

#### VI.3.4A INTRODUCTION TO THE FORECAST COMPONENT INITIALIZATION PROGRAM (FCINIT)

##### Purpose

The Forecast Component Initialization Program (FCINIT) is used to maintain the forecast point information in the Forecast Component Data Base and the Processed Data Base.

The following definitions are needed to describe the functions of FCINIT (see Section V.3 for detailed descriptions):

- Operation           - any hydrologic, hydraulic, display, update or arithmetic computation (see Section V.3.2 for a list of available Operations)
- Segment            - a group of Operations performed as a unit for a forecast point
- Forecast Group   - a group of Segments to be run in a specified order
- Carryover Group   - a group of Forecast Groups to be run in a specified order

Before any Forecast Program runs can be made, the Segments, Forecast Groups and Carryover Groups must be defined. The commands used to define and display the information in the Forecast Component Data Base are described in Section VI.3.4B.

##### Steps for Defining Parameters

The sequence to successfully initialize the Forecast Component Data Base is:

- o define Rating Curves to be used in Segments
- o define Segments to be used in Forecast Groups
- o define Forecast Groups to be used in Carryover Groups
- o define Carryover Groups

**Step 1** is to define all Segments that contain Operations using Rating Curves, the Rating Curves using the DEF-RC command. Once a Rating Curve has been defined it can be modified using the UPDATE or REPLACE options of the DEF-RC command. The PRINTRC command can be used to print a listing of the Rating Curve definitions. The PUNCHRC command can be used to create card image output of Rating Curve definitions.

**Step 2** is to define all Segment to be used in a Forecast Group or in a single Segment execution run using the SEGDEF command. A Segment will be defined only if all parameters to the Operations are input properly and enough space exists to store the Segment definition. The time series used by the Segment do not need to exist on the Processed Data Base for the Segment to be defined.

The RESEGDEF command is used if an existing Segment needs to be redefined. Segments can be redefined to change parameter values in Operations or to change the Operations included in the Segment definition. Segments can be redefined whether they belong to a Forecast Group, a Carryover Group or are not associated with either. Any Segment that belongs to a Forecast Group must have all time series defined before the Segment can be redefined.

A listing of time series used and of all Operations and their parameter and carryover values is printed when the Segment is defined or redefined. Once a Segment has been defined, a listing of the current definition can be obtained using the PRINTSEGS command. The PUNCHSEGS command can be used to create card image output of a Segment definition (time series, Operations, parameters and carryover).

**Step 3** is to define normal Forecast Groups using the FGDEF command and Special Forecast Groups using the SPECIALFG command. The order that the Segments are included in the Forecast Group is the order they are run in a Forecast Program run. A Segment can belong to only one normal Forecast Group. All Segments must be defined before the Forecast Group can be defined. Any Segment included in a Forecast Group must have all time series defined. A Segment can belong to any number of Special Forecast Groups. One possible use for Special Forecast Groups is to execute fast responding headwater basins prior to other forecast points. A Special Forecast Group can not belong to a Carryover Group - only a normal Forecast Group can be included in a Carryover Group.

The PUNCHFG command can be used to create card image output for either a normal or Special Forecast Group.

Forecast Groups cannot be redefined. They must first be deleted using the DELETE command and then defined using the FGDEF or the SPECIALFG command.

**Step 4** is to define Carryover Groups using the CGDEF command. Carryover Groups consist of only normal Forecast Groups. The order that the Forecast Groups are included in a Carryover Group is the order they are run in a Forecast Program Carryover Group run. A Carryover Group run is the only type of run that can save carryover. A Forecast Group can belong to only one Carryover Group and must be defined before the Carryover Group is defined. Carryover for all the Segments in a Carryover Group will be dated the same and the initial carryover date or dates are specified with the CGDEF command.

Carryover Groups cannot be redefined. They must first be deleted using the DELETE command and then defined using the CGDEF command.

The PUNCHCG command can be used to create card image output for a Carryover Group.

Segments not associated with a Carryover Group can have their carryover dated using the SEGDATE command. Only Segments not in a Carryover Group can have carryover dated using the SEGDATE command, but once dated, these Segments can become part of a Carryover Group.

Individual Segment dating allows the user to make Forecast Group or single Segment execution runs without having any Carryover Groups formed. Such runs are used primarily for test purposes.

Dated carryover and selected parameters for certain Operations (such as SAC-SMA and SNOW-17) can be displayed in tabular form for both Forecast Groups and Carryover Groups by using the PRINTOPS command. Printout of carryover using the PRINTOPS command is much more compact than the PRINTSEGS displays.

The DELETE command can be used Rating Curve, Segment, Forecast Group or Carryover Group definitions. Deletions work in reverse of creations. A Carryover Group must be deleted before a Forecast Group belonging to the Carryover Group can be deleted; a Forecast Group must be deleted before a Segment belonging to the Forecast Group can be deleted. Deleting any item except a Carryover Group only sets the identifier to 'OBSOLETE'. The definition is removed from the file when the Forecast System Reorder Program (REORDER) is run.

The STATUS command can be used print information about the status of the Forecast Component Data Base. This command prints information about file size and usage, default item values and Carryover Groups, Forecast Groups, Segments and Rating Curves definitions.

### File Interactions

Information on file interactions between program FCINIT and the Forecast Component files are described in Section IX.4.5C [[Hyperlink](#)]. This includes a discussion of the messages printed when files are being updated and how to recover from errors that may occur during a file update.

### Carryover Dates

As each Segment is processed by the CGDEF and SEGDATE commands, the existing carryover values are checked and the closest date and time to the selected carryover dates is used for initial values. If none of the carryover values for a particular Segment have had dates assigned then the values have the selected dates assigned. For example:

Selected dates: 09/01/1979-13Z and 09/15/1979-13Z

For the Segment 'SEGMENT1'

<u>Existing Carryover</u>	<u>Dates in Carryover Group</u>
08/15/1979-13Z	Undated
08/29/1979-13Z	09/01/1979-13Z
09/12/1979-13Z	Undated
09/14/1979-13Z	09/15/1979-13Z
Remainder Undated	Remainder Undated

For the Segment 'SEGMENT2'

<u>Existing Carryover</u>	<u>Dates in Carryover Group</u>
Undated	09/01/1979-13Z
Undated	09/15/1979-13Z
Undated	Undated

Program Execution Information

See Section I.2 [[Hyperlink](#)] for program execution information.