24-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
137EPIJ 1-24-2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
138EPIJ 1-24-3	-0.000	-6.590	-6.618	-6.335	-5.876	-5.457	-5.260	
139EPIJ 1-25-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
140EPIJ 1-25-2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
141EPIJ 1-25-3	-0.000	-6.948	-6.804	-6.438	-5.921	-5.425	-5.111	
142EPIJ 1-26-1	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000

```
143EPIJ 1-26-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
144EPIJ 1-26-3   -0.000  -0.000  -0.000  -0.000  -0.000  -5.169  -4.747
145EPIJ 1-27-1   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
146EPIJ 1-27-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
147EPIJ 1-27-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
148EFIJ 2-  -    23  2  22  27  1  27  1  2  4  221/J%MAX,EF1,EF2<,LAN,ING
149INDL 2-  -1    1  0   0   0  0   0  0  0  0   0   0   0   0   0   0   0
150INDL 2-  -2    0  0   0   0  0   0  0  0  4   9 -99
151INDR 2-  -1    1  0   0   0  0   0  0  0  0   0   0   0   0   0   0   0
152INDR 2-  -2    0  0   0   0  0   0  0  7 -99 -99 -99
153SYBL 2-  -1 *22*    %23<    %24<    %25<    %26<    %27<    %28<    %29<
154SYBL 2-  -2 %30<    %31<    %32<    %33<    %34<    %35<    %36<    %37<
155SYBL 2-  -3 %38<    %39<    %40<    %41<    %42<    %43<    *44*
156IEFJ 2-  -1    2  22   2  22   2  22   2  22   2  22   2  22   2  22   2  22
157IEFJ 2-  -2    2  22   2  22   2  22   2  22   2  22   2  22   2  22   2  22
158IEFJ 2-  -3    2  22   2  22   2  22   2  22   2  22   2  22   2  22   2  22
159IEFJ 2-  -4    2  22   2  10   4  10
160INDX 2- 1-1   -2   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1
161INDX 2- 1-2    1   1   1   1   1   1  -3
162INDX 2- 2-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
163INDX 2- 2-2    0   0   0   0   0   0  -3
164INDX 2- 3-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
165INDX 2- 3-2    0   0   0   0   0   0  -3
166INDX 2- 4-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
167INDX 2- 4-2    0   0   0   0   0   0  -3
168INDX 2- 5-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
169INDX 2- 5-2    0   0   0   0   0   0  -3
170INDX 2- 6-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
171INDX 2- 6-2    0   0   0   0   0   0  -3
172INDX 2- 7-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
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173INDX 2- 7-2    0   0   0   0   0   0  -3
174INDX 2- 8-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
175INDX 2- 8-2    0   0   0   0   0   0  -3
176INDX 2- 9-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
177INDX 2- 9-2    0   0   0   0   0   0  -3
178INDX 2-10-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
179INDX 2-10-2    0   0   0   0   0   0  -3
180INDX 2-11-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
181INDX 2-11-2    0   0   0   0   0   0  -3
182INDX 2-12-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
183INDX 2-12-2    0   0   0   0   0   0  -3
184INDX 2-13-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
185INDX 2-13-2    0   0   0   0   0   0  -3
186INDX 2-14-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
187INDX 2-14-2    0   0   0   0   0   0  -3
188INDX 2-15-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
189INDX 2-15-2    0   0   0   0   0   0  -3
190INDX 2-16-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
191INDX 2-16-2    0   0   0   0   0   0  -3
192INDX 2-17-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
193INDX 2-17-2    0   0   0   0   0   0  -3
194INDX 2-18-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
195INDX 2-18-2    0   0   0   0   0   0  -3
196INDX 2-19-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
197INDX 2-19-2    0   0   0   0   0   0  -3
198INDX 2-20-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
199INDX 2-20-2    0   0   0   0   0   0  -3
200INDX 2-21-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
201INDX 2-21-2    0   0   0   0   0   0  -3
202INDX 2-22-1   -2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
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203INDX 2-22-2    0    0    0    0    0    0   -3
204INDX 2-23-1   -2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
205INDX 2-23-2    0    0    0    0    0    0   -3
206INDX 2-24-1   -2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
207INDX 2-24-2    0    0    0    0    0   12   -3
209INDX 2-25-1   -2    0    0    0    0    0    0    0    0   12    7    7    7    7    7    7
209INDX 2-25-2    7    7    7    7    7   11  -99
210INDX 2-26-1   -2    7    7    4    0    0    0    0    0    8  -99  -99  -99  -99  -99  -99
211INDX 2-26-2  -99  -99  -99  -99  -99  -99  -99
212INDX 2-27-1  -99  -99  -99    9    7    7    7    7    7   11  -99  -99  -99  -99  -99  -99
213INDX 2-27-2  -99  -99  -99  -99  -99  -99  -99
214EPIJ 2- 1-1 -11.521 -10.502  -9.418  -8.365  -7.438  -6.730  -6.288  -6.090
215EPIJ 2- 1-2  -6.114  -6.336  -6.684  -6.968  -6.972  -6.483  -5.356  -3.849
216EPIJ 2- 1-3  -2.372  -1.334  -1.119  -1.743  -2.934  -4.415  -5.909
217EPIJ 2- 2-1  -8.902  -7.759  -6.502  -5.239  -4.079  -3.130  -2.450  -2.030
218EPIJ 2- 2-2  -1.859  -1.924  -2.162  -2.376  -2.343  -1.844   -.726    .752
219EPIJ 2- 2-3   2.177   3.136   3.242   2.491   1.176   -.404  -1.952
220EPIJ 2- 3-1  -6.173  -4.922  -3.513  -2.067   -.701    .466   1.366   1.995
221EPIJ 2- 3-2   2.356   2.449   2.330   2.199   2.281   2.800   3.911   5.356
222EPIJ 2- 3-3   6.725   7.606   7.613   6.752   5.333   3.670   2.077
223EPIJ 2- 4-1  -3.224  -1.896   -.382   1.197   2.716   4.053   5.135   5.949
224EPIJ 2- 4-2   6.498   6.743   6.762   6.740   6.897   7.452   8.560   9.967
225EPIJ 2- 4-3  11.274  12.077  12.003  11.066   9.580   7.869   6.253
226EPIJ 2- 5-1    .056   1.413   2.965   4.596   6.189   7.627   8.836   9.798
227EPIJ 2- 5-2  10.497  10.920  11.105  11.230  11.500  12.119  13.228  14.588
228EPIJ 2- 5-3  15.822  16.551  16.423  15.458  13.964  12.257  10.648
229EPIJ 2- 6-1   3.777   5.093   6.599   8.178   9.738  11.182  12.445  13.504
230EPIJ 2- 6-2  14.342  14.941  15.327  15.652  16.087  16.804  17.920  19.221
231EPIJ 2- 6-3  20.370  21.028  20.883  19.957  18.531  16.896  15.337
232EPIJ 2- 7-1   7.999   9.209  10.547  11.949  13.351  14.688  15.915  17.013
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233EPIJ 2- 7-2	17.961	18.743	19.373	19.957	20.616	21.472	22.604	23.831
234EPIJ 2- 7-3	24.878	25.470	25.351	24.541	23.274	21.792	20.332	
235EPIJ 2- 8-1	12.402	13.432	14.517	15.638	16.775	17.912	19.029	20.110
236EPIJ 2- 8-2	21.138	22.097	22.934	23.863	24.779	25.795	26.943	28.085
237EPIJ 2- 8-3	29.021	29.550	29.446	28.846	27.802	26.529	25.203	
238EPIJ 2- 9-1	16.499	17.299	18.070	18.844	19.653	20.531	21.488	22.512
239EPIJ 2- 9-2	23.587	24.699	25.832	26.982	28.144	29.312	30.470	31.521
240EPIJ 2- 9-3	32.342	32.811	32.812	32.356	31.550	30.502	29.322	
241EPIJ 2-10-1	19.803	20.340	20.769	21.169	21.626	22.222	22.997	23.936
242EPIJ 2-10-2	25.023	26.240	27.560	28.927	30.281	31.563	32.713	33.673
243EPIJ 2-10-3	34.386	34.796	34.950	34.552	33.954	33.105	32.058	
244EPIJ 2-11-1	21.925	22.084	22.172	22.213	22.335	22.662	23.257	24.098
245EPIJ 2-11-2	25.161	26.419	27.832	29.310	30.760	32.086	33.203	34.078
246EPIJ 2-11-3	34.697	35.049	35.121	34.916	34.448	33.733	32.782	
247EPIJ 2-12-1	22.111	22.095	21.876	21.609	21.451	21.556	21.997	22.739
248EPIJ 2-12-2	23.739	24.956	26.333	27.776	29.185	30.460	31.509	32.308
249EPIJ 2-12-3	32.855	33.148	33.184	32.970	32.514	31.825	30.914	
250EPIJ 2-13-1	20.712	20.441	19.945	19.455	19.083	19.021	19.340	19.982
251EPIJ 2-13-2	20.884	21.978	23.196	24.443	25.699	26.826	27.773	28.503
252EPIJ 2-13-3	28.994	29.224	29.172	28.848	28.290	27.532	26.612	
253EPIJ 2-14-1	18.071	17.591	16.901	16.208	15.679	15.490	15.706	16.243
254EPIJ 2-14-2	17.012	17.922	18.894	19.884	20.855	21.766	22.579	23.235
255EPIJ 2-14-3	23.673	23.831	23.652	23.157	22.428	21.548	20.600	
256EPIJ 2-15-1	14.640	13.982	13.156	12.335	11.694	11.407	11.525	11.945
257EPIJ 2-15-2	12.553	13.236	13.909	14.567	15.218	15.871	16.521	17.087
258EPIJ 2-15-3	17.461	17.535	17.208	16.514	15.592	14.581	13.619	
259EPIJ 2-16-1	10.871	10.112	9.200	8.302	7.585	7.213	7.228	7.510
260EPIJ 2-16-2	7.932	8.365	8.722	9.035	9.355	9.732	10.195	10.644
261EPIJ 2-16-3	10.929	10.899	10.419	9.537	8.445	7.339	6.410	
262EPIJ 2-17-1	7.211	6.433	5.501	4.572	3.802	3.346	3.239	3.359

263EPIJ 2-17-2	3.573	3.751	3.812	3.810	3.825	3.935	4.192	4.483
264EPIJ 2-17-3	4.638	4.483	3.862	2.838	1.645	.521	-.296	
265EPIJ 2-18-1	3.937	3.221	2.331	1.411	.609	.069	-.177	-.241
266EPIJ 2-18-2	-.245	-.311	-.511	-.778	-1.024	-1.160	-1.125	-1.029
267EPIJ 2-18-3	-1.045	-1.347	-2.093	-3.204	-4.419	-5.472	-6.102	
268EPIJ 2-19-1	1.100	.508	-.292	-1.165	-1.974	-2.586	-2.967	-3.214
269EPIJ 2-19-2	-3.431	-3.724	-4.151	-4.645	-5.118	-5.483	-5.677	-5.802
270EPIJ 2-19-3	-6.017	-6.483	-7.344	-8.507	-9.698	-10.635	-11.042	
271EPIJ 2-20-1	-1.260	-1.691	-2.365	-3.158	-3.944	-4.602	-5.094	-5.500
272EPIJ 2-20-2	-5.907	-6.401	-7.028	-7.722	-8.402	-8.984	-9.409	-9.765
273EPIJ 2-20-3	-10.192	-10.831	-11.806	-13.012	-14.168	-14.986	-15.182	
274EPIJ 2-21-1	-3.108	-3.361	-3.886	-4.559	-5.298	-5.959	-6.518	-7.039
275EPIJ 2-21-2	-7.595	-8.258	-9.061	-9.942	-10.819	-11.613	-12.265	-12.848
276EPIJ 2-21-3	-13.484	-14.297	-15.393	-16.659	-17.806	-18.544	-18.585	
277EPIJ 2-22-1	-4.404	-4.487	-4.853	-5.402	-6.031	-6.641	-7.200	-7.770
278EPIJ 2-22-2	-8.417	-9.207	-10.171	-11.236	-12.316	-13.321	-14.187	-14.977
279EPIJ 2-22-3	-15.807	-16.789	-18.023	-19.387	-20.587	-21.329	-21.318	
280EPIJ 2-23-1	-5.154	-5.087	-5.294	-5.687	-6.176	-6.672	-7.156	-7.696
281EPIJ 2-23-2	-8.367	-9.243	-10.354	-11.611	-12.904	-14.125	-15.188	-16.159
282EPIJ 2-23-3	-17.156	-18.298	-19.690	-21.206	-22.544	-23.396	-23.460	
283EPIJ 2-24-1	-5.457	-5.260	-5.308	-5.528	-5.842	-6.173	-6.518	-6.963
284EPIJ 2-24-2	-7.602	-8.528	-9.776	-11.231	-12.749	-14.189	-15.437	-16.564
285EPIJ 2-24-3	-17.706	-19.000	-20.567	-22.282	-23.826	-24.880	-25.125	
286EPIJ 2-25-1	-5.425	-5.111	-5.002	-5.036	-5.148	-5.276	-5.434	-5.736
287EPIJ 2-25-2	-6.301	-7.250	-8.629	-10.286	-12.038	-13.698	-15.121	-16.386
288EPIJ 2-25-3	-17.657	-19.097	-20.853	-22.800	-24.604	-25.927	-0.000	
289EPIJ 2-26-1	-5.169	-4.747	-4.481	-4.321	-4.214	-4.113	-4.053	-4.178
290EPIJ 2-26-2	-4.642	-5.596	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
291EPIJ 2-26-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
292EPIJ 2-27-1	-0.000	-0.000	-0.000	-3.495	-3.161	-2.818	-2.524	-2.457

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293EPIJ 2-27-2   -2.905  -3.756  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
294FPIJ 2-27-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
295EFIJ 3-  -    23   2  23  27   1  24   3   2   0   OI/J%MAX,EF1,EF2<,LAN,ING
296INDL 3-  -1    1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
297INDL 3-  -2    0   0   0   0   0   0   0  12  11 -99 -99
298INDR 3-  -1   10   8   8  11 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
299INDR 3-  -2  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
300SYBL 3-  -1 *43*    %44<    %45<    %46<    %47<    %48<    %49<    %50<
301SYBL 3-  -2 %51<    %52<    %53<    %54<    %55<    %56<    %57<    %58<
302SYBL 3-  -3 %59<    %60<    %61<    %62<    %63<    %64<    %65<
303IEFJ 3-  -1    2  23   2  23   2  23   2  23   2  22   2  20   2  20   2  18
304IEFJ 3-  -2    2  14   2  13   2  11   2  10   2   9   2   8   2   8   2   7
305IEFJ 3-  -3    2   6   2   5   2   5   2   5   2   5   2   5   2   4   2   3
306IEFJ 3-  -4    1   1   1   1   1   1
307INDX 3- 1-1   -4   1   1   1   1   1   1   1   1   1   1   1   1   1   1   1
308INDX 3- 1-2    1   1   1   1   1   1  10
309INDX 3- 2-1   -4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
310INDX 3- 2-2    0   0   0   0   0   0   8
311INDX 3- 3-1   -4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
312INDX 3- 3-2    0   0   0   0   0   0   8
313INDX 3- 4-1   -4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
314INDX 3- 4-2    0   0   0   0   0  12  11
315INDX 3- 5-1   -4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
316INDX 3- 5-2    0   0   0  12   7  11 -99
317INDX 3- 6-1   -4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
318INDX 3- 6-2    0   0   0   8 -99 -99 -99
319INDX 3- 7-1   -4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
320INDX 3- 7-2    0  12   7  11 -99 -99 -99
321INDX 3- 8-1   -4   0   0   0   0   0   0   0   0   0   0   0   0  12   7   7
322INDX 3- 8-2    7  11 -99 -99 -99 -99 -99
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323INDX 3- 9-1   -4   0   0   0   0   0   0   0   0   0   0   0  12  11 -99 -99
324INDX 3- 9-2  -99 -99 -99 -99 -99 -99 -99
325INDX 3-10-1   -4   0   0   0   0   0   0   0   0   0   0  12   7  11 -99 -99 -99
326INDX 3-10-2  -99 -99 -99 -99 -99 -99 -99
327INDX 3-11-1   -4   0   0   0   0   0   0   0   0   0  12  11 -99 -99 -99 -99 -99
328INDX 3-11-2  -99 -99 -99 -99 -99 -99 -99
329INDX 3-12-1   -4   0   0   0   0   0   0   0  12  11 -99 -99 -99 -99 -99 -99 -99
330INDX 3-12-2  -99 -99 -99 -99 -99 -99 -99
331INDX 3-13-1   -4   0   0   0   0   0   0  12  11 -99 -99 -99 -99 -99 -99 -99 -99
332INDX 3-13-2  -99 -99 -99 -99 -99 -99 -99
333INDX 3-14-1   -4   0   0   0   0   0   0   8 -99 -99 -99 -99 -99 -99 -99 -99 -99
334INDX 3-14-2  -99 -99 -99 -99 -99 -99 -99
335INDX 3-15-1   -4   0   0   0   0   0  12  11 -99 -99 -99 -99 -99 -99 -99 -99 -99
336INDX 3-15-2  -99 -99 -99 -99 -99 -99 -99
337INDX 3-16-1   -4   0   0   0   0  12  11 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
338INDX 3-16-2  -99 -99 -99 -99 -99 -99 -99
339INDX 3-17-1   -4   0   0   0  12  11 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
340INDX 3-17-2  -99 -99 -99 -99 -99 -99 -99
341INDX 3-18-1   -4   0   0   0   8 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
342INDX 3-18-2  -99 -99 -99 -99 -99 -99 -99
343INDX 3-19-1   -4   0   0   0   8 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
344INDX 3-19-2  -99 -99 -99 -99 -99 -99 -99
345INDX 3-20-1   -4   0   0   0   8 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
346INDX 3-20-2  -99 -99 -99 -99 -99 -99 -99
347INDX 3-21-1   -4   0   0   0   8 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
348INDX 3-21-2  -99 -99 -99 -99 -99 -99 -99
349INDX 3-22-1   -4   0   0  12  11 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
350INDX 3-22-2  -99 -99 -99 -99 -99 -99 -99
351INDX 3-23-1   -4   0  12  11 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
352INDX 3-23-2  -99 -99 -99 -99 -99 -99 -99
```

```
353INDX 3-24-1   -4    7   11 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
354INDX 3-24-2  -99 -99 -99 -99 -99 -99 -99
355INDX 3-25-1   -4 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
356INDX 3-25-2  -99 -99 -99 -99 -99 -99 -99
357INDX 3-26-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
358INDX 3-26-2  -99 -99 -99 -99 -99 -99 -99
359INDX 3-27-1  -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99 -99
360INDX 3-27-2  -99 -99 -99 -99 -99 -99 -99
361EPIJ 3- 1-1  -6.415  -5.909  -7.230  -8.335  -9.193  -9.772 -10.066 -10.157
362EPIJ 3- 1-2 -10.145 -10.130 -10.199 -10.359 -10.579 -10.826 -11.070 -11.305
363EPIJ 3- 1-3 -11.543 -11.801 -12.091 -12.422 -12.783 -13.165 -13.557
364EPIJ 3- 2-1   -.404  -1.952  -3.279  -4.357  -5.177  -5.730  -6.030  -6.180
365EPIJ 3- 2-2  -6.301  -6.514  -6.923  -7.514  -8.221  -8.977  -9.717 -10.414
366EPIJ 3- 2-3 -11.079 -11.721 -12.350 -12.975 -13.596 -14.215 -14.833
367EPIJ 3- 3-1   3.670   2.077    .748   -.311  -1.108  -1.654  -1.984  -2.217
368EPIJ 3- 3-2  -2.492  -2.946  -3.697  -4.712  -5.893  -7.141  -8.358  -9.501
369EPIJ 3- 3-3 -10.575 -11.585 -12.537 -13.441 -14.307 -15.148 -15.977
370EPIJ 3- 4-1   7.869   6.253   4.923   3.870   3.067   2.488   2.081   1.717
371EPIJ 3- 4-2   1.247    .525   -.573  -1.999  -3.627  -5.331  -6.990  -8.543
372EPIJ 3- 4-3  -9.991 -11.336 -12.590 -13.731 -14.812 -15.846 -16.857
373EPIJ 3- 5-1  12.257  10.648   9.321   8.253   7.402   6.731   6.176   5.608
374EPIJ 3- 5-2   4.891   3.851   2.397    .592  -1.452  -3.562  -5.606  -7.517
375EPIJ 3- 5-3  -9.289 -10.919 -12.406 -13.759 -15.010 -16.192  -0.000
376EPIJ 3- 6-1  14.896  15.337  14.017  12.904  11.950  11.107  10.309   9.441
377EPIJ 3- 6-2   8.375   6.984   5.164   2.987    .601  -1.845  -4.203  -6.401
378EPIJ 3- 6-3  -9.428 -10.277 -11.964 -13.437  -0.000  -0.000  -0.000
379EPIJ 3- 7-1  21.792  20.332  19.025  17.835  16.712  15.605  14.454  13.175
380EPIJ 3- 7-2  11.676   9.864   7.669   5.166   2.495   -.201  -2.784  -5.182
381EPIJ 3- 7-3  -7.382  -9.371 -11.140 -12.638  -0.000  -0.000  -0.000
382EPIJ 3- 8-1  26.529  25.203  23.916  22.631  21.300  19.877  18.314  16.568
```

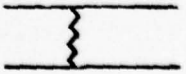
383EPIJ 3- 8-2	14.594	12.348	9.802	7.029	4.154	1.297	-1.421	-3.933
384EPIJ 3- 8-3	-6.224	-8.278	-0.000	-0.000	-0.000	-0.000	-0.000	
385EPIJ 3- 9-1	30.502	29.322	28.061	26.685	25.155	23.427	21.471	19.286
386EPIJ 3- 9-2	16.978	14.254	11.427	8.470	5.479	2.553	-0.000	-0.000
387EPIJ 3- 9-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
388EPIJ 3-10-1	33.105	32.058	30.831	29.394	27.714	25.756	23.505	20.996
389EPIJ 3-10-2	18.278	15.400	12.412	9.380	6.375	-0.000	-0.000	-0.000
390EPIJ 3-10-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
391EPIJ 3-11-1	33.733	32.782	31.596	30.150	28.416	26.367	23.997	21.365
392EPIJ 3-11-2	18.543	15.605	12.622	-0.000	-0.000	-0.000	-0.000	-0.000
393EPIJ 3-11-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
394EPIJ 3-12-1	31.825	30.914	29.779	28.396	26.745	24.803	22.564	20.088
395EPIJ 3-12-2	17.445	14.704	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
396EPIJ 3-12-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
397EPIJ 3-13-1	27.532	26.612	25.542	24.303	22.872	21.227	19.359	17.300
398EPIJ 3-13-2	15.095	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
399EPIJ 3-13-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
400EPIJ 3-14-1	21.548	20.600	19.625	18.599	17.495	16.283	14.943	13.470
401EPIJ 3-14-2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
402EPIJ 3-14-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
403EPIJ 3-15-1	14.581	13.619	12.779	12.027	11.323	10.624	9.890	9.078
404EPIJ 3-15-2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
405EPIJ 3-15-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
406EPIJ 3-16-1	7.339	6.410	5.758	5.332	5.069	4.905	4.774	-0.000
407EPIJ 3-16-2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
408EPIJ 3-16-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
409EPIJ 3-17-1	.521	-.296	-.695	-.753	-.566	-.229	-0.000	-0.000
410EPIJ 3-17-2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
411EPIJ 3-17-3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	
412EPIJ 3-18-1	-5.472	-6.102	-6.192	-5.861	-5.243	-0.000	-0.000	-0.000

```
413EPIJ 3-18-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
414EPIJ 3-18-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
415EPIJ 3-19-1  -10.535 -11.042 -10.812 -10.104  -9.097  -0.000  -0.000  -0.000
416EPIJ 3-19-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
417EPIJ 3-19-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
418EPIJ 3-20-1  -14.986 -15.182 -14.661 -13.624 -12.294  -0.000  -0.000  -0.000
419EPIJ 3-20-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
420EPIJ 3-20-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
421EPIJ 3-21-1  -18.544 -18.585 -17.847 -16.564 -14.998  -0.000  -0.000  -0.000
422EPIJ 3-21-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
423EPIJ 3-21-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
424EPIJ 3-22-1  -21.329 -21.318 -20.479 -19.069 -17.377  -0.000  -0.000  -0.000
425EPIJ 3-22-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
426EPIJ 3-22-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
427EPIJ 3-23-1  -23.396 -23.460 -22.657 -21.257  -0.000  -0.000  -0.000  -0.000
428EPIJ 3-23-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
429EPIJ 3-23-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
430EPIJ 3-24-1  -24.980 -25.125 -24.475  -0.000  -0.000  -0.000  -0.000  -0.000
431EPIJ 3-24-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
432EPIJ 3-24-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
433EPIJ 3-25-1  -25.927  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
434EPIJ 3-25-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
435EPIJ 3-25-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
436EPIJ 3-26-1   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
437EPIJ 3-26-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
438EPIJ 3-26-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
439EPIJ 3-27-1   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
440EPIJ 3-27-2   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
441EPIJ 3-27-3   -0.000  -0.000  -0.000  -0.000  -0.000  -0.000  -0.000
  1    1  854.0   28.0   -35.0    1.0    12.0   .175   .011  0.000  0.000  -.004
```

← Q. → ← cc →

2	2	850.0	4.0	-35.0	5.0	12.0	.280	-.010	.005	-.006	.001
3	3	847.0	-20.0	-35.0	9.0	12.0	.384	-.030	.011	-.013	.006
4	4	844.0	-44.0	-35.0	13.0	12.0	.324	-.046	.004	-.027	.002
5	5	840.0	-68.0	-35.0	17.0	12.0	.265	-.062	-.002	-.041	-.003
6	6	831.0	-91.0	-34.0	21.0	12.0	.249	-.066	-.006	-.049	-.010
7	7	822.0	-114.0	-33.0	25.0	11.0	.233	-.070	-.011	-.058	-.017
8	8	813.0	-138.0	-32.0	29.0	11.0	.245	-.062	-.009	-.046	-.011
9	9	804.0	-161.0	-31.0	33.0	11.0	.256	-.053	-.007	-.034	-.004
10	10	789.0	-183.0	-29.0	36.0	10.0	.268	-.035	-.005	-.015	.002
11	11	775.0	-205.0	-27.0	40.0	9.0	.280	-.017	-.002	.003	.007
12	12	760.0	-228.0	-26.0	44.0	8.0	.319	.018	.002	.007	0.000
13	13	744.0	-250.0	-24.0	47.0	7.0	.358	.054	.005	.011	-.007
14	14	724.0	-270.0	-21.0	51.0	6.0	.396	.093	.010	.008	-.017
15	15	707.0	-290.0	-18.0	54.0	5.0	.434	.131	.015	.005	-.027
16	16	687.0	-310.0	-15.0	58.0	4.0	.483	.104	.009	.010	-.022
17	17	669.0	-330.0	-12.0	61.0	3.0	.531	.077	.004	.015	-.017
18	18	642.0	-342.0	-13.0	63.0	4.0	.595	.047	.003	.008	-.009
19	19	617.0	-354.0	-14.0	64.0	4.0	.659	.017	.002	.001	-.001
20	20	597.0	-377.0	-5.0	68.0	1.0	.650	.016	-0.000	-.004	-0.000
21	21	576.0	-400.0	5.0	72.0	-3.0	.641	.015	-.002	-.009	.001
22	22	552.0	-415.0	12.0	74.0	-5.0	.637	.015	-.002	-.014	.002
23	23	527.0	-429.0	18.0	76.0	-8.0	.633	.016	-.002	-.018	.003
24	24	502.0	-444.0	25.0	79.0	-10.0	.625	.019	-.003	-.017	.002
25	25	478.0	-458.0	32.0	81.0	-13.0	.617	.022	-.004	-.015	-0.000
26	26	454.0	-474.0	43.0	84.0	-17.0	.614	.024	-.004	-.011	-0.000
27	27	431.0	-490.0	54.0	86.0	-21.0	.610	.026	-.004	-.008	-0.000
28	1	1	28.700	-.200	-.100	-.300	-0.000	28.600	.300	-.200	.700	-.300
29	1	1	-1.200	.700	.600	-.500	.300	.300	-.300	0.000	.100	.100
30	1	2	28.930	-.400	-.100	-.200	-0.300	29.400	-.100	-0.000	-.300	-.500
31	1	2	-1.400	-.700	.400	-1.600	.300	.300	-.900	-.100	0.000	-.200

32	1	3	27.000	-.600	-.100	-.100	-.100	30.000	-.400	.100	-.700	-.700
33	1	3	-1.800	-2.100	.200	-2.400	.200	.400	-1.400	-.200	.100	-.100
34	1	4	27.100	-.700	-.100	-.100	-.200	30.400	-.800	.200	-.700	-.800
35	1	4	-2.300	-3.400	-.800	-2.900	.100	.700	-1.900	-.300	.200	.200
36	1	5	27.200	-.800	-.200	-0.000	-.300	30.600	-1.200	.200	-.700	-.900
37	1	5	-2.800	-4.900	-.400	-3.100	.100	.900	-2.500	-.300	.300	.500
38	1	6	27.400	-.900	-.400	.100	-.300	30.400	-1.600	-.100	-.900	-.800
39	1	6	-3.400	-5.400	-.500	-3.000	.400	1.200	-3.200	-.100	.500	.800
40	1	7	27.400	-1.200	-.500	.100	-.300	29.900	-2.200	-.300	-1.200	-.700
41	1	7	-3.900	-7.400	-.500	-2.700	.800	1.400	-3.800	.200	.700	.900
42	1	8	27.100	-1.800	-.500	-.100	-.300	29.300	-3.200	-.500	-1.300	-.700
43	1	8	-4.300	-7.800	-.100	-1.600	1.100	1.400	-3.900	.400	.700	.900
44	1	9	26.100	-2.900	-.400	-.700	-.400	28.000	-4.700	-.500	-1.900	-.500
45	1	9	-4.600	-7.100	.400	-.600	1.300	1.100	-3.800	.600	.700	.900
46	1	10	23.600	-4.500	-.200	-2.400	-.500	25.000	-6.700	0.000	-3.500	-.200
47	1	10	-4.900	-6.300	.700	.100	1.300	.800	-3.700	.600	.700	.800
48	1	11	20.700	-6.500	-.100	-4.100	-.500	21.900	-8.500	.500	-4.800	.500
49	1	11	-4.900	-5.400	.900	.600	1.100	.500	-3.700	.600	.600	.800
50	1	12	19.000	-9.200	-.200	-4.300	-0.000	19.000	-10.300	.700	-5.100	1.300
51	1	12	-4.300	-4.500	.900	.800	.700	.100	-3.600	.500	.500	.700
52	1	13	15.600	-11.400	-.400	-4.300	.400	16.700	-11.200	1.000	-5.200	2.000
53	1	13	-3.400	-3.500	.700	.700	.200	-.200	-3.600	.300	.400	.600
54	1	14	14.200	-11.200	-.800	-5.000	.700	15.000	-10.800	1.200	-5.100	2.300
55	1	14	-2.100	-2.800	.600	.600	-.300	-.400	-3.500	.100	.200	.500
56	1	15	13.100	-11.000	-1.000	-5.500	.600	13.500	-10.200	1.400	-4.900	2.500
57	1	15	-.800	-2.100	.300	.300	-.800	-.700	-3.500	-0.000	.100	.400
58	1	16	11.900	-13.200	-.900	-5.300	.200	11.900	-10.200	1.700	-4.600	2.900



APPENDIX D

EXAMPLE OF RESTART JOB SUBMISSION

Normally a restart run deck consists of 36 cards, 15 of which are system control cards and the remaining 21 are program parameter cards. System control cards have an * in column 1. A sample run deck is as follows:

```
 1  *JOB,5066,35631002,HUANG/SHIEH
 2  *LIMIT, T=50,PT=20,PR=350,DD80=2500
 3  *ASSIGN,CNSTF=11,D
 4  *ASSIGN,STRTF=12,D
 5  *ASSIGN,HOUTF=13,D
 6  *ASSIGN,EGSLF=14,D
 7  *TLIB,11,BN,BK=2,MS=1,NS
 8  *TLIB,12,BN,BK=2,MS=1,NS
 9  *TLIB,13,BN,BK=2,MS=1,NS
10  *TLIB,14,BN,BK=2,MS=1,NS
11  *ASSIGN,DD80=40
12  *FORTRAN,S=PLIB,N=TOCNLNZ
13  *COSY
14  *RUN,I
15  *****RUN(12) OF TIME-DEPT MODEL FROM AA DAYS=6969.250*******
16    7078.600      0.15   6969.250 1  10.00
17    -25   10  100     0.7200  1.0000000E-04
18     30    5  0
19  11  1  110  1        -1.0000        1.0000
20  B8019
21  12  5   20  4      6932.8000       36.5000
22  B8109   B8110   B8111   B8112   B8113
23  13  5   20  3      6951.4000       18.2500
```

```
24   B8114    B8115    B8116    B8117    B8118
25   14  4   250  3      6967.9000         1.5000
26   B8119    B5365    B5385    B5081
27      4
28       1 12     8 14    10 1     11 18
29      4
30       3 22    11 14    13 1     15 22
31      4
32       4 20     7 14    10 9     14  1
33   *END
```

The following table describes all the parameters appearing in the input cards

Card #	Cols.	Format	Parameter	Description
15	1-80	8A10	ID	Brief description of this run (title, run # etc.)
16	1-10	F10.3	DAYEND	Last time-step in days to be calculated in this run
	11-20	F10.3	DIFDAY	Increment in days between time-steps
	21-30	F10.3	START	Time in days of 2nd record of History Starting File
	31-32	I2	LSTART	Switch for listing History Starting File at Days=START = 0 No list ≠ 0 List
	33-40	F8.2	PRTDAY	Interval in days between DD80 outputs (microfilm). Each output ≈ 150 frames. First output is on days = START + PRTDAY
	41-80			Space for comments
17	1-5	I5	MSUN	Number of time-steps between Matsuno process MSUN > 0 = Normal restart MSUN < 0 = Matsuno restart
	6-10	I5	IBSCAN	No. of scans each block per pass
	11-15	I5	MSCAN	Total number of scans
	16-25	F10.4	ALPHAR	Relaxation coefficient
	26-40	E15.7	EPISLON	Convergence criterion

Card #	Cols.	Format	Parameter	Description
18	1-5	I5	MSWP	Maximum number of density adjustment per point
	6-10	I5	MCOUNT	Maximum number of unstable points allowed
	11-13	I3	IOFR	Whether Fourier constants to be listed = 0 = No list ≠ 0 = List (TOCNLNZ only)
19	1-2	I2	NTAP	Logical unit no. for constant file (CNF) (=11)
	3-5	I3	NOTAP	Number of reels of tape provided for CNF
	6-10	I5	NRT	No. of records per tape for CNF
	11-13	I3	ITAP	Reel no. of CNF tape to be used for this run
	14-23	F14.4	BG	Day of CNF record proceeding one to be read (= -1 means read from beginning of tape)
	24-40	F13.4	DOUT	<0 = read constant data from cards, write new CNF on tape 11 ≥0 = read constant data from tape 11 Absolute Value = 1 = List constants independent of I & J (block independent) = 2 = List constants dependent of I & J (block dependent) = 3 = List both of above = 0 = No list
20 (22) (24) (26)		nA8	MTLAB	The labels of magnetic tapes provided for CNF (=11) in this run. The rest of columns can be used for additional tapes, n is total number of tapes provided (22 for restarting file, 24 for historical climatology file, 26 for energy and selected points file)

Card #	Cols.	Format	Parameter	Description
21 (23) (25)				Same as card # 19, except for the restarting file (21), for the historical climatology file (23) and for the energy output and selected points file (25)
27	1-4	I4	MSLCT(1)	Number of points be selected in block #1
28	1-32	4(2x,2I3)	LGLTIJ	Blanks + point location (I,J) to be selected in this example. There are 4 points per block
29				Number of points be selected in block #2
30				Same as card # 28
31				Number of points be selected in block #3
32				Same as card # 28

APPENDIX E
EXAMPLE OF OUTPUTS OF A NORMAL RUN

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```
                                *FORTRAN,S=PLIB,V=TOCNLNZ
                                TOCNLNZ     VERSION   17        FILE GENERATED ON 08/ 4 AT  18. 3 HRS
  1                          0              PROGRAM TOCNLNZ
    COMPILE TIME =     693     MILLISECS
  422                          0        SUBROUTINE CSTJUT (D,X,N)                                                CSTO.2
    COMPILE TIME =      10     MILLISECS
  433                          0        SUBROUTINE FLOYST (KDAT,NAMX,NTPX,ITS,LABEL,KNR,DAYF,DAYX,ISTOP,N,
  434                          0       1KTPR)
    COMPILE TIME =     114     MILLISECS
  541                          0        SUBROUTINE RDBJF (NTPX,IDM,X)                                            RDBF.2
    COMPILE TIME =      12     MILLISECS
  556                          0        SUBROUTINE WTBJF (NTPX,IDM,X)                                            WTBF.2
    COMPILE TIME =      12     MILLISECS
  571                          0        SUBROUTINE REQLCM (NIB,KMAX,NDIM1,NDIM2,IOMDB,IOMDC,MAXI)
    COMPILE TIME =      75     MILLISECS
  632                          0        SUBROUTINE REWDTP (NDSKX)                                                REWD.2
    COMPILE TIME =       4     MILLISECS
  640                          0        SUBROUTINE RDBJFL (NDSKX,IDM,X)                                          RDBL.2
    COMPILE TIME =       8     MILLISECS
  656                          0        SUBROUTINE WTBJFL (NDSKX,IDM,X)                                          WTBL.2
    COMPILE TIME =       8     MILLISECS
  672                          0        SUBROUTINE GRDCST                                                        GRDC.2
    COMPILE TIME =     486     MILLISECS
  944                          0        SUBROUTINE CRDINP (N,KSYB,IB,INKD,IMX,JMX,X)                             CRDI.2
    COMPILE TIME =      44     MILLISECS
  981                          0        SUBROUTINE  LSTCSTI (IB)                                                 LSTC.2
    COMPILE TIME =     257     MILLISECS
 1161                          0        SUBROUTINE INDTABL (KDAT,I2,J2,IB,LSBY,IEF1,IEF2,IMEF1,IMEF2,JMEF1INDT.2
 1162                          0       1,JMEF2,IND)                                                              INDT.3
    COMPILE TIME =      43     MILLISECS
 1190                          0        SUBROUTINE CHGTAPE (L,LLX)                                               CTAP.2
    COMPILE TIME =      78     MILLISECS
 1244                          0        SUBROUTINE GTABOUT (NAMX,NTPX,KDAT,IMAX,JMAX,DAYS,IB,K,LFE,LSBY,X)GTAB.2
    COMPILE TIME =      57     MILLISECS
 1290                          0        SUBROUTINE LSTJUT (NAMX,NTPX,KDAT,IMAX,JMAX,LSBY,LFE,DAYX,IB,K,U,VLSTA.2
 1291                          0       1,W,S,T)                                                                  LSTA.3
    COMPILE TIME =      24     MILLISECS
 1309                          0        SUBROUTINE PRTENGX (NTPO,KDAT,ITEM,NJMAX, NJ,XXP)                        PENG.2
    COMPILE TIME =      45     MILLISECS
 1363                          0        SUBROUTINE DATPLT (ITEM)                                                 DAPL.2
    COMPILE TIME =      35     MILLISECS
 1401                          0        SUBROUTINE MPLJT (NTPO,KDAT,ITEM,NJMAX,NJ,XXP,XMIN,XMAX,IR,NPLX,  PLOT.2
 1402                          0       1 IPL,FAC,KFASW)                                                          PLOT.3
    COMPILE TIME =     206     MILLISECS
 1557                          0        SUBROUTINE PRTDJK (NAMX,JM,KM,X)                                         PRJK.2
    COMPILE TIME =      20     MILLISECS
 1574                          0        SUBROUTINE COLDST (NDSKX,NDSKR)                                          COLD.2
    COMPILE TIME =     145     MILLISECS
 1668                          0        SUBROUTINE INDINTG (IMAX,JMAX,IND,INDB,L,ING)                            INDC.2
    COMPILE TIME =      16     MILLISECS
 1683                          0        SUBROUTINE MAINCL (NDSKP,NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                  MAIN.2
    COMPILE TIME =      87     MILLISECS
 1750                          0        SUBROUTINE ACALK32 (NDSKX, NDSKZ,NDSKR,NDSKW)                            ACAL.2
    COMPILE TIME =      99     MILLISECS
 1821                          0        SUBROUTINE CMPTA (DAYX,   P,KM1,UA,VA,WA,SA,TA,KB,UB,VB,WB,SB,TB, CPTA.2
 1822                          0       1KP1,UC,VC,WC,SC,TC)                                                      CPTA.3
    COMPILE TIME =     850     MILLISECS
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2035                    0          SUBROUTINE BINCPMA (KA,UA,VA,WA,SA,TA)                                  BINA.2
    COMPILE TIME =     62    MILLISECS
2075                    0          SUBROUTINE ZEROBF (KA,UA,VA,WA,SA,TA)                                   ZROF.2
    COMPILE TIME =     63    MILLISECS
2111                    0          SUBROUTINE NONLIN (NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                       NONL.2
    COMPILE TIME =    522    MILLISECS
2329                    0          SUBROUTINE FCALK32 (NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                      FCAL.2
    COMPILE TIME =    114    MILLISECS
2403                    0          SUBROUTINE CMPTF (DAYX,P,KA,UA,VA,WA,SA,TA,KB,UB,VB,WB,SB,TB,KC,UCCPTF.2
2404                    0         1,VC,WC,SC,TC)                                                           CPTF.3
    COMPILE TIME =    667    MILLISECS
2636                    0          SUBROUTINE QTEMPF (S,T,QTX,EMPX)                                        QTEP.2
    COMPILE TIME =     57    MILLISECS
2672                    0          SUBROUTINE RELAX (NDSKR,NDSKW)                                          RELX.2
    COMPILE TIME =    277    MILLISECS
2815                    0          SUBROUTINE CNTX (NDSKX,NDSKY,NDSKZ,NDSKR,NDSKW)                         CNTX.2
    COMPILE TIME =    267    MILLISECS
2966                    0          SUBROUTINE ADVCO (DAYX,IB,KB,U,V,S,T)                                   ADVC.2
    COMPILE TIME =    193    MILLISECS
3062                    0          SUBROUTINE CALCAJ (DAYX,IB,KA,SA,TA,KB,SB,TB,KC,SC,TC)                  AJST.2
    COMPILE TIME =    194    MILLISECS
3160                    0          SUBROUTINE WUVCAL (NDSKX,NDSKZ,NDSKR)                                   WUVC.2
    COMPILE TIME =    621    MILLISECS
3399                    0          SUBROUTINE WFLOUT (NDSKX,NDSKZ)                                         WFLO.2
    COMPILE TIME =    194    MILLISECS
3506                    0          SUBROUTINE FRCST (NTPF, SWFR,IOFR)
    COMPILE TIME =    217    MILLISECS
3620                    0          SUBROUTINE QTSTXY (JSWC,T)
    COMPILE TIME =    296    MILLISECS
3746                    0          SUBROUTINE FRPRT (KDAT,I,JMAX,MAXFR,KIND,NAMFR,XAB)
    COMPILE TIME =     18    MILLISECS
3757                    0          SUBROUTINE CALCKQ (LTYPE,NDSKR,NDSKW)                                   CALQ.2
        REPLACE 1,12
        ****RUN(1) OF TIME-DEPT MODEL FROM AA DAYS=5958.100*********
          6018.100     0.15   5958.100 1  10.00
          -25   10  100    0.7200  1.3000000E-04
            30    5
        11  1  110  1       -1.0000      -1.0000
        88019
        12  5   20  1       -1.0000       20.0000
        88109   88110   88111   88112   88113
        13  5   20  1       -1.0000       10.0000
        88114   88115   88116   88117   88118
        14  1 3000  1       -1.0000        1.0000
        88119
        REPLACE 23
           2.5000    0.2000    0.3000    5.0000    0.8000    1.0000
    COMPILE TIME =     72    MILLISECS

  PROGRAM SPACE IS 137736

ORIGIN    ENTRY POINTS AND LOCATIONS
 11224     TOCNLNZ  11236
 71256     CSTOUT   71266
 71325     FLDYST   71352
 72313     RDBUF    72313
 72422     WTBUF    72422
 72531     REQLCM   72531
101133     REWDTP  101133
101147     RDBUFL  101147
101177     WTBUFL  101177
101227     GRDCST  101239
```

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103136    CRDINP  103141
103373    LSTCSTI 103373
105174    INDTABL 105174
105371    CHGTAPE 105403
105735    GTABOUT 105763
106266    LSTOUT  106266
106515    PRTENGX 106533
107016    DATPLT  107016
107202    MPLOT   107243
110335    PRTOUX  110335
110451    COLDST  111627
112211    INDINTG 112211
112267    MAINCL  112267
112675    ACALK32 112675
113242    CMPTA   113244
115113    BINCPMA 115113
115173    ZEROBF  115173
115262    NONLIN  115262
116463    FCALK32 116463
117025    CMPTF   117025
120662    QTEMPF  120662
120731    RELAX   120731
121545    CNTX    121545
122436    ADVCO   122436
123005    CALCAJ  123005
123473    MOVCAL  123473
125072    MFLOAT  125072
125535    FRCST   125573
126374    QTSTXY  126500
127324    FRPRT   127324
127453    CALCKO  127453
127613    QBQERR  127613
127622    QBQIOU  127622
127767    QBQRSD  130002      NUMP    130013
130016    ALOG    130017      LOGF    130017
130061    EXIT    130074      END     130074      STOP    130064
130131    EXP     130111      EXPF    130111
130161    INPUTC  130161
130604    CODER   130604
131634    KRAKER  131634
132434    OUTPTC  132434
133065    COS     133065      SIN     133071      COSF    133065      SINF    133071
133152    SQRT    133152      SQRTF   133152
133203    ALOG10  133204
133257    BACKSP  133257      REWINM  133334      IFENDF  133344
133403    BUFFER  133403      BUFFEO  133425      LENGTHF 133463      IOCHEK  133503
133655    CLOCKF  133672      DATEF   133665
133677    LCHRD   133734      LCHWT   133737      LCHREQ  133677
133754    NEWDL   133757      NEWLAB  133754
135043    FRSTPT  135063      VECTOR  135136      POINT   135147      CURVE   135160      LINE    135221      QBQTRN  135241
          QBQP42  135321      QBQFLB  135334      QBQWRB  135404      QBQERP  135460
136413    OUTPTS  136413
136706    FRAME   136706
136755    OPTN    136763
137144    PWRI    137150
137467    PWRT    137467
137524    QBQSDA  137524
137533    RBAREX  137552
137655    ULIBER  137655

    COMMON BLOCKS    LOCATION
                4      CMN1    14601      CMN2    31503      CMN3    43034      NLCM    66362      ENSL    66742
          QTST  73050  CPL     137126     QBQPPC  135471
```

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OVERALL CORE USE STATISTICS   (DECIMAL)

THE MAXIMUM SCM IS                 54144
THE PROGRAM CURRENTLY USES         49134
THE LOADING PROCESS USED           52067
THE MAXIMUM LCM IS                468686
THE PROGRAM CURRENTLY USES         81911
 LCM AREA MAP BY BUFFER TYPE
        MISC          185  SYSIJU      16  RD          2048  PR          2048  SYSINS      2048
        SYSMDP       2048  PLIB      1536  RANFD         64  CNSTF       4288  STRTF       4288
        HOUTF        4288  EGSLF     4288  SYSLB0      1024  SYSLB1      1024  SYSLB2      1024
        SYSLB3       1024  SYSSAT     512  SYSDM1      1024  SYSSCM     49134
```

========== LCM ADDRESS TABLE FOR BOTH BKY-FTN AND NCAR SYSTEMS ==========

LCMFRD = 0 0000000000000000000

LCMFR(I) =

1)	271	0000000000000000417	2)	812	0000000000000001454	3)	1353	0000000000000002511
4)	1894	0000000000000003546	5)	2435	0000000000000004603	6)	2976	0000000000000005640
7)	3517	0000000000000006675	8)	4058	0000000000000007732	9)	4599	0000000000000010767
10)	5140	0000000000000012024	11)	5681	0000000000000013061	12)	6222	0000000000000014116
13)	6763	0000000000000015153	14)	7304	0000000000000016210	15)	7845	0000000000000017245
16)	8386	0000000000000023332	17)	8927	0000000000000021337	18)	9468	0000000000000022374
19)	10009	0000000000000023431	20)	10550	0000000000000024466	21)	11091	0000000000000025523
22)	11632	0000000000000026550	23)	12173	0000000000000027615	24)	12714	0000000000000030652
25)	13255	0000000000000031727	26)	13796	0000000000000032744	27)	14337	0000000000000034001
28)	14878	0000000000000035036	29)	15419	0000000000000036073	30)	15960	0000000000000037130
31)	16501	0000000000000040165	32)	17042	0000000000000041222	33)	17583	0000000000000042257
34)	18124	0000000000000043314	35)	18665	0000000000000044351	36)	19206	0000000000000045406
37)	19747	0000000000000045443	38)	20288	0000000000000047500	39)	20829	0000000000000050535
40)	21370	0000000000000051572	41)	21911	0000000000000052627	42)	22452	0000000000000053664
43)	22993	0000000000000054721	44)	23534	0000000000000055756	45)	24075	0000000000000057013
46)	24616	0000000000000060050	47)	25157	0000000000000061105	48)	25698	0000000000000062142
49)	26239	0000000000000063177	50)	26780	0000000000000064234	51)	27321	0000000000000065271
52)	27862	0000000000000066326	53)	28403	0000000000000067363	54)	28944	0000000000000070420
55)	29485	0000000000000071455	56)	30026	0000000000000072512	57)	30567	0000000000000073547
58)	31108	0000000000000074604	59)	31649	0000000000000075641	60)	32190	0000000000000076676
61)	32731	0000000000000077733	62)	33272	0000000000000100770	63)	33813	0000000000000102025
64)	34354	0000000000000103062	65)	34895	0000000000000104117			

LCM NAME REQUEST --- L, LCNT(L), IRMX = 1 0 33

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.
1)	35436	0000000000000105154	2)	36060	0000000000000106334	3)	39166	0000000000000114376
4)	42272	0000000000000122440	5)	45378	0000000000000130502	6)	48484	0000000000000136544
7)	51590	0000000000000144606	8)	54696	0000000000000152650	9)	57802	0000000000000160712
10)	60908	0000000000000166754	11)	64014	0000000000000175016	12)	67120	0000000000000203060
13)	67744	0000000000000204240	14)	70850	0000000000000212302	15)	73956	0000000000000220344
16)	77062	0000000000000226406	17)	80168	0000000000000234450	18)	83274	0000000000000242512
19)	86380	0000000000000252554	20)	89486	0000000000000256616	21)	92592	0000000000000264660
22)	95698	0000000000000272722	23)	98804	0000000000000300764	24)	99428	0000000000000302144
25)	102534	0000000000000312206	26)	105640	0000000000000316250	27)	108746	0000000000000324312
28)	111852	0000000000000332354	29)	114958	0000000000000340416	30)	118064	0000000000000346460
31)	121170	0000000000000354522	32)	124276	0000000000000362564	33)	127382	0000000000000370626

LCM NAME REQUEST --- L, LCNT(L), IRMX = 2 0 33

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.
1)	130488	0000000000000376670	2)	131112	0000000000000400050	3)	134218	0000000000000406112
4)	137324	0000000000000414154	5)	140430	0000000000000422216	6)	143536	0000000000000430260
7)	146642	0000000000000436322	8)	149748	0000000000000444364	9)	152854	0000000000000452426
10)	155960	0000000000000462470	11)	159066	0000000000000466532	12)	162172	0000000000000474574
13)	162796	0000000000000475754	14)	165902	0000000000000504016	15)	169008	0000000000000512060
16)	172114	0000000000000520122	17)	175220	0000000000000526164	18)	178326	0000000000000534226
19)	181432	0000000000000542270	20)	184538	0000000000000550332	21)	187644	0000000000000556374
22)	190750	0000000000000564436	23)	193856	0000000000000572500	24)	196480	0000000000000573660
25)	197586	0000000000000601722	26)	200692	0000000000000607764	27)	203798	0000000000000616026
28)	206904	0000000000000624070	29)	210010	0000000000000632132	30)	213116	0000000000000640174
31)	216222	0000000000000646236	32)	219328	0000000000000654300	33)	222434	0000000000000662342

LCM NAME REQUEST --- L, LCNT(L), IRMX = 3 0 33

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.

1)	225540	000000000000006734	2)	226164	000000000000006715	3)	229270	000000000000006776
4)	232376	000000000000007056	5)	235482	000000000000007337	6)	238588	000000000000007217
7)	241694	000000000000007330	8)	244800	000000000000007361	9)	247906	000000000000007441
10)	251012	000000000000007522	11)	254118	000000000000007602	12)	257224	000000000000007663
13)	257848	000000000000007674	14)	260954	000000000000007755	15)	264060	000000000000010035
16)	267166	000000000000010116	17)	270272	000000000000010177	18)	273378	000000000000010257
19)	276484	000000000000010340	20)	279590	000000000000010420	21)	282696	000000000000010501
22)	285802	000000000000010561	23)	288908	000000000000010642	24)	289532	000000000000010653
25)	292638	000000000000010734	26)	295744	000000000000011015	27)	298850	000000000000011075
28)	321956	000000000000011156	29)	305062	000000000000011236	30)	308168	000000000000011317
31)	311274	000000000000011377	32)	314380	000000000000011460	33)	317486	000000000000011540

LCM NAME REQUEST --- L, LCNT(L), IRMK = 4 0 35

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.
1)	R	600000000000004000	2)	R	600000000000004000	3)	R	600000000000004000
4)	R	600000000000004000	5)	R	600000000000004000	6)	R	600000000000004000
7)	R	600000000000004000	8)	R	600000000000004000	9)	R	600000000000004000
10)	R	600000000000004000	11)	R	600000000000004000	12)	R	600000000000004000
13)	R	600000000000004000	14)	R	600000000000004000	15)	R	600000000000004000
16)	R	600000000000004000	17)	R	600000000000004000	18)	R	600000000000004000
19)	R	600000000000004000	20)	R	600000000000004000	21)	R	600000000000004000
22)	R	600000000000004000	23)	R	600000000000004000	24)	R	600000000000004000
25)	R	600000000000004000	26)	R	600000000000004000	27)	R	600000000000004000
28)	R	600000000000004000	29)	R	600000000000004000	30)	R	600000000000004000
31)	R	600000000000004000	32)	R	600000000000004000	33)	R	600000000000004000

LCM NAME REQUEST --- L, LCNT(L), IRMK = 5 0 3

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.
1)	320592	000000000000011621	2)	322605	000000000000011660	3)	324618	000000000000011720

LCM NAME REQUEST --- L, LCNT(L), IRMK = 6 0 3

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.
1)	326631	000000000000011757	2)	329115	000000000000012026	3)	331599	000000000000012075

LCM NAME REQUEST --- L, LCNT(L), IRMK = 7 0 3

I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.	I	LCMNAM(I,L)	LCMNAM(I,L) IN OCT.
1)	326631	000000000000011757	2)	329115	000000000000012026	3)	331599	000000000000012075

**********RUN(S) OF TIME-DEPT MODEL FROM 66 DAYS+5958.100**********

DATE OF JOB RUN --06/26/76

```
     •••••RUN(1) OF TIME-DEPT MODEL FROM AA DAYS=5958.100••••••••••

DATE OF JOB RUN --08/06/76

                    ••••••••••INPUT DATA AND CALCULATED CONSTANTS••••••••••

       MAXI, NIB, IMAX, JMAX, KMAX =    65     3    23    27    10


     IDMDA,IDMDB,IDMDC,IDMDD, NDIM,NDIM1,NDIM2=    2812    2013    2484     619     621     624    3106

     ENDING DAYS = DAYEND =  6018.10000 (DAYS)
     TIME STEP IN  DAYS    = DTDAY =      .15000 (DAYS)
     TIME STEP IN SECONDS = DTISEI =  1.296000000E+04(SEC)
     CONTROL NO. OF STARTING-DAYS = START =  5958.10000 (DAYS)
         -----COLD START (DAYS=0.0), IF START .LT. 0.0 -----
     CONTROL NO. WHETHER (RE-) START INPUT VALUE OF P,U,V,W,S,T TO BE LISTED = LSTART =  1
     NO. OF  **DAYS**  PER PRINT-OUTPUT = PRTDAY =       10.00000 (DAYS)
     NO. OF TIME-STEPS PER PRINT-OUTPUT =  LDMP  =        67

     NO. OF TIME-STEPS PER STABLIZING (MATSUNO) CALCULATION = MSUN =  -25
          ---- MSUN = (POSITIVE, NEGATIVE) = (NORMAL START, MATSUNO START) ----

     MAXIMUM NO. OF SCANNING (RELAXATION) PER BLOCK = IBSCAN =   10
     MAXIMUM NO. OF BLOCK SCANNING = MSCAN =  100
     SCANNING ADJUSTABLE PARAMETER = ALPHAR =      .7200
     MAXIMUM ERROR ALLOWED IN RELAXATION = EPSL =  1.00000000E-04
     WEIGHT FACTOR = PWGT =    4.0000

     DENSITY ADJUST PARAMETER, MSWP = MAXIMUM NO. OF ADJUST PER POINT =   30
     DENSITY ADJUST PARAMETER, MCOUNT = MAXIMUM NO. OF UNSTABLE POINTS PER BLOCK ALLOWED =    5

     ••••••••WHETHER FOURIER CONSTANTS TO BE LISTED, IOFR =  -0


CONTROL DATA FOR TAPE OF  $$$  CONSTANT-DATA  FILE $$$

     TAPE LOGICAL UNIT = NTAP(1) =11
     NO. OF TAPES ASSIGNED TO THIS FILE = NOTAP(1) =  1
     MAXIMUM NO. OF USERNS GROUP-RECORD PER TAPE = NRT(1) =  110
     SEQUENCE NO. OF THE TAPE FOR STARTING = ITAP(1) = 1
     NO. OF LOGICAL RECORDS PER USERNS GROUP-RECORD = KNR(1) =  70
     BEGINING-CONTROL NO. IN DAYS = BG(1) =       -1.00000

     LABEL OF MAGNETIC TAPE(S) ASSIGNED TO THIS FILE ARE
               1) B8019

     CONTROL NO. WHETHER CONSTANTS-FILE TO BE LISTED = DOUT(1) =      -1.00000
     ----CARD-INPUT NEEDED IF DOUT(1) .LT. 0.0----
     WHICH PART NEEDED TO BE LISTED = LSTDA =   1


CONTROL DATA FOR TAPE OF  •••HISTORY-STARTING FILE •••

     TAPE LOGICAL UNIT = NTAP(2) =12
     NO. OF TAPES ASSIGNED TO THIS FILE = NOTAP(2) =  5
     MAXIMUM NO. OF USERNS GROUP-RECORD PER TAPE = NRT(2) =   20
     SEQUENCE NO. OF THE TAPE FOR STARTING = ITAP(2) = 1
     NO. OF LOGICAL RECORDS PER USERNS GROUP-RECORD = KNR(2) =  33
     BEGINING-CONTROL NO. IN DAYS = BG(2) =       -1.00000

     LABEL OF MAGNETIC TAPE(S) ASSIGNED TO THIS FILE ARE
               1) B8109         2) B8113         3) B8111         4) B8112         5) B8113
```

```
     NO. OF DAYS PER OUTPUT (TO TAPE)  = DOUT(2) =       20.00000
     NO. OF TIME-STEPS OUTPUT TO TAPE = LOW(2) = 133


  CONTROL DATA FOR TAPE OF  *** HISTORY-OUTPUT  FILE ***

     TAPE LOGICAL UNIT = NTAP(3) =13
     NO. OF TAPES ASSIGNED TO THIS FILE = NOTAP(3) =  5
     MAXIMUM NO. OF USERBS GROUP-RECORD PER TAPE = NRT(3) =   20
     SEQUENCE NO. OF THE TAPE FOR STARTING = ITAP(3) = 1
     NO. OF LOGICAL RECORDS PER USERBS GROUP-RECORD = KNR(3) =  33
     BEGINING-CONTROL NO. IN DAYS = BG(3) =       -1.00000

     LABEL OF MAGNETIC TAPE(S) ASSIGNED TO THIS FILE ARE
           1) B8114        2) B8115        3) B8116        4) B8117        5) B8118

     NO. OF DAYS PER OUTPUT (TO TAPE)  = DOUT(3) =       10.00000
     NO. OF TIME-STEPS OUTPUT TO TAPE = LOW(3) =  67


  CONTROL DATA FOR TAPE OF  ---  ENERGY-SELECT  FILE ---

     TAPE LOGICAL UNIT = NTAP(4) =14
     NO. OF TAPES ASSIGNED TO THIS FILE = NOTAP(4) =  1
     MAXIMUM NO. OF USERBS GROUP-RECORD PER TAPE = NRT(4) = 3000
     SEQUENCE NO. OF THE TAPE FOR STARTING = ITAP(4) = 1
     NO. OF LOGICAL RECORDS PER USERBS GROUP-RECORD = KNR(4) =   4
     BEGINING-CONTROL NO. IN DAYS = BG(4) =       -1.00000

     LABEL OF MAGNETIC TAPE(S) ASSIGNED TO THIS FILE ARE
           1) B8119

     NO. OF DAYS PER OUTPUT (TO TAPE)  = DOUT(4) =        1.00000
     NO. OF TIME-STEPS OUTPUT TO TAPE = LOW(4) =   7


  FOR BLOCK  1, NO. OF (I,J) POINTS TO BE SELECTED = MSLCT( 1)=   4

1 ( 1,12)   2 ( 8,14)   3 (10, 1)   4 (11,18)

  FOR BLOCK  2, NO. OF (I,J) POINTS TO BE SELECTED = MSLCT( 2)=   4

1 ( 3,22)   2 (11,14)   3 (13, 1)   4 (15,22)

  FOR BLOCK  3, NO. OF (I,J) POINTS TO BE SELECTED = MSLCT( 3)=   4

1 ( 4,23)   2 ( 7,14)   3 (10, 9)   4 (14, 1)

  ----------BEGIN TO USE THE   1-TH REEL OF TAPE11 LABEL =B8019
           TLIB TO BE ASSIGNED ----- *TLIB   11      BN      BK=2    NS=1    NS      DT            0
```

```
08/06/76                (DAYS) -- LISTING OF TAPE11,    $$$ CONSTANT-DATA  FILE $$$

          TAPE SEQUENCE NO. = 1     LABEL=88019

 NO.     DAYS     RUN-DATE     NO.     DAYS     RUN-DATE     NO.     DAYS     RUN-DATE     NO.     DAYS     RUN-DATE
 ----- ---------- ----------   ----- ---------- ----------   ----- ---------- ----------   ----- ---------- ----------
 ----- ---------- ----------   ----- ---------- ----------   ----- ---------- ----------   ----- ---------- ----------

          INPUT FILE READ FROM TAPE11
          TOTAL NO. OF RECORDS READ =     0
          NO. OF USERS GROUP-RECORDS READ =     0
          NO. OF RECORDS PER USERS GROUP-RECORD =    70

          ---DAYS--- OF LAST GROUP-RECORD READ =          1
          FINAL ---DAYS--- ASSIGNED TO BE READ =      -1.0000

          ********END OF FILE HAS NOT BEEN REACHED.********


   TAPE11 $$$  CONSTANT-DATA  FILE $$$  HAS BEEN READ TILL     0-TH GROUP-RECORD OF DAYF=      -1.00000, DAYX=

   Z(K), DEPTH  (IN UNIT OF METER)
            10.5000   30.0000   60.0000  100.0000  150.0000  225.0000  350.0000  700.0000 1500.0000 3000.0000
          4000.0000

    VISY,SVISY,TVISY,VISZ,SVISZ,TVISZ =     2.5000     .2000     .3000    5.0000     .8000    1.0000

   FLAT1,FLAT2, FLONG1,FLONG2   =     0.0000    1.1345    0.0000    2.7925

   TO,SO,ROO,ALPHA,B,HEATC=  5.0000000E+00  3.4720000E+01  1.0276000E+00  2.7500000E-04  7.5000000E-04  9.5800000E-01

   CONSTANTS DEFINED IN DATA STATEMENT IN SUBROUTINE GRDCST ---
          G = GRAVITATIONAL ACCELERATION = 981.000 (CM/SEC/SEC)
          RE= RADIUS OF EARTH =  6.37500000E+08 (CM)
         TKK=0.0 DEGREE C = 273.200 (DEGREE KELVIN)
          PI=    3.14159260

   CSTQ, CSTE, SECDAY, POWER  =  9.84440800E-01  7.77600000E+06  8.64000000E+04  1.33333333E+00

   DAYB, KDATB =   5958.2500     08/06/76

   IMAXT, NIB, NIBT, IUNDF=(IUNDF),                        RUNDF=(RUNDF)
      65    3    4     -99=(77777777777777776341) -0.0          =(7777777777777777777)


          TOTAL EFFECTIVE  AREA  ABOUT FULL-GRID POINT (FOR ALL BLOCKS) = TAREA =          IIIII CM**2
          TOTAL EFFECTIVE VOLUME ABOUT HALF-GRID POINT (FOR ALL BLOCKS) =  TVOL =          IIIII CM**3
          TOTAL EFFECTIVE  AREA  ABOUT HALF-GRID POINT (FOR ALL BLOCKS) = UAREA =          IIIII CM**2
          TOTAL EFFECTIVE VOLUME ABOUT FULL-GRID POINT (FOR ALL BLOCKS) =  UVOL =          IIIII CM**3

DYT
          1)  2.78161845E+07

DYU
          1)  2.78161845E+07

RDYJ2
          1)  1.79751468E-08
```

DXT(J)

1)	2.78161845E+07	2)	2.77897096E+07	3)	2.77103355E+07	4)	2.75782132E+07	5)	2.73935941E+07
6)	2.71568299E+07	7)	2.68683710E+07	8)	2.65287667E+07	9)	2.61386634E+07	10)	2.56988036E+07
11)	2.52100247E+07	12)	2.46732571E+07	13)	2.40895225E+07	14)	2.34599322E+07	15)	2.27856845E+07
16)	2.20680631E+07	17)	2.13086338E+07	18)	2.05082427E+07	19)	1.96690129E+07	20)	1.87923421E+07
21)	1.78798990E+07	22)	1.69334206E+07	23)	1.59547083E+07	24)	1.49456254E+07	25)	1.39080927E+07
26)	1.28440851E+07	27)	1.17556280E+07						

DXU(J)

1)	2.78329471E+07	2)	2.77503226E+07	3)	2.76442743E+07	4)	2.74859037E+07	5)	2.72752120E+07
6)	2.70126004E+07	7)	2.66985688E+07	8)	2.63337150E+07	9)	2.59187335E+07	10)	2.54544141E+07
11)	2.49416409E+07	12)	2.43813898E+07	13)	2.37747274E+07	14)	2.31228084E+07	15)	2.24268738E+07
16)	2.16882484E+07	17)	2.09083382E+07	18)	2.00886278E+07	19)	1.92306775E+07	20)	1.83361206E+07
21)	1.74066598E+07	22)	1.64440644E+07	23)	1.54501669E+07	24)	1.44268590E+07	25)	1.33760889E+07
26)	1.22998565E+07	27)	0.0						

RDXU2(J)

1)	1.79837051E-08	2)	1.80180034E-08	3)	1.80869280E-08	4)	1.81911429E-08	5)	1.83316632E-08
6)	1.85098803E-08	7)	1.87259956E-08	8)	1.89870666E-08	9)	1.92910661E-08	10)	1.96429585E-08
11)	2.00467965E-08	12)	2.05074446E-08	13)	2.10307354E-08	14)	2.16236710E-08	15)	2.22946811E-08
16)	2.30539595E-08	17)	2.39139046E-08	18)	2.48897040E-08	19)	2.60001260E-08	20)	2.72685816E-08
21)	2.87246379E-08	22)	3.04061080E-08	23)	3.23621100E-08	24)	3.46575785E-08	25)	3.73801344E-08
26)	4.06508806E-08	27)	0.0						

AJXY(J)

1)	7.73371904E+14	2)	7.71899747E+14	3)	7.68958235E+14	4)	7.64552967E+14	5)	7.58692329E+14
6)	7.51387477E+14	7)	7.42652316E+14	8)	7.32503475E+14	9)	7.20960272E+14	10)	7.08044679E+14
11)	6.93781284E+14	12)	6.78197236E+14	13)	6.61322202E+14	14)	6.43188303E+14	15)	6.23830059E+14
16)	6.03284319E+14	17)	5.81590193E+14	18)	5.58788977E+14	19)	5.34924074E+14	20)	5.10040913E+14
21)	4.84186860E+14	22)	4.57411130E+14	23)	4.29764692E+14	24)	4.01300173E+14	25)	3.72071756E+14
26)	3.42135079E+14	27)	0.0						

P(J)

1)	3.17259462E-06	2)	9.51174464E-06	3)	1.58327885E-05	4)	2.21236938E-05	5)	2.83724853E-05
6)	3.45672683E-05	7)	4.06962504E-05	8)	4.67477650E-05	9)	5.27102925E-05	10)	5.85724830E-05
11)	6.43231774E-05	12)	6.99514290E-05	13)	7.54465241E-05	14)	8.07980025E-05	15)	8.59956773E-05
16)	9.10296544E-05	17)	9.58933514E-05	18)	1.00568516E-04	19)	1.05055242E-04	20)	1.09341990E-04
21)	1.13420599E-04	22)	1.17283305E-04	23)	1.20922757E-04	24)	1.24332024E-04	25)	1.27504619E-04
26)	1.30434502E-04	27)	1.30434502E-04						

SETA(J)

1)	0.0	2)	3.16957501E-06	3)	3.16052194E-06	4)	3.14545263E-06	5)	3.12439578E-06
6)	3.09739146E-06	7)	3.06449108E-06	8)	3.02575727E-06	9)	2.98126376E-06	10)	2.93109524E-06
11)	2.87534722E-06	12)	2.81412581E-06	13)	2.74754755E-06	14)	2.67573918E-06	15)	2.59883739E-06
16)	2.51698856E-06	17)	2.43034850E-06	18)	2.33908214E-06	19)	2.24336320E-06	20)	2.14337389E-06
21)	2.03930655E-06	22)	1.93135327E-06	23)	1.81972556E-06	24)	1.70463389E-06	25)	1.58629736E-06
26)	1.46494122E-06	27)	0.0						

SVISX(J)

1)	2.00000000E+07	2)	1.99746233E+07	3)	1.98985897E+07	4)	1.97721889E+07	5)	1.95959027E+07
6)	1.93704041E+07	7)	1.90965553E+07	8)	1.87754058E+07	9)	1.84081899E+07	10)	1.79963235E+07
11)	1.75414011E+07	12)	1.70451920E+07	13)	1.65096364E+07	14)	1.59368416E+07	15)	1.53290777E+07
16)	1.46887737E+07	17)	1.40185133E+07	18)	1.33210313E+07	19)	1.25992107E+07	20)	1.18560803E+07
21)	1.10948134E+07	22)	1.03187283E+07	23)	9.53129133E+06	24)	8.73612239E+06	25)	7.93700559E+06
26)	7.13790586E+06	27)	6.36299695E+06						

SVISY

1)	2.00000000E+07

SVISZ

1)	8.00000000E-01

TVISX(J)

1)	3.00000000E+07	2)	2.99619349E+07	3)	2.98478845E+07	4)	2.96582833E+07	5)	2.93938541E+07
6)	2.90556061E+07	7)	2.86448329E+07	8)	2.81631087E+07	9)	2.76122868E+07	10)	2.69944853E+07
11)	2.63121317E+07	12)	2.55677883E+07	13)	2.47646545E+07	14)	2.39052623E+07	15)	2.29936166E+07
16)	2.20331606E+07	17)	2.10277699E+07	18)	1.99815469E+07	19)	1.88988161E+07	20)	1.77841205E+07
21)	1.66422231E+07	22)	1.54780925E+07	23)	1.42969370E+07	24)	1.31041836E+07	25)	1.19055084E+07

```
                TOTAL EFFECTIVE  AREA  ABOUT FULL-GRID POINT (FOR ALL BLOCKS) = TAREA =  7.46508011E+17 CM**2
                TOTAL EFFECTIVE VOLUME ABOUT HALF-GRID POINT (FOR ALL BLOCKS) =  TVOL =  2.98603204E+23 CM**3
                TOTAL EFFECTIVE  AREA  ABOUT HALF-GRID POINT (FOR ALL BLOCKS) = UAREA =  7.46508011E+17 CM**2
                TOTAL EFFECTIVE VOLUME ABOUT FULL-GRID POINT (FOR ALL BLOCKS) =  UVOL =  2.98603204E+23 CM**3

*****    1-TH GROUP-RECORD (DAYB=    5958.25000) OF  $$$  CONSTANT-DATA  FILE $$$  HAS BEEN WRITTEN ON TAPE11 == B8019


     *****PARTIAL FILLED TAPE OF  $$$  CONSTANT-DATA  FILE $$$    TAPE LOGICAL NO.=11
REEL NO.=   1 (LABEL=B8019   =B8019   ) NO. OF MAXIMUM GROUP-RECORDS PER TAPE=   110,  NO. OF GROUP-RECORDS WRITTEN=

     ********** TAPE11 IS NO LONGER NEEDED FOR THIS RUN.

     ----------BEGIN TO USE THE   1-TH REEL OF TAPE12 LABEL =B0109
               TLIB TO BE ASSIGNED ----- =TLIB   12      BN      BK=2    MS=1    RT      DT            0
```

```
08/06/76                (DAYS) -- LISTING OF TAPE12,    ***HISTORY-STARTING FILE ***

     TAPE SEQUENCE NO. = 1     LABEL=88139

 NO.    DAYS      RUN-DATE     NO.    DAYS      RUN-DATE     NO.    DAYS      RUN-DATE     NO.    DAYS      RUN-DATE
***** ********** ********** ***** ********** ********** ***** ********** ********** ***** ********** **********
***** ********** ********** ***** ********** ********** ***** ********** ********** ***** ********** **********

          INPUT FILE READ FROM TAPE12
          TOTAL NO. OF RECORDS READ =     0
          NO. OF JSERRS GROUP-RECORDS READ =     0
          NO. OF RECORDS PER JSERRS GROUP-RECORD =    33

          ---DAYS--- OF LAST GROUP-RECORD READ =           1
          FINAL ---DAYS--- ASSIGNED TO BE READ =     -1.0000

          ********END OF FILE HAS NOT BEEN REACHED.********


TAPE12 ***HISTORY-STARTING FILE *** HAS BEEN READ TILL    0-TH GROUP-RECORD OF DAYP=     -1.0000D, DAYX=


     RE-START INPUT BLOCKED DATA OF (P,U,V,W,S,T) BELONG TO     5957.9200 DAYS, AND     5958.1000 DAYS
     TIME-STEP BETWEEN THE INPUT DATA =          .1800 DAYS

     ------ FOR NONSUNO-RESTART (NSUN .LT. 0), ONLY THE DATA OF     5958.1000 DAYS IS USED AS INITIAL VALUE -----
      AND  TIME-STEP = DIPDAY =          .1500 DAYS


----------BEGIN TO USE THE   1-TH REEL OF TAPE13 LABEL =88114
          TLIB TO BE ASSIGNED ----- =TLIB   13      BN      BK=2    NS=1    NS      DT            0

08/06/76                (DAYS) -- LISTING OF TAPE13,    *** HISTORY-OUTPUT  FILE ***
```

```
 08/06/76                (DAYS) -- LISTING OF TAPE14,    --- ENERGY-SELECT  FILE ---

      TAPE SEQUENCE NO. = 1     LABEL=88119

 NO.    DAYS      RUN-DATE     NO.    DAYS      RUN-DATE     NO.    DAYS      RUN-DATE     NO.    DAYS      RUN-DATE
 ----- ---------- ----------  ----- ---------- ----------  ----- ---------- ----------  ----- ---------- ----------
 ----- ---------- ----------  ----- ---------- ----------  ----- ---------- ----------  ----- ---------- ----------

      INPUT FILE READ FROM TAPE14
      TOTAL NO. OF RECORDS READ =    0
      NO. OF USERS GROUP-RECORDS READ =    0
      NO. OF RECORDS PER USERS GROUP-RECORD =    4

      ---DAYS--- OF LAST GROUP-RECORD READ =   5957.9200
      FINAL ---DAYS--- ASSIGNED TO BE READ =     -1.0000

      ********END OF FILE HAS NOT BEEN REACHED.********


   TAPE14 ---  ENERGY-SELECT  FILE ---  HAS BEEN READ TILL    0-TH GROUP-RECORD OF DAYF=      -1.00000, DAYX=    5957.92000

4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    1, DAYS=   5959.1500
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    2, DAYS=   5960.2000
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    3, DAYS=   5961.2500
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    4, DAYS=   5962.3000
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    5, DAYS=   5963.3500
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    6, DAYS=   5964.4000
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    7, DAYS=   5965.4500
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    8, DAYS=   5966.5000
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=    9, DAYS=   5967.5500
3) *** HISTORY-OUTPUT  FILE ***  TAPE13, TAPE REEL NO.=  1, LABEL=88114     GROUP-RECORD NO.=    1, DAYS=   5968.1500
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=   10, DAYS=   5968.6000
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=   11, DAYS=   5969.6500
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=   12, DAYS=   5970.7000
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=   13, DAYS=   5971.7500
4) ---  ENERGY-SELECT  FILE ---  TAPE14, TAPE REEL NO.=  1, LABEL=88119     GROUP-RECORD NO.=   14, DAYS=   5972.8000
```

OVER ALL -- ENERGY -- TABLE AS A FUNCTION OF TIME SEQUENCE

DATE OF PROGRAM RUN --- 08/06/76

SEQUENCE IN DAYS	OVER ALL KINETIC ENERGY			OVER ALL POTENTIAL ENERGY	TOTAL ENERGY (KE+PE)
	VT. MEAN	DEVIATED	TOTAL		
5958.250	6.843E+22	3.799E+23	4.481E+23	4.2121E+31	4.212E+31
5958.400	6.858E+22	8.346E+23	9.028E+23	4.2121E+31	4.212E+31
5958.550	6.872E+22	1.442E+24	1.511E+24	4.2121E+31	4.212E+31
5958.700	6.888E+22	1.681E+24	1.749E+24	4.2121E+31	4.212E+31
5958.850	6.893E+22	1.718E+24	1.786E+24	4.2121E+31	4.212E+31
5959.000	6.905E+22	1.566E+24	1.632E+24	4.2121E+31	4.212E+31
5959.150	6.925E+22	1.373E+24	1.442E+24	4.2121E+31	4.212E+31
5959.300	6.947E+22	1.229E+24	1.297E+24	4.2121E+31	4.212E+31
5959.450	6.974E+22	1.219E+24	1.288E+24	4.2121E+31	4.212E+31
5959.600	7.002E+22	1.179E+24	1.248E+24	4.2121E+31	4.212E+31
5959.750	7.028E+22	1.184E+24	1.254E+24	4.2121E+31	4.212E+31
5959.900	7.051E+22	1.125E+24	1.195E+24	4.2121E+31	4.212E+31
5960.050	7.073E+22	1.075E+24	1.146E+24	4.2121E+31	4.212E+31
5960.200	7.095E+22	1.037E+24	1.107E+24	4.2121E+31	4.212E+31
5960.350	7.118E+22	1.071E+24	1.142E+24	4.2121E+31	4.212E+31
5960.500	7.139E+22	1.110E+24	1.181E+24	4.2121E+31	4.212E+31
5960.650	7.160E+22	1.219E+24	1.290E+24	4.2121E+31	4.212E+31
5960.800	7.178E+22	1.268E+24	1.339E+24	4.2121E+31	4.212E+31
5960.950	7.196E+22	1.336E+24	1.408E+24	4.2121E+31	4.212E+31
5961.100	7.213E+22	1.328E+24	1.400E+24	4.2121E+31	4.212E+31
5961.250	7.233E+22	1.325E+24	1.397E+24	4.2121E+31	4.212E+31
5961.400	7.253E+22	1.271E+24	1.343E+24	4.2121E+31	4.212E+31
5961.550	7.276E+22	1.236E+24	1.308E+24	4.2121E+31	4.212E+31
5961.700	7.299E+22	1.183E+24	1.255E+24	4.2121E+31	4.212E+31
5961.850	7.321E+22	1.168E+24	1.241E+24	4.2121E+31	4.212E+31
5962.000	7.340E+22	1.160E+24	1.233E+24	4.2121E+31	4.212E+31
5962.150	7.360E+22	1.182E+24	1.255E+24	4.2121E+31	4.212E+31
5962.300	7.378E+22	1.222E+24	1.296E+24	4.2121E+31	4.212E+31
5962.450	7.393E+22	1.263E+24	1.337E+24	4.2121E+31	4.212E+31
5962.600	7.408E+22	1.316E+24	1.390E+24	4.2121E+31	4.212E+31
5962.750	7.423E+22	1.349E+24	1.422E+24	4.2121E+31	4.212E+31
5962.900	7.437E+22	1.373E+24	1.447E+24	4.2121E+31	4.212E+31
5963.050	7.452E+22	1.378E+24	1.452E+24	4.2121E+31	4.212E+31
5963.200	7.466E+22	1.369E+24	1.443E+24	4.2121E+31	4.212E+31
5963.350	7.483E+22	1.356E+24	1.431E+24	4.2121E+31	4.212E+31
5963.500	7.498E+22	1.342E+24	1.416E+24	4.2121E+31	4.212E+31
5963.650	7.515E+22	1.340E+24	1.415E+24	4.2121E+31	4.212E+31
5963.800	7.529E+22	1.343E+24	1.417E+24	4.2121E+31	4.212E+31
5963.950	7.545E+22	1.358E+24	1.433E+24	4.2121E+31	4.212E+31
5964.100	7.558E+22	1.376E+24	1.451E+24	4.2121E+31	4.212E+31
5964.250	7.570E+22	1.398E+24	1.473E+24	4.2121E+31	4.212E+31
5964.400	7.582E+22	1.422E+24	1.504E+24	4.2121E+31	4.212E+31
5964.550	7.593E+22	1.453E+24	1.529E+24	4.2121E+31	4.212E+31
5964.700	7.605E+22	1.486E+24	1.561E+24	4.2121E+31	4.212E+31
5964.850	7.616E+22	1.497E+24	1.572E+24	4.2121E+31	4.212E+31
5965.000	7.627E+22	1.506E+24	1.581E+24	4.2121E+31	4.212E+31
5965.150	7.639E+22	1.531E+24	1.576E+24	4.2121E+31	4.212E+31
5965.300	7.650E+22	1.495E+24	1.571E+24	4.2121E+31	4.212E+31
5965.450	7.661E+22	1.502E+24	1.578E+24	4.2121E+31	4.212E+31
5965.600	7.672E+22	1.507E+24	1.593E+24	4.2121E+31	4.212E+31

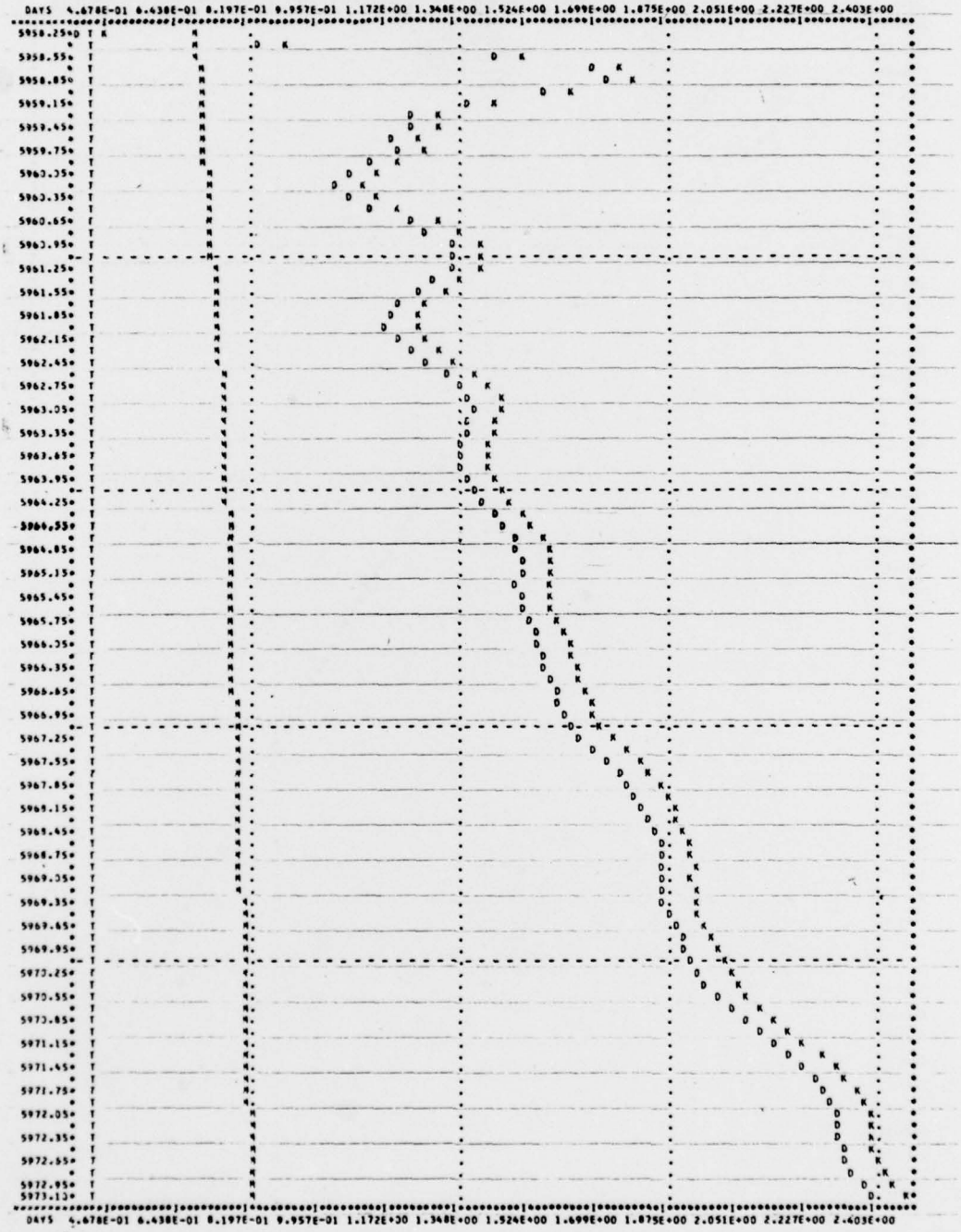
SEQUENCE IN DAYS	OVER ALL KINETIC ENERGY			OVER ALL POTENTIAL ENERGY	TOTAL ENERGY (KE+PE)
	VT. MEAN	DEVIATED	TOTAL		
5965.750	7.682E+22	1.521E+24	1.597E+24	4.2121E+31	4.212E+31
5965.900	7.693E+22	1.536E+24	1.612E+24	4.2121E+31	4.212E+31
5966.050	7.704E+22	1.550E+24	1.626E+24	4.2121E+31	4.212E+31
5966.200	7.715E+22	1.556E+24	1.632E+24	4.2121E+31	4.212E+31
5966.350	7.725E+22	1.566E+24	1.643E+24	4.2121E+31	4.212E+31
5966.500	7.736E+22	1.575E+24	1.652E+24	4.2121E+31	4.212E+31
5966.650	7.747E+22	1.586E+24	1.663E+24	4.2121E+31	4.212E+31
5966.800	7.757E+22	1.598E+24	1.675E+24	4.2121E+31	4.212E+31
5966.950	7.767E+22	1.611E+24	1.688E+24	4.2121E+31	4.212E+31
5967.100	7.778E+22	1.630E+24	1.707E+24	4.2121E+31	4.212E+31
5967.250	7.788E+22	1.655E+24	1.732E+24	4.2121E+31	4.212E+31
5967.400	7.798E+22	1.688E+24	1.765E+24	4.2121E+31	4.212E+31
5967.550	7.808E+22	1.721E+24	1.799E+24	4.2121E+31	4.212E+31
5967.700	7.819E+22	1.754E+24	1.831E+24	4.2121E+31	4.212E+31
5967.850	7.829E+22	1.777E+24	1.855E+24	4.2121E+31	4.212E+31
5968.000	7.839E+22	1.794E+24	1.872E+24	4.2121E+31	4.212E+31
5968.150	7.849E+22	1.809E+24	1.887E+24	4.2121E+31	4.212E+31
5968.300	7.860E+22	1.822E+24	1.900E+24	4.2121E+31	4.212E+31
5968.450	7.870E+22	1.838E+24	1.916E+24	4.2121E+31	4.212E+31
5968.600	7.881E+22	1.849E+24	1.928E+24	4.2121E+31	4.212E+31
5968.750	7.891E+22	1.856E+24	1.935E+24	4.2121E+31	4.212E+31
5968.900	7.903E+22	1.859E+24	1.938E+24	4.2121E+31	4.212E+31
5969.050	7.913E+22	1.857E+24	1.936E+24	4.2121E+31	4.212E+31
5969.200	7.924E+22	1.861E+24	1.939E+24	4.2121E+31	4.212E+31
5969.350	7.935E+22	1.864E+24	1.943E+24	4.2121E+31	4.212E+31
5969.500	7.946E+22	1.875E+24	1.954E+24	4.2121E+31	4.212E+31
5969.650	7.957E+22	1.888E+24	1.967E+24	4.2121E+31	4.212E+31
5969.800	7.968E+22	1.904E+24	1.984E+24	4.2121E+31	4.212E+31
5969.950	7.979E+22	1.916E+24	1.996E+24	4.2121E+31	4.212E+31
5970.100	7.989E+22	1.933E+24	2.012E+24	4.2121E+31	4.212E+31
5970.250	8.000E+22	1.949E+24	2.028E+24	4.2121E+31	4.212E+31
5970.400	8.010E+22	1.971E+24	2.051E+24	4.2121E+31	4.212E+31
5970.550	8.019E+22	1.997E+24	2.077E+24	4.2121E+31	4.212E+31
5970.700	8.028E+22	2.030E+24	2.109E+24	4.2121E+31	4.212E+31
5970.850	8.037E+22	2.062E+24	2.142E+24	4.2121E+31	4.212E+31
5971.000	8.045E+22	2.101E+24	2.182E+24	4.2121E+31	4.212E+31
5971.150	8.054E+22	2.137E+24	2.217E+24	4.2121E+31	4.212E+31
5971.300	8.063E+22	2.177E+24	2.257E+24	4.2121E+31	4.212E+31
5971.450	8.072E+22	2.210E+24	2.291E+24	4.2121E+31	4.212E+31
5971.600	8.082E+22	2.243E+24	2.324E+24	4.2121E+31	4.212E+31
5971.750	8.093E+22	2.268E+24	2.348E+24	4.2121E+31	4.212E+31
5971.900	8.103E+22	2.286E+24	2.367E+24	4.2121E+31	4.212E+31
5972.050	8.115E+22	2.296E+24	2.377E+24	4.2121E+31	4.212E+31
5972.200	8.126E+22	2.301E+24	2.382E+24	4.2121E+31	4.212E+31
5972.350	8.137E+22	2.305E+24	2.386E+24	4.2121E+31	4.212E+31
5972.500	8.148E+22	2.309E+24	2.390E+24	4.2121E+31	4.212E+31
5972.650	8.159E+22	2.320E+24	2.401E+24	4.2121E+31	4.212E+31
5972.800	8.169E+22	2.337E+24	2.419E+24	4.2121E+31	4.212E+31
5972.950	8.179E+22	2.362E+24	2.443E+24	4.2121E+31	4.212E+31
5973.100	8.188E+22	2.392E+24	2.474E+24	4.2121E+31	4.212E+31

OVER ALL ENERGY PLOT FROM 5958.250 DAYS TO 5973.100 DAYS

DATE OF PROGRAM RUN --08/06/76

(M) VERTICAL MEAN-HORIZONTAL K.E.-- IN UNIT OF -- 1.00000000E+23 ERGS
(D) DEVIATED-HORIZONTAL K.E. -- IN UNIT OF -- 1.00000000E+24 ERGS
(P) POTENTIAL-ENERGY -- IN UNIT OF -- 1.00000000E+32 ERGS
(K) TOTAL KINETIC ENERGY -- IN UNIT OF -- 1.00000000E+24 ERGS
(T) TOTAL ENERGY (K.E.+P.E.) -- IN UNIT OF -- 1.00000000E+32 ERGS

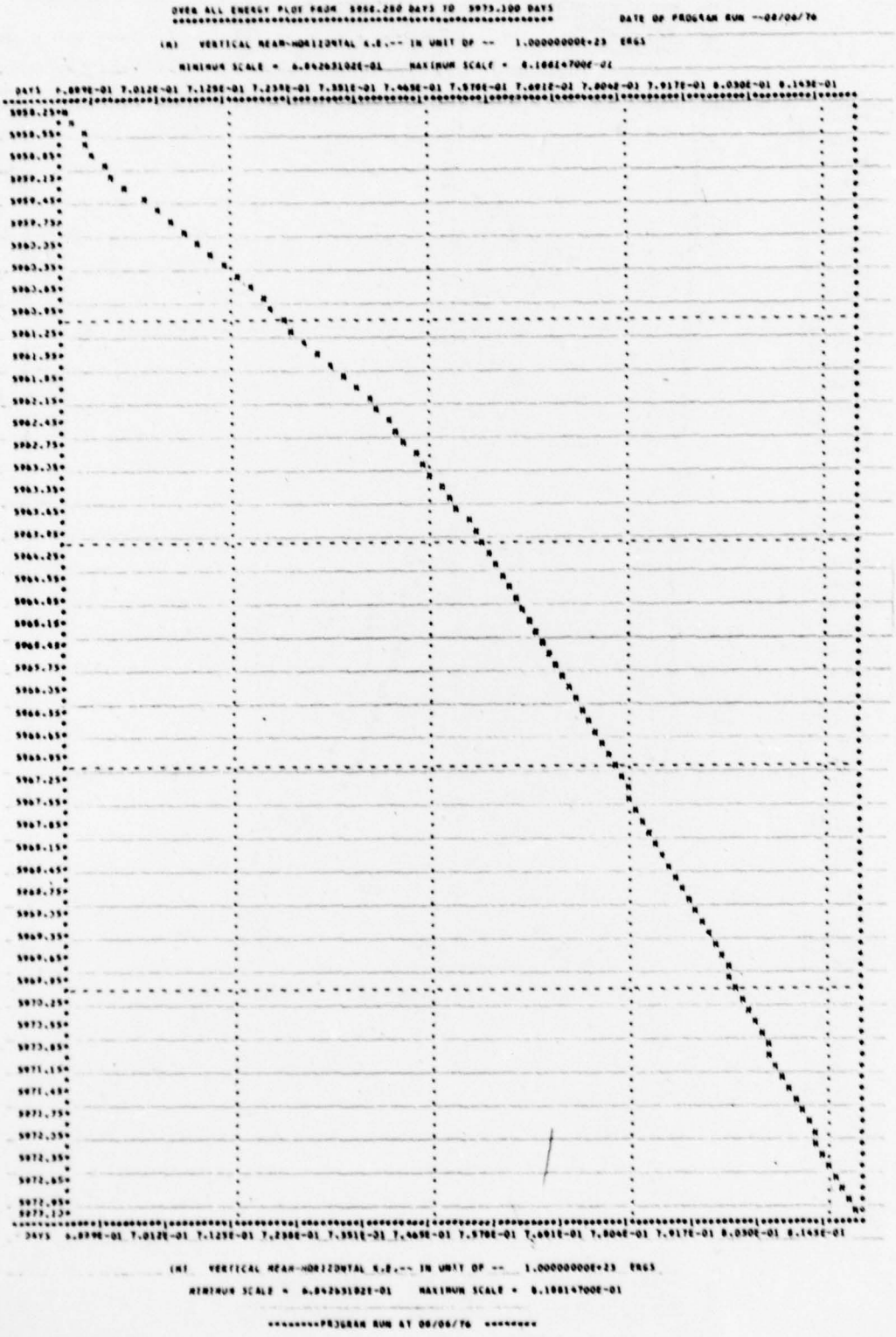
MINIMUM SCALE = 3.79863835E-01 MAXIMUM SCALE = 2.47363318E+00



(M) VERTICAL MEAN-HORIZONTAL K.E.-- IN UNIT OF -- 1.00000000E+23 ERGS
(D) DEVIATED-HORIZONTAL K.E. -- IN UNIT OF -- 1.00000000E+24 ERGS
(P) POTENTIAL-ENERGY -- IN UNIT OF -- 1.00000000E+32 ERGS
(K) TOTAL KINETIC ENERGY -- IN UNIT OF -- 1.00000000E+24 ERGS
(T) TOTAL ENERGY (K.E.+P.E.) -- IN UNIT OF -- 1.00000000E+32 ERGS

MINIMUM SCALE = 3.79863835E-01 MAXIMUM SCALE = 2.47363318E+00

********PROGRAM RUN AT 08/06/76 ********


OVER ALL ENERGY PLOT FROM 5956.250 DAYS TO 5973.100 DAYS
DATE OF PROGRAM RUN --08/06/76
(X) VERTICAL REAH-HORIZONTAL X.E.-- IN UNIT OF -- 1.000000000+23 ERGS
MINIMUM SCALE = 6.842631028-01 MAXIMUM SCALE = 8.188147008-01
DAYS 6.8996-01 7.012E-01 7.125E-01 7.238E-01 7.351E-01 7.465E-01 7.578E-01 7.691E-01 7.804E-01 7.917E-01 8.030E-01 8.143E-01
5956.25
5956.55
5956.85
5959.15
5959.45
5959.75
5963.35
5963.35
5963.65
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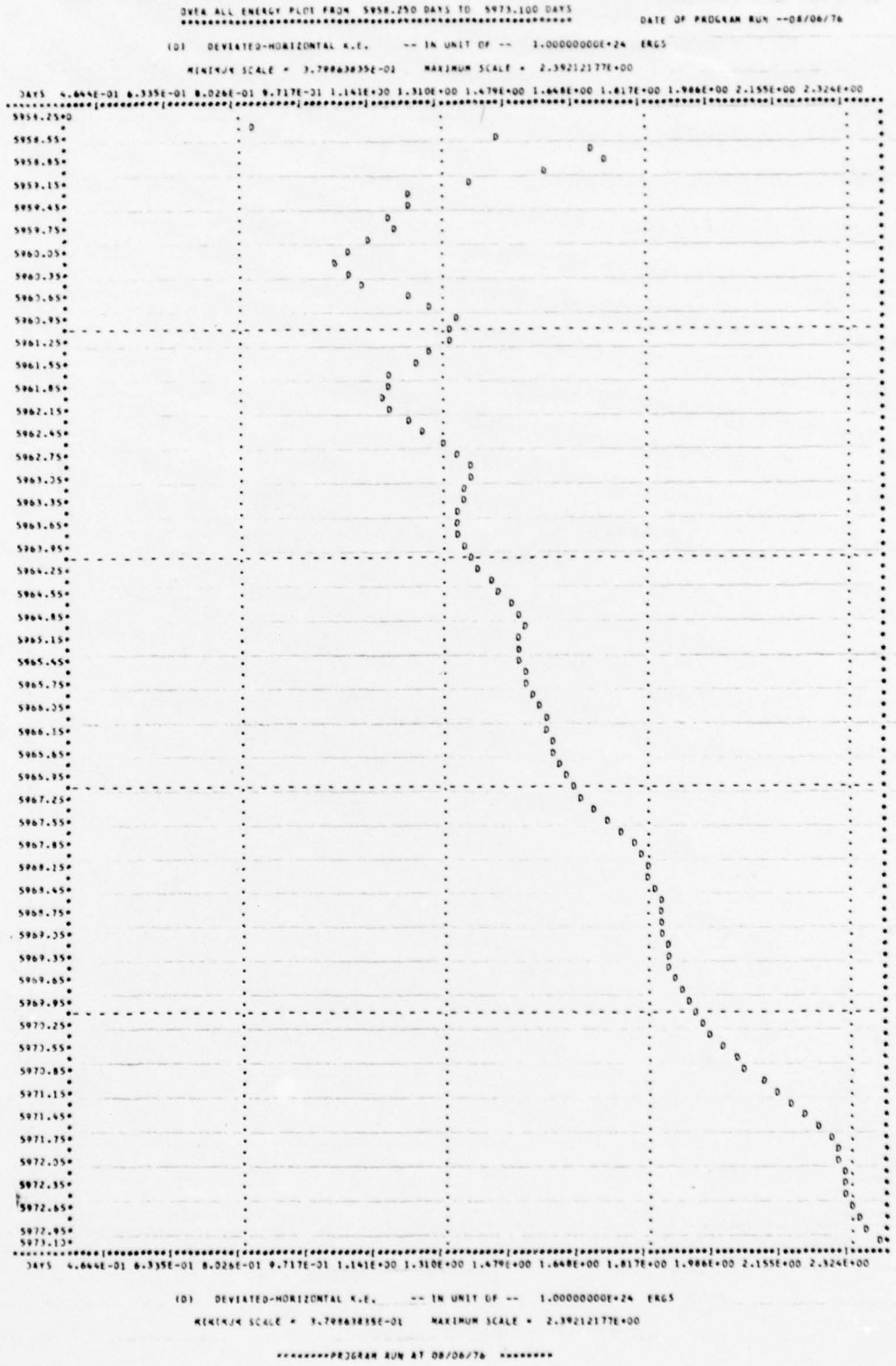
5969.85
5970.25
5972.55
5973.85
5971.15
5971.45
5971.75
5972.35
5972.35
5972.65
5972.85
5973.12
DAYS 6.8996-01 7.012E-01 7.125E-01 7.238E-01 7.351E-01 7.465E-01 7.578E-01 7.691E-01 7.804E-01 7.917E-01 8.030E-01 8.143E-01
(X) VERTICAL REAH-HORIZONTAL X.E.-- IN UNIT OF -- 1.000000000+23 ERGS
MINIMUM SCALE = 6.842631028-01 MAXIMUM SCALE = 8.188147008-01
********PROGRAM RUN AT 08/06/76 ********


OVER ALL ENERGY PLOT FROM 5958.250 DAYS TO 5973.100 DAYS
DATE OF PROGRAM RUN --08/06/76
(D) DEVIATED-HORIZONTAL K.E. -- IN UNIT OF -- 1.00000000E+24 ERGS
MINIMUM SCALE = 3.79863835E-01 MAXIMUM SCALE = 2.39212177E+00
DAYS 4.644E-01 6.335E-01 8.026E-01 9.717E-01 1.141E+00 1.310E+00 1.479E+00 1.648E+00 1.817E+00 1.986E+00 2.155E+00 2.324E+00
5958.25+0
5958.55+
5958.85+
5959.15+
5959.45+
5959.75+
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5960.35+
5960.65+
5960.95+
5961.25+
5961.55+
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5962.15+
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5963.95+
5964.25+
5964.55+
5964.85+
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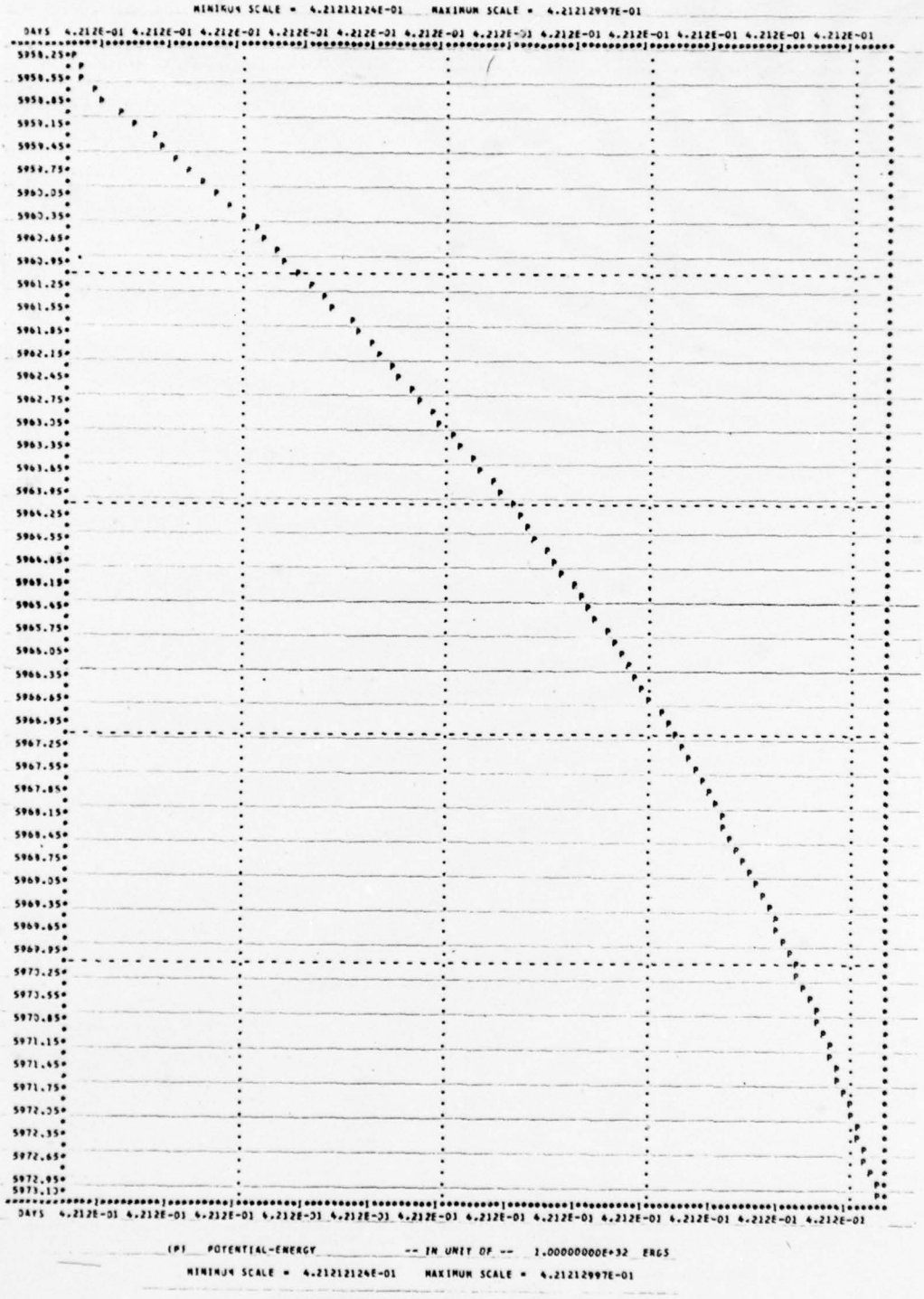
5973.55+
5970.85+
5971.15+
5971.45+
5971.75+
5972.05+
5972.35+
5972.65+
5972.95+
5973.13+
DAYS 4.644E-01 6.335E-01 8.026E-01 9.717E-01 1.141E+00 1.310E+00 1.479E+00 1.648E+00 1.817E+00 1.986E+00 2.155E+00 2.324E+00
(D) DEVIATED-HORIZONTAL K.E. -- IN UNIT OF -- 1.00000000E+24 ERGS
MINIMUM SCALE = 3.79863835E-01 MAXIMUM SCALE = 2.39212177E+00
********PROGRAM RUN AT 08/06/76 ********


OVER ALL ENERGY PLOT FROM 5958.250 DAYS TO 5973.100 DAYS
DATE OF PROGRAM RUN --08/06/76
(P) POTENTIAL-ENERGY -- IN UNIT OF -- 1.00000000E+32 ERGS
MINIMUM SCALE = 4.21212124E-01 MAXIMUM SCALE = 4.21212997E-01
DAYS 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01
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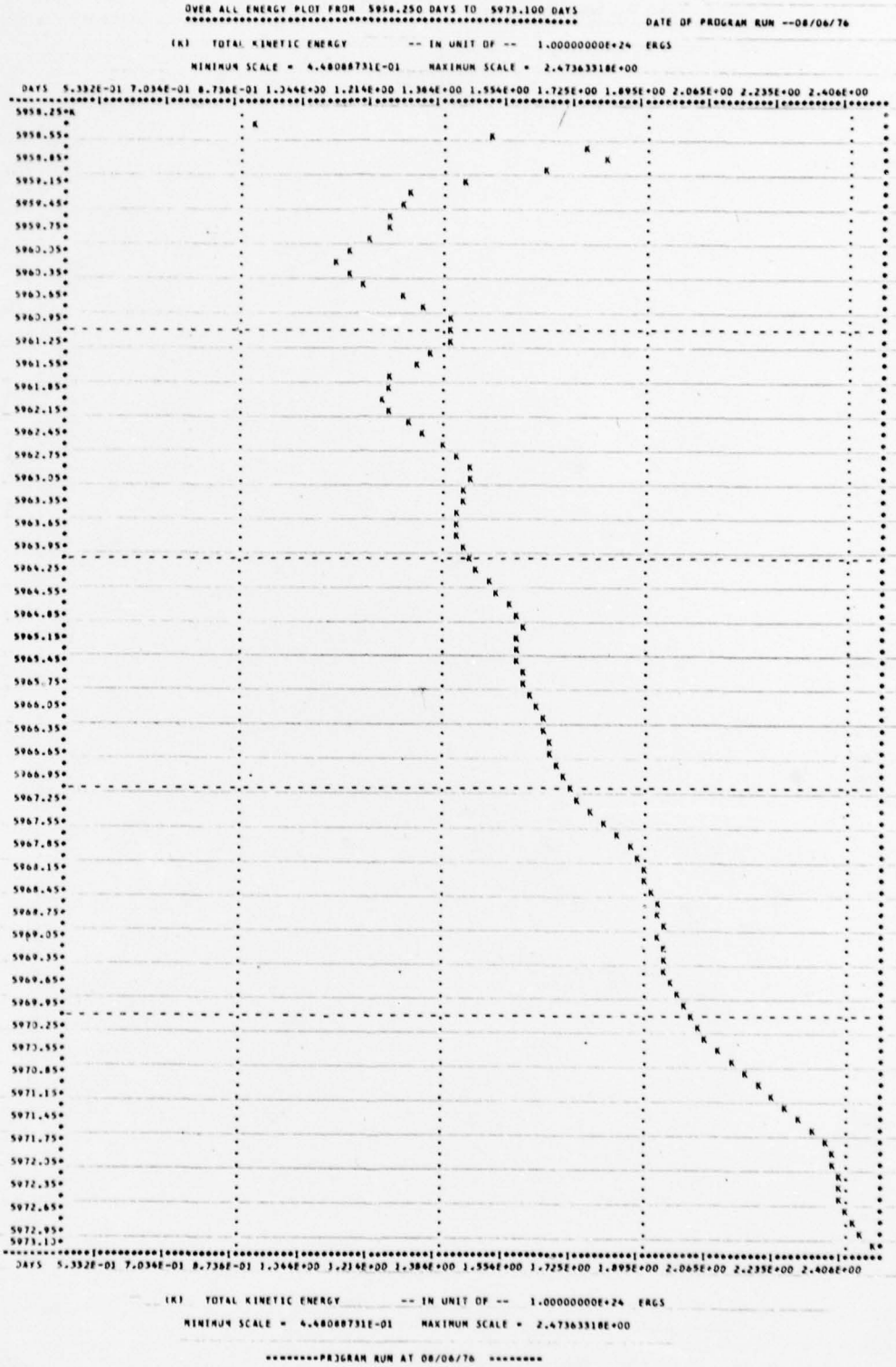
DAYS 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01 4.212E-01
(P) POTENTIAL-ENERGY -- IN UNIT OF -- 1.00000000E+32 ERGS
MINIMUM SCALE = 4.21212124E-01 MAXIMUM SCALE = 4.21212997E-01
********PROGRAM RUN AT 08/06/76 ********


OVER ALL ENERGY PLOT FROM 5958.250 DAYS TO 5973.100 DAYS
DATE OF PROGRAM RUN --08/06/76
(K) TOTAL KINETIC ENERGY -- IN UNIT OF -- 1.00000000E+24 ERGS
MINIMUM SCALE = 4.48088731E-01 MAXIMUM SCALE = 2.47363318E+00
DAYS 5.332E-01 7.034E-01 8.736E-01 1.344E+00 1.214E+00 1.384E+00 1.554E+00 1.725E+00 1.895E+00 2.065E+00 2.235E+00 2.406E+00
5958.25
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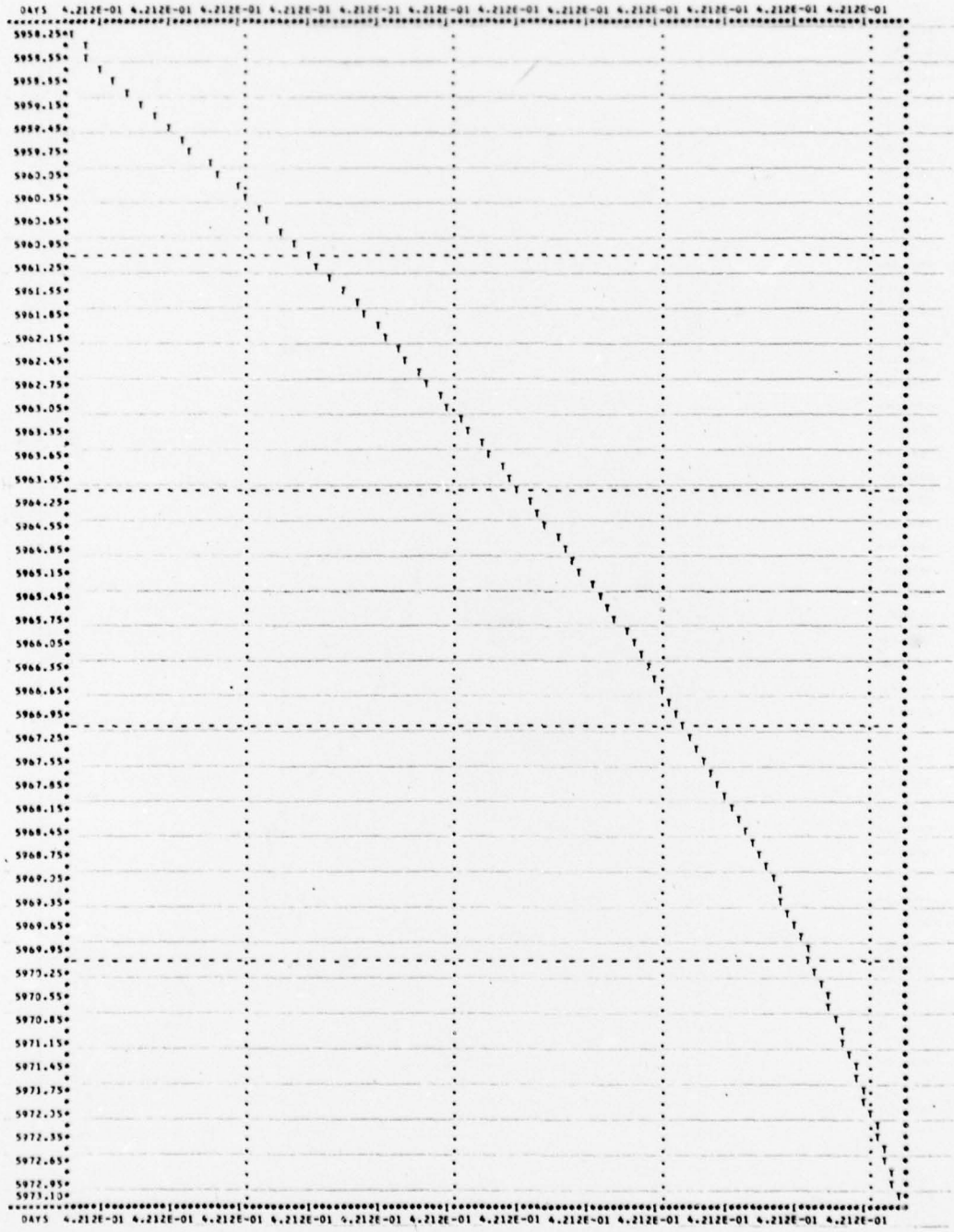
DAYS 5.332E-01 7.034E-01 8.736E-01 1.344E+00 1.214E+00 1.384E+00 1.554E+00 1.725E+00 1.895E+00 2.065E+00 2.235E+00 2.406E+00
(K) TOTAL KINETIC ENERGY -- IN UNIT OF -- 1.00000000E+24 ERGS
MINIMUM SCALE = 4.48088731E-01 MAXIMUM SCALE = 2.47363318E+00
********PROGRAM RUN AT 08/06/76 ********

OVER ALL ENERGY PLOT FROM 5958.250 DAYS TO 5973.100 DAYS

DATE OF PROGRAM RUN --08/06/76

(T) TOTAL ENERGY (K.E.+P.E.) -- IN UNIT OF -- 1.000000000E+32 ERGS

MINIMUM SCALE = 4.212121208E-01 MAXIMUM SCALE = 4.212130228E-01



(T) TOTAL ENERGY (K.E.+P.E.) -- IN UNIT OF -- 1.000000000E+32 ERGS

MINIMUM SCALE = 4.212121208E-01 MAXIMUM SCALE = 4.212130228E-01

********PROGRAM RUN AT 08/06/76 ********

61	---	ENERGY-SELECT	FILE ---	TAPE14,	TAPE REEL NO.=	1,	LABEL=88119	GROUP-RECORD NO.=	15,	DAYS=	5973.8500		
63	---	ENERGY-SELECT	FILE ---	TAPE14,	TAPE REEL NO.=	1,	LABEL=88119	GROUP-RECORD NO.=	16,	DAYS=	5974.9000		
67	---	ENERGY-SELECT	FILE ---	TAPE14,	TAPE REEL NO.=	1,	LABEL=88119	GROUP-RECORD NO.=	17,	DAYS=	5975.9500		
63	---	ENERGY-SELECT	FILE ---	TAPE14,	TAPE REEL NO.=	1,	LABEL=88119	GROUP-RECORD NO.=	18,	DAYS=	5977.0000		
23	***HISTORY-STARTING		FILE ***	TAPE12,	TAPE REEL NO.=	1,	LABEL=88109	GROUP-RECORD NO.=	3,	DAYS=	5977.9000		
23	***HISTORY-STARTING		FILE ***	TAPE12,	TAPE REEL NO.=	1,	LABEL=88109	GROUP-RECORD NO.=	4,	DAYS=	5978.0500		
61	---	ENERGY-SELECT	FILE ---	TAPE14,	TAPE REEL NO.=	1,	LABEL=88119	GROUP-RECORD NO.=	19,	DAYS=	5978.0500		
31	***	HISTORY-OUTPUT	FILE ***	TAPE13,	TAPE REEL NO.=	1,	LABEL=88114	GROUP-RECORD NO.=	2,	DAYS=	5978.2000		
61	---	ENERGY-SELECT	FILE ---	TAPE14,	TAPE REEL NO.=	1,	LABEL=88119	GROUP-RECORD NO.=	20,	DAYS=	5979.1000		

OVER ALL ENERGY PLOT FROM 6018.250 DAYS TO 6018.400 DAYS

DATE OF PROGRAM RUN --08/06/76

(K) TOTAL KINETIC ENERGY -- IN UNIT OF -- 1.00000000E+24 ERGS

MINIMUM SCALE = 3.94539415E+00 MAXIMUM SCALE = 3.94996118E+00

```
 DAYS  3.946E+00 3.946E+00 3.946E+00 3.947E+00 3.947E+00 3.948E+00 3.948E+00 3.948E+00 3.949E+00 3.949E+00 3.949E+00 3.950E+00
.------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------.
6018.25*                                                                                                          .   K*
6018.40*K                                                                                                         .    *
.------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------.
 DAYS  3.946E+00 3.946E+00 3.946E+00 3.947E+00 3.947E+00 3.948E+00 3.948E+00 3.948E+00 3.949E+00 3.949E+00 3.949E+00 3.950E+00
```

(K) TOTAL KINETIC ENERGY -- IN UNIT OF -- 1.00000000E+24 ERGS

MINIMUM SCALE = 3.94539415E+00 MAXIMUM SCALE = 3.94996118E+00

********PROGRAM RUN AT 08/06/76 ********

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                    OVER ALL ENERGY PLOT FROM  6018.250 DAYS TO  6018.400 DAYS
                    ••••••
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DISK BLOCK USAGE SUMMARY

	ODD UNITS DISK 0	EVEN UNITS DISK 1
LIMIT ON BLOCKS ALLOWED	4095	4095
MAXIMUM BLOCKS USED	60	36
PLIB BLOCKS FOR THIS PROJECT	3	

TAPE ACTIVITY SUMMARY

TAPE LABEL	PHYSICAL UNIT	CHANNEL ON CHAN 13,	PARITY ERRORS CHAN 11,	READ ERRORS	WRITE ERRORS	RECORDS READ	WORDS READ	FILE MARKS READ	RECORDS WRITTEN	WORDS WRITTEN	FILE MARKS WRITTEN
13 D	0	0	0	0	0	1	73	0	0	0	0
SLIB D	1	0	0	0	0	20	68710	0	0	0	0
11 D	0	0	0	0	0	22	61952	0	19	49664	0
CNSTF B	0	0	0	0	0	0	0	0	0	0	0
12 D	1	0	0	0	0	288	1158528	0	246	969344	0
STRTF B	0	0	0	0	0	0	0	0	0	0	0
13 D	0	0	0	0	0	148	585088	0	152	584320	0
HOUTF B	0	0	0	0	0	0	0	0	0	0	0
14 D	1	0	0	0	0	121	474496	0	125	473728	0
EGSLF B	0	0	0	0	0	0	0	0	0	0	0
PLIB D	1	0	0	0	0	23	45292	0	0	0	0
SSCR B	0	0	0	0	0	161	41216	0	161	41216	0
SSCR D	0	0	0	0	0	0	0	0	0	0	0
LGO B	0	0	0	0	0	138	51744	2	69	25872	0
LGO D	1	0	0	0	0	6	61440	0	3	30720	0
RANFO D	0	0	0	0	0	9	1537987	0	9	1537987	0
88019 B	0	0	0	0	0	0	0	0	70	44287	0
PR D	0	0	0	0	0	0	0	0	10	20480	0
0080 D	0	0	0	0	0	0	0	0	518	1060864	0
88109 B	0	0	0	0	0	66	190104	0	330	950520	2
88109	3	0	0	0	0	66	190104	1	330	950520	2
88114 B	0	0	0	0	0	0	0	0	198	570312	0
88119 B	0	0	0	0	0	0	0	0	228	460560	0
88019	5	0	0	0	0	0	0	0	70	44287	2
88114	5	0	0	0	0	0	0	0	198	570312	2
88119	7	0	0	0	0	0	0	0	228	460560	2

SYSTEM TAPE D70 GENERATED 08/02/76 AT 09/06 FROM SOURCE TAPE E8

~~4395 OF MODIFIES MODIFIED~~ FIC
CTC DTL