

VIII.3.3-SARROUTE SSARR CHANNEL ROUTING OPERATION

Identifier: SARROUTE

Operation Number: 44

Developed By: Northwest River Forecast Center and
North Pacific Division Corps of Engineers

Parameter Array: The FORTRAN identifier used for the parameter array for this Operation is P. Parameter values that are unit dependent are stored in English units. The contents of the P array are:

<u>Position</u>	<u>Contents</u>
1	Operation version number (integer value)
2-19	General name or title or description (maximum 72 characters)
20-21	Begin time interval inflow time series identifier
22	Begin time interval inflow data type code: 'SQIB' = both begin and end time interval inflow time series are specified 'NONE' = no begin time interval inflow time series identified; only the end interval inflow time series is identified
23-24	End time interval inflow time series identifier
25	End time interval inflow data type code
26-27	Begin time interval outflow time series identifier
28	Begin time interval outflow data type code: 'SQIB' = both begin and end time interval outflow time series are specified 'NONE' = no begin time interval outflow time series identified; only the end interval outflow time series is identified
29-30	End time interval outflow time series identifier
31	End time interval outflow data type
32	Inflow time series specified indicator: 1 = only the end inflow time series is specified 2 = both the begin and end inflow time series are specified
33	Outflow time series specified indicator:

<u>Position</u>	<u>Contents</u>
	1 = only the end outflow time series is specified 2 = both the begin and end outflow time series are specified
34	Number of routing phases (must be greater than 0 and less than or equal to 99)
35	N value of KTS/Q**N computation: 0 = time of storage is extracted from the discharge-time of storage table
36	KTS value in hours if N is nonzero (set to zero if N=0)
37	The number of points on the discharge-time of storage table if N=0 (set to zero if N is nonzero)
38	Computational time interval - must be the same as the inflow and outflow time series data time intervals (units of HR)
39+	Discharge and time of storage pairs to define the discharge-time of storage table if N=0 (set to zero if N is nonzero)

The number of positions required in the P array is 38 plus 2 times the number of points of the discharge-time of storage table.

Carryover Array: The FORTRAN identifier for the carryover array is C. The contents of the C array are dependent on the number of inflow time series specified (element 32 in P array).

If the number of inflow time series specified is equal to 1 or element 32 in P array is equal to 1 the initial inflow to the reach must be specified in carryover:

<u>Position</u>	<u>Contents</u>
1	Initial inflow to reach from upstream station
2+	Phase flow values for reach

If the number of inflow time series specified is equal to 2 or element 32 in P array is equal to 2 the initial and all succeeding begin time interval inflow is available in the specified begin time interval inflow time series:

<u>Position</u>	<u>Contents</u>
1+	Phase flow values for reach

Subroutines Names and Functions: Subroutines associated with this

Operation are:

<u>Subroutine</u>	<u>Function</u>
PIN44	Input values, make checks and store values in the P and C arrays
TAB44	Make entries into the Operations Table
PRP44	Print information stored in the P array
PRC44	Print information stored in the C array
EX44	Provide execution control
ROUT44	Execute the routing routine for one time period
TSAV44	Compute average for period routing time of storage from begin and end period flow using a table or the routing equation
STLU44	2-dimension table evaluation routine
TSTR44	Compute routing time of storage from flow using a table or the routing equation

Subroutines PIN44, PRP44, PRC44, PUC44 and COX44 have the standard argument lists as described in Section VIII.4.3.

SUBROUTINE EX44 (P,C,QINST,QINEN,QOUTST,QOUTEN)

Function

This is the execution control subroutine for Operation SARROUTE.

Argument List

<u>Variable</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
P	Input	R*4	Variable	Contains parameters, options and time series information
C	Input	R*4	Variable	Contains carryover information on input
QINST	Input	R*4	Variable	Begin increment inflow time series
QINEN	Input	R*4	Variable	End increment inflow time series
QOUTST	Output	R*4	Variable	Begin increment outflow time series
QOUTEN	Output	R*4	Variable	End increment outflow time series

SUBROUTINE ROUT44 (P,CTEMP,QSTART,QINEN(I),QOUTST(I),QOUTEN(I))

Function

Executes the routing routine for one time period.

Argument List

<u>Variable</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
P	Input	R*4	Variable	Contains parameters, options and time series information
CTEMP	Both	R*4	Variable	Contains current carryover information
QSTART	Input	R*4	1	Begin increment inflow value
QINEN	Input	R*4	1	End increment inflow value
QOUTST	Output	R*4	1	Begin increment outflow value
QOUTEN	Output	R*4	1	End increment outflow value

FUNCTION TSAV44 (QBEG,QEND,P)

Function

Computes average for period routing time of storage from begin and end period Q using a table or equation.

Argument List

<u>Variable</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
QBEG	Input	R*4	1	Flow in CFS at begin increment
QEND	Input	R*4	1	Flow in CFS at end increment
P	Input	R*4	Variable	Contains parameters, options and time series information

FUNCTION TSTR44 (Q,P)

Function

Computes routing time of storage from Q using a table or equation.

Argument List

<u>Variable</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
Q	Input	R*4	1	Flow in CFS
P	Input	R*4	Variable	Contains parameters, options and time series information

SUBROUTINE STLU44 (P,Q,TS)

Function

Two-dimension discharge-time of storage evaluation routine.

Argument List

<u>Variable</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
P	Input	R*4	Variable	Contains parameters, options and time series information
Q	Input	R*4	1	Flow in CFS
TS	Output	R*4	1	Time of storage interpolated from discharge-time of storage table