

Network Data Entry

SW11-505

**Implementation
Startup & Reconfiguration - 1**

Network Data Entry

**SW11-505
Release 520**

7/96

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About This Publication

This publication supports **TotalPlant**[®] Solution (TPS) System network release 500 - 520. TPS is the evolution of TDC 3000^X.

This publication explains how to enter LCN Network configuration information into the TPS system.

Before attempting to use this publication, configuration information should be collected on standard *Network Forms* as explained in the *Network Forms Instructions* manual (see References).

Change bars are used to indicate paragraphs, tables, or illustrations containing changes that have been made to this manual effective with Release 520. Pages revised only to correct minor typographical errors contain no change bars.

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INTRODUCTION Section 1

1.1 PURPOSE

This publication tells how to enter Local Control Network (LCN) configuration data into a **TotalPlant** Solution (TPS) System. These instructions are intended for process engineers, control systems engineers, application engineers, and others who do similar work, so that data can be correctly entered without adverse effects on system functioning.

1.2 SCOPE

These procedures explain how to enter LCN Network configuration parameters into a TPS system through a Universal Station, Universal Work Station, or Micro TDC 3000 system. They also include reference information required to support the procedures. Before starting the data entry process, Network Configuration Forms should be filled out. Refer to the *Network Forms Instructions* manual if necessary (see References).

Network configuration functions are listed in the left column of the Universal Personality's Engineering Main Menu (refer to Figure 1-1).

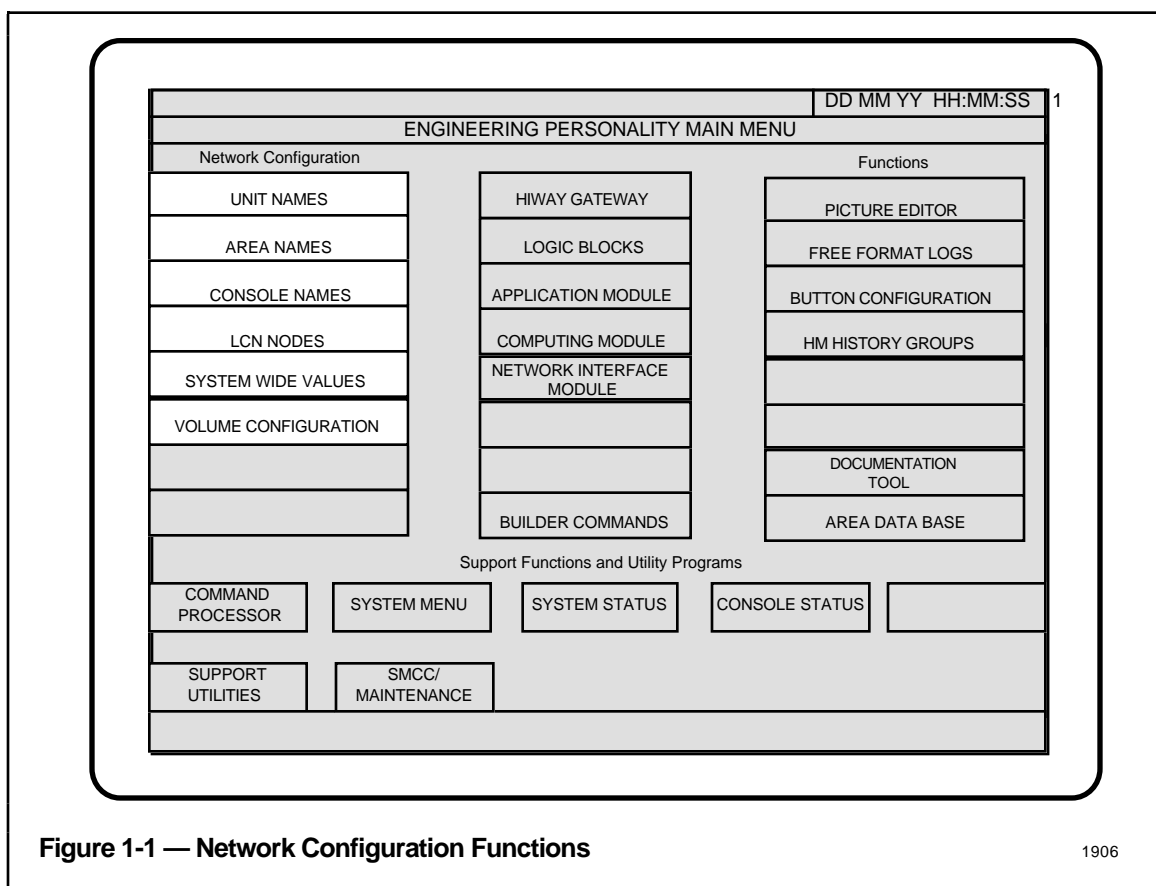


Figure 1-1 — Network Configuration Functions

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1.3 REFERENCES

Some or all of the following TPS documents are required for reference when using this publication:

| Title | Publication No. | Binder |
|--|-----------------|--|
| Network Gateway Imp. and Operation | NG09-510 | Implementation/Network Gateway |
| Network Forms | SW88-505 | Implementation/Configuration Forms |
| Network Form Instructions | SW12-505 | Implementation/Startup & Reconfiguration - 1 |
| System Startup Guide - Cartridge Drive | SW11-504 | Reconfiguration - 1 |
| Engineer's Reference Manual | SW09-505 | Implementation/Startup & Reconfiguration - 2 |
| Command Processor Operation | SW11-507 | Implementation/Startup & Reconfiguration - 1 |
| Computer Gateway User Manual | CG11-510 | Implementation/Computer Gateway |
| Control Language/Application Module Reference Manual | AM27-510 | Implementation/Application Module - 3 |

1.4 PREREQUISITES

Network configuration data entry requires that the following items are available:

A. Knowledge

Before entering configuration data for actual system operation, the user should be familiar with system concepts and configuration rules, and preferably should have started up his system in a "dry run" using the *System Startup Guide*.

B. Materials

- A Universal Station (preferably two), equipped with an Operator's Keyboard and an Engineer's Keyboard. The Universal Station must have Cartridge disk drives, and it should have a printer.
- A set of *Network Configuration Forms*, filled in as applicable.
- A set of cartridge disks with system software.

NOTE

Cartridge disks with the marking **68020** are for use with hardware modules that contain an HMPU, HPK2, or K2LCN printed wire board. Cartridge disks with the marking **68040** are for use with hardware modules that contain a K4LCN printed wire board.

The exact software and optional software are provided according to the hardware purchased.

The cartridge disk set supplied by Honeywell includes some or all of the following system software—

- &C1 68040 software for Universal Station and Universal Station^X Personalities and Supporting Files Software.
- &C2 68020 software for Universal Station and Universal Station^X Personalities and Supporting Files Software.
- &C3 Application Module and Application Module^X Personalities, AM Sets (optional).
- &C4 Computing Module Personalities (optional)
- &C5 Test Programs (optional)
- &C6 Network Configuration files, Null Checkpoints, Key File, Null Area file, LCN Cable Diagnostics and Toolkit software
- &C9 Network Gateway Personalities (optional)
- &C10 HM, NIM, PM/APM/HPM/LM, and SM Personalities (optional)

OVERVIEW Section 2

Network configuration data entry is the process by which data is entered into memories of the appropriate system devices. Network data entry involves the functions listed in the left column of the Universal Personality's Engineering Main Menu. The six functions in this column are associated with LCN-based functions (see Figure 2-1).

| ENGINEERING MAIN MENU | | |
|------------------------------|--|--|
| Network Configuration | | |
| Unit Names | | |
| Area Names | | |
| Console Names | | |
| LCN Nodes | | |
| System-Wide Values | | |
| Volume Configuration | | |
| | | |
| | | |

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Figure 2-1 — Network Configuration Functions

For LCN-based functions, data entry consists of these four major steps:

- **Build**, in which data taken from the appropriate Network Configuration Forms is entered into the System Network Configuration File—Working File (NCF.WF) in the Universal Station. Data is entered through the Engineer's Keyboard, with the display on the screen that corresponds to the form from which the data is being taken. The Working File is only for configuration tasks; it is not involved in system operation.
- **Check**, in which Network checks are performed on the configuration data that was entered into the NCF.WF file. These checks are initiated by pressing the F1 function key. (Refer to Section 5.)

- **Install**, in which Network checks are performed on the Working File (NCF.WF), which is renamed to become the NCF.CF or Configuration File, that will be used in system operation. When the NCF is installed, it is given a time-stamp that uniquely identifies its revision level. Install is initiated by pressing the F2 function key.
- **Load**, in which the NCF.CF is loaded into each LCN Node. The time-stamp must be the same in all nodes, or system functioning will cease when internode data transactions begin. Network configuration can be changed later, using the On-Line Reconfiguration procedures described elsewhere in this publication; however, any node started thereafter must start by using the reconfigured NCF.CF file.

The Build step of configuration data entry is divided into separable tasks, according to the content of each display. Check and Install steps can be done at any time after some data is entered; however, there are practical reasons why the Install function should be used only at certain times during configuration. (Refer to subsection 7.2.1, The Install Function.)

For Data Hiway-based functions associated with the Data Entity Builder, data entry consists of these three major steps:

2.1 ARCHITECTURAL/USER CONCEPTS

The software environment of the **TotalPlant** Solution (TPS) System reflects concepts that are familiar to many users and is structured to correspond to physical processing structures. The Network database is the foundation on which other configuration database entry depends. For additional information on Network Configuration and its relevancy to system configuration, refer to the *Engineer's Reference Manual* (see References).

LCN-based functions are configured, using a software entity called the Configurator, and are entered into a set of files that constitute the Network Configuration File, or NCF. Before Installation, the Network Configuration file is called the NCF.WF, or NCF working file, which is used in configuration but not for system operation. When it is installed, the working file is renamed as NCF.CF, which is the Network Configuration File used for system operation. A simplified diagram of the system architecture as it relates to configuration functions is given in Figure 2-2.

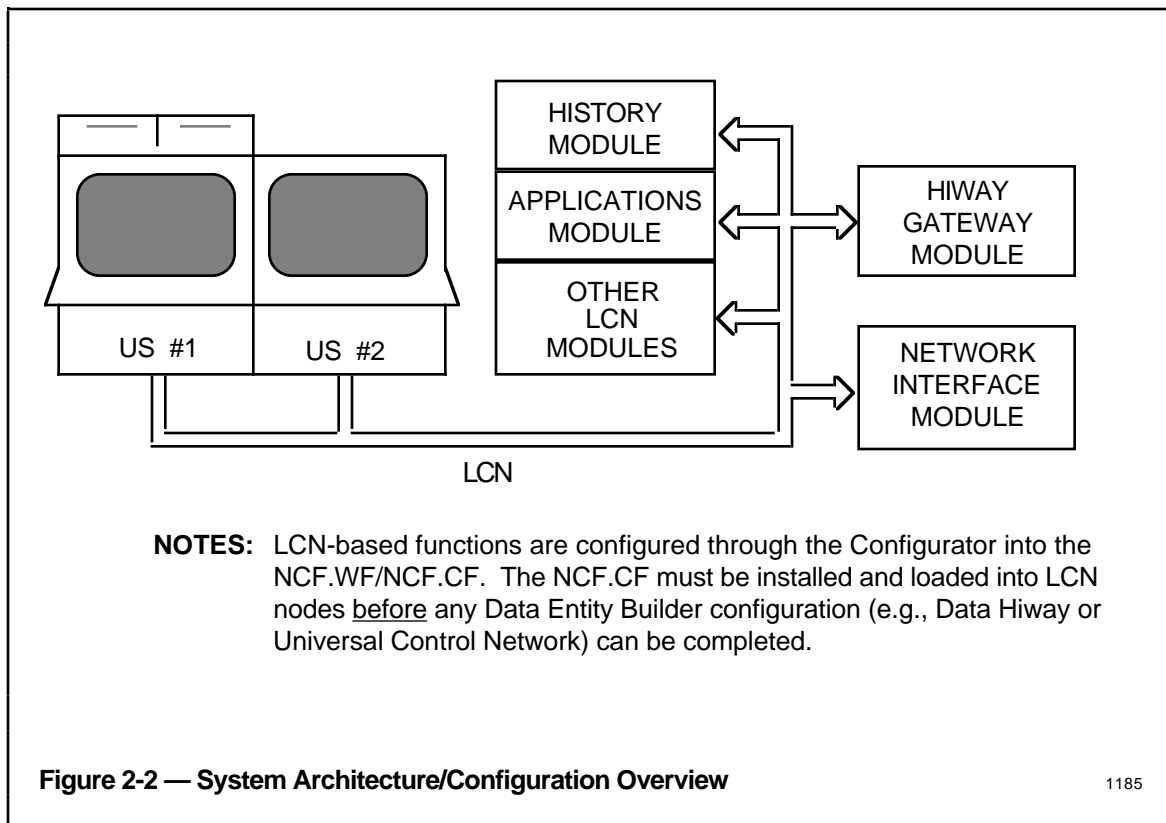


Figure 2-2 — System Architecture/Configuration Overview

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The information entered in Network configuration data entry is described under headings 2.1.1 through 2.1.6, immediately following.

2.1.1 Unit Names

A Unit Name is an identifier used to partition the system to enable a group of points, usually associated with a physical process unit such as a boiler, to be assigned by configuration to that unit. Up to 100 Unit Names can be assigned, and other configuration functions can be associated with Unit Names by subsequent configuration data entry. Note that Unit Names can be added, deleted, or changed in Off-Line mode but they can be added only in On-Line Network Reconfiguration mode.

2.1.2 Area Names

An Area Name is an identifier used in the system to designate an area database, where an area is the process equipment that can be monitored and controlled from a single Console. Up to 10 Area Names can be assigned, and other configuration functions can be associated with Area Names by subsequent configuration data entry.

2.1.3 Console Names

A Console Name consists of up to 24 characters that identify a console, where a console is a logical grouping of Universal Stations and associated equipment. Up to 10 Console Names can be configured.

2.1.4 LCN Nodes

LCN-Node configuration defines address, type of node, and other data. LCN-Node configuration either assigns a node to, or deletes it from, operation on a Network, and other configuration functions can be associated with it by subsequent configuration data entry.

LCN Node configuration also allows you to specify that custom software is used with the node, and allocate memory for that purpose. Custom Software (Load Modules) are optional software packages used for various purposes. AM node configuration contains additional entry ports to allocate memory for use with background AM/CL functions.

2.1.5 System-Wide Values

System-Wide Values are values (such as RAISE/LOWER RATE) and conventions (such as HORN ANNUNCIATION POLICY) that are available for use throughout the system. Software options and Network Gateway options are implemented here.

2.1.6 Volume Configuration

Volume Configuration is the allocation of file-storage space in History Modules (Winchester disks) and the assigning of responsibilities such as history collection, checkpointing, and Load/Dump.

Volume-configuration assignments are associated with "Node Pairs," where a Node Pair is a History Module and its redundant partner. (If a Node Pair does not include a redundant partner, it is still treated by the Configurator as a Node Pair.) Up to 20 Node Pairs can be assigned to a Local Control Network, and each of the Node Pairs can involve one or more configuration processes.

2.2 OFF-LINE/ON-LINE MODES

The term Off-Line Mode means that the Network Configuration File (NCF) being built is either the initial configuration or it is for a system other than the one on which it is being built. In this mode, the Check step (in which the system performs validity checks with the equipment being configured) applies to only History Module functions.

The term On-Line (or On-Line Network Reconfiguration) Mode means that the NCF is being reconfigured on the system for which it was built and the Check function, when invoked, causes the system to verify that the references in the Network configuration to the physical equipment are valid. Some changes (e.g., deleting or swapping Unit Names) can be done only in Off-Line Mode.

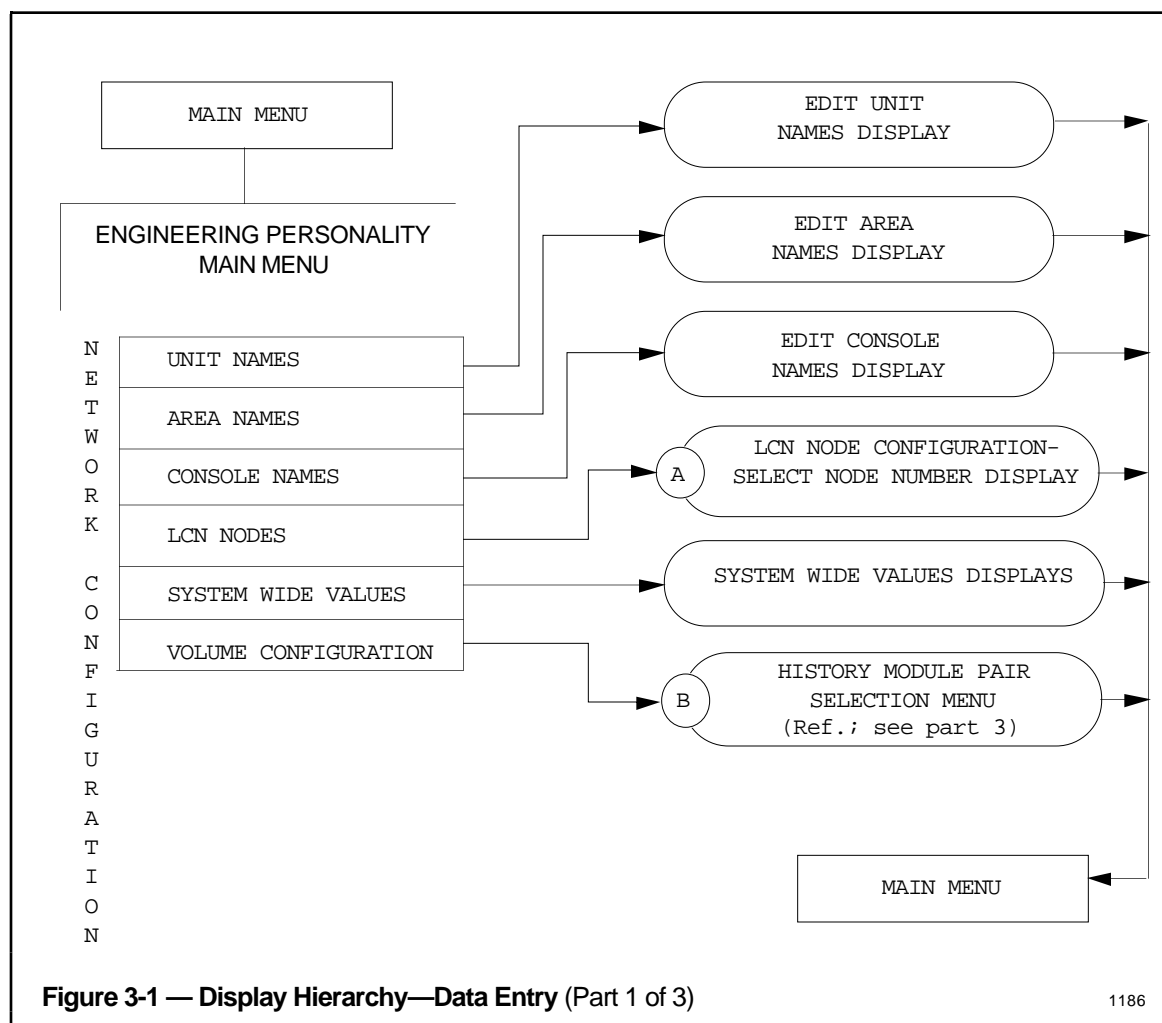
Off-Line Mode is invoked by pressing the F3 function key (and <ENTER>). Once invoked, Off-Line Mode remains in effect until the configuration file is installed or aborted. The configuration built in Off-Line Mode cannot be used until all nodes in the system are shut down and restarted with the new NCF.

2.3 DEPENDENT PROCEDURES

Because Network configuration is the foundation on which other system data is built, Network data entry must be completed before entering other configuration data. (For additional detail, refer to the *Engineer's Reference Manual*.)

DISPLAY HIERARCHY Section 3

The hierarchy of displays available for Network data entry includes interactive and noninteractive types. Figure 3-1 illustrates the progression of interactive displays that are used for configuration data entry.



NOTE

When a Network Gateway is being configured, the NG Local System ID (within System Wide Values) must be configured before configuring the LCN Node for the NG. This is explained in subsections 7.3.1 and 7.4.3.

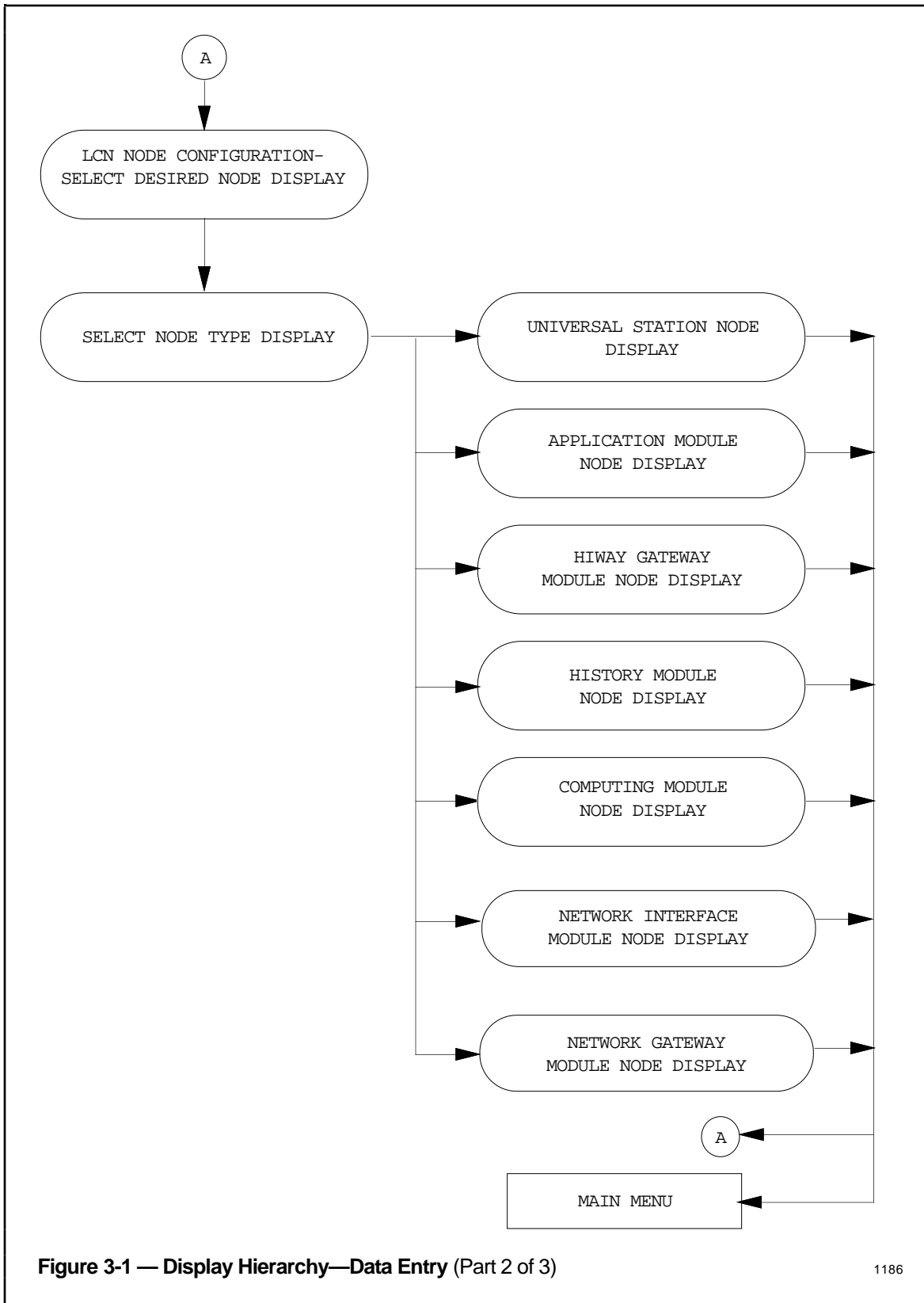


Figure 3-1 — Display Hierarchy—Data Entry (Part 2 of 3)

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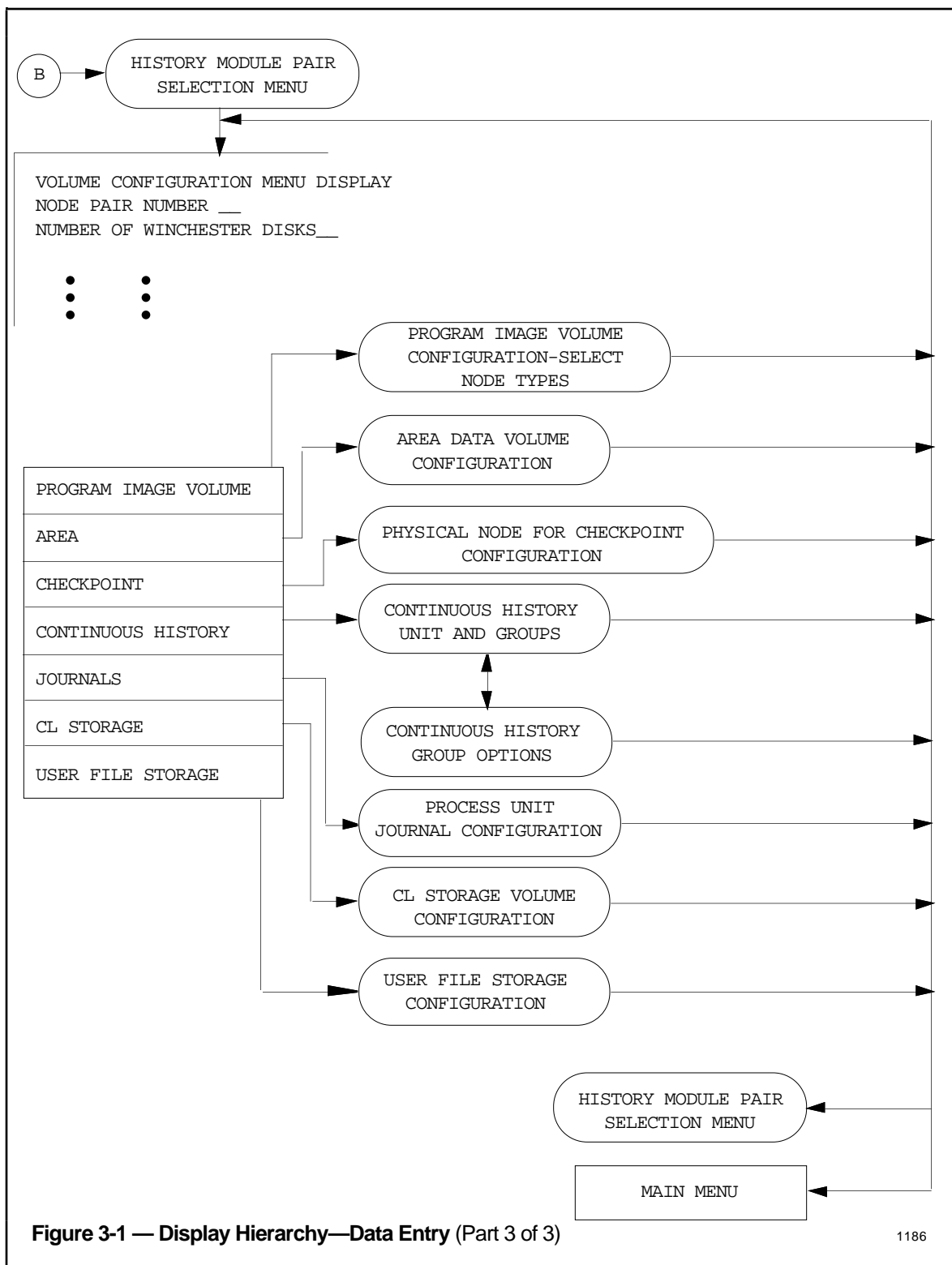


Figure 3-1 — Display Hierarchy—Data Entry (Part 3 of 3)

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DATA SOURCES Section 4

The principal source of the data that is to be entered to build the Network database is filled-in configuration forms.

The *Implementation/Startup & Reconfiguration* binders in the **TotalPlant** Solution (TPS) System bookset has several publications that you may need to consult, either in filling out configuration forms or in making direct entries to the Parameter Entry Displays.

The applicable Configuration Forms, Configuration Form Instructions, and reference publications are listed under REFERENCES in Section 1.

Figure 4-1 illustrates the relation of configuration forms to displays and shows examples where a single form has information that is entered on two or more displays.

ENGINEER'S KEYBOARD Section 5

The Engineer's Keyboard is the interface through which the operator calls up configuration displays, enters data, and invokes other system functions that are required to complete configuration data entry. Most of the keys function as their names imply; however, there are several function keys that have specific functions in Network configuration data entry. The functions that are related to LCN-based functions are summarized in Figure 5-1.

Universal Work Station (UWS)/Micro TDC 3000 —The Engineering Keyboard used on these systems is similar and can be used for Network Configuration. With the Engineering Personality running, press the PF1 key to enable Engineering Keylock status. The monitor does not contain a touch screen, but the mouse or trackball provides easy cursor movement and Select/Enter button functions.

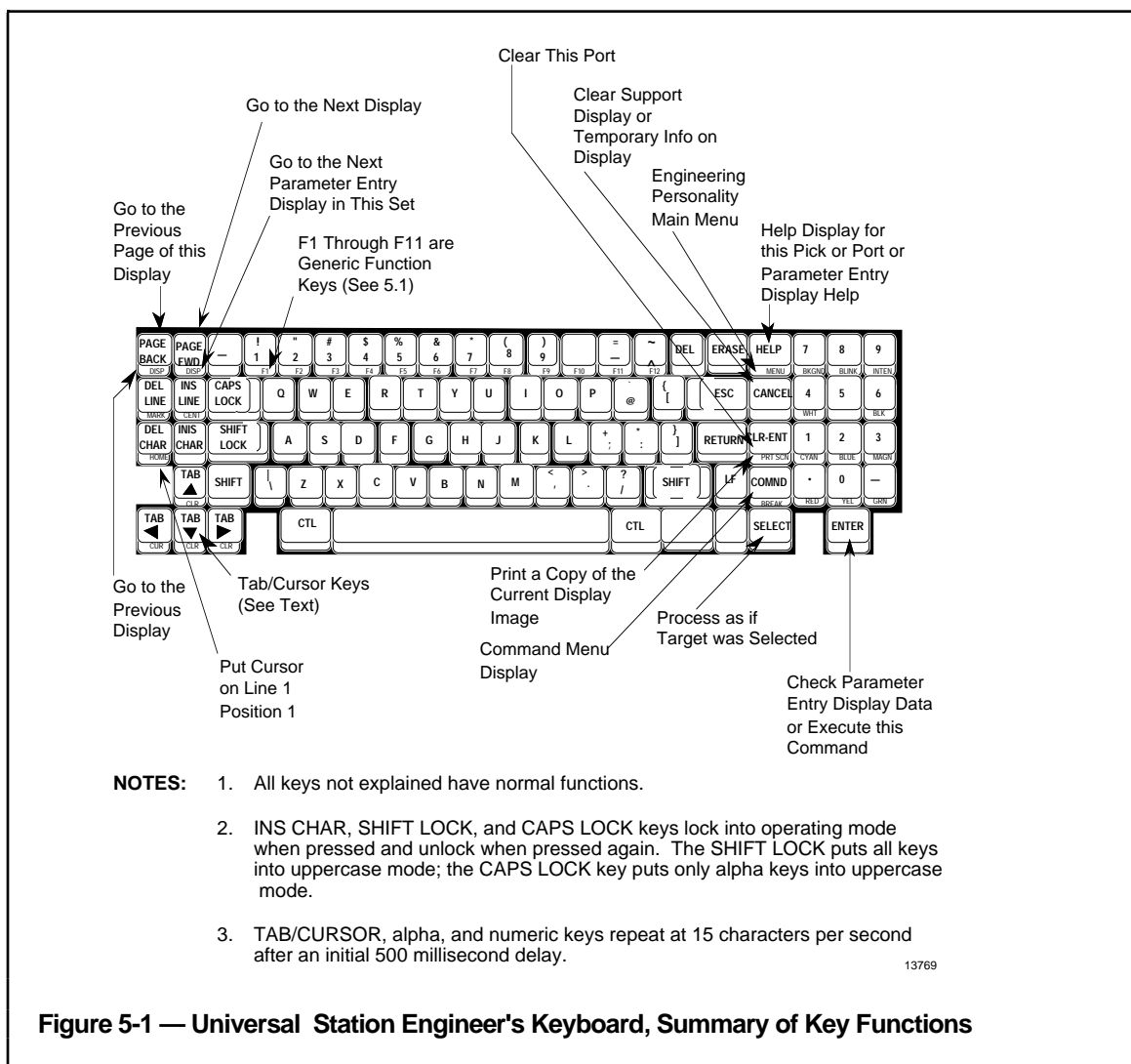


Figure 5-1 — Universal Station Engineer's Keyboard, Summary of Key Functions

Several keys have dual functions and therefore dual markings—a symbol, or symbols, on the top of the key and another symbol, or symbols, on the front edge of the key. The secondary function indicated on the front edge of each of these keys is enabled when one of the two CTL keys is held down while the function key is pressed. The TAB/CUR keys are an exception.

NOTE

No configuration operation that can affect the configuration data of the system, or of the working file can be performed unless the key switch on the Universal Station is in the ENGINEER position.

5.1 FUNCTION KEYS

Function keys on the Engineer's Keyboard have special purposes when used with the configurator (for Network configuration). Appropriate functions for each key are listed at the bottom of the display that you are using, except while that region is displaying prompts or error messages.

Figure 5-2 shows how the function keys are used with the Configurator, then each function is explained.

| | | | | | | | | | | | |
|-------|---------|----------|-------|-------|------|------------|------------|------|--------|----------|---------|
| F1 = | F2 = | F3 = SET | F4 = | F5 = | F6* | F7* = NEXT | F8* - DISP | F9 = | F10* = | F11 = | |
| CHECK | INSTALL | OFFLINE | PRINT | ABORT | INIT | ITEM | FILE | PACK | NCF | READ KEY | TAB/CSR |

NOTES: To use function keys

1. Key switch must be in the Engineer position.
2. The CTL key must be held down.

*F6, F7, F8, and F10 appear only in displays where they can be used.

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Figure 5-2 — Function Key Labels

The function of each of these keys for the Configurator is as follows:

F1 = CHECK—calls the checker, if one exists, for the installation unit and causes network configuration checks to be performed. This key also invokes the on-line installation instructions display; the DISP BACK key recalls the configuration display.

F2 = INSTALL—initiates the installation sequence, if the previous check was successful and no further changes have been made. At the completion of installation, the working file (NCF.WF) disappears, having become the installed configuration file (NCF.CF).

F3 = SET OFF-LINE—Changes the configurator mode from On-Line to Off-Line. Off-line mode assumes that the network file being configured will be used for a total restart (e.g., initial configuration), or it is being built for a different system. On-Line mode is used for network reconfiguration. Once you have pressed F3, you cannot return to On-Line mode unless you abort (F5) or install the data (F2).

F4 = PRINT—causes the data for this installation unit to be printed on a console printer.

F5 = ABORT—Deletes the Network Configuration work file (NCF.WF).

F6 = INITIALIZE—has two functions:

- To initialize (create) the NCF file on the &ASY floppy when neither the NCF.WF nor NCF.CF files exist on the &ASY volume. When Initialize is invoked, the NCF.CF is written from system software to the &ASY diskette, using default values.
- To initialize a History Module that has the Off-Line Personality—NCF initialization can only be requested from the Add History Module Node display or Volume Configuration display. Initializing consists of clearing the directory from the Winchester disks associated with the History Module and of formatting the disks according to the space allocations entered during Volume configuration.

A History Module must be Initialized during system startup, and must be reinitialized if a new NCF.CF, with Volume configuration data that differs from that already on the disk, is to be installed and loaded into the system.

F7 = NEXT ITEM—moves the cursor to the next data entry item in a display if there is more than one column of selections. For example, pressing F7 with the Unit Names display on the screen causes the cursor to be positioned at the beginning of the next UNIT NAME/UNIT DESCRIPTOR line.

F8 = DISPLAY FILE—Displays the NCFxx.ER file (e.g., NCF01.ER). This file shows storage allocation for each HM.

F9 = PACK NCF—after numerous nodes have been added or deleted, extraneous data accumulates and expands the file. Packing deletes unnecessary data and compresses the file.

F10= READ KEY—reads authorized software options from a system-unique Key File disk.

F11= TAB/CSR—Not implemented for R400 - R430. Refer to TAB/CUR in subsection 5.2 for R431 and later software.

5.2 MISCELLANEOUS KEYS

Keys other than the function keys are used as follows:

- **HOME**—Moves the cursor to the upper-left corner of the screen (line 1, character-position 2).
- **TAB/CUR (Arrow keys)**—These keys move the cursor. The following table explains how they work with the F11 function key in R431 and later software. The current state of the F11 key (either F11=TAB or F11=CSR) is displayed at the lower right of the screen when the key is effective. Pressing F11 toggles between the two states.

| F11 State | CTL Key Up | CTL Key Down |
|-----------|--|--|
| F11=TAB | Pressing an arrow key moves the cursor one position in the indicated direction. Two cursor keys can be simultaneously pressed to cause diagonal movement. The cursor continues to move as long as the key or keys are held down. | Pressing an arrow key moves the cursor between entry ports on the screen. |
| F11=CSR | Pressing an arrow key moves the cursor between entry ports on the screen. | Pressing an arrow key moves the cursor one position in the indicated direction. Two cursor keys can be simultaneously pressed to cause diagonal movement. The cursor continues to move as long as the key or keys are held down. |

- **PAGE FWD, PAGE BACK**—These keys are used to page through displays that have multiple pages. If there is no text or preceding page, the station "beeps."
- **DISP (FWD, BACK)**—If one of the CTL keys is held down, the PAGE FWD key becomes the DISP BACK key. Pressing the DISP FWD key requests the next display; pressing DISP BACK requests the preceding display.
- **CLR ENT**—Clears all values in the port that the cursor is in. If the cursor isn't in a port, the station "beeps."

- **HELP**—Requests the display of help information for the pick or the port the cursor is in. If there is an error in the data in the port or if an error has been made in selecting a pick, up-to-two additional lines of error messages appear in the prompt region. If the cursor is not in a pick or a port, the following prompter appears:

CURSOR NOT IN A PORT OR PICK

- **ENTER**—Requests that the data and selections in the display be processed and checked.
- **CANCEL**—Typically, aborts a function or procedure in progress.
- **PRT SCN**—Requests that the present screen image be copied and printed on a matrix printer. The printer must be connected and configured.
- **MENU**—(HELP key with the CTL key held down) requests the Engineering Personality's Main Menu.
- **SELECT**—Selects the pick the cursor is in. This duplicates touching a target (pick) on a station with the touch screen option. An unselected pick has a green outline. When it is selected, it fills in with half-intensity white. Following ENTER, selected picks are written in full-intensity white.
- **INSERT/DELETE CHARACTER**—These keys are useful to correct typing errors when entering commands or filling in the screen forms. Pressing the Insert Character key locks it in alternate positions. In the down position you can enter characters ahead of the current cursor position. Press the Insert Character key again to release it.

Pressing the Delete Character key deletes the character under the cursor.

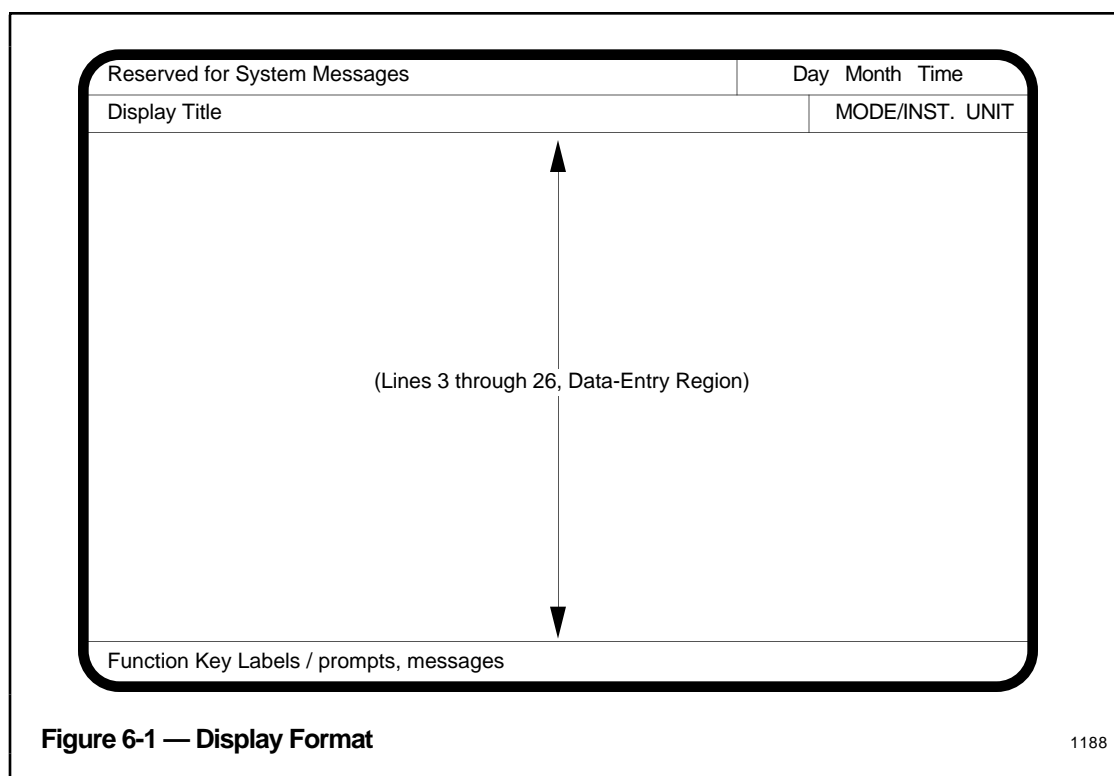
- **INSERT LINE/DELETE LINE** —These keys are useful for deleting/copying and inserting blocks of text. You can delete/copy and insert text using the following method:
 1. Move the cursor to the beginning of the text you want to copy or delete.
 2. Hold down CTRL and press DEL LINE. This places an invisible marker at the cursor location to mark the start of the text block.
 3. Move the cursor to the end of the text you want to copy or delete.
 4. To delete only, press DEL LINE, and the text disappears.
 5. To copy, first delete the text as described in steps 1 through 4. The deleted text is held in temporary memory. Without moving the cursor, press INS LINE to make the text re-appear. The text is now ready to copy elsewhere.
 6. To insert, move the cursor to the position where you want to add the text, then press INS LINE. You can repeatedly insert the text block until you choose another text block to delete or copy.

DATA ENTRY Section 6

This section contains general information that is required when performing the procedures given in Section 7 of this publication. This information applies to the procedures for entering data for LCN-based functions.

6.1 DISPLAY FORMAT

The format of displays that are used for entering data for LCN-based functions is illustrated in Figure 6-1.



The two bottom lines of the displays normally show the function-key labels (in green), but these are replaced by prompts and error messages when necessary.

The prompters and error messages are replaced by the function-key labels (see Figure 5-2) when the next operation begins. Pressing keys such as CHECK, INSTALL, etc., causes new operations to begin.

Mode indicates the On-Line or Off-Line mode during configuration.

6.2 USE OF TARGETS AND PORTS

There are two categories of data to enter in the displays:

- **Targets**—(also called picks) you need to make choices when configuring Network data, such as selecting horn-annunciation policy, access for physical-node commands, or box-point options. These choices are made by selecting targets. On a configuration form, you indicate your choice by circling the item, like this:



To select a target if you have the touch-target option, you merely touch the appropriate location on the screen. You can also tab to the target and press SELECT. When a target is selected, it fills in with half-intensity white. If a target selection has not been ENTERed, its text is white. If it has been ENTERed, the text is light blue (cyan). If the selection is in error, the text is red.

- **Ports**—You can type strings of displayable/printable characters in ports. In general, the number of character positions in a port defines the maximum number of characters. If you don't know whether to enter numbers, or letters, or both, refer to the Configuration Form Instructions.

If you don't use the maximum number of characters, you can type the data anywhere in the port where it will fit. For example, a descriptor is held as typed, with leading spaces, but other data is left-justified when it is ENTERed.

AREA DESCRIPTOR

TANK FARM

6.3 INSTALLATION OF ENTERED DATA

Data entered into displays for LCN-based functions has no value until you install it. LCN-based data is installed, using the F2 = INSTALL key. (Refer to heading 5.1.)

PROCEDURES Section 7

This section provides general (overview) and detailed procedures that describe the tasks required to accomplish Off-Line Network Configuration or On-Line Network Reconfiguration.

NOTE

Before using the procedures in this section to configure a system to control a process, you should

- be familiar with configuration concepts, guidelines, and rules, and
- use the *System Startup Guide* (see References) with sample data contained therein, in "a dry run" to become familiar with startup concepts and procedures.

7.1 OVERVIEW OF PROCEDURES

The procedures given in this section apply in two configuration circumstances:

1. When a system is being configured for the first time as a part of system startup; an overview of NCF initial configuration is given in Figure 7-1.
2. After the system has been configured, and the Network Configuration File (NCF.CF) is to be modified (On-Line Network Reconfiguration). In this case, there are many possibilities that require different sets of procedures.

Each of the rectangular "function blocks" in Figure 7-1 represents a procedure that describes each of the steps required to complete one of the set of "tasks" that constitute system startup. Each function block is sequence-numbered to match the numbers assigned to task sequencing in the *System Startup Guide*.

Function blocks in Figure 7-1 with solid outlines represent tasks in which Network configuration data is actually entered into the system. References that appear next to these blocks are to the tables in this publication (*Network Data Entry*) in which the configuration task is detailed. Function blocks with dotted outlines represent tasks that are preparatory for, but do not directly involve, Network data-entry tasks. These preparatory tasks are detailed (with "typical examples") in the *System Startup Guide*.

7.2 PROCEDURAL CONSIDERATIONS

7.2.1 The Install Function

Although the Install function can be invoked at any time after some Network configuration data has been entered, there are some practical reasons for doing it at certain points in the procedures.

In Off-Line Mode, invoking the Install function causes the NCF.WF to be renamed NCF.CF. The NCF.WF is recreated, if you continue configuration, and used as the source for display data. This takes time, and therefore it is desirable to configure the entire network before invoking the Install function. You can install periodically if desired.

In On-Line Mode, each change to an installation Unit must be checked and installed. An installation unit is made up of all of the data needed to install a particular function. The installation units are listed elsewhere in this section.

7.2.2 Universal Station^X and Micro TDC 3000 System

Micro TDC 3000 Systems are supplied with prebuilt local control network (LCN) configuration software. You would not normally use the procedures in this manual unless you are building a new network, adding a node to the network, or reconfiguring a network. The configuration procedures in this manual have not been tested for Universal Station^X stations but should apply if the station has the required dual cartridge drives.

7.3 OFF-LINE PROCEDURES

Detailed Off-Line configuration procedures for LCN-based functions are given in tables under heading 7.3.1 (for Unit/Area/Console Names and for System-Wide Values), and under heading 7.3.2(for Volumes).

7.3.1 Unit/Area/Console Names, LCN Nodes, and System-Wide Values

Unit Names, Area Names, and Console Names are sets of data that constitute one installation unit each. Details of configuration are given in Tables 7-1 through 7-3.

LCN Nodes—To change page 1 of a node configuration screen form after data has been ENTERed, the node must first be deleted by selecting the Delete Node target. Then reENTER the appropriate configuration. Pages 2 or 3 of the node configuration screen forms are for Custom Software (load modules) or Background CL/AM. To modify only these pages after data has been entered, select the Modify Node target. Details of configuration are given in Table 7-4.

System-Wide Values—Configuration details are given in Table 7-5.

- NOTES:**
1. Before beginning this procedure, the following must be accomplished:
 - power to the nodes is turned on
 - all History Modules are
 - properly formatted
 - rendered incapable of autoboot (that is, autoboot is not on the HM disk or has been disabled, or power to the HM is turned off).
 2. The procedure depicted in this overview is based on a physical configuration that includes the following:
 - a console consisting of two Universal Stations, which are arbitrarily called US #1 and US #2. Two disk drives are physically connected to US #1 and a printer is physically connected to US #2.
 - at least one History Module, which is to be used as a file server during the configuration process.
 3. The function blocks shown in this overview are numbered to match the number sequence given for startup tasks in the *System Startup Guide* (see References). Blocks with dashed lines correspond to tasks that are detailed only in the startup guide. Blocks with solid outlines correspond to procedures that are detailed in this publication.

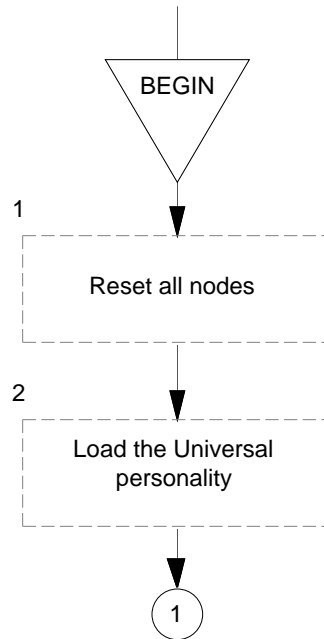
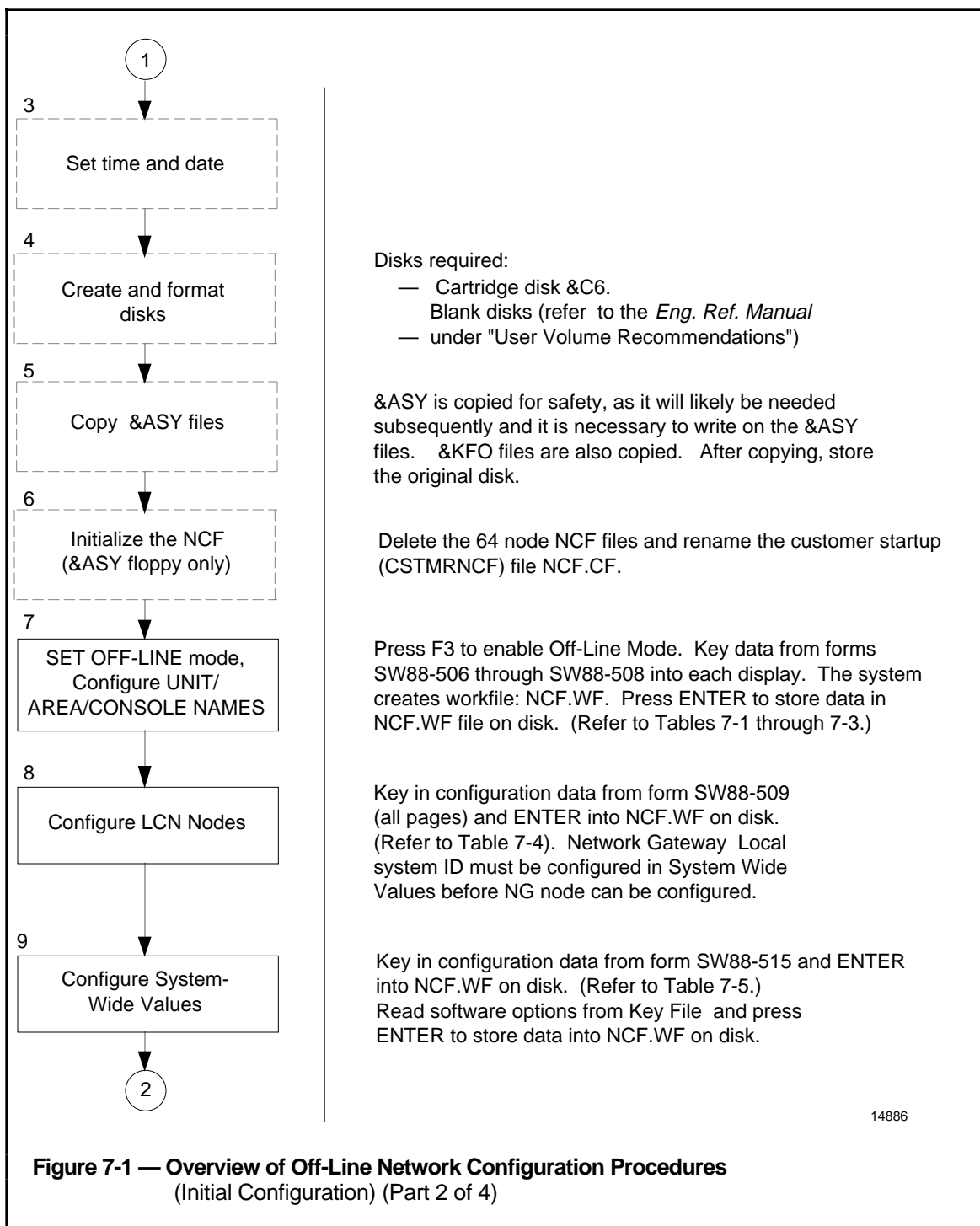


Figure 7-1 — Overview of Off-Line Network Configuration Procedures
(Initial Configuration) (Part 1 of 4)

1189



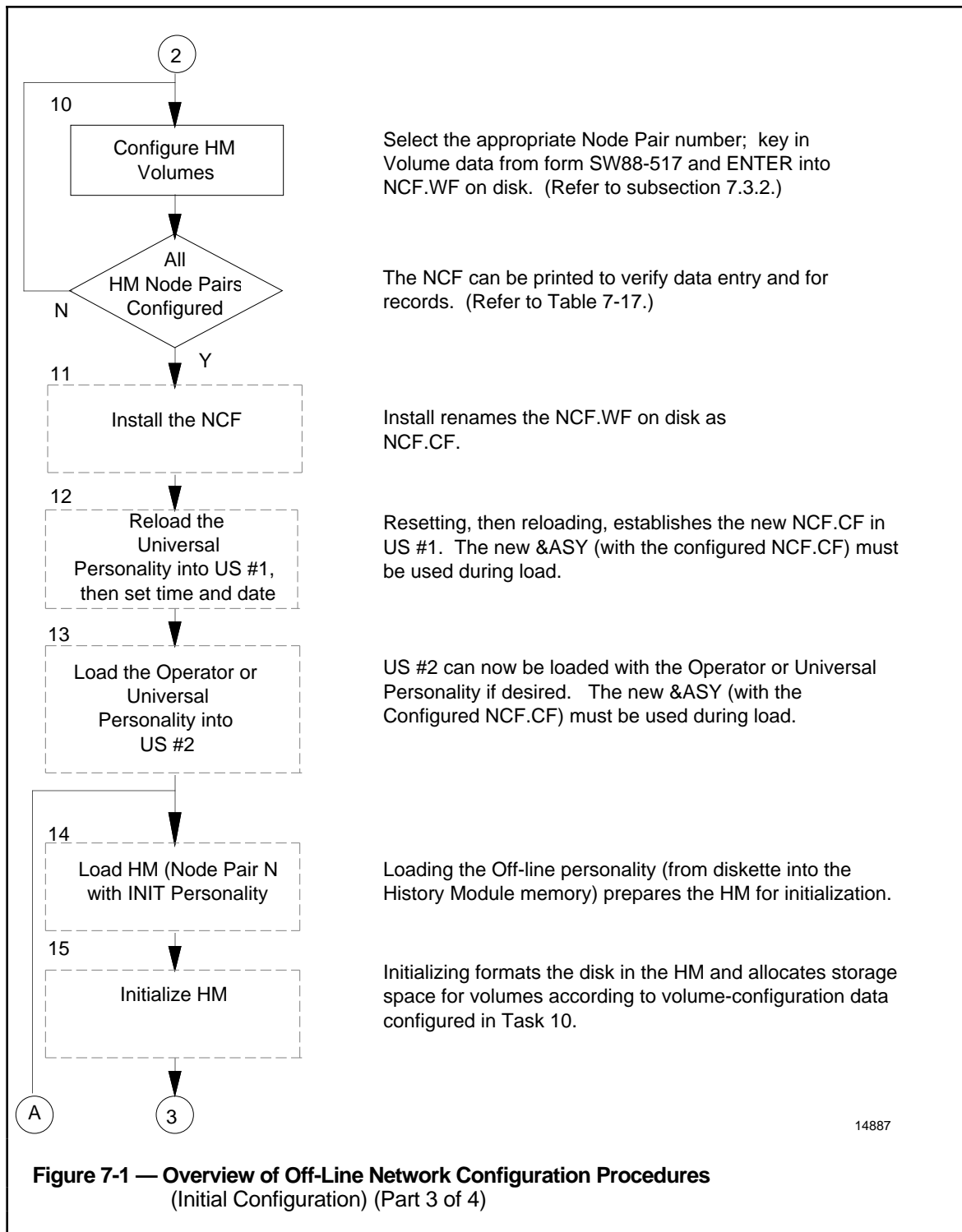
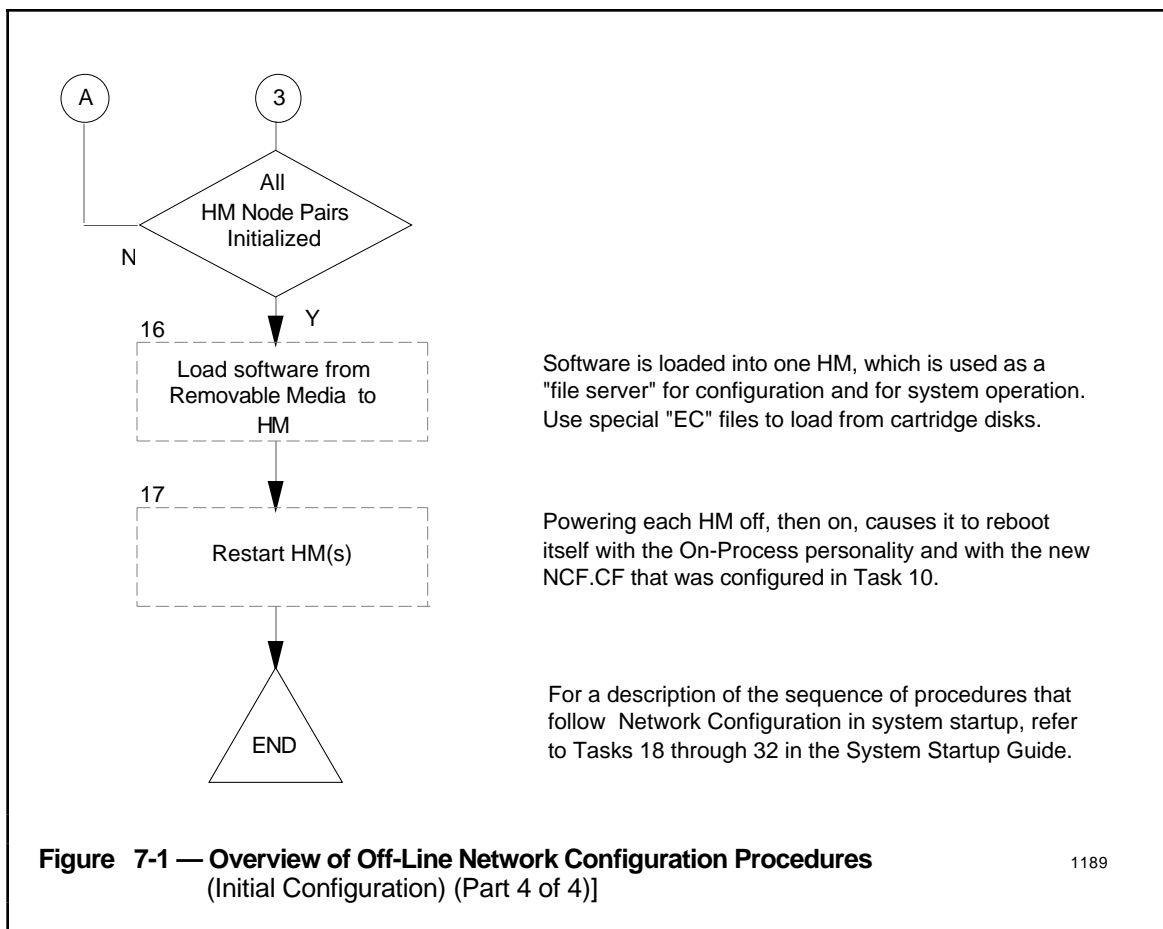


Figure 7-1 — Overview of Off-Line Network Configuration Procedures
(Initial Configuration) (Part 3 of 4)



CAUTION

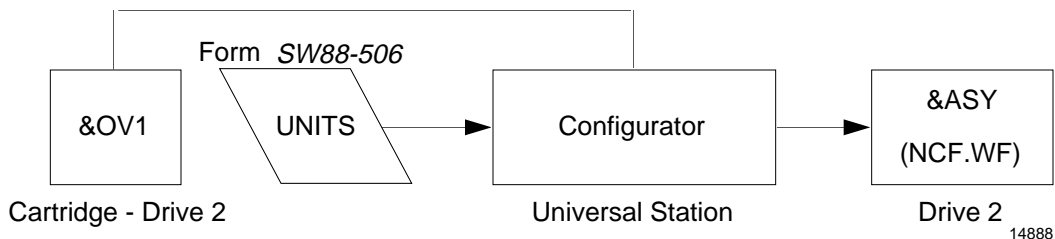
During the network configuration procedures that follow, do not remove the cartridge that contains the &ASY directory unless you do one of the following—

- Return to the Engineer's Main Menu by holding down CTL and pressing HELP
- Perform the install NCF function (Task 11).

If you remove/reinsert the &ASY cartridge during network configuration you may lose part or all of the configuration data.

Table 7-1 — Unit Names/Descriptor Procedure

Overview



Prerequisites

- The Engineering Main Menu of the Universal Personality is on the screen.
- Keylock is in the ENGR position (or press PF1 on UWS keyboard).
- The &ASY files include the Initialized NCF.

1. Select the UNIT NAMES target in the left column of the Main Menu. The UNITS display appears on the screen.

NOTE: The Unit ID/Descriptors display includes up to five pages and provides for up to 100 Unit ID/Descriptor pair entries. Use the PAGE FWD and PAGE BACK keys to access the appropriate page.

| NO | UNIT ID | DESCRIPTION | NO | UNIT ID | DESCRIPTION |
|----|--------------------------|-------------|----|--------------------------|-------------|
| 1 | <input type="checkbox"/> | | 11 | <input type="checkbox"/> | |
| 2 | <input type="checkbox"/> | | 12 | <input type="checkbox"/> | |
| 3 | <input type="checkbox"/> | | 13 | <input type="checkbox"/> | |
| 4 | <input type="checkbox"/> | | 14 | <input type="checkbox"/> | |
| 5 | <input type="checkbox"/> | | 15 | <input type="checkbox"/> | |
| 6 | <input type="checkbox"/> | | 16 | <input type="checkbox"/> | |
| 7 | <input type="checkbox"/> | | 17 | <input type="checkbox"/> | |
| 8 | <input type="checkbox"/> | | 18 | <input type="checkbox"/> | |
| 9 | <input type="checkbox"/> | | 19 | <input type="checkbox"/> | |
| 10 | <input type="checkbox"/> | | 20 | <input type="checkbox"/> | |

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F9=PACK NCF

6339

2. For Off-Line mode, Press F3, ENTER. Then key in data from Form SW88-506.
3. Press the ENTER key to save the data in the working file.

NOTE: Unit IDs constitute a separate installation unit. Units can be added, but not changed or deleted, by On-Line Reconfiguration. Unit Descriptors for existing units can be changed On-Line.

4. Return to the Main Menu by holding the CTL key down and pressing either the DISP BACK key or the MENU key.

Table 7-2 — Area Names Procedure

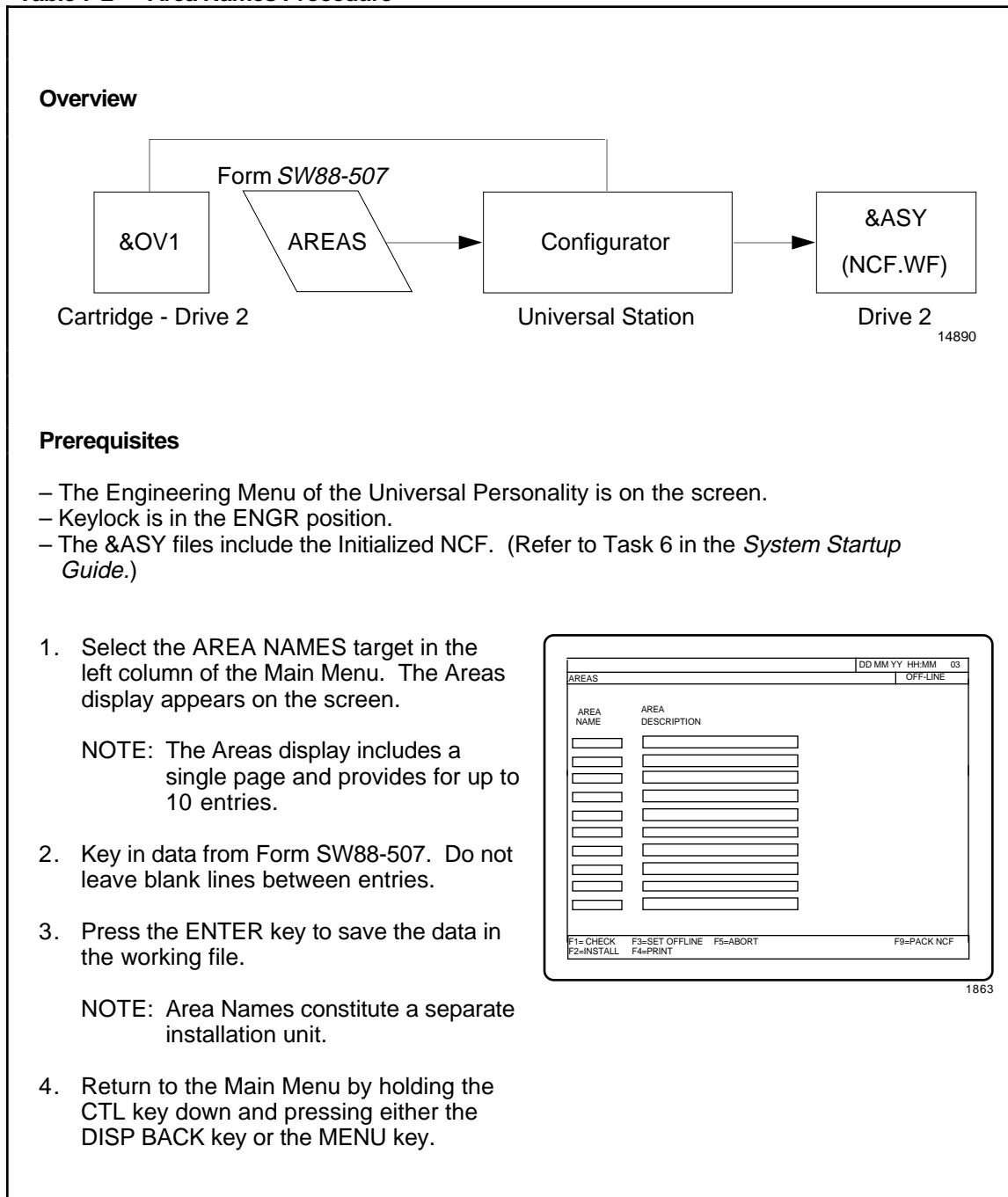


Table 7-3 — Console Names Procedure

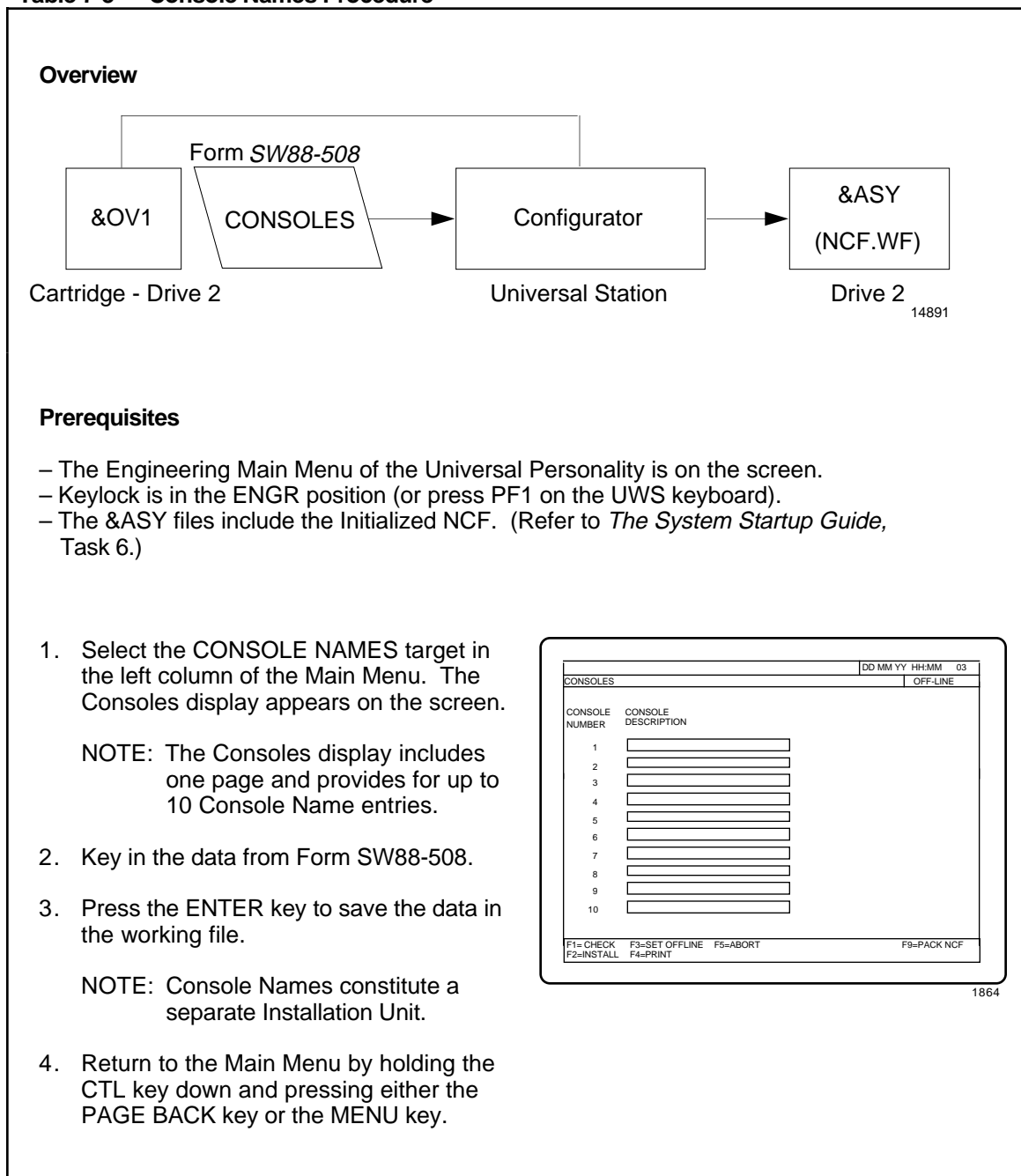


Table 7-4 — LCN Nodes Procedure

Overview

Prerequisites

- The Engineering Main Menu of the Universal Personality is on the screen.
- Keylock is in the ENGR position.
- The &ASY files include the Initialized NCF. (Refer to the *System Startup Guide*, Task 6.)

NOTES:

The node-selection display includes three pages, with provisions for selecting any one of up-to-64 nodes. To change pages, use the PAGE FWD and PAGE BACK keys. Initially, the node-selection menu has no entries. Data under the heading NODE TYPE and REDUNDANT N/P/S NO. appears after the nodes are configured by using the procedures in this section.

- Select the LCN NODES target in the left column of the Main Menu. The LCN Node Configuration—Select Desired Node display appears on the screen.
- Select the appropriate LCN-node number. If not configured, the Select Node Type display appears on the screen.
- Using Form SW88-509 page 1 as a reference, select the appropriate node type. The corresponding display appears on the screen.

LCN NODE CONFIGURATION - SELECT DESIRED NODE 11 Feb 90 10:12:03 1

PAGE 1 of 4 | ON-LINE

| NODE NO. | NODE TYPE | REDUNDANT N/P/S NO. | NODE NO. | NODE TYPE | REDUNDANT N/P/S NO. | NODE NO. | NODE TYPE | REDUNDANT N/P/S NO. |
|----------|-----------|---------------------|----------|-----------|---------------------|----------|-----------|---------------------|
| 1 | US | | 9 | | | 17 | | |
| 2 | US | | 10 | | | 18 | | |
| 3 | | | 11 | | | 19 | | |
| 4 | | | 12 | | | 20 | HG | P 21 |
| 5 | | | 13 | | | 21 | HG | S 20 |
| 6 | | | 14 | | | 22 | | |
| 7 | | | 15 | | | 23 | | |
| 8 | | | 16 | | | 24 | | |

F1=CHECK F3=SET OFFLINE F5=ABORT F9=PACK NCF
F2=INSTALL F4=PRINT

2977

SELECT NODE TYPE 27 May 90 15:36:56 1

ON-LINE

NODE 3

| | | | |
|-------------------|--------------------------|-----------------|--------------------|
| UNIVERSAL STATION | HIWAY GATEWAY | HISTORY MODULE | APPLICATION MODULE |
| COMPUTING MODULE | NETWORK INTERFACE MODULE | NETWORK GATEWAY | |

F1=CHECK F3=SET OFFLINE F5=ABORT F9=PACK NCF
F2=INSTALL F4=PRINT

3706

(Continued on next page)

Table 7-4 — LCN Nodes Procedure (Continued)

4. Enter data from the appropriate form as follows:

Node Type Form

Universal Station SW88-509
 Page 2

Note that if you select YES for the Engineering Keyboard, the system automatically selects YES for the Operator's Keyboard.

Do not press ENTER until all selections are made and all data is typed into all pages.

14893

Universal Station SW88-509
 Custom Software Page 3
 (Option)

Refer to instructions with the Custom Software package (also Equipment List and RULA packages) for data entry instructions.

Make sure that the system has adequate memory to load all Custom Software programs.

14894

(Continued on next page)

Table 7-4 — LCN Nodes Procedure (Continued)

Node Type Form

Application Module SW88-509
or Application Module^X Page 4

NOTE: To index the cursor in the Assigned Unit LIST, hold the CTL key down and use the TAB keys.

```

DD MM YY HH:MM:SS
APPLICATION MODULE NODE
NODE 4
REDUNDANT MEMBER NODE ID 0
STARTUP MODE COLD WARM HOT NOPROC
ASSIGNED UNIT LIST
[ ]
[MODIFY NODE] [DELETE NODE]
F1=CHECK F3=SET OFFLINE F5=ABORT F9=PACK NCF
F2=INSTALL F4=PRINT
    
```

52712

Application Module SW88-509
Background CL Page 4
(Option)

Refer to the CL/AM Reference Manual (see References) for additional Information.

```

DD MM YY HH:MM:SS
APPLICATION MODULE NODE PAGE 2 OF 3 OFF-LINE
NODE 40 USER MEMORY ALLOCATION
FUNCTIONAL ADJUSTMENTS:
# BACKGROUND CU TASKS MEMORY USED (WORDS)
# CONCURRENT DATA ACCESSES FROM BACKGROUND CL 0
BACKGROUND TASK STACK SIZE 0
CVB SIZE FOR FAST & SLOW POINT PROCESSORS 200 34000
REDUNDANCY BUFFER INCREASE (# OF 32KW BLOCKS) 0
INCLUDE INTERNETWORK POINT PROCESSOR? YES NO
USER MEMORY RESERVED (# OF 32KW BLOCKS) 0
EXTERNAL LOAD MODULES CODE (ROUNDUP FROM NEXT PAGE)
EXTERNAL LOAD MODULES POOL1 (FROM NEXT PAGE)
TOTAL MEMORY FOR FUNCTIONAL ADJUSTMENTS 34000
CURRENT DATA BASE SIZE (AMMEMTOT) 0.0
ROOM LEFT FOR DATA BASE GROWTH 0.0
TOTAL USER MEMORY AFTER SOFTWARE OPTIONS (AMMEMAOP) 0.0
F1=CHECK F3=SET OFFLINE F5=ABORT F9=PACK NCF
F2=INSTALL F4=PRINT
    
```

14896

Application Module SW88-509
Custom Software Page 5
(Option)

Refer to instructions with the Custom Software package for Data Entry Information.

Make sure that the system has adequate memory to load all Custom Software programs.

```

DD MM YY HH:MM
APPLICATION MODULE NODE PAGE 3 OF 3 OFF-LINE
NODE 40
ENTER EXTERNAL LOAD MODULE NAMES & ASSOCIATED PERSONALITY-TYPES:
NAME --- PERS. NAME --- PERS. NAME --- PERS. NAME --- PERS.
[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
ADDITIONAL MODULE MEMORY (WORDS)
TOTAL (MODULES PLUS ADDITIONAL MEMORY) AMO
[ ]
FURTHER EXTERNAL DIRECTIVES? NO
F1=CHECK F3=SET OFFLINE F5=ABORT F7=NEXT ITEM F9=PACK NCF
F2=INSTALL F4=PRINT
    
```

14897

(Continued on next page)

Table 7-4 — LCN Nodes Procedure (Continued)

Node Type

Form

Hiway Gateway

SW88-509
Page 6

27 May 90 15:39:2 02
HIWAY GATEWAY NODE OFF-LINE

NODE 34

REDUNDANT MEMBER NODE ID 0

HIWAY NUMBER

MODIFY NODE DELETE NODE

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F9=PACK NCF

1871

Hiway Gateway
Custom Software
(Option)

SW88-509
Page 6

Refer to instructions with the Custom
Software package for Data
Entry Information.

28 Mar 90 13:22:16
HIWAY GATEWAY NODE PAGE 2 OF 2 OFF-LINE

NODE 20

ENTER EXTERNAL LOAD MODULE NAMES & ASSOCIATED PERSONALITY-TYPES:

| NAME | PERS. | NAME | PERS. | NAME | PERS. | NAME | PERS. |
|------|-------|------|-------|------|-------|------|-------|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

ADDITIONAL MODULE MEMORY (WORDS) HGO

TOTAL (MODULES PLUS ADDITIONAL MEMORY)

MAXIMUM EXTERNAL MODULE MEMORY (WORDS)

FURTHER EXTERNAL DIRECTIVES? YES NO

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F9=PACK NCF

14897

(Continued on next page)

Table 7-4 — LCN Nodes Procedure (Continued)

Computing Module SW88-509
Page 8

```

03 Jan 90 22:57 02
COMPUTING MODULE OFF-LINE
NODE 48

ASSIGNED UNIT LIST

MODIFY NODE DELETE NODE
F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F9=PACK NCF
    
```

1873

Computing Module Custom Software (Option) SW88-509
Page 8

Refer to instructions with the Custom Software package for Data Entry Information.

```

DID MM YY 13:22:16 1
PAGE 2 OF 2 OFF-LINE
COMPUTING MODULE NODE
NODE 51
ENTER EXTERNAL LOAD MODULE NAMES & ASSOCIATED PERSONALITY-TYPES?
NAME --- PERG. NAME --- PERG. NAME --- PERG. NAME --- PERG.
[Table with 4 columns and 4 rows]
ADDITIONAL MODULE MEMORY (WORDS) CIO
TOTAL (MODULES PLUS ADDITIONAL MEMORY)
MAXIMUM EXTERNAL MODULE MEMORY (WORDS)
FURTHER EXTERNAL DIRECTIVES? YES NO
F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F9=PACK NCF
    
```

3430

(Continued on next page)

Table 7-4 — LCN Nodes Procedure (Continued)

**Network Interface
Module**

SW88-509
Page 9

27 May 90 15:39:2 .02
ON-LINE

NETWORK INTERFACE MODULE NODE

NODE 45

REDUNDANT MEMBER NODE ID

UNIVERSAL CONTROL NETWORK

MODIFY NODE DELETE NODE

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F9=PACK NCF

1874

**Network Interface
Module
Custom Software
(Option)**

SW88-509
Page 9

Refer to instructions with the Custom
Software package for Data
Entry Information.

28 Mar 90 13:32:16
PAGE 2 OF 2 OFF-LINE

NETWORK INTERFACE MODULE

NODE 54

ENTER EXTERNAL LOAD MODULE NAMES & ASSOCIATED PERSONALITY-TYPES:

| NAME | PERS. | NAME | PERS. | NAME | PERS. | NAME | PERS. |
|------|-------|------|-------|------|-------|------|-------|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

ADDITIONAL MODULE MEMORY (WORDS)

TOTAL (MODULES PLUS ADDITIONAL MEMORY)

MAXIMUM EXTERNAL MODULE MEMORY (WORDS)

FURTHER EXTERNAL DIRECTIVES?

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F9=PACK NCF

14901

(Continued on next page)

Table 7-4 — LCN Nodes Procedure (Continued)

**Network Gateway
Module** SW88-510
Page 10

Note that you must configure the NG Local System ID before you can configure the NG LCN Node. Refer to the System Wide Values configuration procedure for the Network Gateway.

DDMMYY HHMMSS 01
ON-LINE

NETWORK GATEWAY MODULE

NODE 49

PIN LOCAL ADDRESS 0

PIN GLOBAL ADDRESS

CONFIGURED CABLES A B

MODIFY NODE DELETE NODE

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F9=PACK NCF

5941

**Network Gateway
Module
Custom Software
(Option)** SW88-510
Page 10

Refer to instructions with the Custom Software package for Data Entry Information.

DD MM YY HH:MM:SS 1
PAGE 2 OF 2 OFF-LINE

NETWORK GATEWAY MODULE

NODE 49

ENTER EXTERNAL LOAD MODULE NAMES & ASSOCIATED PERSONALITY-TYPES:

| NAME | PERS. | NAME | PERS. | NAME | PERS. | NAME | PERS. |
|------|-------|------|-------|------|-------|------|-------|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

ADDITIONAL MODULE MEMORY (WORDS) NGO

TOTAL (MODULES PLUS ADDITIONAL MEMORY)

MAXIMUM EXTERNAL MODULE MEMORY (WORDS)

FURTHER EXTERNAL DIRECTIVES? YES NO

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F9=PACK NCF

14902

- Press the ENTER key to save the data in the working file.

NOTE: Each LCN Node constitutes a separate installation unit.

- To configure the next LCN Node, hold down the CTL key and press the PAGE BACK key. The SELECT DESIRED NODE Display appears. Go to Step 1 of this procedure.

When all nodes have been configured, return to the Engineering Main Menu by holding the CTL key down and pressing the MENU key.

Table 7-5 — System Wide Values Procedure

Overview

```

    graph LR
      A["&OV1  
Cartridge - Drive 2"] --> B["Form SW88-515  
SYSTEM WIDE VALUES"]
      B --> C["Configurator  
Universal Station"]
      C --> D["&ASY  
(NCF.WF)  
Drive 2 14903"]
  
```

Prerequisites

- The Engineering Main Menu of the Universal Personality is on the screen.
- Keylock is in the ENGR position.
- The &ASY files include the Initialized NCF (refer to the *System Startup Guide*, Task 6.).

1. Select SYSTEM WIDE VALUES on the Engineering Main Menu. The System-Wide Values Menu display appears on the screen. You must select an item to see its configuration display.

NOTE: The Console Data selection includes multiple pages. To change pages, use the PAGE FWD and PAGE BACK keys.

DD MMM YY HH:MM:SS 1

SYSTEM WIDE VALUES MENU ON-LINE

| | |
|---------------------|---|
| SYSTEM ID | NG LOCAL SYSTEM ID |
| CLOCK SOURCE | NG REMOTE SYSTEMS |
| USER AVERAGE PERIOD | NG SECURITY DATABASE |
| SHIFT DATA | NG MODEM DEFINITION |
| CONSOLE DATA | NG ERROR MSG THROTTLE |
| SOFTWARE OPTIONS | TAG NAME OPTIONS |
| | AM MULTIPLE PRIMMOD ALARMING OPTIONS |

F3=SET OFFLINE F5=ABORT F9=PACK NCF

14904/NEW

2. Key in data from Form SW88-515 for each item in the left hand column except SOFTWARE OPTIONS.
3. Press the ENTER key to save the data in the working file.
4. Return to the System Wide Values Menu after entering each set of parameters by holding the CTL key down and pressing the PAGE BACK key.
5. Select the SOFTWARE OPTIONS target. Press F10 to read in purchased software options keys.
6. Press the ENTER key to save the option keys in the working file.

(Continued)

Table 7-5 — System Wide Values Procedure (Continued)

Network Gateway Configuration

If you do not have a Network Gateway (NG) or it has already been configured, skip step 19. If you came here from LCN NG Node Configuration, you must complete steps 7 - 10 before the NG LCN node configuration can be completed. If the NG Local System ID and the NG LCN node are configured, go to step 11.

7. Select NG LOCAL SYSTEM ID in the right column of the System Wide Values Menu.
8. Enter data from Form SW88-515 pg. 9.
9. Press the ENTER key to save the data in the working file.
10. Return to the System Wide Values Menu by holding down CTL and pressing the DISP BACK key, (repeat to go to the Engineering Menu.)

| NETWORK GATEWAY LOCAL SYSTEM ID | | DDMMYY HHMMSS 02 |
|---|--|---------------------|
| | | PAGE 1 OF 1 ON-LINE |
| LOCAL SYSTEM NUMBER | <input type="text" value="0"/> | |
| SYSTEM TITLE | <input type="text"/> | |
| SYSTEM DESCRIPTION | <input type="text"/> | |
| PIN ADDRESSING FORM | <input type="checkbox"/> LOCAL <input type="checkbox"/> GLOBAL | |
| GLOBAL VENDOR NUMBER | <input type="text"/> | |
| F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F9=PACKNCF | | |

5942

11. Select the NG REMOTE SYSTEMS display. Key in data from Form SW88-515 pg. 10. Note that if you need to change an entry, you must clear the # port and press ENTER. Then key in the corrected data.

NOTE: The NG Remote Systems display contains multiple pages. To change pages, use the PAGE FWD or PAGE BACK keys. You must ENTER data on the current page before changing to another page or data will be lost.

| NG REMOTE SYSTEM S | | DDMMYY HHMMSS 01 | | | | | | | |
|--|--------------------------|----------------------|---|--------------------------------|--------------------------------|--------------------------------|----------------------|--------------------------------|----------------------|
| | | PAGE 1 OF 11 ON-LINE | | | | | | | |
| # | TITLE | DESCRIPTOR | CABLE FOR OUTPUT | RESP NG | ALT. NG | RESP LOCAL | ALT. GLOBAL | RESP LOCAL | ALT. GLOBAL |
| 0 | <input type="checkbox"/> | <input type="text"/> | <input type="text" value="A"/> <input type="text" value="B"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text"/> | <input type="text" value="0"/> | <input type="text"/> |
| 0 | <input type="checkbox"/> | <input type="text"/> | <input type="text" value="A"/> <input type="text" value="B"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text"/> | <input type="text" value="0"/> | <input type="text"/> |
| 0 | <input type="checkbox"/> | <input type="text"/> | <input type="text" value="A"/> <input type="text" value="B"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text"/> | <input type="text" value="0"/> | <input type="text"/> |
| 0 | <input type="checkbox"/> | <input type="text"/> | <input type="text" value="A"/> <input type="text" value="B"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text"/> | <input type="text" value="0"/> | <input type="text"/> |
| 0 | <input type="checkbox"/> | <input type="text"/> | <input type="text" value="A"/> <input type="text" value="B"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text"/> | <input type="text" value="0"/> | <input type="text"/> |
| F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F9=PACKNCF | | | | | | | | | |

5943

12. Select the NG SECURITY DATABASE display.
13. If a specific Remote System number is listed at the top of Form SW88-515 pg. 11, for Security Database display, enter the Remote System number from the form.

If ALL is circled, select the ALL SYSTEMS target.

14. Select DEFINE ACCESS RESTRICTIONS. Go to step 15.

| NETWORK GATEWAY SECURITY DATABASE AUTHORIZATION | | DDMMYY HHMMSS 01 |
|---|----------------------|--------------------------------------|
| | | PAGE 1 OF 1 ON-LINE |
| Use this form to specify what access rights a remote system has to your LCN. Access rights may be specified for a single system, or for all remote systems. | | |
| Two types of access may be authorized: | | |
| o File System access - restrict access to files within a specified directory or volume. Note that volume-access only applies to files directly under the volume name, and not to directories created under the volume name. | | |
| o Parameter access - restrict access by Unit ID or Hiway number. | | |
| Access authorizations are specified in terms of default access rights and exceptions to the defaults. | | |
| Enter the Remote System number OR select "ALL SYSTEMS, then select "DEFINE ACCESS RESTRICTIONS". | | |
| Remote System Number | <input type="text"/> | <input type="checkbox"/> ALL SYSTEMS |
| <input type="checkbox"/> DEFINE ACCESS RESTRICTIONS | | |
| F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F9=PACKNCF | | |

5944

(Continued)

Table 7-5 — System Wide Values Procedure (Continued)

AM Multiple Primmod Alarming Options

If you do not have Release 520 or later software, skip this step.
If the system does not have any AMs, skip this step.

AM Multiple Primmod Alarming Options
(R520 and later software).

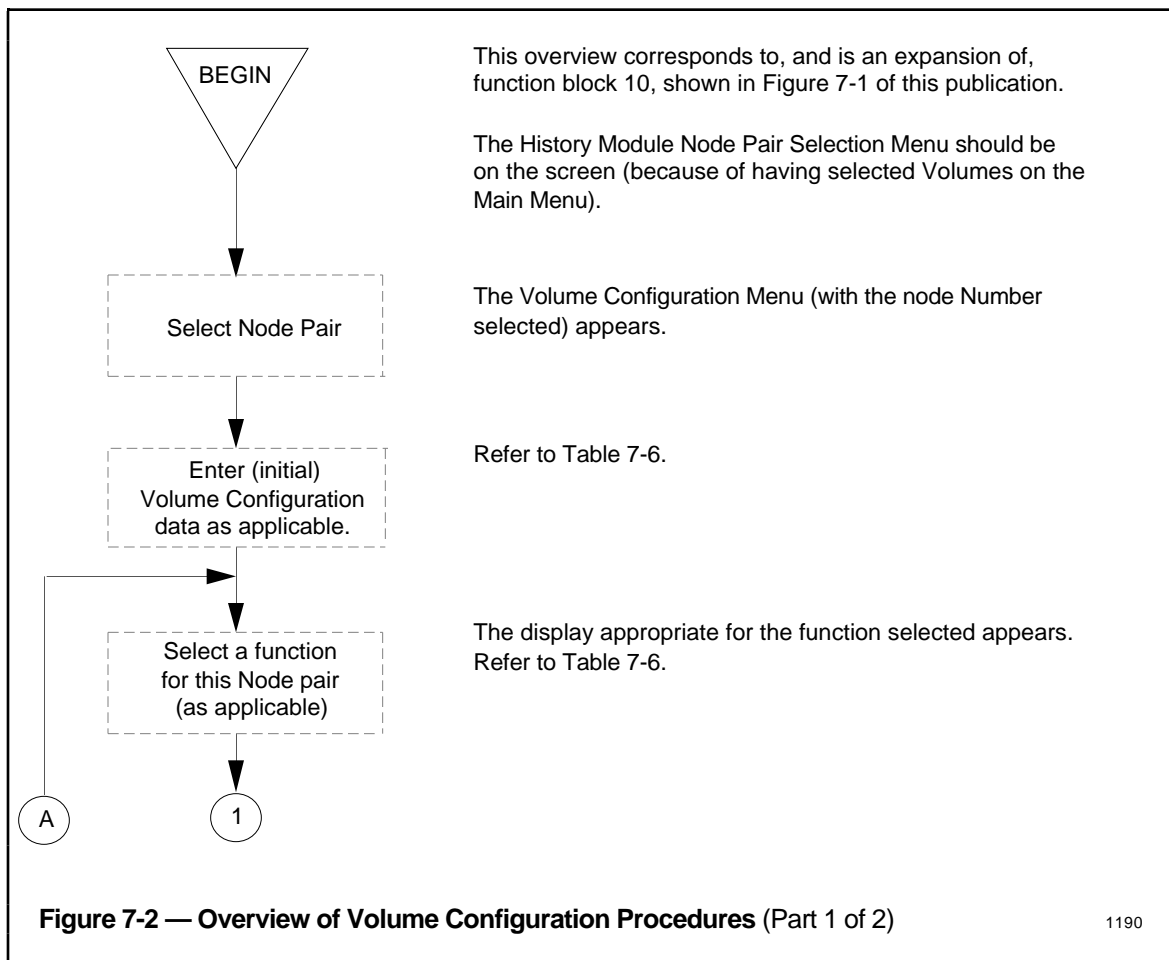
22. Select AM MULTIPLE PRIMMOD ALARMING OPTIONS on the System Wide Values Menu.
23. Key in choice from Form SW88-515 pg. 14 for AM Multiple Primmod Alarming Options. Press ENTER.
24. Return to the Engineering Main Menu by holding down CTL and pressing the HELP key.

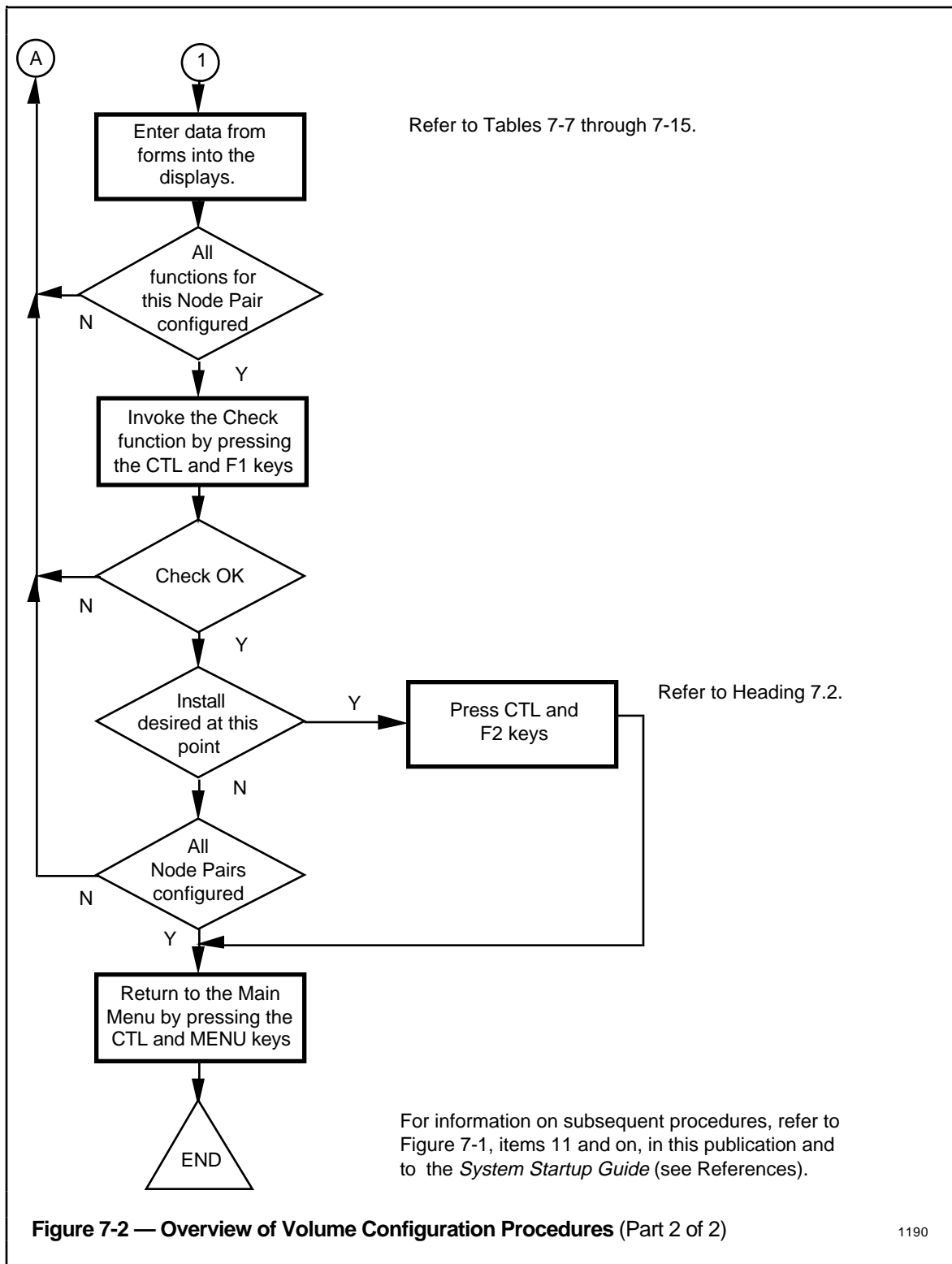
| | | | |
|--------------------------------------|-----------------------|---------------------------|---------------------------|
| | | DD MMM YY HH:MM | |
| AM MULTIPLE PRIMMOD ALARMING OPTIONS | | ON-LINE | |
| AM MULTIPLE PRIMMOD ALARMING | | | |
| OPTIONS: | DISABLED (default) | ENABLED EXCLUSIVE MODE | ENABLED INCLUSIVE MODE |
| F1= CHECK | F3=SET OFFLINE | F5=ABORT | F9=PACK NCF |
| F2=INSTALL | F4=PRINT | | F11=PACK NCF |

7.3.2 Volume Configuration

Volume Configuration procedures are performed for each pair of History Modules that are included in the system. Each pair (called a "Node Pair") consists of a primary and a redundant (secondary) History Module. In most cases, the secondary is not included; that is, the Node Pairs consist of only the primary HM, but is still treated by the Configurator as a Node Pair. If the secondary does exist, configuration of the Node Pair automatically configures the primary and the secondary.

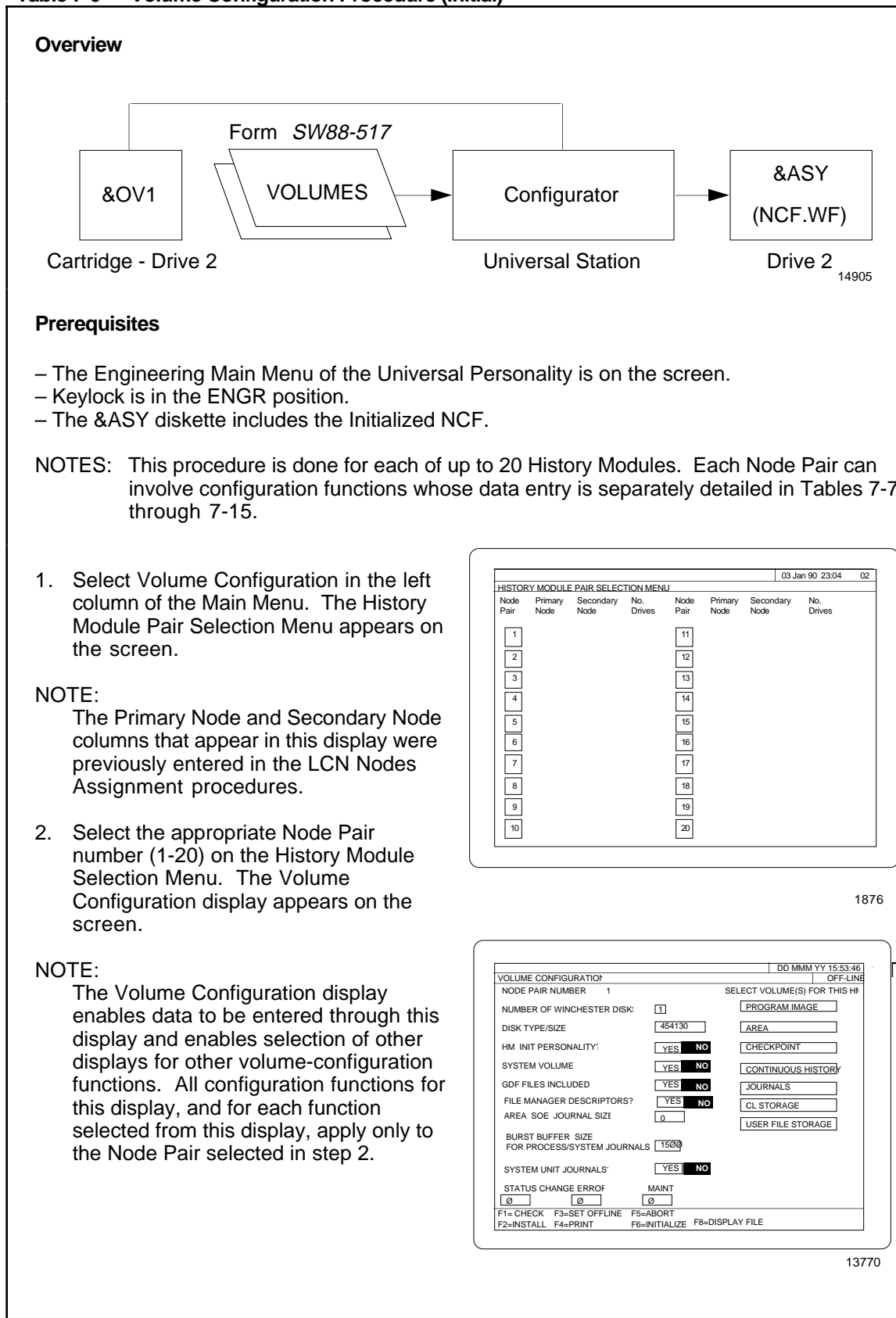
Each Local Control Network can include up to 20 History Module Node Pairs, and each Node Pair can involve several configuration functions. An overview of the Volume Configuration procedure is illustrated in Figure 7-2, and the procedure is detailed in Tables 7-6 through 7-15.





1190

Table 7-6 — Volume Configuration Procedure (Initial)



(Continued on next page)

Table 7-6 — Volume Configuration Procedure (Initial) (Continued)

3. Enter data from Form *SW88-517* for the Node Pair selected.
4. As applicable, select one of the configuration functions listed in the function-menu portion of the VOLUME CONFIGURATION display. The appropriate display appears on the screen.

| <u>Function Selected</u> | <u>Procedure</u> |
|--------------------------|------------------|
| VOLUME CONFIG. MENU | Table 7-7 |
| PROGRAM IMAGE | Table 7-8 |
| AREA | Table 7-9 |
| CHECKPOINT | Table 7-10 |
| CONTINUOUS HISTORY | Table 7-11 & 12 |
| JOURNALS | Table 7-13 |
| CL/MC DATA HIWAYS | Table 7-14 |
| USER FILE STORAGE | Table 7-15 |

5. If data for all configuration functions for this Node Pair have been entered, hold the CTL key down and press the DISP BACK key. The History Module Pair Selection Menu reappears on the screen.
6. Repeat steps 1 through 5 for each Node Pair to be configured.
7. After completing Volume Configuration, you can install the NCF by pressing F2 (hold the CTL key down and press key 2). If you subsequently need to change configuration of any item in the left column of the Engineering Main Menu, you should use the On-Line Network Reconfiguration procedures described elsewhere in this manual.
8. If all data has been completely and correctly entered, return to the Main Menu by holding the CTL key down and pressing the MENU key.

Table 7-7 — Volume Configuration Procedure (Volume Configuration Menu Display)

NOTES: For initiation of this procedure, refer to Table 7-6.
Use Form SW88-517 for source data.

1. Enter data from Form SW88-517

NOTE: If you select YES for SYSTEM VOLUME or SYSTEM UNIT JOURNALS, additional ports appear.

2. Press ENTER key to enter data.
3. To return to the Volume Configuration display, hold the CTL key down and press the DISP BACK key.

VOLUME CONFIGURATION DD MMM YY 15:53:46 OFF-LINE

NODE PAIR NUMBER 1 SELECT VOLUME(S) FOR THIS N#

NUMBER OF WINCHESTER DISK: 1 PROGRAM IMAGE

DISK TYPE/SIZE: 454130 AREA

HM INIT PERSONALITY: YES NO CHECKPOINT

SYSTEM VOLUME YES NO CONTINUOUS HISTORY

GDF FILES INCLUDED YES NO JOURNALS

FILE MANAGER DESCRIPTORS? YES NO CL STORAGE

AREA SOE JOURNAL SIZE: 0 USER FILE STORAGE

BURST BUFFER SIZE FOR PROCESS/SYSTEM JOURNALS: 1500

SYSTEM UNIT JOURNALS: YES NO

STATUS CHANGE ERROF MAINT

0 0 0

F1=CHECK F3=SET OFFLINE F5=ABORT
F2=INSTALL F4=PRINT F6=INITIALIZE F8=DISPLAY FILE

13770

Table 7-8 — Volume Configuration Procedure (Program Image Volume)

NOTES: For initiation of this procedure, refer to Table 7-6.
Use Form SW88-517 for source data.

1. Enter data from Form SW88-517.
2. Press ENTER key to enter data.

PROGRAM IMAGE VOLUME CONFIGURATION DD MMM YY HH:MM:SS PAGE 1 OF 1 OFF-LINE

NODE PAIR NUMBER 1 SELECT ALL PERSONALITIES TO RESIDE ON THIS HM:

CM II HG II AM II USOPR II USUNP II NIM II NG II

CM IV HG IV AM IV USOPR IV USUNP IV NIM IV NG IV

HIST.MOD DUMP VOL.

DUMP VOLUME SIZE (KB) 0

F1=CHECK F3=SET OFFLINE F5=ABORT
F2=INSTALL F4=PRINT F6=INITIALIZE F8=DISPLAY FILE

14906

Table 7-9 — Volume Configuration Procedure (Areas)

NOTES: For initiation of this procedure, refer to Table 7-6.
Use Form SW88-517 for source data.

1. Enter data from Form SW88-517.
2. Press ENTER key to enter data.
3. To return to the Volume Configuration display, hold the CTL key down and press the DISP BACK key.

| | | | |
|--|--------------------------------|--------------------------------|----------------------------------|
| AREA DATA VOLUME CONFIGURATION | | | DD MM YY HH:MM:SS 1 |
| | | | PAGE 1 OF 1 OFF-LINE |
| NODE PAIR NUMBER 1 | | | |
| AREA NAME | VOLUME SIZE (KB) | NUMBER FILES | FILE MANAGER DESCRIPTORS? YES NO |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| <input type="text"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | |
| F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F8=DISPLAY FILE | | | |

1879

Table 7-10 — Volume Configuration Procedure (Checkpoint)

NOTES: For initiation of this procedure, refer to Table 7-6.
Use Form SW88-517 for source data.

1. Enter data from Form SW88-517.
 - NOTE: The Physical Node For Checkpoint display includes three pages. To change pages, use the PAGE FWD and PAGE BACK keys.
2. Press ENTER key to enter data.
3. To return to the Volume Configuration display, hold the CTL key down and press the DISP BACK key.

| | | | | | | |
|---|----------------------------------|---------------------------------|----------------------|----------------------|----------------------|----------------------|
| PHYSICAL NODE FOR CHECKPOINT CONFIGURATION | | | | | | DD MM YY HH:MM:SS 01 |
| | | | | | | PAGE 1 OF 3 |
| NODE PAIR NUMBER 1 | | | | | | |
| NODE NO. | VOLUME SIZE | NUMBER FILES | NODE NO. | VOLUME SIZE | NUMBER FILES | |
| <input type="text" value="38"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text" value="39"/> | <input type="text" value="0"/> | <input type="text" value="0"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text" value="40"/> | <input type="text" value="200"/> | <input type="text" value="30"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F8=DISPLAY FILE | | | | | | |

1880

Table 7-12 — Volume Configuration Procedure (Continuous History/Multiple Unit)

NOTES: For initiation of this procedure, refer to Table 7-6.
Use Form SW88-517 for source data.

1. Enter data from Form SW88-517.

NOTES: This display includes up to two pages. To change pages, use the PAGE FWD and PAGE BACK keys.

1881

2. Go to the Continuous History HM/Unit Options display by selecting the HM/UNIT OPTIONS target at the upper-right corner of the screen.

If you want to configure all groups and units in the same way, select the ALL UNITS target. Key in the single row of choices from Form SW88-517. Press the ENTER key to enter data.

If you want to configure one or more designated units, key in the first designated Unit number. Enter the single row of choices. Press ENTER. Repeat the procedure for each designated Unit.

5939

3. When all Continuous History Process Units have been assigned and Group Options have been defined, hold the CTL key down and press the DISP BACK key to return to the Volume Configuration display.

Table 7-13 — Volume Configuration Procedure (Journals)

NOTES: For initiation of this procedure, refer to Table 7-6.
Use Form *SW88-517* for source data.

- Enter data from Form *SW88-517*

NOTE: This display includes up-to-three pages with provisions for configuring up to 36 units.
- Press ENTER key to enter data.
- To return to the Volume Configuration display, hold the CTL key down and press the DISP BACK key.

| PROCESS UNIT JOURNAL CONFIGURATION | | | | | | | | 01 Jan 90 05:58 01 |
|------------------------------------|-----------------------------------|-----------------------------------|----------------------------------|----------------------|----------------------|----------------------|----------------------|--------------------|
| | | | | | | | | PAGE 1 OF 3 |
| NODE PAIR NUMBER 1 | | | | | | | | |
| UNIT ID | PROCESS ALARM | PROCESS CHANGE | OPERATOR MESSAGE | UNIT ID | PROCESS ALARM | PROCESS CHANGE | OPERATOR MESSAGE | |
| <input type="text" value="01"/> | <input type="text" value="2024"/> | <input type="text" value="2024"/> | <input type="text" value="600"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F8=DISPLAY FILE

1884

Table 7-14 — Volume Configuration Procedure (CL Storage)

NOTES: For initiation of this procedure, refer to Table 7-6.
Use Form *SW88-517* for source data.

- Enter data from Form *SW88-517*.
- Press ENTER key to enter data.
- To return to the Volume Configuration display, hold the CTL key down and press the DISP BACK key.

| CL STORAGE VOLUME CONFIGURATION | | | | | | DD MM YY HH:MM:SS 01 |
|---------------------------------|----------------------|----------------------|--------------------------------|----------------------|----------------------|----------------------|
| | | | | | | PAGE 1 OF 1 |
| NODE PAIR NUMBER 1 | | | | | | |
| | | | HIWAY FILE MANAGER DESCRIPTORS | | | YES NO |
| HIWAY/ NETWORK | NUMBER OF FILES | VOLUME SIZE (KB) | HIWAY/ NETWORK | NUMBER OF FILES | VOLUME SIZE (KB) | YES NO |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |

F1=CHECK F2=INSTALL F3=SET OFFLINE F4=PRINT F5=ABORT F7=NEXT ITEM F8=DISPLAY FILE

1885

Table 7-16 — Printing the NCF

1. Simultaneously press the CTL and Menu keys to call up the Engineering Main Menu.
2. On the Engineering Main Menu, select the network configuration function to be printed.
3. Display the configuration data at which printing is to begin by using the PAGE FORWARD and PAGE BACK keys, and by selecting displayed items (such as LCN Node Number or Node Pair Number) as appropriate.

NOTE: For each configuration function, printing begins at the page that appears on the screen and ends either

- when the last item configured in the display is printed, or
- when the CTL and BREAK keys are simultaneously pressed.

For LCN Nodes, the printout includes the Select Node display and each LCN Node configured, starting at the Node Number indicated by the cursor. If a node is selected (ENTERed), that node and all subsequent nodes are printed, but the Select Node display is not printed.

For Volume Configuration, the printout includes the History Module Pair Selection Menu and all configured node pairs, starting at the node pair indicated by the cursor. If a node pair is selected (ENTERed), that node and all subsequent nodes are printed, but the History Module Selection Menu is not printed.

4. Simultaneously press the CTL and F4 keys. A display of printer prompts appears.
5. Select the desired action:
 - to return to the display, press the ENTER key, or
 - to begin printing, select a printer (1 or 2) and press ENTER, or
 - to abort printing after it has begun, simultaneously press the CTL and BREAK keys.

7.4 ON-LINE NETWORK RECONFIGURATION

7.4.1 Overview

On-Line Network Reconfiguration allows you to make changes to the existing network configuration and to install those changes. Some of the many things you can do are

- Add an AM
- Add a Universal Station
- Add a Unit

There are some things that you cannot change with On-Line Network Reconfiguration. For example, you can't delete a Unit (but you can add a Unit). Network Reconfiguration applies only to the Local Control Network; it does not allow you to change the Area configuration.

On-Line Network Reconfiguration changes are made through installation units. In terms of On-Line Network Reconfiguration, an installation unit is characterized by the steps needed to completely install changes made to it. A change to any part of the installation unit is treated as a change to the entire installation unit.

The installation units are

- Add LCN Nodes (one for each type)
- Alarm Acknowledge
- Area Names
- Clock Source
- Console Data
- Console Names
- Delete LCN Nodes (one for each type)
- Local LCN
- Modify Node
- NG Modem
- NG PIN Data
- NG Security
- Shift Data
- Software Options
- System ID
- Tag Options
- Unit Names
- User Average Period
- Volume Configuration

7.4.2 Preparation

7.4.2.1 Backup Network Configuration

If you make network configuration changes in On-Line mode, those changes are recorded in the system Network Configuration File (NCF) and in a backup NCF. This is done automatically when you install changes to an Installation Unit, but you must have a backup copy of the current NCF on removable media (cartridge disk) and you must have entered the backup pathname before you can make any changes. The Network Configuration File is in the &ASY directory.

To make a backup copy of the current NCF file for this system, insert a cartridge disk on which you have created an &ASY directory.

In drive 1, insert any of the cartridge disks that contain the EC files (such as &C2). Select the Command Processor functions on the Engineering Menu and type in the following command:

```
EC $Fx>&EC>ASY_BKUP.EC $Fy Pn
```

Where x = drive containing EC file.
y = drive containing blank &ASY disk.
n = printer number

When you press the ENTER key, the &ASY directory on the HM is copied to the cartridge in drive 2 and printouts are to printer number n.

Note that you can switch from the Configurator to the Command Processor by pressing the ESC key. Hold the CTL key down and press MENU to return to the Configurator.

7.4.2.2 Set Up Pathnames

From the Engineering Main Menu, Select SUPPORT UTILITIES.

On the SUPPORT UTILITIES Menu, select MODIFY VOLUME PATHS.

Key the pathname \$FN>&ASY> into the NCF BACKUP PATH port (the backup path must be to removable media; NET is not allowed). N = the drive number that will contain the backup &ASY cartridge (e.g., \$F2>&ASY>).

Make sure the logical device number in the pathname for the *system* NCF (NETWORK CONFIG) is different from the backup path. Normally, it will be NET (e.g., NET>&ASY>).

If you are adding a software option via the Key file (cartridge disk &C6), key the pathname \$FN>&KFO> into the KEY FILE VOLUME port. N = the drive number that will contain the Key File disk for this system (e.g., \$F1>&KFO>).

Select the Main Menu target to exit.

7.4.3 On-Line Network Reconfiguration Procedures

7.4.3.1 Common Steps

Some of the steps in Network Reconfiguration are the same no matter what you intend to change. These are detailed below. The remaining steps are unique to the installation unit and are presented on the screen when you press F1 to check the data.

Go to the Engineering Main Menu and select the item you wish to change (e.g., LCN NODES).

The configuration display for that item will appear with entries and selections as it was previously configured.

Make sure the words ON LINE appear as the indicated mode (second line from top). Key in any changes to the display (except new Key File Software Options which must be read in from media); then press <ENTER>. At this point, the name of the affected installation unit (in white) replaces the mode indicator on the second line. If there are additional pages to change, page forward. Press ENTER after making all changes to each page.

Press the F1 key to check syntax of the data. If the syntax check is successful, the installation unit name changes to yellow; if it changes to red, the syntax check failed. A set of instructions (the Installation Form) appears on the screen listing the steps required before and after you invoke the install function (next step). Some of the Installation Forms are multipage (e.g., User Average and Volume Configuration) and you can use the PAGE FWD/PAGE BKWD keys to see all the instructions. To get a printed copy of the Installation Form(s) for the installation unit, press F4 and follow instructions on the screen.

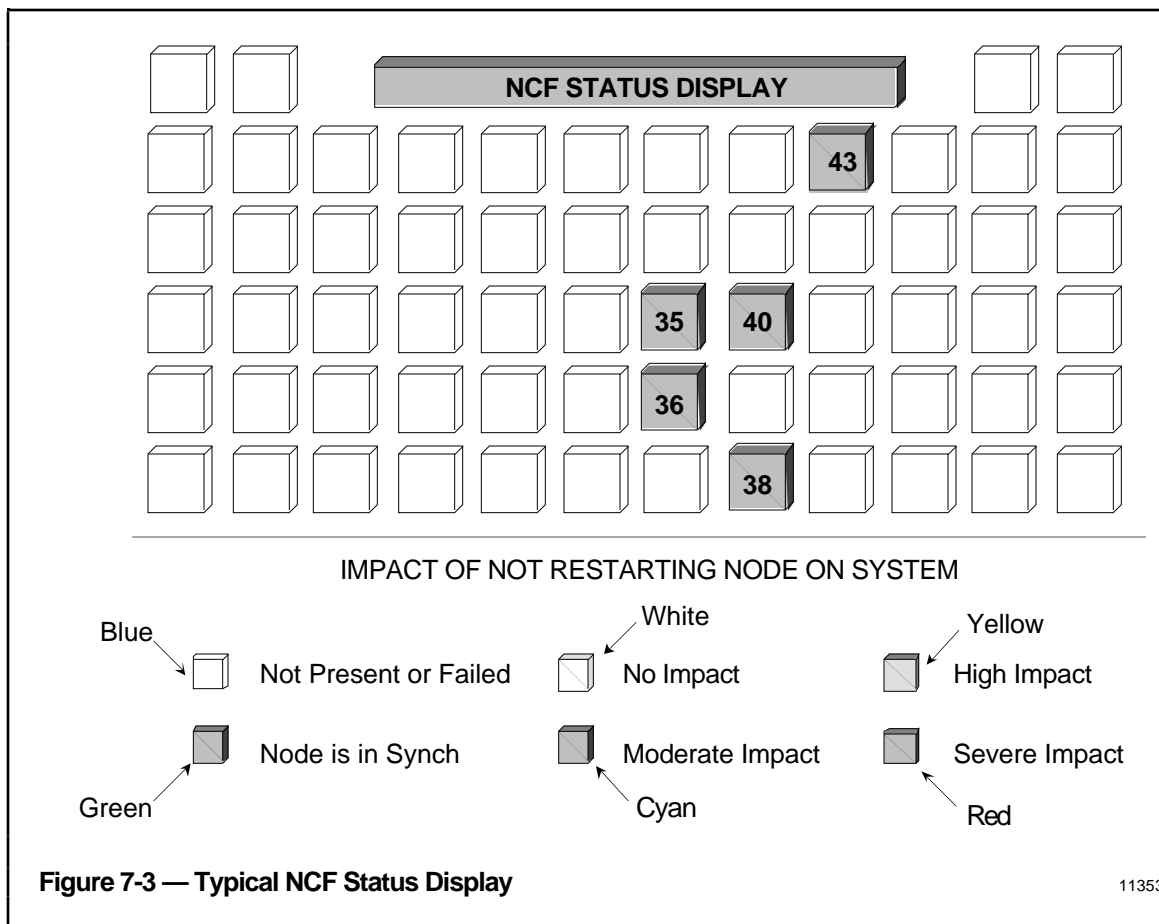
You can back out at this point by pressing the F5 key (abort). You can use the Display-back function or return to the Engineering Main Menu, but once you enter data into a display, the configurator does not allow changes to any other Installation Unit until you either abort or install the data. Even if you go back to the Engineering Main Menu and select another item, the configurator will continue to remind you of the incomplete function by presenting the installation-unit name on the second line from the top of any configurator display. To execute the check, or install functions, or to abort the change you must return to the display where you entered the data.

At this point you should follow the installation instructions that appear on the screen, but generally you will press the F2 key and then press ENTER to install the data. Both the system NCF file and the backup NCF file are updated.

NOTE

In Off-Line mode, all configuration is usually done before invoking the Install function. In On-Line mode, a change made to any installation unit must be checked (by pressing the F1 key), and installed (by pressing the F2 key and then pressing ENTER).

Continue to follow the Installation Form instructions. The exact steps vary (see Tables 7-17 through 7-39), but generally involve shutting down nodes one at a time and restarting them. Read through the Notes and Precautions in Subsection 7.4.3.3 and the detailed procedure following each Installation Instruction Table. Any node restarted from this point on must use the reconfigured network data. You may want to examine the NCF Status Display (selected from the System Menu), which contains a graphic presentation of the system and shows which nodes are running on which NCF file. Figure 7-3 illustrates the NCF Status Display.



NOTE

Any Node with an impact higher than moderate should be reloaded.

7.4.3.2 Installation Unit Tables

The Installation Tables that follow, show the instructions that appear on the screen following the check function (F1). Follow these instructions to complete the on-line reconfiguration procedure for the particular installation unit. Each table shows the installation instructions that appear on-screen and a more detailed step-by-step procedure. Each system is somewhat different and may require slightly different steps, but enough detail is provided so that you should be able to complete the task. In each case, you should check carefully to see if additional changes are needed.

| <u>Installation Unit</u> | | <u>Procedure</u> |
|--------------------------|--------------------|------------------|
| EDIT: | | |
| ALARM ACKNOWLEDGE OPTION | (Sys. Wide Values) | Table 7-41 |
| AREA NAMES | | Table 7-18 |
| CLOCK SOURCE | (Sys. Wide Values) | Table 7-40 |
| CONSOLE DATA | (Sys. Wide Values) | Table 7-35 |
| CONSOLE NAMES | | Table 7-19 |
| LOCAL LCN (NG SYSTEM ID) | (Sys. Wide Values) | Table 7-38a |
| NG MODEM | (Sys. Wide Values) | Table 7-38e |
| NG TAG OPTIONS | (Sys. Wide Values) | Table 7-38f |
| NG PIN DATA | (Sys. Wide Values) | Table 7-38c |
| NG SECURITY | (Sys. Wide Values) | Table 7-38d |
| SHIFT DATA | (Sys. Wide Values) | Table 7-34 |
| SYSTEM ID | (Sys. Wide Values) | Table 7-32 |
| UNIT NAMES | | Table 7-17 |
| USER AVERAGE PERIOD | (Sys. Wide Values) | Table 7-33 |
| VOLUME CONFIGURATION | | Table 7-36 |
| ADD: | | |
| APPLICATION MODULE | (LCN Nodes) | Table 7-24 |
| COMPUTING MODULE | (LCN Nodes) | Table 7-28 |
| HIWAY GATEWAY | (LCN Nodes) | Table 7-20 |
| HISTORY MODULE | (LCN Nodes) | Table 7-26 |
| NETWORK GATEWAY | (LCN Nodes) | Table 7-38b |
| NETWORK INTERFACE MODULE | (LCN Nodes) | Table 7-30 |
| SOFTWARE OPTIONS | (Sys. Wide Values) | Table 7-37 |
| UNIVERSAL STATION | (LCN Nodes) | Table 7-22 |
| DELETE: | | |
| APPLICATION MODULE | (LCN Nodes) | Table 7-25 |
| COMPUTING MODULE | (LCN Nodes) | Table 7-29 |
| HISTORY MODULE | (LCN Nodes) | Table 7-27 |
| HIWAY GATEWAY | (LCN Nodes) | Table 7-21 |
| NETWORK GATEWAY | (LCN Nodes) | Table 7-39 |
| NETWORK INTERFACE MODULE | (LCN Nodes) | Table 7-31 |
| UNIVERSAL STATION | (LCN Nodes) | Table 7-23 |
| MODIFY NODE | (LCN Nodes) | Table 7-42 |

7.4.3.3 Notes and Precautions for the Installation Forms

Shutdown—the term shutdown in the Installation Form Instructions generally means that you should select the SHUTDOWN target on the node's status display (selected through the System Status Display). When adding an LCN node, you can reset the module or interrupt its power, but generally you should use the SHUTDOWN target.

Save your data—If you are shutting down an LCN Module, (e.g., Hiway Gateway, Network Interface Module, etc.), save your data on checkpoint volumes.

Watch for the message THE NEXT STEP WILL DESTROY ALL INFORMATION ON THE HM in the Installation Instructions. Before initializing the affected HM, you must copy anything you wish to save onto removable media. You can read the data back onto the HM after the History Module is restored to operation. Note that Continuous History cannot be saved and restored if its configuration is changed.

Order sensitive procedures—Installation Form procedures must be completed one at a time in the sequence build, check (F1), install (F2), but restarting the nodes can usually wait until several functions have been reconfigured. In such cases, after executing the Install function for the first change, you can continue making changes and then shut down/restart all of the affected nodes one time.

Reloading—The NCF Status Display shows the nodes that need to be restarted. Eventually, you should restart all nodes using the new configuration data. You should be aware that network configuration specifications are passed from the node initiating the load to the node being loaded; therefore, you must shut down and reload a US with the new configuration information before using it to load the other nodes. Use the backup &ASY volume or the system &ASY volume (i.e., usually NET) when reloading the US (both were updated during the install sequence).

LCN Node Changes—To change an attribute on page 1 of a node configuration display, you must first delete the node, then add it back with the desired attributes. For example, to add or delete printers, disks, or trend pens assigned to a Universal Station, you must delete the affected US, then add a US with the new assignments.

Redundant nodes are deleted in pairs (when you delete one, the other is automatically deleted). A redundant HG node or NIM node can be added without affecting the primary node that is currently running.

A redundant HG or NIM node must be added at a higher node address than the HG or NIM that is currently running.

To change an attribute on page 2 or 3 of an existing node configuration display, select the MODIFY NODE target and then make the configuration changes. Follow the configuration instructions in the documentation with the custom software. For AM Sets, refer to Appendix C in the CL/AM Reference Manual (see References). Check and install the change as described for adding the node.

If you are adding custom software or AM Sets, load the additional software into the HM first. You can load it into any user volume where there is room, but, unless they already exist, you must create directory names as specified in the documentation with the custom software (usually &CUS, or &CLX or both). Task 17 in the System Startup Guide illustrates the steps. Then, if the node already exists, modify page 2 or 3 of the LCN node as explained above. If the LCN node is being added, follow the instructions to add a node of that type and configure all needed pages. Check and install the change as described for adding the node.

Some changes affect more than one installation unit. For example, to add a unit to an AM you must

- Add the Unit Name
- Delete the affected AM
- Add the affected AM back with the new Unit Name

Table 7-17 — EDIT UNIT NAMES On-Line Network Reconfiguration Procedure

| |
|--|
| <p>EDIT UNIT NAMES—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Unit names appear in all Universal Stations and all Computing Modules. To load the new names in these nodes complete the next 2 steps.</p> <p>2. FOR ALL Universal Stations and Computing Modules</p> <p>(node numbers)</p> <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. <p>WARNING: Nodes that are not restarted will not know about the changes. These nodes will be inconsistent for point building, any displays in which a unit name appears, and button configuration.</p> <p>COMMENTS: The unit names cannot be deleted or changed after the Install occurs. Only additions are allowed in on-line mode.</p> <p>Reconfigure any AM/CM nodes to use the new unit(s), and HMs for checkpointing new node(s).</p> |
| <p>Detailed Procedure—This procedure cannot be used to delete or change a Unit Name; you must go to Off-Line mode for those functions. A better way, if possible, is to leave the old name on the Unit Name list. Add a new Unit Name and then switch all other configuration references from the old Unit Name to the new Unit Name.</p> <p>The procedure to add a Unit Name is straightforward</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Pathnames menu • Make sure the backup &ASY cartridge is in place • Select UNIT NAMES from the Engineering Menu • Type in a Unit Name or names and description • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US/CM named in the Installation Instructions (see 7.4.3.3). Other changes that would also require reloading the same nodes can go in first.</p> |

(Continued on next page)

Table 7-17 — EDIT UNIT NAMES On-Line Network Reconfiguration Procedure (Continued)

Adding a Unit Name may require other changes, depending on the desired final configuration. The most likely configuration functions affected by adding a Unit Name are

- LCN Nodes (Units assigned to an AM or CM)
- Volume Configuration (Continuous History and Process Journals)
- Point Building (HG, AM, or CM point types)
- HM History Groups
- Area Configuration (Unit Assignment Display, Unit Summary Display, Process Journals, and any display where UNITALRM was referenced as an Associated/Related display).
- Checkpoints, if the unit name is added to an AM or CM Unit Names List.

Here's an example of other changes required to add an additional Unit Assignment to an existing AM. The objective is to add the new Unit Assignment, but not lose the configured AM points for the other Units:

Save the AM checkpoints to a floppy or cartridge. Use a List command to view those Checkpoint files on the floppy or cartridge and make a note of the file names.

Delete the same checkpoint files from Net. AM Checkpoints are on the &5np volume (np = HM node pair).

Delete the AM node from the LCN using the procedures in Table 7-24 (you must delete the AM to change its Unit Assignments).

Add an AM node to the LCN with the desired Unit Assignments. Use the procedures in Table 7-25.

Load the AM with null checkpoints by using Floppy &AMC or cartridge &C6 as a Data Source.

Save AM Data (Checkpoints) to Net.

Copy the original AM Checkpoints back to Net (overwrites the Null Checkpoints for the original Unit or Units).

Shutdown the AM and then reload it from Net. This restores the original Checkpoints to the AM.

Note that the Technical Assistance Center (TAC) is available to help you with reconfiguration problems.

Table 7-18 — EDIT AREA NAMES On-Line Network Reconfiguration Procedure

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| <p>EDIT AREA NAMES—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Area names appear in all Universal Stations. To load the new names in these nodes complete the next step.</p> <p>2. FOR ALL Universal Stations</p> <p>(node numbers)</p> <p>a. SHUTDOWN the node</p> <p>b. LOAD the node using the NCF installed in the previous step.</p> <p>WARNING: Universal Stations that are not restarted will not know about the changes. These nodes will be inconsistent for console status displays, area title summaries, and possibly user schematics.</p> <p>COMMENTS: Legal operations on the area name table are add, delete, change.</p> |
| <p>Detailed procedure—This procedure can be used to add, delete, or change an Area Name.</p> <p>The procedure to edit Area Names is straightforward</p> <ul style="list-style-type: none">• Make sure the backup &ASY pathname was entered on the Default Pathnames menu• Make sure the backup &ASY cartridge is in place• Select AREA NAMES from the Engineering Menu• To add a new Area Name type in the new name and descriptor• To delete or change an Area Name, type spaces or a new name over the existing text• Press the ENTER key• Press F1 (hold the CTL key down and press 1)• Print the installation instructions if you want• Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Other changes that would also require reloading the same US can go in first. Adding an Area Name may require other changes, depending on the desired final configuration.</p> <p>The most likely configuration functions affected by adding/deleting/changing an Area Name are</p> <ul style="list-style-type: none">• LCN Nodes (Universal Station Configuration)• Volume Configuration (Area Data Volume Configuration) <p>Adding a new area also requires going through the Area Configuration procedure.</p> |

Table 7-19 — EDIT CONSOLE NAMES On-Line Network Reconfiguration Procedure

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| <p>EDIT CONSOLE NAMES—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU CAN INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Console names appear in all Universal Stations. To load the new names in these nodes complete the next step.</p> <p>2. FOR ALL Universal Stations</p> <p>(node numbers)</p> <p>a. SHUTDOWN the node b. LOAD the node using the NCF installed in step 1.</p> <p>WARNING: Universal Stations that are not restarted will not know about the changes. These nodes will be inconsistent for console status displays, console overview display and possibly user schematics.</p> <p>COMMENTS: Legal operations on the console name table are add, delete, change.</p> |
| <p>Detailed procedure—This procedure can be used to add, delete, or change a Console Name.</p> <p>The procedure to edit Console Names is straightforward</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Pathnames menu • Make sure the backup &ASY cartridge is in place • Select CONSOLE NAMES from the Engineering Menu • Add a new Console Description • To delete or change a Console Description, type spaces or new name over the old entry • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Other changes that would also require reloading the same US can go in first. Editing a Console Name may require other changes, depending on the desired final configuration.</p> <p>The most likely configuration functions affected by adding/deleting/changing a Console Name are</p> <ul style="list-style-type: none"> • LCN Nodes (Universal Station Configuration) • Any Area display where CONSTAT was referenced as a Related/Associated/Help display |

Table 7-21 — DELETE HIWAY GATEWAY On-Line Network Reconfiguration Procedure

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| <p>DELETE HIWAY GATEWAY—Installation Instructions</p> |
| <ol style="list-style-type: none"> 1. SHUTDOWN the secondary HG to be deleted—Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) 2. SHUTDOWN the primary hiway gateway to be deleted—Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) 3. INSTALL CHANGES IN NCF (F2) <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Hiway gateways are known to Universal Stations. Complete the next step to remove this node from US displays and alarm lists.</p> <ol style="list-style-type: none"> 4. FOR ALL Universal Stations <ul style="list-style-type: none"> (node numbers) a. SHUTDOWN the node. b. LOAD the node using the NCF installed the previous step. |
| <p>Detailed procedure—This procedure is used to delete an HG. To reconfigure an HG, delete it and then use Table 7-20 to add it back with the desired configuration. The procedure to delete a Hiway Gateway is</p> <ul style="list-style-type: none"> • Get a current checkpoint (preferably on both HM and removable media) • Make sure the backup &ASY pathname is entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • Select the System Status Display • Select GATEWAYS • Select the applicable node number • Select the SHUTDOWN target for the secondary HG (if any), then press the ENTER key • Select the node number/SHUTDOWN target for the primary HG, then press ENTER • From the Engineering Menu, select LCN Nodes • Select the applicable node number • Select the DELETE NODE target • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions. Other changes that would also require reloading the same US can go in first. Deleting a Hiway Gateway may require other changes, depending on the desired final configuration. The most likely configuration functions affected by deleting a Hiway Gateway are</p> <ul style="list-style-type: none"> • Volume Configuration (Program Image and Checkpoint Volume Configuration) • Box/Slot Configuration • HG Point Building • Any schematics, logs, CL programs, HM History Groups, and Area displays where HG points from the deleted HG was/is referenced. |

Table 7-22 — ADD UNIVERSAL STATION On-Line Network Reconfiguration Procedure

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| <p>ADD UNIVERSAL STATION—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>USs are known to other Universal Stations. Complete the next step to load information about the new node into the USs.</p> <p>2. FOR ALL Universal Stations</p> <p style="padding-left: 40px;">(node numbers)</p> <p style="padding-left: 80px;">a. SHUTDOWN the node.</p> <p style="padding-left: 80px;">b. LOAD the node using the NCF installed in the previous step.</p> <p>NOTE: The US may be loaded from a Universal Station which was restarted in the previous step. The other USs do not have to be restarted before loading the US.</p> |
| <p>Detailed procedure —This procedure is used to add a US. To reconfigure a US, delete it according to Table 7-23 and then add it back with the desired configuration. You must work from a different US than the one being added.</p> <p>The procedure to add a Universal Station is</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select LCN Nodes • Select the appropriate node number • Select UNIVERSAL STATION • Type in the US configuration/optional custom software details • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Use the first reloaded US to restart the others. Other changes that would also require reloading the same Universal Station(s) can go in first. Adding a US may require other changes, depending on the desired final configuration.</p> <p>The most likely configuration functions affected by adding/reconfiguring a Universal Station are</p> <ul style="list-style-type: none"> • Area (LCN Node Annunciation) • Any schematics or configurable buttons where CROSSCRN or FRMSCRN actors are used. |

Table 7-23 — DELETE UNIVERSAL STATION On-Line Network Reconfiguration Procedure

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| <p>DELETE UNIVERSAL STATION—Installation Instructions</p> |
| <ol style="list-style-type: none"> 1. SHUTDOWN the US to be deleted—Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) 2. INSTALL CHANGES IN NCF (F2) <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>USs are known to other Universal Stations. Complete the next step to remove this node from US displays and alarm lists.</p> <ol style="list-style-type: none"> 3. FOR ALL Universal Stations (node numbers) <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed the previous step. |
| <p>Detailed procedure —This procedure is used to delete a Universal Station. To reconfigure a US, delete it, then add it back according to Table 7-22 with the desired configuration. You must work from a different US than the one being deleted or reconfigured.</p> <p>The procedure to delete a Universal Station is</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • Select the Console Status Display • Select STA number of the US to be deleted • Select the SHUTDOWN target • Press the ENTER key (US shuts down) • From the Engineering Menu, select LCN Nodes • Select the appropriate node number for the US being deleted • Select the DELETE NODE target • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Other changes that would also require reloading the same Universal Station(s) can go in first. Use the first reloaded US to restart the others. Deleting a US may require other changes, depending on the desired final configuration.</p> <p>The most likely configuration functions affected by deleting/reconfiguring a Universal Station are</p> <ul style="list-style-type: none"> • LCN Nodes (to add the US back with a new configuration) • Area (LCN Node Annunciation) • Any schematics or configurable buttons where CROSSCRN or FRMSCRN actors are used. |

Table 7-24 — ADD APPLICATION MODULE On-Line Network Reconfiguration Procedure

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| <p>ADD APPLICATION MODULE—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>AMs are known to all Universal Stations. Complete the next step to load information about the new node into the USs.</p> <p>2. FOR ALL Universal Stations</p> <p>(node numbers)</p> <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. <p>NOTE: The AM may be loaded from a Universal Station which was restarted in the previous step. The other USs do not have to be restarted before loading the AM.</p> |
| <p>Detailed Procedure—This procedure is used to add an AM. To reconfigure an AM, delete it according to Table 7-25 and then add it back with the desired configuration.</p> <p>The procedure to add an Application Module is</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select LCN Nodes • Select the appropriate node number • Select APPLICATION MODULE • Enter the AM configuration/optional custom software/optional background AM/CL details • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Use the first reloaded US to load the added AM and other USs. When reconfiguring, use the previous AM checkpoint volume. If this is a new AM, use the &AMC checkpoint cartridge as a data source. Additional changes that would also require reloading the same nodes can go in first. Adding an AM may require other changes, depending on the desired final configuration.</p> <p>The most likely configuration functions affected by adding/reconfiguring an AM are</p> <ul style="list-style-type: none"> • Volume Configuration (Program Image Volume, Checkpoint Volume) • Area (LCN Node Annunciation) • AM Point Building. |

Table 7-25 — DELETE APPLICATION MODULE On-Line Network Reconfiguration Procedure

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| DELETE APPLICATION MODULE—Installation Instructions |
| <ol style="list-style-type: none"> 1. SHUTDOWN the AM to be deleted—Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) 2. INSTALL CHANGES IN NCF (F2) <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>AMs are known to Universal Stations. Complete the next step to remove this node from US displays and alarm lists.</p> <ol style="list-style-type: none"> 3. FOR ALL Universal Stations (node numbers) <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed the previous step. |
| <p>Detailed procedure—This procedure is used to delete an Application Module. To reconfigure an AM, delete it, then add it back according to Table 7-24 with the desired configuration. The procedure to delete an application module is</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • Call up the System Status Display • Select the APPLICATION MODULES Display • Select STA number of the AM to be deleted • Select the SHUTDOWN target • Press the ENTER key (AM shuts down) • From the Engineering Menu, select LCN Nodes • Select the appropriate node number for the AM being deleted • Select the DELETE NODE target • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Other changes that would also require reloading the same Universal Station(s) can go in first. Use the first reloaded US to restart the others. Deleting an AM may require other changes, depending on the desired final configuration.</p> <p>The most likely configuration functions affected by deleting/reconfiguring an AM are</p> <ul style="list-style-type: none"> • LCN Nodes (to add the AM back with a new configuration) • Volume Configuration (Program Image Volume) • Area (LCN Node Annunciation) • Any CL programs, schematics, or logs where the deleted AM's points are used. |

Table 7-26 — ADD HISTORY MODULE On-Line Network Reconfiguration Procedure

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| <p>ADD HISTORY MODULE—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>History modules are known to all Universal Stations. Complete the next step to load information about the new node into the USs.</p> <p>2. FOR ALL Universal Stations</p> <p>(node numbers)</p> <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. <p>NOTE: The HMI personality may be loaded from a Universal Station which was restarted in the previous step. The other Universal Stations do not have to be restarted before loading the HMI.</p> |
| <p>Detailed Procedure—If the HM being added will not contain the system network configuration volume (&ASY), skip steps A1-A4.</p> <ol style="list-style-type: none"> A. Set up paths and removable media <ol style="list-style-type: none"> 1. From the Engineering Menu, select SUPPORT UTILITIES 2. Select MODIFY VOLUME PATHS 3. Select SET DEVICE PATH TO REMOVABLE MEDIA LDIDs 4. Insert cartridge &Cn (n = 1 or 2) in drive 1, &ASY (main) in drive 2 5. Enter the NCF BACKUP PATH (e.g., \$F1>&ASY>) B. Add to LCN Nodes <ol style="list-style-type: none"> 1. From the Engineering Menu, select LCN NODES 2. Select the appropriate node number 3. Select HISTORY MODULES 4. Type in HM Configuration/optional custom software details; press the ENTER key 5. Press F1 (hold the CTL key down and press 1) 6. Print the installation instructions if you want 7. Insert Backup &ASY cartridge in drive 1 8. Press F2 (hold the CTL key down and press 2) 9. Wait for the installation complete message <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Other changes that would also require reloading the same USs can go in first. Adding an unconfigured HM requires that you go through the Volume Configuration functions and initialize the HM. If you want to read in data saved from another HM, refer to the Restore command in the <i>Command Processor Manual</i>. If you also saved continuous History files, refer to Section 7 in the <i>Engineer's Reference Manual</i>.</p> |

**Table 7-27 — DELETE HISTORY MODULE On-Line Network Reconfiguration
Procedure - Installation Instructions**

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| <p>DELETE HISTORY MODULE—Installation Instructions</p> |
| <ol style="list-style-type: none"> 1. COPY any volumes from this HM which need to be saved to another media. Identify the volumes via the LSV PN:xx in the Command Processor. Use the Command Processor (BACKUP or CPV with -A) to copy the volumes. 2. SHUTDOWN the HM to be deleted - Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) 3. INSTALL CHANGES IN NCF (F2) <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Complete the next step to remove this node from US displays.</p> <ol style="list-style-type: none"> 4. FOR ALL Universal Stations (node numbers) <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step |
| <p>Detailed Procedure—If the HM does not contain the system network configuration volume (&ASY), you can skip steps B1, B2, and C3 of the procedure.</p> <p>The procedure to delete a History Module that contains the &ASY volume follows. This method presumes you want to save data on cartridge disks. If space is available on another HM, skip part A and, in part E, copy to the other HM instead of to removable media. If you do not want to save any data, skip parts A and D.</p> <ol style="list-style-type: none"> A. Prepare cartridge disks <ol style="list-style-type: none"> 1. From the Engineering Menu, select COMMAND PROCESSOR 2. The exact quantity of data stored varies with the system, but you should format one cartridge disk per n megabytes of HM storage, plus one extra (where n = the size of your cartridge disk). The same volume name can be used for all disks or you may want to select sequential volume names e.g., BU01, BU02, etc. B. Copy backup &ASY disk <ol style="list-style-type: none"> 1. Copy the backup &ASY file onto another cartridge. 2. Leave the &ASY copy in one drive 3. Ensure the &ASY <u>backup</u> disk is in the other drive |

(Continued on next page)

**Table 7-27 — DELETE HISTORY MODULE On-Line Network Reconfiguration
Procedure - Installation Instructions (Continued)**

- C. Set-up &ASY Path(s)
 - 1. From the Engineering Menu, select SUPPORT UTILITIES
 - 2. Select MODIFY VOLUME PATHS
 - 3. Enter the NETWORK CONFIG PATH to one disk drive (e.g., \$F1>&ASY>)
 - 4. Enter the NCF BACKUP PATH to the other disk drive (e.g., \$F2>&ASY>)
(press ENTER)

- D. Save HM Data
 - 1. From the Engineering Menu, select COMMAND PROCESSOR.
 - 2. Use the Backup command to copy the HM's contents (e.g., BACK PN:50 \$F1)
 - 3. Insert additional disks when prompted
 - 4. Label each disk carefully (e.g., BU01, BU02, etc.)
 - 5. The Backup command does not copy some directories. If you want to copy the Continuous History files, follow the instructions in Section 7 of the *Engineer's Reference Manual*.

- E. Change LCN NODE Configuration
 - 1. From the Engineering Menu, select LCN NODES
 - 2. Select the appropriate node number on the HM PAIR SELECTION MENU
 - 3. Select the DELETE NODE target
 - 4. Press F1 (hold the CTL key down and press 1)
 - 5. Print the installation instructions if you want

- F. Shutdown HM
 - 1. Call up the System Status Display
 - 2. Select HISTORY MODULES
 - 3. Select the applicable HM node number
 - 4. Select the SHUTDOWN target, then press the ENTER key (status goes to QUALIF)

- G. Install Change
 - 1. From the Engineering Menu, select LCN NODES
 - 2. Select the appropriate node number
 - 3. Press F1 (hold the CTL key down and press 1)
 - 4. Press F2 (hold the CTL key down and press 2)
 - 5. Wait for the installation complete message

To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Other changes that would also require reloading the same US can go in first.

Table 7-28 — ADD COMPUTING MODULE On-Line Network Reconfiguration Procedure

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| <p>ADD COMPUTING MODULE—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Computing Modules are known to all Universal Stations. Complete the next step to load information about the new node into the USs.</p> <p>2. FOR ALL Universal stations (node numbers)</p> <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. <p>NOTE: The CM may be loaded from a Universal Station which was restarted in the previous step. The other USs do not have to be restarted before loading the CM.</p> <p>WARNING: Adding nodes may affect checkpointing (to the HM).</p> |
| <p>Detailed Procedure—This procedure is used to add a Computer Gateway/Computing Module. To reconfigure a CG, delete it according to Table 7-29 and then add it back with the desired configuration.</p> <p>The procedure to add a Computer Gateway/Computing Module is</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select LCN Nodes • Select the appropriate node number • Select the CM MODULE target • Type in the CM/optional custom software configuration details • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) • Refer to CG11-410, the <i>CG User's Manual</i> to complete configuration. <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Use the first reloaded US to load the added Computer Gateway and other USs. When reconfiguring, use the previous CM checkpoint volume and make sure the baud rate at the Computing Module matches the baud rate configured for the module. If this is a new CM, use the &CIC checkpoint cartridge as a data source when loading the Computer Gateway. Other changes that would require reloading the same nodes can go in first. Adding a Computing Module may require other changes, depending on the desired final configuration.</p> <p>The most likely configuration functions affected by adding/reconfiguring a Computing Module are</p> <ul style="list-style-type: none"> • Volume Configuration (Program Image Volume and Checkpoint Volume) • Area (LCN Node Annunciation) • CM Point Building |

Table 7-29 — DELETE COMPUTING MODULE On-Line Network Reconfiguration Procedure

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| <p>DELETE Computing Module—Installation Instructions</p> |
| <ol style="list-style-type: none"> 1. SHUTDOWN the Computing Module to be deleted—Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) 2. SHUTDOWN the primary computer gateway to be deleted—Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) INSTALL CHANGES IN NCF (F2) <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Computing Modules are known to Universal Stations. Complete the next step to remove this node from US displays and alarm lists.</p> <ol style="list-style-type: none"> 3. FOR ALL Universal Stations (node numbers) <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. |
| <p>Detailed procedure—Use this procedure to delete a Computer Gateway/Computing Module. To reconfigure a CG/CM, delete it, then add it back according to Table 7-28 with the desired configuration. The procedure to delete a CG/CM is—</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • Call up the System Status Display • Select the COMPUTER MODULES Display • Select NODE number to be deleted • Select the SHUTDOWN target • Press the ENTER key (node shuts down) • From the Engineering Menu, select LCN Nodes • Select the appropriate node number for the AM being deleted • Select the DELETE NODE target • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions (see 7.4.3.3). Other changes that would also require reloading the same Universal Station(s) can go in first. Use the first reloaded US to load the others. Deleting a CG/CM may require other changes, depending on the desired final configuration. The most likely configuration functions affected by deleting/reconfiguring a CG/CM are</p> <ul style="list-style-type: none"> • LCN Nodes (to add the CG/CM back with a new configuration) • Volume Configuration (Program Image Volume and Checkpoint Volume) • Area (LCN Node Annunciation) • Any CL programs, schematics, or logs where the deleted CM points are used. |

Table 7-30 — ADD NETWORK INTF. MODULE On-Line Network Reconfiguration Procedure

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| <p>ADD NETWORK INTERFACE MODULE—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>NIMs are known to all Universal Stations. Complete the next step to load information about the new node into the USs.</p> <p>2. FOR ALL Universal Stations (node numbers)</p> <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. <p>NOTE: The NIM may be loaded from a Universal Station that was restarted in the previous step. The other USs do not have to be restarted before loading the NIM.</p> <p>WARNING: Adding nodes may affect checkpointing (to the HM).</p> |
| <p>Detailed procedure—This procedure is used to add a NIM. To reconfigure a NIM, delete it according to Table 7-31 and then add it back with the desired configuration. The procedure to add a Network Interface Module is</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select LCN Nodes • Select the appropriate node number • Select NETWORK INTERFACE MODULE • Type in the NIM configuration/optional custom software details • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions. Use one of these USs to reload the added NIM(s). If this was a reconfiguration, use the old checkpoint volume. If this is a new redundant NIM, use the primary NIM checkpoint volume as a data source. If this is a new primary NIM, use the startup NIM checkpoint cartridge as the Data Source.</p> <p>Other changes that would also require reloading the same Universal station(s) can go in first. Adding a NIM may require other changes, depending on the desired final configuration.</p> <p>The most likely configuration functions affected by adding/reconfiguring a NIM are</p> <ul style="list-style-type: none"> • Volume Configuration (Program Image and Checkpoint Volume Configuration) • UCN and PM/LM Configuration. • PM/LM Point Building • Any schematics, logs, CL programs, HM History Groups, and Area displays where points from the added PM or LM was/is referenced. |

Table 7-31 — DELETE NETWORK INTF. MODULE On-Line Network Reconfiguration Procedure

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| <p>DELETE NETWORK INTERFACE MODULE—Installation Instructions</p> |
| <ol style="list-style-type: none"> 1. SHUTDOWN the secondary NIM to be deleted—Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) 2. INSTALL CHANGES IN NCF (F2) <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>NIMs are known to Universal Stations. Complete the next step to remove this node from US displays and alarm lists.</p> <ol style="list-style-type: none"> 3. FOR ALL Universal Stations (node numbers) <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. <p>WARNING: Deleting Nodes may affect checkpointing (to the HM)</p> |
| <p>Detailed procedure—This procedure is used to delete a NIM. To reconfigure a NIM, delete it; then use Table 7-30 to add it back with the desired configuration. The procedure to delete a NIM is</p> <ul style="list-style-type: none"> • Get a current checkpoint (preferably on both HM and removable media) • Make sure the backup &ASY pathname was entered on the Default Vol. Pathnames menu • Make sure the backup &ASY cartridge is in place • Select the System Status Display • Select GATEWAYS • Select the applicable node number • Select the SHUTDOWN target for the secondary NIM (if any), then press the ENTER key • Select the node number/SHUTDOWN target for the primary NIM, then press ENTER • From the Engineering Menu, select LCN Nodes • Select the applicable node number • Select the DELETE NODE target • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions. Other changes that would also require reloading the same US can go in first. Deleting a Network Interface Module may require other changes, depending on the desired final configuration. The most likely configuration functions affected by deleting a NIM are</p> <ul style="list-style-type: none"> • Volume Configuration (Program Image and Checkpoint Volume Configuration) • UCN/PM Configuration • NIM Point Building • Any schematics, logs, CL programs, HM History Groups, and Area displays where NIM points from the deleted NIM was/is referenced. |

Table 7-32 — EDIT SYSTEM ID On-Line Network Reconfiguration Procedure

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| EDIT SYSTEM ID—Installation Instructions |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>CHANGES TO SYSTEM ID HAVE NO EFFECT ON THE SYSTEM. NO NODES NEED TO BE RESTARTED.</p> |

Table 7-33 — EDIT USER AVERAGE PERIOD On-Line Network Reconfiguration Procedure

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| <p>EDIT USER AVERAGE PERIOD—Installation procedure</p> |
| <p>Changing the user average period, changes the size of the prearchive files.</p> <ol style="list-style-type: none"> 1. FOR EACH HM with prearchiving specified for user averages: <ul style="list-style-type: none"> (node numbers) a. SHUTDOWN the on-process HM (STATUS must be OFF, POWER_ON, or QUALIFIED) b. LOAD the HMI personality 2. INSTALL CHANGES IN NCF (F2) <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <ol style="list-style-type: none"> 3. FOR EACH HM with prearchiving specified for user averages: <ul style="list-style-type: none"> (node numbers) a. COPY all volumes you want preserved: Identify the volumes via the LSV PN:xx in the Command Processor. Use the Command Processor (BACKUP or CPV with -A) to copy the volumes. <p>THE NEXT STEP WILL DESTROY ALL INFORMATION ON THE HM.</p> <ol style="list-style-type: none"> b. INITIALIZE (F6) (Initialize creates new blank prearchive files of the correct size for the user average period.) c. PROTECT the prearchive files (ref. NCFxx.ER, Continuous History volumes). d. COPY all volumes back. The prearchive files will not be restored to the HM because they are a different size than the new ones. e. UNPROTECT the pre-archive files. f. LOAD the HMs with the on-process personality. <p>Complete the next step to load the new user average period into HMs which collect user averages.</p> <ol style="list-style-type: none"> 4. FOR EACH HM with user averages <ul style="list-style-type: none"> (node numbers) a. SHUTDOWN the node b. LOAD the node using the NCF installed in the previous step. <p>WARNING: If the previous step is not completed inconsistent data may be shown in logs.</p> |

(Continued on next page)

Table 7-33 — EDIT USER AVERAGE PERIOD On-Line Network Reconfiguration Procedure (Continued)

Detailed procedure—These procedures are used to edit the User Average Period.

If prearchiving was not used in the current configuration and is not being added, the procedure is

- Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu
- Make sure the backup &ASY cartridge is in place
- From the Engineering Menu, select SYSTEM WIDE VALUES
- Select the USER AVERAGE PERIOD target
- Type in the configuration changes
- Press the ENTER key
- Press F1 (hold the CTL key down and press 1)
- Print the installation instructions if you want
- Press F2 (hold the CTL key down and press 2)

To complete the change, you must shut down each HM named in the Installation Instructions and reload it with the new network configuration. The easiest way to do this is just interrupt power on the HM for about 5 seconds and let it reboot. You can install other configuration changes before rebooting.

If prearchiving was specified for User Averages in the current configuration

- Go to the detailed procedure for Table 7-36 and perform steps A, B, C, and D.
- From the Engineering Menu, select SYSTEM WIDE VALUES
- Select the USER AVERAGE PERIOD target
- Type in the configuration changes
- Press the ENTER key
- Press F1 (hold the CTL key down and press 1)
- Print the installation instructions if you want.
- Press F2 (hold the CTL key down and press 2)
- Go to the procedure following Table 7-36 and perform the steps F and G
- Protect the prearchive files
- Go to the procedure following Table 7-36 and perform step H
- Unprotect the prearchive files
- Go to the procedure following Table 7-36 and perform steps I, J, K, L, and M.

Table 7-34 — EDIT SHIFT DATA On-Line Network Reconfiguration Procedure

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| <p>EDIT SHIFT DATA—Installation Instructions</p> |
| <p>1. INSTALL NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Shift data is used by all Universal Stations and all history modules with continuous history. Complete the next two steps to load the new shift data into the USs and HMs.</p> <p>2. FOR ALL HMs with continuous history</p> <p style="padding-left: 40px;">(node numbers)</p> <p style="padding-left: 80px;">a. SHUTDOWN the HM</p> <p style="padding-left: 80px;">b. LOAD the HM on-process personality</p> <p>3. FOR ALL USs</p> <p style="padding-left: 40px;">(node numbers)</p> <p style="padding-left: 80px;">a. SHUTDOWN the node</p> <p style="padding-left: 80px;">b. LOAD the node using the NCF installed in the previous step.</p> <p>WARNING: Failure to complete the previous two steps could result in inconsistent data in logs.</p> |
| <p>Detailed Procedure</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Vol. Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select SYSTEM WIDE VALUES • Select the SHIFT DATA target • Type in the configuration changes • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) • Wait for the Installation Complete message • Call up the Console Status Display • For at least one US named in the Installation Instructions <ul style="list-style-type: none"> 1. Select the applicable US node number 2. Select the SHUTDOWN target, then press the ENTER key • Interrupt power to the HM module named in the Installation Instructions • Use removable media to reload one US with the Universal Personality • Check for HM status = OK on System Status Display • Call up the Console Status display; shut down, and reload the other Universal Stations |

Table 7-35 — EDIT CONSOLE DATA On-Line Network Reconfiguration Procedure

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| EDIT CONSOLE DATA—Installation Instructions |
| <p>1. INSTALL NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>Console data is used in all Universal Stations. Complete the next step to load the changes into the Universal Stations.</p> <p>2. FOR ALL Universal Stations</p> <p>(node numbers)</p> <p>a. SHUTDOWN the US</p> <p>b. LOAD the node using the NCF installed in the previous step.</p> |
| <p>Detailed Procedure</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames Menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select SYSTEM WIDE VALUES • Select the CONSOLE DATA target • Type in the configuration changes • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) • Call up the Console Status Display • For at least one US named in the Installation Instructions <ul style="list-style-type: none"> 1. Select the applicable US node number 2. Select the SHUT DOWN target, then press the ENTER key • Use removable media to reload one US with the Universal Personality • Call up the Console Status display; shut down and reload the other Universal Stations |

Table 7-36 — EDIT VOLUME CONFIGURATION On-Line Network Reconfiguration Procedure

| EDIT VOLUME CONFIGURATION—Installation Instructions |
|---|
| <p>1. FOR The HM pair being configured - nodes: (node numbers)</p> <ol style="list-style-type: none"> a. SHUTDOWN the on-process HM b. LOAD the HMI personality <p>2. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>3. COPY any volumes from this HM which need to be saved to another media: Identify the volumes via the LSV PN:xx in the Command Processor. Use the Command Processor (BACKUP or CPV with -A) to copy the volumes.</p> <p>WARNING: IF CONTINUOUS HISTORY CHANGED, ITS VOLUME CANNOT BE SAVED AND RESTORED. DOING SO WILL DESTROY THE NEW CONFIGURATION. IF THE JOURNALS CHANGED, THEIR VOLUME CANNOT BE SAVED AND RESTORED. DOING SO WILL DESTROY THE NEW CONFIGURATION. THE NEXT STEP WILL DESTROY ALL INFORMATION ON THE HM.</p> <p>4. INITIALIZE (F6).</p> <p>5. COPY all saved volumes back.</p> <p>6. LOAD the on-process HM personality.</p> <p>7. IF continuous history changed, RELOAD history groups.</p> |
| <p>Detailed Procedure—If the HM does not contain the network configuration volume (&ASY), you can skip steps B1, B2, and C3 of the procedure.</p> <p>The procedure to reconfigure a History Module that contains the &ASY volume follows. This method presumes you want to save data on removable media. If space is available on another HM, skip section A and, in parts D and K, copy volumes to/from the other HM instead of to disks.</p> <p>Before starting the procedure, enable output to the printer (DO \$Pn where n = the printer number), then execute the LSV NET command to make a printed record of all the directories on the HM.</p> <p>A. Prepare cartridge disks (refer to the Create and Backup Commands in the Command Processor manual).</p> <ol style="list-style-type: none"> 1. From the Engineering Menu, select COMMAND PROCESSOR. 2. The exact quantity of data stored varies with the system, but you should format one cartridge disk per n megabytes of HM storage plus one extra (where n = . the size of your cartridge disk). The same volume name can be used for all disks or you may want to select sequential volume names like BU01, BU02, etc. |

(Continued on next page)

Table 7-36 — EDIT VOLUME CONFIGURATION On-Line Network Reconfiguration Procedure (Continued)

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| <p>B. Copy backup &ASY cartridge</p> <ol style="list-style-type: none"> 1. Copy the &ASY directory from Net to a cartridge. Make a backup copy of the cartridge. 2. Leave the &ASY copy in one drive 3. Ensure the &ASY backup cartridge is in the other drive. <p>C. Set up &ASY Path(s)</p> <ol style="list-style-type: none"> 1. From the Engineering Menu, select SUPPORT UTILITIES 2. Select MODIFY VOLUME PATHS 3. Enter the NETWORK CONFIG PATH to one removable media drive (e.g., \$F1>&ASY>) 4. Enter the NCF BACKUP PATH to the other removable media drive (e.g., \$F2>&ASY>) 5. Press ENTER <p>D. Save HM Data</p> <ol style="list-style-type: none"> 1. From the Engineering Menu, select COMMAND PROCESSOR. 2. Use the Backup command to copy the HM volumes to removable media. (e.g., BACK PN:43 \$F1). Insert an additional cartridge disk when prompted. Label each cartridge carefully. The backup command does not save all files. Refer to Section 7 in the Engineer's Reference Manual for the procedure to save Continuous History. If you changed configuration for Continuous History or Journals, don't copy those volumes. 3. Make sure that the points in History Groups are saved in IDF (or .EB) files. If not, do it now. <p>E. Shut down HM; Load &HMI (offline personality)</p> <ol style="list-style-type: none"> 1. If this is the system HM (where the personalities reside), use the Support Utilities to set device paths to Removable Media 2. Call up the System Status Display 3. Select HISTORY MODULES 4. Select the applicable HM node number 5. Select the SHUTDOWN target, then press the ENTER key (status goes to QUALIF) 6. Select the LOAD DUMP target and then the MANUAL LOAD target 7. Select the INIT PROGRAM target 8. Load the INIT personality from either HM or removable media. <p>F. Change Volume Configuration</p> <ol style="list-style-type: none"> 1. If this is the System HM, insert &C2 (or &C1) cartridge into \$F1. 2. From the Engineering Menu, select VOLUME CONFIGURATION 3. After the overlay is read, insert the &ASY cartridge in \$F1 (if it was replaced). 4. Select the appropriate node number on the HM PAIR SELECTION MENU 5. Type in Volume Configuration changes as desired; press the ENTER key after each page is changed 6. Press F1 (hold the CTL key down and press 1) 7. Print the installation instructions if you want. 8. Press F2 (hold the CTL key down and press 2) <p>G. Initialize the HM</p> <ol style="list-style-type: none"> 1. From the Engineering Menu, select VOLUME CONFIGURATION. 2. Select the appropriate node number on the HM PAIR SELECTION MENU 3. Press F6 (hold the CTL key down and press 6). 4. All information stored on the HM is erased. 5. From the Engineering Menu, select COMMAND PROCESSOR. | <p>(Continued on next page)</p> |
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Table 7-36 — EDIT VOLUME CONFIGURATION On-Line Network Reconfiguration Procedure (Continued)

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| <p>H. Reload the Local Volume</p> <ol style="list-style-type: none"> 1. Copy the &ASY directory from removable media to the HM (for System HM only): CP \$Fn>&ASY>*. * PN:nn>&ASY>= -D where n is the cartridge number and nn is the HM physical node number. 2. Load the HMO/HMI/Writeboot files. Insert the &C10 cartridge appropriate for your system in FD2. Invoke the EC: EC \$F2>&EC>LOC_VOL.EC \$F2 nn np where nn is the HM physical node and np is the HM node pair number. Follow the screen instructions. Loading &HMI is optional but recommended (if HMI is selected on the first page of the Volume Configuration menu). Wait for "EC Complete." <p>I. Reboot the HM</p> <ol style="list-style-type: none"> 1. Call up the System Status Display 2. Select HISTORY MODULES 3. Select SHUT DOWN; then press ENTER. 4. Interrupt power to the HM for about 5 seconds. Wait for status = OK. Dual redundant HM drives may have a status = Severe until synchronized. <p>J. Recreate missing directories</p> <ol style="list-style-type: none"> 1. Use the LSV Net command to determine which directories are on the HM. Compare them to the printout you obtained earlier. If any directory is not present, use the CD command to create them. <p>K. Restore Saved data to the HM</p> <ol style="list-style-type: none"> 1. Use the Restore command to reload volumes saved with the Backup command. If you saved Continuous History, refer to Section 7 in the <i>Engineer's Reference Manual</i>. <p>L. Set the NCF Path</p> <ol style="list-style-type: none"> 1. From the Engineering Menu, select SUPPORT UTILITIES 2. Select MODIFY VOLUME PATHS 3. Set the default path to the HM (e.g., NET>&ASY>) <p>M. Reload HM History Groups</p> <ol style="list-style-type: none"> 1. If Continuous History Configuration was changed, select HM HISTORY GROUPS on the Engineering Menu. Reload the HM history groups from your IDFs or .EB files. |
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This completes Volume Reconfiguration. Dual redundant HM drives should be synchronized (refer to the Command Processor Manual and the Engineer's Reference Manual).

Table 7-37 — SOFTWARE OPTIONS On-Line Network Reconfiguration Procedure

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| <p>ADD SOFTWARE OPTIONS—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>xxxxxx options affect yyyyyy (message varies with software option)</p> <p>2. For all zzzz nodes (message varies with software option)</p> <ol style="list-style-type: none"> a. SHUTDOWN the node (message varies with software option) b. RESTART/LOAD all affected nodes (message varies with software option) |
| <p>Detailed procedure—This procedure can be used to add, delete, or change software options.</p> <ul style="list-style-type: none"> • Make sure the Key File Volume pathname was entered on the Default Pathnames menu • Make sure the backup &ASY pathname was entered on the Default Pathnames menu • Select SYSTEM WIDE VALUES from the Engineering Menu • Select SOFTWARE OPTIONS • Make sure the Key File Options cartridge (&C6) is in place • Press F10 (hold the CTL key down and press 0). Allowed options appear in cyan • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Make sure the backup &ASY cartridge is in place • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must follow the Installation Instructions. These vary with the software option you are installing. Usually you must shut down and reload each affected node. Other changes that would require reloading the same nodes can go in first. For example, you would probably want to configure the option(s) added.</p> |

NOTE

Because of a current software problem, If you are installing the HG Point Display Ranges option you may have to temporarily shut down all NIM and HG modules. Check for a notice with the software. You can reload the HG and NIM nodes after installing the Software Options according to the above procedure.

ADD NETWORK GATEWAY On-Line Network Reconfiguration Procedure

To add a Network Gateway, follow the procedures in Tables 7-38.

The most likely configuration functions affected by adding/reconfiguring a Network Gateway are:

Volume Configuration (Program Image and Checkpoint Volume Configuration)
Any schematics, logs, CL programs, HM History Groups, and Area displays where NG points from the remote LCNs are referenced.

If you only want to modify one item, refer to the applicable table. After installing the changes, you usually must shutdown and reload nodes referenced on the screen.

Table 7-38a — ADD LCN NUMBER (NG Local System ID) On-Line Network Reconfiguration Procedure

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| ADD LCN Number—Installation Instructions |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>Changes to this data are sent to all NGs as part of the install process. NGs do not have to be restarted. (Check the AUX NODE STATUS display for errors.)</p> <p>Local LCN changes affect all Universal Stations and CMs. To load the new data, complete the next step.</p> <p>2. FOR ALL Universal Stations (node numbers)</p> <p>FOR ALL Computing Modules (node numbers)</p> <p>a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step.</p> |
| <p>Detailed procedure—This procedure is used to add a Local System ID for an NG. The procedure to add a Network Gateway Local LCNumberN. (Local system ID) is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select System Wide Values • On the System Wide Values menu, select the LOCAL SYSTEM ID target • Type in the NG configuration data • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) to install • Press MENU (hold the CTL key down and press HELP) to return to the Main Menu <p>Continue to Table 7-38b if adding a new NG node.</p> |

Table 7-38b — ADD NG MODULE On-Line Network Reconfiguration Procedure

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| <p>ADD Network Gateway MODULE (LCN Nodes Configuration)—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES TO THE NCF BEFORE PERFORMING THESE STEPS.</p> <p>NGs are known to all Universal Stations. Complete the next step to load information about the new node into the USs.</p> <p>2. FOR ALL Universal Stations</p> <p style="padding-left: 40px;">(node numbers)</p> <p style="padding-left: 80px;">a. SHUTDOWN the node.</p> <p style="padding-left: 80px;">b. LOAD the node using the NCF installed in the previous step.</p> <p>WARNING:</p> <p style="padding-left: 40px;">Before completing this installation, verify that the LOCAL LCN was defined.</p> <p style="padding-left: 40px;">Before making additional configuration changes that affect NG nodes, RESTART this EP.</p> |
| <p>Detailed Procedure—This procedure is used to add an NG node. To reconfigure an NG node, delete it according to Table 7-39 and then add it back with the desired configuration.</p> <p>You must configure the NG Local System ID before doing this procedure. The procedure to add a Network Gateway Module node to the LCN is</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select LCN Nodes • Select the appropriate node number • Select NETWORK GATEWAY • Enter the NG configuration and optional custom software (if any) details • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>Continue to Table 7-38c if adding a new NG node.</p> |

Table 7-38c — EDIT NETWORK GATEWAY PIN DATA (NG Remote Systems) On-Line Network Reconfiguration Procedure

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| <p>Edit Network Gateway PIN Data (NG Remote Systems)—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>Changes to this data are sent to all NGs as part of the install process. NGs do not have to be restarted. (Check the AUX NODE STATUS display for errors.)</p> <p>PIN definitions affect all Universal stations and CMs. To load the new data, complete the next step.</p> <p>2. FOR ALL Universal Stations (node numbers)</p> <p>. FOR ALL Computing Modules (node numbers)</p> <p>a. SHUTDOWN the node.</p> <p>b. LOAD the node using the NCF installed in the previous step.</p> |
| <p>Detailed procedure—This procedure is used to edit/configure the NG Remote System display. The procedure to edit a Network Gateway Remote System Display is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select System Wide Values • On the System Wide Values menu, select the NG REMOTE SYSTEMS target • Type in the NG configuration data. • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) to install. • Press MENU (hold the CTL key down and press HELP) to return to the Main Menu <p>Continue to Table 7-38d if adding a new NG node.</p> |

Table 7-38d — EDIT NETWORK GATEWAY SECURITY DATABASE On-Line Network Reconfiguration Procedure

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|---|
| <p>Edit Network Gateway Security Database —Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>Changes to this data are sent to all NGs as part of the install process. NGs do not have to be restarted. (Check the AUX NODE STATUS display for errors.)</p> |
| <p>Detailed procedure—This procedure is used to edit/configure the NG Security Database display. The procedure to edit a Network Gateway Security Database Authorization Display is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select System Wide Values • On the System Wide Values menu, select the NG SECURITY DATABASE target • Type in data/select the NG configuration options. Define Exceptions (if any) • Press the ENTER key after each display • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) to install • Press MENU (hold the CTL key down and press HELP) to return to the Main Menu <p>Proceed to Table 7-38e if adding a new NG node.</p> |

Table 7-38e — EDIT NETWORK GATEWAY MODEM DEFINITIONS On-Line Network Reconfiguration Procedure

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|--|
| <p>Edit Network Gateway Modem Definitions—Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>Changes to this data are sent to all NGs as part of the install process. NGs do not have to be restarted. (Check the AUX NODE STATUS display for errors.)</p> |
| <p>Detailed procedure—This procedure is used to edit the NG Modem Definition display. Unless you were instructed by Honeywell to make changes, you should skip this procedure. The procedure to Edit NG Modem Data is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select System Wide Values • On the System Wide Values menu, select the NG MODEM DEFINITION target • Type in changes to the NG Modem configuration data • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) to install • Press MENU (hold the CTL key down and press HELP) to return to the Main Menu <p>Continue to Table 7-38f if adding a new NG.</p> |

Table 7-38f — EDIT TAG NAME DATA On-Line Network Reconfiguration Procedure

| |
|---|
| <p>Edit TAG Name Options —Installation Instructions</p> |
| <p>Changing Tag Name Size affects the HM journal capacity; it is recommended that HM(s) configured for Journals be re-initialized.</p> <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>2. FOR ALL Universal Stations (node numbers)</p> <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. |
| <p>Detailed procedure—If you <u>do not</u> want to reinitialize the HM, the procedure used to edit the NG Tag Name options is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • From the Engineering Menu, select System Wide Values • On the System Wide Values menu, select the TAG NAME OPTIONS target • Select the NG Tag Name length. Then press the ENTER key • If Long Tag Names were selected, choose Yes or No for Formatting. Then press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) to install • Press MENU (hold the CTL key down and press HELP) to return to the Main Menu |

Add Network Gateway—completion.

| |
|---|
| <p>To complete addition of a Network Gateway node, if you have not done so after the last installation instruction, you must shut down and reload each US named in the Installation instructions. Other changes that would also require reloading the same US can go in first.</p> <p>Reload the Network Gateway with its On-Line personality (&NGO).</p> |
|---|

Table 7-38f (alternate) — EDIT TAG NAME DATA On-Line Network Reconfiguration Procedure

Edit TAG Names. If you do want to reinitialize the HM after editing NG Tag Names, follow the procedure below. (Note that this procedure has not been verified and may require slight changes).

Detailed procedure—The procedure to edit the NG Tag Name options and then reinitialize the HM is:

- Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu
- Make sure the backup &ASY cartridge is in place

- From the Engineering Menu, select System Status Display
- On the System Status Display, select the HISTORY MODULES target
- Under Node Numbers, select an HM that has journals
- Select the SHUTDOWN target. Then, press the ENTER key

- Load the Off-Line personality (HMI) into the HM
- Repeat shutdown procedure and load HMI into other HMs that have journals

- From the Engineering Menu, select System Wide Values
- On the System Wide Values menu, select the TAG NAME OPTIONS target
- Select the NG Tag Name length. Then press the ENTER key
- Press F1 (hold the CTL key down and press 1)
- Print the installation instructions if you want
- Press F2 (hold the CTL key down and press 2) to install
- Press MENU (hold the CTL key down and press HELP) to return to the Main Menu

- From the Engineering Menu, select Command Processor
- Use the Backup Command to copy data that you want to save (except Journal volumes)

- From the Engineering Menu, select Volume Configuration
- From the HM Pair Selection Menu, select an affected Node Pair
- NOTE that the next step destroys all data on the HM
- With the Volume Configuration display on screen, press F6 (hold down CTL/press 6)
- Repeat backup/initialize procedure for other other HMs that are affected

- From the Engineering Menu, select Command Processor
- Use the Restore command to copy data that you saved back into the HM(s)

- From the Engineering Menu, select System Status Display
- On the System Status Display, select the HISTORY MODULES target
- Under Node Numbers, select an HM that was shut down
- Load the On-Line Personality (HMO) into HMs that were shut down
- Select the SHUTDOWN target
- Press the ENTER key
- Reboot all affected HMs by turning power off for approximately 5 seconds

- Shutdown all Universal Stations
- Reload all Universal Stations

Table 7-39 — DELETE NETWORK GATEWAY MODULE On-Line Network Reconfiguration Procedure

| |
|--|
| <p>DELETE NETWORK GATEWAY MODULE—Installation Instructions</p> |
| <ol style="list-style-type: none"> 1. SHUTDOWN the NG to be deleted—Node ##. (STATUS must be OFF, PWR_ON or QUALIFIED) 2. INSTALL CHANGES IN NCF (F2) <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>NGs are known to Universal Stations. Complete the next step to remove this node from US displays and alarm lists.</p> <ol style="list-style-type: none"> 3. FOR ALL Universal Stations (node numbers) <ol style="list-style-type: none"> a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step. |
| <p>Detailed procedure—This procedure is used to delete an NG. To reconfigure an NG node, delete it; then use Table 7-38b to add it back with the desired configuration. The procedure to delete a Network Gateway LCN node is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • Select the System Status Display • Select GATEWAYS • Select the applicable NG node number • Select the SHUTDOWN target, then press the ENTER key • From the Engineering Menu, select LCN Nodes • Select the applicable node number • Select the DELETE NODE target • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) <p>To complete the change, you must shut down and reload each US named in the Installation Instructions. Other changes that would also require reloading the same US can go in first. Deleting a Network Gateway Module may require other changes, depending on the desired final configuration. The most likely configuration functions affected by deleting an NG are</p> <ul style="list-style-type: none"> • Volume Configuration (Program Image and Checkpoint Volume Configuration) • Any schematics, logs, CL programs, HM History Groups, and Area displays where points from another LCN was/are referenced. |

Table 7-40 — EDIT CLOCK SOURCE On-Line Network Reconfiguration Procedure

| EDIT CLOCK SOURCE —Installation Instructions |
|---|
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU CAN INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>2. FOR EACH node which is the OLD clock source:</p> <p style="padding-left: 40px;">nn mm</p> <p style="padding-left: 80px;">a. SHUTDOWN the node. b. LOAD the node using the new NCF</p> <p>3. FOR EACH node which is the NEW clock source:</p> <p style="padding-left: 40px;">nn mm</p> <p style="padding-left: 80px;">a. SHUTDOWN the node. b. LOAD the node using the new NCF</p> <p>4. FOR EACH node not already reloaded:</p> <p style="padding-left: 40px;">a. SHUTDOWN the node. b. LOAD the node using the new NCF</p> <p>WARNING: Failure to complete steps 2 and 3 in proper order will result in unsynchronized nodes on the network.</p> |
| <p>Detailed procedure—This procedure is used to reconfigure the System Wide Values Clock Source display. The procedure is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • Select SYSTEM WIDE VALUES on the Engineering Menu • Select CLOCK SOURCE • Enter the new clock locations (lowest number in the left port) • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) • Press the ENTER key <p>To complete the change, you must shut down and reload each node named in the Installation Instructions which was an OLD clock source. Next, you must shut down and reload each node named in the Installation Instructions which is a NEW clock source. Finally, you must shut down and reload all of the other nodes. Reloading must be done in this order.</p> |

Table 7-41 — EDIT ALARM ACKNOWLEDGE OPTION On-Line Network Reconfiguration Procedure

| EDIT ALARM ACKNOWLEDGE OPTION —Installation Instructions |
|--|
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU MAY INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>Console data is used in all Universal stations. Complete next step to load the changes into the USs.</p> <p>2. FOR ALL Universal stations</p> <p style="padding-left: 40px;">nn mm</p> <p style="padding-left: 80px;">a. SHUTDOWN the node. b. LOAD the node using the NCF installed in the previous step.</p> |
| <p>Detailed procedure—This procedure is used to reconfigure the Alarm Acknowledge option. The procedure is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • Select SYSTEM WIDE VALUES on the Engineering Menu • Select ALARM ACKNOWLEDGE • Select YES or NO • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) • Press the ENTER key <p>To complete the change, you must shut down and reload each named Universal Station using the new NCF.</p> |

Table 7-42 — MODIFY NODE On-Line Network Reconfiguration Procedure

| |
|--|
| <p>MODIFY NODE —Installation Instructions</p> |
| <p>1. INSTALL CHANGES IN NCF (F2)</p> <p>THE FOLLOWING STEPS OUTLINE THE PROCEDURE FOR LOADING THE CHANGES INTO THE NETWORK. YOU CAN INSTALL OTHER CHANGES BEFORE PERFORMING THESE STEPS.</p> <p>Loader Directive changes affect only the node being modified. Complete the next step to install the new directives.</p> <p>2. For this node:</p> <ol style="list-style-type: none"> a. SHUTDOWN the node. b. Load the node using the NCF installed in the previous step. |
| <p>Detailed procedure—This procedure is used to reconfigure an LCN Node. It applies to nodes that have a MODIFY NODE target on the first page of the node configuration display. The procedure is:</p> <ul style="list-style-type: none"> • Make sure the backup &ASY pathname was entered on the Default Volume Pathnames menu • Make sure the backup &ASY cartridge is in place • Select LCN Nodes on the Engineering Menu • Select the desired Node on the LCN Node Configuration display. • Select MODIFY NODE on page 1 • Enter configuration changes • Press the ENTER key • Press F1 (hold the CTL key down and press 1) • Print the installation instructions if you want • Press F2 (hold the CTL key down and press 2) • Press the ENTER key <p>To complete the change, you must shut down and reload this node.</p> |

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