Comparison of Numerical and Physical Hydraulic Models, Masonboro Inlet, North Carolina

APPENDIX 2, VOLUME 2

Numerical Simulation of Hydrodynamics (WRE)

by

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PROGRAM STRUCTURE

HYDTID is constructed and formulated in such a manner that the sequential flow of program control necessary for solution using high speed digital computers can be easily understood. The basic computer language used is Fortran V and the model has been successfully applied using the CDC 6600 and 6400, the UNIVAC 1108 and 1106 and the RCA Spectra 70/45 computers. In its present form HYDTID is essentially machine independent. The computation time and storage depend on the size of the system being modeled, the mesh size and time step being used, the number of computational or water cells in the grid network, and the length of simulation time desired. Recent applications of the model to Texas bays have required as much as 150,000 words of memory and from 2 to 6 minutes of UNIVAC 1108 computer time to simulate one 25 hour tidal cycle. For the Masonboro Inlet problem, the coarse grid model required about four minutes of UNIVAC 1108 time to simulate one 12.5 hour tidal cycle and to generate the input flows for the fine grid sub-model. The fine grid sub-model required about 40 minutes of computer time to simulate one cycle.

Basically the model consists of an executive control program and eight subroutine packages for performing specific computational tasks. Input data to the program are read from cards or magnetic tape, and output is either printed, punched on cards, or written on magnetic tape. Detailed descriptions of the basic program elements are presented in the following sections.

Executive Control Program. This is the basic command element of Program HYDTID. All program control data, real system description data, and model

operation data required for computing tidal hydrodynamics are input into the program by this routine. Variables are initialized, constants are set, and a portion of the basic input data is printed out. At every time step, control is transferred from this routine to appropriate subroutines for calculation of instantaneous values of tidal amplitudes and flows, as well as net flows, net velocities and mean velocities. Input data are processed appropriately based on whether the program is being applied to the fine or coarse grid configuration. This element of HYDTID also transfers control to appropriate subroutines for printing tidal amplitudes and discharges for selected cells at specified time intervals, for storing instantaneous hydrodynamics for all cells on magnetic tape at specified time intervals, for storing tidal amplitudes for selected cells for plotting, and for storing final values of the basic variables on cards or tape at the end of program execution.

Subroutine CALTID. This subroutine computes at every time step the appropriate values of the four exciting tides that are specified around the periphery of the coarse grid model to impart tidal fluctuations in the system. Hourly values of tidal amplitudes read into the program from cards are interpolated appropriately to obtain tidal values at every time step.

Subroutine PRINTI. This subroutine prints the remaining basic input data not printed in the Executive Control Routine. Appropriate descriptive headings and titles are printed with the data so that it is possible to check that all prototype conditions are properly accounted for in the model. Print out of program control parameters serves as a check to see that the program has operated correctly. Proper specification of certain program control parameters can cause control to pass over this subroutine or execute only a portion of it.

Subroutine CALCQH. This subroutine is the basic computational element of the tidal hydrodynamics model. Control must pass through this subroutine during each time step of the computation process. In this subroutine, control moves from cell to cell according to a previously defined sequencing scheme so that only water cells are considered in the calculations. Based on the type of boundary condition required by a particular computational grid cell as specified by its identifying "flag" value, control is transferred to appropriate statements within this subroutine for calculation of certain constants and coefficients. Utilizing these constants and coefficients and known values of tidal amplitudes and flows from the previous time step, new values of these quantities are then determined explicitly at the end of the routine. One execution of this subroutine provides a complete new array of tidal amplitudes and flows per foot of width in the two coordinate directions. Water depths are computed from the new values of tidal amplitude at the end of this routine.

Subroutine PRINTO. This subroutine outputs the results of the basic model computations at specified time intervals. Specifically, values of tidal amplitudes and discharges are printed out for twenty pre-specified grid cells located in the grid system. Ordinally, hourly values are printed out, however, any desired time interval greater than the computational time step can be used. In the event that the complete array of final computed values of tidal amplitudes and flows per foot of width for all grid elements are required to be saved at the end of model operation, control can be transferred to this subroutine where these values are either punched on cards or written on magnetic tape. These ending values of the basic variables are used as initial values for subsequent computer runs. Also at the end of model operation, hourly velocities for the above 20 cells are punched for the x- and y-directions.

Subroutine NETVOD. This is an optional subroutine that calculates net velocities, net flows, or average depths which occur during a tidal cycle for all computational grid elements. Net velocities and flows and average depths are printed for all grid cells and can also be punched on cards or stored on tape by this routine.

Subroutine STRVEL. This is also an optional subroutine, and it stores on magnetic tape the instantaneous hydrodynamics for all cells at specified time intervals. This routine is particularly useful for storing hydrodynamics at times of ebb, flood, and slack tides so that flow conditions throughout the system can be analyzed at these times. Another use of this routine has been to store instantaneous hydrodynamics for all cells at short time intervals and to use these data in a marker particle program to trace paths traversed by water particles during a tidal period.

Subroutine PLOTHS. This subroutine is an optional plot package which when executed, results in verification type plots of tidal amplitude for specified grid cells. Both the tidal amplitude computed by the hydrodynamic model and the tidal amplitude measured in the prototype are plotted for specific locations. Appropriate descriptive labels and titles are also included on the plots. As many as twenty different locations (grid cells) can be chosen for tidal amplitude plots. By obtaining these plots for several locations throughout the system being simulated, an idea of the accuracy of the model can be obtained.

Subroutine RITAP. This subroutine is used only in the operation of the coarse grid model and compiles arrays of selected flows and tides from the coarse grid model results. These selected flows and tides are then

interpolated temporally and distributed spatially to obtain the boundary input flows for the fine grid sub-model. The fine grid flows are then stored on magnetic tape for use in operating the fine grid sub-model. For the Masonboro Inlet problem, there are two versions of Subroutine RITAP which must be interchanged in the HYDTID program deck depending on the particular inlet geometry being simulated. Version I applies to the pre-project condition without the jetty, and Version II is used for the post-project condition with the jetty in place. Two different versions are needed because the configuration of boundary flow cells used to excite the fine grid sub-model are different for the two inlet conditions, and therefore different coarse grid flows must be interpolated and distributed accordingly.

DEFINITION OF PROGRAM VARIABLES

Program HYDTID

ANGCOR	-	Angle between north and x-axis measured clockwise from north.
CB	-	Submerged or overtopping barrier coefficient.
CELSID	-	Literal description equal to SIDE or TOP.
CODE	-	Literal, (CARD, TAPE, NONE, BOTH) which designates mode of I/O.
CON1	-	Base value counter for tidal curve interpolation.
CON2	-	Base value counter for tidal curve interpolation.
CT	-	Tidal discharge coefficient.
D	-	Total water depth in a given cell.
DATA	-	General purpose input variable used for temporary data storage.
DS	-	Cell side dimension.
DT	-	Computational time step.
DTODS	-	DT/DS.
DTO2DS	-	DT/(2•DS).
DT2	-	DT/2.
DUM	-	General purpose input variable used for temporary data storage.
E	-	Rate of evaporation.
ENDF	-	Literal which denotes end of input data file.
ENDT	-	Literal which denotes end of input title file.
F	-	Manning's "n" bottom roughness coefficient.
FX	-	Function of Manning's "n" for computations in the x-direction.

FY	-	Function of Manning's "n" for computations in the y-direction.
G	-	Acceleration of gravity.
GC	-	Internal computation constant.
GCDTO4	-	Internal computation constant.
GDTODS	-	Internal computation constant.
GTIDE	-	Current value of exciting tide for one of four input tidal conditions.
G1	-	Exciting tidal elevation temporarily stored for printed output.
G41	-	Exciting tidal elevation temporarily stored for printed output.
G42	-	Exciting tidal elevation temporarily stored for printed output.
G43	-	Exciting tidal elevation temporarily stored for printed output.
H	-	Current tidal elevation in a given cell.
HF	-	Prototype tidal elevation used in verification plots.
HN	-	Newly computed tidal elevation in a given cell.
HPLT	-	Storage variable equal to tidal elevation to be plotted.
HPRT	-	Print out variable for tidal elevation.
HPRTA	-	Print out variable for tidal elevation.
HSHIFT	-	Elevation difference between MSL and datum of input data.
I	-	Standard grid column indicator.
IBAR	-	Grid column indicator for submerged barrier cells.
IBASIC	-	Internal variable which indicates number of program options desired.
ICLL	-	Grid column indicator for water cells where computations are required.
IDCARD	-	Variable which indicates mode of basic cell data input.
IDTIDE	-	Identification number which assigns exciting tide to appropriate cells.

IDUM - General purpose input variable used for temporary data storage.

IFLAG - Computational cell flag number which denotes type of calculations to be performed.

IFLOW - Grid column indicator for external inflow cells.

IHKP - Grid column indicator for cells in coarse grid where ending H-values are to be punched for input into fine grid sub-model.

IK - Internal counter.

ILB - Internal counter.

ILF - Internal counter.

IMAX - Total number of columns in grid.

IMXJMX - Total number of cells in grid.

INETFL - Variable which specifies net flow option.

INEW - Internal variable used to facilitate I/O.

IODISP - Variable which specifies mode of dispersion coefficient output.

IONFLO - Variable which specifies mode of net flow output.

IONVEL - Variable which specifies mode of net velocity output.

IP - Grid column indicator for cells where tides and flows are to be periodically printed.

IPDATA - Variable which denotes extent of input data print out.

IQHIN - Variable which specifies mode of initial hydrodynamics input.

ISAVQH - Variable which specifies model of final hydrodynamics output.

ITIDE - Grid column indicator for tidal excitation cells.

IVLTAP - Variable which specifies mode of instantaneous hydrodynamics output.

J - Standard grid row indicator.

JBAR - Grid row indicator for submerged barrier cells.

JCLL - Grid row indicator for water cells where computations are required.

JFLAG	-	Two digit cell flag which specifies the particular finite difference formulation of the convective acceleration cross-product term that is to be used for a given cell.
JFLOW	-	Grid row indicator for external inflow cells.
JHKP	-	Grid row indicator for cells in coarse grid where ending H-values are to be punched for input into fine grid sub-model.
JK	-	Internal counter.
JLB	-	Internal counter.
JLF	-	Internal counter.
JMAX	-	Total number of rows in grid.
JP	-	Grid row indicator for cells where tides and flows are to be periodically printed.
JTIDE	-	Grid row indicator for tidal excitation cells.
K	-	Internal counter.
KB	-	Temporary counter for submerged barriers.
KD	-	Temporary counter for external inflows.
KEPSAV	-	Temporary variable used to indicate storage of hydrodynamics at end of one tidal cycle.
KG	-	Internal counter.
KINDAT	-	Tape unit number for reading basic cell data.
KINIQH	-	Tape unit number for reading initial hydrodynamics.
KK	-	Internal counter used in data input.
KQ	-	Internal counter used in printing basic hydrodynamics for selected cells.
KODISP	-	Tape unit number used for storing dispersion coefficients.
KONETF	-	Tape unit number used for storing net flows.
KONETV	-	Tape unit number used for storing net velocities.
KOTVEL	-	Tape unit number used for storing instantaneous hydrodynamics.

KOUNT - Internal counter used to designate specific water cells.

KOUTDA - Tape unit number for storing final hydrodynamics.

KPRINT - Variable which controls punching of hydrodynamics at end of one tidal cycle.

KQCTP - Tape unit number used for storing selected flows from coarse grid model for input to fine grid sub-model.

KQFTP - Tape unit number used for storing external inflows for exciting fine grid sub-model.

KRSOFN - Variable which indicates type of model operation to be performed.

KT - Internal counter.

LINMAX - Variable which indicates number of sets of hydrodynamic output to be punched per page.

M - Internal counter for plotting tides.

MA - Internal counter.

N - Internal counter.

NFLOW - Total number of external inflows.

NN - Internal counter.

NPLOT - Total number of cells where tidal plots are to be made.

NPRPLT - Variable which designates the order of 20 specified cells where basic hydrodynamics are to be periodically printed.

NREEF - Total number of submerged and overtopping barriers.

NTIDE - Total number of external tidal excitation cells.

OMEGA - Coriolis parameter.

PI - Constant equal to π (3.1416).

PTIME - Time interval for printing basic hydrodynamics at selected cells.

QINFLO - External inflow for a given cell.

QX - Current value of flow per foot of width in x-direction for a given cell.

QXN	-	Newly computed value of flow per foot of width in x-direction for a given cell.
QY	-	Current value of flow per foot of width in y-direction for a given cell.
QYN	-	Newly computed value of flow per foot of width in y-direction for a given cell.
R	-	Rainfall rate.
REMARK	-	Variable used for storing title inputs.
SIDE	-	Literal used to designate right side of computational cell.
SQTG	-	Square root of G.
STATON	-	Literal used to identify specific cells where basic hydrodynamics are periodically printed.
TCOUNT	-	Time counter used for printing basic hydrodynamics.
THETA	-	Wind angle.
THETA1	-	Wind angle temporarily stored for print out.
TIDE1	-	Tidal elevation read into program for Exciting Tide No. 1.
TIDE2	-	Tidal elevation read into program for Exciting Tide No. 2.
TIDE3	-	Tidal elevation read into program for Exciting Tide No. 3.
TIDE4	-	Tidal elevation read into program for Exciting Tide No. 4.
TID1	-	Current interpolated tidal elevation from Exciting Tide No. 1.
TID2	-	Current interpolated tidal elevation from Exciting Tide No. 2.
TID3	-	Current interpolated tidal elevation from Exciting Tide No. 3.
TID4	-	Current interpolated tidal elevation from Exciting Tide No. 4.
TIM	-	Time stored for plotting.
TIME	-	Current value of simulated time during model operation.
TIMEIN	-	Beginning time of model operation.
TIMTOT	-	Total time to be simulated.

TIMVEL	-	Specified time interval for storage of instantaneous hydrodynamics.
TMARK	-	Internal time counter for storage of instantaneous hydrodynamics.
TMAX	-	Final value of time at end of model operation.
TNET	-	Value of time at which computations for net flows and velocities begin.
TOP	-	Literal used to designate top side of computational cell.
TPER	-	Period of tidal cycle.
TPLOT	-	Value of time at which storage of hourly H-values begins for tidal plots.
UAPRT	-	Variable used for printing flows in x-direction at specified cells.
UAPRTA	-	Variable used for printing flows in y-direction at specified cells.
UPLT	-	Velocity in x-direction punched at PTIME intervals for selected cells where velocity comparisons are desired.
VAPRT	-	Variable used for printing flows in y-direction at specified cells.
VAPRTA	-	Variable used for printing flows in y-direction at specified cells.
VPLT	-	Velocity in y-direction punched at PTIME intervals for selected cells where velocity comparisons are desired.
W	-	Wind velocity.
W2	-	Temporary storage variable generally set equal to W.
XW	-	Effective wind stress term for x-direction.
YW	-	Effective wind stress term for y-direction.
Z	-	MSL elevation of bottom of cell.
ZB	-	MSL elevation of crest of submerged or overtopping barrier.

Subroutine CALTID

DELT1 - Current incremental change during one time step for Exciting Tide No. 1.

DELT2 - Current incremental change during one time step for Exciting Tide No. 2.

DELT3 - Current incremental change during one time step for Exciting Tide No. 3.

DELT4 - Current incremental change during one time step for Exciting Tide No. 4.

NTID - Counter used in interpolation.

NTIDP1 - Counter used in interpolation.

Subroutine CALCQH

COEFX - Computed coefficient used in basic hydrodynamic computations of flow in x-direction.

COEFY - Computed coefficient used in basic hydrodynamic computations of flow in y-direction.

DBARX - Internally computed variable involving depths in adjacent cells in x-direction.

DBARY - Internally computed variable involving depths in adjacent cells in y-direction.

DBX - Average water depth over submerged barrier on side of cell.

DBY - Average water depth over submerged barrier on top of cell.

DCON - Reciprocal of average of depths in adjacent cells.

HMAX - The greater of two adjacent MSL water surface elevations.

IFL - Temporary variable equal to IFLAG.

IFLG - Temporary variable equal to IFLAG.

JAFL - First digit of JFLAG value.

JBFL - Second digit of JFLAG value.

JFL - Temporary variable used to indicate type of flow calculations required at a particular cell.

KBT - Temporary counter for submerged and overtopping barriers.

KTT - Temporary counter for tidal excitation cells.

QBARX - Magnitude of actual velocity vector used in calculation of flows in x-direction.

QBARY - Magnitude of actual velocity vector used in calculation of flows in y-direction.

QDIFXS - Flow gradient in y-direction used to approximate $\partial q_x/\partial y$.

QDIFYS - Flow gradient in x-direction used to approximate $\partial q_y/\partial x$.

QXBAR - Average flow in x-direction defined at same location as q_y.

QYBAR - Average flow in y-direction defined at same location as q_x.

SIGN - Temporary algebraic sign variable which indicates flow direction across overtopping barriers.

ZMAX - The greater of two adjacent cell MSL bottom elevations.

Subroutine NETVQD

DEPTH - Average water depth in a given cell over a tidal cycle.

DXA - Average of water depths in two adjacent cells in x-direction.

DYA - Average of water depths in two adjacent cells in y-direction.

QNETX - Net flow for a given cell in the x-direction over a tidal cycle.

QNETY - Net flow for a given cell in the y-direction over a tidal cycle.

UAVE - Mean tidal velocity in x-direction for a given cell during one tidal cycle.

VAVE - Mean tidal velocity in y-direction for a given cell during one tidal cycle.

DX - Dispersion coefficient in x-direction computed using Random Process Analogy.

DY - Dispersion coefficient in y-direction computed using Random Process Analogy.

VNETX - Net velocity in the x-direction for a given cell during one tidal cycle.

VNETY - Net velocity in the y-direction for a given cell during one tidal cycle.

Subroutine STRVEL

TAPTIM - Current value of time written on tape for checking purposes.

Subroutine PLOTHS

A - A processor variable for plotting.

ACOLMN - Storage vehicle for a plot character.

ADOT - Print character "X".

AEQUAL - Print character "=".

AI - Print character "I".

AMINUS - Print character "-".

APLUS - Print character "+".

ASTRSK - Print character "*".

BLANK - Print character "^".

CO - Print character "0".

DIFHF - Internal processor variable.

DIFHP - Internal processor variable.

HF - Prototype tidal elevation.

ICC - Internal processor variable.

IHF - Temporary integer storage for prototype tidal elevation.

IHPLT - Temporary integer storage for model tidal elevation.

ITCONT - Internal processor variable.

ITID - Internal processor variable.

ITIDM1 - Internal processor variable.

ITIDPR - Internal processor variable.

MM1 - Internal processor variable.

TIDPRT - Internal processor variable.

TITEL - Specified literal title of plot.

TITELY - Literal ordinate label.

Subroutine RITAP

DTOT - Sum of k water depths used as a proportioning base to distribute one coarse grid flow to k fine grid cells.

HOLD - Value of water elevation for beginning of coarse grid time step.

HTP - Value of water surface elevation at end of coarse grid time step.

HTPU - Water surface elevation at intermediate time level used to determine fine grid input flows.

KCT - Internal interpolating counter.

KCTM - Interpolation factor equal to (coarse grid time step/fine grid time step).

Q - Interpolated and distributed value of external inflow for fine grid sub-model.

QOLD - Coarse grid flow at beginning of coarse grid time step.

QS - Computed fine grid external inflow in x-direction.

QT - Computed fine grid external inflow in y-direction.

QTP - Coarse grid flow at end of coarse grid time step.

QTPU - Coarse grid flow at intermediate time level.

TIME - Internal time counter (seconds).

TMAX - Total real time of model operation (seconds).

ZT - Input variable of cell bottom elevations.

DATA INPUT

The data input structure for HYDTID is dependent on the mode of model operation and the various program options the user wishes to employ. For purposes of this study, three different types of operation modes are defined as follows: (1) Coarse Grid Production Run meaning operation of the coarse grid model for the purpose of generating the input flows to the fine grid sub-model; (2) Fine Grid Production Run meaning any operation of the fine grid sub-model; and (3) Coarse Grid Non-Production Run meaning operation of the coarse grid model for purposes other than to generate fine grid sub-model inputs. Input data is read from both cards and magnetic tape, with some data specified in the program itself. In all there are eleven different card data files which can be read, however only six of these are necessary for coarse grid model operation, and five are required by the fine grid sub-model. The contents of the eleven files are described in the subsequent paragraphs followed by their appropriate format structures.

Title File - Titles for First Page of Output

Four separate 68 character titles can be specified using this file. They appear on the first page of the edited output and can be used to describe the various conditions under which the model is being operated. The entire Title File is also echo printed at the beginning of each run.

Data File A - Program Control Parameters

The I/O mode for various types of data in the model are specified in this file by assigning the appropriate literal, CARD, TAPE, BOTH, or NONE, in the proper space on the File A cards. If TAPE or BOTH are assigned, the tape unit number must also be specified. Based on this information, HYDTID performs the necessary I/O operations.

Data File B - Basic Model Operation Parameters

Included in the file are the basic parameters which are used in the model. All of the parameters are read as floating point variables from columns 74 through 80 and then assigned to appropriate variable names in the program. The various parameters required are described on the format forms which follow and the required units are also specified.

Data File C - Basic Cell Data

One data card for grid cell included in a model is read by the program from this file. Each card is identified with I and J coordinates and includes all of the descriptive data necessary for hydrodynamics to be determined for every cell in the computational grid. These data include the following:

1. IFLAG - Computational cell flag determined from the individual boundary conditions at the cell .
2. Z - Average bottom or ground elevation (feet) referred to same datum specified in Data File B, Card 20.
3. F - Manning's "n" value.

4. IDTIDE - Tidal identification number ($1 \leq$ IDTIDE ≤ 4) which assigns appropriate exciting tide to the cell if it is flagged accordingly. Otherwise IDTIDE is zero.

5. QINFLO - External inflow magnitude (cfs) if cell is flagged accordingly. Otherwise QINFLO set equal to zero. Sign must be specified to be consistent with coordinate axes. For fine grid sub-model, this quantity does not need to be specified since external flows are read from tape for each of the exciting flow cells.

6. CBX - Discharge coefficient assigned to barriers parallel to x-axis when cell flagged accordingly. Otherwise CBX set equal to zero.

7. ZBX - Crest elevation assigned to barriers parallel to x-axis when cell flagged accordingly. Otherwise ZBX set equal to zero. Referred to same datum specified in Data File B, Card 20.

8. CBY - Discharge coefficient assigned to barriers parallel to y-axis when cell flagged accordingly. Otherwise CBY set equal to zero.

9. ZBY - Crest elevation assigned to barriers parallel to y-axis when cell flagged accordingly. Otherwise ZBY set equal to zero. Referred to same datum specified in Data File B, Card 20.

10. NPRPLT - Print/Plot order number assigned to 20 selected cells for periodic output of basic hydrodynamics and for plotting tidal elevations. Otherwise NPRPLT set equal to zero.

11. STATON - Literal station name used as heading when printing basic hydrodynamics for 20 selected cells. Otherwise STATON left blank.

Data File D - Exciting Tides

As the coarse and fine grid models are currently structured, this data file is only required by the coarse grid model. For each of the four exciting tides used in the model, 26 hourly values of tides (2 tidal cycles) are read preceded by an appropriate title card. Datum for the tides is the same specified in Data File B, Card 20.

Data File E - Cell Identification for Storing H-Values

This is an optional data file used only for production runs with the coarse grid model. I and J coordinates are read for those cells in the coarse grid model where tidal elevations at the end of one tidal cycle are required to establish the initial water levels in the fine grid sub-model. As currently structured the program reads 32 sets of coordinates.

Data File F - Two-Digit Convective Acceleration Cell Flags

This data file is required for all modes of model operation. For those cells that require finite difference approximations of the flow gradients in the cross-product terms that are different from the normal centered difference formulations, I and J coordinates and an appropriate two-digit flag are read from a single card. When a blank card is encountered, the program assumes that the end of this file has been reached and control is transferred accordingly.

Data File G - Complete Array of Initial Hydrodynamics

Once the models have been operated for a complete tidal cycle, the ending values of the hydrodynamics for every cell can be saved and used as the initial conditions at which to begin subsequent simulations with the models. In this manner, simulations can be made with several short one tidal cycle runs rather than a single long run which might take several hours of computer time. These ending hydrodynamics can be obtained on cards or magnetic tape by specifying the appropriate option in Data File A for the

initial run, and can then be read into the models for subsequent runs as Data File G again using the option in Data File A. In the event no initial conditions are available, initial hydrodynamics are set equal to zero.

Data File H - Initial H-Values

This data file is used only with the fine grid sub-model when initial hydrodynamics for all cells are not available from previous runs. For this situation, all flows are set equal to zero, but initial water levels are established from those computed using the coarse grid model. Data File H is punched when the coarse grid model is operated under Mode 1, Production Run.

Data File I - Selected Bottom Elevations for Fine Grid Sub-Model Inflow Cells

This data file is required only for the operation of the coarse grid model under Mode 1, Production Run. Data File I consists of the bottom elevations at those fine grid cells where exciting inflows are specified. These data are used in spatially distributing the computed flows from the coarse grid model to obtain the fine grid inputs. The datum for these elevations is the same as that specified in Data File B, Card 20.

Data File J - Prototype HF-Values for Tidal Plots

When tidal verification plots are desired using either model, the measured prototype tidal elevations must be read into the program as Data File J. The datum for these elevations is the same as that specified in Data File B, Card 20.

DATA INPUT FORMATS

Program HYDTID

Title File - Titles for First Page of Output (5 cards)

		1 3*
TITLE	01	[17A4]
TITLE	02	
TITLE	03	
TITLE	04	
ENDTITLE		

Data File A - Program Control Parameters (10 cards)

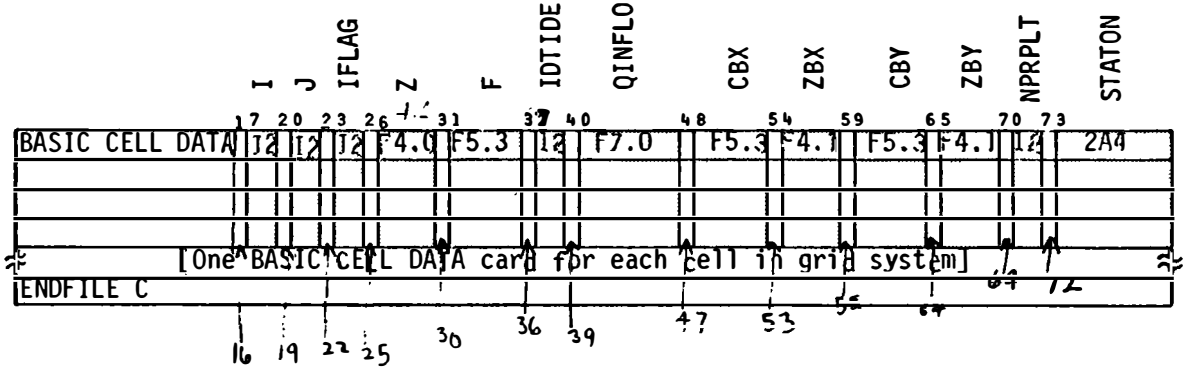
			Card Tape Both None 59		Tape Unit No. 76
FILE A	01	READ BASIC CELL DATA FROM	A4		I2
FILE A	02	READ INITIAL HYDRODYNAMICS FROM			
FILE A	03	COMPUTE AND SAVE NET VELOCITIES ON			
FILE A	04	COMPUTE AND SAVE NET FLOWS ON			
FILE A	05	COMPUTE AND SAVE DISPERSION COEF. ON			
FILE A	06	STORE ENDING VALUES OF HYDRODYNAMICS ON			
FILE A	07	STORE INSTANTANEOUS HYDRODYNAMICS ON			
FILE A	08	WRITE/READ INPUTS FOR FINE GRID MODEL ON			
FILE A	09	STORE COARSE GRID DATA FOR FINE GRID ON			
ENDFILE A					

* Small numbers above each file refer to corresponding columns on an 80 column computer card.

Data File B - Basic Model Operation Parameters (21 cards)

			74
FILE B	01	TYPE OF MODEL(1=COARSE PROD.,2=FINE PROD.,3=COARSE NON-PROD)	F7.0
FILE B	02	PRINT INPUT DATA (1=NO PRINT,2=W/MANN. N,3=W/O MANN. N)	
FILE B	03	NUMBER OF STATIONS FOR WHICH PLOTS ARE DESIRED	
FILE B	04	TOTAL REAL TIME FOR OPERATION OF MODEL (HOURS)	
FILE B	05	START REAL TIME FOR OPERATION OF MODEL (HOURS)	
FILE B	06	REAL TIME INTERV. FOR STORING INSTANT. HYDRO. (MINUTES)	
FILE B	07	REAL TIME PERIOD OF TIDAL CYCLE (HOURS)	
FILE B	08	INITIAL WIND MAGNITUDE (KNOTS)	
FILE B	09	DIRECTION FROM WHICH INITIAL WIND BLOWS(DEG. CW FROM N)	
FILE B	10	AVERAGE PRECIPITATION RATE (INCHES/DAY)	
FILE B	11	AVERAGE EVAPORATION RATE (INCHES/DAY)	
FILE B	12	ANGLE BETWEEN NORTH AND X-AXIS (DEG. CW FROM N)	
FILE B	13	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN X-DIRECTION	
FILE B	14	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN Y-DIRECTION	
FILE B	15	GRID SIZE OF COMPUTATIONAL ELEMENTS (FEET)	
FILE B	16	PROGRAM COMPUTATIONAL TIME STEP (SECONDS)	
FILE B	17	LATITUDE OF ESTUARINE SYSTEM (DEGREES)	
FILE B	18	NUMBER OF OUTPUT SETS (HOURS) PRINTED PER PAGE	
FILE B	19	COMPUTE NET FLOWS BUT DO NOT STORE (1=YES,2=NO)	
FILE B	20	DIFFERENCE BETWEEN MSL AND DATA INPUT DATUM (FEET)	
ENDFILE B			

Data File C - Basic Cell Data (IMAX x JMAX cards + ENDFILE)



Data File D (Coarse Grid Model Only) - Exciting Tides (13 cards)

INPUT TIDE NO. 1 - GAGE O, MASONBORO INLET
[26 hourly values (2 semi-diurnal cycles) of MLW tides punched sequentially, 16F5.2]
INPUT TIDE NO. 2
INPUT TIDE NO. 3
INPUT TIDE NO. 4
ENDFILE D

Data File E (Optional, Coarse Grid Model Only) - Cell Identifications for Storing Ending H-Values

[I and J coordinates punched sequentially, 40I2]
[Repeat as Necessary]

Data File F - Two-Digit Convective Acceleration Cell Flags

I	J	JFLAG	
1	5	9	
I4	I4	I4	[1 card for each computational cell where JFLAG ≠ 11]
[Last card should be blank]			

Data File G (Optional) - Complete Array of Initial Hydrodynamics

[H values punched sequentially for each row in grid, 8F10.5]
[Repeat as necessary]
[Sets of QX and QY values punched sequentially for each row in grid, 8F10.4]
[Repeat as necessary]
ENDFILE G

Data File H (Optional Fine Grid Sub-Model Only) - Initial H-Values

1 I	5 J	9 H	
I4	I4	F10.3	
[One card for each water cell in fine grid sub-model. Input only for first tidal cycle run.]			
[Last card should be blank]			

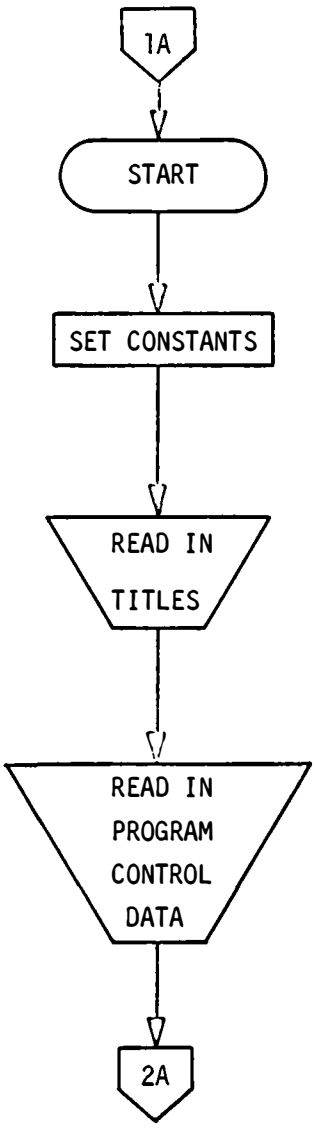
Data File I (Optional Coarse Grid Model Only) - Selected Bottom Elevations for Fine Grid Sub-Model Cells

26
[F4.0]
[One card for each boundary inflow cell in fine grid sub-model]

Data File J (Optional) - Prototype HF-Values for Tidal Plots

[Title card identifying gage number and period of recorded tide]
[26 hourly values (2 semi-diurnal cycles) of MLW tides punched sequentially, 16F5.2]
[Repeat title card and tide data cards for each plot to be made]

FLOW CHART FOR MAIN HYDTID PROGRAM

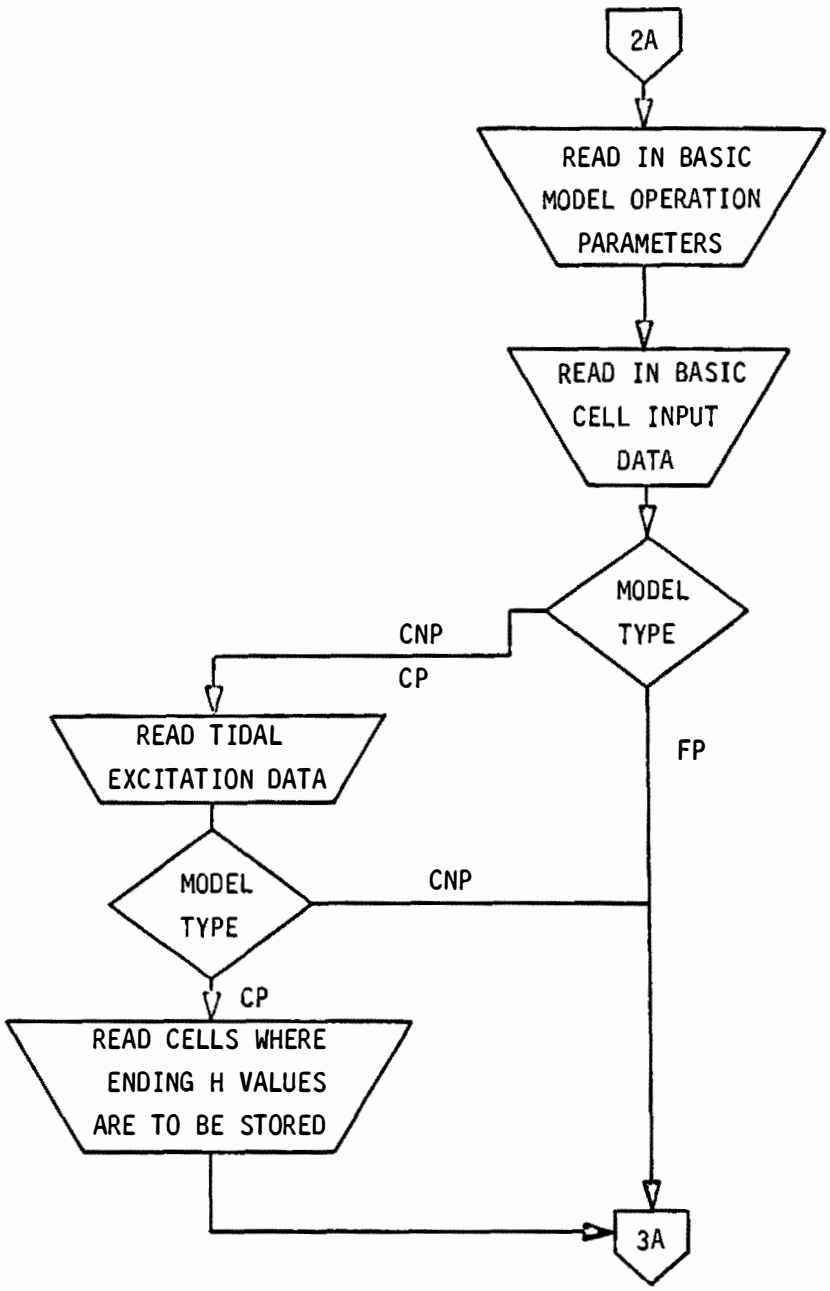


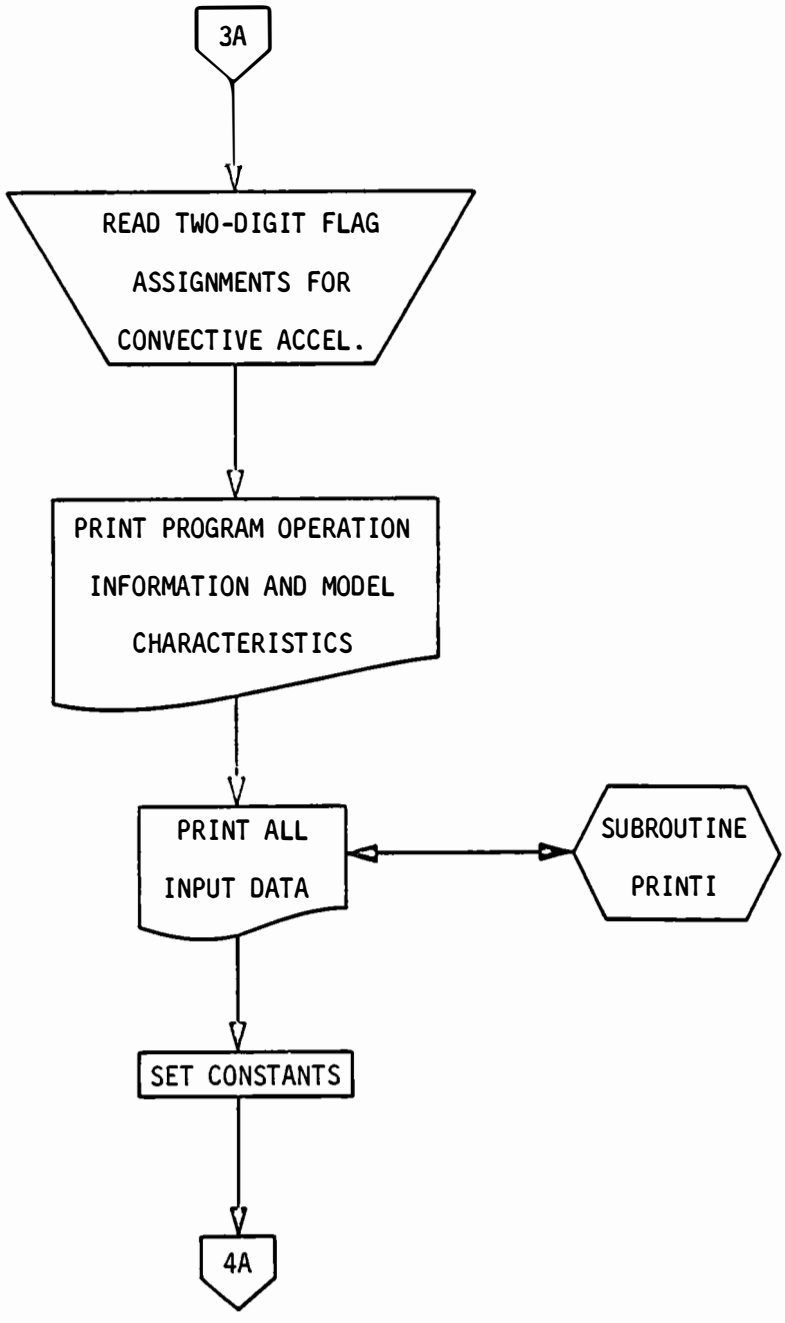
Legend for Model Type

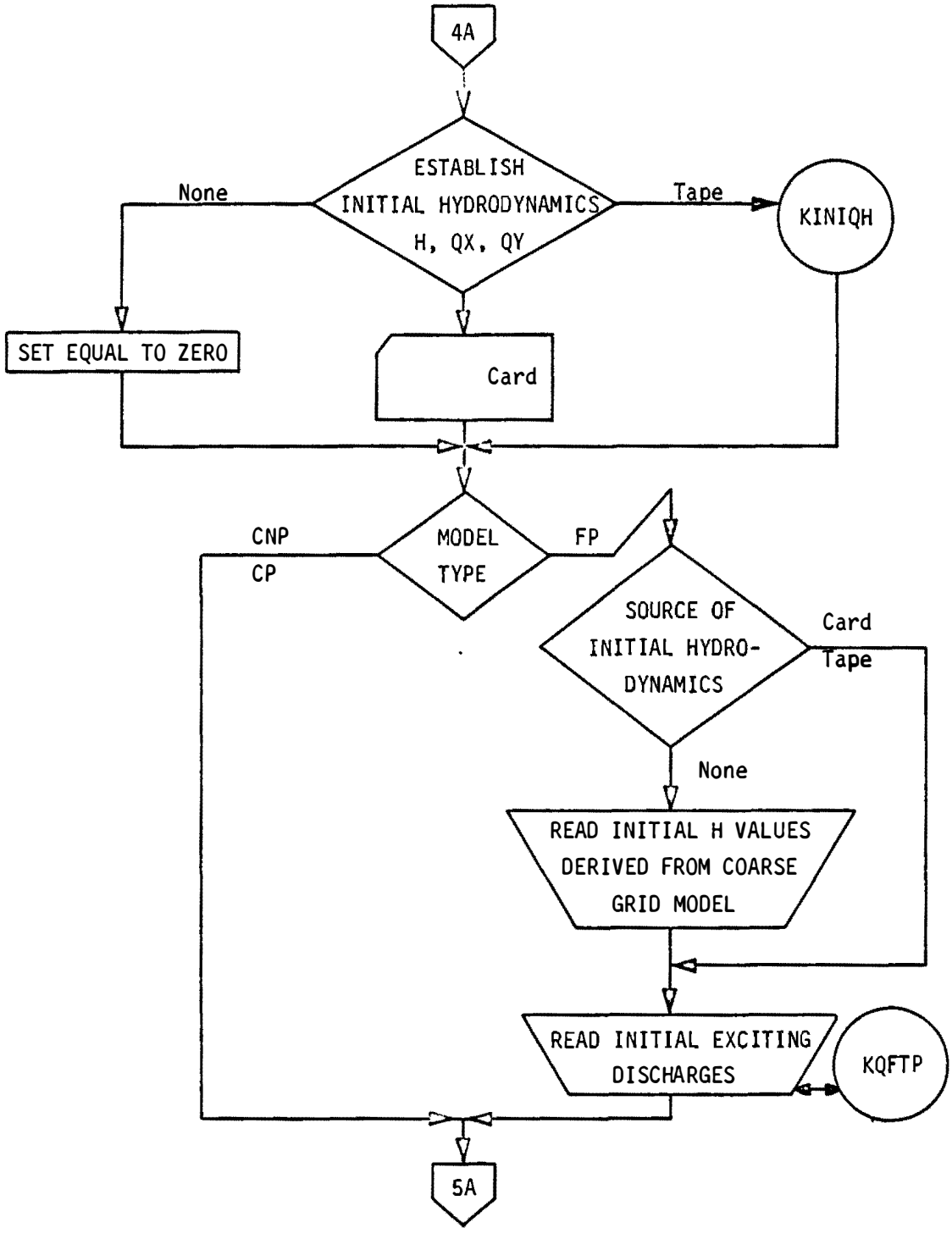
CNP - Coarse Grid Model, Non-Production Run

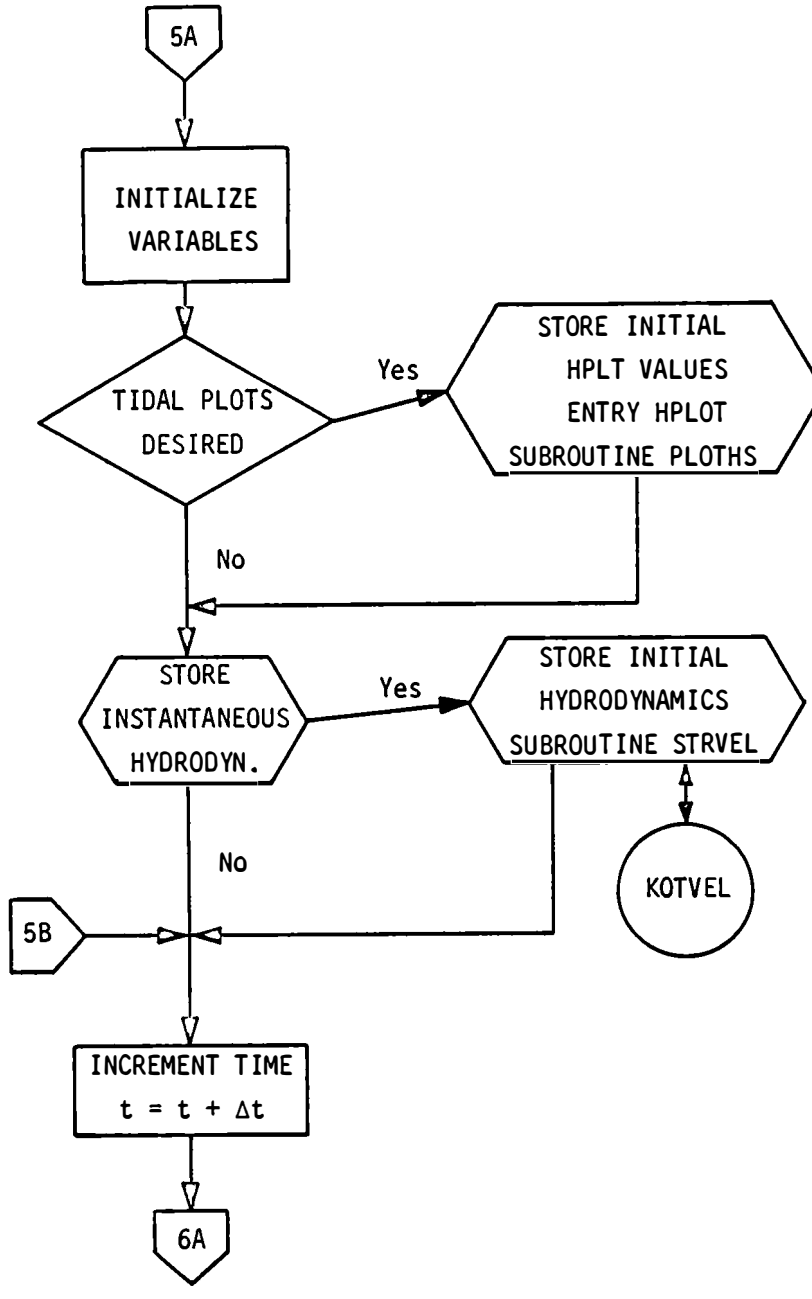
CP - Coarse Grid Model, Production Run

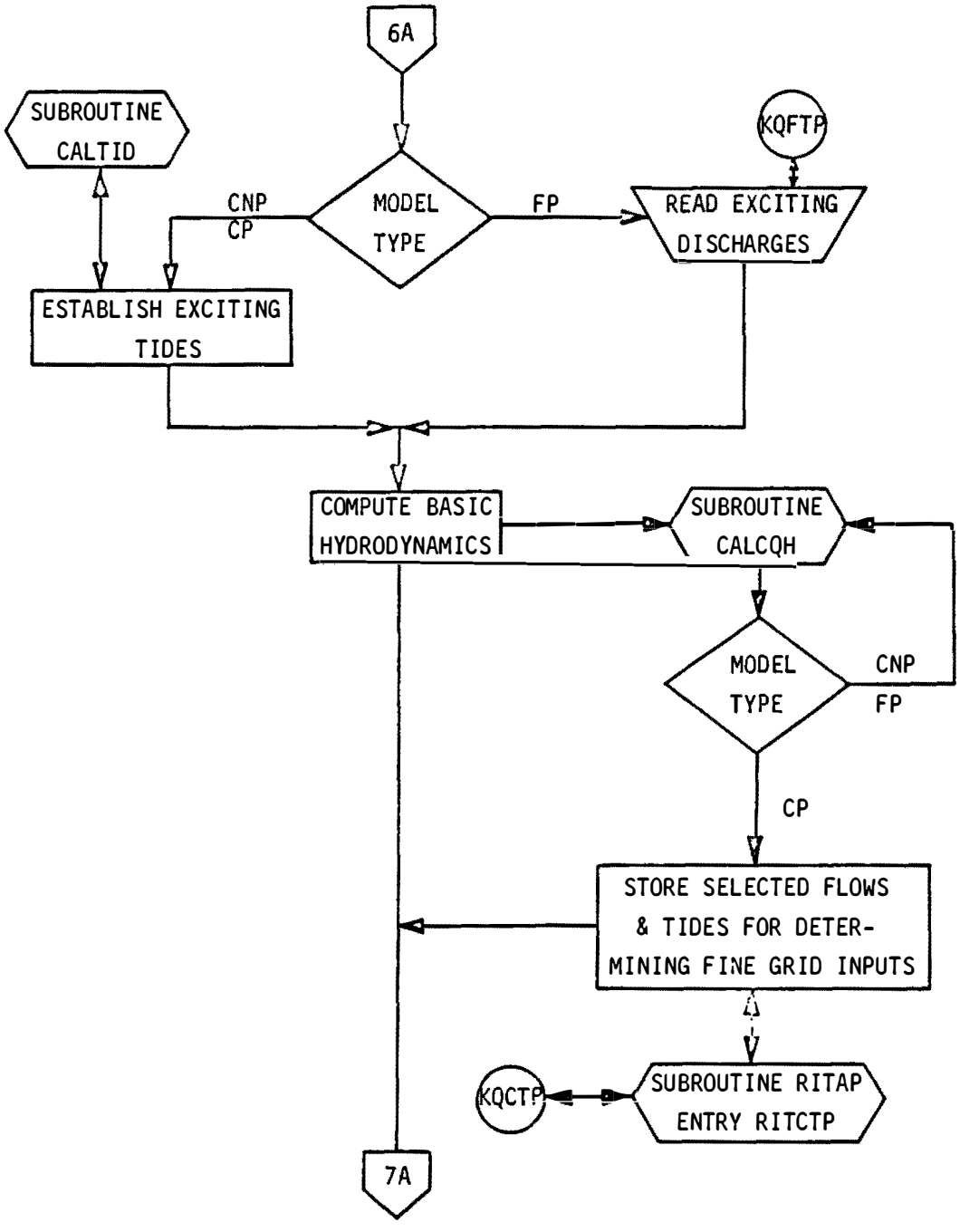
FP - Fine Grid Model Production Run

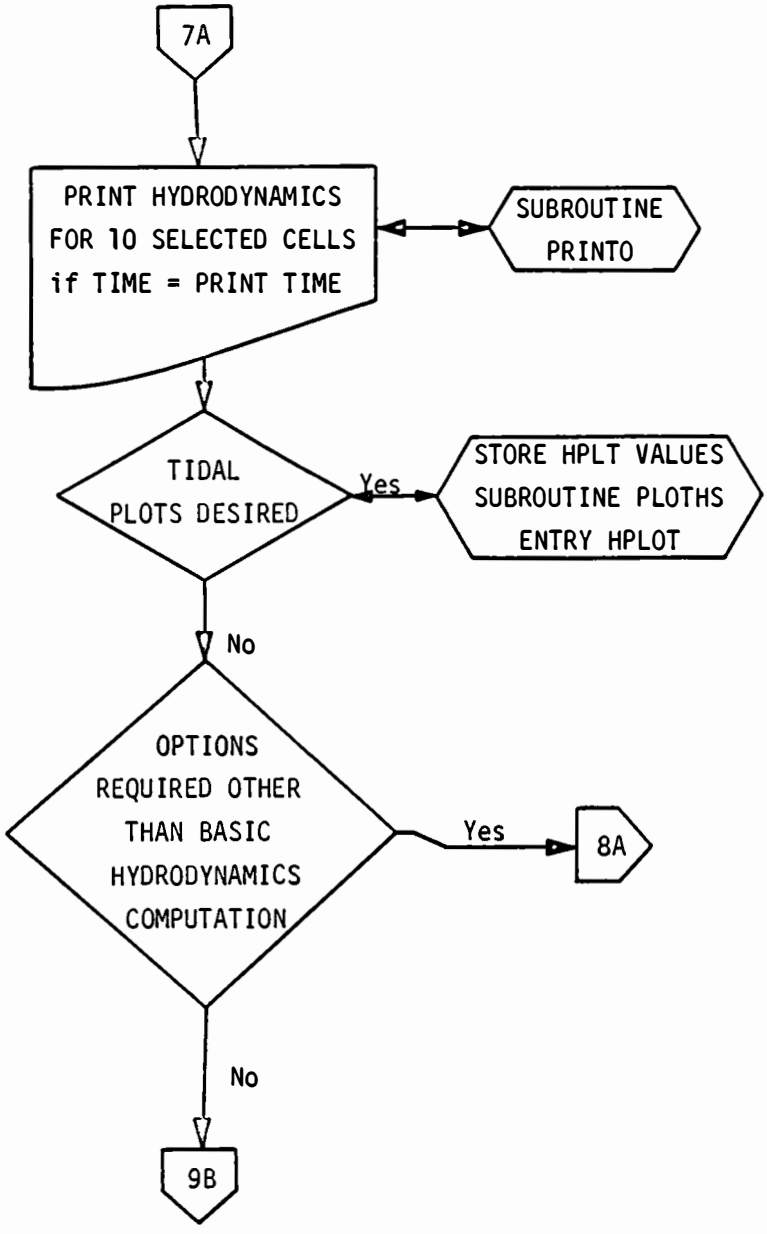

2A
READ IN BASIC MODEL OPERATION PARAMETERS
READ IN BASIC CELL INPUT DATA
MODEL TYPE
CNP
CP
FP
READ TIDAL EXCITATION DATA
MODEL TYPE
CNP
CP
READ CELLS WHERE ENDING H VALUES ARE TO BE STORED
3A

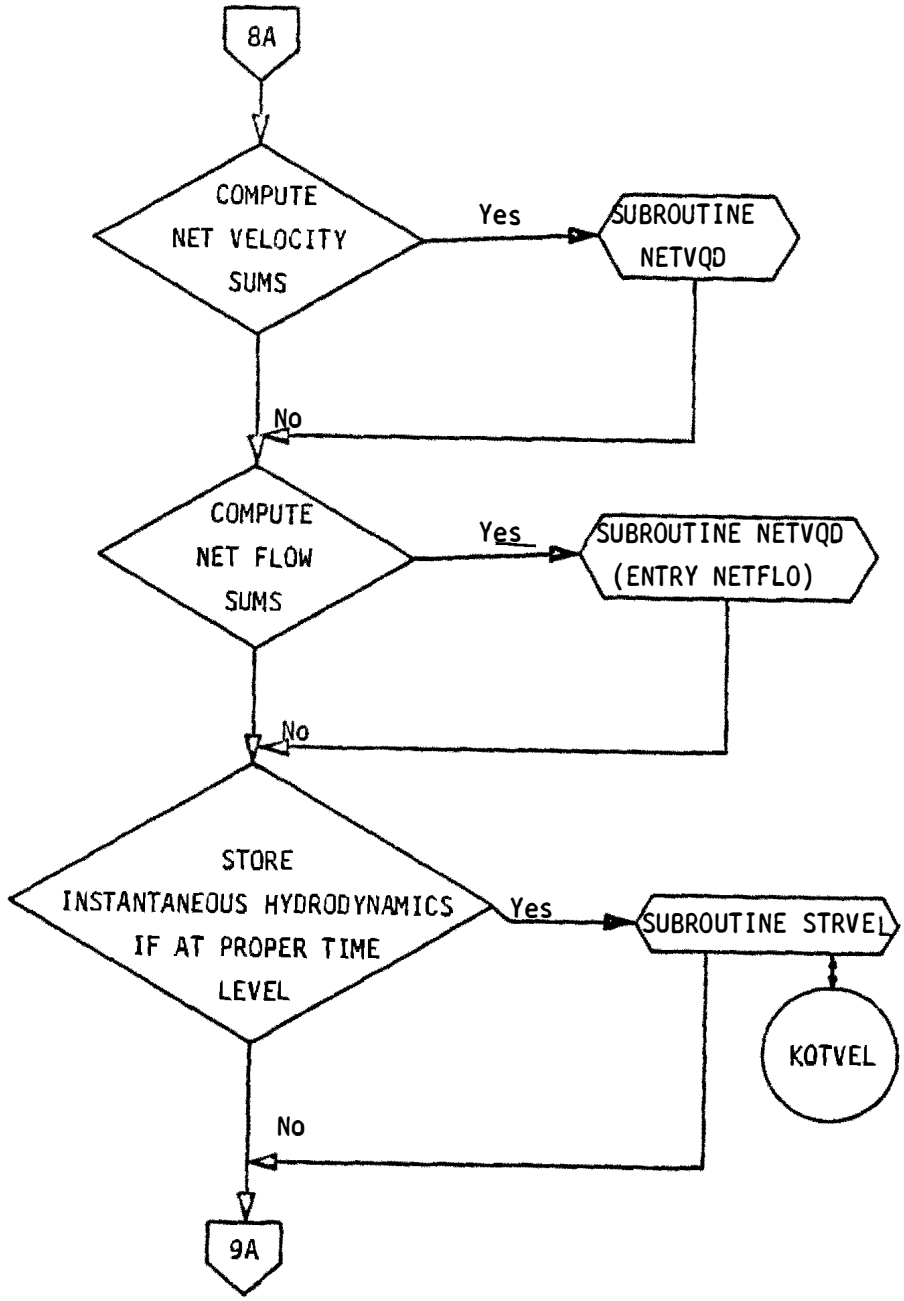

3A
READ TWO-DIGIT FLAG ASSIGNMENTS FOR CONVECTIVE ACCEL.
PRINT PROGRAM OPERATION INFORMATION AND MODEL CHARACTERISTICS
PRINT ALL INPUT DATA
SUBROUTINE PRINTI
SET CONSTANTS
4A

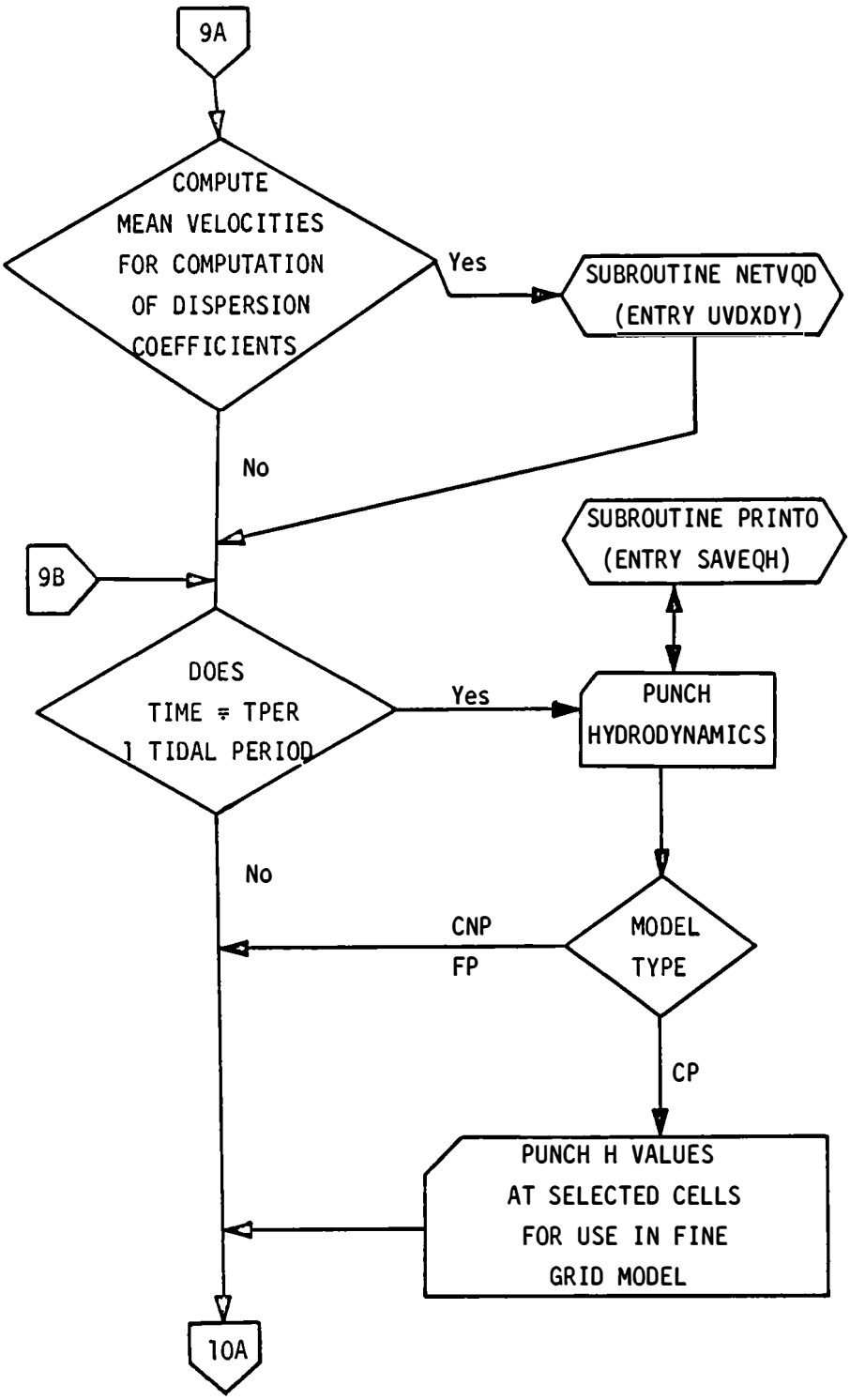

4A
ESTABLISH
INITIAL HYDRODYNAMICS
H, QX, QY
None
Tape
KINIQH
SET EQUAL TO ZERO
Card
CNP
CP
MODEL
TYPE
FP
SOURCE OF
INITIAL HYDRO-
DYNAMICS
Card
Tape
None
READ INITIAL H VALUES
DERIVED FROM COARSE
GRID MODEL
READ INITIAL EXCITING
DISCHARGES
KQFTP
5A

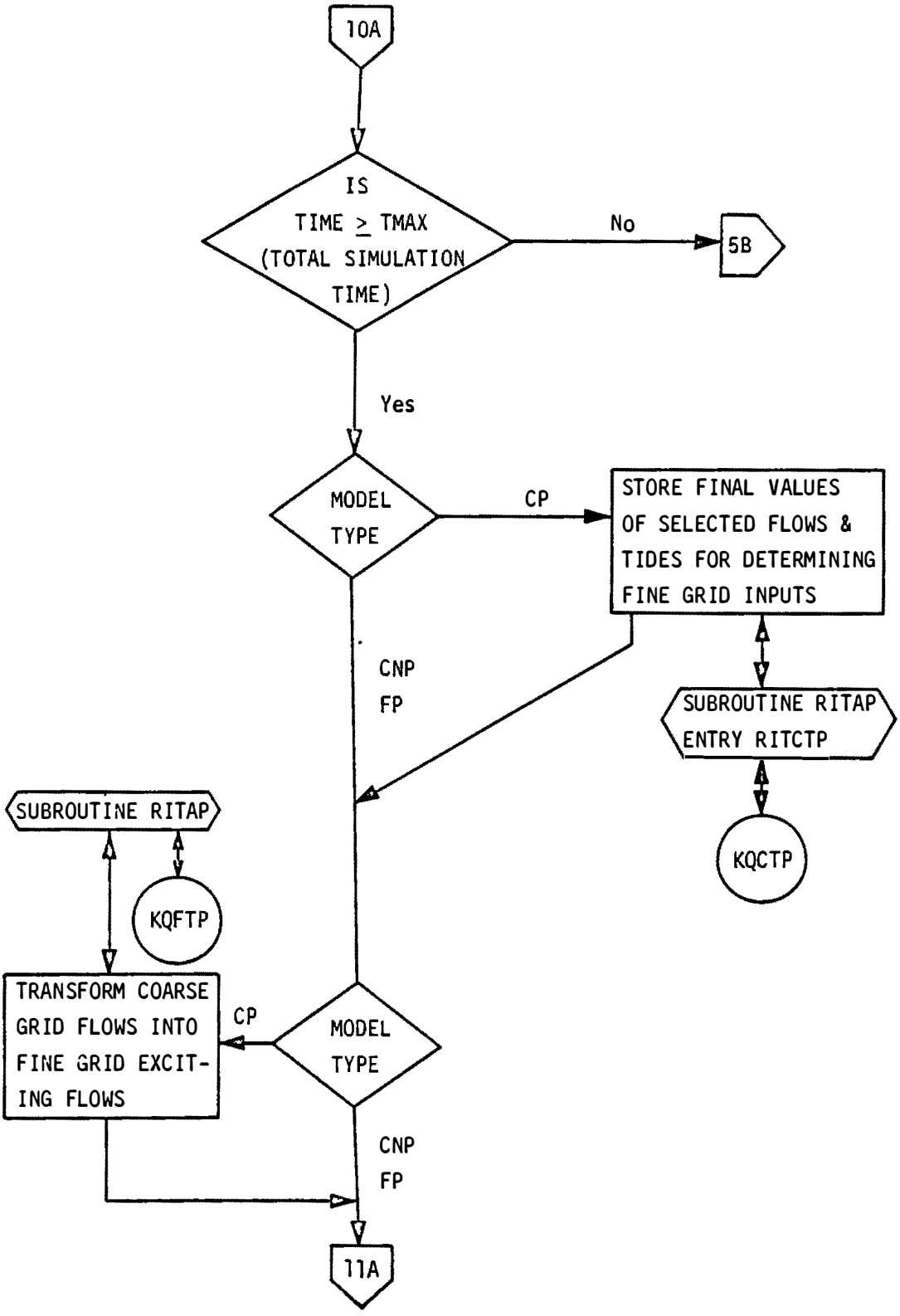

5A
INITIALIZE VARIABLES
TIDAL PLOTS DESIRED
Yes
STORE INITIAL HPLT VALUES ENTRY HPLOT SUBROUTINE PLOTHS
No
STORE INSTANTANEOUS HYDRODYN.
Yes
STORE INITIAL HYDRODYNAMICS SUBROUTINE STRVEL
KOTVEL
No
5B
INCREMENT TIME t = t + Δt
6A

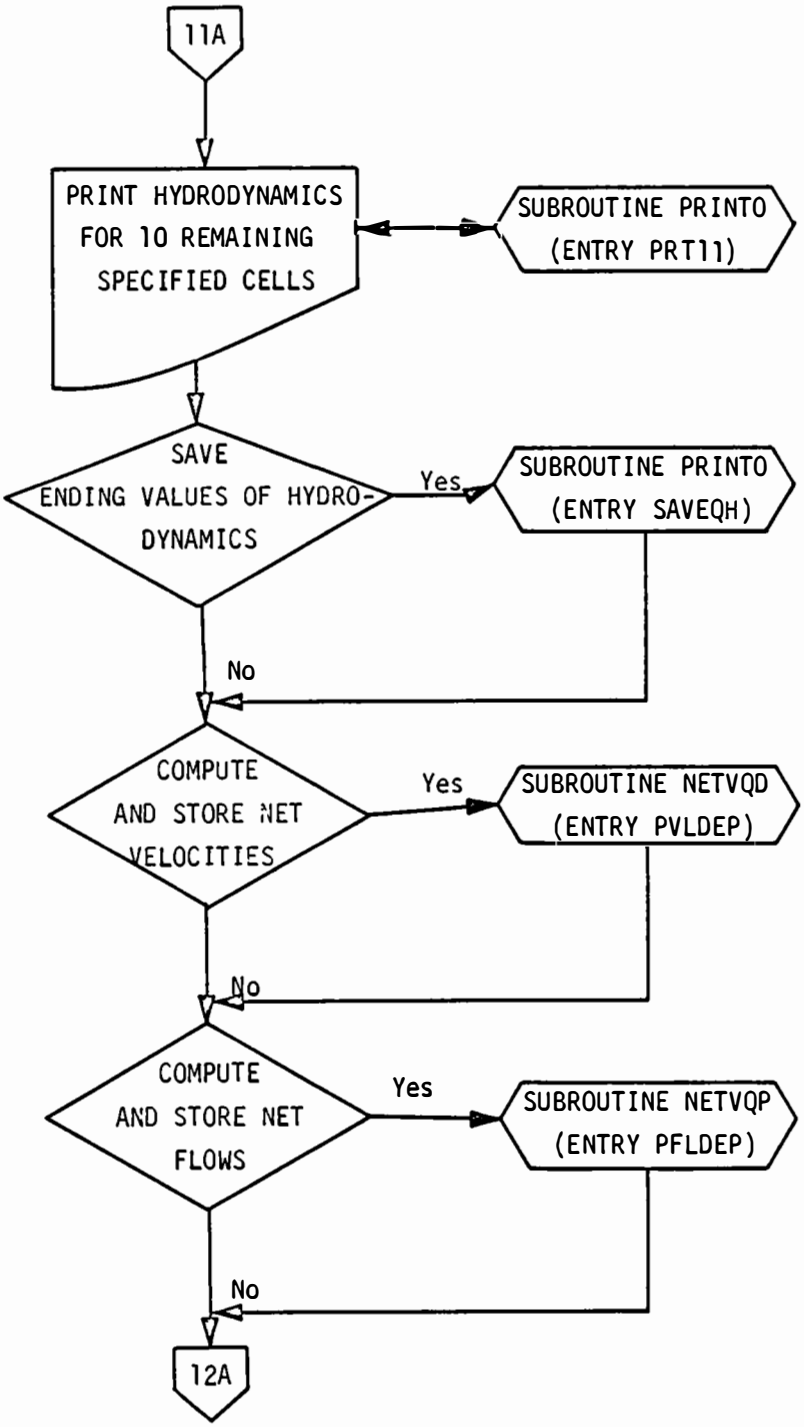

6A
SUBROUTINE CALTID
KQFTP
CNP
CP
MODEL TYPE
FP
READ EXCITING DISCHARGES
ESTABLISH EXCITING TIDES
COMPUTE BASIC HYDRODYNAMICS
SUBROUTINE CALCQH
MODEL TYPE
CNP
FP
CP
STORE SELECTED FLOWS & TIDES FOR DETER-MINING FINE GRID INPUTS
KQCTP
SUBROUTINE RITAP ENTRY RITCTP
7A

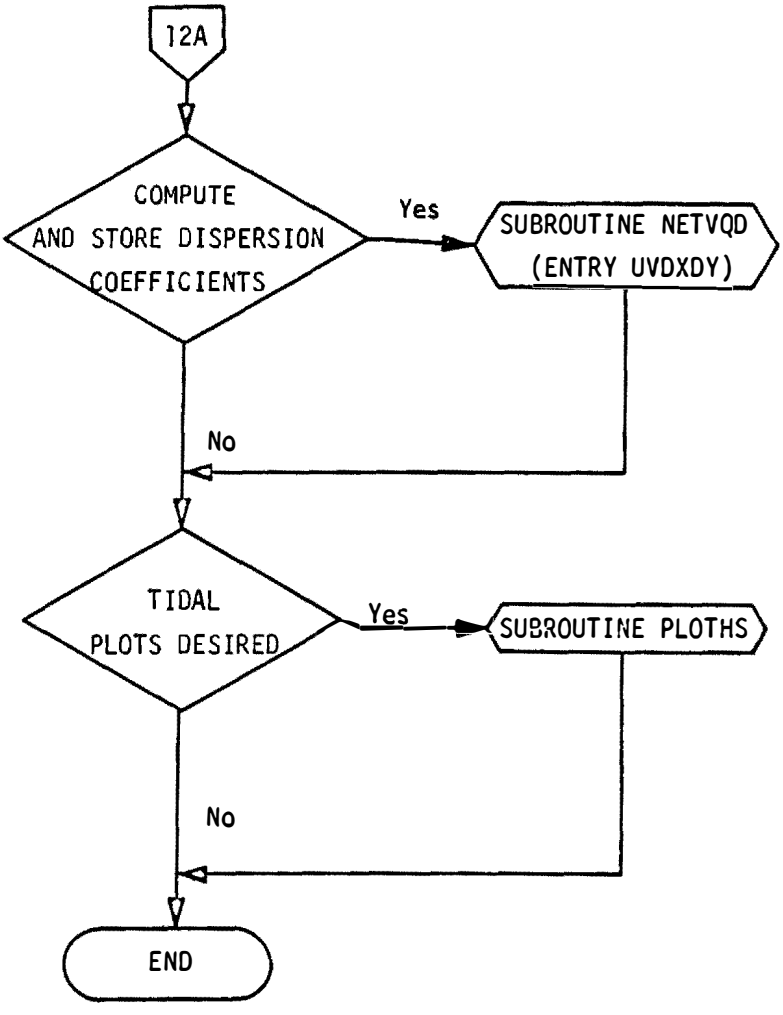

7A
PRINT HYDRODYNAMICS
FOR 10 SELECTED CELLS
if TIME = PRINT TIME
SUBROUTINE
PRINTO
TIDAL
PLOTS DESIRED
Yes
STORE HPLT VALUES
SUBROUTINE PLOTHS
ENTRY HPLOT
No
OPTIONS
REQUIRED OTHER
THAN BASIC
HYDRODYNAMICS
COMPUTATION
Yes
8A
No
9B


8A
COMPUTE NET VELOCITY SUMS
Yes
SUBROUTINE NETVQD
No
COMPUTE NET FLOW SUMS
Yes
SUBROUTINE NETVQD (ENTRY NETFLO)
No
STORE INSTANTANEOUS HYDRODYNAMICS IF AT PROPER TIME LEVEL
Yes
SUBROUTINE STRVEL
KQTVEL
No
9A


9A
COMPUTE MEAN VELOCITIES FOR COMPUTATION OF DISPERSION COEFFICIENTS
Yes
SUBROUTINE NETVQD (ENTRY UVDXDY)
No
SUBROUTINE PRINTO (ENTRY SAVEQH)
9B
DOES TIME = TPER 1 TIDAL PERIOD
Yes
PUNCH HYDRODYNAMICS
No
CNP
FP
MODEL TYPE
CP
PUNCH H VALUES AT SELECTED CELLS FOR USE IN FINE GRID MODEL
10A


10A
IS TIME ≥ TMAX (TOTAL SIMULATION TIME)
No
5B
Yes
MODEL TYPE
CP
STORE FINAL VALUES OF SELECTED FLOWS & TIDES FOR DETERMINING FINE GRID INPUTS
SUBROUTINE RITAP ENTRY RITCTP
KQCTP
CNP FP
SUBROUTINE RITAP
KQFTP
TRANSFORM COARSE GRID FLOWS INTO FINE GRID EXCITING FLOWS
CP
MODEL TYPE
CNP FP
11A


11A
PRINT HYDRODYNAMICS FOR 10 REMAINING SPECIFIED CELLS
SUBROUTINE PRINTO (ENTRY PRT11)
SAVE ENDING VALUES OF HYDRO-DYNAMICS
Yes
SUBROUTINE PRINTO (ENTRY SAVEQH)
No
COMPUTE AND STORE NET VELOCITIES
Yes
SUBROUTINE NETVQD (ENTRY PVLDEP)
No
COMPUTE AND STORE NET FLOWS
Yes
SUBROUTINE NETVQP (ENTRY PFLDEP)
No
12A


12A
COMPUTE
AND STORE DISPERSION
COEFFICIENTS
Yes
SUBROUTINE NETVQD
(ENTRY UVDXDY)
No
TIDAL
PLOTS DESIRED
Yes
SUBROUTINE PLOTHS
No
END

FORTRAN LISTING OF PROGRAM HYDTID

Following is a complete listing of the HYDTID program including all of its various subroutines. This listing corresponds to that used for simulation of the modified inlet conditions with the jetty in place (12 September 1969 and June 1967 simulations). To apply the program to the pre-project inlet conditions without the jetty (November 1964 simulation), there are four changes which have to be made. The sets of cards which have to be interchanged are identified in the program listing as Insert 1, Insert 2, Insert 3, and Subroutine RITAP. The replacement cards for each of the inserts and a listing of Subroutine RITAP, Version I, which applies to the modified inlet conditions, follows the complete HYDTID listing.

```
@I FOR,* HYDTID,HYDTID                                          05 FEB 73   12:06:27.041
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:27


   MAIN PROGRAM

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001   *CODE    004252
         0000   *DATA    001551
         0002   *BLANK   032477
         0003   MQ       010544
         0004   ALL      007133
         0005   MRQ      000003
         0006   MPRC     000002
         0007   MQPI     002311
         0010   PUN      004622


   EXTERNAL REFERENCES (BLOCK, NAME)

     0011   PRINTI          0012   ZEROS           0013   PRINTT          0014   HPLOT           0015   STRVEL
     0016   CALTID          0017   CALCQH          0020   PRINTO          0021   NETVQD          0022   NETFLO
     0023   UVDXDY          0024   SAVEQH          0025   RITCTP          0026   RITAP           0027   PRT11
     0030   PVLDEP          0031   PFLDEP          0032   UVDOUT          0033   PLOTHS          0034   SQRT
     0035   NRDU$           0036   NIO1$           0037   NIO2$           0040   NWDU$           0041   NERR2$
     0042   NREW$           0043   NRDC$           0044   NPRT$           0045   COS             0046   SIN
     0047   NRBU$           0050   NWDC$           0051   NSTOP$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

    0001   001714 1047G      0001   001725 1055G      0001   001735 1063G      0001   001746 1071G
    0001   001756 1077G      0001   001322 110L       0001   001767 1105G      0001   001777 1113G
    0001   002010 1121G      0001   002024 1131G      0001   002040 1141G      0001   002052 1151G
    0001   002111 1171G      0001   002131 1200G      0001   002132 1203G      0001   002167 1226G
    0001   002174 1232G      0000   001473 142F       0001   000023 143G       0001   004065 143L
    0000   001475 144F       0001   000030 147G       0001   003002 1547G      0001   003006 1553G
    0001   003020 1563G      0001   003024 1567G      0001   003045 1603G      0001   003061 1613G
    0001   000050 162G       0001   003113 1625G      0001   003114 1627G      0001   003131 1636G
```

0001 003132 1640G
0001 003272 1715G
0001 003323 1741G
0001 003405 1775G
0000 000633 202F
0001 002251 205L
0001 003564 2061G
0001 003674 2095L
0001 000113 210G
0001 003760 2147G
0001 004036 2164G
0000 000746 219F
0001 002543 228L
0000 001264 232F
0001 002416 235L
0000 001063 238F
0001 002356 242L
0000 001037 246F
0001 002445 249L
0001 002463 252L
0000 001276 257F
0001 000231 265G
0000 001003 274F
0001 001012 3002L
0001 001040 3006L
0001 000741 3012L
0001 000765 3016L
0001 001001 3020L
0000 000562 3026F
0000 000376 3035F
0000 000467 3046F
0001 000433 3062L
0001 000477 3066L
0000 000570 3077F
0001 000330 326G
0001 000373 343G
0001 001132 3666L
0001 003147 39L
0001 000611 436G
0001 003613 45L
0001 000670 472G
0001 001216 5160L
0001 001653 521L

0001 003161 1652G
0001 003301 1722G
0001 003330 1746G
0000 000624 199F
0001 000105 203G
0001 003551 2052G
0001 002243 207L
0001 004071 2096L
0001 002277 213L
0001 002273 215L
0000 000726 217F
0001 000137 223G
0000 001234 229F
0001 000152 232G
0001 000162 236G
0000 001077 239F
0001 002363 243L
0001 000204 246G
0001 002452 250L
0000 001115 253F
0000 001314 258F
0001 002500 271L
0001 002323 275L
0001 001021 3003L
0001 001043 3007L
0001 000750 3013L
0001 000770 3017L
0001 001063 3021L
0000 000503 3027F
0000 000313 3043F
0001 000274 305G
0001 000444 3063L
0001 000510 3067L
0001 004246 310L
0001 002530 329L
0001 002340 347L
0001 003072 37L
0001 000542 405G
0000 001467 443F
0001 000632 450G
0001 003373 5000L
0001 001540 518L
0001 001375 522L

0001 003162 1655G
0001 003307 1727G
0001 003336 1753G
0001 003406 2000G
0001 002230 203L
0000 000621 2055F
0001 002255 208L
0001 004113 2097L
0000 000710 214F
0001 002513 216L
0001 002306 218L
0001 002555 226L
0001 002561 230L
0001 002405 233L
0001 002423 236L
0001 002345 240L
0000 001016 244F
0001 002513 247L
0001 002456 251L
0000 001136 254F
0000 001344 259F
0001 002505 272L
0001 000253 277G
0001 001030 3004L
0001 001052 3008L
0001 000757 3014L
0001 000773 3018L
0001 001004 3022L
0000 000307 3032F
0000 000316 3044F
0000 000410 3057F
0001 000455 3064L
0001 000536 3068L
0001 000302 312G
0001 000342 335G
0000 000616 350F
0001 001117 3777L
0001 000547 411G
0001 000624 443G
0001 003560 453L
0001 001241 5150L
0001 001561 519L
0001 001264 5515L

0001 003264 1710G
0001 003315 1734G
0001 000072 176G
0001 002223 201L
0000 000643 204F
0000 000655 206F
0000 000665 209F
0000 000677 210F
0001 003750 2144G
0001 004033 2161G
0000 000765 2180F
0001 002535 227L
0000 001247 231F
0001 002412 234L
0000 001053 237F
0001 002352 241L
0000 001025 245F
0000 001212 248F
0001 000211 252G
0000 001156 255F
0000 001355 260F
0000 001200 273F
0001 001007 3001L
0001 001033 3005L
0001 000732 3011L
0001 000762 3015L
0001 000776 3019L
0000 000475 3025F
0000 000317 3033F
0000 000402 3045F
0001 000422 3061L
0001 000466 3065L
0000 000614 3076F
0001 002266 316L
0001 002400 337L
0001 002440 352L
0001 002767 38L
0001 000567 424G
0000 001465 444F
0001 000656 463G
0000 000577 516F
0001 001616 520L
0001 003457 599L

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0001    003421 60L      0001    003473 600L     0001    001163 604G     0001    001203 612G
0001    003626 661L     0001    003643 662L     0001    003652 667L     0000    001471 700F
0001    003230 701L     0000    000620 708F     0001    002161 709L     0001    002141 710L
0001    001404 714G     0001    001405 717G     0001    003254 720L     0001    001061 730L
0001    000362 732L     0001    001441 733G     0001    000521 733L     0001    000530 734L
0001    001710 738L     0001    002604 740L     0001    002612 741L     0001    002617 742L
0001    001455 743G     0001    003211 744L     0001    003214 745L     0001    003556 746L
0001    003737 747L     0001    004111 748L     0001    004133 750L     0001    004135 751L
0001    001467 752G     0001    001670 760L     0001    001673 761L     0001    001677 762L
0000    001330 763F     0000    001336 764F     0001    003542 770L     0001    003200 771L
0001    004140 772L     0001    004160 773L     0001    003217 774L     0001    003663 777L
0001    001166 780L     0000    000622 87F      0001    003674 888L     0001    002116 901L
0001    003523 99L      0001    004246 9999L    0000 R  000242 ANGCOR    0002    032436 AO
0002 R  021443 CB       0002 R  021777 CELSID   0000 R  000000 CODE      0002 R  032434 CON1
0002 R  032435 CON2     0002 R  021063 CT       0002    032442 C1       0002    032446 C2
0002    032452 C3       0002 R  000000 D        0000 R  000240 DATA      0002 R  032361 DS
0002 R  032365 DT       0002 R  032404 DTODS    0002 R  032432 DTO2DS    0002 R  032366 DT2
0000 R  000274 DUM      0000 R  000270 DUMDAT   0000 R  000267 DUMMY     0000 R  000252 DUMMY1
0000 R  000253 DUMMY2   0000 R  000255 DUMMY4   0000 R  000256 DUMMY5    0000 R  000257 DUMMY6
0000 R  000260 DUMMY7   0000 R  000261 DUMMY8   0000 R  000263 DUMMY9    0000 R  000264 DUMY10
0000 R  000227 DUM1     0000 R  000230 DUM2     0002 R  032427 E        0000 R  000220 ENDF
0000 R  000221 ENDT     0002 R  013755 F        0003 R  000000 FX       0003 R  002311 FY
0002 R  032362 G        0000 R  000223 GC       0002 R  032363 GCDTO4   0002 R  032364 GDTODS
0002    021347 GTIDE    0002    031103 G1       0002    031223 G41      0002    031343 G42
0002    031463 G43      0004 R  004622 H        0002    023677 HF       0000 R  000306 HKP
0002 R  004622 HN       0002    022667 HPLT     0002    022655 HPRT     0002    023763 HPRTA
0006 R  000000 HSHIFT   0000 I  000225 I        0002 I  022155 IBAR     0000 I  000246 IBASIC
0003 I  004624 ICLL     0000 I  000235 IDCARD   0002 I  031603 IDTIDE   0000 I  000271 IDUM
0000 I  000251 IDUMY1   0000 I  000262 IDUMY2   0000 I  000254 IDUMY3   0002 I  016266 IFLAG
0002 I  020673 IFLOW    0000 I  000107 IHKP     0000 I  000304 IK       0000 I  000300 ILB
0000 I  000301 ILF      0002 I  032357 IMAX     0000 I  000243 IMXJMX   0002 I  032421 INETFL
0000 I  000250 INEW     0002 I  032431 IODISP   0002 I  032424 IONFLO   0002 I  032423 IONVEL
0002 I  022561 IP       0002 I  032422 IPDATA   0000 I  000236 IQHIN    0002 I  032430 ISAVQH
0002 I  021157 ITIDE    0000 I  000237 IVLTAP   0000 I  000217 I$       0000 I  000226 J
0002 I  022333 JBAR     0003 I  006574 JCLL     0007 I  000000 JFLAG    0002 I  020767 JFLOW
0000 I  000152 JHKP     0000 I  000305 JK       0000 I  000302 JLB      0000 I  000303 JLF
0002 I  032360 JMAX     0002 I  022605 JP       0002 I  021253 JTIDE    0000 I  000231 K
0000 I  000244 KB       0000 I  000245 KD       0000 I  000276 KEPSAV   0000 I  000277 KG
0002 I  032412 KINDAT   0002 I  032413 KINIQH   0000 I  000232 KK       0002 I  032433 KO
0002 I  032420 KODISP   0002 I  032416 KONETF   0002 I  032415 KONETV   0002 I  032417 KOTVEL
0003 I  004623 KOUNT    0002    032410 KOUTCD   0002 I  032414 KOUTDA   0002    032411 KOUTPP
0000 I  000222 KPRINT   0005 I  000001 KQCTP    0005 I  000002 KQFTP    0005 I  000000 KRSOFN
0000 I  000233 KT       0002 I  032472 LINMAX   0002 I  032407 M        0000 I  000275 MA
```

```
0000 I 000266 N          0002 I 032402 NFLOW      0000 I 000234 NN         0002 I 032425 NPLOT
0000 I 000265 NPRPLT     0002 I 032401 NREEF      0002 I 032403 NTIDE      0002 R 032373 OMEGA
0002 R 032374 PHI        0002   032456 PHI1       0002   032462 PHI2       0002   032466 PHI3
0000 R 000224 PI         0002 R 032372 PTIME      0002 R 020577 QINFLO     0004 R 000000 QX
0002 R 007133 QXN        0004 R 002311 QY         0002 R 011444 QYN        0002 R 032426 R
0000 R 000003 REMARK     0000 R 000215 SIDE       0003 R 004622 SQTG       0002 R 022511 STATON
0002 R 032370 TCOUNT     0002 R 032376 THETA      0002   030643 THETA1     0002   030523 TI
0002 R 031677 TIDE1      0002 R 032013 TIDE2      0002 R 032127 TIDE3      0002 R 032243 TIDE4
0002 R 032473 TID1       0002 R 032474 TID2       0002 R 032475 TID3       0002 R 032476 TID4
0002 R 023731 TIM        0002 R 032367 TIME       0000 R 000241 TIMEIN     0006 R 000001 TIMTOT
0002 R 032406 TIMVEL     0002 R 032405 TMARK      0000 R 000247 TMAX       0000 R 000272 TNET
0000 R 000216 TOP        0002 R 032371 TPER       0000 R 000273 TPLOT      0002   022631 UAPRT
0002   025423 UAPRTA     0010   000000 UPLT       0002   022643 VAPRT      0002   027063 VAPRTA
0010   002311 VPLT       0002 R 032375 W          0002 R 030763 W2         0002 R 032377 XW
0002 R 032400 YW         0002 R 002311 Z          0002 R 021621 ZB
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00100     1*    C                                                                    HYD 0002
00100     2*    C               EXECUTIVE CONTROL ROUTINE (HYDTID)                          *NEW
00100     3*    C                    THIS IS THE BASIC CONTROL ELEMENT OF THE PROGRAM.  HYD 0004**-1
00100     4*    C               ALL PROGRAM CONTROL DATA, REAL SYSTEM DATA, AND MODEL   HYD 0005
00100     5*    C               DESCRIPTION DATA REQUIRED FOR COMPUTING TIDAL HYDRO-    HYD 0006
00100     6*    C               DYNAMICS ARE INPUT INTO THE PROGRAM BY THIS ROUTINE,
00100     7*    C               VARIABLES ARE INITIALIZED, CONSTANTS ARE SET, AND       HYD 0008
00100     8*    C               A PORTION OF THE BASIC INPUT DATA ARE ECHO-PRINTED.     HYD 0009
00100     9*    C               AT EVERY TIME STEP DURING THE SIMULATION PERIOD, CONTROL HYD 0010
00100    10*    C               IS TRANSFERRED FROM THIS ROUTINE TO APPROPRIATE SUB-    HYD 0011
00100    11*    C               ROUTINES FOR CALCULATION OF INSTANTANEOUS TIDAL         HYD 0012
00100    12*    C               AMPLITUDES AND FLOWS PER UNIT WIDTH THROUGHOUT THE BAY  HYD 0013
00100    13*    C               SYSTEM. AT THE OPTION OF THE USER CONTROL CAN ALSO      HYD 0014
00100    14*    C               BE TRANSFERRED TO THE APPROPRIATE SUBROUTINES FOR       HYD 0015
00100    15*    C               CALCULATION OF NET FLOWS, NET VELOCITIES, MEAN                *NEW
00100    16*    C               VELOCITIES, OR DISPERSION COEFFICIENTS.                       *NEW
00100    17*    C                                                                    HYD 0018**-2
00101    18*          COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),               *NEW
00101    19*         1F(35,35),IFLAG(35,35)                                                  *NEW
00103    20*          COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),       *NEW
00103    21*         *       GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),      **-3
00103    22*         *       STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
00103    23*         *       HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
00103    24*         *       VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
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00103    25*       *       G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
00103    26*       *       TIDE4(76)
00104    27*        COMMON IMAX,JMAX,DS,G,GDTO4,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,HYD 0028
00104    28*       *       OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,     HYD 0029
00104    29*       *       TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIQH,KOUTDA,KONETV,KONETF, HYD 0030
00104    30*       *       KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00104    31*       *       ISAVQH,IODISP,DT02DS,KO                                    HYD 0032
00105    32*        COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00106    33*        COMMON LINMAX,TID1,TID2,TID3,TID4
00107    34*        COMMON/MQ/FX(35,35),FY(35,35),SQTG,KOUNT,ICLL(1000),JCLL(1000)          *NEW
00110    35*        COMMON/ALL/QX(35,35),QY(35,35),H(35,35)                             *NEW
00111    36*        COMMON/MRQ/KRSOFN,KQCTP,KQFTP                                       *NEW
00112    37*        COMMON/MPRC/HSHIFT,TIMTOT                                           *NEW
00113    38*        COMMON/MQPI/JFLAG(35,35)                                            *NEW
00114    39*        COMMON/PUN/UPLT(35,35),VPLT(35,35)                                  *NEW
00115    40*        DIMENSION CODE(3), REMARK(4,17)                                  HYD 0037
00116    41*        DIMENSION IHKP(35),JHKP(35)                                         *NEW
00117    42*        DATA SIDE/4HSIDE/, TOP/4HTOP /                                   HYD 0041**-4
00122    43*        DATA CODE/4HCARD,4HTAPE,4HBOTH/, ENDF/4HENDF/, ENDT/4HENDT/      HYD 0042
00126    44*        DATA IFLOW/9,10,11,12,13,14,15,16,17,18,19,8*8,3*21,4*1,32,4,32,    *NEW
00126    45*       14,32,4,20,29,31,32,32,20,20,12,13,14,15,16,3*20,13*0/               *NEW
00130    46*        DATA JFLOW/11*4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,22,23,23,   *NEW
00130    47*       124,24,6*25,26,27,6*28,29,30,13*0/                                   *NEW
00130    48*   C                                                                    HYD 0043
00130    49*   C                                   STEP-01                          HYD 0044
00130    50*   C                                   SET CONSTANTS.                   HYD 0045
00130    51*   C                                                                    HYD 0046
00132    52*        KOUNT=0                                                             *NEW
00133    53*        KPRINT=1.0                                                          *NEW
00134    54*        PTIME = 60.0                                                     CORR0029
00135    55*        OMEGA = 7.29E-05                                                 CORR0028
00136    56*        G = 32.1725 * 3600.0                                             CORR0030
00137    57*        SQTG=SQRT(G)                                                        *NEW
00140    58*        GC = 32.1725 / 2.21                                              CORR0031
00141    59*        PI = 3.1416                                                      CORR0032
00141    60*   C                                                                    HYD 0066**-1
00141    61*   C                                   STEP-02                          HYD 0067
00141    62*   C                                   READ TITLE CARDS.                HYD 0068
00141    63*   C                                                                    HYD 0069
00142    64*        DO 3031 I = 1, 4                                                 HYD 0070
00145    65*        READ (5,3032) (D(I,J),J=1,20)                                    HYD 0071
00153    66*    3032 FORMAT (2A4,1X,F2.0,1X,17A4)                                    HYD 0072
00154    67*    3031 CONTINUE                                                        HYD 0073
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INSERT 1

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00156    68*          READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
00166    69*     3043 FORMAT (15X,17A4,///)
00167    70*     3044 FORMAT (20A4)
00170    71*          WRITE (6,2055)                                                    HYD 0075
00172    72*          WRITE (6,3033)                                                    HYD 0076
00174    73*     3033 FORMAT (15X,40H CARD   CARD                          ,          HYD 0077
00174    74*         *            40HDESCRIPTION                           ,//,       HYD 0078
00174    75*         *         15X,40H TYPE    NO                     ALPH,          HYD 0079
00174    76*         *            40HANUMERIC TITLE                        ,//,       HYD 0080
00174    77*         *         15X,40H ----   ----                       ----,          HYD 0081
00174    78*         *            40H-------------                         )          HYD 0082
00175    79*          DO 3034 I = 1, 4                                                  HYD 0083
00200    80*          K = D(I,3)                                                        HYD 0084
00201    81*          WRITE (6,3035) (D(I,J),J=1,2), K, (D(I,J),J=4,20)                 HYD 0085
00214    82*     3035 FORMAT (15X,2A4,1X,I2,1X,17A4)                                    HYD 0086
00215    83*     3034 CONTINUE                                                          HYD 0087
00217    84*          WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
00227 *DIAGNOSTIC*   THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00227    85*          IF (DUM1.NE.ENDT) GO TO 3777                                      HYD 0089
00231    86*          DO 3036 I = 1, 4                                                  HYD 0090
00234    87*          K = D(I,3)                                                        HYD 0091
00235    88*          DO 3036 J = 4, 20                                                 HYD 0092
00240    89*          KK = J - 3                                                        HYD 0093
00241    90*          REMARK(K,KK) = D(I,J)                                             HYD 0094
00242    91*     3036 CONTINUE                                                          HYD 0095
00242    92*    C                                                                       HYD 0096
00242    93*    C                                   STEP-03                             HYD 0097
00242    94*    C                                   READ PROGRAM CONTROL DATA.          HYD 0098
00242    95*    C                                                                       HYD 0099
00245    96*          DO 3042 I=1,9                                                                *NEW
00250    97*          READ (5,3045) (D(I,J),J=1,15)                                     HYD 0101**-1
00256    98*     3045 FORMAT (2A4,1X,F2.0,1X,10A4,6X,A4,13X,F2.0)                       CORR0007
00257    99*     3042 CONTINUE
00261   100*          READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
00271   101*          WRITE (6,2055)                                                    HYD 0105
00273   102*          WRITE (6,3057)                                                    HYD 0106
00275   103*     3057 FORMAT (15X,40H CARD   CARD              DESCRIPTION   ,         HYD 0107
00275   104*         *            40H        TYPE OF INPUT/OUTPUT   TAPE   ,//,      HYD 0108
00275   105*         *         15X,40H TYPE    NO                          ,         HYD 0109
00275   106*         *            40H        CARD,TAPE,BOTH, OR NONE   NO   ,//,      HYD 0110
00275   107*         *         15X,40H ----   ----                ----------  ,         HYD 0111
00275   108*         *            40H        ----------------------  ----   )         HYD 0112
00276   109*          DO 3058 I=1,9                                                                *NEW
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00301   110*          K = D(I,3)                                                        HYD 0114**-1
00302   111*          KK = D(I,15)                                                      HYD 0115
00303   112*          WRITE (6,3046) (D(I,J),J=1,2), K, (D(I,J),J=4,14), KK             HYD 0116
00317   113*     3058 CONTINUE                                                          HYD 0117
00321   114*     3046 FORMAT (15X,2A4,1X,I2,1X,10A4,6X,A4,12X,I2)                       HYD 0118
00322   115*          WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
00332  *DIAGNOSTIC*  THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00332   116*          IF (DUM1.NE.ENDF) GO TO 3777                                      HYD 0120
00334   117*          DO 3068 I=1,9                                                             *NEW
00337   118*          GO TO (732,732,732,732,732,732,732,733,734),I                             *NEW
00340   119*      732 K=D(I,3)                                                                  *NEW
00341   120*          KT = 0                                                            HYD 0123**-2
00342   121*          DO 3056 NN = 1, 3                                                 HYD 0124
00345  *DIAGNOSTIC*  THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00345   122*          IF (D(I,14).EQ.CODE(NN))KT = KT + NN                              HYD 0125
00347   123*     3056 CONTINUE                                                          HYD 0126
00351   124*          GO TO (3061, 3062, 3063, 3064, 3065, 3066, 3067), K               HYD 0127
00352   125*     3061 IDCARD = KT                                                       HYD 0128
00353   126*          KINDAT = D(I,15)                                                  HYD 0129
00354   127*          GO TO 3068                                                        HYD 0130
00355   128*     3062 IQHIN = KT                                                        HYD 0131
00356   129*          KINIQH = D(I,15)                                                  HYD 0132
00357   130*          GO TO 3068                                                        HYD 0133
00360   131*     3063 IONVEL = KT                                                       HYD 0134
00361   132*          KONETV = D(I,15)                                                  HYD 0135
00362   133*          GO TO 3068                                                        HYD 0136
00363   134*     3064 IONFLO = KT                                                       HYD 0137
00364   135*          KONETF = D(I,15)                                                  HYD 0138
00365   136*          GO TO 3068                                                        HYD 0139
00366   137*     3065 IODISP = KT                                                       HYD 0140
00367   138*          KODISP = D(I,15)                                                  HYD 0141
00370   139*          GO TO 3068                                                        HYD 0142
00371   140*     3066 ISAVQH = KT                                                       HYD 0143
00372   141*          KOUTDA = D(I,15)                                                  HYD 0144
00373   142*          GO TO 3068                                                        HYD 0145
00374   143*     3067 IVLTAP = KT
00375   144*          KOTVEL = D(I,15)                                                  HYD 0147
00376   145*          GO TO 3068                                                                *NEW
00377   146*      733 KQFTP=D(I,15)                                                             *NEW
00400   147*          GO TO 3068                                                                *NEW
00401   148*      734 KQCTP=D(I,15)                                                             *NEW
00401   149*    C                                                                               *NEW
00401   150*    C       KQFTP COMPILED FROM KQCTP IN COARSE GRID MODEL.                         *NEW
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00401   151*   C      KQFTP READ AND KQCTP UNUSED IN FINE GRID MODEL.                          *NEW
00401   152*   C                                                                               *NEW
00402   153*    3068 CONTINUE                                                                  HYD 0148
00402   154*   C                                                                               HYD 0149
00402   155*   C                                    STEP-04                                    HYD 0150
00402   156*   C                                    READ BASIC MODEL OPERATION                 HYD 0151
00402   157*   C                                    PARAMETERS.                                HYD 0152
00402   158*   C                                                                               HYD 0153
00404   159*         DO 3024 I=1,20                                                            *NEW
00407   160*         READ (5,3025) (D(I,J),J=1,19)                                             HYD 0155**-1
00415   161*    3025 FORMAT (2A4,2X,F2.0,2X,A1,14A4,2X,F7.0)                                   HYD 0156
00416   162*    3024 CONTINUE                                                                  HYD 0157
00420   163*         READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
00430   164*         WRITE (6,2055)                                                            HYD 0159
00432   165*         WRITE (6,3027)                                                            HYD 0160
00434   166*    3027 FORMAT (15X,40H CARD   CARD                        DESCR,                 HYD 0161
00434   167*        *            40HIPTION                              VALUE,/,               HYD 0162
00434   168*        *       15X,40H TYPE    NO                                                CORR0009
00434   169*        *           ,40H                                        ,/,                HYD 0164
00434   170*        *        15X,40H ----   ----                          -----,             HYD 0165
00434   171*        *            40H------                                -----)             HYD 0166
00435   172*         DO 3028 I=1,20                                                            *NEW
00440   173*         K = D(I,3)                                                                HYD 0168**-1
00441   174*         WRITE (6,3026) (D(I,J),J=1,2), K, (D(I,J),J=4,19)                         HYD 0169
00454   175*    3026 FORMAT (15X,2A4,2X,I2,2X,A1,14A4,2X,F7.1)                                 HYD 0170
00455   176*    3028 CONTINUE                                                                  HYD 0171
00457   177*         WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
00467  *DIAGNOSTIC*  THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00467   178*         IF (DUM1.NE.ENDF) GO TO 3777                                              HYD 0173
00471   179*         DO 3021 I=1,20                                                            *NEW
00474   180*         K = D(I,3)                                                                HYD 0175**-1
00475   181*         DATA = D(I,19)                                                            HYD 0176
00476   182*         GO TO (3011, 3012, 3013, 3014, 3015, 3016, 3017, 3018, 3022,              HYD 0177
00476   183*        *       3019, 3020, 3001, 3002, 3003, 3004, 3005, 3006, 3007,
00476   184*        *     3008,730),K                                                         *NEW
00477   185*    3011 KRSOFN=DATA                                                               *NEW
00477   186*   C                                                                               *NEW
00477   187*   C      KRSOFN = 1 FOR COARSE GRID PRODUCTION RUN.                               *NEW
00477   188*   C      KRSOFN = 2 FOR FINE GRID PRODUCTION RUN.                                 *NEW
00477   189*   C      KRSOFN = 3 FOR COARSE GRID NON-PRODUCTION RUN.                           *NEW
00477   190*   C                                                                               *NEW
00500   191*         GO TO 3021                                                                HYD 0180**-2
00501   192*    3012 IPDATA = DATA                                                             HYD 0181
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00502   193*          GO TO 3021                                          HYD 0182
00503   194*     3013 NPLOT  = DATA                                       HYD 0183
00504   195*          GO TO 3021                                          HYD 0184
00505   196*     3014 TIMTOT = DATA                                       HYD 0185
00506   197*          GO TO 3021                                          HYD 0186
00507   198*     3015 TIMEIN = DATA                                       HYD 0187
00510   199*          GO TO 3021                                          HYD 0188
00511   200*     3016 TIMVEL = DATA                                       HYD 0189
00512   201*          GO TO 3021                                          HYD 0190
00513   202*     3017 TPER   = DATA                                       HYD 0191
00514   203*          GO TO 3021                                          HYD 0192
00515   204*     3018 W      = DATA                                       HYD 0193
00516   205*          GO TO 3021                                          HYD 0194
00517   206*     3019 R      = DATA                                       HYD 0195
00520   207*          GO TO 3021                                          HYD 0196
00521   208*     3020 E      = DATA                                       HYD 0197
00522   209*          GO TO 3021                                          HYD 0198
00523   210*     3022 THETA  = DATA                                       HYD 0199
00524   211*          GO TO 3021                                          CORR0013
00525   212*     3001 ANGCOR = DATA                                       CORR0014
00526   213*          GO TO 3021                                          CORR0015
00527   214*     3002 IMAX   = DATA                                       CORR0016
00530   215*          GO TO 3021                                          CORR0017
00531   216*     3003 JMAX   = DATA                                       CORR0018
00532   217*          GO TO 3021                                          CORR0019
00533   218*     3004 DS     = DATA                                       CORR0020
00534   219*          GO TO 3021                                          CORR0021
00535   220*     3005 DT     = DATA                                       CORR0022
00536   221*          DT=DT/60.                                                    *NEW
00537   222*          GO TO 3021                                          CORR0023
00540   223*     3006 PHI    = DATA                                       CORR0024
00541   224*          GO TO 3021
00542   225*     3007 LINMAX = DATA
00543   226*          GO TO 3021
00544   227*     3008 INETFL = DATA
00545   228*          GO TO 3021                                                   *NEW
00546   229*      730 HSHIFT=DATA                                                  *NEW
00547   230*     3021 CONTINUE                                            HYD 0200
00551   231*          IMXJMX = IMAX * JMAX                                CORR0025
00552   232*          KB = 0
00553   233*          KT = 0                                              CORR0026
00554   234*          KD = 0                                              CORR0027
00555   235*          GCDT04 = 1.26 * GC * DT                             CORR0033
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0.63

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00556   236*          GDTODS = G * DT / (2.0 * DS)                                                    CORR0034
00557   237*          DTODS = DT / DS                                                                 CORR0035
00560   238*          DTO2DS = DTODS / 2.0                                                            CORR0036
00561   239*          DT2 = DT / 2.0                                                                  CORR0037
00562   240*          KO = 0                                                                          CORR0038
00563   241*          GO TO 3666                                                                      HYD 0201
00564   242*     3777 WRITE (6,2055)                                                                  HYD 0202
00566   243*          WRITE (6,3077)                                                                  HYD 0203
00570   244*     3077 FORMAT (15X,29H*** THERE WAS A DATA BUST ***)                                   HYD 0204
00571   245*          GO TO 9999                                                                      CORR0039
00572   246*     3666 CONTINUE                                                                        HYD 0205
00573   247*      497 CONTINUE                                                                        HYD 0218*-12
00574   248*          IBASIC = IONFLO + INETFL + IONVEL + IODISP + IVLTAP
00575   249*          TMAX = TIMEIN+TIMTOT                                                            HYD 0222
00575   250*      C                                                                                   HYD 0223
00575   251*      C                                   STEP-05                                         HYD 0224
00575   252*      C                                   READ BASIC CELL DATA.                           HYD 0225
00575   253*      C                                                                                   HYD 0226
00576   254*          IF (IDCARD.EQ.2) REWIND KINDAT                                                  CORR0040
00600   255*          INEW = IDCARD+1                                                                 HYD 0228
00601   256*          IF(KRSOFN.EQ.2)GO TO 780                                                                *NEW
00603   257*          DO 781 M=1,60                                                                           *NEW
00606   258*          IFLOW(M)=0                                                                              *NEW
00607   259*      781 JFLOW(M)=0                                                                              *NEW
00611   260*      780 DO 517 K=1,IMXJMX                                                                       *NEW
00614   261*          GO TO (3777,5160,5150,3777), INEW                                               CORR0041**-1
00615   262*     5160  READ 516,I,J,IDUMY1,DUMMY1,DUMMY2,IDUMY3,DUMMY4,DUMMY5,DUMMY6,                 HYD 0231
00615   263*          *DUMMY7,DUMMY8,IDUMY2,DUMMY9,DUMY10                                             HYD 0232
00635   264*      516 FORMAT (16X,3(I2,1X),F4.0,1X,F5.3,1X,I2,1X,F7.0,                                        *NEW
00635   265*          *        1X,2(F5.3,1X,F4.1,1X),I2,1X,2A4)                                               **-1
00636   266*          GO TO 5515                                                                      HYD 0235
00637   267*     5150  READ (KINDAT,516) I,J,IDUMY1,DUMMY1,DUMMY2,IDUMY3,DUMMY4,DUMMY5,               HYD 0236
00637   268*          *DUMMY6,DUMMY7,DUMMY8,IDUMY2,DUMMY9,DUMY10                                      HYD 0237
00657   269*     5515  IFLAG(I,J) = IDUMY1                                                           HYD 0238
00660   270*          Z(I,J)= DUMMY1                                                                  HYD 0239
00661   271*          Z(I,J) = Z(I,J)-HSHIFT                                                                  *NEW
00662   272*          IF (IFLAG(I,J).EQ.1) Z(I,J) = 9999.                                                     *NEW
00664   273*          IF(IFLAG(I,J).EQ.1)GO TO 110                                                            *NEW
00666   274*          KOUNT=KOUNT+1                                                                           *NEW
00667   275*          ICLL(KOUNT)=I                                                                           *NEW
00670   276*          JCLL(KOUNT)=J                                                                           *NEW
00671   277*      110 CONTINUE                                                                                *NEW
00672   278*          F(I,J) = DUMMY2                                                                 HYD 0240
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00673   279*          H(I,J) = IDUMY3                                                    HYD 0241
00674   280*          HN(I,J) = DUMMY4                                                   HYD 0242
00675   281*          QX(I,J) = DUMMY5                                                   HYD 0243
00676   282*          QXN(I,J) = DUMMY6                                                  HYD 0244
00677   283*          QY(I,J) = DUMMY7                                                   HYD 0245
00700   284*          QYN(I,J) = DUMMY8                                                  HYD 0246
00701   285*          IF (IDUMY2.LE.0.OR.IDUMY2.GT.20)GO TO 522                                 *NEW
00703   286*          NPRPLT = IDUMY2                                                    HYD 0248**-1
00704   287*          STATON(1,NPRPLT) = DUMMY9                                          HYD 0249
00705   288*          STATON(2,NPRPLT) = DUMY10                                          HYD 0250
00706   289*          IP(NPRPLT) = I                                                     HYD 0251
00707   290*          JP(NPRPLT) = J                                                     HYD 0252
00710   291*    522   CONTINUE                                                         HYD 0253
00711   292*    517   CONTINUE                                                         HYD 0254
00713   293*          DO 856 J=1,JMAX                                                           *NEW
00716   294*          DO 856 I=1,IMAX                                                           *NEW
00721   295*          FX(I,J)=(F(I,J)+F(I+1,J))**2                                              *NEW
00722   296*      856 FY(I,J)=(F(I,J)+F(I,J+1))**2                                              *NEW
00725   297*          IF (IDCARD.EQ.2) REWIND KINDAT                                     CORR0043
00727   298*          READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
00737   299*          WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
00747  *DIAGNOSTIC*  THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00747   300*          IF (DUM1.NE.ENDF) GO TO 3777                                       CORR0048
00751   301*          DO 450 N=1,KOUNT                                                          *NEW
00754   302*          I=ICLL(N)                                                                 *NEW
00755   303*          J=JCLL(N)                                                                 *NEW
00756   304*          IDUMY3 = H(I,J)                                                    HYD 0258**-2
00757   305*          DUMMY4 = HN(I,J)                                                   HYD 0259
00760   306*          DUMMY5 = QX(I,J)                                                   HYD 0260
00761   307*          DUMMY6 = QXN(I,J)                                                  HYD 0261
00762   308*          DUMMY7 = QY(I,J)                                                   HYD 0262
00763   309*          DUMMY8 = QYN(I,J)                                                  HYD 0263
00764   310*          IF (IDUMY3.LE.0.0000001) GO TO 518                                 HYD 0265
00766   311*          KT = KT+1                                                          HYD 0266
00767   312*          ITIDE(KT) = I                                                      HYD 0267
00770   313*          JTIDE(KT) = J                                                      HYD 0268
00771   314*          IDTIDE(KT) = IDUMY3                                                HYD 0269
00772   315*          CT(KT) = 2.0                                                              *NEW
00773   316*    518   CONTINUE                                                         HYD 0271**-1
00774   317*          DUMMY = ABS(DUMMY4)                                                HYD 0272
00775   318*          IF (DUMMY.LE.0.001) GO TO 519                                      HYD 0273
00777   319*          KD = KD+1                                                          HYD 0274
01000   320*          IFLOW(KD) = I                                                      HYD 0275
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01001   321*          JFLOW(KD) = J                                                    HYD 0276
01002   322*          GINFLO(KD) = DUMMY4                                              HYD 0277
01003   323*    519   CONTINUE                                                        HYD 0278
01004   324*          IF (DUMMY5.LE.0.000001) GO TO 520                                HYD 0279
01006   325*          KB = KB+1                                                        HYD 0280
01007   326*          IBAR(KB) = I                                                     HYD 0281
01010   327*          JBAR(KB) = J                                                     HYD 0282
01011   328*          CELSID(KB) = SIDE                                                HYD 0283
01012   329*          CB(KB) = DUMMY5                                                  HYD 0284
01013   330*          ZB(KB)=DUMMY6                                                          *NEW
01014   331*          ZB(KB) = ZB(KB)-HSHIFT                                                 *NEW
01015   332*          IF(ZB(KB).GT.0.)CB(KB)=0.5                                             *NEW
01017   333*    520   CONTINUE                                                        HYD 0286**-1
01020   334*          IF (DUMMY7.LE.0.000001) GO TO 521                                HYD 0287
01022   335*          KB = KB+1                                                        HYD 0288
01023   336*          IBAR(KB) = I                                                     HYD 0289
01024   337*          JBAR(KB)=J                                                       HYD 0290
01025   338*          CELSID(KB) = TOP                                                 HYD 0291
01026   339*          CB(KB) = DUMMY7                                                  HYD 0292
01027   340*          ZB(KB)=DUMMY8                                                          *NEW
01030   341*          ZB(KB) = ZB(KB)-HSHIFT                                                 *NEW
01031   342*          IF(ZB(KB).GT.0.)CB(KB)=0.5                                             *NEW
01033   343*    521   CONTINUE                                                        HYD 0294**-1
01034   344*    450   CONTINUE                                                        HYD 0295
01036   345*          NREEF=KB                                                         HYD 0296
01037   346*          GO TO (761,760,761),KRSOFN                                             *NEW
01037   347*    C                                                                            *NEW
01037   348*    C     NFLOW MUST BE ASSIGNED ANOTHER VALUE FOR OTHER CONFIGURATIONS.         *NEW
01037   349*    C                                                                            *NEW
01040   350*      760 NFLOW=47          INSERT 2                                           *NEW
01041   351*          GO TO 762                                                          *NEW
01042   352*      761 NFLOW=KD                                                           *NEW
01043   353*          NTIDE=KT                                                           *NEW
01044   354*      762 GO TO (738,901,738),KRSOFN                                         *NEW
01044   355*    C                                                                    HYD 0299**-2
01044   356*    C                                   STEP-06                          HYD 0300
01044   357*    C                                   READ EXCITATION TIDE DATA.       HYD 0301
01044   358*    C                                   FOR COARSE GRID MODELS ONLY.           *NEW
01044   359*    C                                                                    HYD 0302
01045   360*      738 READ 3044,(DUMDAT,I=1,3)                                             *NEW
01053   361*          READ 3076, (TIDE1(I), I=1,26)                                      **-1
01061   362*          READ 3044, (DUMDAT, I=1,3)
01067   363*          READ 3076, (TIDE2(I), I=1,26)
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01075   364*          READ 3044, (DUMDAT, I=1,3)
01103   365*          READ 3076, (TIDE3(I), I=1,26)
01111   366*          READ 3044,(DUMDAT,I=1,3)                                        *NEW
01117   367*          READ 3076,(TIDE4(I),I=1,26)                                     *NEW
01125   368*          READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
01135   369*          WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
01145  *DIAGNOSTIC*  THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
01145   370*          IF (DUM1.NE.ENDF) GO TO 3777
01147   371*     3076 FORMAT (16F5.2)
01150   372*          DO 301 I=1,26                                                   *NEW
01153   373*          TIDE1(I) = TIDE1(I)-HSHIFT                                      *NEW
01154   374*          TIDE2(I) = TIDE2(I)-HSHIFT                                      *NEW
01155   375*          TIDE3(I) = TIDE3(I)-HSHIFT                                      *NEW
01156   376*          TIDE4(I)=TIDE4(I)-HSHIFT                                        *NEW
01157   377*      301 CONTINUE                                                        *NEW
01161   378*          TID1 = TIDE1(1)
01162   379*          TID2 = TIDE2(1)
01163   380*          TID3 = TIDE3(1)
01164   381*          TID4=TIDE4(1)                                                   *NEW
01164   382*    C                                                                     *NEW
01164   383*    C                                    STEP 07                          *NEW
01164   384*    C                                    CELL IDENTIFICATION FOR STORING H-VALUES  *NEW
01164   385*    C                                    COARSE GRID PRODUCTION.          *NEW
01164   386*    C                                                                     *NEW
01165   387*          IF(KRSOFN.EQ.3)GO TO 901                                        *NEW
01167   388*          READ(5,350)(IHKP(N),JHKP(N),N=1,32)                             *NEW
01176   389*      350 FORMAT(20(2I2))                                                 *NEW
01176   390*    C                                                          HYD 0313**-1
01176   391*    C                                    STEP 08                          *NEW
01176   392*    C                                    INPUT TWO-DIGIT FLAGS FOR CONVECTION.  *NEW
01176   393*    C                                                          HYD 0317**-2
01177   394*      901 DO 711 I=1,IMAX                                                 *NEW
01202   395*          DO 711 J=1,JMAX                                                 *NEW
01205   396*      711 JFLAG(I,J)=11                                                   *NEW
01210   397*      710 READ(5,708)I,J,IDUM                                             *NEW
01215   398*          IF(I.EQ.0)GO TO 709                                             *NEW
01217   399*          JFLAG(I,J)=IDUM                                                 *NEW
01220   400*          GO TO 710                                                       *NEW
01221   401*      708 FORMAT(3I4)                                                     *NEW
01221   402*    C                                                                     *NEW
01221   403*    C                                    STEP 09                          *NEW
01221   404*    C                                    PRINT PROGRAM CONTROL INFORMATION.  *NEW
01221   405*    C                                                                     *NEW
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01222   406*     709 PRINT 2055                                                          *NEW
01224   407*    2055  FORMAT(1H1)                                                  HYD 0322**-1
01225   408*          DO 3039 I = 1, 4                                             HYD 0327
01230   409*          WRITE (6,87) (REMARK(I,J),J=1,17)                            HYD 0328
01236   410*       87 FORMAT (15X,17A4,/)                                          HYD 0329
01237   411*     3039 CONTINUE                                                     HYD 0330
01241   412*          PRINT 2055                                                   HYD 0331
01243   413*          PRINT 199                                                    HYD 0332
01245   414*     199  FORMAT (10X,27HMODEL-OPERATION INFORMATION,/)               HYD 0333
01246   415*          IF(IDCARD.EQ.0) GO TO 201                                    HYD 0336**-1
01250   416*          PRINT 202                                                    HYD 0337
01252   417*     202  FORMAT(15X,37HBASIC CELL INPUT DATA READ FROM CARDS,/)      HYD 0338
01253   418*          GO TO 203                                                    HYD 0339
01254   419*     201  PRINT 204,KINDAT                                            HYD 0340
01257   420*     204  FORMAT(15X,46HBASIC CELL INPUT DATA READ FROM TAPE UNIT NO. ,I2,/)HYD 0341
01260   421*     203  CONTINUE                                                     HYD 0342
01261   422*          IF(IQHIN.EQ.0)GO TO 205                                      HYD 0343
01263   423*          IF(IQHIN.EQ.2)GO TO 207                                      HYD 0344
01265   424*          PRINT 206                                                    HYD 0345
01267   425*     206  FORMAT(15X,37HINITIAL HYDRODYNAMICS READ FROM CARDS,/)      HYD 0346
01270   426*          GO TO 208                                                    HYD 0347
01271   427*     207  PRINT 209,KINIQH                                            HYD 0348
01274   428*     209  FORMAT(15X,46HINITIAL HYDRODYNAMICS READ FORM TAPE UNIT NO. ,I2,/)HYD 0349
01275   429*          GO TO 208                                                    HYD 0350
01276   430*     205  PRINT 210                                                    HYD 0351
01300   431*     210  FORMAT(15X,39HINITIAL HYDRODYNAMICS SET EQUAL TO ZERO,/)    HYD 0352
01301   432*     208  CONTINUE                                                     HYD 0353
01302   433*          GO TO (213, 316, 215), IPDATA                                CORR0076
01303   434*     316 PRINT 214                                                     CORR0077
01305   435*     214  FORMAT(15X,68HALL INPUT DATA (EXCLUDING INITIAL HYDRODYNAMICS) PRIHYD 0357
01305   436*         .NTED AND LABELED,/)                                         HYD 0358
01306   437*          GO TO 213                                                    HYD 0359
01307   438*     215  PRINT 217                                                    HYD 0360
01311   439*     217  FORMAT(15X,83HALL INPUT DATA (EXCLUDING INITIAL HYDRODYNAMICS AND HYD 0361
01311   440*         .MANNINGS N) PRINTED AND LABELED,/)                          HYD 0362
01312   441*     213  CONTINUE                                                     HYD 0363
01313   442*          IF (IBASIC.NE.0) GO TO 218                                   CORR0078
01315   443*          PRINT 219                                                    HYD 0365
01317   444*     219  FORMAT(15X,76HONLY TIDAL AMPLITUDES AND FLOWS WERE COMPUTED AND PRHYD 0366
01317   445*         .INTED FOR SELECTED CELLS,/)                                 HYD 0367
01320   446*          GO TO 216                                                    HYD 0368
01321   447*     218  PRINT 2180                                                   HYD 0369
01323   448*    2180  FORMAT(15X,71HTIDAL AMPLITUDES AND FLOWS WERE COMPUTED AND PRINTEDHYD 0370
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01323   449*        . FOR SELECTED CELLS,/)                                          HYD 0371
01324   450*         IF (INETFL.NE.1) GO TO 275
01326   451*         PRINT 274
01330   452*     274 FORMAT (15X,52HNET FLOWS WERE COMPUTED FOR ALL CELLS BUT NOT STORE
01330   453*        *D,/)
01331   454*         GO TO 243
01332   455*     275 CONTINUE
01333   456*         INEW = IONFLO + 1                                                CORR0079
01334   457*         GO TO (240, 347, 242, 241), INEW                                 CORR0080
01335   458*     347 PRINT 245                                                        CORR0081
01337   459*         GO TO 243                                                        HYD 0380
01340   460*   240   PRINT 244                                                       HYD 0381
01342   461*     244 FORMAT (15X,27HNET FLOWS WERE NOT COMPUTED,/)
01343   462*         GO TO 243                                                        HYD 0384
01344   463*   241   PRINT 245                                                       HYD 0385
01346   464*   245   FORMAT(15X,45HNET FLOWS FOR ALL CELLS WERE PUNCHED ON CARDS,/)  HYD 0386
01347   465*   242   PRINT 246,KONETF                                               HYD 0388
01352   466*   246   FORMAT(15X,53HNET FLOWS FOR ALL CELLS WERE STORED ON TAPE UNIT NO.HYD 0389
01352   467*        . ,I2,/)                                                         HYD 0390
01353   468*   243   CONTINUE                                                       HYD 0391
01354   469*         INEW = IONVEL + 1                                                CORR0082
01355   470*         GO TO (233, 337, 235, 234), INEW                                 CORR0083
01356   471*     337 PRINT 238                                                        CORR0084
01360   472*         GO TO 236                                                        HYD 0401
01361   473*   233   PRINT 237                                                       HYD 0402
01363   474*     237 FORMAT (15X,32HNET VELOCITIES WERE NOT COMPUTED,/)
01364   475*         GO TO 236                                                        HYD 0405
01365   476*   234   PRINT 238                                                       HYD 0406
01367   477*   238   FORMAT (15X,61HNET VELOCITIES AND DEPTHS FOR ALL CELLS WERE PUNCHEHYD 0407
01367   478*        *D ON CARDS,/)                                                   HYD 0408
01370   479*   235   PRINT 239,KONETV                                              HYD 0410
01373   480*   239   FORMAT (15X,69HNET VELOCITIES AND DEPTHS FOR ALL CELLS WERE STOREDHYD 0411
01373   481*        * ON TAPE UNIT NO. ,I2,/)                                        HYD 0412
01374   482*   236   CONTINUE                                                       HYD 0413
01375   483*         INEW = IODISP + 1
01376   484*         GO TO (249,352, 251, 250), INEW                                  CORR0086
01377   485*     352 PRINT 254                                                        CORR0087
01401   486*         GO TO  252                                                       HYD 0423
01402   487*   249   PRINT 253                                                       HYD 0424
01404   488*   253   FORMAT (15X,90HAVERAGE VELOCITIES AND DISPERSION COEFFICIENTS WEREHYD 0425
01404   489*        * NOT PUNCHED ON CARDS OR STORED ON TAPE,/)                      HYD 0426
01405   490*         GO TO 252                                                        HYD 0427
01406   491*   250   PRINT 254                                                       HYD 0428
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01410   492*   254   FORMAT (15X,82HAVERAGE VELOCITIES AND DISPERSION COEFFICIENTS FOR HYD 0429
01410   493*        *ALL CELLS WERE PUNCHED ON CARDS,/)                                HYD 0430
01411   494*   251   PRINT  255,KODISP                                                 HYD 0432
01414   495*   255   FORMAT (15X,90HAVERAGE VELOCITIES AND DISPERSION COEFFICIENTS FOR HYD 0433
01414   496*        *ALL CELLS WERE STORED ON TAPE UNIT NO. ,I2,/)                     HYD 0434
01415   497*   252   CONTINUE                                                          HYD 0435
01416   498*         INEW = IVLTAP + 1
01417   499*         GO TO (271,271,272,271),INEW                                              *NEW
01420   500*     271 PRINT 273                                                                 **-1
01422   501*     273 FORMAT (15X,48HINSTANTANEOUS VELOCITIES WERE NOT STORED ON TAPE,/)
01423   502*         GO TO 247
01424   503*     272 PRINT 248, KOTVEL,TIMVEL
01430   504*   248   FORMAT(15X,54HINSTANTANEOUS VELOCITIES WERE STORED ON TAPE UNIT NOHYD 0459
01430   505*        .. ,I2,4H AT ,F5.1,22H MINUTE TIME INTERVALS,/)                     HYD 0460
01431   506*     247 CONTINUE
01432   507*   216   CONTINUE                                                          HYD 0436
01433   508*         INEW = ISAVQH + 1                                                 CORR0088
01434   509*         GO TO (226, 329, 227, 228), INEW                                  CORR0089
01435   510*     329 PRINT 229                                                         CORR0090
01437   511*   229   FORMAT(15X,52HENDING VALUES OF HYDRODYNAMICS WERE PUNCHED ON CARDSHYD 0441
01437   512*        .,/)                                                               HYD 0442
01440   513*         GO TO 230                                                         HYD 0443
01441   514*   227   PRINT 231,KOUTDA                                                 HYD 0444
01444   515*   231   FORMAT(15X,60HENDING VALUES OF HYDRODYNAMICS WERE STORED ON TAPE UHYD 0445
01444   516*        .NIT NO. ,I2,/)                                                    HYD 0446
01445   517*         GO TO 230                                                         HYD 0447
01446   518*   228   PRINT 229                                                         HYD 0448
01450   519*         PRINT 231,KOUTDA                                                  HYD 0449
01453   520*         GO TO 230                                                         HYD 0450
01454   521*   226   PRINT 232                                                         HYD 0451
01456   522*   232   FORMAT(15X,45HENDING VALUES OF HYDRODYNAMICS WERE NOT SAVED,/)    HYD 0452
01457   523*   230   CONTINUE                                                          HYD 0453
01460   524*         PRINT 257,NPLOT                                                   HYD 0454
01463   525*   257   FORMAT(15X,36HTIDAL AMPLITUDE PLOTS WERE MADE FOR ,I2,25H SELECTEDHYD 0455
01463   526*        . STATIONS IN BAY,/)                                               HYD 0456
01464   527*         PRINT 258,TIMTOT                                                  HYD 0462
01467   528*     258 FORMAT(15X,31HMODEL WAS OPERATED TO SIMULATE ,F5.1,19H HOURS OF RE        *NEW
01467   529*        .AL TIME,/)                                                        HYD 0464**-1
01470   530*         GO TO (740,741,742),KRSOFN                                                *NEW
01471   531*     740 WRITE(6,763)                                                              *NEW
01473   532*         GO TO 742                                                                 *NEW
01474   533*     763 FORMAT(//,15X,'COARSE GRID MODEL',//)                                     *NEW
01475   534*     741 WRITE(6,764)                                                              *NEW
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01477   535*     764 FORMAT(//,15X,'FINE GRID MODEL',//)                                    *NEW
01500   536*     742 PRINT 259                                                              *NEW
01502   537*    259   FORMAT (/,  10X,36HMODEL DIMENSIONS AND CHARACTERISTICS,/)          HYD 0466**-1
01503   538*          PRINT 260,IMAX,JMAX,IMXJMX,DS,NTIDE,NREEF,NFLOW,DT,TPER            HYD 0467
01516   539*    260   FORMAT(15X,33HNUMBER OF CELLS IN X-DIRECTION = ,I2,//,15X,33HNUMBEHYD 0468
01516   540*         .R OF CELLS IN Y-DIRECTION = ,I2,//,15X,33HTOTAL NUMBER OF CELLS INHYD 0469
01516   541*         . MODEL = ,I4,//,15X,21HWIDTH OF EACH CELL = ,F6.1,5H FEET,//,15X,3HYD 0470
01516   542*         .5HNUMBER OF TIDAL EXCITATION CELLS = ,I2,//,15X,31HNUMBER OF SUBMEHYD 0471
01516   543*         .RGED BARRIERS = ,I3,//,15X,34HNUMBER OF EXTERNAL FLOW SOURCES = ,IHYD 0472
01516   544*         .2,//15X,31HCOMPUTATIONAL TIME INCREMENT = ,F5.3,8H MINUTES,//,15X,HYD 0473
01516   545*         .24HPERIOD OF TIDAL CYCLE = , F4.1,6H HOURS)                       HYD 0474
01517   546*          IF (IPDATA.NE.1) CALL PRINTI
01521   547*          THETA = 180.0-THETA+ANGCOR
01522   548*          THETA = THETA*PI/180.0                                             HYD 0476
01523   549*          XW = 0.0185*COS(THETA)*W**2
01524   550*          YW = 0.0185*SIN(THETA)*W**2
01525   551*          PHI = PHI*PI/180.0                                                 HYD 0479
01526   552*          OMEGA = 2.0*OMEGA*SIN(PHI)*60.0                                    HYD 0480
01527   553*          R = R/17280.0
01530   554*          E = E/17280.0
01531   555*          TMAX = TMAX*60.0                                                   HYD 0485**-3
01532   556*          TPER = TPER*60.0                                                   HYD 0486
01533   557*          TNET = TMAX-TPER+DT2                                               HYD 0487
01534   558*          TPLOT = TMAX-TPER-DT2                                              HYD 0488
01535   559*          TPLOT = TIMEIN*60.0-DT2                                                *NEW
01536   560*          M = 0                                                              HYD 0489
01536   561*    C                                                                        HYD 0490
01536   562*    C                                   STEP 10                                *NEW
01536   563*    C                                   READ IN OR SET INITIAL CONDITIONS.   HYD 0492**-1
01536   564*    C                                                                        HYD 0493
01537   565*          TIM(1) = 0.0                                                       HYD 0494
01540   566*          TCOUNT = DT2                                                       HYD 0495
01541   567*          TMARK=TIMVEL                                                       HYD 0496
01542   568*          TIMVEL = TIMVEL-DT2
01543   569*          TIME = TIMEIN*60.0                                                 HYD 0497
01544   570*          INEW = IQHIN + 1                                                   CORR0091
01545   571*          GO TO (39, 38, 37, 3777), INEW                                     CORR0092
01546   572*       38 DO 445 J = 1, JMAX                                                 CORR0093
01551   573*          READ 444, (H(I,J),I=1,IMAX)                                        HYD 0500
01557   574*       445  CONTINUE                                                         HYD 0501
01561   575*       444 FORMAT (8F10.5)
01562   576*          DO 446  J=1,JMAX                                                   HYD 0502
01565   577*          READ 443, (QX(I,J),QY(I,J), I=1,IMAX)
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01574   578*      446  CONTINUE                                                                  HYD 0504
01576   579*      443 FORMAT (8F10.4)
01577   580*          READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
01607   581*          WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
01617  *DIAGNOSTIC*  THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
01617   582*          IF (DUM1.NE.ENDF) GO TO 3777
01621   583*          GO TO 771                                                                      *NEW
01622   584*       37 REWIND KINIQH                                                              CORR0094**-1
01623   585*          READ (KINIQH) ((H(I,J),I=1,IMAX),J=1,JMAX)                                HYD 0509
01634   586*          READ (KINIQH) ((QX(I,J),QY(I,J),I=1,IMAX),J=1,JMAX)                       HYD 0510
01646   587*          REWIND KINIQH                                                             HYD 0511
01647   588*          GO TO 771                                                                      *NEW
01650   589*       39 CONTINUE                                                                  HYD 0513**-1
01651   590*          DO 5005 J=1,JMAX                                                          HYD 0514
01654   591*          DO 5005 I=1,IMAX                                                          HYD 0515
01657   592*          H(I,J) = 0.0                                                              HYD 0516
01660   593*          IF(Z(I,J).GT.0.)H(I,J)=Z(I,J)                                                  *NEW
01662   594*          QX(I,J) = 0.0                                                             HYD 0517
01663   595*     5005 QY(I,J) = 0.0                                                             HYD 0518
01666   596*      771 GO TO (744,745,774),KRSOFN                                                     *NEW
01667   597*      744 REWIND KQCTP                                                                   *NEW
01670   598*      745 REWIND KQFTP                                                                   *NEW
01671   599*      774 GO TO (5000,701,5000),KRSOFN                                                   *NEW
01672   600*      701 IF(INEW.NE.1)GO TO 720                                                         *NEW
01674   601*          READ(5,700)I,J,DUM                                                             *NEW
01701   602*          IF(I.EQ.0)GO TO 720                                                            *NEW
01703   603*          H(I,J)=DUM                                                                     *NEW
01704   604*          GO TO 701                                                                      *NEW
01705   605*      700 FORMAT(2I4,F10.3)                                                              *NEW
01706   606*      720 READ(KQFTP)(QINFLO(MA),MA=1,NFLOW)                                             *NEW
01714   607*          DO 61 MA=1,NFLOW                                                               *NEW
01717   608*       61 QINFLO(MA)=QINFLO(MA)*60./DS                                                   *NEW
01721   609*          DO 702 I=9,19                                                                  *NEW
01724   610*      702 QY(I,4)=QINFLO(I-8)                                                            *NEW
01726   611*          DO 703 J=5,12                                                                  *NEW
01731   612*      703 QX(8,J)=QINFLO(J+7)                                                            *NEW
01733   613*          DO 704 J=13,15                                                                 *NEW
01736   614*      704 QX(21,J)=QINFLO(J+7)                                                           *NEW
01740   615*          DO 705 J=16,19                                                                 *NEW
01743   616*      705 QX(1,J)=QINFLO(J+7)                                                            *NEW
01745   617*          DO 706 I=12,16                                                                 *NEW
01750   618*      706 QY(I,28)=QINFLO(I+28)                                                          *NEW
01752   619*          DO 707 J=28,30                                                                 *NEW
```

```
01755   620*      707 QX(20,J)=QINFLO(J+17)                                          *NEW
01757   621*          QX(32,22)=QINFLO(27)                                           *NEW
01760   622*          QX(4,23)=QINFLO(28)                                            *NEW
01761   623*          QX(32,23)=QINFLO(29)                                           *NEW
01762   624*          QX(4,24)=QINFLO(30)                                            *NEW
01763   625*          QX(32,24)=QINFLO(31)                                           *NEW
01764   626*          QX(4,25)=QINFLO(32)                                            *NEW
01765   627*          QX(20,25)=QINFLO(33)                                           *NEW
01766   628*          QY(29,25)=QINFLO(34)                                           *NEW
01767   629*          QY(31,25)=QINFLO(35)                                           *NEW
01770   630*          QX(32,25)=QINFLO(36)                                           *NEW
01771   631*          QY(32,25)=QINFLO(37)                                           *NEW
01772   632*          QX(20,26)=QINFLO(38)                                           *NEW
01773   633*          QX(20,27)=QINFLO(39)                                           *NEW
01774   634*      5000 DO 36 J=1,JMAX                                        HYD 0519
01777   635*           DO 36 I=1,IMAX                                        HYD 0520
02002   636*           D(I,J) = H(I,J)-Z(I,J)                                HYD 0522**-1
02003   637*           IF (D(I,J).GT.0.0) GO TO 60                                *NEW
02005   638*           D(I,J) = 0.1                                               *NEW
02006   639*           H(I,J) = Z(I,J)                                            *NEW
02007   640*        60 CONTINUE                                                   *NEW
02010   641*           QXN(I,J) = 0.0                                        HYD 0523
02011   642*           QYN(I,J) = 0.0                                        HYD 0524
02012   643*           HN(I,J) = 0.0                                         HYD 0525
02013   644*           IF(Z(I,J).GT.0.)HN(I,J)=Z(I,J)                             *NEW
02015   645*        36 CONTINUE                                              HYD 0535
02020   646*           CALL ZEROS
02021   647*           CON1 = DT2+TPER                                            **-7
02022   648*           CON2 = 0.0
02023   649*           CALL PRINTT                                           HYD 0540
02024   650*           IF (NPLOT.EQ.0) GO TO 599                             HYD 0541
02026   651*           IF (TIME.GT.TPLOT) CALL HPLOT                         HYD 0542
02030   652*     599   CONTINUE                                             HYD 0543
02031   653*           IF ( IVLTAP.EQ.0)GO TO 600                            HYD 0544
02033   654*           REWIND KOTVEL                                              *NEW
02034   655*           IF(TIME.GT.TPLOT)CALL STRVEL                               *NEW
02036   656*        600 CONTINUE                                             HYD 0547**-2
02037   657*           IF (IONVEL.GT.1) REWIND KONETv                        HYD 0548
02041   658*           IF (IONFLO.GT.1) REWIND KONETF                        HYD 0549
02043   659*           IF (IODISP.GT.1) REWIND KODISP                        HYD 0550
02043   660*     C                                                           HYD 0551**-5
02043   661*     C                                 STEP 11                        *NEW
02043   662*     C                                 CALCULATE TEMPORAL VARIATION OF HYD 0553**-1
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02043   663*   C                                   HYDRODYNAMICS THROUGHOUT BAY.        HYD 0554
02043   664*   C                                                                        HYD 0555
02045   665*       99 TIME=TIME+DT                                                      HYD 0556
02046   666*          TCOUNT=TCOUNT+DT                                                        *NEW
02047   667*          GO TO (746,770,746),KRSOFN                                              *NEW
02050   668*     770  READ(KQFTP)(QINFLO(MA),MA=1,NFLOW)                                    *NEW
02056   669*          GO TO 453                                                               *NEW
02057   670*     746  CALL CALTID                                                          *NEW
02060   671*     453  DO 29 MA=1,NFLOW                                                     *NEW
02063   672*      29  QINFLO(MA)=QINFLO(MA)*60./DS                                        *NEW
02065   673*          CALL CALCQH                                                  HYD 0559**-2
02066   674*          IF (TCOUNT.LT.PTIME) GO TO 45                                HYD 0560**-7
02066   675*   C                                                                   HYD 0571*-12
02066   676*   C                                   STEP 12                                 *NEW
02066   677*   C                                   WRITE TIDAL AMPLITUDES AND VELOCITIESHYD 0573**-1
02066   678*   C                                   FOR SPECIFIED STATIONS IN BAY.       HYD 0574
02066   679*   C                                                                        HYD 0575
02070   680*          CALL PRINTO                                                       HYD 0576
02071   681*          IF (NPLOT.EQ.0) GO TO 45                                          HYD 0577
02073   682*          IF (TIME.GT.TPLOT) CALL HPLOT                                     HYD 0578
02075   683*       45 IF (IBASIC.EQ.0) GO TO 2095                                       CORR0096
02075   684*   C                                                                       HYD 0580
02075   685*   C                                   STEP 13                                 *NEW
02075   686*   C                                   CALCULATE NET VELOCITIES OR NET      HYD 0582**-1
02075   687*   C                                   FLOWS FOR ALL CELLS IF DESIRED.      HYD 0583
02075   688*   C                                                                        HYD 0584
02077   689*          IF (IONVEL.EQ.0) GO TO 661
02101   690*          IF (TIME.GT.TNET) CALL NETVQD                                     HYD 0586
02103   691*     661  IF (IONFLO.GT.0.OR.INETFL.EQ.1) GO TO 662
02105   692*          GO TO 667
02106   693*     662  IF (TIME.GT.TNET) CALL NETFLO
02110   694*     667  CONTINUE                                                          HYD 0589
02110   695*   C                                                                       HYD 0590
02110   696*   C                                   STEP 14                                 *NEW
02110   697*   C                                   STORE INSTANTANEOUS VELOCITIES AT    HYD 0592**-1
02110   698*   C                                   SPECIFIED TIME INTERVALS IF DESIRED. HYD 0593
02110   699*   C                                                                        HYD 0594
02111   700*          IF (IVLTAP.EQ.0) GO TO 777                                        HYD 0595
02113   701*          IF(TIME.GT.TPLOT)CALL STRVEL                                            *NEW
02115   702*   777    CONTINUE                                                         HYD 0597**-1
02115   703*   C                                                                       HYD 0598
02115   704*   C                                   STEP 15                                 *NEW
02115   705*   C                                   CALCULATE AND STORE MEAN VELOCITIES  HYD 0600**-1
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02115   706*   C                                   AND DISPERSION COEFFICIENTS IF       HYD 0601
02115   707*   C                                   DESIRED.                             HYD 0602
02115   708*   C                                                                        HYD 0603
02116   709*         IF (IODISP.EQ.0) GO TO 888                                         HYD 0604
02120   710*         IF (TIME.GT.TNET) CALL UVDXDY                                      HYD 0605
02122   711*     888 CONTINUE                                                           HYD 0606
02122   712*   C                                                                        HYD 0607
02122   713*   C                                   STEP 16                                    *NEW
02122   714*   C                                   PUNCH TIDAL PERIOD HYDRODYNAMICS AND/OR    *NEW
02122   715*   C                                   TIDAL PERIOD H-VALUES FOR FINE GRID MODEL. *NEW
02122   716*   C                                                                        HYD 0612**-4
02123   717*    2095 IF((TIMTOT*60.).LT.TPER)GO TO 2096                                   *NEW
02125   718*         IF(TIME.LT.(TIMEIN*60.+TPER))GO TO 2096                            *NEW
02127   719*         IF(KPRINT.NE.1)GO TO 2096                                          *NEW
02131   720*         KEPSAV=ISAVQH                                                      *NEW
02132   721*         ISAVQH=1                                                           *NEW
02133   722*         CALL SAVEQH                                                        *NEW
02134   723*         ISAVQH=KEPSAV                                                      *NEW
02135   724*         KPRINT=0                                                           *NEW
02136   725*         GO TO (747,2096,2096),KRSOFN                                       *NEW
02137   726*     747 PUNCH 144,TIME                                                     *NEW
02142   727*         KG=1                                                               *NEW
02143   728*         DO 143 J=6,12                                                      *NEW
02146   729*         DO 143 I=3,10                                                      *NEW
02151   730*         IF(I.NE.IHKP(KG).OR.J.NE.JHKP(KG))GO TO 143                        *NEW
02153   731*         KG=KG+1                                                            *NEW
02154   732*         ILB=I+4*(I-3)                                                      *NEW
02155   733*         ILF=ILB+3                                                          *NEW
02156   734*         JLB=5+4*(J-6)                                                      *NEW
02157   735*         JLF=JLB+3                                                          *NEW
02160   736*         DO 141 IK=ILB,ILF                                                  *NEW
02163   737*         DO 141 JK=JLB,JLF                                                  *NEW
02166   738*         HKP=H(IK,JK)                                                       *NEW
02167   739*         IF(H(IK,JK).GT.5.)HKP=H(6,9)                                       *NEW
02171   740*     141 PUNCH 142,IK,JK,HKP                                                *NEW
02200   741*     143 CONTINUE                                                           *NEW
02203   742*     142 FORMAT(2I4,F10.3)                                                  *NEW
02204   743*     144 FORMAT(F10.3)                                                      *NEW
02204   744*   C                                                                        *NEW
02204   745*   C                                   STEP 17                            *NEW
02204   746*   C                                   IF SPECIFIED SIMULATION PERIOD HAS *NEW
02204   747*   C                                   NOT BEEN COMPLETED, REPEAT STEPS   *NEW
02204   748*   C                                   11 THROUGH 16.                     *NEW
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02204   749*   C                                                                    *NEW
02205   750*    2096 IF(TIME.LT.(TMAX-0.9*DT))GO TO 99                              *NEW
02207   751*         GO TO (748,2097,2097),KRSOFN                                   *NEW
02210   752*     748 CALL RITCTP                                                    *NEW
02211   753*    2097 IF(TCOUNT.GT.DT2)CALL PRINTO                                   *NEW
02213   754*         GO TO (750,751,772),KRSOFN                                     *NEW
02213   755*   C                                                                    *NEW
02213   756*   C                                  STEP 18                           *NEW
02213   757*   C                                  WRITE EXCITATION FLOWS FOR FINE GRID MODEL.  *NEW
02213   758*   C                                                                    *NEW
02214   759*     750 CALL RITAP                                                     *NEW
02215   760*     751 REWIND KQFTP                                                   *NEW
02216   761*     772 CALL PRT11                                                     *NEW
02216   762*   C                                                          HYD 0615*-12
02216   763*   C                                  STEP 19                           *NEW
02216   764*   C                                  SAVE FINAL VALUES OF TIDAL AMPLITUDES HYD 0617**-1
02216   765*   C                                  AND FLOWS FOR ALL CELLS.          HYD 0618
02216   766*   C                                                                    HYD 0619
02217   767*         IF(KPRINT.EQ.0.AND.ISAVQH.EQ.1) GO TO 773                      *NEW
02221   768*         IF (ISAVQH.NE.0) CALL SAVEQH                               HYD 0620
02223   769*     773 IF(IONVEL.GT.0)CALL PVLDEP                                     *NEW
02225   770*         IF (IONFLO.GT.0.OR.INETFL.EQ.1) CALL PFLDEP                    **-1
02227   771*         IF (IODISP.GT.0) CALL UVDOUT
02231   772*         IF (IONVEL.GT.1) REWIND KONETV                             HYD 0624
02233   773*         IF (IONFLO.GT.1) REWIND KONETF                             HYD 0625
02235   774*         IF (IODISP.GT.1) REWIND KODISP                             HYD 0626
02235   775*   C                                                                HYD 0627
02235   776*   C                                  STEP 20                           *NEW
02235   777*   C                                  PLOT TIDAL AMPLITUDES FOR SPECIFIED  HYD 0629**-1
02235   778*   C                                  STATIONS IN BAY.                  HYD 0630
02235   779*   C                                                                    HYD 0631
02237   780*         IF (NPLOT.EQ.0) GO TO 310                                      HYD 0632
02241   781*         CALL PLOTHS                                                    HYD 0633
02242   782*     310  CONTINUE                                                      HYD 0634
02243   783*    9999  CONTINUE                                                      HYD 0635
02244   784*         STOP                                                           HYD 0636
02245   785*         END                                                            HYD 0637

   END OF UNIVAC 1108 FORTRAN V COMPILATION.     7 *DIAGNOSTIC* MESSAGE(S)
HYDTID          SYMBOLIC                  05 MAY 72  12:54:26   0  00036670    14   662  (DELETED)
HYDTID  CODE    RELOCATABLE               05 MAY 72  12:54:26   1  00060754    48     1  (DELETED)
                                                                 0  00061034    14   250
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@I FOR,* CALTID,CALTID                                          05 FEB 73   12:06:34.707
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:34


   SUBROUTINE CALTID     ENTRY POINT 000142

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001    *CODE    000152
         0000    *DATA    000033
         0002    *BLANK   032477


   EXTERNAL REFERENCES (BLOCK, NAME)

     0003    NERR2$          0004    NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

    0001   000110 1L        0001   000123 10L       0001   000074 131G      0001   000113 2L
    0001   000056 20L       0001   000116 3L        0001   000121 4L        0002   032436 AO
    0002   021443 CB        0002   021777 CELSID    0002 R 032434 CON1      0002 R 032435 CON2
    0002   021063 CT        0002   032442 C1        0002   032446 C2        0002   032452 C3
    0002   000000 D         0000 R 000003 DELT1     0000 R 000002 DELT2     0000 R 000004 DELT3
    0000 R 000005 DELT4     0002   032361 DS        0002 R 032365 DT        0002   032404 DTODS
    0002   032432 DTO2DS    0002 R 032366 DT2       0002   032427 E         0002   013755 F
    0002   032362 G         0002   032363 GCDTO4    0002   032364 GDTODS    0002 R 021347 GTIDE
    0002   031103 G1        0002   031223 G41       0002   031343 G42       0002   031463 G43
    0002   023677 HF        0002   004622 HN        0002   022667 HPLT      0002   022655 HPRT
    0002   023763 HPRTA     0002   022155 IBAR      0000 I 000007 ID        0002 I 031603 IDTIDE
    0002   016266 IFLAG     0002   020673 IFLOW     0002   032357 IMAX      0002   032421 INETFL
    0000   000013 INJP$     0002   032431 IODISP    0002   032424 IONFLO    0002   032423 IONVEL
    0002   022561 IP        0002   032422 IPDATA    0002   032430 ISAVQH    0002   021157 ITIDE
    0002   022333 JBAR      0002   020767 JFLOW     0002   032360 JMAX      0002   022605 JP
    0002   021253 JTIDE     0002   032412 KINDAT    0002   032413 KINIQH    0002   032433 KO
    0002   032420 KODISP    0002   032416 KONETF    0002   032415 KONETV    0002   032417 KOTVEL
    0002   032410 KOUTCD    0002   032414 KOUTDA    0002   032411 KOUTPP    0000 I 000006 KT
    0002   032472 LINMAX    0002   032407 M         0002   032402 NFLOW     0002   032425 NPLOT
    0002   032401 NREEF     0000 I 000000 NTID      0002 I 032403 NTIDE     0000 I 000001 NTIDP1
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0002    032373 OMEGA      0002    032374 PHI        0002    032456 PHI1       0002    032462 PHI2
0002    032466 PHI3       0002    032372 PTIME      0002    020577 QINFLO     0002    007133 QXN
0002    011444 QYN        0002    032426 R          0002    022511 STATON     0002    032370 TCOUNT
0002    032376 THETA      0002    030643 THETA1     0002    030523 TI       0002 R  031677 TIDE1
0002 R  032013 TIDE2      0002 R  032127 TIDE3    0002 R  032243 TIDE4     0002 R  032473 TID1
0002 R  032474 TID2       0002 R  032475 TID3     0002 R  032476 TID4       0002    023731 TIM
0002    032367 TIME       0002    032406 TIMVEL     0002    032405 TMARK      0002    032371 TPER
0002    022631 UAPRT      0002    025423 UAPRTA     0002    022643 VAPRT      0002    027063 VAPRTA
0002    032375 W          0002    030763 W2         0002    032377 XW         0002    032400 YW
0002    002311 Z          0002    021621 ZB
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00101     1*          SUBROUTINE CALTID                                                    HYD 0645
00101     2*    C                                                                          HYD 0638
00101     3*    C                THIS INTERPOLATION SUBROUTINE COMPUTES AT EVERY                   *NEW
00101     4*    C              TIME STEP THE APPROPRIATE VALUES OF EXCITING TIDES                  *NEW
00101     5*    C              AT THE OCEAN BOUNDARIES THAT ARE USED AS FORCING                    *NEW
00101     6*    C              FUNCTIONS IN THE COARSE GRID MODEL.                                 *NEW
00101     7*    C                                                                          HYD 0644**-4
00103     8*          COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),                   *NEW
00103     9*         1F(35,35),IFLAG(35,35)                                                       *NEW
00104    10*          COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),           *NEW
00104    11*         *       GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),          **-3
00104    12*         *       STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
00104    13*         *       HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
00104    14*         *       VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
00104    15*         *       G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
00104    16*         *       TIDE4(76)
00105    17*          COMMON IMAX,JMAX,DS,G,GCDT04,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,HYD 0655
00105    18*         *       OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,      HYD 0656
00105    19*         *       TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIQH,KOUTDA,KONETV,KONETF,  HYD 0657
00105    20*         *       KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00105    21*         *       ISAVQH,IODISP,DT02DS,KO                                     HYD 0659
00106    22*          COMMON CON1,CON2,A0(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00107    23*          COMMON LINMAX,TID1,TID2,TID3,TID4
00110    24*          CON1 = CON1+DT
00111    25*          IF (CON1.LT.60.0) GO TO 20
00113    26*          CON1 = DT2
00114    27*          CON2 = CON2 + 1.0
00115    28*          NTID = CON2
00116    29*          NTIDP1 = NTID + 1
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00117    30*          DELT2 = (TIDE2(NTIDP1)-TIDE2(NTID))*DT/60.0
00120    31*          DELT1 = (TIDE1(NTIDP1)-TIDE1(NTID))*DT/60.0
00121    32*          DELT3 = (TIDE3(NTIDP1)-TIDE3(NTID))*DT/60.0
00122    33*          DELT4=(TIDE4(NTIDP1)-TIDE4(NTID))*DT/60.                    *NEW
00123    34*       20 CONTINUE
00124    35*          TID1 = TID1 + DELT1
00125    36*          TID2 = TID2 + DELT2
00126    37*          TID3 = TID3 + DELT3
00127    38*          TID4=TID4+DELT4                                             *NEW
00130    39*          DO 10 KT = 1,NTIDE                                  HYD 0672
00133    40*          ID = IDTIDE(KT)                                     HYD 0673
00134    41*          GO TO  (1,2,3,4) , ID                               HYD 0674
00135    42*        1 GTIDE(KT)=TID1                                              *NEW
00136    43*          GO TO 10                                            HYD 0676**-1
00137    44*        2 GTIDE(KT) = TID2
00140    45*          GO TO 10                                            HYD 0678
00141    46*        3 GTIDE(KT) = TID3
00142    47*          GO TO 10                                            HYD 0680
00143    48*        4 GTIDE(KT) = TID4
00144    49*       10 CONTINUE                                            HYD 0682
00146    50*          RETURN                                              HYD 0683
00147    51*          END                                                 HYD 0684

      END OF UNIVAC 1108 FORTRAN V COMPILATION.     0 *DIAGNOSTIC* MESSAGE(S)
   CALTID          SYMBOLIC          05 MAY 72  12:54:27   0  00067710    14    49  (DELETED)
   CALTID  CODE    RELOCATABLE       05 MAY 72  12:54:27   1  00071166    24     1  (DELETED)
                                                           0  00071216    14    11
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@I FOR,* CALCQH,CALCQH                                          05 FEB 73   12:06:36.149
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:36


   SUBROUTINE CALCQH    ENTRY POINT 003145

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001    *CODE    003160
         0000    *DATA    000100
         0002    *BLANK   032477
         0003    ALL      007133
         0004    MQ       010544
         0005    MRQ      000003
         0006    MQPI     002311


   EXTERNAL REFERENCES (BLOCK, NAME)

     0007   RITCTP          0010   NERR2$          0011   SQRT            0012   NEXP6$          0013   NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

    0001   003123 100L      0001   001741 101L      0001   001753 102L      0001   001765 103L
    0001   002054 104L      0001   002060 105L      0001   002065 106L      0001   002164 107L
    0001   002170 108L      0001   002175 109L      0001   001767 110L      0001   002041 111L
    0001   002151 112L      0001   002067 113L      0001   002073 114L      0001   001773 115L
    0001   000032 120G      0001   002202 137L      0001   002230 138L      0001   002256 139L
    0001   002304 140L      0001   002345 141L      0001   002523 142L      0001   002526 143L
    0001   002733 144L      0001   002736 145L      0001   002437 160L      0001   002450 161L
    0001   002353 162L      0001   002621 163L      0001   002633 164L      0001   002534 165L
    0001   002537 166L      0001   002751 167L      0001   002745 168L      0001   002662 169L
    0001   002757 170L      0001   002742 171L      0001   000064 201L      0001   000074 202L
    0001   000076 203L      0001   000106 204L      0001   000115 205L      0001   000127 206L
    0001   000137 207L      0001   000141 208L      0001   000151 209L      0001   000160 210L
    0001   003066 250L      0001   000217 60L       0001   003072 603G      0001   003060 70L
    0001   000261 71L       0001   000413 72L       0001   000527 73L       0001   000653 74L
    0001   000777 75L       0001   001056 76L       0001   001072 77L       0001   001117 78L
    0001   001170 79L       0001   001202 80L       0001   001227 81L       0001   001307 82L
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0001    001323 83L      0001    001350 84L      0001    001427 85L      0001    001441 86L
0001    001466 87L      0001    001505 88L      0001    001517 89L      0001    001545 90L
0001    001557 91L      0001    001605 92L      0001    001633 93L      0001    001661 94L
0001    001711 95L      0001    002765 96L      0001    003017 97L      0001    003044 98L
0002    032436 AO       0002  R 021443 CB       0002    021777 CELSID   0000  R 000021 COEFX
0000  R 000025 COEFY    0002    032434 CON1     0002    032435 CON2     0002  R 021063 CT
0002    032442 C1       0002    032446 C2       0002    032452 C3       0002  R 000000 D
0000  R 000016 DBARX    0000  R 000023 DBARY    0000  R 000026 DBX     0000  R 000027 DBY
0000  R 000017 DCON     0002  R 032361 DS       0002  R 032365 DT      0002  R 032404 DTODS
0002  R 032432 DTO2DS   0002  R 032366 DT2      0002  R 032427 E       0002    013755 F
0004  R 000000 FX       0004  R 002311 FY       0002  R 032362 G       0002  R 032363 GCDT04
0002  R 032364 GDTODS   0002  R 021347 GTIDE    0002    031103 G1       0002    031223 G41
0002    031343 G42      0002    031463 G43      0003  R 004622 H       0002    023677 HF
0000  R 000034 HMAX     0002  R 004622 HN       0002    022667 HPLT     0002    022655 HPRT
0002    023763 HPRTA    0000  I 000005 I        0002    022155 IBAR     0004  I 004624 ICLL
0002    031603 IDTIDE   0000  I 000007 IFL      0002  I 016266 IFLAG    0000  I 000010 IFLG
0002    020673 IFLOW    0002    032357 IMAX     0002    032421 INETFL   0000    000044 INJP$
0002    032431 IODISP   0002    032424 IONFLO   0002    032423 IONVEL   0002    022561 IP
0002    032422 IPDATA   0002    032430 ISAVGH   0002    021157 ITIDE    0000  I 000006 J
0000  I 000011 JAFL     0002    022333 JBAR     0000  I 000012 JBFL     0004  I 006574 JCLL
0000  I 000030 JFL      0006  I 000000 JFLAG    0002    020767 JFLOW    0002    032360 JMAX
0002    022605 JP       0002    021253 JTIDE    0000  I 000001 KB       0000  I 000033 KBT
0000  I 000002 KD       0002    032412 KINDAT   0002    032413 KINIQH   0002    032433 KO
0002    032420 KODISP   0002    032416 KONETF   0002    032415 KONETV   0002    032417 KOTVEL
0004  I 004623 KOUNT    0002    032410 KOUTCD   0002    032414 KOUTDA   0002    032411 KOUTPP
0005    000001 KQCTP    0005    000002 KQFTP    0005  I 000000 KRSOFN   0000  I 000003 KT
0000  I 000032 KTT      0002    032472 LINMAX   0002    032407 M        0000  I 000004 N
0002    032402 NFLOW    0002    032425 NPLOT    0002    032401 NREEF    0002    032403 NTIDE
0002  R 032373 OMEGA    0002    032374 PHI      0002    032456 PHI1     0002    032462 PHI2
0002    032466 PHI3     0002    032372 PTIME    0000  R 000020 QBARX    0000  R 000024 QBARY
0000  R 000013 QDIFXS   0000  R 000014 QDIFYS   0002  R 020577 QINFLO   0003  R 000000 QX
0000  R 000022 QXBAR    0002  R 007133 QXN      0003  R 002311 QY       0000  R 000015 QYBAR
0002  R 011444 QYN      0002  R 032426 R        0000  R 000000 SIGN     0004  R 004622 SQTG
0002    022511 STATON   0002    032370 TCOUNT   0002    032376 THETA    0002    030643 THETA1
0002    030523 TI       0002    031677 TIDE1    0002    032013 TIDE2    0002    032127 TIDE3
0002    032243 TIDE4    0002    032473 TID1     0002    032474 TID2     0002    032475 TID3
0002    032476 TID4     0002    023731 TIM      0002    032367 TIME     0002    032406 TIMVEL
0002    032405 TMARK    0002    032371 TPER     0002    022631 UAPRT    0002    025423 UAPRTA
0002    022643 VAPRT    0002    027063 VAPRTA   0002    032375 W        0002    030763 W2
0002  R 032377 XW       0002  R 032400 YW       0002  R 002311 Z        0002  R 021621 ZB
0000  R 000031 ZMAX
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00101     1*          SUBROUTINE CALCQH                                                    HYD 0698
00101     2*    C                                                                          HYD 0685
00101     3*    C                THIS SUBROUTINE IS THE BASIC COMPUTATIONAL ELEMENT        HYD 0687
00101     4*    C             OF THE TIDAL HYDRODYNAMIC MODEL.          DEPENDING              *NEW
00101     5*    C             ON THE TYPE OF BOUNDARY CONDITION REQUIRED BY A GIVEN      HYD 0690**-2
00101     6*    C             COMPUTATIONAL GRID CELL AS SPECIFIED BY ITS IDENTIFYING    HYD 0691
00101     7*    C             FLAG VALUE, CONTROL IS TRANSFERRED TO THE APPROPRIATE      HYD 0692
00101     8*    C             EQUATION FOR THE EXPLICIT DETERMINATION OF THE TIDAL       HYD 0693
00101     9*    C             APPLITUDE AND THE FLOWS PER UNIT WIDTH AT THE TOP AND      HYD 0694
00101    10*    C             RIGHT-HAND SIDE OF THE CELL. CONTROL PASSES THROUGH        HYD 0695
00101    11*    C             THIS SUBROUTINE DURING EACH TIME STEP OF THE SIMULATION.   HYD 0696
00101    12*    C             FLOWS TO BE TRANSFERRED FROM THE COARSE GRID MODEL TO            *NEW
00101    13*    C             THE FINE GRID MODEL ARE COMPILED ON MAGNETIC TAPE.               *NEW
00101    14*    C                                                                          HYD 0697
00103    15*          COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),                *NEW
00103    16*         1F(35,35),IFLAG(35,35)                                                    *NEW
00104    17*          COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),         *NEW
00104    18*         *        GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),      **-3
00104    19*         *        STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
00104    20*         *        HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
00104    21*         *        VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
00104    22*         *        G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
00104    23*         *        TIDE4(76)
00105    24*          COMMON IMAX,JMAX,DS,G,GCDT04,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,HYD 0708
00105    25*         *        OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,     HYD 0709
00105    26*         *        TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIQH,KOUTDA,KONETV,KONETF, HYD 0710
00105    27*         *        KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00105    28*         *        ISAVQH,IODISP,DT02DS,KO                                    HYD 0712
00106    29*          COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00107    30*          COMMON LINMAX,TID1,TID2,TID3,TID4
00110    31*          COMMON/ALL/QX(35,35),QY(35,35),H(35,35)                                  *NEW
00111    32*          COMMON/MQ/FX(35,35),FY(35,35),SQTG,KOUNT,ICLL(1000),JCLL(1000)           *NEW
00112    33*          COMMON/MRQ/KRSOFN,KQCTP,KQFTP                                            *NEW
00113    34*          COMMON/MQPI/JFLAG(35,35)                                                 *NEW
00114    35*          KB=0                                                               HYD 0717
00115    36*          KD=0                                                               HYD 0718
00116    37*          KT=0                                                               HYD 0719
00117    38*          DO 70 N=1,KOUNT                                                          *NEW
00122    39*          I=ICLL(N)                                                                *NEW
00123    40*          J=JCLL(N)                                                                *NEW
00124    41*          IFL=IFLAG(I,J)                                                     HYD 0722**-2
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00125    42*          IFLG = IFL
00126    43*          JAFL=JFLAG(I,J)/10                                                    00002900*NEW
00127    44*          JBFL=JFLAG(I,J)-10*JAFL                                               00003000*NEW
00130    45*          GO TO (201,202,203,204),JAFL                                          00003100*NEW
00131    46*      201 QDIFXS=(QX(I,J+1)-QX(I,J-1))/(DS*2.)                                  00003200*NEW
00132    47*          GO TO 205                                                             00003300*NEW
00133    48*      202 QDIFXS=0.                                                             00003400*NEW
00134    49*          GO TO 205                                                             00003500*NEW
00135    50*      203 QDIFXS=(QX(I,J+1)-QX(I,J))/DS                                         00003600*NEW
00136    51*          GO TO 205                                                             00003700*NEW
00137    52*      204 QDIFXS=(QX(I,J)-QX(I,J-1))/DS                                         00003800*NEW
00140    53*      205 GO TO (206,207,208,209),JBFL                                          00003900*NEW
00141    54*      206 QDIFYS=(QY(I+1,J)-QY(I-1,J))/(2.*DS)                                  00004000*NEW
00142    55*          GO TO 210                                                             00004100*NEW
00143    56*      207 QDIFYS=0.                                                             00004200*NEW
00144    57*          GO TO 210                                                             00004300*NEW
00145    58*      208 QDIFYS=(QY(I+1,J)-QY(I,J))/DS                                         00004400*NEW
00146    59*          GO TO 210                                                             00004500*NEW
00147    60*      209 QDIFYS=(QY(I,J)-QY(I-1,J))/DS                                         00004600*NEW
00150    61*      210 IF(IFL.GT.20)GO TO 60                                                 00004700*NEW
00152    62*          GO TO (70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,98,         00004800*NEW
00152    63*         *       87,88), IFL                                                    00004900*NEW
00153    64*       60  IFL=IFL-20                                                          00005000*NEW
00154    65*          GO TO (89,90,91,92,93,94,95,101,102,103,104,105,106,107,              00005100*NEW
00154    66*         *       108,109,137,138,139,140,141,142,143,144,145),IFL               00005200*NEW
00155    67*       71 QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))                  *NEW
00156    68*          DBARX=D(I,J)+D(I+1,J)                                                 *NEW
00157    69*          DCON=2./DBARX                                                         *NEW
00160    70*          QYBAR=QYBAR*DCON                                                      *NEW
00161    71*          QBARX=SQRT(QX(I,J)*QX(I,J)*DCON*DCON+QYBAR*QYBAR)                     *NEW
00162    72*          COEFX=1.+GCDT04*FX(I,J)*QBARX/DBARX**1.333-DCON*DT02DS*(QX(I-1,J)     *NEW
00162    73*         1-QX(I+1,J))                                                           *NEW
00163    74*          QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))                  *NEW
00164    75*          DBARY=D(I,J)+D(I,J+1)                                                 00006800*NEW
00165    76*          DCON=2./DBARY                                                         00006900*NEW
00166    77*          QXBAR=QXBAR*DCON                                                      *NEW
00167    78*          QBARY=SQRT(QXBAR*QXBAR+QY(I,J)*QY(I,J)*DCON*DCON)                     00007000*NEW
00170    79*          COEFY=1.+GCDT04*FY(I,J)*QBARY/DBARY**1.333-DCON*DT02DS*(QY(I,J-1)     00007100*NEW
00170    80*         1-QY(I,J+1))                                                           00007200*NEW
00171    81*          GO TO 96                                                              00007300*NEW
00172    82*       72 KB = KB+1                                                            00007400*NEW
00173    83*          DBX = (H(I,J) + H(I+1,J)) * 0.5 -ZB(KB)                               00007500*NEW
00174    84*          DBARX = D(I,J) + D(I+1,J)                                             00007600*NEW
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00175    85*          QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))                                  *NEW
00176    86*          DCON=2./DBARX                                                                 00008200*NEW
00177    87*          QYBAR=QYBAR*DCON                                                                      *NEW
00200    88*          COEFX = 1.0 +DT02DS*DBARX*ABS(QX(I,J))/(CB(KB)*DBX)**2                        00008300*NEW
00200    89*         1-DCON*DT02DS*(QX(I-1,J)-QX(I+1,J))                                            00008400*NEW
00201    90*          KB = KB+1                                                                     00008500*NEW
00202    91*          DBY = (H(I,J) + H(I,J+1)) * 0.5 - ZB(KB)                                      00008600*NEW
00203    92*          QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))                                  *NEW
00204    93*          DBARY=D(I,J)+D(I,J+1)                                                         00009200*NEW
00205    94*          DCON=2./DBARY                                                                 00009300*NEW
00206    95*          QXBAR=QXBAR*DCON                                                                      *NEW
00207    96*          COEFY = 1.0 +DT02DS*DBARY*ABS(QY(I,J))/(CB(KB)*DBY)**2                        00009400*NEW
00207    97*         1-DCON*DT02DS*(QY(I,J-1)-QY(I,J+1))                                            00009500*NEW
00210    98*          GO TO 96                                                                      00009600*NEW
00211    99*       73 QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))                                  *NEW
00212   100*          DBARY=D(I,J)+D(I,J+1)                                                         00010200*NEW
00213   101*          DCON=2./DBARY                                                                 00010300*NEW
00214   102*          QXBAR=QXBAR*DCON                                                                      *NEW
00215   103*          QBARY=SQRT(QXBAR*QXBAR+QY(I,J)*QY(I,J)*DCON*DCON)                             00010400*NEW
00216   104*          COEFY=1.+GCDT04*FY(I,J)*QBARY/DBARY**1.333-DCON*DT02DS*(QY(I,J-1)             00010500*NEW
00216   105*         1-QY(I,J+1))                                                                   00010600*NEW
00217   106*          KB = KB+1                                                                     00010700*NEW
00220   107*          DBX = (H(I,J) + H(I+1,J)) * 0.5 -ZB(KB)                                       00010800*NEW
00221   108*          QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))                                  *NEW
00222   109*          DBARX=D(I,J)+D(I+1,J)                                                         00011400*NEW
00223   110*          DCON=2./DBARX                                                                 00011500*NEW
00224   111*          QYBAR=QYBAR*DCON                                                                      *NEW
00225   112*          COEFX = 1.0 +DT02DS*DBARX*ABS(QX(I,J))/(CB(KB)*DBX)**2                        00011600*NEW
00225   113*         1-DCON*DT02DS*(QX(I-1,J)-QX(I+1,J))                                            00011700*NEW
00226   114*          GO TO 96                                                                      00011800*NEW
00227   115*       74 QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))                                  *NEW
00230   116*          DBARX=D(I,J)+D(I+1,J)                                                         00012400*NEW
00231   117*          DCON=2./DBARX                                                                 00012500*NEW
00232   118*          QYBAR=QYBAR*DCON                                                                      *NEW
00233   119*          QBARX=SQRT(QX(I,J)*QX(I,J)*DCON*DCON+QYBAR*QYBAR)                             00012600*NEW
00234   120*          COEFX=1.+GCDT04*FX(I,J)*QBARX/DBARX**1.333-DCON*DT02DS*(QX(I-1,J)             00012700*NEW
00234   121*         1-QX(I+1,J))                                                                   00012800*NEW
00235   122*          KB = KB+1                                                                     00012900*NEW
00236   123*          DBY = (H(I,J) + H(I,J+1)) * 0.5 - ZB(KB)                                      00013000*NEW
00237   124*          QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))                                  *NEW
00240   125*          DBARY=D(I,J)+D(I,J+1)                                                         00013600*NEW
00241   126*          DCON=2./DBARY                                                                 00013700*NEW
00242   127*          QXBAR=QXBAR*DCON                                                                      *NEW
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00243   128*          COEFY = 1.0 +DT02DS*DBARY*ABS(QY(I,J))/(CB(KB)*DBY)**2                00013800*NEW
00243   129*         1-DCON*DT02DS*(QY(I,J-1)-QY(I,J+1))                                    00013900*NEW
00244   130*          GO TO 96                                                              00014000*NEW
00245   131*       75 QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))                      *NEW
00246   132*          DBARY=D(I,J)+D(I,J+1)                                                 00014600*NEW
00247   133*          DCON=2./DBARY                                                         00014700*NEW
00250   134*          QXBAR=QXBAR*DCON                                                         *NEW
00251   135*          QBARY=SQRT(QXBAR*QXBAR+QY(I,J)*QY(I,J)*DCON*DCON)                     00014800*NEW
00252   136*          COEFY=1.+GCDT04*FY(I,J)*QBARY/DBARY**1.333-DCON*DT02DS*(QY(I,J-1)      00014900*NEW
00252   137*         1-QY(I,J+1))                                                           00015000*NEW
00253   138*             GO TO 97                                                           00015100*NEW
00254   139*       76 KD = KD + 1                                                           00015200*NEW
00255   140*          QXN(I,J) = QINFLO(KD)                                                 00015300*NEW
00256   141*          JFL=1                                                                 00015400*NEW
00257   142*          GO TO 114                                                             00015500*NEW
00260   143*       77 KT = KT + 1                                                           00015600*NEW
00261   144*          QXN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))                  00015700*NEW
00262   145*          GO TO 75                                                              00015800*NEW
00263   146*       78 KB = KB+1                                                             00015900*NEW
00264   147*          DBY = (H(I,J) + H(I,J+1)) * 0.5 - ZB(KB)                              00016000*NEW
00265   148*          QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))                     *NEW
00266   149*          DBARY=D(I,J)+D(I,J+1)                                                 00016600*NEW
00267   150*          DCON=2./DBARY                                                         00016700*NEW
00270   151*          QXBAR=QXBAR*DCON                                                         *NEW
00271   152*          COEFY = 1.0 +DT02DS*DBARY*ABS(QY(I,J))/(CB(KB)*DBY)**2                00016800*NEW
00271   153*         1-DCON*DT02DS*(QY(I,J-1)-QY(I,J+1))                                    00016900*NEW
00272   154*          GO TO 97                                                              00017000*NEW
00273   155*       79 KD = KD+1                                                             00017100*NEW
00274   156*          QXN(I,J) = QINFLO(KD)                                                 00017200*NEW
00275   157*          GO TO 78                                                              00017300*NEW
00276   158*       80 KT = KT+1                                                             00017400*NEW
00277   159*          QXN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))                  00017500*NEW
00300   160*          GO TO 78                                                              00017600*NEW
00301   161*       81 QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))                  *NEW
00302   162*          DBARX=D(I,J)+D(I+1,J)                                                 00018200*NEW
00303   163*          DCON=2./DBARX                                                         00018300*NEW
00304   164*          QYBAR=QYBAR*DCON                                                         *NEW
00305   165*          QBARX=SQRT(QX(I,J)*QX(I,J)*DCON*DCON+QYBAR*QYBAR)                     00018400*NEW
00306   166*          COEFX=1.+GCDT04*FX(I,J)*QBARX/DBARX**1.333-DCON*DT02DS*(QX(I-1,J)      00018500*NEW
00306   167*         1-QX(I+1,J))                                                           00018600*NEW
00307   168*          GO TO 96                                                              00018700*NEW
00310   169*       82 KD = KD+1                                                             00018800*NEW
00311   170*          QYN(I,J) = QINFLO(KD)                                                 00018900*NEW
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00312   171*          JFL=1                                                                    00019000*NEW
00313   172*          GO TO 115                                                                00019100*NEW
00314   173*       83 KT = KT+1                                                                00019200*NEW
00315   174*          QYN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))                     00019300*NEW
00316   175*          GO TO 81                                                                 00019400*NEW
00317   176*       84 KB = KB+1                                                                00019500*NEW
00320   177*          DBX = (H(I,J) + H(I+1,J)) * 0.5 -ZB(KB)                                  00019600*NEW
00321   178*          QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))                          *NEW
00322   179*          DBARX=D(I,J)+D(I+1,J)                                                    00020200*NEW
00323   180*          DCON=2./DBARX                                                            00020300*NEW
00324   181*          QYBAR=QYBAR*DCON                                                              *NEW
00325   182*          COEFX = 1.0 +DT02DS*DBARX*ABS(QX(I,J))/(CB(KB)*DBX)**2                   00020400*NEW
00325   183*         1-DCON*DT02DS*(QX(I-1,J)-QX(I+1,J))                                       00020500*NEW
00326   184*          IF(IFLG.EQ.45)KB=KB+1                                                         *NEW
00330   185*          GO TO 96                                                                 00020600*NEW
00331   186*       85 KD = KD+1                                                                00020700*NEW
00332   187*          QYN(I,J) = QINFLO(KD)                                                    00020800*NEW
00333   188*          GO TO 84                                                                 00020900*NEW
00334   189*       86 KT = KT+1                                                                00021000*NEW
00335   190*          QYN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))                     00021100*NEW
00336   191*          GO TO 84                                                                 00021200*NEW
00337   192*       87 KD = KD+1                                                                00021300*NEW
00340   193*          QXN(I,J) = QINFLO(KD)                                                    00021400*NEW
00341   194*          KD = KD+1                                                                00021500*NEW
00342   195*          QYN(I,J) = QINFLO(KD)                                                    00021600*NEW
00343   196*          GO TO 98                                                                 00021700*NEW
00344   197*       88 KD = KD+1                                                                00021800*NEW
00345   198*          QYN(I,J) = QINFLO(KD)                                                    00021900*NEW
00346   199*          GO TO 98                                                                 00022000*NEW
00347   200*       89 KT = KT+1                                                                00022100*NEW
00350   201*          QXN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))                     00022200*NEW
00351   202*          GO TO 88                                                                 00022300*NEW
00352   203*       90 KD = KD+1                                                                00022400*NEW
00353   204*          QXN(I,J) = QINFLO(KD)                                                    00022500*NEW
00354   205*          GO TO 98                                                                 00022600*NEW
00355   206*       91 KT = KT+1                                                                00022700*NEW
00356   207*          QYN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))                     00022800*NEW
00357   208*          GO TO 90                                                                 00022900*NEW
00360   209*       92 KT = KT+1                                                                00023000*NEW
00361   210*          QYN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))                     00023100*NEW
00362   211*          GO TO 98                                                                 00023200*NEW
00363   212*       93 KT = KT+1                                                                00023300*NEW
00364   213*          QXN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))                     00023400*NEW
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00365   214*          GO TO 98                                                                  00023500*NEW
00366   215*       94 KT = KT+1                                                                 00023600*NEW
00367   216*          QYN(I,J) = CT(KT)*SQRT(G*D(I,J+1))*(GTIDE(KT)-H(I,J+1))                   00023700*NEW
00370   217*          HN(I,J) = GTIDE(KT)                                                       00023800*NEW
00371   218*          GO TO 70                                                                  00023900*NEW
00372   219*       95 KT = KT+1                                                                 00024000*NEW
00373   220*          QXN(I,J) = CT(KT)*SQRT(G*D(I+1,J))*(GTIDE(KT)-H(I+1,J))                   00024100*NEW
00374   221*          HN(I,J) = GTIDE(KT)                                                       00024200*NEW
00375   222*          GO TO 70                                                                  00024300*NEW
00376   223*      101 KD = KD+1                                                                 00024400*NEW
00377   224*          QXN(I,J) = QINFLO(KD)                                                     00024500*NEW
00400   225*          GO TO 70                                                                  00024600*NEW
00401   226*      102 KD=KD+1                                                                   00024700*NEW
00402   227*          QYN(I,J) = QINFLO(KD)                                                     00024800*NEW
00403   228*             GO TO 70                                                               00024900*NEW
00404   229*      103 JFL = 1                                                                   00025000*NEW
00405   230*      110 QYN(I,J) = 0.0                                                            00025100*NEW
00406   231*      115 ZMAX=AMAX1(Z(I,J),Z(I+1,J))                                               00025200*NEW
00407   232*          IF (H(I,J).GT.ZMAX.OR.H(I+1,J).GT.ZMAX) GO TO 111                         00025300*NEW
00411   233*          QXN(I,J) = 0.0                                                            00025400*NEW
00412   234*          GO TO (98,75,78,70,106), JFL                                              00025500*NEW
00413   235*      111 GO TO (81,71,74,70,113), JFL                                              00025600*NEW
00414   236*      104 JFL = 2                                                                   00025700*NEW
00415   237*          IFLG = 2                                                                  00025800*NEW
00416   238*          GO TO 110                                                                 00025900*NEW
00417   239*      105 JFL = 3                                                                   00026000*NEW
00420   240*          IFLG = 2                                                                  00026100*NEW
00421   241*          GO TO 110                                                                 00026200*NEW
00422   242*      106 JFL = 1                                                                   00026300*NEW
00423   243*      113 QXN(I,J) = 0.0                                                            00026400*NEW
00424   244*      114 ZMAX=AMAX1(Z(I,J),Z(I,J+1))                                               00026500*NEW
00425   245*          IF (H(I,J).GT.ZMAX.OR.H(I,J+1).GT.ZMAX) GO TO 112                         00026600*NEW
00427   246*          QYN(I,J) = 0.0                                                            00026700*NEW
00430   247*          IF (JFL.GT.1) IFLG = IFLAG(I,J)                                           00026800*NEW
00432   248*          GO TO (98,81,84,70,81), JFL                                               00026900*NEW
00433   249*      112 GO TO (75,71,73,70,71), JFL                                               00027000*NEW
00434   250*      107 JFL = 2                                                                   00027100*NEW
00435   251*          IFLG = 2                                                                  00027200*NEW
00436   252*          GO TO 113                                                                 00027300*NEW
00437   253*      108 JFL = 3                                                                   00027400*NEW
00440   254*          IFLG = 2                                                                  00027500*NEW
00441   255*          GO TO 113                                                                 00027600*NEW
00442   256*      109 JFL = 5                                                                   00027700*NEW
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```
00443   257*          IFLG = 2                                                                  00027800*NEW
00444   258*          GO TO 110                                                                 00027900*NEW
00445   259*      137 KTT = KT+1                                                                00028000*NEW
00446   260*          IF (GTIDE(KTT).GT.Z(I,J)) GO TO 77                                        00028100*NEW
00450   261*          KT=KT+1                                                                       *NEW
00451   262*          QXN(I,J) = 0.0                                                            00028200*NEW
00452   263*          GO TO 75                                                                  00028300*NEW
00453   264*      138 KTT = KT+1                                                                00028400*NEW
00454   265*          IF (GTIDE(KTT).GT.Z(I,J)) GO TO 93                                        00028500*NEW
00456   266*          KT=KT+1                                                                       *NEW
00457   267*          QXN(I,J) = 0.0                                                            00028600*NEW
00460   268*          GO TO 98                                                                  00028700*NEW
00461   269*      139 KTT = KT+1                                                                00028800*NEW
00462   270*          IF (GTIDE(KTT).GT.Z(I+1,J)) GO TO 95                                      00028900*NEW
00464   271*          KT=KT+1                                                                       *NEW
00465   272*          QXN(I,J) = 0.0                                                            00029000*NEW
00466   273*          GO TO 70                                                                  00029100*NEW
00467   274*      140 KBT=KB+1                                                                  00029200*NEW
00470   275*          IFLG=3                                                                    00029300*NEW
00471   276*          IF(H(I,J).GT.ZB(KBT).OR.H(I+1,J).GT.ZB(KBT))GO TO 72                      00029400*NEW
00473   277*          QXN(I,J)=0.                                                               00029500*NEW
00474   278*          KB=KB+1                                                                   00029600*NEW
00475   279*          GO TO 78                                                                  00029700*NEW
00476   280*      141 JFL=2                                                                     00029800*NEW
00477   281*          QYN(I,J)=0.                                                               00029900*NEW
00500   282*      162 KBT=KB+1                                                                  00030000*NEW
00501   283*          IF(H(I,J).GT.ZB(KBT).AND.H(I+1,J).GT.ZB(KBT))GO TO 160                    00030100*NEW
00503   284*          HMAX=AMAX1(H(I,J),H(I+1,J))                                               00030200*NEW
00504   285*          IF(HMAX.GT.ZB(KBT))GO TO 161                                              00030300*NEW
00506   286*          KB=KB+1                                                                       *NEW
00507   287*          QXN(I,J)=0.                                                               00030400*NEW
00510   288*          GO TO (106,98,171),JFL                                                        *NEW
00511   289*      160 GO TO (108,84,168),JFL                                                        *NEW
00512   290*      161 KB=KB+1                                                                   00030700*NEW
00513   291*          DBX=HMAX-ZB(KB)                                                           00030800*NEW
00514   292*          SIGN=1.0                                                                      *NEW
00515   293*          IF(H(I+1,J).GT.ZB(KB))SIGN=-1.0                                               *NEW
00517   294*          QXN(I,J)=SIGN*CB(KB)*DBX*SQTG*SQRT(DBX)                                       *NEW
00520   295*          GO TO (114,98,171),JFL                                                        *NEW
00521   296*      142 JFL=1                                                                     00031300*NEW
00522   297*          GO TO 162                                                                 00031400*NEW
00523   298*      143 JFL=2                                                                     00031500*NEW
00524   299*          QXN(I,J)=0.                                                               00031600*NEW
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00525   300*      165 KBT=KB+1                                                                  00031700*NEW
00526   301*      166 IF(H(I,J).GT.ZB(KBT).AND.H(I,J+1).GT.ZB(KBT))GO TO 163                          *NEW
00530   302*          HMAX=AMAX1(H(I,J),H(I,J+1))                                               00031900*NEW
00531   303*          IF(HMAX.GT.ZB(KBT))GO TO 164                                              00032000*NEW
00533   304*          KB=KB+1                                                                       *NEW
00534   305*          QYN(I,J)=0.                                                               00032100*NEW
00535   306*          GO TO (103,98,167,98),JFL                                                     *NEW
00536   307*      163 GO TO (105,78,72,78),JFL                                                      *NEW
00537   308*      164 KB=KB+1                                                                   00032400*NEW
00540   309*          IF(IFLAG(I,J).NE.45.OR.JFL.EQ.4)GO TO 169                                     *NEW
00542   310*          KB=KB+1                                                                   00032600*NEW
00543   311*      169 DBY=HMAX-ZB(KB)                                                           00032800*NEW
00544   312*          SIGN=1.0                                                                      *NEW
00545   313*          IF(H(I,J+1).GT.ZB(KB))SIGN=-1.0                                               *NEW
00547   314*          QYN(I,J)=SIGN*CB(KB)*DBY*SQTG*SQRT(DBY)                                       *NEW
00550   315*          GO TO (115,98,170,98),JFL                                                     *NEW
00551   316*      144 JFL=1                                                                     00033300*NEW
00552   317*          GO TO 165                                                                 00033400*NEW
00553   318*      145 JFL=3                                                                     00033500*NEW
00554   319*          IFLG=3                                                                    00033600*NEW
00555   320*          GO TO 162                                                                     *NEW
00556   321*      171 JFL=4                                                                         *NEW
00557   322*          GO TO 165                                                                     *NEW
00560   323*      168 KBT=KB+2                                                                      *NEW
00561   324*          GO TO 166                                                                     *NEW
00562   325*      167 KB=KB-1                                                                       *NEW
00563   326*          IFLG=45                                                                       *NEW
00564   327*          GO TO 84                                                                      *NEW
00565   328*      170 KB=KB-2                                                                   00034100*NEW
00566   329*          IFLG=45                                                                   00034300*NEW
00567   330*          GO TO 84                                                                      *NEW
00570   331*       96 QXN(I,J)=(QX(I,J)+GDTODS*DBARX*(H(I,J)-H(I+1,J))-DT*QYBAR*QDIFXS          00034500*NEW
00570   332*         1+DT2*DBARX*OMEGA*QYBAR+DT*XW)/COEFX                                       00034600*NEW
00571   333*          IF (IFLG.GT.11) GO TO 98                                                  00034700*NEW
00573   334*       97 QYN(I,J)=(QY(I,J)+GDTODS*DBARY*(H(I,J)-H(I,J+1))-DT*QXBAR*QDIFYS          00034800*NEW
00573   335*         1+DT2*DBARY*OMEGA*QXBAR+DT*YW)/COEFY                                       00034900*NEW
00574   336*       98 HN(I,J) = H(I,J)+DTODS*((QXN(I-1,J)-QXN(I,J))+                            00035000*NEW
00574   337*         *                          (QYN(I,J-1)-QYN(I,J)))+DT*(R-E)                 00035100*NEW
00575   338*       70 CONTINUE                                                                  HYD 0864-141
00577   339*          IF(KRSOFN.NE.1)GO TO 250                                                      *NEW
00601   340*          CALL RITCTP                                                                   *NEW
00602   341*      250 DO 100 N=1,KOUNT                                                              *NEW
00605   342*          I=ICLL(N)                                                                     *NEW
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```
00606    343*          J=JCLL(N)                                                    *NEW
00607    344*          QX(I,J)=QXN(I,J)                                    HYD 0867**-2
00610    345*          QY(I,J)=QYN(I,J)                                    HYD 0868
00611    346*          H(I,J)=HN(I,J)                                      HYD 0869
00612    347*          D(I,J) = H(I,J)-Z(I,J)                              HYD 0870
00613    348*          IF (D(I,J).GT.0.0) GO TO 100                                 *NEW
00615    349*          D(I,J) = 0.1                                                 *NEW
00616    350*          H(I,J) = Z(I,J)                                              *NEW
00617    351*      100 CONTINUE                                            HYD 0871
00621    352*          RETURN                                              HYD 0872
00622    353*          END                                                 HYD 0873

      END OF UNIVAC 1108 FORTRAN V COMPILATION.     0 *DIAGNOSTIC* MESSAGE(S)
    CALCQH           SYMBOLIC          05 MAY 72  12:54:31    0  00071450     14   187  (DELETED)
    CALCQH  CODE     RELOCATABLE       05 MAY 72  12:54:31    1  00076542     24     1  (DELETED)
                                                             0  00076572     14    77
```

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@I FOR,* PRINTI,PRINTI                                                    05 FEB 73   12:06:42.801
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:42


   SUBROUTINE PRINTI     ENTRY POINT 000512

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001    *CODE    000525
         0000    *DATA    000514
         0002    *BLANK   032477
         0003    ALL      007133
         0004    MQPI     002311


   EXTERNAL REFERENCES (BLOCK, NAME)

     0005   NPRT$          0006   NIO2$          0007   NIO1$          0010   NWDU$          0011   NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

    0001   000043 122G      0001   000071 142G      0000   000067 150F      0000   000102 151F
    0000   000115 152F      0001   000103 153L      0000   000201 154F      0000   000212 155F
    0000   000230 156F      0000   000247 157F      0000   000275 158F      0000   000312 159F
    0001   000130 171G      0000   000452 2055F     0001   000156 210G      0000   000130 219F
    0000   000145 220F      0001   000206 231G      0000   000434 240F      0000   000445 242F
    0000   000333 260F      0001   000244 260G      0000   000343 261F      0001   000263 266G
    0000   000364 270F      0000   000404 271F      0000   000410 273F      0000   000375 276F
    0000   000401 277F      0001   000276 277G      0000   000413 280F      0001   000472 300L
    0000   000423 301F      0000   000431 303F      0001   000316 314G      0001   000331 320G
    0001   000342 327G      0001   000355 336G      0001   000372 346G      0001   000412 354G
    0001   000426 363G      0001   000453 400G      0001   000461 405G      0002   032436 A0
    0002 R 021443 CB        0002 R 021777 CELSID     0002   032434 CON1      0002   032435 CON2
    0002 R 021063 CT        0002   032442 C1        0002   032446 C2        0002   032452 C3
    0002   000000 D         0002   032361 DS        0002   032365 DT        0002   032404 DTODS
    0002   032432 DT02DS     0002   032366 DT2       0002 R 032427 E         0002 R 013755 F
    0002   032362 G         0002   032363 GCDT04    0002   032364 GDTODS    0002   021347 GTIDE
    0002   031103 G1        0002   031223 G41       0002   031343 G42       0002   031463 G43
    0003   004622 H         0002   023677 HF        0002   004622 HN        0002   022667 HPLT
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0002    022655 HPRT      0002    023763 HPRTA     0000 I 000063 I          0002 I 022155 IBAR
0002 I  031603 IDTIDE    0000 I  000000 IDUMY     0002 I 016266 IFLAG      0002 I 020673 IFLOW
0002 I  032357 IMAX      0002    032421 INETFL    0000   000460 INJP$      0002   032431 IODISP
0002    032424 IONFLO    0002    032423 IONVEL    0002 I 022561 IP         0002 I 032422 IPDATA
0002    032430 ISAVQH    0002 I  021157 ITIDE     0000 I 000064 J          0002 I 022333 JBAR
0004 I  000000 JFLAG     0002 I  020767 JFLOW     0000 I 000065 JJ         0000 I 000066 JK
0002 I  032360 JMAX      0002 I  022605 JP        0002 I 021253 JTIDE      0002   032412 KINDAT
0002    032413 KINIQH    0002    032433 KO        0002   032420 KODISP     0002   032416 KONETF
0002    032415 KONETV    0002    032417 KOTVEL    0002   032410 KOUTCD     0002   032414 KOUTDA
0002    032411 KOUTPP    0000 I  000062 L         0002   032472 LINMAX     0002   032407 M
0002 I  032402 NFLOW     0002 I  032425 NPLOT     0002 I 032401 NREEF      0002 I 032403 NTIDE
0002 R  032373 OMEGA     0002 R  032374 PHI       0002   032456 PHI1       0002   032462 PHI2
0002    032466 PHI3      0002    032372 PTIME     0002 R 020577 QINFLO      0003   000000 QX
0002    007133 QXN       0003    002311 QY        0002   011444 QYN        0002 R 032426 R
0002 R  022511 STATON    0002    032370 TCOUNT    0002 R 032376 THETA       0002   030643 THETA1
0002    030523 TI        0002    031677 TIDE1     0002   032013 TIDE2      0002   032127 TIDE3
0002    032243 TIDE4     0002    032473 TID1      0002   032474 TID2       0002   032475 TID3
0002    032476 TID4      0002    023731 TIM       0002   032367 TIME       0002   032406 TIMVEL
0002    032405 TMARK     0002    032371 TPER      0002   022631 UAPRT      0002   025423 UAPRTA
0002    022643 VAPRT     0002    027063 VAPRTA    0002 R 032375 W          0002   030763 W2
0002    032377 XW        0002    032400 YW        0002 R 002311 Z          0002 R 021621 ZB
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00101     1*          SUBROUTINE PRINTI                                                HYD 0884
00101     2*    C                                                                      HYD 0874
00101     3*    C                THIS SUBROUTINE PRINTS ALL DATA READ IN                     *NEW
00101     4*    C             BY THE EXECUTIVE CONTROL ROUTINE, EXCEPT FOR THAT         HYD 0877**-1
00101     5*    C             PREVIOUSLY PRINTED BY THAT ROUTINE. APPROPRIATE           HYD 0878
00101     6*    C             DESCRIPTIVE HEADINGS AND TITLES ARE PRINTED WITH THE      HYD 0879
00101     7*    C             DATA SO THAT MODEL USERS CAN CHECK TO SEE THAT ALL        HYD 0880
00101     8*    C             PROTOTYPE CONDITIONS ARE PROPERLY ACCOUNTED FOR IN        HYD 0881
00101     9*    C             THE MODEL.                                                HYD 0882
00101    10*    C                                                                      HYD 0883
00103    11*          COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),              *NEW
00103    12*         1F(35,35),IFLAG(35,35)                                                  *NEW
00104    13*          COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),      *NEW
00104    14*         *       GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),      **-3
00104    15*         *       STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
00104    16*         *       HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
00104    17*         *       VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
00104    18*         *       G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
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00104    19*          *       TIDE4(76)
00105    20*           COMMON IMAX,JMAX,DS,G,GDT04,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,HYD 0894
00105    21*          *       OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,      HYD 0895
00105    22*          *       TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIGH,KOUTDA,KONETV,KONETF, HYD 0896
00105    23*          *       KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00105    24*          *       ISAVGH,IODISP,DT02DS,KO                                     HYD 0898
00106    25*           COMMON CON1,CON2,A0(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00107    26*           COMMON LINMAX,TID1,TID2,TID3,TID4
00110    27*           COMMON/ALL/QX(35,35),QY(35,35),H(35,35)                                  *NEW
00111    28*           COMMON/MQPI/JFLAG(35,35)                                                 *NEW
00112    29*           DIMENSION IDUMY(50)
00113    30*           PRINT 2055                                                          HYD 0904
00115    31*           PRINT 150                                                           HYD 0905
00117    32*     150   FORMAT(9X,53HSTATION LOCATIONS FOR TIME PRINT-OUT OF HYDRODYNAMICSHYD 0906
00117    33*          .,//)                                                                HYD 0907
00120    34*           PRINT 151,(L,STATON(1,L),STATON(2,L),IP(L),JP(L),L=1,20)            HYD 0908
00132    35*     151   FORMAT (9X,15HSTATION NUMBER ,I2,5X,A4,A4,5X,4HI = ,I2,5X,4HJ = , HYD 0909
00132    36*          *I2,/)                                                               HYD 0910
00133    37*           IF(NPLOT.EQ.0)GO TO 153                                             HYD 0911
00135    38*           PRINT 152                                                           HYD 0912
00137    39*     152   FORMAT(///,9X,49HSTATION LOCATIONS FOR TIME PLOTS OF HYDRODYNAMICSHYD 0913
00137    40*          .,//)                                                                HYD 0914
00140    41*           PRINT 151,(L,STATON(1,L),STATON(2,L),IP(L),JP(L),L=1,NPLOT)         HYD 0915
00152    42*     153   PRINT 219                                                           HYD 0916
00154    43*       219 FORMAT (///,9X,58HINITIAL WIND CONDITIONS AND RAINFALL AND EVAPORAHYD 0917
00154    44*          *TION RATES,//)                                                      HYD 0918
00155    45*           PRINT 220, W,THETA,R,E                                              HYD 0919
00163    46*       220 FORMAT (9X,16HWIND VELOCITY = ,F5.1,6H KNOTS,//,9X,13HWIND ANGLE =HYD 0920
00163    47*          * ,F5.1,8H DEGREES,//,9X,16HRAINFALL RATE = ,F5.3,8H IN./DAY,//,   H
00163    48*          *9X,19HEVAPORATION RATE = ,F5.3,8H IN./DAY)
00164    49*           PRINT 154                                                           HYD 0923
00166    50*     154   FORMAT(///9X,38HEXTERNAL FLOW LOCATIONS AND QUANTITIES,//)         HYD 0924
00167    51*           PRINT 155,(I,IFLOW(I),JFLOW(I),QINFLO(I),I=1,NFLOW)                 HYD 0925
00200    52*     155   FORMAT (9X,14HINFLOW NUMBER ,I2,5X,4HI = ,I2,5X,4HJ = ,I2,5X,9HQINHYD 0926
00200    53*          *FLO = ,F7.1,4H CFS,/)                                               HYD 0927
00201    54*           PRINT 2055                                                          HYD 0928
00203    55*           PRINT 156                                                           HYD 0929
00205    56*     156   FORMAT(///,9X,71HSUBMERGED BARRIER LOCATIONS, DISCHARGE COEFFICIENHYD 0930
00205    57*          .TS, AND MSL ELEVATIONS,//)                                          HYD 0931
00206    58*           PRINT 157,(I,IBAR(I),JBAR(I),CELSID(I),CB(I),ZB(I),I=1,NREEF)       HYD 0932
00221    59*     157   FORMAT (9X,12HBARRIER NO. ,I3,4X,4HI = ,I2,4X,4HJ = ,I2,4X,A4,1X,       *NEW
00221    60*          *8HBOUNDARY,4X,14HCOEFFICIENT = ,F4.2,4X,12HELEVATION = ,F5.1,5H FE      *NEW
00221    61*          *ET,/)                                                                   *NEW
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00222    62*          PRINT 2055                                                    HYD 0936**-3
00224    63*          PRINT 158                                                     HYD 0937
00226    64*   158    FORMAT (///,9X,59HGULF TIDAL DISCHARGE COEFFICIENTS AND CELL TIDE HYD 0938
00226    65*         *ASSIGNMENTS,//)                                               HYD 0939
00227    66*          PRINT 159, (I,ITIDE(I),JTIDE(I),CT(I),IDTIDE(I), I=1,NTIDE)   HYD 0940
00241    67*   159    FORMAT(9X,11HTIDAL CELL ,I2,5X,4HI = ,I2,5X,4HJ = ,I2,5X,14HCOEFFIHYD 0941
00241    68*         .CIENT = ,F4.2,5X,11HTIDE = TIDE,I1,/)                         HYD 0942
00242    69*          PRINT 260                                                     HYD 0943
00244    70*     260 FORMAT (///,9X,30HDATA FOR CORIOLIS ACCELERATION,//)           HYD 0944
00245    71*          PRINT 261, OMEGA,PHI                                          HYD 0945
00251    72*     261 FORMAT (9X,28HANGULAR ROTATION OF EARTH = ,F9.7,10H RAD./SEC.,//, HYD 0946
00251    73*        *9X,18HLATITUDE OF BAY = ,F5.2,8H DEGREES,/)                   HYD 0947
00252    74*          PRINT 2055                                                    HYD 0948
00254    75*          PRINT 270                                                     HYD 0949
00256    76*     270 FORMAT (9X,42HMEAN SEA LEVEL WATER DEPTHS THROUGHOUT BAY,//)   HYD 0950
00257    77*          DO 275 J=1,JMAX
00262    78*          JJ = JMAX-J+1
00263    79*          PRINT 276, JJ,(Z(I,JJ), I=1,IMAX)                                *NEW
00272    80*     275 CONTINUE                                                          *NEW
00274    81*     276 FORMAT (3X,I2,2X,15(1X,F5.1))                                     *NEW
00275    82*          PRINT 277, (I, I=1,IMAX)                                         *NEW
00303    83*     277 FORMAT (/,2X,3HJ/I,15I6)                                          *NEW
00304    84*     271 FORMAT (/,2X,3HJ/I,1X,41I3)                                       *NEW
00305    85*     273 FORMAT (3X,I2,1X,41I3)                                            **-5
00306    86*          PRINT 2055                                                    HYD 0958
00310    87*          PRINT 280                                                     HYD 0959
00312    88*     280 FORMAT (9X,34HCOMPUTATIONAL CELL IDENTIFICATIONS,//)           HYD 0960
00313    89*          DO 282 J=1,JMAX
00316    90*          JJ = JMAX-J+1
00317    91*          DO 284 I=1,IMAX
00322    92*     284 IDUMY(I) = IFLAG(I,JJ)
00324    93*     282 PRINT 273,JJ, (IDUMY(I),I=1,IMAX)
00334    94*          PRINT 271, (I,I=1,IMAX)
00342    95*          WRITE(6,301)                                                     *NEW
00344    96*     301 FORMAT(1H1,9X,19HCONVECTION FLAGGING,//)                          *NEW
00345    97*          DO 302 J=1,JMAX                                                  *NEW
00350    98*          JK=JMAX-J+1                                                      *NEW
00351    99*     302 WRITE(6,303)JK,(JFLAG(I,JK),I=1,IMAX)                             *NEW
00361   100*          WRITE(6,271)(I,I=1,IMAX)                                         *NEW
00367   101*     303 FORMAT(3X,I2,1X,41I3)                                             *NEW
00370   102*          PRINT 2055                                                    HYD 0965
00372   103*          IF(IPDATA.EQ.3)GO TO 300
00374   104*          PRINT 240                                                     HYD 0967
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00376   105*      240 FORMAT (/9X,39HMANNINGS N BOTTOM FRICTION COEFFICIENTS,//)        HYD 0968
00377   106*          DO 241 J=1,JMAX                                                  HYD 0969
00402   107*      241 PRINT 242,J,(F(I,J),I=1,IMAX)                                    HYD 0970
00412   108*      242 FORMAT (/9X,4HJ = ,I2,/,(9X,10F8.5))                             HYD 0971
00413   109*      300 CONTINUE                                                         HYD 0972
00414   110*     2055 FORMAT (1H1)                                                     HYD 0973
00415   111*          RETURN                                                           HYD 0974
00416   112*          END                                                              HYD 0975

      END OF UNIVAC 1108 FORTRAN V COMPILATION.     0 *DIAGNOSTIC* MESSAGE(S)
   PRINTI          SYMBOLIC                 05 MAY 72  12:54:33   0  00100660    14   102  (DELETED)
   PRINTI  CODE    RELOCATABLE              05 MAY 72  12:54:33   1  00103504    24     1  (DELETED)
                                                                  0  00103534    14    57
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@I FOR,* PRINTO,PRINTO                                                    05 FEB 73   12:06:44.706
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:44

   SUBROUTINE PRINTO    ENTRY POINT 000706

              PRINTT    ENTRY POINT 000711

              SAVEQH    ENTRY POINT 000714


              PRT11     ENTRY POINT 000717

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001   *CODE   000722
         0000   *DATA   000204
         0002   *BLANK  032477
         0003   ALL     007133
         0004   PUN     004622


   EXTERNAL REFERENCES (BLOCK, NAME)

     0005   NPRT$          0006   NIO2$          0007   NIO1$          0010   NREW$          0011   NERR2$
     0012   NWDC$          0013   NWBU$          0014   NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

     0001   000316 1L      0000   000130 110F    0000   000132 111F    0001   000436 115L
     0001   000517 12L     0000   000107 1205F   0001   000016 124G    0001   000016 126G
     0001   000047 142G    0000   000031 16F     0001   000121 164G    0001   000133 174G
     0001   000370 2L      0000   000135 202F    0000   000134 203F    0001   000145 204G
     0000   000030 2055F   0001   000157 213G    0001   000535 22L     0001   000216 237G
     0001   000331 264G    0001   000335 270G    0001   000347 277G    0001   000353 303G
     0001   000406 316G    0001   000407 320G    0001   000424 327G    0001   000425 331G
     0001   000453 343G    0001   000467 355G    0001   000501 365G    0000   000056 40F
     0001   000531 402G    0001   000531 404G    0000   000066 41F     0000   000101 410F
     0000   000074 411F    0001   000554 416G    0001   000567 425G    0001   000602 434G
     0001   000022 44L     0001   000614 443G    0002   032436 AO      0002   021443 CB
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0002    021777 CELSID     0002    032434 CON1       0002    032435 CON2       0002    021063 CT
0002    032442 C1         0002    032446 C2         0002    032452 C3         0002 R  000000 D
0002 R  032361 DS         0002    032365 DT         0002    032404 DTODS      0002    032432 DTO2DS
0002 R  032366 DT2        0000 R  000020 DXA        0000 R  000021 DYA        0002    032427 E
0002    013755 F          0002    032362 G          0002    032363 GCDTO4     0002    032364 GDTODS
0002    021347 GTIDE      0002 R  031103 G1         0002 R  031223 G41        0002 R  031343 G42
0002 R  031463 G43        0003 R  004622 H          0002    023677 HF         0002    004622 HN
0002    022667 HPLT       0002 R  022655 HPRT       0002 R  023763 HPRTA      0000 I  000025 I
0002    022155 IBAR       0002    031603 IDTIDE     0002    016266 IFLAG      0002    020673 IFLOW
0002 I  032357 IMAX       0002    032421 INETFL     0000    000153 INJP$      0002    032431 IODISP
0002    032424 IONFLO     0002    032423 IONVEL     0002 I  022561 IP         0002    032422 IPDATA
0002 I  032430 ISAVQH     0002    021157 ITIDE      0000 I  000024 J          0002    022333 JBAR
0002    020767 JFLOW      0002 I  032360 JMAX       0002 I  022605 JP         0002    021253 JTIDE
0000 I  000013 K          0002    032412 KINDAT     0002    032413 KINIQH     0000 I  000026 KK
0002 I  032433 KO         0002    032420 KODISP     0002    032416 KONETF     0002    032415 KONETV
0002    032417 KOTVEL     0002    032410 KOUTCD     0002 I  032414 KOUTDA     0002    032411 KOUTPP
0000 I  000023 KTR        0000 I  000016 K1         0000 I  000017 K2         0000 I  000014 L
0002 I  032472 LINMAX     0002    032407 M          0000 I  000027 N          0002    032402 NFLOW
0000 I  000012 NLINES     0002    032425 NPLOT      0002    032401 NREEF      0002    032403 NTIDE
0002    032373 OMEGA      0002    032374 PHI        0002    032456 PHI1       0002    032462 PHI2
0002    032466 PHI3       0002    032372 PTIME      0002    020577 QINFLO     0003 R  000000 QX
0002    007133 QXN        0003 R  002311 QY         0002    011444 QYN        0002    032426 R
0002 R  022511 STATON     0002 R  032370 TCOUNT     0002 R  032376 THETA     0000 R  000022 THETAP
0002 R  030643 THETA1     0002 R  030523 TI         0002    031677 TIDE1      0002    032013 TIDE2
0002    032127 TIDE3      0002    032243 TIDE4      0002 R  032473 TID1       0002 R  032474 TID2
0002 R  032475 TID3       0002 R  032476 TID4       0002    023731 TIM        0002 R  032367 TIME
0000 R  000015 TIMP       0002    032406 TIMVEL     0002    032405 TMARK      0002    032371 TPER
0002 R  022631 UAPRT      0002 R  025423 UAPRTA     0004 R  000000 UPLT       0002 R  022643 VAPRT
0002 R  027063 VAPRTA     0004 R  002311 VPLT       0002 R  032375 W          0002 R  030763 W2
0002    032377 XW         0002    032400 YW         0002 R  002311 Z          0002    021621 ZB
0000 R  000000 ZPRT
```

```
00101     1*          SUBROUTINE PRINTO                                                    HYD 0988
00101     2*    C                                                                          HYD 0976
00101     3*    C                THIS SUBROUTINE OUTPUTS THE VALUES OF TIDAL                     *NEW
00101     4*    C              AMPLITUDES AND FLOWS PER UNIT WIDTH AT SPECIFIED TIME        HYD 0979**-1
00101     5*    C              INTERVALS FOR TWENTY PRESPECIFIED GRID CELLS LOCATED         HYD 0980
00101     6*    C              IN THE SYSTEM. IF FINAL COMPUTED VALUES OF TIDAL             HYD 0981
00101     7*    C              AMPLITUDES AND FLOWS PER UNIT WIDTH FOR ALL GRID             HYD 0982
00101     8*    C              ELEMENTS ARE DESIRED FOR A RESTART CAPABILITY AT THE             *NEW
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00101     9*   C              END OF THE SIMULATION PERIOD, CONTROL CAN BE TRANSFERRED HYD 0984**-1
00101    10*   C              TO THIS SUBROUTINE WHERE THESE VALUES CAN BE OUTPUTTED   HYD 0985
00101    11*   C              TO CARDS OR MAGNETIC TAPE.                               HYD 0986
00101    12*   C                                                                       HYD 0987
00103    13*         COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),              *NEW
00103    14*        1F(35,35),IFLAG(35,35)                                                  *NEW
00104    15*         COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),      *NEW
00104    16*        *       GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),      **-3
00104    17*        *       STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
00104    18*        *       HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
00104    19*        *       VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
00104    20*        *       G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
00104    21*        *       TIDE4(76)
00105    22*         COMMON IMAX,JMAX,DS,G,GDT04,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,HYD 0998
00105    23*        *       OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,      HYD 0999
00105    24*        *       TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIQH,KOUTDA,KONETV,KONETF,  HYD 1000
00105    25*        *       KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00105    26*        *       ISAVQH,IODISP,DT02DS,KO                                  HYD 1002
00106    27*         COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00107    28*         COMMON LINMAX,TID1,TID2,TID3,TID4
00110    29*         COMMON/ALL/QX(35,35),QY(35,35),H(35,35)                                *NEW
00111    30*         COMMON/PUN/UPLT(35,35),VPLT(35,35)                                     *NEW
00112    31*         DIMENSION ZPRT(10)                                                     *NEW
00113    32*         IF (NLINES.NE.LINMAX) GO TO 44
00115    33*         ENTRY PRINTT                                                        HYD 1008
00116    34*         NLINES = 0                                                          HYD 1009
00117    35*         PRINT 2055                                                          HYD 1010
00121    36*   2055  FORMAT (1H1)                                                        HYD 1011
00122    37*         PRINT 16,((STATON(K,L), K=1,2), L=1,10)                             HYD 1012
00133    38*     16  FORMAT(3X,23HTIME    SEA    HYDRO-  ,19X, 43HPRINTOUT STATIONS THR      *NEW
00133    39*        *OUGHOUT SYSTEM        ,/3X,22HHOURS   TIDE  DYNAMICS,2X,10(A4,A4))     **-1
00134    40*     44  NLINES = NLINES+1                                                  HYD 1015
00135    41*         KO=KO+1                                                             HYD 1016
00136    42*         TCOUNT = DT2                                                        HYD 1017
00137    43*         TIMP = TIME/60.0                                                    HYD 1018
00140    44*         TI(KO)=TIMP                                                         HYD 1019
00141    45*         DO 38 K=1,10                                                        HYD 1020
00144    46*         K1 = IP(K)                                                          HYD 1021
00145    47*         K2 = JP(K)                                                          HYD 1022
00146    48*         HPRT(K) = H(K1,K2)                                                  HYD 1023
00147    49*         UAPRT(K) = QX(K1,K2)*DS/60.0
00150    50*         VAPRT(K) = QY(K1,K2)*DS/60.0
00151    51*         ZPRT(K) = Z(K1,K2)                                                     *NEW
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```
00152    52*          DXA = 0.5*(D(K1,K2)+D(K1+1,K2))*60.0                                    *NEW
00153    53*         DYA = 0.5*(D(K1,K2)+D(K1,K2+1))*60.0                                     *NEW
00154    54*         UPLT(KO,K) = QX(K1,K2)/DXA                                               *NEW
00155    55*         VPLT(KO,K) = QY(K1,K2)/DYA                                               *NEW
00156    56*       38 CONTINUE                                                          HYD 1026
00160    57*         PRINT 40, TIMP,TID1,(HPRT(K), K=1,10)                                    **-1
00170    58*       40 FORMAT (/,1X,F6.2,2X,F6.3,12H  MSL TIDE  ,10(F6.3,2X))            HYD 1028
00171    59*         PRINT 41, TID2,(UAPRT(K), K=1,10)
00200    60*       41 FORMAT (9X,F6.3,2X,8HXFLO CFS,1X,10F8.0)
00201    61*         PRINT 410, TID3,(VAPRT(K), K=1,10)
00210    62*         PRINT 411, TID4,(ZPRT(K), K=1,10)                                        *NEW
00217    63*      411 FORMAT (9X,F6.3,2X,8HGRD ELEV,10F8.2)                                   *NEW
00220    64*      410 FORMAT (9X,F6.3,2X,8HYFLO CFS,1X,10F8.0)
00221    65*         THETAP = THETA*180.0/3.1416                                          HYD 1033
00222    66*         PRINT 1205, TID4,W,THETAP
00227    67*     1205 FORMAT (9X,F6.3,2X,13HWIND SPEED = ,F5.1,6H KNOTS,10X,17HWIND DIREHYD 1035
00227    68*         *CTION = ,F6.1,22H DEGREES W.R.T. X-AXIS)                            HYD 1036
00230    69*         THETA1(KO) = THETAP                                                  HYD 1037
00231    70*         W2(KO)=W                                                             HYD 1038
00232    71*         G1(KO) = TID1
00233    72*         G41(KO) = TID2
00234    73*         G42(KO) = TID3
00235    74*         G43(KO) = TID4
00236    75*         DO 39 K=11,20                                                        HYD 1043
00241    76*         K1=IP(K)                                                             HYD 1044
00242    77*         K2=JP(K)                                                             HYD 1045
00243    78*         KTR=K-10                                                             HYD 1046
00244    79*         HPRTA(KO,KTR)=H(K1,K2)                                               HYD 1047
00245    80*         UAPRTA(KO,KTR)=QX(K1,K2)*DS/60.0
00246    81*         VAPRTA(KO,KTR)=QY(K1,K2)*DS/60.0
00247    82*         ZPRT(KTR) = Z(K1,K2)                                                     *NEW
00250    83*         DXA=0.5*(D(K1,K2)+D(K1+1,K2))*60.                                        *NEW
00251    84*         DYA=0.5*(D(K1,K2)+D(K1,K2+1))*60.                                        *NEW
00252    85*         UPLT(KO,K  )=QX(K1,K2)/DXA                                               *NEW
00253    86*         VPLT(KO,K  )=QY(K1,K2)/DYA                                               *NEW
00254    87*   39    CONTINUE                                                             HYD 1050
00256    88*         RETURN                                                               HYD 1051
00257    89*         ENTRY SAVEQH                                                         HYD 1052
00260    90*         IF (ISAVQH.GT.1) REWIND KOUTDA                                       HYD 1053
00262    91*         GO TO (1,2,1), ISAVQH                                                HYD 1054
00263    92*       1 DO 108 J=1,JMAX                                                      HYD 1055
00266    93*       108 PUNCH 110, (H(I,J), I=1,IMAX)                                      HYD 1056
00275    94*       110 FORMAT (8F10.5)                                                    HYD 1057
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00276    95*          DO 109 J=1,JMAX                                                    HYD 1058
00301    96*      109 PUNCH 111, (QX(I,J),QY(I,J), I=1,IMAX)
00311    97*      111 FORMAT (8F10.4)
00312    98*          IF (ISAVQH.NE.3) GO TO 115                                         HYD 1060
00314    99*        2 WRITE (KOUTDA) ((H(I,J), I=1,IMAX), J=1,JMAX)                      HYD 1061
00325   100*          WRITE (KOUTDA) ((QX(I,J),QY(I,J), I=1,IMAX), J=1,JMAX)           HYD 1062
00337   101*      115 CONTINUE                                                         HYD 1063
00340   102*          RETURN                                                           HYD 1064
00341   103*          ENTRY PRT11                                                      HYD 1065
00341   104*    C      FIRST CARDS VX, SECOND CARDS VY                                        *NEW
00342   105*          DO 201 K=1,20                                                          *NEW
00345   106*          PUNCH 203, K                                                           *NEW
00350   107*      203 FORMAT (I5)                                                        *NEW
00351   108*          PUNCH 202, IP(K),JP(K),(UPLT(KK,K), KK=1,KO)                       *NEW
00361   109*          PUNCH 202, IP(K),JP(K),(VPLT(KK,K), KK=1,KO)                       *NEW
00371   110*      202 FORMAT (2I4,18F4.1,/,20F4.1)                                       *NEW
00372   111*      201 CONTINUE                                                           *NEW
00374   112*          K=1                                                              HYD 1066
00375   113*    12    NLINES = 0                                                       HYD 1067
00376   114*          PRINT 2055                                                       HYD 1068
00400   115*          PRINT 16,((STATON(N,L), N=1,2), L=11,20)                         HYD 1069
00411   116*    22    NLINES=NLINES+1                                                  HYD 1070
00412   117*          PRINT 40,TI(K),G1(K),(HPRTA(K,KTR),KTR=1,10)                     HYD 1071
00422   118*          PRINT 41,G41(K),(UAPRTA(K,KTR),KTR=1,10)                         HYD 1072
00431   119*          PRINT 410,G42(K),(VAPRTA(K ,KTR),KTR=1,10)                       HYD 1073
00440  *DIAGNOSTIC*    =  IS AN IMPROPER PUNCTUATION MARK.
00440   120*          PRINT 411, G43(K),(ZPRT(KTR), KTR=1=10)                                *NEW
00447   121*          PRINT 1205,G43(K),W2(K),THETA1(K)                                HYD 1074
00454   122*          IF(K.EQ.KO)RETURN                                                HYD 1075
00456   123*          K=K+1                                                            HYD 1076
00457   124*          IF (NLINES.NE.LINMAX) GO TO 22
00461   125*          GO TO 12                                                         HYD 1078
00462   126*          END                                                              HYD 1079

   END OF UNIVAC 1108 FORTRAN V COMPILATION.     1 *DIAGNOSTIC* MESSAGE(S)
PRINTO          SYMBOLIC                  05 MAY 72  12:54:35   0  00105172    14   103  (DELETED)
PRINTO  CODE    RELOCATABLE               05 MAY 72  12:54:35   1  00110034    36     1  (DELETED)
                                                                0  00110100    14    44
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@I FOR,* NETVQD,NETVQD                                          05 FEB 73   12:06:46.983
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:47

   SUBROUTINE NETVQD    ENTRY POINT 001212

              NETFLO    ENTRY POINT 001215

              UVDXDY    ENTRY POINT 001220

              PVLDEP    ENTRY POINT 001223

              PFLDEP    ENTRY POINT 001226

              UVDOUT    ENTRY POINT 001231


              ZEROS     ENTRY POINT 001234

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001   *CODE   001237
         0000   *DATA   003776
         0002   *BLANK  032477
         0003   ALL     007133


   EXTERNAL REFERENCES (BLOCK, NAME)

     0004   NPRT$          0005   NIO2$          0006   NERR2$         0007   NWDC$          0010   NIO1$
     0011   NWBU$          0012   NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

     0001   000312 1L        0000   001740 108F      0001   000533 11L       0001   000016 114G
     0001   000017 117G      0001   000605 12L       0001   000114 140G      0001   000115 143G
     0001   000156 157G      0001   000157 162G      0001   000364 2L        0000   001704 2055F
     0001   000237 206G      0000   002035 208F      0001   001002 21L       0000   002037 211F
     0001   000242 211G      0001   001055 22L       0001   000325 235G      0001   000331 241G
     0001   000344 251G      0001   000350 255G      0001   000402 266G      0001   000403 270G
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0000    001765 28F      0001    000421 300G     0001    000422 302G     0001    000463 320G
0001    000466 323G     0001    000546 345G     0001    000552 351G     0001    001124 353L
0001    000565 361G     0001    000571 365G     0001    000623 376G     0001    000624 400G
0001    000642 410G     0001    000643 412G     0001    000710 430G     0001    000713 433G
0001    000432 453L     0001    001015 461G     0001    001021 465G     0001    001034 475G
0001    001040 501G     0001    001073 514G     0001    001074 516G     0001    001112 526G
0001    001113 530G     0001    001141 542G     0001    001142 545G     0000    002006 5505F
0000    001767 5506F    0001    000653 553L     0001    000203 555L     0001    000746 559L
0001    000076 665L     0001    000127 667L     0001    000051 668L     0000    001721 670F
0000    001705 675F     0000    001751 681F     0000    001742 685F     0002    032436 AO
0002    021443 CB       0002    021777 CELSID   0002    032434 CON1     0002    032435 CON2
0002    021063 CT       0002    032442 C1       0002    032446 C2       0002    032452 C3
0002 R  000000 D        0000 R  002041 DEPTH    0002 R  032361 DS       0002 R  032365 DT
0002    032404 DTODS    0002    032432 DTO2DS   0002    032366 DT2      0000 R  002041 DX
0000 R  001702 DXA      0000 R  002041 DY       0000 R  001703 DYA      0002    032427 E
0002    013755 F        0002    032362 G        0002    032363 GCDTO4   0002    032364 GDTODS
0002    021347 GTIDE    0002    031103 G1       0002    031223 G41      0002    031343 G42
0002    031463 G43      0003    004622 H        0002    023677 HF       0002    004622 HN
0002    022667 HPLT     0002    022655 HPRT     0002    023763 HPRTA    0000 I  001701 I
0002    022155 IBAR     0002    031603 IDTIDE   0002 I  016266 IFLAG    0002    020673 IFLOW
0002 I  032357 IMAX     0002 I  032421 INETFL   0000    003745 INJP$    0002 I  032431 IODISP
0002 I  032424 IONFLO   0002 I  032423 IONVEL   0002    022561 IP       0002    032422 IPDATA
0002    032430 ISAVQH   0002    021157 ITIDE    0000 I  001700 J        0002    022333 JBAR
0002    020767 JFLOW    0002 I  032360 JMAX     0002    022605 JP       0002    021253 JTIDE
0002    032412 KINDAT   0002    032413 KINIQH   0002    032433 KO       0002 I  032420 KODISP
0002 I  032416 KONETF   0002 I  032415 KONETV   0002    032417 KOTVEL   0002    032410 KOUTCD
0002    032414 KOUTDA   0002    032411 KOUTPP   0002    032472 LINMAX   0002    032407 M
0002    032402 NFLOW    0002    032425 NPLOT    0002    032401 NREEF    0002    032403 NTIDE
0002    032373 OMEGA    0002    032374 PHI      0002    032456 PHI1     0002    032462 PHI2
0002    032466 PHI3     0002    032372 PTIME    0002    020577 QINFLO   0000 R  002041 QNETX
0000 R  000000 QNETY    0003 R  000000 QX       0002    007133 QXN      0003 R  002311 QY
0002    011444 QYN      0002    032426 R        0002    022511 STATON   0002    032370 TCOUNT
0002    032376 THETA    0002    030643 THETA1   0002    030523 TI       0002    031677 TIDE1
0002    032013 TIDE2    0002    032127 TIDE3    0002    032243 TIDE4    0002    032473 TID1
0002    032474 TID2     0002    032475 TID3     0002    032476 TID4     0002    023731 TIM
0002    032367 TIME     0002    032406 TIMVEL   0002    032405 TMARK    0002 R  032371 TPER
0002    022631 UAPRT    0002    025423 UAPRTA   0000 R  002041 UAVE     0002    022643 VAPRT
0002    027063 VAPRTA   0000 R  002041 VAVE     0000 R  002041 VNETX    0000 R  002041 VNETY
0002    032375 W        0002    030763 W2       0002    032377 XW       0002    032400 YW
0002    002311 Z        0002    021621 ZB
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00101     1*          SUBROUTINE NETVQD                                                    HYD 1088
00101     2*    C                                                                          HYD 1080
00101     3*    C                    THIS IS A  SUBROUTINE WHICH AT THE OPTION OF THE      HYD 1082
00101     4*    C               USER CALCULATES NET VELOCITIES AND FLOWS OVER A TIDAL      HYD 1083
00101     5*    C               CYCLE AND ALSO AVERAGE DEPTHS FOR ALL COMPUTATIONAL        HYD 1084
00101     6*    C               GRID ELEMENTS. THESE VALUES CAN BE OUTPUTTED TO CARDS      HYD 1085
00101     7*    C               OR MAGNETIC TAPE.                                          HYD 1086
00101     8*    C                                                                          HYD 1087
00103     9*          COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),                  *NEW
00103    10*         1F(35,35),IFLAG(35,35)                                                      *NEW
00104    11*          COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),          *NEW
00104    12*         *        GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),        **-3
00104    13*         *        STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
00104    14*         *        HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
00104    15*         *        VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
00104    16*         *        G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
00104    17*         *        TIDE4(76)
00105    18*          COMMON IMAX,JMAX,DS,G,GCDT04,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,HYD 1098
00105    19*         *        OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,     HYD 1099
00105    20*         *        TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIQH,KOUTDA,KONETV,KONETF, HYD 1100
00105    21*         *        KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00105    22*         *        ISAVQH,IODISP,DT02DS,KO                                    HYD 1102
00106    23*          COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00107    24*          COMMON LINMAX,TID1,TID2,TID3,TID4
00110    25*          COMMON/ALL/QX(35,35),QY(35,35),H(35,35)                                    *NEW
00111    26*          DIMENSION QNETX(32,30),QNETY(32,30),VNETX(32,30),VNETY(32,30),             *NEW
00111    27*         1DEPTH(32,30),UAVE(32,30),VAVE(32,30),DX(32,30),DY(32,30)                   *NEW
00112    28*          EQUIVALENCE (VNETX,VNETY,DEPTH,UAVE,VAVE,DX,DY,QNETX)                      **-2
00113    29*          DO 668 J=1,JMAX                                                    HYD 1107
00116    30*          DO 668 I=1,IMAX                                                    HYD 1108
00121    31*          IF (IFLAG(I,J).EQ.1) GO TO 668                                     HYD 1109
00123    32*          DXA=0.5*(D(I,J)+D(I+1,J))                                          HYD 1110
00124    33*          DYA=0.5*(D(I,J)+D(I,J+1))                                          HYD 1111
00125    34*          VNETX(I,J) = VNETX(I,J)+QX(I,J)/(60.0*DXA)                         HYD 1112
00126    35*          VNETY(I,J) = VNETY(I,J)+QY(I,J)/(60.0*DYA)                         HYD 1113
00127    36*          DEPTH(I,J) = DEPTH(I,J)+D(I,J)                                     HYD 1114
00130    37*      668 CONTINUE                                                           HYD 1115
00133    38*          IF (IONFLO.GT.0.OR.INETFL.EQ.1) GO TO 665
00135    39*          RETURN                                                             HYD 1117
00136    40*          ENTRY NETFLO                                                       HYD 1118
00137    41*      665 DO 667 J=1,JMAX                                                    HYD 1119
00142    42*          DO 667 I=1,IMAX                                                    HYD 1120
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00145    43*          IF (IFLAG(I,J).EQ.1) GO TO 667                                    HYD 1121
00147    44*          QNETX(I,J) = QNETX(I,J)+QX(I,J)                                   HYD 1122
00150    45*          QNETY(I,J) = QNETY(I,J)+QY(I,J)                                   HYD 1123
00151    46*      667 CONTINUE                                                          HYD 1124
00154    47*          RETURN                                                            HYD 1132
00155    48*          ENTRY UVDXDY                                                      HYD 1133
00156    49*          DO 555 J=1,JMAX                                                   HYD 1134
00161    50*          DO 555 I=1,IMAX                                                   HYD 1135
00164    51*          IF (IFLAG(I,J).EQ.1) GO TO 555                                    HYD 1136
00166    52*          DXA = 0.5*(D(I,J)+D(I+1,J))                                       HYD 1137
00167    53*          DYA = 0.5*(D(I,J)+D(I,J+1))                                       HYD 1138
00170    54*          UAVE(I,J) = UAVE(I,J)+ABS(QX(I,J))/DXA                            HYD 1139
00171    55*          VAVE(I,J) = VAVE(I,J)+ABS(QY(I,J))/DYA                            HYD 1140
00172    56*      555 CONTINUE                                                          HYD 1141
00175    57*          RETURN                                                            HYD 1142
00176    58*          ENTRY PVLDEP                                                      HYD 1143
00177    59*          PRINT 2055                                                        HYD 1144
00201    60*     2055 FORMAT (1H1)                                                      HYD 1145
00202    61*          PRINT 675                                                         HYD 1146
00204    62*      675 FORMAT (10X,54HNET VELOCITIES (FEET/SECOND) AND AVERAGE DEPTHS (FEHYD 1147
00204    63*         *ET),///)                                                          HYD 1148
00205    64*          DO 669 J=1,JMAX                                                   HYD 1149
00210    65*          DO 669 I=1,IMAX                                                   HYD 1150
00213    66*          VNETX(I,J)=VNETX(I,J)*DT/TPER                                     HYD 1151
00214    67*          VNETY(I,J)=VNETY(I,J)*DT/TPER                                     HYD 1152
00215    68*          DEPTH(I,J) = DEPTH(I,J)*DT/TPER                                   HYD 1153
00216    69*          PRINT 670, I,J,VNETX(I,J),VNETY(I,J),DEPTH(I,J)                   HYD 1154
00225    70*      670 FORMAT (10X,4HI = ,I2,5X,4HJ = ,I2,5X,8HVNETX = ,F10.6,5X,        HYD 1155
00225    71*         *   8HVNETY = ,F10.6,5X,8HDEPTH = ,F6.3)                          HYD 1156
00226    72*      669 CONTINUE                                                          HYD 1157
00231    73*          IF (IONVEL.EQ.0) GO TO 453                                        HYD 1158
00233    74*          GO TO (1,2,1), IONVEL                                             HYD 1159
00234    75*        1 DO 109 J=1,JMAX                                                   HYD 1160
00237    76*      109 PUNCH 108, (VNETX(I,J),VNETY(I,J), I=1,IMAX)                      HYD 1161
00247    77*      108 FORMAT (8F10.6)                                                   HYD 1162
00250    78*          DO 107 J=1,JMAX                                                   HYD 1163
00253    79*      107 PUNCH 108, (DEPTH(I,J), I=1,IMAX)                                 HYD 1164
00262    80*          IF (IONVEL.NE.3) GO TO 453                                        HYD 1165
00264    81*        2 WRITE (KONETV) ((VNETX(I,J),VNETY(I,J), I=1,IMAX), J=1,JMAX)      HYD 1166
00276    82*          WRITE (KONETV) ((DEPTH(I,J), I=1,IMAX), J=1,JMAX)                 HYD 1167
00307    83*      453 CONTINUE                                                          HYD 1168
00310    84*          RETURN                                                            HYD 1170
00311    85*          ENTRY PFLDEP                                                      HYD 1171
```

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00312    86*          PRINT 2055                                                          HYD 1172
00314    87*          PRINT 685                                                           HYD 1173
00316    88*      685 FORMAT (10X,29HNET FLOWS (CUBIC FEET/SECOND),///)                   HYD 1174
00317    89*          DO 680 J=1,JMAX                                                     HYD 1175
00322    90*          DO 680 I=1,IMAX                                                     HYD 1176
00325    91*          QNETX(I,J) = QNETX(I,J)*DS*DT/(60.0*TPER)                           HYD 1177
00326    92*          QNETY(I,J) = QNETY(I,J)*DS*DT/(60.0*TPER)                           HYD 1178
00327    93*          PRINT 681, I,J,QNETX(I,J),QNETY(I,J)                                HYD 1179
00335    94*      681 FORMAT (10X,4HI = ,I2,5X,4HJ = ,I2,5X,8HQNETX = ,F12.2,5X,          HYD 1180
00335    95*         *8HQNETY = ,F12.2)                                                   HYD 1181
00336    96*      680 CONTINUE                                                            HYD 1182
00341    97*          IF (IONFLO.EQ.0) GO TO 553                                          HYD 1183
00343    98*          GO TO (11,12,11), IONFLO                                            HYD 1184
00344    99*       11 DO 27 J=1,JMAX                                                      HYD 1185
00347   100*       27 PUNCH 28, (QNETX(I,J),QNETY(I,J), I=1,IMAX)                         HYD 1186
00357   101*       28 FORMAT (8F10.3)                                                     HYD 1187
00360   102*          DO 29 J=1,JMAX                                                      HYD 1188
00363   103*       29 PUNCH 108, (DEPTH(I,J), I=1,IMAX)                                   HYD 1189
00372   104*          IF (IONFLO.NE.3) GO TO 553                                          HYD 1190
00374   105*       12 WRITE (KONETF) ((QNETX(I,J),QNETY(I,J), I=1,IMAX), J=1,JMAX)        HYD 1191
00406   106*          WRITE (KONETF) ((DEPTH(I,J), I=1,IMAX), J=1,JMAX)                   HYD 1192
00417   107*      553 CONTINUE                                                            HYD 1193
00420   108*          RETURN                                                              HYD 1223
00421   109*          ENTRY UVDOUT                                                        HYD 1224
00422   110*          PRINT 2055                                                          HYD 1225
00424   111*          PRINT 5506                                                          HYD 1226
00426   112*     5506 FORMAT (5X, 74HAVERAGE VELOCITIES OVER A TIDAL CYCLE AND COMPUTED  HYD 1227
00426   113*         *DISPERSION COEFFICIENTS,///)                                       HYD 1228
00427   114*          DO 560 J=1,JMAX                                                     HYD 1229
00432   115*          DO 560 I=1,IMAX                                                     HYD 1230
00435   116*          IF (IFLAG(I,J).EQ.1) GO TO 559                                      HYD 1231
00437   117*          UAVE(I,J) = UAVE(I,J)*DT/(60.0*TPER)                                HYD 1232
00440   118*          VAVE(I,J) = VAVE(I,J)*DT/(60.0*TPER)                                HYD 1233
00441   119*          DX(I,J) =0.5*(UAVE(I,J)*TPER*30.0)**2.0/(TPER*60.0)                 HYD 1234
00442   120*          DY(I,J) =0.5*(VAVE(I,J)*TPER*30.0)**2.0/(TPER*60.0)                 HYD 1235
00443   121*      559 PRINT 5505, I,J,UAVE(I,J),VAVE(I,J),DX(I,J),DY(I,J)                 HYD 1236
00453   122*     5505 FORMAT (5X,4HI = ,I2,5X,4HJ = ,I2,5X,7HUAVE = ,F8.5,4H FPS,5X,      HYD 1237
00453   123*         *7HVAVE = ,F8.5,4H FPS,5X,5HDX = ,F8.2,10H FTSQD/SEC,5X,5HDY = ,    HYD 1238
00453   124*         *F8.2,10H FTSQD/SEC)                                                HYD 1239
00454   125*      560 CONTINUE                                                            HYD 1240
00457   126*          GO TO (21,22,21), IODISP                                            HYD 1242
00460   127*       21 DO 209 J=1,JMAX                                                     HYD 1243
00463   128*      209 PUNCH 208, (UAVE(I,J),VAVE(I,J), I=1,IMAX)                         HYD 1244
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00473   129*      208 FORMAT (8F10.6)                                                    HYD 1245
00474   130*          DO 210 J=1,JMAX                                                    HYD 1246
00477   131*      210 PUNCH 211, (DX(I,J),DY(I,J), I=1,IMAX)                             HYD 1247
00507   132*      211 FORMAT (8F10.3)                                                    HYD 1248
00510   133*          IF (IODISP.NE.3) GO TO 353                                         HYD 1249
00512   134*       22 WRITE (KODISP) ((UAVE(I,J),VAVE(I,J), I=1,IMAX), J=1,JMAX)         HYD 1250
00524   135*          WRITE (KODISP) ((DX(I,J),DY(I,J), I=1,IMAX), J=1,JMAX)             HYD 1251
00536   136*      353 CONTINUE                                                           HYD 1252
00537   137*          RETURN                                                             HYD 1253
00540   138*          ENTRY ZEROS
00541   139*          DO 410 J=1,JMAX
00544   140*          DO 410 I=1,IMAX
00547   141*          VNETX(I,J) = 0.0
00550   142*          VNETY(I,J) = 0.0
00551   143*          QNETX(I,J) = 0.0
00552   144*          QNETY(I,J) = 0.0
00553   145*          DEPTH(I,J) = 0.0
00554   146*          UAVE(I,J) = 0.0
00555   147*          VAVE(I,J) = 0.0
00556   148*          DX(I,J) = 0.0
00557   149*          DY(I,J) = 0.0
00560   150*      410 CONTINUE
00563   151*          RETURN
00564   152*          END                                                                HYD 1263

      END OF UNIVAC 1108 FORTRAN V COMPILATION.     0 *DIAGNOSTIC* MESSAGE(S)
   NETVQD          SYMBOLIC                  05 MAY 72  12:54:38   0  00111250    14   151  (DELETED)
   NETVQD  CODE    RELOCATABLE               05 MAY 72  12:54:38   1  00115352    48     1  (DELETED)
                                                                   0  00115432    14    75
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@I FOR,* MARKER,MARKER                                                    05 FEB 73   12:06:49.688
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:49


   SUBROUTINE STRVEL     ENTRY POINT 000102

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001    *CODE    000110
         0000    *DATA    000024
         0002    *BLANK   032477
         0003    ALL      007133


   EXTERNAL REFERENCES (BLOCK, NAME)

     0004    NWBU$          0005    NIO2$          0006    NIO1$          0007    NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

    0001    000067 10L       0001    000037 123G      0001    000040 125G      0001    000055 134G
    0001    000056 136G      0002    032436 AO        0002    021443 CB        0002    021777 CELSID
    0002    032434 CON1      0002    032435 CON2      0002    021063 CT        0002    032442 C1
    0002    032446 C2        0002    032452 C3        0002  R 000000 D         0002    032361 DS
    0002  R 032365 DT        0002    032404 DTODS     0002    032432 DTO2DS    0002    032366 DT2
    0002    032427 E         0002    013755 F         0002    032362 G         0002    032363 GCDTO4
    0002    032364 GDTODS    0002    021347 GTIDE     0002    031103 G1        0002    031223 G41
    0002    031343 G42       0002    031463 G43       0003    004622 H         0002    023677 HF
    0002    004622 HN        0002    022667 HPLT      0002    022655 HPRT      0002    023763 HPRTA
    0000  I 000001 I         0002    022155 IBAR      0002    031603 IDTIDE    0002    016266 IFLAG
    0002    020673 IFLOW     0002  I 032357 IMAX      0002    032421 INETFL    0000    000006 INJP$
    0002    032431 IODISP    0002    032424 IONFLO    0002    032423 IONVEL    0002    022561 IP
    0002    032422 IPDATA    0002    032430 ISAVQH    0002    021157 ITIDE     0000  I 000002 J
    0002    022333 JBAR      0002    020767 JFLOW     0002  I 032360 JMAX      0002    022605 JP
    0002    021253 JTIDE     0002    032412 KINDAT    0002    032413 KINIQH    0002    032433 KO
    0002    032420 KODISP    0002    032416 KONETF    0002    032415 KONETV    0002  I 032417 KOTVEL
    0002    032410 KOUTCD    0002    032414 KOUTDA    0002    032411 KOUTPP    0002    032472 LINMAX
    0002    032407 M         0002    032402 NFLOW     0002    032425 NPLOT     0002    032401 NREEF
    0002    032403 NTIDE     0002    032373 OMEGA     0002    032374 PHI       0002    032456 PHI1
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0002   032462 PHI2        0002   032466 PHI3        0002   032372 PTIME       0002   020577 QINFLO
0003 R 000000 QX          0002   007133 QXN         0003 R 002311 QY          0002   011444 QYN
0002   032426 R           0002   022511 STATON      0000 R 000000 TAPTIM      0002   032370 TCOUNT
0002   032376 THETA       0002   030643 THETA1      0002   030523 TI          0002   031677 TIDE1
0002   032013 TIDE2       0002   032127 TIDE3       0002   032243 TIDE4       0002   032473 TID1
0002   032474 TID2        0002   032475 TID3        0002   032476 TID4        0002   023731 TIM
0002 R 032367 TIME        0002 R 032406 TIMVEL      0002 R 032405 TMARK       0002   032371 TPER
0002   022631 UAPRT       0002   025423 UAPRTA      0002   022643 VAPRT       0002   027063 VAPRTA
0002   032375 W           0002   030763 W2          0002   032377 XW          0002   032400 YW
0002   002311 Z           0002   021621 ZB
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00101     1*          SUBROUTINE STRVEL                                                    *NEW
00101     2*    C                                                                        HYD 1264**-1
00101     3*    C                    THIS IS A SUBROUTINE WHICH AT THE OPTION OF THE     HYD 1266
00101     4*    C              USER STORES INSTANTANEOUS HYDRODYNAMICS FOR ALL CELLS          *NEW
00101     5*    C              AT SPECIFIED TIME INTERVALS AND STORES THESE VALUES      HYD 1268**-1
00101     6*    C              ON MAGNETIC TAPE.                                       HYD 1269
00101     7*    C                                                                       HYD 1270
00103     8*          COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),              *NEW
00103     9*         1F(35,35),IFLAG(35,35)                                                  *NEW
00104    10*          COMMON/ALL/QX(35,35),QY(35,35),H(35,35)                                *NEW
00105    11*          COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),      *NEW
00105    12*         *       GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),      **-3
00105    13*         *       STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
00105    14*         *       HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
00105    15*         *       VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
00105    16*         *       G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
00105    17*         *       TIDE4(76)
00106    18*          COMMON IMAX,JMAX,DS,G,GCDT04,CDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,HYD 1281
00106    19*         *       OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,      HYD 1282
00106    20*         *       TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIQH,KOUTDA,KONETV,KONETF, HYD 1283
00106    21*         *       KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00106    22*         *       ISAVQH,IODISP,DT02DS,KO                                 HYD 1285
00107    23*          COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00110    24*          COMMON LINMAX,TID1,TID2,TID3,TID4
00111    25*          TMARK = TMARK+DT                                                   HYD 1290
00112    26*          IF (TMARK.LT.TIMVEL) GO TO 10                                      HYD 1291
00114    27*          TMARK = 0.0
00115    28*          TAPTIM = TIME/60.0
00116    29*          WRITE (KOTVEL) (TAPTIM)
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```
00121     30*          WRITE (KOTVEL) ((D(I,J), I=1,IMAX), J=1,JMAX)
00132     31*          WRITE (KOTVEL) ((QX(I,J),QY(I,J), I=1,IMAX), J=1,JMAX)
00144     32*       10 CONTINUE                                                    HYD 1301
00145     33*          RETURN                                                      HYD 1302
00146     34*          END                                                         HYD 1303

      END OF UNIVAC 1108 FORTRAN V COMPILATION.     0 *DIAGNOSTIC* MESSAGE(S)
    MARKER            SYMBOLIC          05 MAY 72  12:54:39   0  00117464     14     33  (DELETED)
    MARKER  CODE      RELOCATABLE       05 MAY 72  12:54:39   1  00120402     24      1  (DELETED)
                                                              0  00120432     14      9
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@I FOR,* PLOTHS,PLOTHS                                                    05 FEB 73   12:06:50.992
UNIVAC 1108 FORTRAN V LEVEL 2206 U023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:51

   SUBROUTINE PLOTHS     ENTRY POINT 000774


             HPLOT       ENTRY POINT 000777

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001    *CODE    001002
         0000    *DATA    000506
         0002    *BLANK   032477
         0003    ALL      007133
         0004    MPRC     000002


   EXTERNAL REFERENCES (BLOCK, NAME)

     0005   NRDC$          0006   NIO1$          0007   NIO2$          0010   NPRT$          0011   NERR2$
     0012   NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

     0000   000363 10F       0000   000365 11F       0001   000232 12L       0001   000004 130G
     0001   000011 134G      0001   000330 14L       0001   000022 143G      0001   000270 15L
     0001   000030 151G      0001   000325 16L       0001   000335 17L       0000   000362 2055F
     0001   000574 21L       0001   000164 213G      0001   000613 22L       0001   000174 222G
     0001   000214 237G      0000   000424 25F       0000   000431 26F       0000   000437 27F
     0001   000311 274G      0000   000444 28F       0001   000465 31L       0001   000332 310G
     0001   000340 317G      0001   000506 32L       0001   000526 33L       0001   000477 346G
     0001   000546 35L       0000   000373 36F       0001   000517 362G      0000   000404 37F
     0001   000537 376G      0000   000414 38F       0001   000565 414G      0001   000605 427G
     0001   000622 442G      0001   000647 451G      0001   000665 465G      0001   000675 474G
     0001   000726 506G      0000   000357 707F      0000   000360 708F      0001   000112 710L
     0001   000124 711L      0001   000141 712L      0001   000153 713L      0000   000370 9F
     0000 R 000341 A         0000 R 000064 ACOLMN    0000 R 000332 ADOT      0000 R 000324 AEQUAL
     0000 R 000325 AI        0000 R 000323 AMINUS    0002   032436 AO        0000 R 000331 APLUS
     0000 R 000327 ASTRSK    0000 R 000330 BLANK     0002   021443 CB        0002   021777 CELSID
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0000 R 000326 CO          0002   032434 CON1        0002   032435 CON2        0002   021063 CT
0002   032442 C1          0002   032446 C2          0002   032452 C3          0002   000000 D
0000 R 000337 DIFHF       0000 R 000340 DIFHP       0002   032361 DS          0002   032365 DT
0002   032404 DTODS       0002   032432 DT02DS      0002   032366 DT2         0002   032427 E
0002   013755 F           0002   032362 G           0002   032363 GCDT04      0002   032364 GDTODS
0002   021347 GTIDE       0002   031103 G1          0002   031223 G41         0002   031343 G42
0002   031463 G43         0003 R 004622 H           0002 R 023677 HF          0002   004622 HN
0002 R 022667 HPLT        0002   022655 HPRT        0002   023763 HPRTA       0004 R 000000 HSHIFT
0000 I 000342 I           0002   022155 IBAR        0000 I 000352 IC          0000 I 000351 ICC
0002   031603 IDTIDE      0000 I 000353 IDUMY       0002   016266 IFLAG       0002   020673 IFLOW
0000 I 000000 IHF         0000 I 000032 IHPLT       0002   032357 IMAX        0002   032421 INETFL
0000   000466 INJP$       0002   032431 IODISP      0002   032424 IONFLO      0002   032423 IONVEL
0002 I 022561 IP          0002   032422 IPDATA      0002   032430 ISAVQH      0000 I 000346 IT
0000 I 000345 ITCONT      0000 I 000344 ITID        0002   021157 ITIDE       0000 I 000347 ITIDM1
0000 I 000350 ITIDPR      0000 I 000333 I$          0000 I 000334 J           0002   022333 JBAR
0002   020767 JFLOW       0002   032360 JMAX        0002 I 022605 JP          0002   021253 JTIDE
0000 I 000335 K           0002   032412 KINDAT      0002   032413 KINIQH      0002   032433 KO
0002   032420 KODISP      0002   032416 KONETF      0002   032415 KONETV      0002   032417 KOTVEL
0002   032410 KOUTCD      0002   032414 KOUTDA      0002   032411 KOUTPP      0000 I 000354 K1
0000 I 000355 K2          0000 I 000336 L           0002   032472 LINMAX      0002 I 032407 M
0000 I 000356 MM1         0002   032402 NFLOW       0002 I 032425 NPLOT       0002   032401 NREEF
0002   032403 NTIDE       0002   032373 OMEGA       0002   032374 PHI         0002   032456 PHI1
0002   032462 PHI2        0002   032466 PHI3        0002 R 032372 PTIME       0002   020577 QINFLO
0003   000000 QX          0002   007133 QXN         0003   002311 QY          0002   011444 QYN
0002   032426 R           0002   022511 STATON      0002   032370 TCOUNT      0002   032376 THETA
0002   030643 THETA1      0002   030523 TI          0002   031677 TIDE1       0002   032013 TIDE2
0002   032127 TIDE3       0002   032243 TIDE4       0000 R 000343 TIDPRT      0002   032473 TID1
0002   032474 TID2        0002   032475 TID3        0002   032476 TID4        0002 R 023731 TIM
0002   032367 TIME        0004   000001 TIMTOT      0002   032406 TIMVEL      0000 R 000227 TITEL
0000 R 000253 TITELY      0002   032405 TMARK       0002   032371 TPER        0002   022631 UAPRT
0002   025423 UAPRTA      0002   022643 VAPRT       0002   027063 VAPRTA      0002   032375 W
0002   030763 W2          0002   032377 XW          0002   032400 YW          0002   002311 Z
0002   021621 ZB
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```
00101     1*          SUBROUTINE PLOTHS                                                    HYD 1312
00101     2*    C                                                                          HYD 1304
00101     3*    C                THIS IS A SUBROUTINE WHICH AT THE OPTION OF THE           HYD 1306
00101     4*    C           USER PLOTS BOTH THE COMPUTED AND OBSERVED TIDAL                 HYD 1307
00101     5*    C           AMPLITUDES AT SPECIFIED GRID CELLS IN THE SYSTEM.               HYD 1308
00101     6*    C           THESE LINE PRINTER PLOTS CAN BE MADE FOR AS MANY AS             HYD 1309
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00101     7*   C               TWENTY LOCATIONS.                                          HYD 1310
00101     8*   C                                                                          HYD 1311
00103     9*         COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),                    *NEW
00103    10*        1F(35,35),IFLAG(35,35)                                                        *NEW
00104    11*         COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),           *NEW
00104    12*        *       GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),          **-3
00104    13*        *       STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
00104    14*        *       HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
00104    15*        *       VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
00104    16*        *       G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
00104    17*        *       TIDE4(76)
00105    18*         COMMON IMAX,JMAX,DS,G,GCDT04,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,HYD 1322
00105    19*        *       OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,      HYD 1323
00105    20*        *       TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIQH,KOUTDA,KONETV,KONETF,  HYD 1324
00105    21*        *       KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00105    22*        *       ISAVQH,IODISP,DT02DS,KQ                                     HYD 1326
00106    23*         COMMON CON1,CON2,A0(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00107    24*         COMMON LINMAX,TID1,TID2,TID3,TID4
00110    25*         COMMON/ALL/QX(35,35),QY(35,35),H(35,35)                                   *NEW
00111    26*         COMMON/MPRC/HSHIFT,TIMTOT                                                 *NEW
00112    27*         DIMENSION IHF(26),IHPLT(26),ACOLMN(99),TITEL(20),TITELY(40)
00113    28*         DATA AMINUS/1H-/,AEQUAL/1H=/,AI/1HI/,CO/1HO/
00120    29*         DATA ASTRSK/1H*/,BLANK/1H /,APLUS/1H+/,ADOT/1HX/
00125    30*         DATA TITELY/1H ,1HM,1HS,1HL,1H ,1H ,1HT,1HI,1HD,1HE,1H ,1H ,1HF,
00125    31*        *1HE,1HE,1HT,24*1H /
00127    32*         DO 100 J=1,NPLOT
00132    33*         READ 707, (TITEL(K), K=1,20)
00140    34*     707 FORMAT (20A4)
00141    35*         READ 708, (HF(L), L=1,26)                                                 *NEW
00147    36*     708 FORMAT (16F5.2)                                                           **-1
00150    37*         DO 709 L=1,26                                                             *NEW
00153    38*         HF(L) = HF(L)-HSHIFT                                                      *NEW
00154    39*         IF (HF(L).LT.-1.29) HF(L) = 0.0                                           *NEW
00156    40*         HF(L) = HF(L)*10.0                                                        **-1
00157    41*         HPLT(L,J) = HPLT(L,J)*10.0
00160    42*         IHF(L) = HF(L)
00161    43*         IHPLT(L) = HPLT(L,J)
00162    44*         DIFHF = HF(L)-IHF(L)
00163    45*         DIFHP = HPLT(L,J)-IHPLT(L)
00164    46*         IF (DIFHF.LT.0.0) GO TO 710
00166    47*         IF (DIFHF.GE.0.5) IHF(L) = IHF(L)+1
00170    48*         GO TO 711
00171    49*     710 A = ABS(DIFHF)
```

```
00172    50*          IF (A.GE.0.5) IHF(L) = IHF(L)-1
00174    51*      711 IF (DIFHP.LT.0.0) GO TO 712
00176    52*          IF (DIFHP.GE.0.5) IHPLT(L) = IHPLT(L)+1
00200    53*          GO TO 713
00201    54*      712 A = ABS(DIFHP)
00202    55*          IF (A.GE.0.5) IHPLT(L)= IHPLT(L)-1
00204    56*      713 CONTINUE
00205    57*      709 CONTINUE
00207    58*          PRINT 2055
00211    59*     2055 FORMAT (1H1)
00212    60*          DO 5 I=1,91
00215    61*          ACOLMN(I) = ASTRSK
00216    62*        5 CONTINUE
00220    63*          PRINT 10, (ACOLMN(I), I=1,91)
00226    64*       10 FORMAT (9X,91A1)
00227    65*          PRINT 11, ASTRSK,ASTRSK
00233    66*       11 FORMAT (9X,A1,89X,A1)
00234    67*          PRINT 9, ASTRSK, (TITEL(K), K=1,20), ASTRSK
00244    68*        9 FORMAT (9X,A1,9X,20A4,A1)
00245    69*          TIDPRT = 6.0                                          *NEW
00246    70*          ITID = 52                                             *NEW
00247    71*          ITCONT = 5                                            **-2
00250    72*          IT = 1
00251    73*       12 ITCONT = ITCONT+1
00252    74*          IF (ITID.LT.16) IT = IT+1
00254    75*          ITID = ITID-2                                         *NEW
00255    76*          ITIDM1 = ITID-1                                       *NEW
00256    77*          ACOLMN(1) = AI                                        **-1
00257    78*          IF (ITCONT.LT.6) GO TO 15
00261    79*          TIDPRT = TIDPRT-1.0                                   *NEW
00262    80*          ITCONT = 1                                            **-1
00263    81*          ACOLMN(1) = APLUS
00264    82*       15 CONTINUE
00265    83*          ITIDPR = 10.0*TIDPRT
00266    84*          IF (ITIDPR.NE.0) GO TO 14
00270    85*          IF (ITCONT.NE.1) GO TO 14
00272    86*          ICC = 0
00273    87*          DO 16 IC=2,76
00276    88*          ICC = ICC+1
00277    89*          ACOLMN(IC) = AMINUS
00300    90*          IF (ICC.NE.6) GO TO 16
00302    91*          ACOLMN(IC) = APLUS
00303    92*          ICC = 0
```

```
00304    93*       16 CONTINUE
00306    94*          GO TO 17
00307    95*       14 DO 13 IC = 2,76
00312    96*       13 ACOLMN(IC) = BLANK
00314    97*       17 CONTINUE
00315    98*          L = 0
00316    99*          DO 20 IC=1,76,3
00321   100*          L = L+1
00322   101*          IF (IHF(L).EQ.ITID.OR.IHF(L).EQ.ITIDM1) ACOLMN(IC) = CO                    *NEW
00324   102*          IF (IHPLT(L).EQ.ITID.OR.IHPLT(L).EQ.ITIDM1) ACOLMN(IC) = ADOT              *NEW
00326  *DIAGNOSTIC*  THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00326   103*          IF (ACOLMN(IC).EQ.ADOT.AND.IHF(L).EQ.ITID) ACOLMN(IC) = AEQUAL             *NEW
00330  *DIAGNOSTIC*  THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00330   104*          IF (ACOLMN(IC).EQ.ADOT.AND.IHF(L).EQ.ITIDM1) ACOLMN(IC) = AEQUAL           *NEW
00332   105*       20 CONTINUE                                                                   **-3
00334   106*          IF (ITID.LT.46) GO TO 35                                                   *NEW
00336   107*          IDUMY = (52-ITID)/2                                                        *NEW
00337   108*          GO TO (31,32,33),IDUMY                                                     **-2
00340   109*       31 PRINT 36, ASTRSK,TITELY(IT),TIDPRT,ACOLMN(1),(ACOLMN(IC),IC=16,76)
00340   110*         *,ASTRSK
00353   111*       36 FORMAT (9X,A1,2X,A1,2X,F4.1,A1,3X,11HO  OBSERVED,61A1,4X,A1)
00354   112*          GO TO 22
00355   113*       32 PRINT 37, ASTRSK,TITELY(IT),ACOLMN(1),(ACOLMN(IC),IC=16,76),ASTRSK
00367   114*       37 FORMAT (9X,A1,2X,A1,6X,A1,3X,11HX  COMPUTED,61A1,4X,A1)
00370   115*          GO TO 22
00371   116*       33 PRINT 38, ASTRSK,TITELY(IT),ACOLMN(1),(ACOLMN(IC),IC=16,76),ASTRSK
00403   117*       38 FORMAT (9X,A1,2X,A1,6X,A1,3X,11H=  BOTH    ,61A1,4X,A1)
00404   118*          GO TO 22
00405   119*       35 CONTINUE
00406   120*          IF (ITCONT.EQ.1) GO TO 21
00410   121*          PRINT 25, ASTRSK,TITELY(IT),(ACOLMN(IC), IC=1,76),ASTRSK
00421   122*          GO TO 22
00422   123*       21 PRINT 26, ASTRSK,TITELY(IT),TIDPRT,(ACOLMN(IC), IC=1,76),ASTRSK
00434   124*       25 FORMAT (9X,A1,2X,A1,6X,76A1,4X,A1)
00435   125*       26 FORMAT (9X,A1,2X,A1,2X,F4.1,76A1,4X,A1)
00436   126*       22 CONTINUE
00437   127*          IF (TIDPRT.GT.-2.0) GO TO 12                                               *NEW
00441   128*          DO 30 I=1,5                                                                **-1
00444   129*       30 IHF(I) = (I-1)*6.0
00446   130*          PRINT 27, ASTRSK,(IHF(I), I=1,5),ASTRSK
00456   131*       27 FORMAT (9X,A1,8X,I2,4(16X,I2),7X,A1)
00457   132*          PRINT 28, ASTRSK,ASTRSK
00463   133*       28 FORMAT (9X,A1,41X,12HTIME - HOURS,36X,A1)
```

```
00464   134*          DO 29 I=1,91
00467   135*          ACOLMN(I) = ASTRSK
00470   136*       29 CONTINUE
00472   137*          PRINT10, (ACOLMN(I), I=1,91)
00500   138*      100 CONTINUE
00502   139*          RETURN
00503   140*          ENTRY HPLOT                                                    HYD 1431
00504   141*          M = M+1                                                        HYD 1432
00505   142*          DO 47 K=1,NPLOT                                                HYD 1433
00510   143*          K1 = IP(K)
00511   144*          K2 = JP(K)
00512   145*          MM1 = M-1                                                      HYD 1434
00513   146*          TIM(M)=PTIME/60.0*MM1                                          HYD 1435
00514   147*          HPLT(M,K) = H(K1,K2)
00515   148*       47 CONTINUE                                                       HYD 1437
00517   149*          RETURN                                                         HYD 1438
00520   150*          END                                                            HYD 1439

      END OF UNIVAC 1108 FORTRAN V COMPILATION.     2 *DIAGNOSTIC* MESSAGE(S)
    PLOTHS           SYMBOLIC                  05 MAY 72  12:54:41   0  00120630    14   144  (DELETED)
    PLOTHS  CODE     RELOCATABLE               05 MAY 72  12:54:41   1  00124570    24     1  (DELETED)
                                                                     0  00124620    14    62
```

```
@I FOR RITAP,RITAP                                                    05 FEB 73   12:06:53.466
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:53

   SUBROUTINE RITAP      ENTRY POINT 001127

              RITCTP     ENTRY POINT 001132

   STORAGE USED (BLOCK, NAME, LENGTH)

         0001    *CODE    001135
         0000    *DATA    012011
         0002    *BLANK   000000
         0003    ALL      007133
         0004    MRQ      000003
         0005    MPRC     000002


   EXTERNAL REFERENCES (BLOCK, NAME)

     0006   NRDU$          0007   NIO1$          0010   NIO2$          0011   NREW$          0012   NRBU$
     0013   NWBU$          0014   NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

     0001   000014 115G      0001   000022 122G      0001   000036 131G      0001   000043 135G
     0001   000055 144G      0001   000067 153G      0001   000074 157G      0001   000116 164G
     0001   000140 173G      0001   000756 19L       0001   000053 20L       0001   000145 200G
     0001   000161 206G      0001   000170 214G      0001   000204 222G      0000   011731 23F
     0001   000213 230G      0001   000227 236G      0001   000236 244G      0001   000251 253G
     0001   000256 260G      0001   000272 266G      0001   000301 274G      0001   000315 302G
     0001   000323 307G      0001   000335 316G      0001   000342 323G      0001   000354 331G
     0001   000361 336G      0001   000375 344G      0001   000403 351G      0001   000416 360G
     0001   000423 365G      0001   000444 375G      0001   000462 406G      0001   000467 413G
     0001   000510 423G      0001   000543 442G      0001   000603 461G      0001   000610 466G
     0001   000631 476G      0001   000641 504G      0001   000654 513G      0001   000661 520G
     0001   000702 530G      0001   000727 544G      0001   000100 6L        0001   001064 615G
     0001   001071 621G      0000 R 007243 D         0000 R 011726 DTOT      0003 R 004622 H
     0000 R 002371 HOLD      0005 R 000000 HSHIFT    0000 R 002355 HTP       0000 R 002405 HTPU
```

```
0000 I 011723 I          0000   011763 INJP$      0000 I 011730 J          0000 I 011725 KCT
0000 I 011721 KCTM       0004 I 000001 KQCTP      0004 I 000002 KQFTP      0004   000000 KRSOFN
0000 I 011724 M          0000 I 011727 N          0000 R 011554 Q          0000 R 002325 QOLD
0000 R 002421 QS         0000 R 004732 QT         0000 R 002311 QTP        0000 R 002341 QTPU
0003 R 000000 QX         0003 R 002311 QY         0000 R 011720 TIME       0005 R 000001 TIMTOT
0000 R 011722 TMAX       0000 R 000000 Z          0000 R 011636 ZT
```

SUBROUTINE RITAP — VERSION 2

```
00101     1*
00101     2*   C
00101     3*   C                  THIS SUBROUTINE STORES SELECTED FLOWS FROM A
00101     4*   C              COARSE GRID MODEL, THEN INTERPOLATES BY TIME,
00101     5*   C              DISTRIBUTES BY DEPTH PROPORTION, AND WRITES THE
00101     6*   C              TRANSFER FLOWS ON MAGNETIC TAPE FOR SUBSEQUENT
00101     7*   C              USE BY THE FINE GRID MODEL.
00101     8*   C
00103     9*         COMMON/ALL/QX(35,35),QY(35,35),H(35,35)
00104    10*         COMMON/MRQ/KRSOFN,KQCTP,KQFTP
00105    11*         COMMON/MPRC/HSHIFT,TIMTOT
00106    12*         DIMENSION Z(35,35),QTP(12),QOLD(12),QTPU(12),HTP(12),HOLD(12),
00106    13*        1HTPU(12),QS(35,35),QT(35,35),D(35,35),Q(50),ZT(50)
00107    14*        23 FORMAT(25X,F4.0)
00110    15*         TIME=0.
00111    16*         KCTM=4
00112    17*         TMAX=3600.*TIMTOT
00113    18*         READ(5,23)(ZT(I),I=1,46)
00121    19*         DO 65 I=1,46
00124    20*        65 ZT(I)=ZT(I)-HSHIFT
00126    21*         REWIND KQCTP
00127    22*         READ(KQCTP)(QTP(M),M=1,12),(HTP(M),M=1,12)
00141    23*         KCT=0
00142    24*         REWIND KQFTP
00143    25*        20 DO 4 M=1,12
00146    26*         HOLD(M)=HTP(M)
00147    27*         4 QOLD(M)=QTP(M)
00151    28*         5 READ(KQCTP)(QTP(M),M=1,12),(HTP(M),M=1,12)
00163    29*         6 DO 7 M=1,12
00166    30*         HTPU(M)=HOLD(M)+KCT/KCTM*(HTP(M)-HOLD(M))
00167    31*         7 QTPU(M)=QOLD(M)+KCT*(QTP(M)-QOLD(M))/KCTM
00171    32*         DTOT=0.
00172    33*         DO 45 I=9,19
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```
00175    34*       45 Z(I,4)=ZT(I-8)
00177    35*          DO 27 I=9,12
00202    36*          D(I,4)=HTPU(1)-Z(I,4)
00203    37*       27 DTOT=DTOT+D(I,4)
00205    38*          DO 9 I=9,12
00210    39*        9 QT(I,4)=QTPU(1)/DTOT*D(I,4)
00212    40*          DTOT=0.
00213    41*          DO 28 I=13,16
00216    42*          D(I,4)=HTPU(2)-Z(I,4)
00217    43*       28 DTOT=DTOT+D(I,4)
00221    44*          DO 10 I=13,16
00224    45*       10 QT(I,4)=QTPU(2)/DTOT*D(I,4)
00226    46*          DTOT=0.
00227    47*          DO 29 I=17,19
00232    48*          D(I,4)=HTPU(3)-Z(I,4)
00233    49*       29 DTOT=DTOT+D(I,4)
00235    50*          DO 11 I=17,19
00240    51*       11 QT(I,4)=QTPU(3)/DTOT*D(I,4)
00242    52*          N=0
00243    53*          DO 36 I=9,19
00246    54*          N=N+1
00247    55*       36 Q(N)=QT(I,4)
00251    56*          DTOT=0.
00252    57*          DO 46 J=5,12
00255    58*       46 Z(8,J)=ZT(J+7)
00257    59*          DO 30 J=5,8
00262    60*          D(8,J)=HTPU(4)-Z(8,J)
00263    61*       30 DTOT=DTOT+D(8,J)
00265    62*          DO 12 J=5,8
00270    63*       12 QS(8,J)=QTPU(4)/DTOT*D(8,J)
00272    64*          DTOT=0.
00273    65*          DO 31 J=9,12
00276    66*          D(8,J)=HTPU(5)-Z(8,J)
00277    67*       31 DTOT=DTOT+D(8,J)
00301    68*          DO 13 J=9,12
00304    69*       13 QS(8,J)=QTPU(5)/DTOT*D(8,J)
00306    70*          DO 37 J=5,12
00311    71*          N=N+1
00312    72*       37 Q(N)=QS(8,J)
00314    73*          DTOT=0.
00315    74*          DO 62 J=13,15
00320    75*       62 QS(21,J)=QTPU(6)/3.
00322    76*          DO 63 J=13,15
```

```
00325    77*          N=N+1
00326    78*       63 Q(N)=QS(21,J)
00330    79*          DO 47 J=16,19
00333    80*       47 Z(1,J)=ZT(J+7)
00335    81*          DO 32 J=16,19
00340    82*          D(1,J)=HTPU(7)-Z(1,J)
00341    83*       32 DTOT=DTOT+D(1,J)
00343    84*          DO 14 J=16,19
00346    85*       14 QS(1,J)=QTPU(7)/DTOT*D(1,J)
00350    86*          DO 38 J=16,19
00353    87*          N=N+1
00354    88*       38 Q(N)=QS(1,J)
00356    89*          DTOT=0.
00357    90*          DO 48 J=23,25
00362    91*       48 Z(4,J)=ZT(J+4)
00364    92*          DO 24 J=23,25
00367    93*          D(4,J)=HTPU(8)-Z(4,J)
00370    94*          IF(D(4,J).LT.0.)D(4,J)=0.
00372    95*       24 DTOT=DTOT+D(4,J)
00374    96*          DO 15 J=23,25
00377    97*       15 QS(4,J)=QTPU(8)/DTOT*D(4,J)
00401    98*          Q(28)=QS(4,23)
00402    99*          Q(30)=QS(4,24)
00403   100*          Q(32)=QS(4,25)
00404   101*          DTOT=0.
00405   102*          DO 49 J=22,25
00410   103*       49 Z(32,J)=ZT(J+8)
00412   104*          DO 25 J=22,25
00415   105*          D(32,J)=HTPU(9)-Z(32,J)
00416   106*          IF(D(32,J).LT.0.)D(32,J)=0.
00420   107*       25 DTOT=DTOT+D(32,J)
00422   108*          DO 16 J=22,25
00425   109*       16 QS(32,J)=QTPU(9)/DTOT*D(32,J)
00427   110*          Q(27)=QS(32,22)
00430   111*          Q(29)=QS(32,23)
00431   112*          Q(31)=QS(32,24)
00432   113*          Q(36)=QS(32,25)
00433   114*          Z(29,25)=ZT(34)
00434   115*          D(29,25)=HTPU(10)-Z(29,25)
00435   116*          IF(D(29,25).LT.0.)D(29,25)=0.
00437   117*          DTOT=D(29,25)
00440   118*          Z(31,25)=ZT(35)
00441   119*          DO 26 I=31,32
```

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00444   120*          D(I,25)=HTPU(10)-Z(I,25)
00445   121*          IF(D(I,25).LT.0.)D(I,25)=0.
00447   122*       26 DTOT=DTOT+D(I,25)
00451   123*          QT(29,25)=QTPU(10)*D(29,25)/DTOT
00452   124*          QT(31,25)=QTPU(10)*D(31,25)/DTOT
00453   125*          QT(32,25)=QTPU(10)*D(32,25)/DTOT
00454   126*          Q(34)=QT(29,25)
00455   127*          Q(35)=QT(31,25)
00456   128*          Q(37)=QT(32,25)
00457   129*          DTOT=0.
00460   130*          DO 50 I=12,16
00463   131*       50 Z(I,28)=ZT(I+24)
00465   132*          DO 33 I=12,16
00470   133*          D(I,28)=HTPU(11)-Z(I,28)
00471   134*          IF(D(I,28).LT.0.)D(I,28)=0.
00473   135*       33 DTOT=DTOT+D(I,28)
00475   136*          DO 17 I=12,16
00500   137*       17 QT(I,28)=QTPU(11)/DTOT*D(I,28)
00502   138*          N=39
00503   139*          DO 41 I=12,16
00506   140*          N=N+1
00507   141*       41 Q(N)=QT(I,28)
00511   142*          DTOT=0.
00512   143*          DO 51 J=25,30
00515   144*       51 Z(20,J)=ZT(J+16)
00517   145*          DO 34 J=25,30
00522   146*          D(20,J)=HTPU(12)-Z(20,J)
00523   147*          IF(D(20,J).LT.0.)D(20,J)=0.
00525   148*       34 DTOT=DTOT+D(20,J)
00527   149*          DO 18 J=25,30
00532   150*       18 QS(20,J)=QTPU(12)/DTOT*D(20,J)
00534   151*          Q(33)=QS(20,25)
00535   152*          Q(38)=QS(20,26)
00536   153*          Q(39)=QS(20,27)
00537   154*          Q(45)=QS(20,28)
00540   155*          Q(46)=QS(20,29)
00541   156*          Q(47)=QS(20,30)
00542   157*          WRITE(KQFTP)(Q(N),N=1,47)
00550   158*          IF(TIME.GE.TMAX)GO TO 19
00552   159*          KCT=KCT+1
00553   160*          TIME=TIME+5.
00554   161*          IF(KCT.LE.KCTM)GO TO 6
00556   162*          KCT=1
```

```
00557   163*          GO TO 20
00560   164*       19 REWIND KQCTP
00561   165*          RETURN
00562   166*          ENTRY RITCTP
00563   167*          QTP(1)=QY(5,5)*20.
00564   168*          QTP(2)=QY(6,5)*20.
00565   169*          QTP(3)=QY(7,5)*20.
00566   170*          QTP(4)=QX(4,6)*20.
00567   171*          QTP(5)=QX(4,7)*20.
00570   172*          QTP(6)=QX(7,8)*20.
00571   173*          QTP(7)=QX(2,9)*20.
00572   174*          QTP(8)=QX(3,10)*20.
00573   175*          QTP(9)=QX(10,10)*20.
00574   176*          QTP(10)=QY(10,10)*20.
00575   177*          QTP(11)=QY(6,11)*20.
00576   178*          QTP(12)=QX(7,11)*20.
00577   179*          HTP(1)=H(5,5)
00600   180*          HTP(2)=H(6,5)
00601   181*          HTP(3)=H(7,5)
00602   182*          HTP(4)=H(4,6)
00603   183*          HTP(5)=H(4,7)
00604   184*          HTP(6)=H(7,8)
00605   185*          HTP(7)=H(2,9)
00606   186*          HTP(8)=H(3,10)
00607   187*          HTP(9)=H(10,10)
00610   188*          HTP(10)=H(10,10)
00611   189*          HTP(11)=H(6,11)
00612   190*          HTP(12)=H(7,11)
00613   191*          WRITE(KQCTP)(QTP(I),I=1,12),(HTP(I),I=1,12)
00625   192*          RETURN
00626   193*          END

       END OF UNIVAC 1108 FORTRAN V COMPILATION.     0 *DIAGNOSTIC* MESSAGE(S)
```

INSERTS IN PROGRAM HYDTID FOR SIMULATION OF INLET GEOMETRY WITHOUT JETTY (NOV. 1964)

Insert 1

```
      DATA/IFLOW/9,10,11,12,13,14,15,16,17,18,19,20,21,8,21,8,21,8,21,
     18,21,8,21,8,21,8,21,8,21,3*21,4*1,32,4,32,4,32,4,20,29,31,32,32,
     220,20,12,13,14,15,16,3*20,3*0/
      DATA/JFLOW/13*4,2*5,2*6,2*7,2*8,2*9,2*10,2*11,2*12,13,14,15,
     116,17,18,19,22,2*23,2*24,6*25,26,27,6*28,29,30,3*0/
```

Insert 2

```
      NFLOW=57
```

Insert 3

```
      DO 702 I=9,21
  702 QY(I,4)=QINFLO(I-8)
      N=14
      DO 703 J=5,12
      QX(8,J)=QINFLO(N)
      QX(21,J)=QINFLO(N+1)
  703 N=N+2
      DO 704 J=13,15
  704 QX(21,J)=QINFLO(J+17)
      DO 705 J=16,19
  705 QX(1,J)=QINFLO(J+17)
      DO 706 I=12,16
  706 QY(I,28)=QINFLO(I+38)
      DO 707 J=28,30
```

Insert 3 continued

```
 707 QX(20,J)=QINFLO(J+27)
     QX(32,22)=QINFLO(37)
     QX( 4,23)=QINFLO(39)
     QX(32,23)=QINFLO(39)
     QX( 4,24)=QINFLO(40)
     QX(32,24)=QINFLO(41)
     QX( 4,25)=QINFLO(42)
     QX(20,25)=QINFLO(43)
     QY(29,25)=QINFLO(44)
     QY(31,25)=QINFLO(45)
     QX(32,25)=QINFLO(46)
     QY(32,25)=QINFLO(47)
     QX(20,26)=QINFLO(48)
     QX(20,27)=QINFLO(49)
```

Subroutine RITAP, Version I

```
@I FOR RITAP,RITAP                                                    05 FEB 73   11:32:18.172
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 11:32:18

   SUBROUTINE RITAP      ENTRY POINT 001244


            RITCTP     ENTRY POINT 001247

   STORAGE USED (BLOCK, NAME, LENGTH)

        0001    •CODE    001252
        0000    •DATA    012024
        0002    •BLANK   000000
        0003    ALL      007133
        0004    MRU      000003
        0005    MPRC     000002


   EXTERNAL REFERENCES (BLOCK, NAME)

     0006   NRDUS          0007   NIO1$          0010   NIO2$          0011   NREW$          0012   NRBUS
     0013   NWBUS          0014   NERR3$


   STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

     0001   000014 115G      0001   000022 122G      0001   000036 131G      0001   000043 135G
     0001   000055 144G      0001   000067 153G      0001   000074 157G      0001   000116 164G
     0001   000135 173G      0001   001061 19L       0001   000053 20L       0001   000142 200G
     0001   000156 206G      0001   000165 214G      0001   000201 222G      0000   011745 23F
     0001   000210 230G      0001   000224 236G      0001   000233 244G      0001   000246 253G
     0001   000253 260G      0001   000267 266G      0001   000276 274G      0001   000312 302G
     0001   000322 310G      0001   000335 317G      0001   000342 324G      0001   000356 332G
     0001   000365 340G      0001   000401 346G      0001   000410 354G      0001   000424 362G
     0001   000434 370G      0001   000454 401G      0001   000462 407G      0001   000476 415G
     0001   000506 423G      0001   000521 432G      0001   000526 437G      0001   000547 447G
     0001   000565 460G      0001   000572 465G      0001   000613 475G      0001   000646 514G
     0001   000706 533G      0001   000713 540G      0001   000734 550G      0001   000744 556G
     0001   000757 565G      0001   000764 572G      0001   000100 6L        0001   001005 602G
     0001   001032 616G      0001   001201 673G      0001   001206 677G      0000 R 007257 D
```

```
0000 R 011742 DTOT      0003 R 004622 H         0000 R 002401 HOLD      0005 R 000000 HSHIFT
0000 R 002363 HTP       0000 R 002417 HTPU      0000 I 011737 I         0000   011776 INJPS
0000 I 011744 J         0000 I 011741 KCT       0000 I 011735 KCTM      0004 I 000001 KQCTP
0004 I 000002 KQFTP     0004   000000 KRSOFN    0000 I 011740 M         0000 I 011743 N
0000 R 011570 Q         0000 R 002327 QOLD      0000 R 002435 QS        0000 R 004746 QT
0000 R 002311 QTP       0000 R 002345 QTPU      0003 R 000000 QX        0003 R 002311 QY
0000 R 011734 TIME      0005 R 000001 TIMTOT    0000 R 011736 TMAX      0000 R 000000 Z
0000 R 011652 ZT
```

VERSION 1

```
00101     1•          SUBROUTINE RITAP
00101     2•    C
00101     3•    C                 THIS SUBROUTINE STORES SELECTED FLOWS FROM A
00101     4•    C               COARSE GRID MODEL, THEN INTERPOLATES BY TIME,
00101     5•    C               DISTRIBUTES BY DEPTH PROPORTION, AND WRITES THE
00101     6•    C               TRANSFER FLOWS ON MAGNETIC TAPE FOR SUBSEQUENT
00101     7•    C               USE BY THE FINE GRID MODEL.
00101     8•    C
00103     9•          COMMON/ALL/QX(35,35),QY(35,35),H(35,35)
00104    10•          COMMON/ERW/KRSOFN,KQCTP,KQFTP
00105    11•          COMMON/MPRC/HSHIFT,TIMTOT
00106    12•          DIMENSION Z(35,35),QTP(14),QOLD(14),GTPU(14),HTP(14),HOLD(14),
00106    13•         1HTPU(14),QS(35,35),QT(35,35),D(35,35),Q(50),ZT(50)
00107    14•       23 FORMAT(25X,F4.0)
00110    15•          TIME=0.
00111    16•          KCTM=4
00112    17•          TMAX=3600.*TIMTOT
00113    18•          READ(5,23)(ZT(I),I=1,56)
00121    19•          DO 65 I=1,56
00124    20•       65 ZT(I)=ZT(I)-HSHIFT
00126    21•          REWIND KQCTP
00127    22•          READ(KQCTP)(QTP(M),M=1,14),(HTP(M),M=1,14)
00141    23•          KCT=0
00142    24•          REWIND KQFTP
00143    25•       20 DO 4 M=1,14
00146    26•          HOLD(M)=HTP(M)
00147    27•        4 QOLD(M)=QTP(M)
00151    28•        5 READ(KQCTP)(QTP(M),M=1,14),(HTP(M),M=1,14)
00163    29•        6 DO 7 M=1,14
00166    30•          HTPU(M)=HOLD(M)+KCT/KCTM*(HTP(M)-HOLD(M))
00167    31•        7 QTPU(M)=QOLD(M)+KCT*(QTP(M)-QOLD(M))/KCTM
```

```
00171    32.          DTOT=0.
00172    33.          DO 45 I=9,21
00175    34.       45 Z(I,4)=ZT(I-8)
00177    35.          DO 27 I=9,12
00202    36.          D(I,4)=HTPU(1)-Z(I,4)
00203    37.       27 DTOT=DTOT+D(I,4)
00205    38.          DO 9 I=9,12
00210    39.        9 QT(I,4)=QTPU(1)/DTOT*D(I,4)
00212    40.          DTOT=0.
00213    41.          DO 28 I=13,16
00216    42.          D(I,4)=HTPU(2)-Z(I,4)
00217    43.       28 DTOT=DTOT+D(I,4)
00221    44.          DO 10 I=13,16
00224    45.       10 QT(I,4)=QTPU(2)/DTOT*D(I,4)
00226    46.          DTOT=0.
00227    47.          DO 29 I=17,21
00232    48.          D(I,4)=HTPU(3)-Z(I,4)
00233    49.       29 DTOT=DTOT+D(I,4)
00235    50.          DO 11 I=17,21
00240    51.       11 QT(I,4)=QTPU(3)/DTOT*D(I,4)
00242    52.          N=0
00243    53.          DO 36 I=9,21
00246    54.          N=N+1
00247    55.       36 Q(N)=QT(I,4)
00251    56.          DTOT=0.
00252    57.          DO 46 J=5,12
00255    58.       46 Z(8,J)=ZT(J+7)
00257    59.          DO 30 J=5,8
00262    60.          D(8,J)=HTPU(4)-Z(8,J)
00263    61.       30 DTOT=DTOT+D(8,J)
00265    62.          DO 12 J=5,8
00270    63.       12 QS(8,J)=QTPU(4)/DTOT*D(8,J)
00272    64.          DTOT=0.
00273    65.          DO 31 J=9,12
00276    66.          D(8,J)=HTPU(5)-Z(8,J)
00277    67.       31 DTOT=DTOT+D(8,J)
00301    68.          DO 13 J=9,12
00304    69.       13 QS(8,J)=QTPU(5)/DTOT*D(8,J)
00306    70.          N=14
00307    71.          DO 109 J=5,12
00312    72.          Q(N)=QS(8,J)
00313    73.      109 N=N+2
00313    74.    C
```

```
00313     75.    C       ARRANGE ZT IN ORDER (9-21,4),(8,5-12),(21,5-15),(1,16-19),(4,23-25),
00313     76.    C       (32,22-25),(29,25),(31-32,25),(12-16,28),(20,25-30)
00313     77.    C
00315     78.            DTOT=0.
00316     79.            DO 101 J=5,15
00321     80.        101 Z(21,J)=ZT(J+17)
00323     81.            DO 102 J=5,8
00326     82.            D(21,J)=HTPU(13)-Z(21,J)
00327     83.        102 DTOT=DTOT+D(21,J)
00331     84.            DO 103 J=5,8
00334     85.        103 QS(21,J)=QTPU(13)/DTOT*D(21,J)
00336     86.            DTOT=0.
00337     87.            DO 104 J=9,12
00342     88.            D(21,J)=HTPU(14)-Z(21,J)
00343     89.        104 DTOT=DTOT+D(21,J)
00345     90.            DO 105 J=9,12
00350     91.        105 QS(21,J)=QTPU(14)/DTOT*D(21,J)
00352     92.            DTOT=0.
00353     93.            DO 106 J=13,15
00356     94.            D(21,J)=HTPU(6)-Z(21,J)
00357     95.        106 DTOT=DTOT+D(21,J)
00361     96.            DO 107 J=13,15
00364     97.        107 QS(21,J)=QTPU(6)/DTOT*D(21,J)
00366     98.            N=15
00367     99.            DO 108 J=5,12
00372    100.            Q(N)=QS(21,J)
00373    101.        108 N=N+2
00375    102.            Q(30)=QS(21,13)
00376    103.            Q(31)=QS(21,14)
00377    104.            Q(32)=QS(21,15)
00400    105.            DO 47 J=16,19
00403    106.         47 Z(1,J)=ZT(J+17)
00405    107.            DTOT=0.
00406    108.            DO 32 J=16,19
00411    109.            D(1,J)=HTPU(7)-Z(1,J)
00412    110.         32 DTOT=DTOT+D(1,J)
00414    111.            DO 14 J=16,19
00417    112.         14 QS(1,J)=QTPU(7)/DTOT*D(1,J)
00421    113.            N=32
00422    114.            DO 38 J=16,19
00425    115.            N=N+1
00426    116.         38 Q(N)=QS(1,J)
00430    117.            DTOT=0.
```

```
00431   118.          DO 48 J=23,25
00434   119.       48 Z(4,J)=ZT(J+4)
00436   120.          DO 24 J=23,25
00441   121.          D(4,J)=HTPU(8)-Z(4,J)
00442   122.          IF(D(4,J).LT.0.)D(4,J)=0.
00444   123.       24 DTOT=DTOT+D(4,J)
00446   124.          DO 15 J=23,25
00451   125.       15 QS(4,J)=QTPU(8)/DTOT*D(4,J)
00453   126.          Q(38)=QS(4,23)
00454   127.          Q(40)=QS(4,24)
00455   128.          Q(42)=QS(4,25)
00456   129.          DTOT=0.
00457   130.          DO 49 J=22,25
00462   131.       49 Z(32,J)=ZT(J+8)
00464   132.          DO 25 J=22,25
00467   133.          D(32,J)=HTPU(9)-Z(32,J)
00470   134.          IF(D(32,J).LT.0.)D(32,J)=0.
00472   135.       25 DTOT=DTOT+D(32,J)
00474   136.          DO 16 J=22,25
00477   137.       16 QS(32,J)=QTPU(9)/DTOT*D(32,J)
00501   138.          Q(37)=QS(32,22)
00502   139.          Q(39)=QS(32,23)
00503   140.          Q(41)=QS(32,24)
00504   141.          Q(46)=QS(32,25)
00505   142.          Z(29,25)=ZT(34)
00506   143.          D(29,25)=HTPU(10)-Z(29,25)
00507   144.          IF(D(29,25).LT.0.)D(29,25)=0.
00511   145.          DTOT=D(29,25)
00512   146.          Z(31,25)=ZT(35)
00513   147.          DO 26 I=31,32
00516   148.          D(I,25)=HTPU(10)-Z(I,25)
00517   149.          IF(D(I,25).LT.0.)D(I,25)=0.
00521   150.       26 DTOT=DTOT+D(I,25)
00523   151.          QT(29,25)=QTPU(10)*D(29,25)/DTOT
00524   152.          QT(31,25)=QTPU(10)*D(31,25)/DTOT
00525   153.          QT(32,25)=QTPU(10)*D(32,25)/DTOT
00526   154.          Q(44)=QT(29,25)
00527   155.          Q(45)=QT(31,25)
00530   156.          Q(47)=QT(32,25)
00531   157.          DTOT=0.
00532   158.          DO 50 I=12,16
00535   159.       50 Z(I,28)=ZT(I+24)
00537   160.          DO 33 I=12,16
```

```
00542   161.          D(I,28)=HTPU(11)-Z(I,28)
00543   162.          IF(D(I,28).LT.0.)D(I,28)=0.
00545   163.       33 DTOT=DTOT+D(I,28)
00547   164.          DO 17 I=12,16
00552   165.       17 QT(I,28)=QTPU(11)/DTOT*D(I,28)
00554   166.          N=49
00555   167.          DO 41 I=12,16
00560   168.          N=N+1
00561   169.       41 Q(N)=QT(I,28)
00563   170.          DTOT=0.
00564   171.          DO 51 J=25,30
00567   172.       51 Z(20,J)=ZT(J+16)
00571   173.          DO 34 J=25,30
00574   174.          D(20,J)=HTPU(12)-Z(20,J)
00575   175.          IF(D(20,J).LT.0.)D(20,J)=0.
00577   176.       34 DTOT=DTOT+D(20,J)
00601   177.          DO 18 J=25,30
00604   178.       18 QS(20,J)=QTPU(12)/DTOT*D(20,J)
00606   179.          Q(43)=QS(20,25)
00607   180.          Q(48)=QS(20,26)
00610   181.          Q(49)=QS(20,27)
00611   182.          Q(55)=QS(20,28)
00612   183.          Q(56)=QS(20,29)
00613   184.          Q(57)=QS(20,30)
00614   185.          WRITE(KQFTP)(Q(N),N=1,57)
00622   186.          IF(TIME.GE.TMAX)GO TO 19
00624   187.          KCT=KCT+1
00625   188.          TIME=TIME+5.
00626   189.          IF(KCT.LE.KCTM)GO TO 6
00630   190.          KCT=1
00631   191.          GO TO 20
00632   192.       19 REWIND KQCTP
00633   193.          RETURN
00634   194.          ENTRY RITCTP
00635   195.          QTP(1)=QY(5,5)*20.
00636   196.          QTP(2)=QY(6,5)*20.
00637   197.          QTP(3)=QY(7,5)*20.
00640   198.          QTP(4)=QX(4,6)*20.
00641   199.          QTP(5)=QX(4,7)*20.
00642   200.          QTP(6)=QX(7,8)*20.
00643   201.          QTP(7)=QX(2,9)*20.
00644   202.          QTP(8)=QX(3,10)*20.
00645   203.          QTP(9)=QX(10,10)*20.
```

```
00646   204.          QTP(10)=QY(10,10)*20.
00647   205.          QTP(11)=QY(6,11)*20.
00650   206.          QTP(12)=QX(7,11)*20.
00651   207.          QTP(13)=QX(7,6)*20.
00652   208.          QTP(14)=QX(7,7)*20.
00653   209.          HTP(1)=H(5,5)
00654   210.          HTP(2)=H(6,5)
00655   211.          HTP(3)=H(7,5)
00656   212.          HTP(4)=H(4,6)
00657   213.          HTP(5)=H(4,7)
00660   214.          HTP(6)=H(7,8)
00661   215.          HTP(7)=H(2,9)
00662   216.          HTP(8)=H(3,10)
00663   217.          HTP(9)=H(10,10)
00664   218.          HTP(10)=H(10,10)
00665   219.          HTP(11)=H(6,11)
00666   220.          HTP(12)=H(7,11)
00667   221.          HTP(13)=H(7,6)
00670   222.          HTP(14)=H(7,7)
00671   223.          WRITE(KQCTP)(QTP(I),I=1,14),(HTP(I),I=1,14)
00703   224.          RETURN
00704   225.          END

        END OF UNIVAC 1108 FORTRAN V COMPILATION.      0 *DIAGNOSTIC* MESSAGE(S)
```

OUTPUT FROM PROGRAM HYDTID

Two complete sets of sample output from HYDTID are included in this section. Both are for simulation of the verification period 0400 to 2100 on 12 September 1969, however the first is output from the coarse grid model and the second is from the fine grid sub-model. Each set includes exactly the same types of information but for different models.

Coarse Grid Model Output

CARD TYPE	CARD NO	DESCRIPTION ALPHANUMERIC TITLE
TITLE	1	TWO DIMENSIONAL HYDRODYNAMIC MODEL OF MASONBORO INLET (N. CAROLINA)
TITLE	2	MODEL STUDY FOR COASTAL ENGINEERING RESEARCH CENTER (CORPS OF ENGRS)
TITLE	3	RUN MADE USING COARSE GRID MODEL FOR INITIAL VERIFICATION
TITLE	4	SIMULATION PERFORMED FOR PERIOD 400-2100 SEPTEMBER 12, 1969
ENDTITLE		

CARD TYPE	CARD NO	DESCRIPTION	TYPE OF INPUT/OUTPUT CARD, TAPE, BOTH, OR NONE	TAPE NO
FILE A	1	READ BASIC CELL INPUT DATA FROM	CARD	0
FILE A	2	READ INITIAL HYDRODYNAMICS FROM	CARD	0
FILE A	3	COMPUTE AND SAVE NET VELOCITIES ON	NONE	0
FILE A	4	COMPUTE AND SAVE NET FLOWS ON	NONE	0
FILE A	5	COMPUTE AND SAVE DISPERSION COEF. ON	NONE	0
FILE A	6	STORE ENDING VALUES OF HYDRODYNAMICS ON	NONE	0
FILE A	7	STORE INSTANTANEOUS VELOCITIES ON	NONE	0
FILE A	8	WRITE/READ INPUTS FOR FINE GRID MODEL ON	TAPE	1
FILE A	9	STORE COARSE GRID DATA FOR FINE GRID ON	TAPE	2
ENDFILE A				

CARD TYPE	CARD NO	DESCRIPTION	VALUE
FILE B	1	MODEL TYPE (1=COARSE PROD,2=FINE PROD,3=COARSE NON-PROD)	1.0
FILE B	2	PRINT INPUT DATA (1=NO PRINT, 2=W/MANN. N, 3=W/O MANN. N)	2.0
FILE B	3	NUMBER OF STATIONS FOR WHICH PLOTS ARE DESIRED	7.0
FILE B	4	TOTAL REAL TIME FOR OPERATION OF MODEL (HOURS)	17.0
FILE B	5	START REAL TIME FOR OPERATION OF MODEL (HOURS)	4.0
FILE B	6	REAL TIME INT. FOR STORING INSTANT. HYDRODYNAMICS (MIN)	.0
FILE B	7	REAL TIME PERIOD OF TIDAL CYCLE (HOURS)	12.5
FILE B	8	INITIAL WIND MAGNITUDE (KNOTS)	4.0
FILE B	9	DIRECTION FROM WHICH INITIAL WIND BLOWS (CLOCKWISE FROM N	20.0
FILE B	10	AVERAGE PRECIPITATION RATE (INCHES/DAY)	.0
FILE B	11	AVERAGE EVAPORATION RATE (INCHES/DAY)	.0
FILE B	12	ANGLE BETWEEN NORTH AND X-AXIS (DEG. CLOCKWISE FROM N.)	48.0
FILE B	13	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN X-DIRECTION	12.0
FILE B	14	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN Y-DIRECTION	16.0
FILE B	15	GRID SIZE OF COMPUTATIONAL ELEMENTS (FEET)	1200.0
FILE B	16	PROGRAM COMPUTATIONAL TIME STEP (SECONDS)	20.0
FILE B	17	LATITUDE OF ESTUARINE SYSTEM (DEGREES)	34.2
FILE B	18	NUMBER OF OUTPUT SETS (HOURS) PRINTED PER PAGE	6.0
FILE B	19	COMPUTE NET FLOWS BUT DO NOT STORE (1=YES, 2=NO)	2.0
FILE B	20	DIFFERENCE BETWEEN MSL AND INPUT DATUM(FEET)	1.3
ENDFILE B			

ENDFILE C BASIC CELL DATA

ENDFILE D EXCITING TIDES

TWO DIMENSIONAL HYDRODYNAMIC MODEL OF MASONBORO INLET (N. CAROLINA)

MODEL STUDY FOR COASTAL ENGINEFRING RESEARCH CENTER (CORPS OF ENGRS)

RUN MADE USING COARSE GRID MODEL FOR INITIAL VERIFICATION

SIMULATION PERFORMED FOR PERIOD 400-2100 SEPTEMBER 12, 1969

MODEL-OPERATION INFORMATION

BASIC CELL INPUT DATA READ FROM CARDS

INITIAL HYDRODYNAMICS READ FROM CARDS

ALL INPUT DATA (EXCLUDING INITIAL HYDRODYNAMICS) PRINTED AND LABELED

TIDAL AMPLITUDES AND FLOWS WERE COMPUTED AND PRINTED FOR SELECTED CELLS

NET FLOWS WERE NOT COMPUTED

NET VELOCITIES WERE NOT COMPUTED

AVERAGE VELOCITIES AND DISPERSION COEFFICIENTS WERE NOT PUNCHED ON CARDS OR STORED ON TAPE

INSTANTANEOUS VELOCITIES WERE NOT STORED ON TAPE

ENDING VALUES OF HYDRODYNAMICS WERE NOT SAVED

TIDAL AMPLITUDE PLOTS WERE MADE FOR 7 SELECTED STATIONS IN BAY

MODEL WAS OPERATED TO SIMULATE 17.0 HOURS OF REAL TIME

COARSE GRID MODEL

MODEL DIMENSIONS AND CHARACTERISTICS

NUMBER OF CELLS IN X-DIRECTION = 12

NUMBER OF CELLS IN Y-DIRECTION = 16

TOTAL NUMBER OF CELLS IN MODEL = 192

WIDTH OF EACH CELL = 1200.0 FEET

NUMBER OF TIDAL EXCITATION CELLS = 32

NUMBER OF SUBMERGED BARRIERS = 11

NUMBER OF EXTERNAL FLOW SOURCES = 0

COMPUTATIONAL TIME INCREMENT = .333 MINUTES

PERIOD OF TIDAL CYCLE = 12.5 HOURS

STATION LOCATIONS FOR TIME PRINT-OUT OF HYDRODYNAMICS

STATION NUMBER 1	I7J6	I = 7	J = 6
STATION NUMBER 2	I7J8	I = 7	J = 8
STATION NUMBER 3	I6J10	I = 6	J = 10
STATION NUMBER 4	I9J10	I = 9	J = 10
STATION NUMBER 5	I3J9	I = 3	J = 9
STATION NUMBER 6	I11J8	I = 11	J = 8
STATION NUMBER 7	I7J13	I = 7	J = 13
STATION NUMBER 8	I10J10	I = 10	J = 10
STATION NUMBER 9	I11J10	I = 11	J = 10
STATION NUMBER 10	I6J8	I = 6	J = 8
STATION NUMBER 11	I6J7	I = 6	J = 7
STATION NUMBER 12	I6J11	I = 6	J = 11
STATION NUMBER 13	I6J12	I = 6	J = 12
STATION NUMBER 14	I3J11	I = 3	J = 11
STATION NUMBER 15	I7J7	I = 7	J = 7
STATION NUMBER 16	I2J13	I = 2	J = 13
STATION NUMBER 17	I8J12	I = 8	J = 12
STATION NUMBER 18	I8J13	I = 8	J = 13
STATION NUMBER 19	I10J13	I = 10	J = 13
STATION NUMBER 20	I11J15	I = 11	J = 15

STATION LOCATIONS FOR TIME PLOTS OF HYDRODYNAMICS

STATION NUMBER	1	I7J6	I = 7	J = 6
STATION NUMBER	2	I7J8	I = 7	J = 8
STATION NUMBER	3	I6J10	I = 6	J = 10
STATION NUMBER	4	I9J10	I = 9	J = 10
STATION NUMBER	5	I3J9	I = 3	J = 9
STATION NUMBER	6	I11J8	I = 11	J = 8
STATION NUMBER	7	I7J13	I = 7	J = 13

INITIAL WIND CONDITIONS AND RAINFALL AND EVAPORATION RATES

WIND VELOCITY = 4.0 KNOTS

WIND ANGLE = 20.0 DEGREES

RAINFALL RATE = .000 IN./DAY

EVAPORATION RATE = .000 IN./DAY

EXTERNAL FLOW LOCATIONS AND QUANTITIES

INFLOW NUMBER 1 I = 0 J = 0 QINFLO = .0 CFS

SUBMERGED BARRIER LOCATIONS, DISCHARGE COEFFICIENTS, AND MSL ELEVATIONS

BARRIER NO. 1	I = 6	J = 6	SIDE BOUNDARY	COEFFICIENT = .50	ELEVATION = -6.3 FEET
BARRIER NO. 2	I = 6	J = 7	SIDE BOUNDARY	COEFFICIENT = .40	ELEVATION = -1.3 FEET
BARRIER NO. 3	I = 6	J = 8	SIDE BOUNDARY	COEFFICIENT = .40	ELEVATION = -2.3 FEET
BARRIER NO. 4	I = 7	J = 8	SIDE BOUNDARY	COEFFICIENT = .50	ELEVATION = .7 FEET
BARRIER NO. 5	I = 7	J = 8	TOP BOUNDARY	COEFFICIENT = 1.30	ELEVATION = -12.2 FEET
BARRIER NO. 6	I = 3	J = 9	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -4.5 FEET
BARRIER NO. 7	I = 5	J = 9	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -5.7 FEET
BARRIER NO. 8	I = 6	J = 10	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -8.2 FEET
BARRIER NO. 9	I = 7	J = 10	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -7.2 FEET
BARRIER NO. 10	I = 9	J = 10	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -10.2 FEET
BARRIER NO. 11	I = 11	J = 10	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -3.2 FEET

GULF TIDAL DISCHARGE COEFFICIENTS AND CELL TIDE ASSIGNMENTS

TIDAL CELL 1	I = 3	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 2	I = 4	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 3	I = 5	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 4	I = 6	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 5	I = 7	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 6	I = 8	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 7	I = 9	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 8	I = 10	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 9	I = 1	J = 2	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 10	I = 11	J = 2	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 11	I = 1	J = 3	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 12	I = 11	J = 3	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 13	I = 1	J = 4	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 14	I = 11	J = 4	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 15	I = 1	J = 5	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 16	I = 11	J = 5	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 17	I = 1	J = 6	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 18	I = 11	J = 6	COEFFICIENT = 2.00	TIDE = TIDE1

TIDAL CELL 19 I = 1 J = 7 COEFFICIENT = 2.00 TIDE = TIDE1

TIDAL CELL 20 I = 11 J = 7 COEFFICIENT = 2.00 TIDE = TIDE1

TIDAL CELL 21 I = 1 J = 8 COEFFICIENT = 2.00 TIDE = TIDE2

TIDAL CELL 22 I = 11 J = 8 COEFFICIENT = 2.00 TIDE = TIDE1

TIDAL CELL 23 I = 1 J = 9 COEFFICIENT = 2.00 TIDE = TIDE2

TIDAL CELL 24 I = 11 J = 9 COEFFICIENT = 2.00 TIDE = TIDE1

TIDAL CELL 25 I = 1 J = 10 COEFFICIENT = 2.00 TIDE = TIDE4

TIDAL CELL 26 I = 11 J = 10 COEFFICIENT = 2.00 TIDE = TIDE3

TIDAL CELL 27 I = 1 J = 11 COEFFICIENT = 2.00 TIDE = TIDE4

TIDAL CELL 28 I = 11 J = 11 COEFFICIENT = 2.00 TIDE = TIDE3

TIDAL CELL 29 I = 1 J = 12 COEFFICIENT = 2.00 TIDE = TIDE4

TIDAL CELL 30 I = 11 J = 12 COEFFICIENT = 2.00 TIDE = TIDE3

TIDAL CELL 31 I = 11 J = 13 COEFFICIENT = 2.00 TIDE = TIDE3

TIDAL CELL 32 I = 11 J = 15 COEFFICIENT = 2.00 TIDE = TIDE3

DATA FOR CORIOLIS ACCELERATION

ANGULAR ROTATION OF EARTH = .0000729 RAD./SEC.

LATITUDE OF BAY = 34.20 DEGREES

MEAN SEA LEVEL WATER DEPTHS THROUGHOUT BAY

J/I	1	2	3	4	5	6	7	8	9	10	11	12
16	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
15	*****	*****	*****	*****	*****	*****	*****	*****	.7	-5.3	-5.3	*****
14	*****	*****	*****	*****	*****	*****	*****	-5.3	-5.3	-5.3	*****	*****
13	*****	-1.3	*****	1.7	-2.3	-6.3	-5.3	-5.3	*****	-3.3	-2.3	*****
12	-5.3	-6.3	-7.3	-8.3	-9.3	-9.3	*****	-.3	-.3	-.3	-2.3	*****
11	-5.3	-2.3	-1.3	*****	.9	-8.3	1.4	1.0	.7	.7	-2.3	*****
10	-5.3	-2.3	.7	1.9	1.4	-10.3	-10.3	-7.3	-10.3	-11.3	-12.3	*****
9	-3.3	-4.3	-4.6	-4.8	-5.8	-7.3	-12.3	*****	*****	*****	-9.3	*****
8	-5.3	-2.3	*****	*****	*****	-4.3	-15.3	-6.3	-10.3	-21.3	-26.3	*****
7	-7.3	-7.3	-7.3	-8.3	-9.3	-6.3	-19.3	-16.3	-23.3	-26.3	-30.3	*****
6	-19.3	-19.3	-19.3	-19.3	-16.3	-9.3	-23.3	-22.3	-29.3	-31.3	-31.3	*****
5	-28.3	-28.3	-28.3	-29.3	-27.3	-21.3	-27.3	-31.3	-31.3	-31.3	-31.3	*****
4	-31.3	-31.3	-31.3	-31.3	-31.3	-31.3	-31.3	-32.3	-32.3	-32.3	-32.3	*****
3	-33.3	-33.3	-32.3	-32.3	-32.3	-32.3	-31.3	-33.3	-33.3	-32.3	-32.3	*****
2	-33.3	-33.3	-33.3	-33.3	-33.3	-33.3	-32.3	-33.3	-33.3	-33.3	-33.3	*****
1	*****	*****	-33.3	-33.3	-33.3	-33.3	-33.3	-33.3	-33.3	-33.3	*****	*****

COMPUTATIONAL CELL IDENTIFICATIONS

J/I	1	2	3	4	5	6	7	8	9	10	11	12
16	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	30	30	25	1
14	1	1	1	1	1	1	1	30	36	33	1	1
13	1	18	1	30	18	12	12	33	1	36	25	1
12	27	34	12	34	2	6	1	36	30	36	8	1
11	27	36	33	1	30	31	30	36	36	36	8	1
10	27	30	36	30	33	5	15	12	15	34	11	1
9	27	12	15	12	15	2	6	1	1	1	25	1
8	27	6	1	1	1	15	45	12	12	12	8	1
7	27	12	12	12	12	42	6	2	2	2	8	1
6	27	2	2	2	2	4	6	2	2	2	8	1
5	27	2	2	2	2	2	2	2	2	2	8	1
4	27	2	2	2	2	2	2	2	2	2	8	1
3	27	2	2	2	2	2	2	2	2	2	8	1
2	27	2	2	2	2	2	2	2	2	2	8	1
1	1	1	26	26	26	26	26	26	26	26	1	1

CONVECTION FLAGGING

J/I	1	2	3	4	5	6	7	8	9	10	11	12
16	11	11	11	11	11	11	11	11	11	11	11	11
15	11	11	11	11	11	11	11	11	41	21	11	11
14	11	11	11	11	11	11	11	21	33	14	11	11
13	11	11	11	41	11	21	21	12	11	42	11	11
12	11	42	21	33	21	12	11	42	41	13	14	11
11	11	33	12	11	41	22	21	33	31	11	14	11
10	11	21	22	21	33	44	21	21	21	33	14	11
9	11	21	21	21	21	33	14	11	11	11	11	11
8	11	12	11	11	11	41	22	41	41	41	12	11
7	11	41	41	41	41	13	14	13	11	11	14	11
6	11	13	11	11	11	11	14	13	11	11	14	11
5	11	13	11	11	11	11	44	13	11	11	14	11
4	11	13	11	11	11	11	11	11	11	11	14	11
3	11	13	11	11	11	11	11	11	11	11	14	11
2	11	33	31	31	31	31	31	31	31	31	14	11
1	11	11	11	11	11	11	11	11	11	11	11	11

MANNINGS N BOTTOM FRICTION COEFFICIENTS

J = 1
.01000 .01500 .01500 .01500 .01500 .01500 .01500 .01500 .01500 .01500
.01500 .00000

J = 2
.01500 .01500 .01500 .01500 .01500 .01500 .01600 .01500 .01500 .01500
.01500 .00000

J = 3
.01500 .01500 .01600 .01600 .01600 .01600 .01700 .01500 .01500 .01600
.01600 .00000

J = 4
.01700 .01700 .01700 .01700 .01700 .01700 .01700 .01600 .01600 .01600
.01600 .00000

J = 5
.01900 .01900 .01900 .01800 .01900 .02300 .02400 .01700 .01700 .01700
.01700 .00000

J = 6
.02500 .02500 .02500 .02500 .02700 .03100 .02600 .02300 .01800 .01700
.01700 .00000

J = 7
.03300 .03300 .03300 .03200 .03100 .03200 .02900 .02700 .02200 .02000
.01700 .00000

J = 8
.01000 .01000 .01000 .01000 .01000 .03500 .02800 .03300 .03100 .02300
.02000 .00000

J = 9
.01000 .03900 .03900 .03900 .03900 .03500 .02900 .01000 .01000 .01000
.03100 .00000

J = 10

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  .01000  .05200  .04600  .04600  .05200  .03300  .03200  .03300  .03100  .03000
  .02900  .00000

J = 11
  .01000  .03900  .04900  .01000  .05200  .03300  .03500  .04600  .04600  .04600
  .03900  .00000

J = 12
  .01000  .03900  .03400  .03400  .03300  .03300  .01000  .05200  .05200  .05200
  .04400  .00000

J = 13
  .01000  .04600  .01000  .04600  .04400  .03400  .03400  .03400  .01000  .05300
  .04400  .00000

J = 14
  .01000  .01000  .01000  .01000  .01000  .01000  .01000  .04900  .04900  .04900
  .01000  .00000

J = 15
  .01000  .01000  .01000  .01000  .01000  .01000  .01000  .01000  .05200  .04900
  .04900  .00000

J = 16
  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000
  .00000  .00000
     ENDFILE
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TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I7J6	I7J8	I6J10	I9J10	I3J9	I11J8	I7J13	I10J10	I11J10	I6J8
4.00	.920	MSL TIDE	.895	.796	.604	.423	.338	.929	.374	.374	.348	.849
	.000	XFLO CFS	0.	-190.	-9866.	13690.	-6872.	-2982.	3841.	13300.	8626.	1970.
	.400	YFLO CFS	35519.	38155.	14485.	0.	0.	-1374.	0.	0.	4339.	0.
	.250	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	.250	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
5.00	1.900	MSL TIDE	1.830	1.733	1.545	1.396	1.224	1.864	1.346	1.351	1.335	1.780
	.730	XFLO CFS	0.	-1312.	-11771.	14747.	-9363.	-3023.	4857.	13379.	8064.	2457.
	1.170	YFLO CFS	37934.	42875.	16145.	0.	0.	-1528.	0.	1045.	4992.	0.
	1.150	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	1.150	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
6.00	2.700	MSL TIDE	2.625	2.517	2.313	2.157	1.943	2.662	2.109	2.108	2.094	2.570
	1.410	XFLO CFS	0.	-2386.	-13965.	16929.	-11624.	-3124.	5599.	14924.	8767.	3115.
	1.920	YFLO CFS	42208.	49617.	18660.	0.	0.	-1707.	0.	1705.	5855.	0.
	1.900	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	1.900	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
7.00	3.120	MSL TIDE	3.061	2.982	2.836	2.739	2.471	3.088	2.707	2.706	2.701	3.020
	1.960	XFLO CFS	0.	-2534.	-13488.	15034.	-12703.	-2541.	5084.	12982.	7245.	2933.
	2.560	YFLO CFS	38437.	46016.	16630.	0.	0.	-1505.	0.	1817.	5500.	0.
	2.570	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.570	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
8.00	3.030	MSL TIDE	3.020	3.022	3.033	3.054	2.838	3.018	3.046	3.062	3.071	3.018
	2.550	XFLO CFS	0.	-288.	-7979.	4165.	-9841.	-886.	1525.	3382.	1006.	548.
	3.050	YFLO CFS	19116.	20822.	6146.	0.	0.	-639.	0.	662.	2250.	0.
	3.020	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	3.020	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
9.00	2.500	MSL TIDE	2.544	2.596	2.808	2.861	2.873	2.524	2.952	2.896	2.918	2.530
	2.970	XFLO CFS	0.	1630.	5382.	-13638.	3264.	1963.	-1906.	-11814.	-6460.	-3547.
	3.040	YFLO CFS	-26924.	-33633.	-16198.	0.	0.	1035.	0.	-1787.	-5321.	0.
	3.320	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	3.320	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

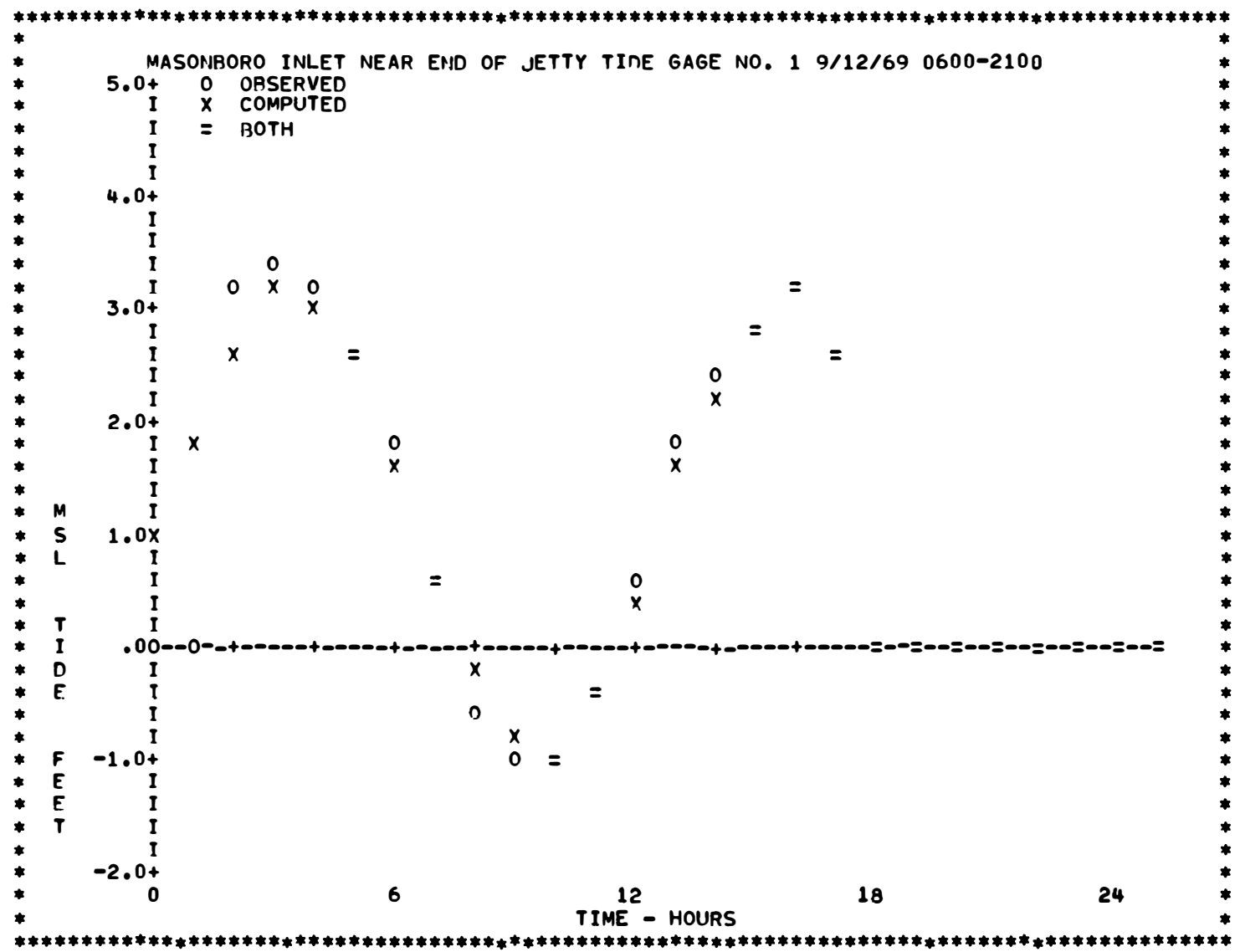
TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	I7J6	I7J8	I6J10	I9J10	I3J9	I11J8	I7J13	I10J10	I11J10	I6J8
			PRINTOUT STATIONS THROUGHOUT SYSTEM									
10.00	1.600	MSL TIDE	1.643	1.724	2.119	2.199	2.297	1.637	2.345	2.248	2.280	1.631
	2.600	XFLO CFS	0.	961.	8857.	-16307.	8993.	2996.	-3193.	-14313.	-7631.	-3533.
	2.430	YFLO CFS	-41623.	-46945.	-19365.	0.	0.	1525.	0.	-1728.	-6420.	0.
	2.680	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.680	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0	DEGREES W.R.T. X-AXIS			
11.00	.570	MSL TIDE	.623	.743	1.278	1.403	1.543	.609	1.595	1.468	1.512	.602
	1.950	XFLO CFS	0.	36.	9722.	-17696.	9505.	3175.	-3929.	-16291.	-9290.	-3220.
	1.700	YFLO CFS	-46563.	-50253.	-20333.	0.	0.	1529.	0.	-1088.	-6693.	0.
	2.020	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.020	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0	DEGREES W.R.T. X-AXIS			
12.00	-.350	MSL TIDE	-.297	-.172	.378	.524	.719	-.315	.724	.594	.636	-.324
	1.200	XFLO CFS	0.	0.	9290.	-16575.	8717.	2766.	-3855.	-16089.	-9775.	-2291.
	.840	YFLO CFS	-44268.	-46466.	-18472.	0.	0.	1270.	0.	0.	-6032.	0.
	1.170	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	1.170	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0	DEGREES W.R.T. X-AXIS			
13.00	-.950	MSL TIDE	-.911	-.811	-.366	-.240	-.041	-.923	-.073	-.203	-.161	-.932
	.430	XFLO CFS	0.	0.	8198.	-13620.	6944.	2091.	-2662.	-11708.	-7459.	-1424.
	-.000	YFLO CFS	-37463.	-38608.	-15737.	0.	0.	968.	0.	0.	-3996.	0.
	.380	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	.380	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0	DEGREES W.R.T. X-AXIS			
14.00	-1.000	MSL TIDE	-.986	-.953	-.764	-.738	-.555	-.986	-.626	-.742	-.722	-.993
	-.200	XFLO CFS	0.	0.	6203.	-7926.	4847.	990.	-1163.	-5260.	-3256.	-788.
	-.650	YFLO CFS	-24092.	-24886.	-11025.	0.	0.	547.	0.	0.	-1888.	0.
	-.300	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	-.300	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0	DEGREES W.R.T. X-AXIS			
15.00	-.500	MSL TIDE	-.526	-.563	-.611	-.649	-.679	-.505	-.637	-.682	-.682	-.517
	-.730	XFLO CFS	0.	0.	2077.	1767.	-399.	-551.	939.	4132.	3048.	1000.
	-.750	YFLO CFS	-1230.	-153.	-2987.	0.	0.	-126.	0.	0.	918.	0.
	-.580	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	-.580	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0	DEGREES W.R.T. X-AXIS			

TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I7J6	I7J8	I6J10	I9J10	I3J9	I11J8	I7J13	I10J10	I11J10	I6J8
16.00	.380	MSL TIDE	.330	.263	.132	.007	-.078	.354	-.029	-.036	-.051	.303
	-.460	XFLO CFS	0.	0.	-7193.	10449.	-5413.	-2156.	2992.	11550.	7859.	1419.
	-.220	YFLO CFS	27179.	28785.	10691.	0.	0.	-963.	0.	0.	3384.	0.
	-.300	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	-.300	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
17.00	1.550	MSL TIDE	1.472	1.348	1.099	.854	.778	1.512	.817	.788	.764	1.411
	.250	XFLO CFS	0.	-971.	-12198.	17114.	-8571.	-3214.	4762.	15889.	10326.	2533.
	.550	YFLO CFS	41866.	46343.	17992.	0.	0.	-1555.	0.	870.	5283.	0.
	.400	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	.400	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
18.00	2.320	MSL TIDE	2.248	2.136	1.912	1.745	1.579	2.284	1.659	1.695	1.681	2.189
	1.080	XFLO CFS	0.	-1924.	-14281.	16976.	-10338.	-2948.	5375.	15082.	8935.	2871.
	1.500	YFLO CFS	43382.	49802.	19903.	0.	0.	-1593.	0.	1537.	5786.	0.
	1.320	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	1.320	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
19.00	2.910	MSL TIDE	2.844	2.746	2.555	2.404	2.270	2.876	2.360	2.356	2.344	2.793
	1.860	XFLO CFS	0.	-2529.	-14125.	17269.	-10867.	-2760.	5592.	15179.	8878.	3084.
	2.170	YFLO CFS	41882.	49510.	19329.	0.	0.	-1571.	0.	1828.	6037.	0.
	2.150	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.150	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
20.00	3.130	MSL TIDE	3.087	3.033	2.926	2.842	2.761	3.105	2.819	2.815	2.811	3.057
	2.500	XFLO CFS	0.	-2115.	-11625.	14092.	-9129.	-1969.	4752.	12247.	6819.	2420.
	2.680	YFLO CFS	33630.	39985.	15561.	0.	0.	-1216.	0.	1667.	5248.	0.
	2.680	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.680	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
21.00	2.550	MSL TIDE	2.598	2.660	2.774	2.828	2.807	2.561	2.861	2.857	2.879	2.599
	2.820	XFLO CFS	0.	1997.	-92.	-7009.	-753.	986.	-1345.	-5266.	-3748.	-3280.
	2.950	YFLO CFS	-6279.	-13335.	-6418.	0.	0.	370.	0.	-1714.	-1506.	0.
	2.970	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.970	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				

TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I6J7	I6J11	I6J12	I3J11	I7J7	I2J13	I8J12	I8J13	I10J13	I11J15
4.00	.920	MSL TIDE	.907	.523	.427	.231	.860	.179	.319	.337	.191	.186
	.000	XFLO CFS	1354.	0.	0.	0.	0.	0.	79.	0.	300.	529.
	.400	YFLO CFS	2413.	14389.	4571.	-1041.	36422.	0.	-439.	3067.	-875.	0.
	.250	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	.250	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
5.00	1.900	MSL TIDE	1.840	1.460	1.392	1.264	1.796	1.253	1.288	1.312	1.205	1.198
	.730	XFLO CFS	1909.	426.	0.	0.	0.	0.	395.	0.	368.	813.
	1.170	YFLO CFS	2835.	15124.	5473.	-1668.	39471.	0.	-948.	3581.	-833.	0.
	1.150	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	1.150	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
6.00	2.700	MSL TIDE	2.637	2.218	2.151	2.017	2.587	2.013	2.062	2.079	1.982	1.967
	1.410	XFLO CFS	2535.	604.	0.	0.	0.	0.	611.	0.	914.	1556.
	1.920	YFLO CFS	3430.	17184.	6199.	-2187.	44428.	0.	-1109.	4186.	-791.	0.
	1.900	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	1.900	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
7.00	3.120	MSL TIDE	3.071	2.771	2.732	2.656	3.034	2.658	2.682	2.690	2.626	2.612
	1.960	XFLO CFS	2469.	722.	0.	0.	0.	0.	625.	0.	1071.	1854.
	2.560	YFLO CFS	3111.	15014.	5542.	-2190.	40731.	0.	-860.	3989.	-643.	0.
	2.570	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	2.570	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
8.00	3.030	MSL TIDE	3.024	3.034	3.038	3.046	3.022	3.048	3.051	3.050	3.061	3.063
	2.550	XFLO CFS	873.	-25.	0.	0.	0.	0.	-33.	0.	-23.	443.
	3.050	YFLO CFS	548.	5780.	1764.	-973.	19996.	0.	-212.	1183.	163.	0.
	3.020	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	3.020	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				
9.00	2.500	MSL TIDE	2.531	2.870	2.946	3.119	2.563	3.144	2.953	2.955	2.976	2.987
	2.970	XFLO CFS	-1934.	-571.	0.	0.	0.	0.	-80.	0.	-987.	-2086.
	3.040	YFLO CFS	-3764.	-15058.	-1913.	3339.	-28650.	0.	-343.	-2241.	72.	0.
	3.320	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	3.320	WIND SPEED =	4.0 KNOTS			WIND DIRECTION =		208.0 DEGREES W.R.T. X-AXIS				

TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I6J7	I6J11	I6J12	I3J11	I7J7	I2J13	I8J12	I8J13	I10J13	I11J15
10.00	1.600	MSL TIDE	1.639	2.209	2.321	2.503	1.670	2.528	2.362	2.359	2.386	2.393
	2.600	XFLO CFS	-1524.	-678.	0.	0.	0.	0.	-260.	0.	-322.	-1251.
	2.430	YFLO CFS	-3893.	-17654.	-3724.	3059.	-42794.	0.	431.	-2503.	-246.	0.
	2.680	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	2.680	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
11.00	.570	MSL TIDE	.614	1.393	1.553	1.806	.661	1.848	1.631	1.620	1.665	1.671
	1.950	XFLO CFS	-1214.	-407.	0.	0.	0.	0.	-344.	0.	-241.	-905.
	1.700	YFLO CFS	-3626.	-19064.	-4551.	2733.	-47385.	0.	850.	-2779.	125.	0.
	2.020	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	2.020	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
12.00	-.350	MSL TIDE	-.309	.495	.671	.939	-.259	1.003	.778	.760	.827	.827
	1.200	XFLO CFS	-651.	0.	0.	0.	0.	0.	-247.	0.	106.	-277.
	.840	YFLO CFS	-2668.	-17667.	-4553.	1954.	-44533.	0.	755.	-2758.	463.	0.
	1.170	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	1.170	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
13.00	-.950	MSL TIDE	-.916	-.256	-.111	.131	-.880	.223	-.032	-.047	.003	-.001
	.430	XFLO CFS	-222.	0.	0.	0.	0.	0.	-95.	0.	150.	115.
	-.000	YFLO CFS	-1666.	-14295.	-3272.	1056.	-37437.	0.	404.	-1947.	448.	0.
	.380	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	.380	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
14.00	-1.000	MSL TIDE	-.981	-.699	-.634	-.493	-.977	-.416	-.300	-.624	-.626	-.635
	-.200	XFLO CFS	-84.	0.	0.	0.	0.	0.	-30.	0.	238.	546.
	-.650	YFLO CFS	-810.	-9285.	-1546.	517.	-24145.	0.	0.	-719.	129.	0.
	-.300	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	-.300	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
15.00	-.500	MSL TIDE	-.510	-.603	-.625	-.636	-.542	-.629	-.300	-.647	-.698	-.720
	-.730	XFLO CFS	374.	0.	0.	0.	0.	0.	-18.	0.	399.	885.
	-.750	YFLO CFS	1173.	-1320.	1044.	65.	-1013.	0.	0.	1150.	-240.	0.
	-.580	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	-.580	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

TIME HOURS	SFA TIDE	HYDRO-DYNAMICS	I6J7	I6J11	I6J12	I3J11	I7J7	I2J13	I8J12	I8J13	I10J13	I11J15
			PRINTOUT STATIONS THROUGHOUT SYSTEM									
16.00	.380	MSL TIDE	.340	.086	.009	-.135	.306	-.183	-.067	-.059	-.189	-.196
	-.460	XFLO CFS	853.	0.	0.	0.	0.	0.	-23.	0.	346.	632.
	-.220	YFLO CFS	1752.	10988.	3489.	-676.	27690.	0.	-212.	2535.	-750.	0.
	-.300	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	-.300	WIND SPEED =	4.0	KNOTS		WIND DIRECTION =		208.0	DEGREES	W.R.T.	X-AXIS	
17.00	1.550	MSL TIDE	1.483	.983	.875	.627	1.429	.566	.752	.774	.593	.583
	.250	XFLO CFS	1833.	0.	0.	0.	0.	0.	298.	0.	530.	957.
	.550	YFLO CFS	2977.	17261.	5415.	-1404.	43254.	0.	-642.	3783.	-1181.	0.
	.400	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	.400	WIND SPEED =	4.0	KNOTS		WIND DIRECTION =		208.0	DEGREES	W.R.T.	X-AXIS	
18.00	2.320	MSL TIDE	2.257	1.796	1.706	1.488	2.210	1.470	1.598	1.626	1.535	1.527
	1.080	XFLO CFS	2245.	415.	0.	0.	0.	0.	491.	0.	318.	781.
	1.500	YFLO CFS	3180.	18803.	6050.	-2278.	45318.	0.	-1235.	3792.	-774.	0.
	1.320	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	1.320	WIND SPEED =	4.0	KNOTS		WIND DIRECTION =		208.0	DEGREES	W.R.T.	X-AXIS	
19.00	2.910	MSL TIDE	2.853	2.460	2.308	2.267	2.810	2.266	2.320	2.334	2.241	2.224
	1.860	XFLO CFS	2496.	686.	0.	0.	0.	0.	650.	0.	1101.	1868.
	2.170	YFLO CFS	3324.	17689.	6138.	-2442.	44139.	0.	-1016.	4303.	-793.	0.
	2.150	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	2.150	WIND SPEED =	4.0	KNOTS		WIND DIRECTION =		208.0	DEGREES	W.R.T.	X-AXIS	
20.00	3.130	MSL TIDE	3.093	2.871	2.839	2.770	3.069	2.771	2.799	2.805	2.749	2.735
	2.500	XFLO CFS	2032.	662.	0.	0.	0.	0.	608.	0.	1166.	2014.
	2.680	YFLO CFS	2523.	14203.	5090.	-2142.	35562.	0.	-727.	3849.	-683.	0.
	2.680	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	2.680	WIND SPEED =	4.0	KNOTS		WIND DIRECTION =		208.0	DEGREES	W.R.T.	X-AXIS	
21.00	2.550	MSL TIDE	2.583	2.807	2.840	2.910	2.626	2.917	2.876	2.874	2.910	2.923
	2.820	XFLO CFS	-2170.	-552.	0.	0.	0.	0.	-364.	0.	-709.	-1086.
	2.950	YFLO CFS	-3533.	-5478.	-1398.	1334.	-8251.	0.	126.	-1201.	164.	0.
	2.970	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-.30	-5.30	-3.30	-5.30
	2.970	WIND SPEED =	4.0	KNOTS		WIND DIRECTION =		208.0	DEGREES	W.R.T.	X-AXIS	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3.0
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MSL
TIDE
FEET
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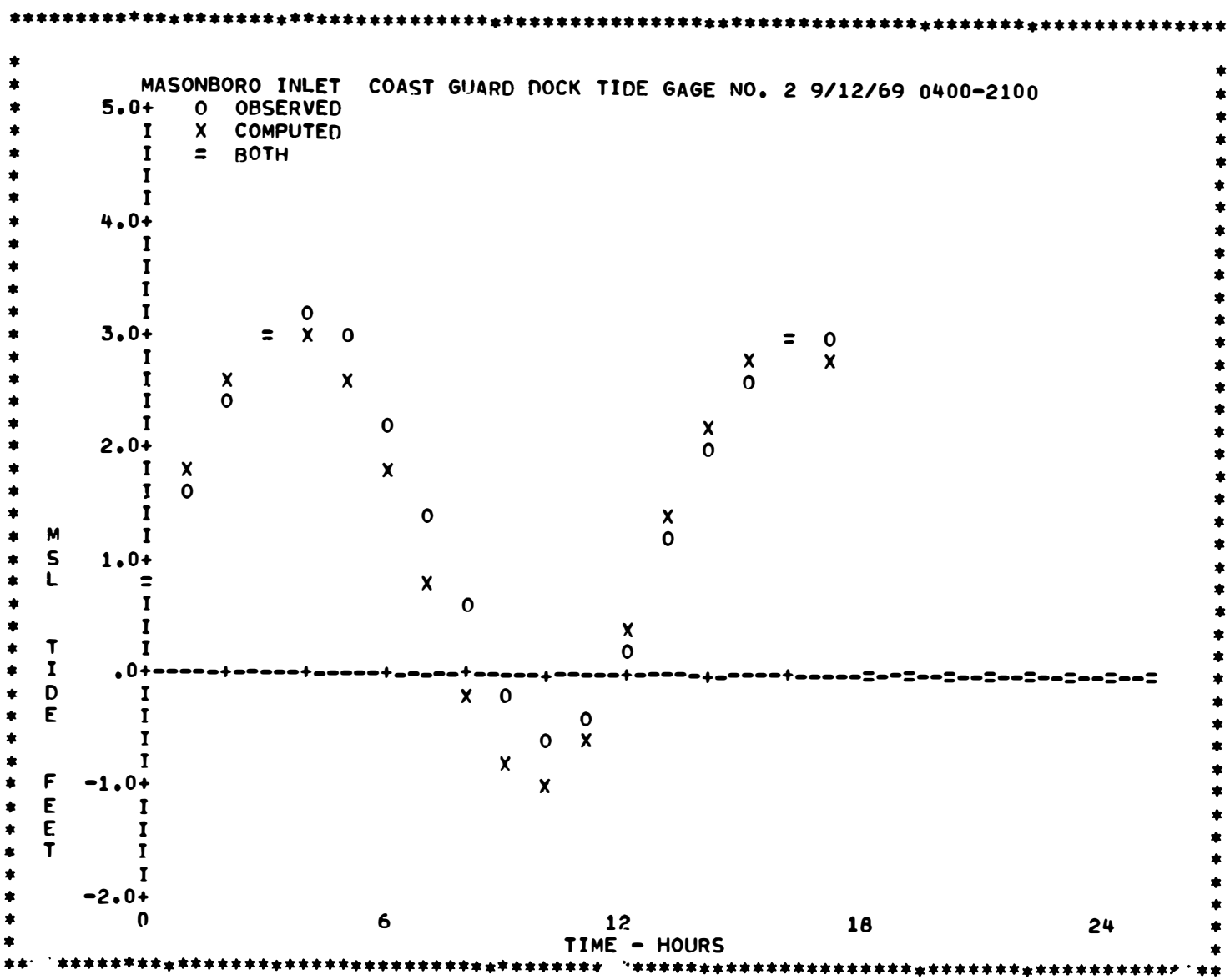
6
12
18
24
TIME - HOURS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3.0+
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TIDE FEET
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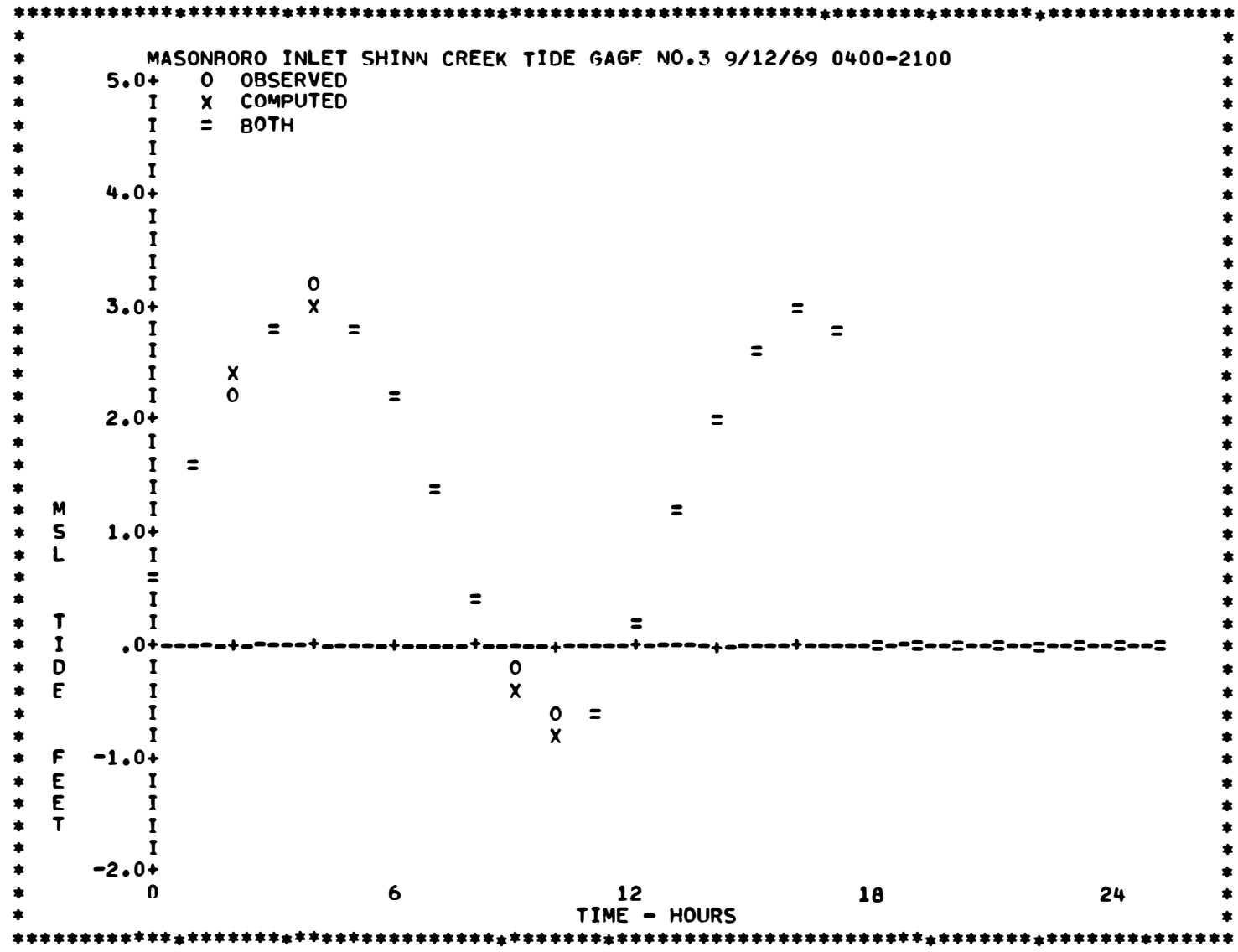
6
12
18
24
TIME - HOURS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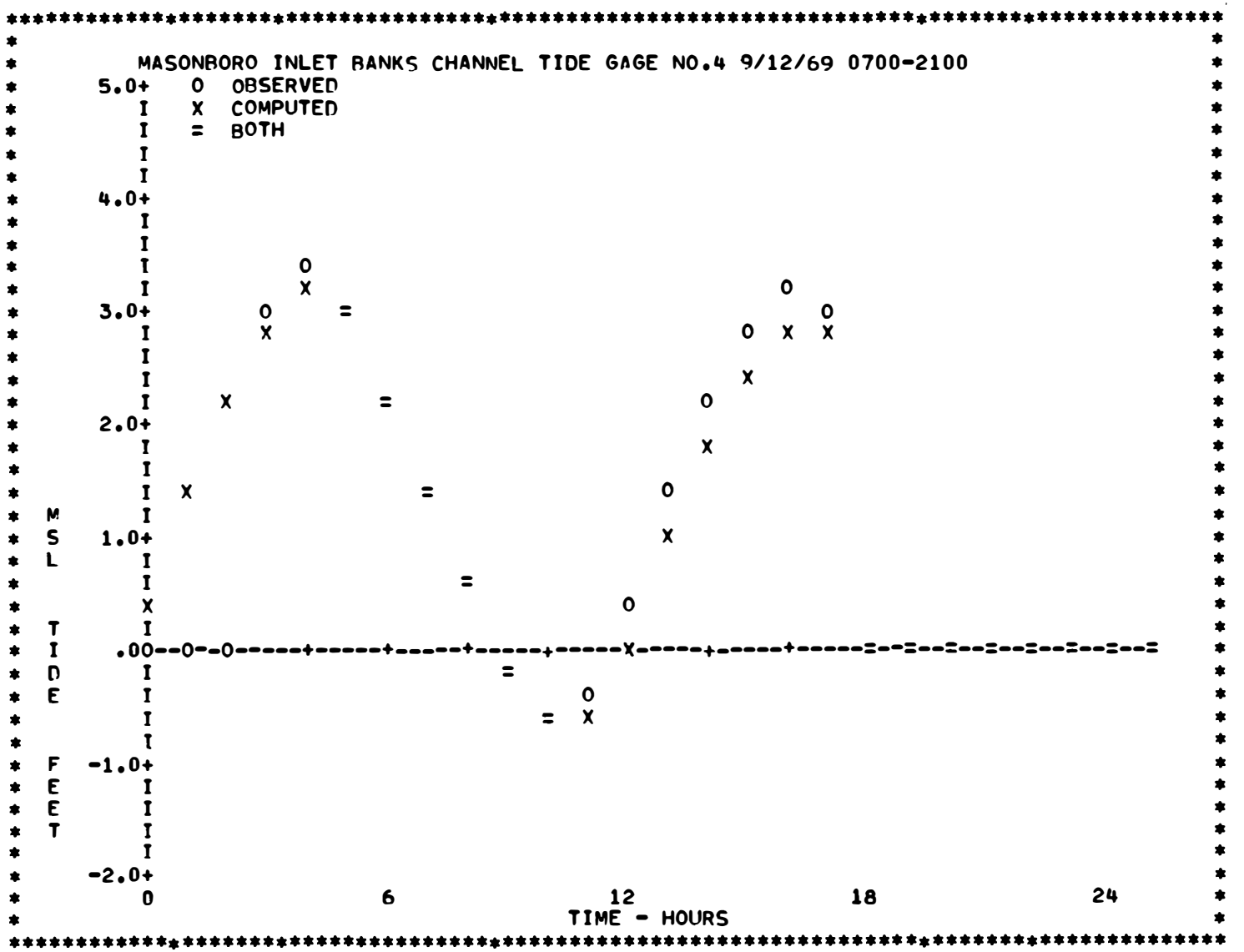
MSL
TIDE FEET
0
6
12
18
24
TIME - HOURS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3.0+
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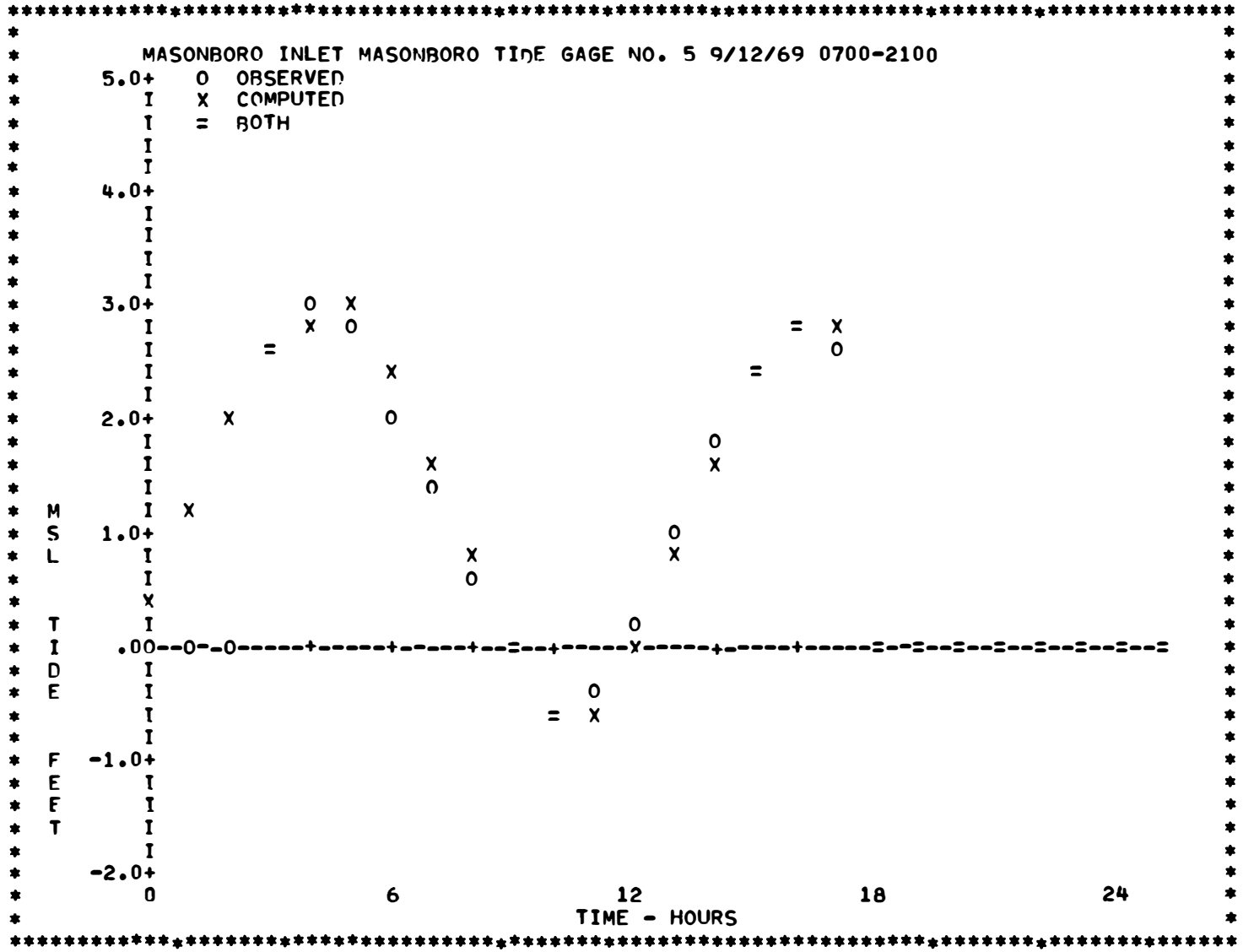
-2.0+
MSL
TIDE
FEET
0
6
12
18
24
TIME - HOURS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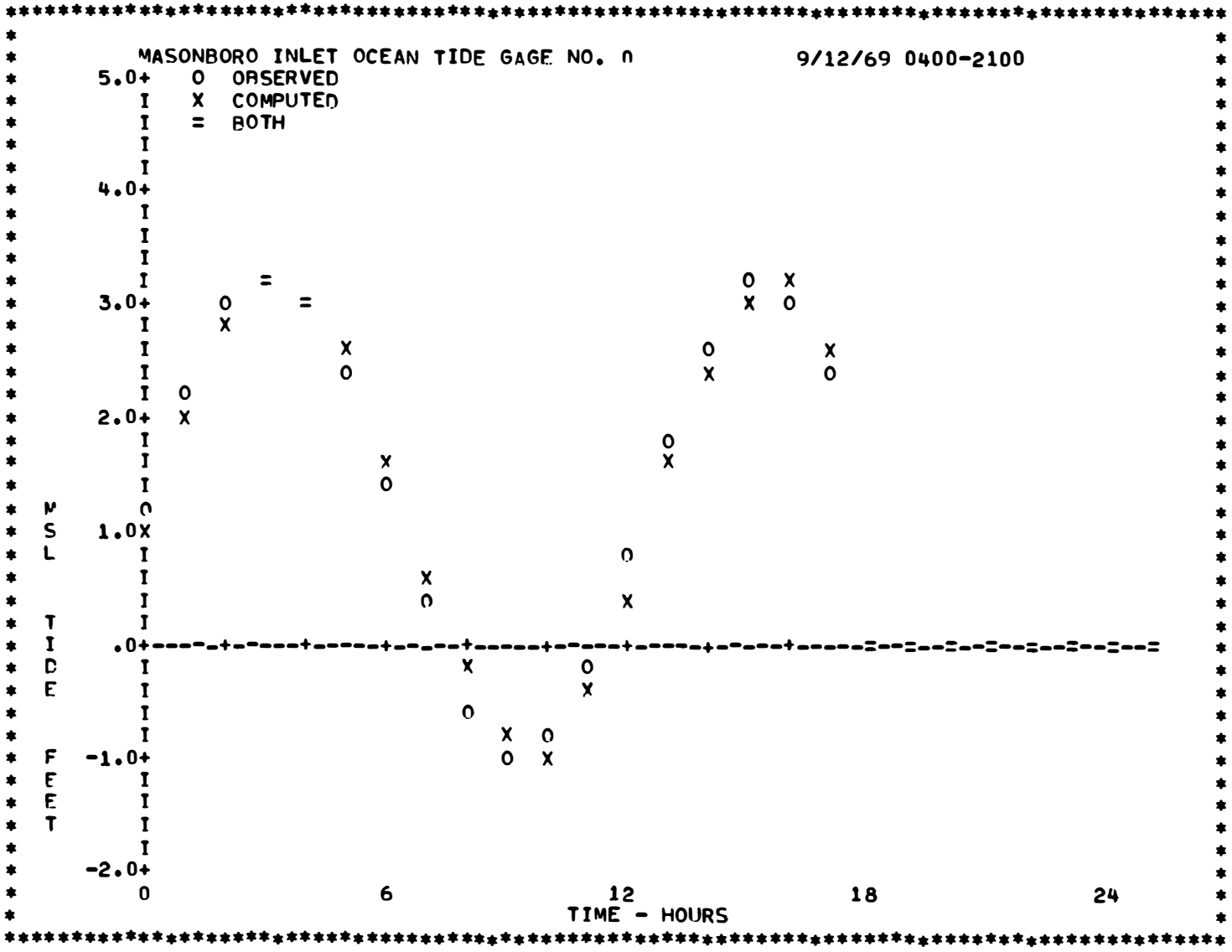
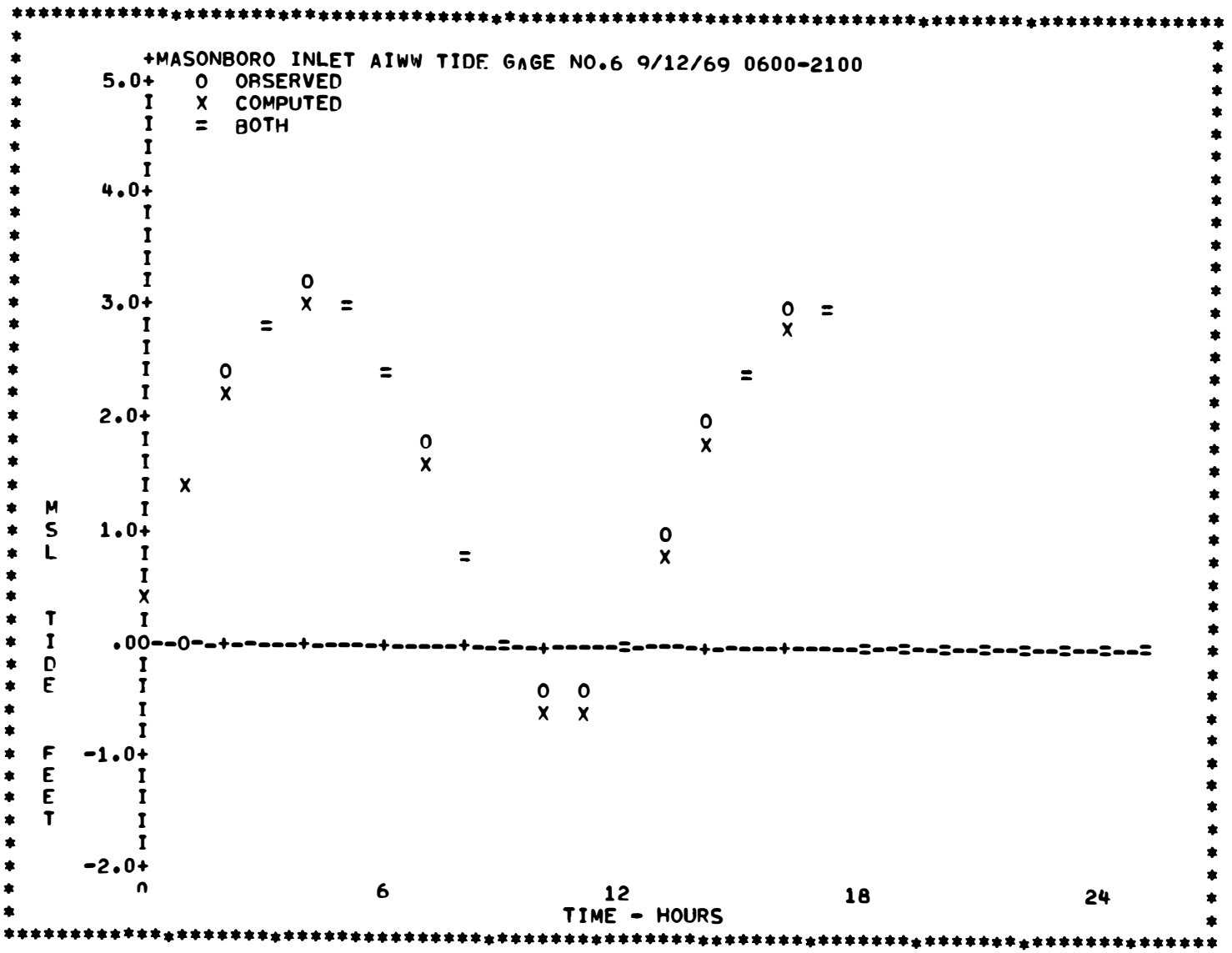
2.0+
1.0+
.00
-1.0+
-2.0+
MSL
TIDE
FEET
0
6
12
18
24
TIME - HOURS


MASONBORO INLET OCEAN TIDE GAGE NO. 0
9/12/69 0400-2100
O OBSERVED
X COMPUTED
= BOTH
5.0
4.0
3.0
2.0
1.0
.0
-1.0
-2.0
MSL
FEET
0
6
12
18
24
TIME - HOURS


+MASONBORO INLET AIWW TIDE GAGE NO.6 9/12/69 0600-2100
O OBSERVED
X COMPUTED
= BOTH
5.0+
4.0+
3.0+
2.0+
1.0+
.00
-1.0+
-2.0+
MSL
TIDE
FEET
0
6
12
18
24
TIME - HOURS

Fine Grid Sub-Model Output

CARD TYPE	CARD NO	DESCRIPTION ALPHANUMERIC TITLE
TITLE	1	TWO DIMENSIONAL HYDRODYNAMIC MODEL OF MASONBORO INLET (N. CAROLINA)
TITLE	2	MODEL STUDY FOR COASTAL ENGINEERING RESEARCH CENTER (CORPS OF ENGRS)
TITLE	3	RUN MADE USING FINE GRID MODEL FOR DETAILED VERIFICATION
TITLE	4	SIMULATION PERFORMED FOR PERIOD 400-2100 SEPTEMBER 12, 1969
ENDTITLE		

CARD TYPE	CARD NO	DESCRIPTION	TYPE OF INPUT/OUTPUT CARD, TAPE, BOTH, OR NONE	TAPE NO
FILE A	1	READ BASIC CELL INPUT DATA FROM	CARD	0
FILE A	2	READ INITIAL HYDRODYNAMICS FROM	CARD	0
FILE A	3	COMPUTE AND SAVE NET VELOCITIES ON	NONE	0
FILE A	4	COMPUTE AND SAVE NET FLOWS ON	NONE	0
FILE A	5	COMPUTE AND SAVE DISPERSION COEF. ON	NONE	0
FILE A	6	STORE ENDING VALUES OF HYDRODYNAMICS ON	CARD	0
FILE A	7	STORE INSTANTANEOUS HYDRODYNAMICS ON	TAPE	2
FILE A	8	WRITE/READ INPUTS FOR FINE GRID MODEL ON	TAPE	1
FILE A	9	STORE COARSE GRID DATA FOR FINE GRID ON	NONE	0
ENDFILE A				

CARD TYPE	CARD NO	DESCRIPTION	VALUE
FILE B	1	MODEL TYPE (1=COARSE PROD,2=FINE PROD,3=COARSE NON-PROD)	2.0
FILE B	2	PRINT INPUT DATA (1=NO PRINT, 2=W/MANN. N, 3=W/O MANN. N)	2.0
FILE B	3	NUMBER OF STATIONS FOR WHICH PLOTS ARE DESIRED	6.0
FILE B	4	TOTAL REAL TIME FOR OPERATION OF MODEL (HOURS)	17.0
FILE B	5	START REAL TIME FOR OPERATION OF MODEL (HOURS)	4.0
FILE B	6	REAL TIME INT. FOR STORING INSTANTANEOUS VEL. (MINUTES)	30.0
FILE B	7	REAL TIME PERIOD OF TIDAL CYCLE (HOURS)	12.5
FILE B	8	INITIAL WIND MAGNITUDE (KNOTS)	4.0
FILE B	9	DIRECTION FROM WHICH INITIAL WIND BLOWS (CLOCKWISE FROM N	20.0
FILE B	10	AVERAGE PRECIPITATION RATE (INCHES/DAY)	.0
FILE B	11	AVERAGE EVAPORATION RATE (INCHES/DAY)	.0
FILE B	12	ANGLE BETWEEN NORTH AND X-AXIS (DEG. CLOCKWISE FROM N.)	48.0
FILE B	13	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN X-DIRECTION	33.0
FILE B	14	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN Y-DIRECTION	30.0
FILE B	15	GRID SIZE OF COMPUTATIONAL ELEMENTS (FEET)	300.0
FILE B	16	PROGRAM COMPUTATIONAL TIME STEP (SECONDS)	5.0
FILE B	17	LATITUDE OF ESTUARINE SYSTEM (DEGREES)	34.2
FILE B	18	NUMBER OF OUTPUT SETS (HOURS) PRINTED PER PAGE	6.0
FILE B	19	COMPUTE NET FLOWS BUT DO NOT STORE (1=YES, 2=NO)	2.0
FILE B	20	DIFFERENCE BETWEEN MSL AND INPUT DATUM(FEET)	1.3
ENDFILE B			

ENDFILE C BASIC CELL DATA

TWO DIMENSIONAL HYDRODYNAMIC MODEL OF MASONBORO INLET (N. CAROLINA)

MODEL STUDY FOR COASTAL ENGINEERING RESEARCH CENTER (CORPS OF ENGRS)

RUN MADE USING FINE GRID MODEL FOR DETAILED VERIFICATION

SIMULATION PERFORMED FOR PERIOD 400-2100 SEPTEMBER 12, 1969

MODEL-OPERATION INFORMATION

BASIC CELL INPUT DATA READ FROM CARDS

INITIAL HYDRODYNAMICS READ FROM CARDS

ALL INPUT DATA (EXCLUDING INITIAL HYDRODYNAMICS) PRINTED AND LABELED

TIDAL AMPLITUDES AND FLOWS WERE COMPUTED AND PRINTED FOR SELECTED CELLS

NET FLOWS WERE NOT COMPUTED

NET VELOCITIES WERE NOT COMPUTED

AVERAGE VELOCITIES AND DISPERSION COEFFICIENTS WERE NOT PUNCHED ON CARDS OR STORED ON TAPE

INSTANTANEOUS VELOCITIES WERE STORED ON TAPE UNIT NO. 2 AT 30.0 MINUTE TIME INTERVALS

ENDING VALUES OF HYDRODYNAMICS WERE PUNCHED ON CARDS

TIDAL AMPLITUDE PLOTS WERE MADE FOR 6 SELECTED STATIONS IN BAY

MODEL WAS OPERATED TO SIMULATE 17.0 HOURS OF REAL TIME

FINE GRID MODEL

MODEL DIMENSIONS AND CHARACTERISTICS

NUMBER OF CELLS IN X-DIRECTION = 33

NUMBER OF CELLS IN Y-DIRECTION = 30

TOTAL NUMBER OF CELLS IN MODEL = 990

WIDTH OF EACH CELL = 300.0 FEET

NUMBER OF TIDAL EXCITATION CELLS = 0

NUMBER OF SUBMERGED BARRIERS = 11

NUMBER OF EXTERNAL FLOW SOURCES = 47

COMPUTATIONAL TIME INCREMENT = .083 MINUTES

PERIOD OF TIDAL CYCLE = 12.5 HOURS

STATION LOCATIONS FOR TIME PRINT-OUT OF HYDRODYNAMICS

STATION NUMBER 1	I21J20	I = 21	J = 20
STATION NUMBER 2	I6J17	I = 6	J = 17
STATION NUMBER 3	I32J23	I = 32	J = 23
STATION NUMBER 4	I15J25	I = 15	J = 25
STATION NUMBER 5	I20J29	I = 20	J = 29
STATION NUMBER 6	I20J10	I = 20	J = 10
STATION NUMBER 7	I19J10	I = 19	J = 10
STATION NUMBER 8	I17J17	I = 17	J = 17
STATION NUMBER 9	I18J17	I = 18	J = 17
STATION NUMBER 10	I19J17	I = 19	J = 17
STATION NUMBER 11	I5J18	I = 5	J = 18
STATION NUMBER 12	I5J19	I = 5	J = 19
STATION NUMBER 13	I16J24	I = 16	J = 24
STATION NUMBER 14	I17J24	I = 17	J = 24
STATION NUMBER 15	I29J22	I = 29	J = 22
STATION NUMBER 16	I29J23	I = 29	J = 23
STATION NUMBER 17	I29J24	I = 29	J = 24
STATION NUMBER 18	I30J25	I = 30	J = 25
STATION NUMBER 19	I16J17	I = 16	J = 17
STATION NUMBER 20	I4J24	I = 4	J = 24

STATION LOCATIONS FOR TIME PLOTS OF HYDRODYNAMICS

STATION NUMBER	1	I21J20	I = 21	J = 20
STATION NUMBER	2	I6J17	I = 6	J = 17
STATION NUMBER	3	I32J23	I = 32	J = 23
STATION NUMBER	4	I15J25	I = 15	J = 25
STATION NUMBER	5	I20J29	I = 20	J = 29
STATION NUMBER	6	I20J10	I = 20	J = 10

INITIAL WIND CONDITIONS AND RAINFALL AND EVAPORATION RATES

WIND VELOCITY = 4.0 KNOTS

WIND ANGLE = 20.0 DEGREES

RAINFALL RATE = .000 IN./DAY

EVAPORATION RATE = .000 IN./DAY

EXTERNAL FLOW LOCATIONS AND QUANTITIES

INFLOW NUMBER	1	I = 9	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER	2	I = 10	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER	3	I = 11	J = 4	QINFLO =	.0 CFS

INFLOW NUMBER 4 I = 12 J = 4 QINFLO = .0 CFS

INFLOW NUMBER 5 I = 13 J = 4 QINFLO = .0 CFS

INFLOW NUMBER 6 I = 14 J = 4 QINFLO = .0 CFS

INFLOW NUMBER 7 I = 15 J = 4 QINFLO = .0 CFS

INFLOW NUMBER 8 I = 16 J = 4 QINFLO = .0 CFS

INFLOW NUMBER 9 I = 17 J = 4 QINFLO = .0 CFS

INFLOW NUMBER 10 I = 18 J = 4 QINFLO = .0 CFS

INFLOW NUMBER 11 I = 19 J = 4 QINFLO = .0 CFS

INFLOW NUMBER 12 I = 8 J = 5 QINFLO = .0 CFS

INFLOW NUMBER 13 I = 8 J = 6 QINFLO = .0 CFS

INFLOW NUMBER 14 I = 8 J = 7 QINFLO = .0 CFS

INFLOW NUMBER 15 I = 8 J = 8 QINFLO = .0 CFS

INFLOW NUMBER 16 I = 8 J = 9 QINFLO = .0 CFS

INFLOW NUMBER 17 I = 8 J = 10 QINFLO = .0 CFS

INFLOW NUMBER 18 I = 8 J = 11 QINFLO = .0 CFS

INFLOW NUMBER 19 I = 8 J = 12 QINFLO = .0 CFS

INFLOW NUMBER 20 I = 21 J = 13 QINFLO = .0 CFS

INFLOW NUMBER 21 I = 21 J = 14 QINFLO = .0 CFS

INFLOW NUMBER 22 I = 21 J = 15 QINFLO = .0 CFS

INFLOW NUMBER 23 I = 1 J = 16 QINFLO = .0 CFS

INFLOW NUMBER 24 I = 1 J = 17 QINFLO = .0 CFS

INFLOW NUMBER 25	I = 1	J = 18	QINFLO =	.0 CFS
INFLOW NUMBER 26	I = 1	J = 19	QINFLO =	.0 CFS
INFLOW NUMBER 27	I = 32	J = 22	QINFLO =	.0 CFS
INFLOW NUMBER 28	I = 4	J = 23	QINFLO =	.0 CFS
INFLOW NUMBER 29	I = 32	J = 23	QINFLO =	.0 CFS
INFLOW NUMBER 30	I = 4	J = 24	QINFLO =	.0 CFS
INFLOW NUMBER 31	I = 32	J = 24	QINFLO =	.0 CFS
INFLOW NUMBER 32	I = 4	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 33	I = 20	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 34	I = 29	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 35	I = 31	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 36	I = 32	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 37	I = 32	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 38	I = 20	J = 26	QINFLO =	.0 CFS
INFLOW NUMBER 39	I = 20	J = 27	QINFLO =	.0 CFS
INFLOW NUMBER 40	I = 12	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 41	I = 13	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 42	I = 14	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 43	I = 15	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 44	I = 16	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 45	I = 20	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 46	I = 20	J = 29	QINFLO =	.0 CFS

INFLOW NUMBER 47 I = 20 J = 30 QINFLO = .0 CFS

SUBMERGED BARRIER LOCATIONS, DISCHARGE COEFFICIENTS, AND MSL ELEVATIONS

BARRIER NO. 1	I = 19	J = 10	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -21.2 FEET
BARRIER NO. 2	I = 20	J = 10	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -16.3 FEET
BARRIER NO. 3	I = 17	J = 17	TOP BOUNDARY	COEFFICIENT = 1.00	ELEVATION = -21.2 FEET
BARRIER NO. 4	I = 18	J = 17	TOP BOUNDARY	COEFFICIENT = 1.00	ELEVATION = -16.2 FEET
BARRIER NO. 5	I = 19	J = 17	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -5.2 FEET
BARRIER NO. 6	I = 5	J = 18	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -6.2 FEET
BARRIER NO. 7	I = 5	J = 19	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -4.2 FEET
BARRIER NO. 8	I = 29	J = 22	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -19.2 FEET
BARRIER NO. 9	I = 29	J = 23	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -16.2 FEET
BARRIER NO. 10	I = 16	J = 24	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -10.2 FEET
BARRIER NO. 11	I = 17	J = 24	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -15.2 FEET

GULF TIDAL DISCHARGE COEFFICIENTS AND CELL TIDE ASSIGNMENTS

TIDAL CELL 1 I = 0 J = 0 COEFFICIENT = .00 TIDE = $TIDE_0$

DATA FOR CORIOLIS ACCELERATION

ANGULAR ROTATION OF EARTH = .0000729 RAD./SEC.

LATITUDE OF BAY = 34.20 DEGREES

MEAN SEA LEVEL WATER DEPTHS THROUGHOUT BAY

```
  30   *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****  *****    .7  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****
  29   *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  -1.3    .7    .7  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****
  28   *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  -1.3  -1.3  -1.3 -12.3
-19.3  -2.3  -1.3   -.3    .7  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****
  27   *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****   -.3    .7   -.3  -3.3
-19.3 -19.3   1.7   -.3   -.3  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****
  26   *****  *****  *****  *****  *****  *****  *****    .7    .7    .7    .7    .7    .7   -.3  -1.3
-11.3 -19.3    .7    .7    .7  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****
  25   *****  *****  *****    .7    .7    .7    .7    .7    .7    .7    .7    .7    .7   1.7    .7  -2.3
-10.3 -17.3  *****  *****   1.7  *****  *****  *****  *****  *****  *****  *****  *****  -2.3  -2.3
 -2.3  -1.3  *****
  24   *****  *****  *****    .7    .7    .7    .7    .7    .7    .7  *****  *****  *****    .7  -1.3
-10.3 -15.3  -1.3    .7  *****  *****  *****  *****  *****  *****  *****  *****  -2.3  -3.3  -3.3
 -3.3  -8.3  *****
  23   *****  *****  *****    .7    .7    .7    .7    .7    .7    .7  *****   -.3  -1.3  -1.3  -1.3
-10.3 -15.3  -2.3  -2.3  -5.3  -6.3  -6.3  -5.3  -9.3 -12.3 -12.3 -12.3 -16.3 -16.3 -16.3
-16.3 -16.3  *****
  22   *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  -1.3  -1.3  -1.3  -1.3
 -9.3 -14.3  -6.3  -6.3  -5.3  -4.3  -3.3  -7.3 -12.3 -13.3 -14.3 -16.3 -18.3 -19.3 -19.3
-17.3 -11.3  *****
  21   *****  *****  *****  *****  *****  *****  *****  *****  *****  *****   -.3  -1.3   -.3  -1.3  -1.3  -1.3
 -8.3 -13.3 -15.3  -5.3  -4.3  -7.3 -11.3 -12.3 -11.3 -11.3  -9.3  -6.3  -5.3  *****  *****
*****  *****  *****
  20   *****  *****  *****  *****  *****    .7    .7   -.3   -.3   -.3  -1.3  -2.3  -2.3  -2.3  -2.3
 -6.3 -20.3 -17.3 -11.3 -11.3 -13.3 -11.3  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****
  19    -1.3  -2.3  -3.3  -4.3  -4.3  -4.3  -4.8  -5.3  -6.3  -6.3  -7.3  -7.3  -7.3  -7.3  -6.3
 -7.3 -24.3 -17.3  -3.3  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****
  18    -4.3  -4.3  -5.3  -5.3  -6.3  -6.3  -6.3  -6.3  -6.3  -6.3  -5.3  -2.3  -2.3  -2.3  -3.3
 -8.3 -23.3 -16.3  -5.3  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****  *****
*****  *****  *****
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  17    -4.3  -5.3  -4.3  -4.3  -1.3   -.3   -.3   -.3    .7    .7    .7 *****   -.3   -.3 *****
 -1.3 -21.3 -28.3  -8.3  -2.3 ***** ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
  16    -4.3  -3.3  -2.3  -1.3 *****   -.3    .7   1.7   1.7 ***** ***** ***** ***** *****   -.3
 -2.3 -14.3 -23.3 -17.3  -6.3  -3.3 ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
  15   ***** *****  -2.3  -1.3   1.7 ***** ***** ***** ***** ***** ***** ***** ***** *****  -3.3
 -5.3  -2.3 -23.3 -18.3 -10.3  -5.3 ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
  14   ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****  -3.3  -3.3  -7.3  -7.3
 -4.3  -2.3 -12.3 -17.3 -18.3  -8.3 ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
  13   ***** ***** ***** ***** ***** ***** ***** *****  -1.3  -2.3  -3.3  -6.3  -6.3  -8.3  -5.3
 -3.3  -2.3  -7.3 -12.3 -19.3 -11.3 ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
  12   ***** ***** ***** ***** ***** ***** *****  -5.3  -6.3  -7.3  -7.3  -7.3  -7.3  -7.3  -6.3
 -5.3  -2.3  -4.3 -13.3 -21.3 -12.3 ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
  11   ***** ***** ***** ***** ***** ***** ***** -10.3 -10.3 -10.3  -9.3  -8.3  -7.3  -7.3  -7.3
 -5.3  -3.3  -1.3 -21.3 -21.3 -12.3 ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
  10   ***** ***** ***** ***** ***** ***** ***** -11.3 -11.3 -11.3 -10.3  -9.3  -8.3  -8.3  -8.3
 -6.3  -1.3  -1.3 -21.3 -21.3 ***** ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
   9   ***** ***** ***** ***** ***** ***** ***** -13.3 -12.3 -12.3 -11.3 -11.3  -9.3  -9.3  -8.3
 -6.3  -4.3  -1.3 -16.3 -22.3 ***** ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
   8   ***** ***** ***** ***** ***** ***** ***** -14.3 -13.3 -13.3 -11.3 -11.3 -10.3  -9.3  -7.3
 -7.3  -5.3  -8.3 -13.3 -23.3 ***** ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
   7   ***** ***** ***** ***** ***** ***** ***** -15.3 -14.3 -13.3 -11.3 -11.3 -11.3  -9.3  -8.3
 -8.3  -8.3  -9.3 -23.3 -23.3 ***** ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
   6   ***** ***** ***** ***** ***** ***** ***** -18.3 -16.3 -15.3 -13.3 -11.3 -11.3 -10.3  -9.3
 -9.3  -7.3  -9.3 -23.3 ***** ***** ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
   5   ***** ***** ***** ***** ***** ***** ***** -21.3 -24.3 -18.3 -15.3 -13.3 -12.3 -11.3  -9.3
 -9.3  -7.3  -9.3 -23.3 ***** ***** ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
   4   ***** ***** ***** ***** ***** ***** ***** ***** -26.3 -23.3 -21.3 -18.3 -14.3 -12.3 -11.3
-10.3  -9.3 -14.3 -21.3 ***** ***** ***** ***** ***** ***** ***** ***** *****  ***** *****
***** ***** *****
   3   ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****
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***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****
***** ***** *****
2 ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****
***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****
***** ***** *****
1 ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****
***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****
***** ***** *****

J/I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
J/I	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
J/I	31	32	33												

COMPUTATIONAL CELL IDENTIFICATIONS

30	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	1	1	1	1	1	1	1	1	1	1	1
29	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30	30	7	1	1	1	1	1	1	1	1	1	1	1
28	1	1	1	1	1	1	1	1	1	1	1	13	13	13	13	13	30	36	36	7	1	1	1	1	1	1	1	1	1	1	1
27	1	1	1	1	1	1	1	1	1	1	1	36	36	36	2	2	31	36	36	7	1	1	1	1	1	1	1	1	1	1	1
26	1	1	1	1	1	1	1	30	30	30	30	36	36	36	36	2	31	36	36	7	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	28	30	30	30	36	36	36	36	36	36	36	34	2	6	1	1	7	1	1	1	1	1	1	1	1	13	12	13	19	1
24	1	1	1	28	36	36	36	36	36	33	1	1	1	36	36	5	32	30	18	1	1	1	1	1	1	1	1	12	2	2	2	7	1
23	1	1	1	28	36	36	36	36	36	33	1	30	30	36	36	2	2	34	2	12	12	12	12	12	12	12	12	2	4	2	2	7	1
22	1	1	1	1	1	1	1	1	1	1	1	36	36	36	36	2	2	2	2	2	2	2	2	2	2	2	2	2	4	2	2	7	1
21	1	1	1	1	1	1	1	1	1	30	30	36	36	36	36	2	2	2	2	2	2	2	2	2	2	2	2	6	1	1	1	1	1
20	1	1	1	1	1	30	30	30	30	36	36	34	34	34	34	2	2	2	2	2	2	6	1	1	1	1	1	1	1	1	1	1	1
19	28	12	12	12	15	34	34	34	34	34	34	2	2	2	2	2	2	2	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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17	28	2	2	31	36	36	36	36	36	36	33	1	36	18	1	36	5	5	5	18	1	1	1	1	1	1	1	1	1	1	1	1	1
16	28	2	31	33	1	36	36	36	33	1	1	1	1	1	30	2	2	2	2	2	18	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	31	36	18	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	7	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	12	12	12	2	2	2	2	2	2	7	1	1	1	1	1	1	1	1	1	1	1	1
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5	1	1	1	1	1	1	1	28	2	2	2	2	2	2	2	2	2	2	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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J/I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33

CONVECTION FLAGGING

J/I	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
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MANNINGS N BOTTOM FRICTION COEFFICIENTS

J = 1

.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 2

.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 3

.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 4

.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .02016 .02216
.02349 .02549 .02816 .02950 .03016 .03083 .03150 .02816 .02349 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 5

.00000 .00000 .00000 .00000 .00000 .00000 .00000 .02349 .02149 .02549
.02749 .02883 .02950 .03016 .03150 .03150 .03283 .03150 .02216 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 6

.00000 .00000 .00000 .00000 .00000 .00000 .00000 .02549 .02683 .02749
.02883 .03016 .03016 .03083 .03150 .03150 .03283 .03150 .02216 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 7

.00000 .00000 .00000 .00000 .00000 .00000 .00000 .02749 .02816 .02883
.03016 .03016 .03016 .03150 .03216 .03216 .03216 .03150 .02216 .02216
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 8
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .02816 .02883 .02883
.03016 .03016 .03083 .03150 .03283 .03283 .03416 .03216 .02883 .02216
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 9
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .02883 .02950 .02950
.03016 .03016 .03150 .03150 .03216 .03350 .03483 .04850 .02683 .02283
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 10
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .03016 .03016 .03016
.03083 .03150 .03216 .03216 .03216 .03350 .04850 .04850 .02349 .02349
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 11
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .03083 .03083 .03083
.03150 .03216 .03283 .03283 .03283 .03416 .03850 .04850 .02349 .02349
.02950 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 12
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .03416 .03350 .03283
.03283 .03283 .03283 .03283 .03350 .03416 .04350 .03483 .02883 .02349
.02950 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 13
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .04850 .04350
.03850 .03350 .03350 .03216 .03416 .03850 .04350 .03283 .02950 .02483
.03016 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 14
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000

.00000 .03850 .03850 .03283 .03283 .03483 .04350 .02950 .02616 .02549
.03216 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 15
.00000 .00000 .04350 .04850 .06350 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000 .00000 .03850 .03416 .04350 .02216 .02549 .03083
.03416 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 16
.03483 .03850 .04350 .04850 .00000 .05350 .05850 .06350 .06350 .00000
.00000 .00000 .00000 .00000 .05350 .04350 .02816 .02216 .02616 .03350
.03850 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 17
.03483 .03416 .03483 .03483 .04850 .05350 .05350 .05350 .05850 .05850
.05850 .00000 .05350 .05350 .00000 .04850 .02349 .01882 .03216 .04350
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 18
.03483 .03483 .03416 .03416 .03350 .03350 .03350 .03350 .03350 .03350
.03416 .04350 .04350 .04350 .03850 .03216 .02216 .02683 .03416 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 19
.04850 .04350 .03850 .03483 .03483 .03483 .03450 .03416 .03350 .03350
.03283 .03283 .03283 .03283 .03350 .03283 .02149 .02616 .03850 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 20
.00000 .00000 .00000 .00000 .00000 .05850 .05850 .05350 .05350 .05350
.04850 .04350 .04350 .04350 .04350 .03350 .02416 .02616 .03016 .03016
.02883 .03016 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 21
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .05350
.04850 .05350 .04850 .04850 .04850 .03216 .02883 .02749 .03416 .03483

.03283 .03016 .02950 .03016 .03016 .03150 .03350 .03416 .00000 .00000
.00000 .00000 .00000

J = 22
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .04850 .04850 .04850 .04850 .03150 .02816 .03350 .03350 .03416
.03483 .03850 .03283 .02950 .02883 .02816 .02683 .02549 .02483 .02483
.02616 .03016 .00000

J = 23
.00000 .00000 .00000 .05850 .05850 .05850 .05850 .05850 .05850 .05850
.00000 .05350 .04850 .04850 .04850 .03083 .02749 .04350 .04350 .03416
.03350 .03350 .03416 .03150 .02950 .02950 .02950 .02683 .02683 .02683
.02683 .02683 .00000

J = 24
.00000 .00000 .00000 .05850 .05850 .05850 .05850 .05850 .05850 .05850
.00000 .00000 .00000 .05850 .04850 .03083 .02749 .04850 .05850 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .04350 .03850 .03850
.03850 .03216 .00000

J = 25
.00000 .00000 .00000 .05850 .05850 .05850 .05850 .05850 .05850 .05850
.05850 .05850 .06350 .05850 .04350 .03083 .02616 .00000 .00000 .06350
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .04350 .04350
.04350 .04850 .00000

J = 26
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .05850 .05850 .05850
.05850 .05850 .05850 .05350 .04850 .03016 .02483 .05850 .05850 .05850
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 27
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
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.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 28
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .04850 .04850 .04850 .02950 .02483 .04350 .04850 .05350 .05850
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000

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   .00000  .00000  .00000

J = 29
   .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000
   .00000  .00000  .00000  .00000  .00000  .00000  .00000  .04850  .05850  .05850
   .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000
   .00000  .00000  .00000

J = 30
   .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000
   .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .05850
   .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000  .00000
   .00000  .00000  .00000
       ENDFILE D
```

TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I21J20	I6J17	I32J23	I15J25	I20J29	I20J10	I19J10	I17J17	I18J17	I19J17
4.00	.000	MSL TIDE	.700	.401	.380	.521	.700	.863	.863	.699	.699	.699
	.000	XFLO CFS	5828.	-129.	6212.	82.	0.	0.	-2706.	-12244.	-6241.	-2359.
	.000	YFLO CFS	-205.	-171.	1668.	585.	15.	11031.	11153.	13032.	13795.	6827.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
5.00	.000	MSL TIDE	1.659	.579	1.401	1.648	1.495	2.343	2.324	1.933	1.968	1.980
	.000	XFLO CFS	6074.	-173.	5963.	53.	0.	0.	-2820.	-13271.	-7379.	-1658.
	.000	YFLO CFS	-242.	-209.	2499.	755.	80.	12243.	12127.	15600.	16406.	4831.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
6.00	.000	MSL TIDE	2.458	1.446	2.197	2.428	2.374	3.232	3.215	2.772	2.819	2.845
	.000	XFLO CFS	6268.	-441.	6444.	-69.	52.	0.	-2698.	-14989.	-8566.	-2299.
	.000	YFLO CFS	-552.	-272.	2770.	1260.	70.	12882.	12760.	17912.	19006.	5905.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
7.00	.000	MSL TIDE	3.000	2.109	2.835	2.990	2.953	3.605	3.592	3.241	3.285	3.312
	.000	XFLO CFS	5145.	-643.	5480.	-235.	84.	0.	-2551.	-13789.	-7993.	-2231.
	.000	YFLO CFS	-722.	-300.	2379.	1355.	98.	11498.	11220.	16723.	17691.	5428.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
8.00	.000	MSL TIDE	3.242	2.750	3.269	3.256	3.263	3.329	3.325	3.269	3.279	3.288
	.000	XFLO CFS	1265.	-610.	1410.	-252.	-21.	0.	-1467.	-7480.	-4631.	-897.
	.000	YFLO CFS	-1039.	-292.	825.	559.	-14.	5696.	5277.	8259.	8472.	1508.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
9.00	.000	MSL TIDE	3.048	3.097	3.191	3.115	3.198	2.609	2.616	2.768	2.765	2.765
	.000	XFLO CFS	-2938.	294.	-4953.	-1355.	-91.	0.	-243.	3170.	3432.	1533.
	.000	YFLO CFS	-2633.	67.	-2566.	256.	-85.	-9003.	-9731.	-14752.	-11264.	-3844.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

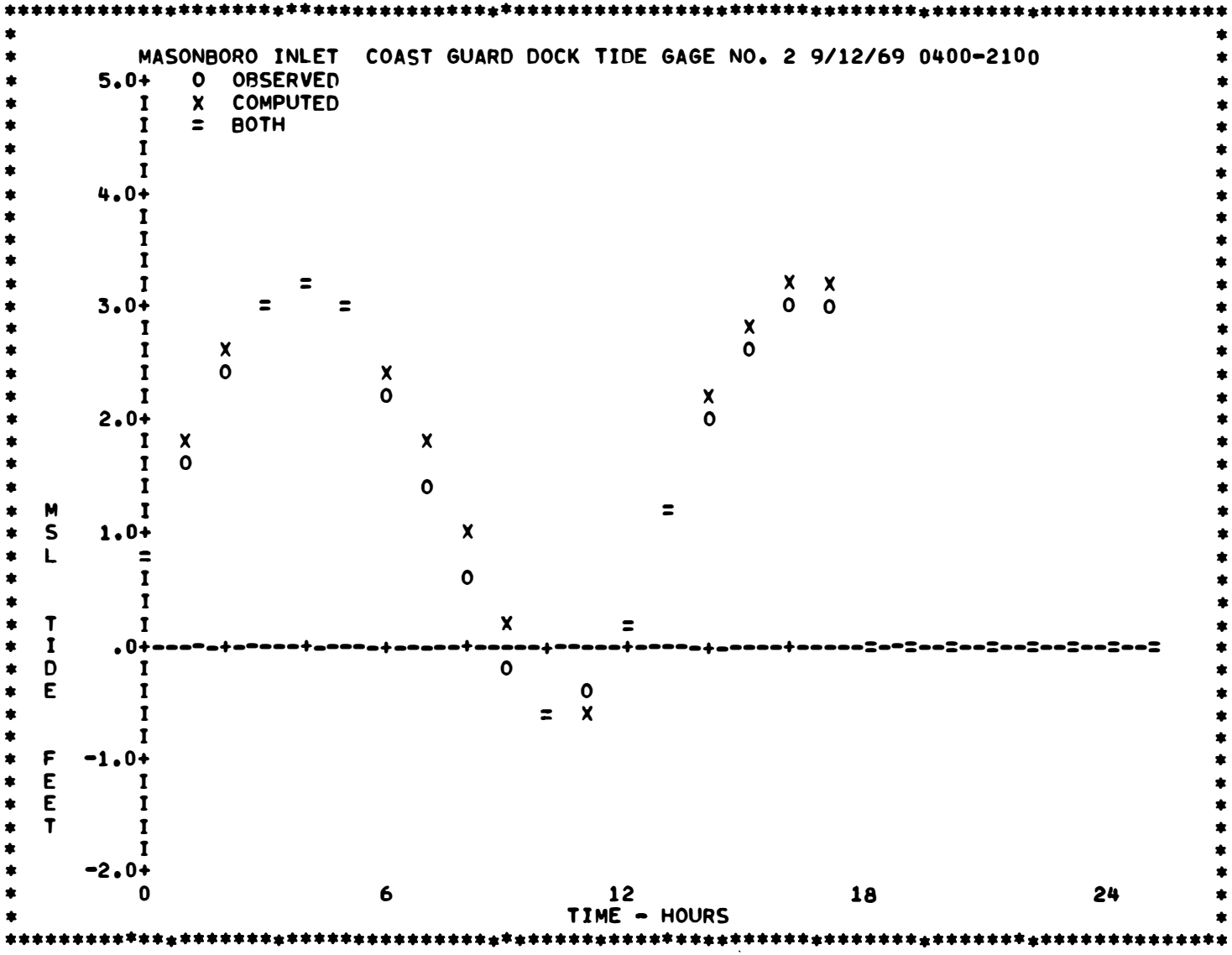
TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I21J20	I6J17	I32J23	I15J25	I20J29	I20J10	I19J10	I17J17	I18J17	I19J17
10.00	.000	MSL TIDE	2.423	2.750	2.649	2.544	2.719	1.416	1.431	1.814	1.807	1.810
	.000	XFLO CFS	-3730.	460.	-6146.	-1294.	-66.	0.	1040.	2702.	5048.	1730.
	.000	YFLO CFS	-3541.	358.	-2514.	188.	-82.	-14339.	-16055.	-22367.	-17452.	-5517.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
11.00	.000	MSL TIDE	1.705	2.178	2.014	1.813	2.019	.145	.177	.833	.819	.828
	.000	XFLO CFS	-3723.	368.	-7224.	-1022.	-11.	0.	1116.	2932.	5725.	1681.
	.000	YFLO CFS	-4510.	362.	-2321.	2.	-29.	-17470.	-19369.	-24148.	-18639.	-6098.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
12.00	.000	MSL TIDE	.903	1.495	1.236	.976	1.223	-.821	-.775	.016	-.013	-.008
	.000	XFLO CFS	-3351.	211.	-7431.	-703.	0.	0.	1006.	3288.	5480.	1346.
	.000	YFLO CFS	-4871.	281.	-1910.	-2.	-16.	-18021.	-19704.	-22242.	-16868.	-5336.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
13.00	.000	MSL TIDE	.110	.769	.388	.133	.887	-1.285	-1.249	-.605	-.632	-.632
	.000	XFLO CFS	-3296.	69.	-5644.	-196.	0.	0.	876.	2162.	3944.	799.
	.000	YFLO CFS	-4065.	140.	-3601.	-151.	-3.	-15669.	-16865.	-18528.	-13857.	-4192.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
14.00	.000	MSL TIDE	-.567	.059	-.467	-.557	.810	-1.180	-1.162	-.893	-.904	-.905
	.000	XFLO CFS	-2181.	2.	-2620.	-7.	0.	0.	586.	1054.	2491.	453.
	.000	YFLO CFS	-2633.	2.	-2974.	-90.	-1.	-10333.	-11063.	-12225.	-9166.	-2680.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
15.00	.000	MSL TIDE	-.634	-.300	-.710	-.625	.772	-.544	-.545	-.589	-.588	-.585
	.000	XFLO CFS	886.	0.	2051.	-29.	0.	0.	624.	-1371.	339.	-114.
	.000	YFLO CFS	-221.	0.	262.	17.	-1.	-597.	-722.	-274.	141.	-15.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I21J20	I6J17	I32J23	I15J25	I20J29	I20J10	I19J10	I17J17	I18J17	I19J17
16.00	.000	MSL TIDE	.111	-.300	-.122	.092	.756	.570	.557	.301	.313	.309
	.000	XFLO CFS	5042.	0.	5516.	64.	0.	0.	-2438.	-8810.	-4519.	-565.
	.000	YFLO CFS	209.	0.	2032.	214.	-0.	9780.	10162.	10781.	11028.	2799.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
17.00	.000	MSL TIDE	1.175	.076	.768	1.164	.807	2.049	2.028	1.544	1.579	1.583
	.000	XFLO CFS	7361.	-59.	7269.	92.	0.	0.	-3187.	-14509.	-7914.	-1577.
	.000	YFLO CFS	-95.	-119.	3062.	655.	0.	13743.	13709.	16712.	17684.	5317.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
18.00	.000	MSL TIDE	2.170	1.151	1.890	2.129	2.084	2.986	2.968	2.501	2.548	2.571
	.000	XFLO CFS	6591.	-341.	6623.	29.	16.	0.	-2660.	-15232.	-8644.	-2171.
	.000	YFLO CFS	-518.	-283.	2835.	1135.	38.	13385.	13381.	18040.	19157.	5857.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
19.00	.000	MSL TIDE	2.812	2.163	2.569	2.777	2.729	3.538	3.523	3.108	3.156	3.183
	.000	XFLO CFS	6090.	-565.	6491.	-153.	71.	0.	-2612.	-14752.	-8482.	-2373.
	.000	YFLO CFS	-655.	-296.	2748.	1457.	87.	12536.	12392.	17820.	19035.	6093.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
20.00	.000	MSL TIDE	3.203	2.866	3.070	3.188	3.160	3.650	3.640	3.383	3.415	3.435
	.000	XFLO CFS	4712.	-579.	5150.	-222.	84.	0.	-2227.	-11880.	-6866.	-1948.
	.000	YFLO CFS	-680.	-279.	2185.	1316.	95.	10007.	9731.	14437.	15477.	4952.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
21.00	.000	MSL TIDE	3.136	3.135	3.244	3.141	3.173	2.951	2.952	3.031	3.023	3.016
	.000	XFLO CFS	-1429.	64.	-2211.	54.	-82.	0.	-1186.	-1270.	1280.	965.
	.000	YFLO CFS	-1854.	-80.	-613.	-521.	-84.	-2806.	-2468.	-4437.	-5155.	-2013.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I5J18	I5J19	I16J24	I17J24	I29J22	I29J23	I29J24	I30J25	I16J17	I4J24
4.00	.000	MSL TIDE	.401	.401	.608	.663	.380	.380	.380	.696	.613	.700
	.000	XFLO CFS	-3945.	-2555.	-1507.	-709.	5389.	5490.	2175.	510.	-4243.	0.
	.000	YFLO CFS	-395.	0.	5430.	8316.	1672.	2103.	499.	0.	3960.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
5.00	.000	MSL TIDE	.367	.410	1.731	1.735	1.453	1.456	1.457	1.416	1.889	.700
	.000	XFLO CFS	-5495.	-3545.	-1441.	-542.	6633.	5680.	1501.	686.	-4761.	0.
	.000	YFLO CFS	-561.	0.	5250.	8857.	1082.	1356.	887.	0.	5200.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
6.00	.000	MSL TIDE	1.197	1.237	2.530	2.538	2.251	2.254	2.255	2.213	2.706	.700
	.000	XFLO CFS	-6483.	-4431.	-2034.	-1088.	7298.	6265.	1999.	1036.	-5813.	3.
	.000	YFLO CFS	-648.	0.	6285.	10456.	1438.	1942.	1310.	0.	6470.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
7.00	.000	MSL TIDE	1.867	1.900	3.062	3.070	2.868	2.871	2.871	2.846	3.179	.700
	.000	XFLO CFS	-6820.	-4836.	-2077.	-1199.	6291.	5412.	1945.	1093.	-5551.	78.
	.000	YFLO CFS	-664.	0.	5609.	9351.	1408.	1975.	1352.	0.	6349.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
8.00	.000	MSL TIDE	2.632	2.645	3.259	3.262	3.262	3.263	3.264	3.266	3.254	.700
	.000	XFLO CFS	-5195.	-3796.	-1134.	-463.	1666.	1432.	613.	337.	-2967.	32.
	.000	YFLO CFS	-488.	0.	1973.	3787.	615.	751.	460.	0.	3330.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
9.00	.000	MSL TIDE	3.116	3.115	3.044	3.038	3.135	3.135	3.144	3.173	2.751	.700
	.000	XFLO CFS	1421.	1123.	654.	335.	-6257.	-5398.	-954.	-715.	1250.	187.
	.000	YFLO CFS	120.	0.	-5958.	-8277.	-1432.	-2621.	-969.	0.	-2555.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I5J18	I5J19	I16J24	I17J24	I29J22	I29J23	I29J24	I30J25	I16J17	I4J24
10.00	.000	MSL TIDE	2.857	2.857	2.426	2.406	2.562	2.561	2.573	2.616	1.754	.700
	.000	XFLO CFS	4423.	3438.	555.	430.	-7515.	-6827.	-851.	-994.	-1240.	1.
	.000	YFLO CFS	587.	0.	-6847.	-10573.	-1676.	-2932.	-1037.	0.	-611.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
11.00	.000	MSL TIDE	2.325	2.325	1.651	1.631	1.903	1.901	1.916	1.967	.792	.700
	.000	XFLO CFS	4873.	3708.	1355.	355.	-8237.	-7583.	-868.	-873.	-1286.	-36.
	.000	YFLO CFS	650.	0.	-7395.	-11275.	-1676.	-2756.	-876.	0.	-261.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
12.00	.000	MSL TIDE	1.659	1.660	.798	.792	1.131	1.131	1.154	1.204	.057	.700
	.000	XFLO CFS	4688.	3453.	3054.	424.	-7855.	-7260.	-825.	-603.	664.	0.
	.000	YFLO CFS	619.	0.	-7318.	-10419.	-1375.	-2115.	-552.	0.	-1458.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
13.00	.000	MSL TIDE	.921	.922	-.012	-.015	.312	.315	.324	.377	-.563	.700
	.000	XFLO CFS	3994.	2809.	2370.	261.	-6824.	-5807.	-328.	-320.	784.	0.
	.000	YFLO CFS	509.	0.	-5943.	-8637.	-857.	-1603.	-625.	0.	-1207.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
14.00	.000	MSL TIDE	.178	.178	-.623	-.627	-.485	-.484	-.480	-.384	-.873	.700
	.000	XFLO CFS	3029.	2015.	1371.	98.	-4242.	-3166.	248.	-282.	487.	0.
	.000	YFLO CFS	362.	0.	-3804.	-5848.	-398.	-1008.	-837.	0.	-710.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
15.00	.000	MSL TIDE	-.730	-.729	-.622	-.624	-.685	-.685	-.683	-.613	-.589	.700
	.000	XFLO CFS	35.	41.	627.	25.	1360.	1196.	-46.	-204.	28.	0.
	.000	YFLO CFS	19.	0.	-579.	-891.	-359.	-677.	-761.	0.	73.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

TIME HOURS	SEA TIDE	HYDRO-DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM I5J18	I5J19	I16J24	I17J24	I29J22	I29J23	I29J24	I30J25	I16J17	I4J24
16.00	.000	MSL TIDE	-.683	-.658	.153	.155	-.065	-.066	-.062	-.087	.281	.700
	.000	XFLO CFS	-3177.	-1835.	-603.	218.	5576.	4677.	465.	-11.	-2582.	0.
	.000	YFLO CFS	-311.	0.	3786.	6413.	436.	366.	-297.	0.	2830.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
17.00	.000	MSL TIDE	-.144	-.096	1.277	1.282	.848	.851	.853	.784	1.501	.700
	.000	XFLO CFS	-5105.	-3156.	-1380.	-299.	7975.	6817.	1491.	613.	-4891.	0.
	.000	YFLO CFS	-520.	0.	5829.	9872.	1097.	1270.	811.	0.	5271.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
18.00	.000	MSL TIDE	.929	.969	2.242	2.249	1.946	1.949	1.951	1.905	2.439	.700
	.000	XFLO CFS	-6045.	-4056.	-1941.	-954.	7454.	6387.	1909.	939.	-5765.	0.
	.000	YFLO CFS	-609.	0.	6432.	10815.	1401.	1824.	1213.	0.	6333.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
19.00	.000	MSL TIDE	1.992	2.014	2.878	2.887	2.620	2.623	2.624	2.586	3.042	.700
	.000	XFLO CFS	-5854.	-4162.	-2235.	-1289.	7332.	6300.	2156.	1171.	-5878.	55.
	.000	YFLO CFS	-566.	0.	6489.	10793.	1537.	2128.	1439.	0.	6597.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
20.00	.000	MSL TIDE	2.770	2.780	3.247	3.254	3.098	3.100	3.100	3.080	3.338	.700
	.000	XFLO CFS	-4751.	-3489.	-1983.	-1188.	5856.	5039.	1878.	1084.	-4830.	5.
	.000	YFLO CFS	-444.	0.	5196.	8696.	1353.	1912.	1301.	0.	5491.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
21.00	.000	MSL TIDE	3.140	3.140	3.125	3.124	3.213	3.213	3.217	3.233	3.037	.700
	.000	XFLO CFS	-475.	-317.	-613.	440.	-3162.	-2611.	-439.	-554.	246.	89.
	.000	YFLO CFS	-51.	0.	-2117.	-3302.	-261.	-733.	-785.	0.	-1365.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						


MASONBORO INLET COAST GUARD DOCK TIDE GAGE NO. 2 9/12/69 0400-2100
O OBSERVED
X COMPUTED
= BOTH
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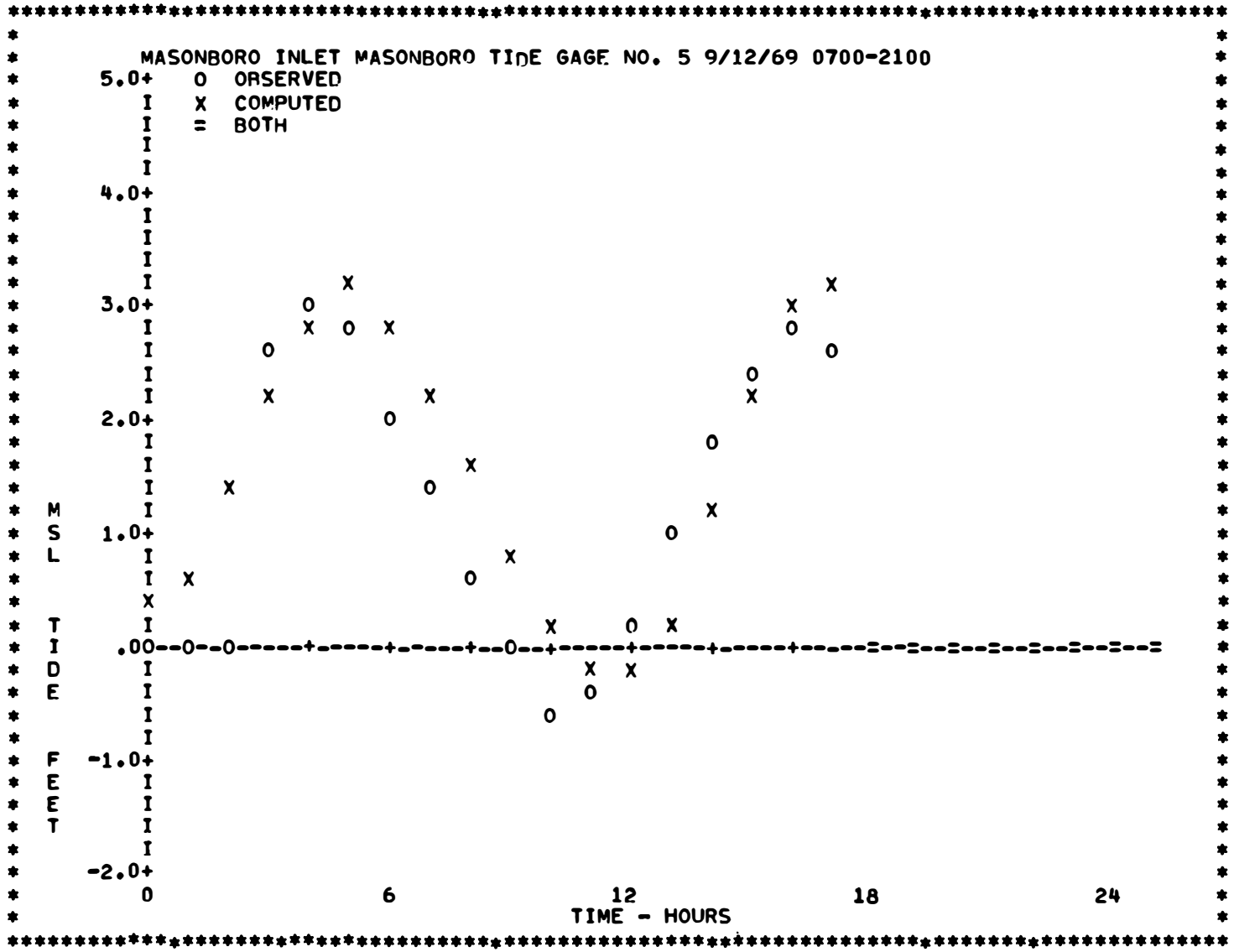
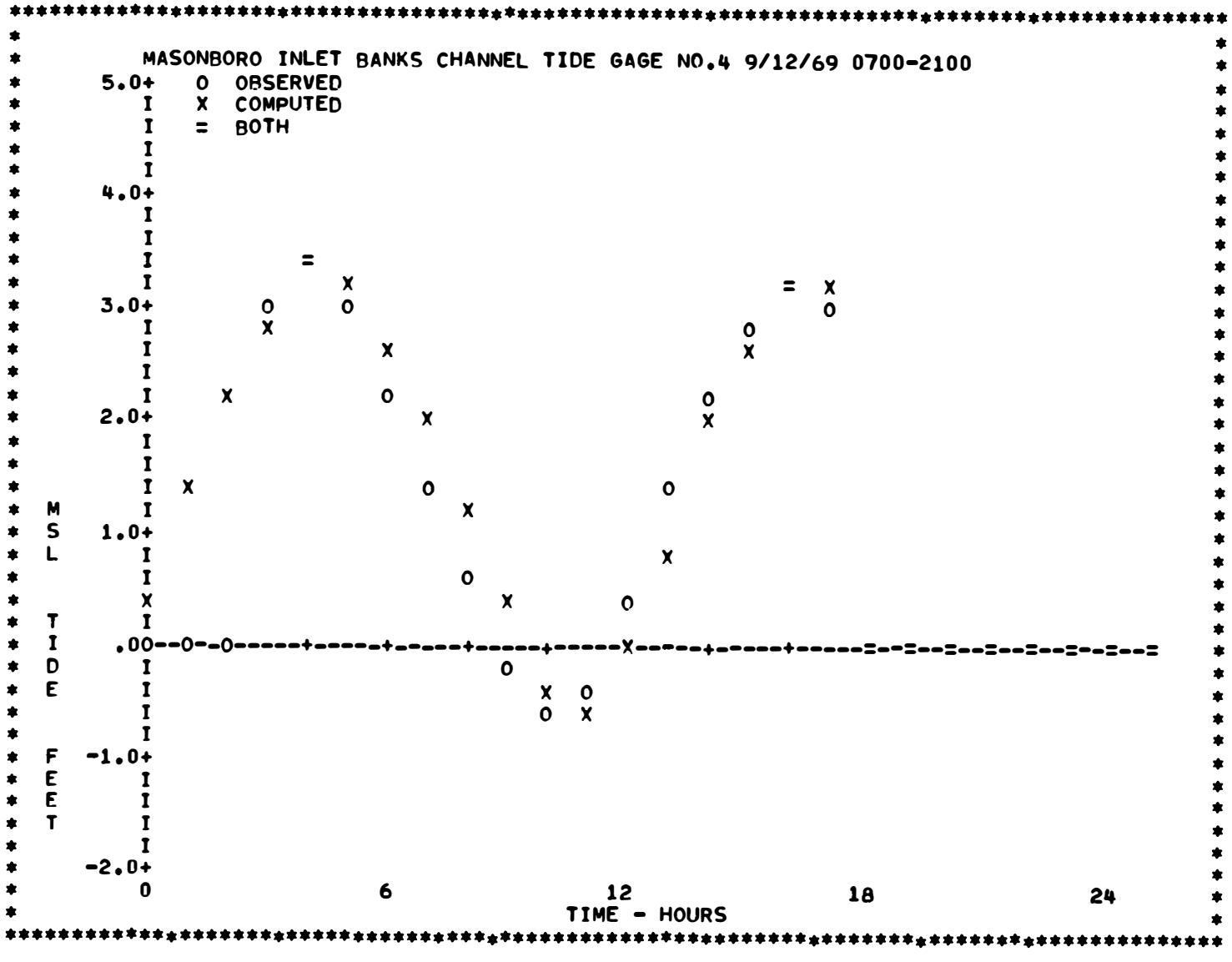
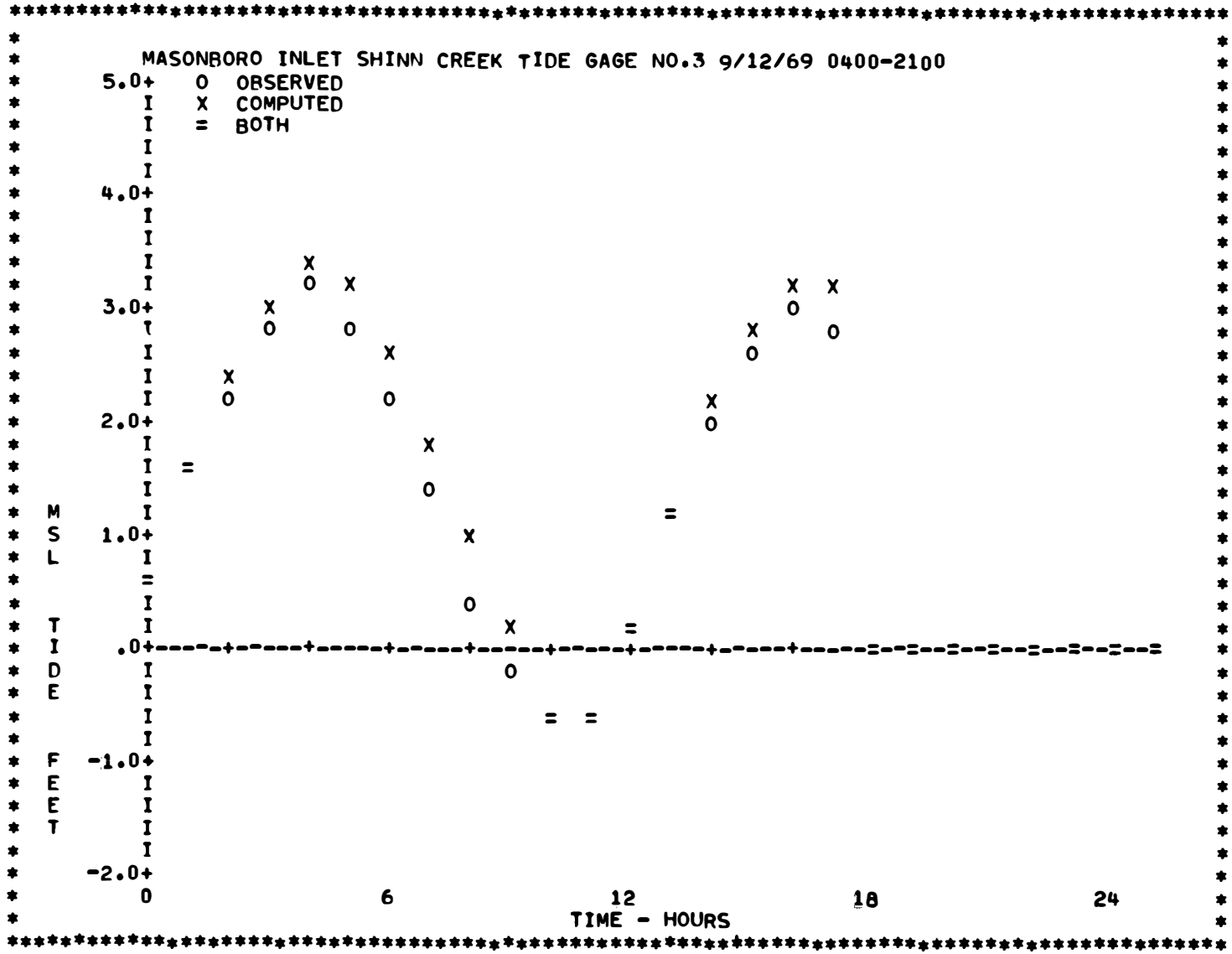
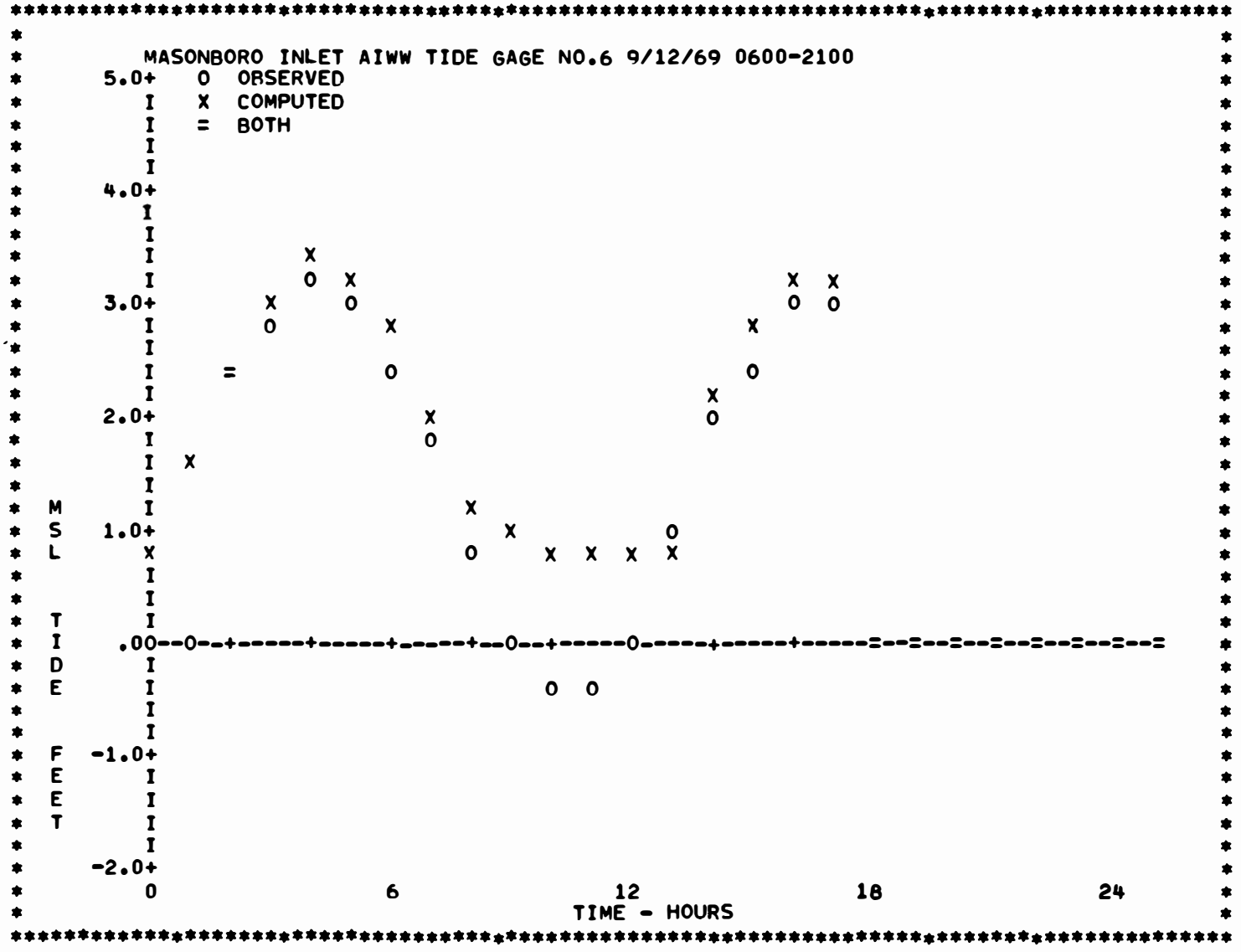
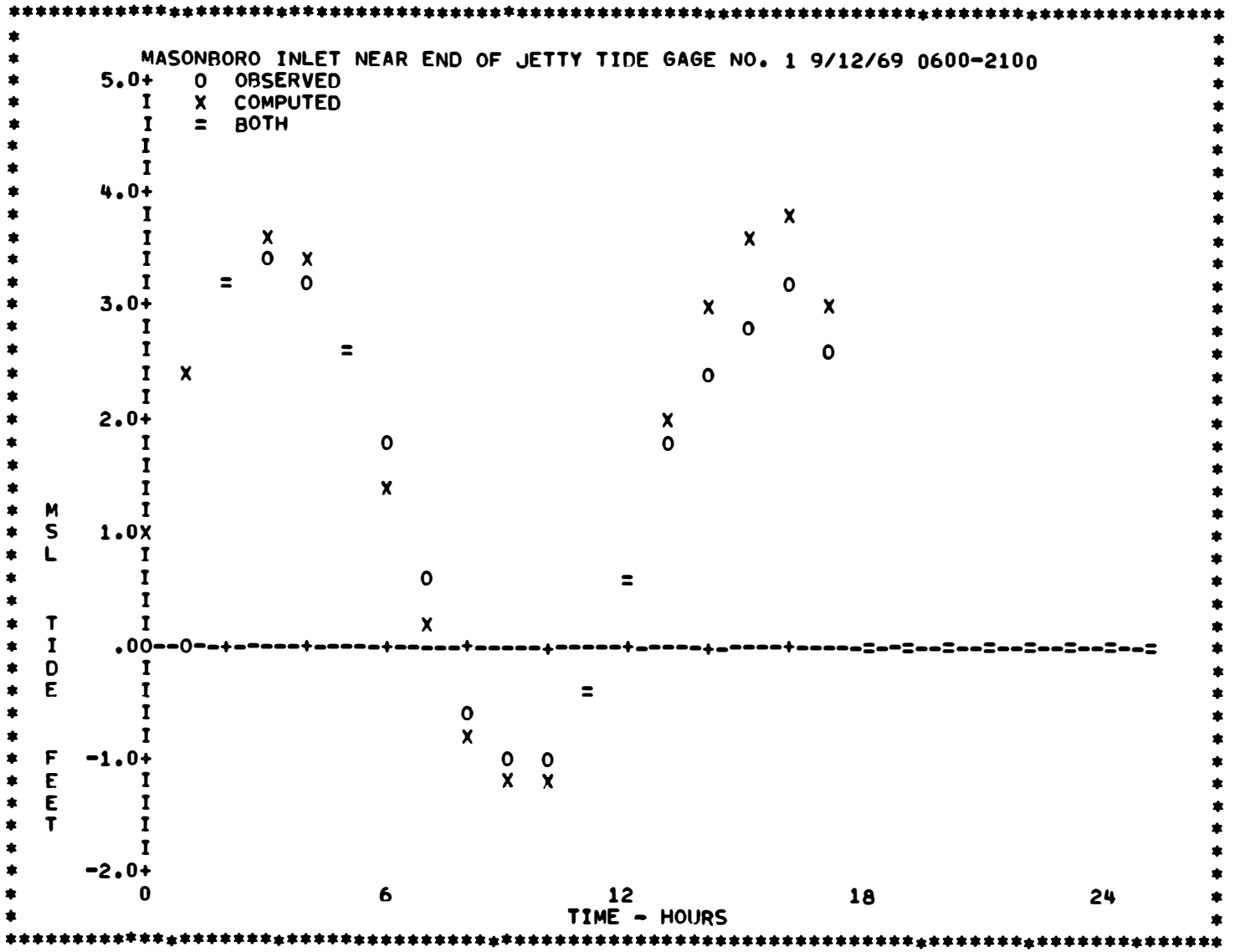
24
TIME - HOURS


MASONBORO INLET MASONBORO TIDE GAGE NO. 5 9/12/69 0700-2100
O OBSERVED
X COMPUTED
= BOTH
5.0+
4.0+
3.0+
2.0+
1.0+
.00
-1.0+
-2.0+
MSL
TIDE
FEET
0
6
12
18
24
TIME - HOURS


MASONBORO INLET BANKS CHANNEL TIDE GAGE NO.4 9/12/69 0700-2100
O OBSERVED
X COMPUTED
= BOTH
5.0+
4.0+
3.0+
2.0+
1.0+
.00
-1.0+
-2.0+
MSL
TIDE
FEET
0
6
12
18
24
TIME - HOURS


MASONBORO INLET SHINN CREEK TIDE GAGE NO.3 9/12/69 0400-2100
O OBSERVED
X COMPUTED
= BOTH
5.0
4.0
3.0
2.0
1.0
.0
-1.0
-2.0
MSL
TIDE
FEET
0
6
12
18
24
TIME - HOURS


MASONBORO INLET AIWW TIDE GAGE NO.6 9/12/69 0600-2100
0 OBSERVED
X COMPUTED
= BOTH
5.0+
4.0+
3.0+
2.0+
1.0+
.00
-1.0+
-2.0+
MSL
TIDE
FEET
0
6
12
18
24
TIME - HOURS


MASONBORO INLET NEAR END OF JETTY TIDE GAGE NO. 1 9/12/69 0600-2100
O OBSERVED
X COMPUTED
= BOTH
5.0
4.0
3.0
2.0
1.0
.00
-1.0
-2.0
MSL
TIDE
FEET
0
6
12
18
24
TIME - HOURS