VIII.3.3-LIST-MSP MINNEAPOLIS API TABULATION OPERATION

Identifier: LIST-MSP

Operation Number: 37

Developed By: North Central River Forecast Center

Parameter Array: The FORTRAN identifier used for the parameter array in this Operation is PO. The contents of the PO array are:

Position	Contents
1	Operation version number
2-7	Description of the runoff zone (obtained from the API Operation - if no API operation, then obtained from snow model operation)
8-9	Type of API Operation: PO(8) = 'API-' PO(9) = 'MKC', 'CIN', 'SLC', 'HAR', etc. If no API Operation: PO(8) = 'NONE'
10-11	API Operation identifier (blank if none used)
12	Snow model Operation indicator: 0 = no snow model used 1 = snow model exists
13-14	Type of snow model Operation (blank if none used)
15-16	Snow model Operation identifier (blank if none used)
17	Display control for Calibration System programs: 0 = not in use (Operational Forecast System programs) 1 = display all days 2 = display only days when rain plus melt is greater than zero 3 = display only days when runoff is greater than zero
18	Operation computational time interval (time interval of rain plus melt and runoff time series - must be 6 hours)
19-20	Rain plus melt time series identifier (obtained from the API Operation or from snow model Operation if no API operation)

Position	Contents
21	Rain plus melt data type code
22-23	Runoff time series identifier (obtained from the API Operation or same as rain plus melt time series if no API operation)
24	Runoff data type code
25-26	Precipitation time series identifier (obtained from the snow model operation, same as rain plus melt time series if no snow model)
27	Precipitation data type code
28	Time interval of precipitation time series (must evenly divide into computational time interval)
29	Location of water-equivalent time series information in the PO array: 0 = no water-equivalent time series available
30	Location of API time series information in the PO array: 0 = no API time series available
31	Location of AI/FI time series information in the PO array: 0 = no AI/FI time series available
32	Location of AI adjustment, AEI time series or areal extent of snow cover (AESC) time series information in the PO array: 0 = none available
33	Number of words used in the PO array
34-38	Unused (initialized to 0.01)

Water-equivalent information if PO(29) is greater than zero:

PO(29)-PO(29)+1	Water-equivalent time series identifier (obtained from the API Operation for MKC and CIN; obtained from the snow model for HAR, SLC and if no API Operation)
PO(2)+2	Water-equivalent data type code
PO(29)+3	Time interval of the water-equivalent time series (must be a multiple of the computational time interval)

API information if PO(30) is greater than zero:

PO(30)-	API time series identifier (obtained from the API

PO(30)+1	Operation)
PO(30)+2	API data type code
PO(30)+3	Time interval of the API time series (must be a multiple of the computational time interval)

AI/FI information if PO(31) is greater than zero:

PO(31)- PO(31)+1	AI/FI time series identifier (obtained from the API operation; does not exist for SLC)
PO(31)+2	AI/FI data type code
PO(31)+3	Time interval of the AI/FI time series (must be a multiple of the computational time interval)

AI adjustment, AEI or AESC information if PO(32) is greater than zero:

PO(32)	Indicator as to type of information: 1 = AEI time series (HAR) 2 = AESC time series (SLC) >7 = AI adjustment location in P array (MKC or CIN)

Remaining information only if PO(32) is less than or equal to 2:

PO(32)+1- PO(32)+2	Time series identifier (obtained from the API Operation)
PO(32)+3	AEI or AESC data type code
PO(32)+4	Time interval of the AEI or AESC time series (must be a multiple of the computational time interval)

Subroutines Names and Functions: Subroutines associated with this Operation are:

Subroutine	Function
PRP37	Print information in PO array
EX37	Execute the Operation
PUC37	Generate card images that can be used by the PIN subroutine
TAB37	Make entry into the Operations Table

Subroutines PRP37 and PUC37 have the standard argument lists for these routines as described in Section VIII.4.3.
SUBROUTINE PIN37 (PO,LEFTP,IUSEP,P,MP)

Function: This is the input routine for Operation LIST-MSP. This subroutine inputs card images and fills the PO array.

Argument List:

Variable	Input/ Output	Type	Dimension	Description
PO	Output	R*4	Variable	Contains parametric information
LEFTP	Input	I*4	1	Maximum space available for the PO array
IUSEP	Output	I*4	1	Amount of space used by the PO array
P	Input	R*4	MP	P array
MP	Input	I*4	1	Dimension of P array

SUBROUTINE EX37 (PO,PX,RM,RO,WE,API,AI,AIADJ,AEI,AESC)

Function: This is the execution routine for Operation LIST-MSP.

Argument List:

Variable	Input/ Output	Type	Dimension	Description
PO	Input	R*4	Variable	Contains parametric information
PX	Input	R*4	Variable	Precipitation time series
RM	Input	R*4	Variable	Rain plus melt time series
RO	Input	R*4	Variable	Runoff time series
WE	Input	R*4	Variable	Water-equivalent time series (defined if PO(29)>0)
API	Input	R*4	Variable	API time series (defined if PO(30)>0)
AI	Input	R*4	Variable	AI/FI time series (defined if PO(31)>0)
AIADJ	Input	R*4	1	AI adjustment (defined if PO(32)>0 and PO(PO(32))>7)
AEI	Input	R*4	Variable	AEI time series (defined if PO(32)>0 and PO(PO(32))=1)
AESC	Input	R*4	Variable	AESC time series (defined if PO(32)>0 and PO(PO(32))=2)

SUBROUTINE TAB37 (TO,LEFT,IUSET,NXT,LPO,PO,TS,MTS,LWORK,IDT)

Function: This is the Operations Table entry routine for Operation LIST-MSP.

Argument List: The argument list for this subroutine is similar to the argument for TAB subroutines for the 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 in the T array of the next Operation to be executed
3	Location of the PO array in the P array
4	Location of the precipitation time series in the D array
5	Location of the rain plus melt time series in the D array
6	Location of the runoff time series in the D array
7	Location of the water-equivalent time series in the D array: 0 = not available
8	Location of API time series in the D array: 0 = not available
9	Location of AI/FI time series in the D array: 0 = not available
10	Location of AIADJ factor in the P array: 0 = not available
11	Location of AEI time series in the D array: 0 = not available
12	Location of AESC time series in the D array: 0 = not available