VIII.3.3-TIDEREV TIDE BALANCE REVIEW OPERATION

Identifier: TIDEREV

Operation Number: 59

Developed by: Northwest River Forecast Center

Parameter Array: The FORTRAN identifier used for the parameter array is P. The contents of the P array are:

Position	Contents
1	Operation version number (integer)
2-19	General name or title (maximum 72 characters)
20-21	Observed stage time series identifier
22	Observed stage time series data type code
23-24	Predicted stage time series identifier
25	Predicted stage time series data type code
26-27	Tide1 balance time series identifier
28	Tide1 balance time series data type code
29-30	Tide2 balance time series identifier
31	Tide2 balance time series data type code
32-33	Tide3 balance time series identifier
34	Tide3 balance time series data type code
35-36	Tide4 balance time series identifier
37	Tide4 balance time series data type code

Carryover Array: There is no carryover for this Operation.

Subroutine Names and Functions:

Subroutine	Function
PIN59	Input values, make checks and store values to the P array
TAB59	Make entries into the Operations Table
PRP59	Print information stored in the P array
PUC59	Write card images that can be read by PIN59
EX59	Execute the Operation
MXMN59	Find tidal highs and lows 1/

Subroutines PIN59, PRP59 and PUC59 have the standard argument lists for subroutines as given in Section VIII.4.3.

Note:

1/ MXMN59 contains the algorithm to identify the tidal highs and lows. It is an adaptation of a finite-difference computation of the second derivative of stage with respect to time at each hourly point. Five hydrograph points are required to compute the second derivative at a given point, that is, the point itself and the two adjacent points on either side of it. The algorithm allows for tidal variances such as slack periods, sharp rises or falls due to regulation and indeterminate tidal fluctuations.

Figure 1 illustrates how a tidal low is identified.

Figure 2 illustrates how a tidal high is identified.

Figures 3 through 5 illustrate special conditions.

Figure 1. Tidal low

If DH1.GE.0
and DH2.GE.0
and DH3.LT.0
and DH4.LE.0

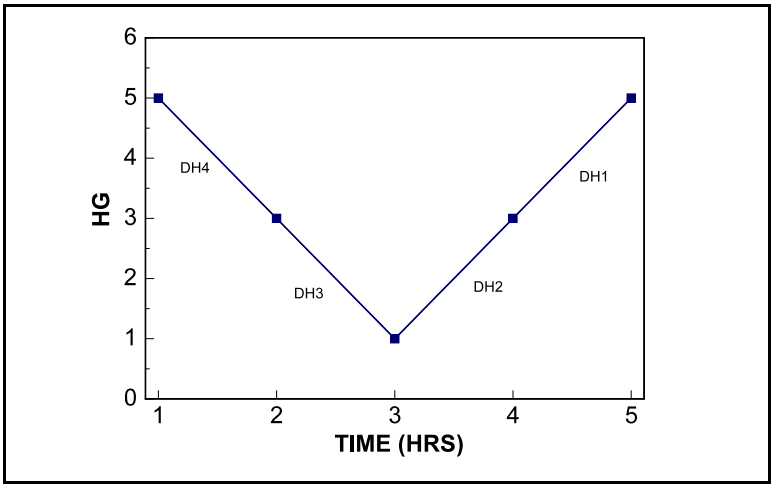


Figure 2. Tidal high

If DH1.LE.0
and DH2.LE.0
and DH3.GT.0
and DH4.GE.0

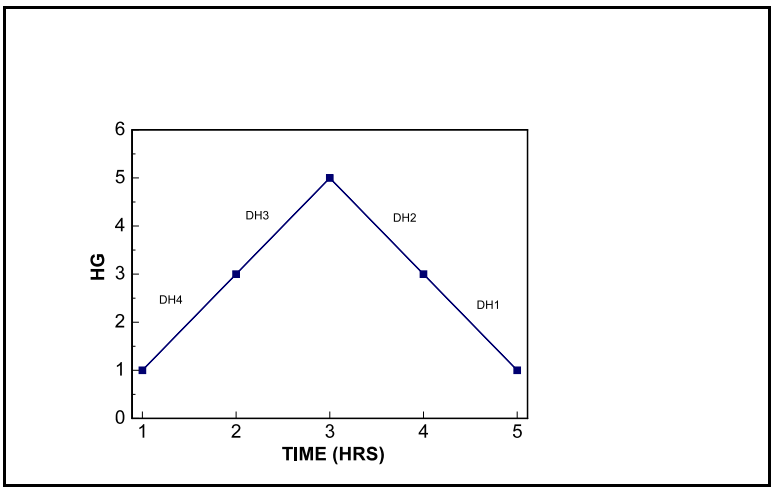


Figure 3. Tidal variance 1

Slack periods when no recorded change occurs between a maximum and minimum:

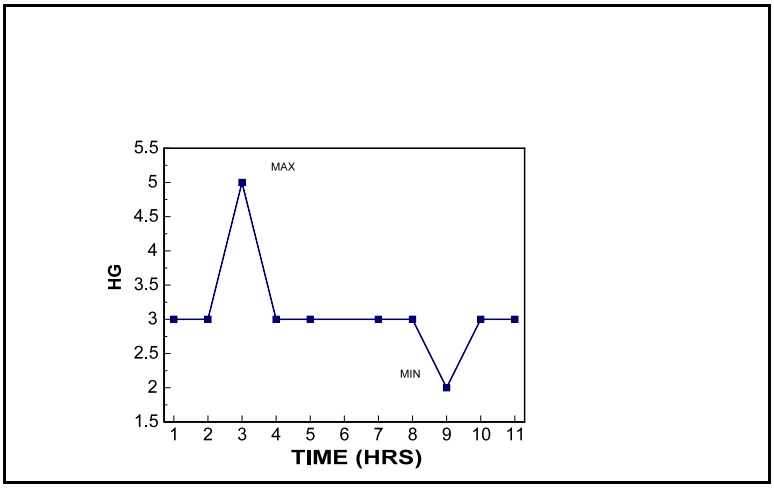


Figure 4. Tidal variance 2

Sharp rises or falls:

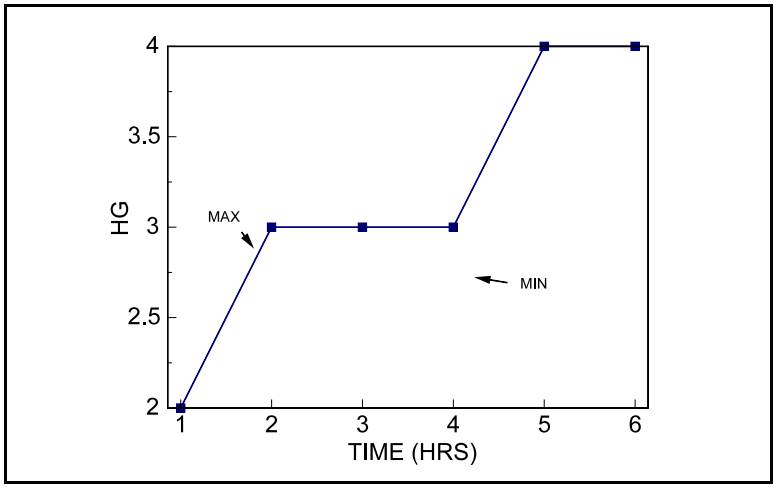
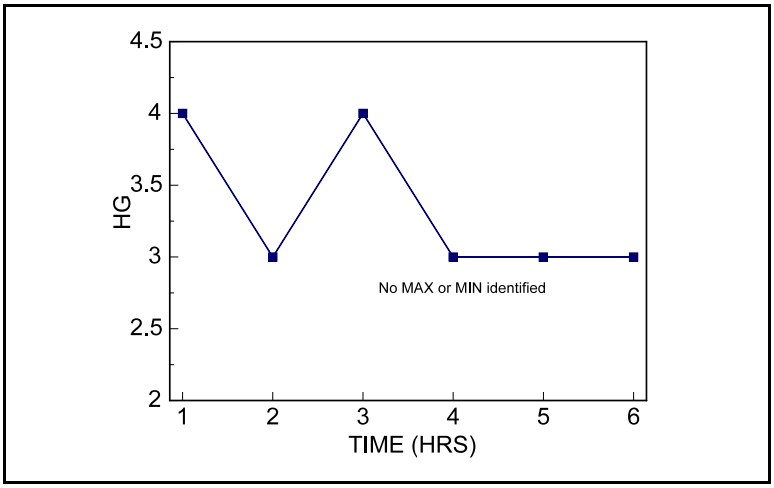


Figure 5. Tidal variance 3

Successive indeterminate fluctuations:



SUBROUTINE EX59 (P,ODEPTH,PDEPTH,ASTID1,ASTID2,ASTID3,ASTID4)

Function: This is the execution subroutine for Operation n TIDEREV.

Argument List:

Variable	Input/ Output	Type	Dimension	Description
P	Input	R*4	Variable	Contains parameters and other information
ODEPTH	Input	R*4	Variable	Observed tide stage array
PDEPTH	Input	R*4	Variable	Predicted tide stage array
ASTID1	Output	R*4	Variable	Range1 stage balances array
ASTID2	Output	R*4	Variable	Range2 stage balances array
ASTID3	Output	R*4	Variable	Range3 stage balances array
ASTID4	Output	R*4	Variable	Range4 stage balances array

SUBROUTINE TAB59 (TO,LEFT,IUSET,NXT,LPO,PO,LCO,TS,MTS,LWORK,IDT)

Function: This is the Operations Table entry routine for Operation TIDEREV.

Argument List: The arguments for this subroutine are similar to the arguments for the Operations Table entry subroutines for other Operations. A description of the arguments is contained in Section VIII.4.2-TAB.

Operations Table Array: The contents of the TO array are:

Position	Contents
1	Operation number
2	Location of next Operation in T array
3	Location of parameters in P array
4	Location of carryover in C array
5	Location of observed stage time series in D array
6	Location of predicted stage time series in D array
7	Location of Tide1 balance time series in D array
8	Location of Tide2 balance time series in D array
9	Location of Tide3 balance time series in D array
10	Location of Tide4 balance time series in D array