



User's Guide

**I-2000 Controller for DACS II
Release 3.2**

December 15 1993

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ABOUT THIS MANUAL

Purpose of This Manual

This manual explains in step-through procedures how to use the I-2000. For related topics, such as details on how to install the I-2000 or maintain its hardware, refer to the accompanying documentation.

Audience

This manual is written for customers who have some familiarity with DACS operations.

How to Use This Manual

This manual is organized by MAIN MENU selection, but the selections are presented in the order in which you would use them. Before attempting to use the manual for the first time, read Chapters 1 and 2. For subsequent uses, turn directly to the chapter on the selection you are trying to use. The Index and the Table of Contents provide references to subselections and fields.

A chapter for one MAIN MENU selection contains an introduction, the forms and menus for the selection, field descriptions in tabular form and operational examples that allow you to step through procedures on the I-2000. Practice on the I-2000 is highly recommended. After a few hours' experience, you will only need this manual for reference purposes.

The Glossary is intended to assist you to understand what a DACS is doing when it responds to menu selections and forms entered through the I-2000. The Abbreviations and Acronyms section provides a quick reference to the many acronyms that form a large part of the telephone communications lexicon.

Accompanying Documents

The following documents accompany this user's manual:

- *AT&T I-2000 Controller for DACS II Installation Manual (365-301-423)*
- *AT&T I-2000 Controller for DACS II Software Release Description*

Depending on the hardware you purchased, you may receive one or more of the following manuals:

- The user's guide appropriate to the computer system unit you purchased
- *UNIX® System V/386 Release 3.2.3 User's Guide and Operations/System Administrator's Reference Manual (1 box, 105750194, 4 documents)*
- *AT&T 570/571 Printer User's Guide*
- *AT&T Intelligent Ports Card Model 1600 (IPC-1600) User's Guide (305-920)*
- *AT&T Intelligent Ports Card Model 900 (IPC-900) User's Guide (305-910)*
- *AT&T 605 Asynchronous Terminal Operating Manual*
- *General Purpose Synchronous Controller - AT/E Installation Guide*

Additional Documents

The following DACS I-related documents, North American Standard (NAS) and Conference European Postale et Telephonique (CEPT), may be of help in using the I-2000 with DACS I.

Table 1. DACS I Documentation

Number	Title	Issue
None	<i>DACS Reference Manual</i>	NA
MC-90017-09	<i>DACS Input-output Message Manual</i>	11.00
MC-90095-09	<i>DACS (CEPT) Input-output Message Manual</i>	1.00

The following DACS II-related documents (Generic 4.1 Release 3) or their equivalents for later releases of DACS II, may be of help in using the I-2000 with

DACS II. Some documents are not specifically relevant to I-2000 features but will be useful, for example, to an expert user in passthrough mode. Other documentation is listed at the appropriate points in this manual.

Table 2. Additional DACS II Documentation

Number	Title	Issue
365-301-002	<i>DACS II Reference Manual</i>	3
365-301-617	<i>DACS II Subrate O&M Manual (PDS)*</i>	1AD.1
365-301-618	<i>DACS II Subrate O&M Manual (MML)</i>	1AD.1
365-301-621	<i>DACS II Gateway O&M Manual (PDS)</i>	1AD.1
365-301-622	<i>DACS II Gateway O&M Manual (MML)</i>	1AD.1
365-301-623	<i>DACS II Core O&M Manual (PDS)</i>	1
365-301-624	<i>DACS II Core O&M Manual (MML)</i>	1
365-301-625	<i>DACS II Domestic Quick Reference Guide (PDS)</i>	2
365-301-626	<i>DACS II Domestic Quick Reference Guide (MML)</i>	2
365-301-661	<i>DACS II Core-Subrate-SLC Gateway I/O Manual (PDS)*</i>	1
365-301-662	<i>DACS II Core-Subrate-SLC Gateway I/O Manual (MML)*</i>	1
365-301-716	<i>DACS II Software Release Description (Customer Support)</i>	1
365-301-625AI	<i>DACS II International Quick Reference Guide (PDS)</i>	2
365-301-626AI	<i>DACS II International Quick Reference Guide (MML)</i>	2
365-301-615AI	<i>DACS II CEPT/EXTCEPT O&M Manual (PDS)</i>	1
365-301-616AI	<i>DACS II CEPT/EXTCEPT O&M Manual (MML)</i>	2
365-301-661AI	<i>DACS II CEPT/EXTCEPT I/O Manual (PDS)</i>	1
365-301-662AI	<i>DACS II CEPT/EXTCEPT I/O Manual (MML)</i>	1
365-301-718AI	<i>DACS II Software Release Description (Customer Support)</i>	1

* To order this manual, call the AT&T Customer Information Center toll free at 1-800-432-6600.

Electronic Documentation

Documentation for some releases of the I-2000 Controller is now available on CD-ROM (compact disk, read-only memory). CD-ROM has many advantages over traditional paper documentation, including cost savings, search and retrieve capability.

CD-ROM is available by annual subscription (on standing order).

- To order, call your technical information resource manager, your AT&T account executive, or the AT&T Customer Information Center (1-800-432-6600).
- For pricing information, contact your AT&T Network Systems account executive or the AT&T Customer Information Center (1-800-432-6600).
- For technical information, call AT&T Documentation Support (1-800-334-0404).

Notational Conventions

The following conventions are used in this manual.

- Key names are shown as they are on a typical keypad and are enclosed in a box, such as

Enter or **^**

- **Enter** represents the **Enter** or the **Return** key on your keyboard.
- Function key labels are in all capital letters and are enclosed in a box; for example:

EXECUTE

- Field names are quoted as they appear on the screen, except where they are described. Bolding is used for emphasis:

Site Name

- Literal command examples, screen prompts, and screen examples are in monospace font:

THE COMMAND COMPLETED SUCCESSFULLY

- In command formats, literals to be typed are in **bold** type:

cd root

- In command formats, and sometimes in literal examples, value names to be filled in are in *italic* type:

yy mmm dd

- Field values are in monospace font:

Ckt ID: circuit01

- Menu selections are stated as they are on the screen in unemphasized capital letters:

PROVISIONING

- Screens and printouts are in 8-point monospace.

The above conventions allow the user to distinguish easily between menu selections, field names, field values and function key names in instructions and field descriptions. Bold and italic are used in other contexts for table titles, emphasis or document references.

INTRODUCTION

1

Product Description

The AT&T I-2000 Controller for DACS II is a computing system configuration designed to allow many users to simultaneously manage multiple cross-connect frames through a user-friendly interface. The elements of the configuration are the frames, the I-2000 computing system and, optionally, the DACScan[®]-2000/C Controller (Circuit Module).

If present, the DACScan acts as a super-controller. The I-2000 is invisible to the DACScan user, and also the DACScan is invisible to the I-2000 user. The interface requires no intervention on the part of I-2000 operators; communication is machine-to-machine.

Since the inception of the I-2000 system, AT&T has expanded the system's hardware platform and networking capabilities. You may configure a variety of products as the I-2000 computer, and establish links to a range of frames. You must make hardware and networking selections before installation. The unqualified terms *DACS* and *frame* in this manual mean any supported, configured cross-connect frame.

More than one I-2000 can be controlled by the DACScan. However, if you have more than one I-2000 on the network and do not use the DACScan, it is suggested that you assign subordinate DACSs to only one I-2000 controller. While it is possible to have more than one controller control a DACS, careful administrative precedents must be put into place to insure that no one accidentally connects or disconnects circuits that are being controlled by the other I-2000.

A Digital Access and Cross-connect System (DACS) is a device for cross-connecting, or switching, between lines that have been time-division multiplexed; i.e., the DACS provisions cross-connections for multiplexed digital transmission. Typically, a DACS is used for connecting trunk lines. The voice-circuit input for trunk transmission has already been collected and multiplexed by other switching and multiplexing equipment. It enters the DACS and is routed through a cross-connection to a channel on another DACS some distance away, where it is again routed to telephone switching equipment for demultiplexing and delivery. The DACS on the other side is the *far end*.

The first electronic cross-connect frame was termed the DACS, currently DACS I. It features modularized circuits called circuit packs (CPs), which can easily be replaced.

In the DACS I, the basic ICs for making cross-connections are located in a CP, the digroup circuit, which receives a multiplexed, DS1 signal and makes available two groups of 12 channels each. As other types of CPs were added to implement different types of cross-connection, such as multipoint and subrate, a more generic name was needed for those CPs that accomplish cross-connection and are interchangeable in the same slots. The term network processing circuit (NPC) was applied.

The DACS I is a cross-connect frame on which has been mounted hardware for:

1. Terminating DS1, multiplexed signals.

- Up to four cross-connect units contain a maximum of four cross-connect modules per unit.
- Each module contains up to eight NPCs: NAS circuit digroups or CEPT NPCs.
- One NPC terminates 24 channels for NAS or 30 for CEPT.

One DACS I fully configured with 4 cross-connect units, 16 cross-connect modules and 128 NPCs provides 3072 DS0 channels, supporting a maximum of 1536 two-way two-point cross-connections. One digroup is reserved for test access.

2. Establishing DS0 two-point cross-connections between the channels.

One cross-connect network (CCN) card contains the circuits to analyze the multiplexed signal into its constituent DS0 signals and retime and switch the constituent DS0s into the desired channels.

The DACS II upgrades DACS I functions and takes advantage of a more advanced technology; specifically, miniaturization. In the DACS II, two digroups are located on a single CP, which is therefore called a dual digroup card (DDC). NPC is used to mean, not the CP, as it does in DACS I, but one digroup of 24 channels for NAS transmission. CPs that are designed for transmission according to the CEPT standard feature dual primary circuits (DPCs). One DPC contains

two CEPT NPCs of 30 channels each (really 32; one channel is used for timing signals and one is used for signaling bits).

The DACS II is a cross-connect frame on which has been mounted hardware modules for:

1. Terminating DS1 multiplexed signals.

- DS3 units (DS3U) contain a maximum of six DS3 terminations per unit. A capacity expansion frame (CEF) features up to 16 DS3Us. Each DS3 termination has the capacity for 28 network processing circuits (NPCs).
- Facility terminating units (FTUs) contain a maximum of 4 facility terminating modules (FTMs) per unit. A CEF features up to 16 FTUs. Each module contains up to 20 dual digroup cards (DDCs) for NAS provisioning or up to 16 dual primary circuits (DPCs) for CEPT provisioning.
- Each DDC or DPC contains two (NPCs).
- One NPC terminates one digroup of 24 channels each for NAS provisioning or 31 channels each for CEPT provisioning.

For example, one DACS II configured with 4 FTUs, 16 FTMs, and 320 DDCs or DPCs can make available 640 NPCs for cross-connection. A fully configured CEF with 16 DS3Us can make available 2688 NPCs.

2. Establishing DS0 two-point cross-connections between the channels.

One or two cross-connect network (CCN) cards contain the circuits to analyze the multiplexed signal into its constituent DS0 signals and retime and switch the constituent DS0s into the desired channels.

3. Establishing multipoint cross-connections.

Digital signal processing units (DSPUs) can perform these functions. Multipoint cross-connections can also be virtual; i.e., they can be established without the aid of the DSP shelf.

Additional hardware supports additional cross-connect capabilities for the DACS II. One or more TG80 cards support clear DS1 signals, and DS3 signal packs support DS3-level signals, which can be cross-connected as 672 DS0 channels per DS3 pack or as 28 clear DS1 signals.

The I-2000 permits you to take advantage of DACS capabilities in a more friendly way. Prior to the I-2000, an operator utilized a command-line interface to generate DACS commands. You may still use the DACS as a stand-alone in this way.

The I-2000 adds a control interface to generate DACS commands; i.e., it is a user-friendly front-end, as well as a circuit and facility management system. You select

provisioning operations from menus and enter the desired circuit characteristics through preformatted screens (forms). The I-2000 then automatically generates the appropriate DACS commands and sends them to the target DACS.

Provisioning is the main task of an I-2000. Provisioning is the process of establishing, deleting or restoring circuits between communications channels that terminate at the DACS' channel ends (*external facility terminations*).

- NPC provisioning informs the I-2000 computer database what channels are terminated in a DACS and what their characteristics are. It establishes logical NPCs and channels corresponding to the physical ones.
- Test port provisioning establishes logical test ports leading to test equipment that can be used for testing channels. The equipment must be physically in place.
- Circuit provisioning makes the logical cross-connections needed to create circuits between NPCs (all channels of the NPC) or between individual channels of an NPC, and sends the commands effecting the physical cross-connecting to the frame. Circuits can also be created, deleted or changed automatically according to stored, user-defined reconfiguration plans.

Other cross-connect administrative operations performed by the I-2000 include:

- Circuit altrouting (alternate routing on a temporary basis)
- Preempting (temporary "overrouting")
- Normalizing (restoring altrouted or preempted circuits)

Additional functionality includes the following features:

- Circuit reconfiguration lets the operator create, execute, and store circuit reconfiguration plans.
- Test access lets the operator route circuits to test ports.
- Alarm reporting notifies the operator of all major and critical frame alarms.

There is also an I-2000-transparent mode of operation, called *passthrough*, in which an expert operator can communicate with a frame directly, as though the I-2000 console were a DACS console.

In order to track its operations and record the state of its circuits, the I-2000 maintains its own databases. The information in the databases is accessible by the operator as printed or displayed reports. The I-2000's report generation functions are very flexible and let you create report templates and individual reports as required.

From time to time, the I-2000 and DACS databases may not correspond; that is, they may have become inadvertently *out of synchronization*. As part of its repertoire of administrative functions, the I-2000 supports automatic or scheduled *synchronization* of:

- NPC provisioning data
- circuit provisioning data
- alarm data

The security of the network is an important concern, especially because it can contain so many elements and, therefore, has a greater risk of intrusion. Access to any I-2000 is controlled by password. Within an I-2000, the system administrator assigns logins. Access to the network is limited also. If the DACScan is present, network access is governed from it.

The quantity and arrangement of the pool of available resources: frames, I-2000, DACScan and the peripherals for mass storage, display or printing available to each, is widely variable. You can build whatever system is practical and economic for the application. Within an I-2000, the element configuration is user-selectable on installation or reinstallation only.

The possible configurations between the I-2000 and the frame it controls are:

- X.25 packet data network
- X.25 direct (point-to-point)
- SNIDER direct



NOTE:

Systems including multiple I-2000s or the DACScan require the packet data network (PDN).

In the network, each frame and the I-2000 computer become nodes. The user terminals are peripheral to an I-2000 computer. Communication between an I-2000 computer and a frame is defined by the CCITT standard X.25 DTE/DCE interface.

The network supports link protection. Without link protection, the I-2000 computer is connected to the network by two lines, and a frame by one. With full link protection, the I-2000 computer is connected by up to four lines: two primary and two backup, and a frame is connected by one primary and one backup.

The following figure shows a network configuration with full link protection; that is, the links from the I-2000 to the network are provided by two X.25 port cards (two ports each), and one card backs up the other.

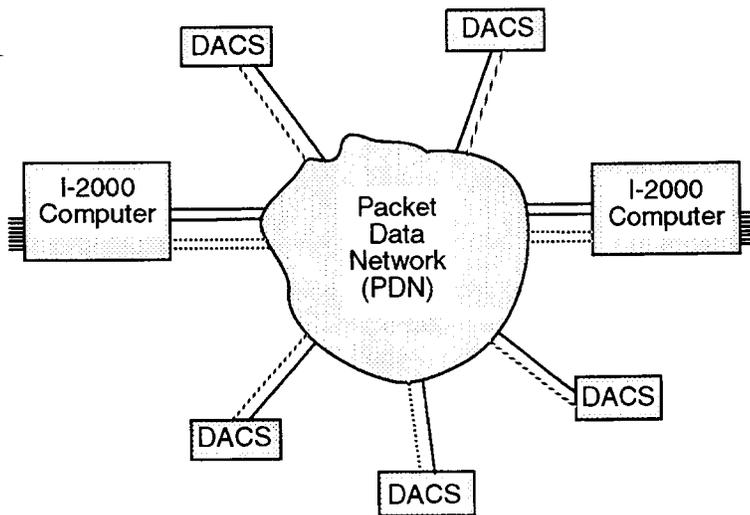


Figure 1-1. PDN X.25 Configuration

A cheaper solution to the link backup problem is to run both primary and backup links through the two ports of a single X.25 board. In that way, you can dispense with one board; however, if the board fails you have no backup.

In the direct configurations, the user terminals and the frames are connected directly to an I-2000 computer and communicate under either the X.25 or the SNIDER protocol.

Although the X.25 is designed to interface to a PDN, it can be used with a point-to-point connection (I-2000 computer to frame) if each DACS line contains a synchronous modem eliminator (SME) to provide the timing signals.

The following figure shows a point-to-point X.25 configuration with link protection.

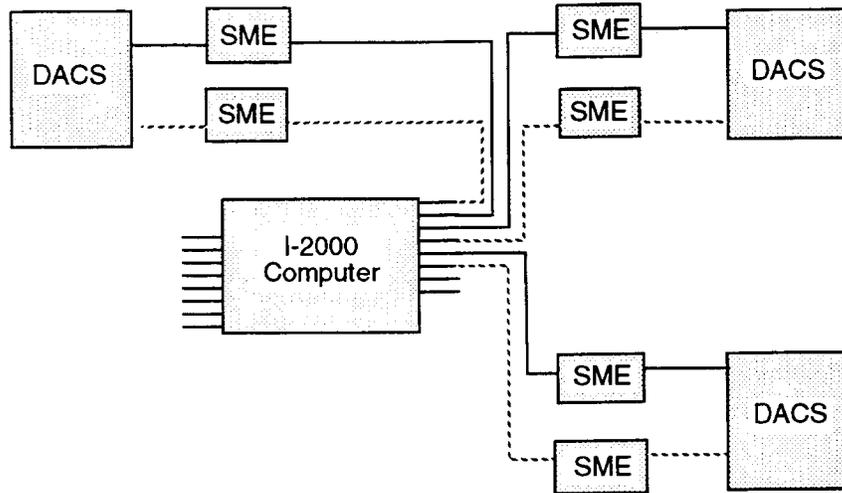


Figure 1-2. Point-to-point X.25 Configuration

The following figure shows a direct configuration that uses the SNIDER protocol (asynchronous data link), instead of the X.25. In that case, SMEs or modems are not required, and also link protection is not available.

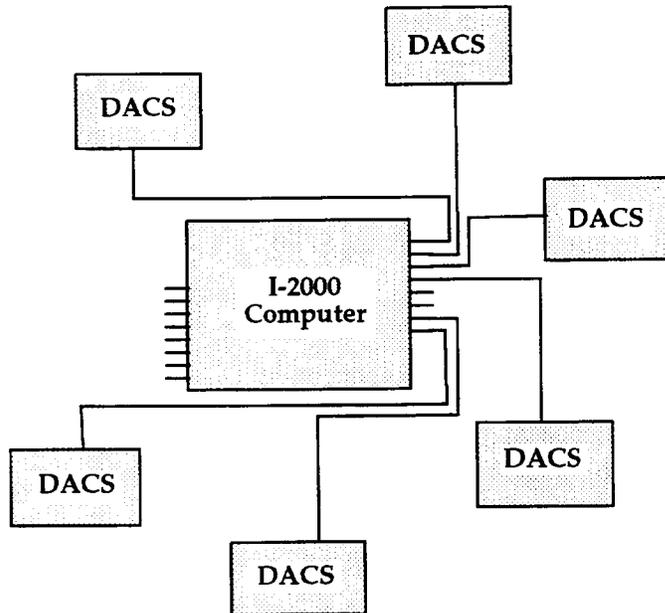


Figure 1-3. Point-to-point SNIDER Configuration

Features

I-2000 features may be bundled into basic configurations called releases. A number of releases have been issued and they continue on an ongoing basis. This manual covers Release 3.2 only. This policy represents a change, in that previous manuals covered all releases.

The features listed in this section are comprehensive; i.e., the list includes all features in the current release. However, order only those features that you think you will need.

The features associated with this release are listed in the "Summary of Menus And Forms," at the end of Chapter 2.

System Features

The hardware and system software features are listed below.

- A variety of hardware platforms described in the *I-2000 Controller for DACS II Installation Manual*.
- A choice of configurations varying the type and the capacity of disk and tape drives.
- Within one configuration, a choice of boards for the slots, to vary the number and type of I/O ports.
- Control of 1 to 20 frames in DACS I or in DACS II Releases 4, 5 and 6.
- Cross-connections for up to 128 DACS I NPCs per frame and 2688 DACS II NPCs per frame. For example, 20 DACS II frames of 640 NAS NPCs per frame would make available approximately 12,000 digroups and 300,000 channel ends, typically supporting 450,000 circuits.
- With DACS II only, clear DS1-level cross-connections through the DACS II's TG80 Card. DACS II Release 6 adds CEPT clear E1 cross-connections.
- With DACS II only, support for the DACS II's DS3-level circuit packs, providing either 28 clear DS1 signals or 672 DS0 channels.
- With DACS II only, TS0 to non-TS0 CEPT cross-connections.
- Login and password protection. Support of up to 6 simultaneous sessions and 64 different logins.
- AT&T 605, 615, 620, 705, 4425, or TELETYPE 5425 asynchronous user terminals.
- Monochrome VGA or color VGA monitor and a keyboard (KBD).

- Selection of communication with individual frames through the X.25 or SNIDER interfaces. One IPC900 or IPC1600 board provides 8 or 16 ports for SNIDER and user terminal communication. One GPSC-AT/E board provides two X.25 ports.
- With the X.25, selection of either point-to-point interfaces or the packet data network.
- Full protection of X.25 switched virtual circuits (SVCs) with optional extra links.
- Optional interface to the DACScan.

Features Under Menu Control

Features that can be user-controlled through menus and forms are as follows:

- User-defined names (IDs) for cross-connects and NPCs.
- Cross-connect altrouting, preempting and normalizing.
- Preplanned circuit reconfigurations, executed according to schedule or triggered on cue from an NPC alarm.
- User administration.
- Command partitioning between administrators and users.
- Task scheduling.
- Task administration, to list or delete tasks on queue.
- DACS support:
 - Facility (NPC) provisioning
 - Two-point cross-connections
 - Contiguous and noncontiguous *m*xDS0 cross-connections
 - One-way cross-connections
 - Virtual broadcast (one-way) cross-connections
 - Symmetric voice circuits
 - Polling data circuits
 - Test access and test-port provisioning
 - Subrate cross-connections through the DACScan-2000 Controller C-Module only
- DACS alarm logging and notification.
- Passthrough (expert DACS user) mode, direct to DACS.

- Querying of database from forms, including NPC and circuit browse selections.
- Database backup and recovery to/from diskette or tape.
- Report capability, including user-defined reports.
- Database administration:
 - Upload I-2000 database with DACS provisioning data
 - NPC audit
 - Scheduled NPC, channel or alarm synchronization between the I-2000 and a DACS
- Synchronous interface to the DACScan.

Autonomous Features

The I-2000 offers some features that are not controllable through menus and screens.

- Alarm broadcast port.

The I-2000 automatically makes available on the alarm broadcast port all alarms sent to it by DACSs that it controls. For its location, refer to the *AT&T I-2000 DACS II Controller for DACS II Installation Manual*.

No special installation or operation through the terminal is required to utilize this port. You must provide your own equipment to connect to the port and receive the alarms. If a modem is going to be attached to the port, you must insure that everything is done that is necessary to put the modem in a DATA TERMINAL READY state.

The alarms are transmitted exactly as they are received from the DACS. Since multiple alarms may be received simultaneously, the I-2000 buffers them for output.

- Real-time echoed response processing (ERP).

Echoed response processing is the automatic response of the I-2000 to provisioning changes made in the DACS through the DACS console or via other DACS administrative links. Such changes cause messages to be sent to the I-2000, which then places NPCs and channels in service or takes them out of service (NPC ERP), or connects or disconnects circuits (circuit ERP) to make the information in the I-2000 database match the DACS cross-connections.

ERP may be switched on or off at two levels: by setting a field value on the appropriate I-2000 form, and by entering DACS commands to configure the

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DACS output. Alarm synchronization also may be turned on or off by entering a field value.

Configuring the DACS

When the I-2000 system is operational, leave it and configure the DACS port(s) that you will connect to it. Perform this step at the DACS. Compatibility is crucial. If DACS frames are already operative, see your system administrator for the details of their settings.

For a DACS I, no login is necessary. For a DACS II or DACS II ISX, log in directly on a dumb DACS terminal as a frame administrator. The commands are:

For **MML**:

```
LGN-USER : : : DAX  
(enter password)
```

For **PDS**:

```
LOGIN : : USER DAX  
(enter password)
```

Once you are logged on as `USER DAX`, follow either the procedure for configuring the DACS as a node in a direct configuration utilizing the SNIDER protocol (next subsection), or the procedure for configuring the DACS as a node in a direct or network configuration utilizing the X.25 protocol (see the section "For X.25 Protocol" later in this chapter). For each DACS that you are configuring, repeat the procedure.

⇒ NOTE:

The procedures for configuring the DACS for a SNIDER link differ slightly between the DACS II and DACS II ISX. The differences are noted in the appropriate procedure below.

For SNIDER Protocol

The DACS I supports only PDS and the SNIDER protocol; therefore, other than setting the baud rate, no special configuration is required. To configure a DACS II:

In MML:

Step 1: Set the baud rate to 4800 (48) and the protocol to SNIDER (S):

For DACS II:

```
ED-PRMTR-LINK::n::BAUD-48,PTCOL-S;
```

where *n* is 1, 2, 3, or 4 and refers to the DACS link.

For DACS II ISX:

```
ED-PRMTR-LINK::1::BAUD-48,PTCOL-S,ENQ-1,XON-0!
```

⇒ NOTE:

On reset, the DACS frame defaults its link's speed to 1200 baud. If the administrative link has been provisioned to any other speed, as above, communication will be temporarily lost. Communication can be reestablished when the frame reboots its database and the link hardware.

Step 2: Set the language to MML (M) and select the NPC addressing system:

```
SET-PRVG-TERM::::n:LANG-M:NPCAD-m;
```

where *m* is

E for 3-digit extended numbering.

X for 4-digit extended numbering.

H for hierarchical numbering.

Step 3a: To disable echoed responses from the DACS II, set the link screening level to 2:

```
SET-PRVG-TERM::::n:SCR-2;
```

Step 3b: To enable echoed responses from the DACS II, set the link screening level to 4:

```
SET-PRVG-TERM::::n:SCR-4,GR-1&-1&-1&-0&-0&-1;
```



NOTE:

For more information concerning echoed responses, see Chapters 4 and 6 under *Echoed Response Processing*.

In PDS:

To configure a DACS I, enter this command:

```
ADD: :LINK n,BAUD b
```

where *n* is 1, 2, 3, or 4 and refers to the DACS link, and *b* is 12, 24 or 48 and refers to 1200, 2400 or 4800 baud.

To configure a DACS II, follow this procedure:

Step 1: Set the baud rate to 4800 (48) and the protocol to SNIDER (S):

For DACS II:

```
ADD: :LINK n,BAUD 48,PTCOL S!
```

For DACS II ISX:

```
ADD: :LINK n,BAUD 48,PTCOL S,ENQ 1,XON 0!
```

Step 2: Set the language to MML (M) and select the NPC addressing system:

```
ADD: :LINK n,LANG M,NPCAD m!
```

Step 3a: To disable echoed responses from the DACS II, set the link screening level to 2:

```
CHG: :LINK n,SCR 2!
```

Step 3b: To enable echoed responses from the DACS II, set the link screening level to 4:

```
CHG: :LINK n,SCR 4,GR(1,1,1,0,0,1)!
```

For X.25 Protocol

DACS I can be configured in SNIDER only. To configure a DACS II:

In MML:

Step 1: Initialize one or both DACS links to handle X.25:

```
ED-PRMTR-LINK: :n: :PTCOL-X;
```

where *n* is the link number, 5 or 6.

- Step 2:** Change the default setting of 8 SVCs and 8 PVCs per link to 16 SVCs and no PVCs per link:

```
ED-PRMTR-LINK::n::VC-0016&-0000;
```

- Step 3:** Set each virtual circuit on the link to the MML language:

```
SET-PRVG-TERM:::n01:LANG-M:NPCAD-m;
```

```
SET-PRVG-TERM:::n02:LANG-M:NPCAD-m;
```

...

```
SET-PRVG-TERM:::n16:LANG-M:NPCAD-m;
```

where *n* is the link number, and *m* is

E for 3-digit extended NPC numbering.

X for 4-digit extended numbering.

H for hierarchical numbering.

- Step 4:** Set the screening of virtual circuits on the link.

To disable echoed responses from the DACS II, set the link-screening level to 2:

```
SET-PRVG-TERM:::n01:SCR-2;
```

```
SET-PRVG-TERM:::n02:SCR-2;
```

...

```
SET-PRVG-TERM:::n16:SCR-2;
```

To enable echoed responses from the DACS II, set the link-screening level to 4:

```
SET-PRVG-TERM:::n01:SCR-4,GR-1&-1&-1&-0&-0&-1;
```

```
SET-PRVG-TERM:::n02:SCR-4,GR-1&-1&-1&-0&-0&-1;
```

...

```
SET-PRVG-TERM:::n16:SCR-4,GR-1&-1&-1&-0&-0&-1;
```

- Step 5:** Set the DACS level 2 parameters to match the parameters of the I-2000:

```
ED-PRMTR-LINK::n::K-2,N2-7,T1-3;
```

In PDS:

- Step 1:** Initialize one or both DACS links to handle X.25:

```
ADD::LINK n,PTCOL X!
```

where *n* is the link number (5 or 6).

Step 2: Change the default setting of 8 SVCs and 8 PVCs per link to 16 SVCs and no PVCs per link:

```
ADD::LINK n,VC(0016,0000)!
```

Step 3: Set each virtual circuit on the link to the MML language:

```
ADD::LINK n01,LANG M,NPCAD m!
```

```
ADD::LINK n02,LANG M,NPCAD m!
```

```
...
```

```
ADD::LINK n16,LANG M,NPCAD m!
```

where *n* is the link number, and *m* is

E for 3-digit extended NPC numbering.

X for 4-digit extended numbering.

H for hierarchical numbering.

Step 4: Set the screening of virtual circuits on the link.

To disable echoed responses from the DACS II, set the link-screening level to 2:

```
CHG::LINK n01,SCR 2!
```

```
...
```

```
CHG::LINK n16,SCR 2;
```

To enable echoed responses from the DACS II, set the link-screening level to 4:

```
CHG::LINK n01,SCR 4,GR(1,1,1,0,0,1)!
```

```
...
```

```
CHG::LINK n16,SCR 4,GR(1,1,1,0,0,1)!
```

Step 5: Set the DACS level 2 parameters to match the parameters of the I-2000:

```
ADD::LINK n,K 2,N2 7,T1 3!
```

Repeat the appropriate steps for the other DACS links as necessary.

Logging In to the I-2000

Entering a Root Password for the I-2000

The root password is the password assigned to the login, `root`, which grants full access to the system, and is the initial login for any system. You may only log in as `root`, or enter a root password, from the console.



CAUTION:

As shipped, the I-2000 has no root password. It is important to enter one and to remember this password, since it is the only way to recover from forgotten I-2000 passwords (see the section "CHANGE PASSWORD Selection" in Chapter 11). If the worst case does occur, you can only gain access to the I-2000 via a procedure that involves hardware disassembly. Refer to the processor manuals.

- Step 1:** At the `login` prompt, enter the word `root`.
- Step 2:** At the `password` prompt, press `[Enter]`.
- Step 3:** At the `#` prompt, enter `passwd`.
- Step 4:** Enter the selected password twice as requested.
- Step 5:** At the `#` prompt, enter `exit`.

Logging In

To log in:

- Step 1:** Turn on the I-2000's computer. The login prompt appears.
- Step 2:** Be sure that `[Caps Lock]` is not on; if it is, press `[Ctrl][d]` until lower-case letters appear.
- Step 3:** Log in as system administrator with the login `dacsadm` and the `dacsadm` password, or as an operator with the login and password assigned by the administrator.

The system administrator manages as many as 63 operator logins (see Chapter 11). If this is the first entry to the system, it will be necessary for you to create those logins. But first, it is suggested you administer the links and frames as part of the initial setup.

- Step 4:** The I-2000 prompts
Do you have a color monitor (y/n)?

Answer *y* or *n*.

The MAIN MENU appears.



NOTE:

When entering data, strike the keys sharply and quickly to avoid entering repeated key values for the same keystroke.

You are automatically logged off if you do not enter a keystroke within 60 minutes.

Administering X.25 Links

This feature is available only to system administrators.

Administering the X.25 links means placing them in service or taking them out of service. The network and its nodes must already have been physically installed before links can be placed in service. Placing the links in service is not required for merely running the I-2000. Once a link is in service, it can be used to establish communication with one or more frames (see the next section, "Administering Frames"). For the details on how to administer an X.25 link, see the section "X.25 LINK ADMINISTRATION Selection" in Chapter 3.

Administering Frames

This feature is available only to system administrators.

Administering a frame means establishing communication with the frame or taking it away. A link over which communication can occur must already have been provisioned (see the preceding section, "Administering X.25 Links"). For the details on how to administer a frame, see the section "FRAME ADMINISTRATION Selection" in Chapter 3.

Configuring the Login Ports

This feature is available only to system administrators.

Configuring a login port means placing an asynchronous line in service. The I-2000 supports as many login ports as you have asynchronous ports. These appear as login ports 1 through *x*. The I-2000 supports up to six simultaneous

login sessions, including the console session. For the details on how to administer the login ports, see the section "LOGIN PORTS Selection" in Chapter 3.

Changing Passwords

This feature is available only to system administrators.

You may need to change your password from the *root* password. For information on how to change passwords, see the section "CHANGE PASSWORD Selection" in Chapter 11.

Using the System

Obtaining the MAIN (Top) MENU

As soon as you log in, the MAIN MENU appears.

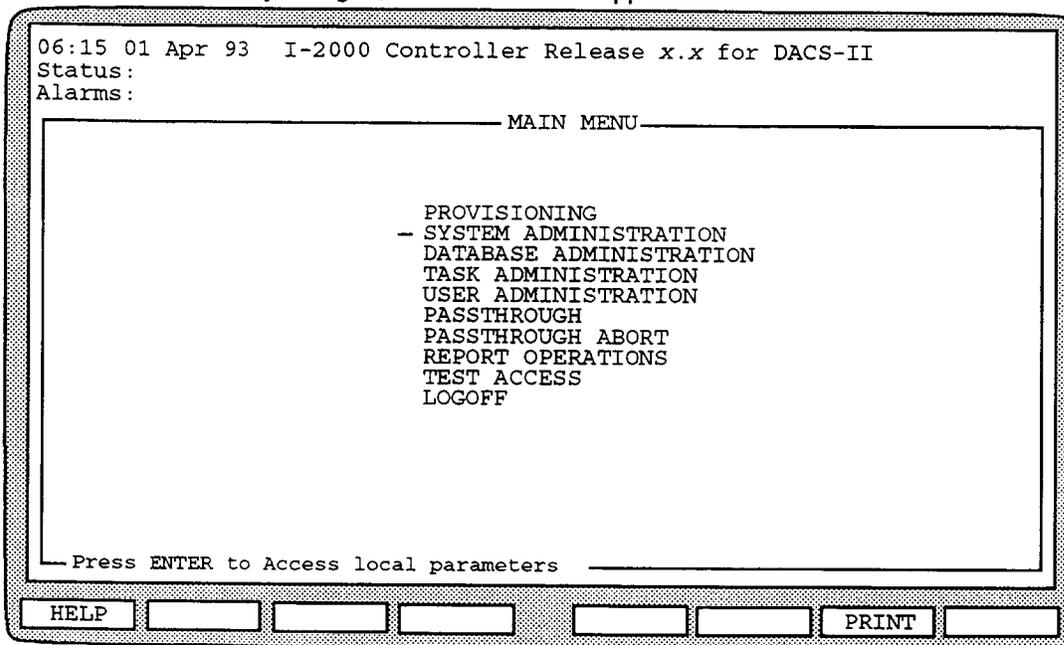


Figure 2-1. MAIN MENU

Navigating Between Menus, Forms and Fields

The user interface of the I-2000 features screens, which comprise menus and forms in a logical "tree" structure. The complete structure is summarized at the end of this chapter.

A menu is a list of operations and actions from which you can select by one of the following methods:

- Press **Enter** if the cursor is already at the desired choice; otherwise, use the arrow keys to get there.
- Type the first letter of your choice. For selections beginning with the same letter, type additional letters. Use **Ctrl|X** to clear the field before making any entry.

Some menu choices branch to subsequent submenus, but in any case lead eventually to a form. Forms contain fields. You type information into the fields and press **Enter**.

As soon as the cursor enters a field, INSERT typing mode is in effect. Each keystroke appears to the left and the cursor character with characters to the right are moved to the right.

To switch to OVERLAY typing mode, press **Esc**. A keystroke appears at the cursor position, overlaying the character there, and the cursor moves over the next character to the right. **Esc** switches between INSERT and OVERLAY typing modes, but entry to a field is always in INSERT.

To remove the contents of the field and start over, type **Ctrl|X**.

Once you press **Enter**, the entered information is syntactically validated and accepted or not.

If it is not accepted, an error message is displayed with a request to reenter. Once the data for a field has been accepted, the cursor advances to the next field.

Tab and **Shift|Tab** can be used to move forward and backward, respectively, between fields. However, not all fields allow user input. In such cases, the next field is the next that allows user input.

Some fields are mandatory; for example, **NPC ID** in an NPC PROVISIONING form. You are not allowed to continue until the field contains a valid value. Of course, the special function keys are always valid when they are shown on the screen; you can always start over by pressing **QUIT**. See the next section, "Using the F-Keys."

For further information on allowed keystrokes for menus, forms and passthrough, see the following tables.

⇒ NOTE:

The title of each table states the proper application of its keystrokes. For example, **PAGE DOWN** as a menu control keystroke obtains the next page of a menu, but not necessarily the next page of a form or of a displayed report.

If there is no next page or you are at the last page, a message appears:

Can't move in that direction.

Table 2-1. Menu Control Keystrokes

Keystrokes	Function
^	Return to the MAIN MENU.
Enter Ctrl j Ctrl m	Select an item from the menu.
Home	Move to the first menu item.
End	Move to the last menu item.
Ctrl a	Get an alarm report.
Ctrl b Pg Dn	Scroll forward a page.
Ctrl c	Return to the MAIN MENU from a second level menu; log the user off from the MAIN MENU level.
Ctrl d Ctrl n Ctrl i ↓	Move down a line.

Table 2-1. Menu Control Keystrokes

Keystrokes	Function
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">f</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Pg Up</div>	Scroll backward a page.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">h</div>	Erase the last character in the pattern matching buffer.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">o</div>	Output the screen to the printer.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">p</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 10px;">↑</div>	Move up one line.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">t</div>	Toggle SELECT and UNSELECT in a multiselect menu.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">w</div>	Refresh the screen.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">x</div>	Clear the pattern matching buffer.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">z</div>	Find the next pattern match among multichoice matches.

**NOTE:**

The pattern matching buffer holds keystrokes as you type them. Typing

p

, for example, places p in the pattern matching buffer.

Ctrl

z

 moves to the next menu selection beginning with p.

Ctrl

x

 and

Ctrl

h

 clear the p.

Table 2-2. Form Control Keystrokes

Keystrokes	Function
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Enter</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">m</div>	Enter the information in the field.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Home</div>	Move to the first form item.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">End</div>	Move to the last form item.
<div style="border: 1px solid black; padding: 2px; display: inline-block;">Ctrl</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-left: 5px;">a</div>	Get an alarm report.

Table 2-2. Form Control Keystrokes

Keystrokes	Function
Ctrl b Pg Dn	Move to the next page.
Ctrl f Pg Up	Move to the previous page.
Ctrl h	Backspace and erase a character.
Ctrl i Tab	Move forward one field.
Ctrl k	Clear to the end of the field.
Ctrl l	Move left a field within a row.
Ctrl n	Move right to the next field.
Ctrl o	Output the screen to the printer.
Ctrl p Shift Tab	Move to the previous field.
Ctrl r	Move right a field within a row.
Ctrl u	Move up to the next closest field.
Ctrl v	Delete a character.
Ctrl w	Refresh the screen.
Ctrl x	Clear the field.
Ctrl z	Move to the previous listed choice.

Table 2-3. Passthrough Control Keystrokes

Keystrokes	Function
Home	Position the cursor at the input line.
Ctrl a	Get an alarm report.
Ctrl b	Scroll back a page.
Ctrl d	Scroll forward a line.
Ctrl e	EXIT from passthrough
Ctrl f	Scroll forward a page.
Ctrl h	Backspace and erase a character.
Ctrl l	Move to the last page of the buffer.
Ctrl o	Output the screen to the printer.
Ctrl t	Move to the top of the buffer.
Ctrl u	Scroll back a line.

Using the F-Keys

Function keys (F1) through (F8) across the top of the I-2000 keyboard perform the I-2000 functions that are shown along the bottom of each I-2000 screen. The functions may change from screen to screen.

⇒ NOTE:

(F1) through (F8) are under software control and cannot be programmed by the user. However, some terminals permit selection of user function keys and system function keys. In that case, the user function keys can still be user programmed. To obtain the preprogrammed system function keys, you must select them. See your terminal user's guide for instructions on how to program the user F-keys.

Some of the common preprogrammed F-keys are shown next:

Table 2-4. F-Keys

Keystrokes	Function
CHOICES	Displays a pop-up window showing the list of choices available for this field.
FIRST	Moves the selection highlighting to the first list item.
HELP	Displays a brief help message for the item on which the cursor is currently resting.
LAST	Moves the selection highlighting to the last list item.
NEXT	Moves the selection highlighting to the next list item.
PREVIOUS	Moves the selection highlighting to the previous list item.
PRINT	Prints the screen just as it is.
QUIT	Returns to the previous menu.
TOP MENU	Returns to the MAIN MENU.

Other F-keys are described at the appropriate locations in this manual. If a key does not appear on the screen, it has no definition for that screen. Pressing it results in a message:

Unimplemented Function Key.

If the key appears on the screen, and pressing the key results in the Unimplemented message, its definition may not be applicable to the attempted operation.

Two keys have functions that require explanation in detail: **EXECUTE** and **RECNCILE**. See the sections, "Using the EXECUTE Key" and "Using the RECNCILE Key" later in this chapter.

Understanding the Screen Line

The contents of the screen are:

Table 2-5. Screen Contents

Area	Description
Top line	Gives the time, date and I-2000 software release number.
Second line (Status line)	Contains the most recent message about I-2000 status for system-wide communication to logged-in users. For example, when you enter passthrough mode on a SNIDER link, a message appears that passthrough is in progress for that DACS. This line also gives the status of background processes such as preplanned reconfigurations and report generation. This line is termed the I-2000 status in this manual to avoid confusion with the various status or state fields that may appear on the screen. Note that the previous message is overwritten by the next message, and that you cannot count on a message remaining in the Status line for long. If the response to your I-2000 operation does not seem to appear, it may already have been overwritten by a system message.
Third line	Shows the alarm state of frames supported by the I-2000. Pressing Ctrl a displays a report of the most recent alarms (up to 4000) for the chosen frame.
Middle screen	Shows the menu or a form with its fields.
Near bottom	Displays a line of text that prompts, gives an error message, or displays the completion status of the last command you requested.
Bottom screen	Contains the pertinent labels for the F1 through F8 keys in effect for that screen.

Using the EXECUTE Key

Entry of data through the screen sets up an operation to be performed on the DACS. The DACS commands generated by the I-2000 are sent to the DACS when you specify execution through the **EXECUTE** special function key. Since an improperly timed or ill-prepared operation can have serious consequences, some safeguards are built into the use of the **EXECUTE** key.

As soon as you press **EXECUTE**, the I-2000 begins by making a number of consistency checks before deciding that the command might succeed and passing it on to the frame. If the consistency checks indicate that the command cannot succeed, then an error message either is flashed at the bottom of the screen, or, in a few instances, is placed in the command response pop-up window. In the latter case, the window persists until you acknowledge it by typing

Enter. An example of the command response pop-up window is illustrated immediately below.

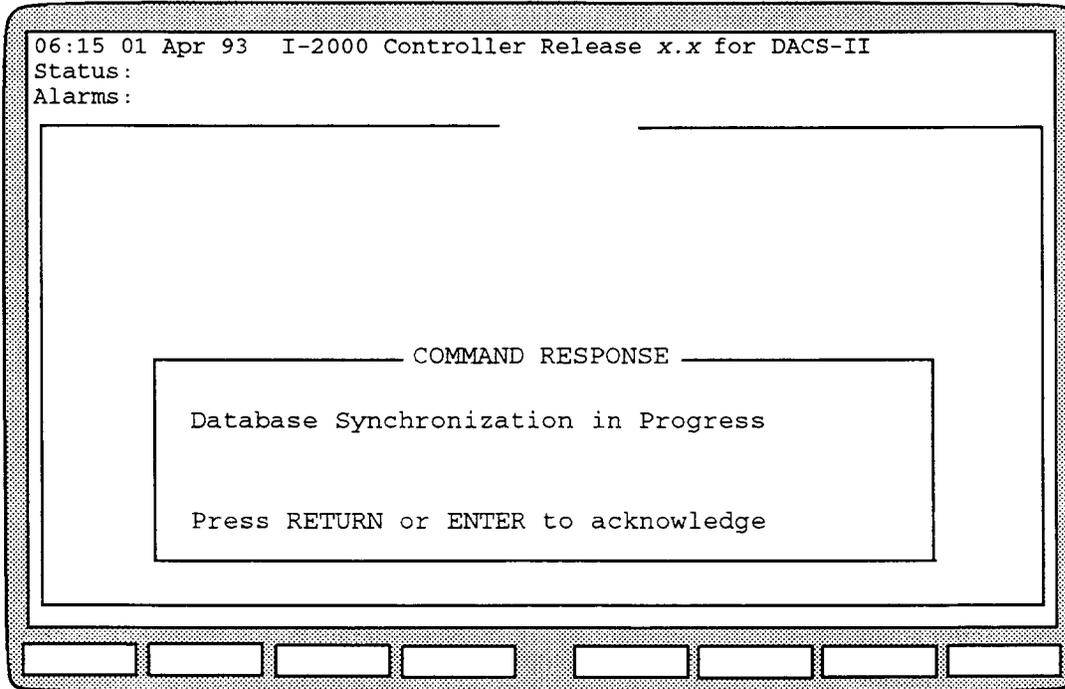


Figure 2-2. Command Response Pop-up Window

⇒ NOTE:
The frame may also reject a command for reasons not checked by the I-2000. An explanation message is then displayed in the command response pop-up window, which will remain on the screen until acknowledged by **Enter**.

When the database checking indicates that the command can succeed, one of two possible pop-up windows appears as shown next:

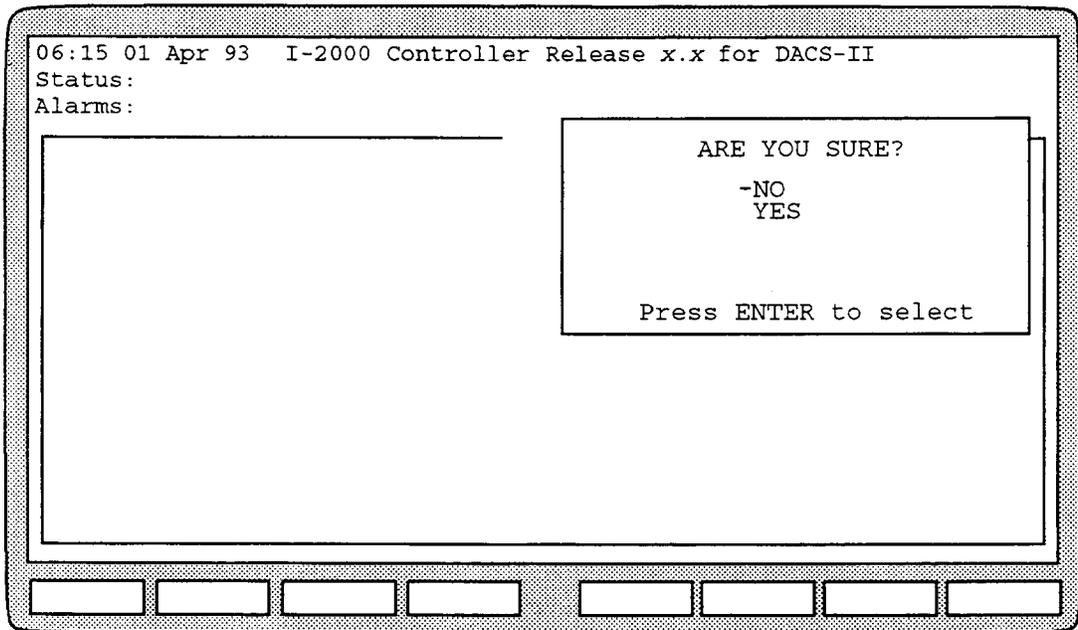


Figure 2-3. Confirmation Window

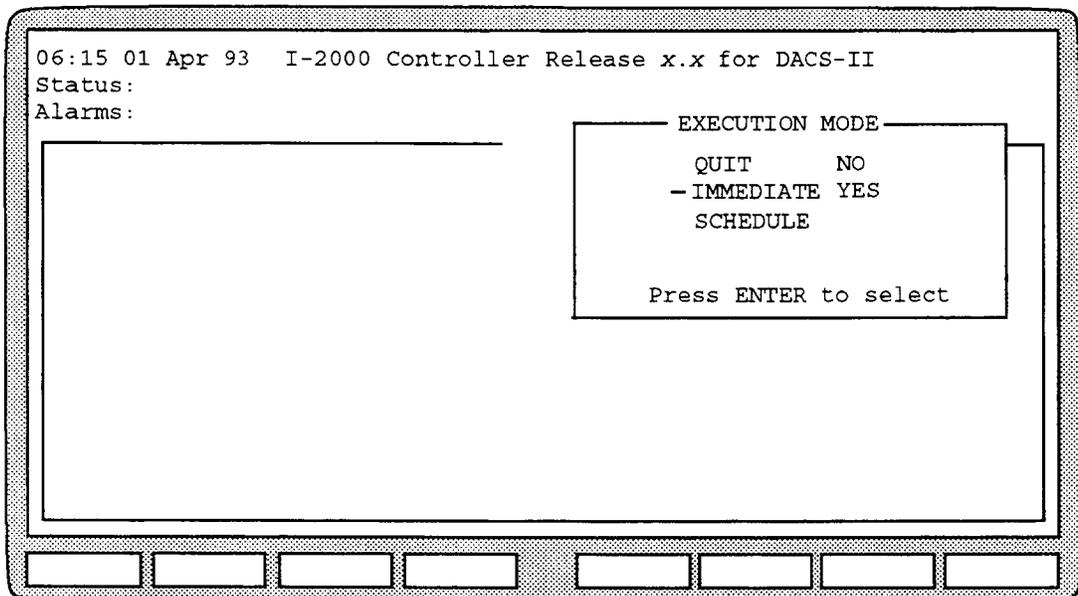


Figure 2-4. Select Schedule or Confirm Window

The confirmation window asks if you are sure you want to send the request to the DACS, and allows you to choose Y or N. As soon as you make your selection, the I-2000 either performs the operation immediately or cancels it as you requested.

If the I-2000 sends a command to the frame, it may not receive a timely reply. The I-2000 waits for three minutes and then displays a `timeout` error message in the COMMAND RESPONSE box.

Scheduling is an important I-2000 feature. You may not desire or it may not be convenient to perform the operation now. The I-2000 provides the capability of executing the operation in the foreground or in the background. It can be scheduled to run in the background once, repeatedly or indefinitely at a specified frequency. Operations that can be scheduled are noted at the end of this chapter in the section "Summary of Menus And Forms."

For operations that can be scheduled, the EXECUTION MODE window appears when you press **EXECUTE**. It allows you to select a scheduling menu. You may also just select YES or NO, as in the ARE YOU SURE? menu.

If you select QUIT or NO, the operation is canceled. If you select IMMEDIATE or YES, the operation is executed immediately in the foreground; i.e., the screen is not usable until the operation is complete. If you select SCHEDULE, the TASK SCHEDULING window appears:

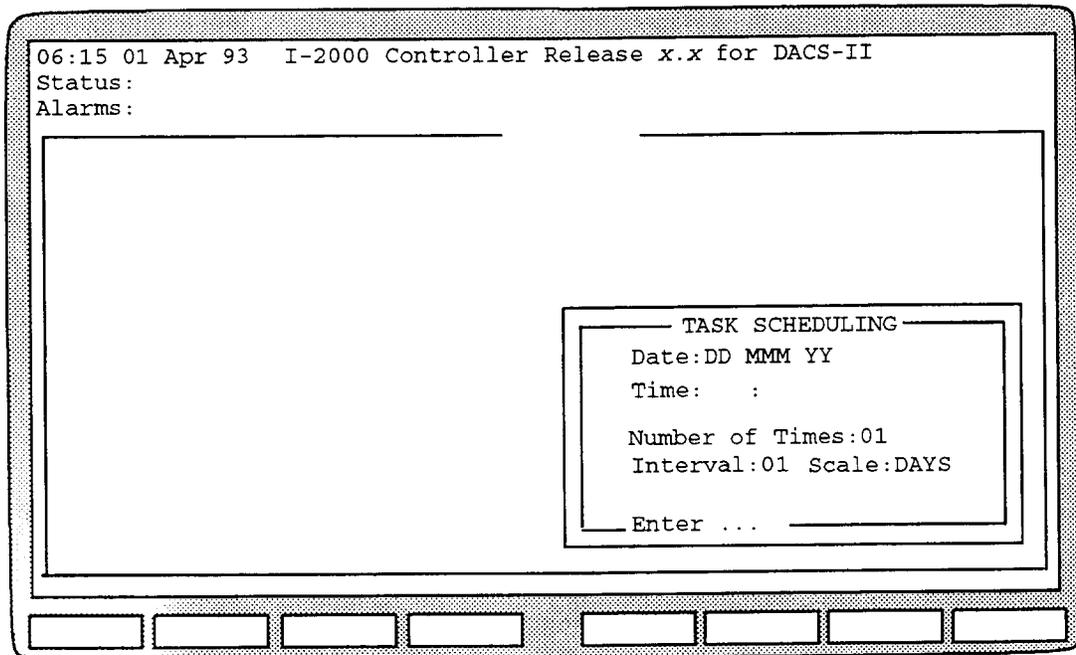


Figure 2-5. Task Scheduling Window

Table 2-6. TASK SCHEDULING Field Descriptions

Date	The date of first scheduled execution. The format is <i>dd mmm yy</i>
	<i>dd</i> The day of the month, 1 through 31.
	<i>mmm</i> A 3-letter standard abbreviation for the month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec. The month is not case-sensitive.
	<i>yy</i> The last two numbers of the year. Years begin with 1990.
Time	The time of first scheduled execution. The format is <i>hh:mm</i>
	<i>hh</i> The hour on a 24-hour clock, 00-23.
	<i>mm</i> The minute, 00-59.

Table 2-6. TASK SCHEDULING Field Descriptions

Number of times	Two numeric digits. A value specifying the number of times the task is to execute. The default is 01. The value 00 obtains indefinitely repeated execution.
Interval	The number of Scale units between successive executions of the Action . The range of values is 01-99.
Scale	The type of units in which the Interval is expressed. MINUTES HOURS DAYS

For information on how to remove a task from the task list, see Chapter 10 on "Task Administration."

Using the RECNCILE Key

Pressing **EXECUTE** alone to enter a provisioning **Action** such as CREATE or RESTORE updates both DACS and I-2000 databases automatically. However, there will be situations where you need to change the DACS and I-2000 databases individually to reconcile them. For example, if you are installing the I-2000 at a site where the DACS NPCs have already been provisioned, pressing **RECNCILE** followed by **EXECUTE** lets you provision the I-2000 database independently, without sending a corresponding command to the DACS frame.

To update the I-2000 database independently:

Step 1: Fill out the screen.

Step 2: Press **RECNCILE**. The WHICH DATABASE? window pops up:

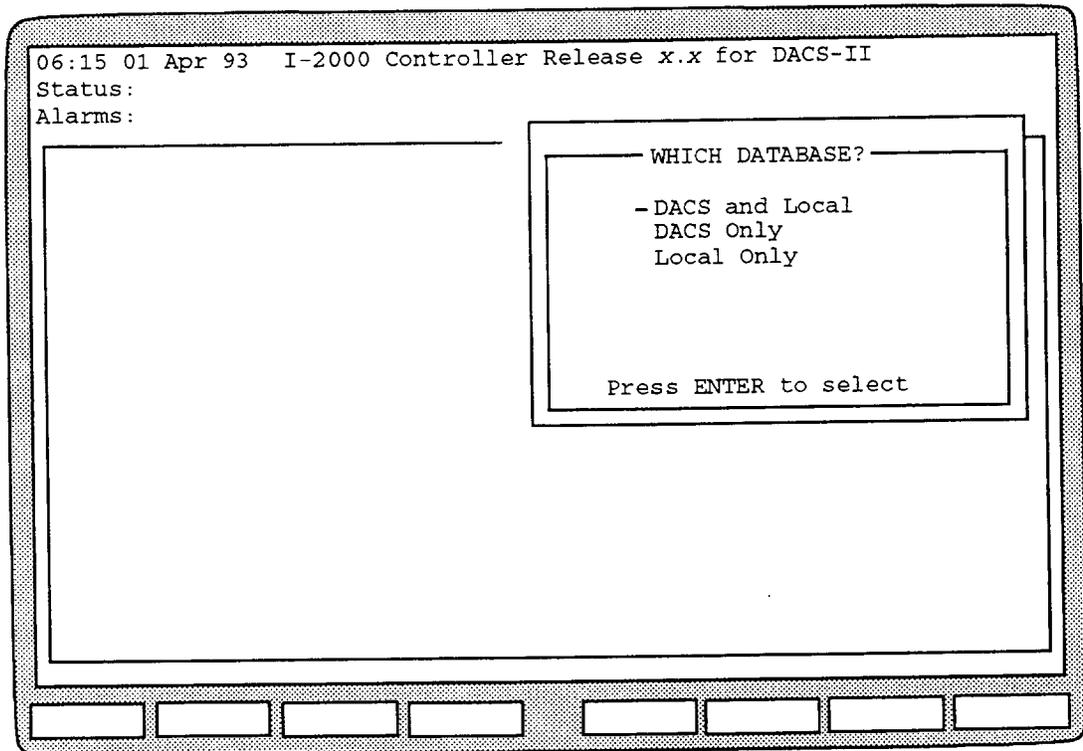


Figure 2-6. Database Selection Window

Step 3: Choose `Local Only`. The following message appears toward the bottom of the screen:

DATABASE CHOSEN: LOCAL ONLY

Step 4: Press `EXECUTE`.

The `DACS Only` selection lets you send a provisioning command to the DACS for execution, bypassing the I-2000 database and its consistency checking. This feature allows the I-2000 screen displays to control the DACS frames without the need for you to enter passthrough mode.

The constraints concerning the use of `RECNCILE` are:

- For `Local only` mode, the results of a `RECNCILE` followed by an `EXECUTE` are the same as for `Dacs and Local`, except that no commands at all are sent to the DACS. You can provision NPCs and circuits for practice, or for future use in the DACS, without altering the DACS provisioning in any way.

- For `DACS only` mode, fields that would affect the I-2000 database only are ignored. Minimal checking of DACS information is performed, and the I-2000 database is not updated at all.



CAUTION:

You must take care when using `local only` mode: since the I-2000 does not cross-check every parameter in the form and relies on the DACS for some checking, it is possible to store invalid circuit or provisioning attributes in the I-2000 database. The result could be an `EXECUTE` failure later.

For example, suppose you store an illegal `TC` value. A later attempt to synchronize the circuit will result in an `EXECUTE` failure. To prevent this type of failure, consult your local network engineering staff or refer to the DACS I/O manuals for proper value pairs.

After command completion the database selection reverts to `DACS` and `Local`, the normal mode, in which the DACS and the I-2000 are provisioned together.

Summary of Menus And Forms

The list of operating features in this summary is comprehensive. However, you may not have purchased every feature. If you did not purchase a feature, the item appears on the menu, but on attempting to access it, you are informed of its unavailability.

This table lists menu selections starting at the highest level to the left and moving to the lowest level to the right. At the lowest level is typically a form. Nearly all forms include an **Action** field. The **Action** identifies the task you want to perform. This table summarizes the **Actions** available.

The following conventions are observed in the table below:

- Some features can be scheduled. These are underlined.
- Some features are available only to the system administrator. These are in shaded regions.

Table 2-7. Summary of Menus and Forms

MAIN MENU	Second Level	Action/Third Level
PROVISIONING	CIRCUIT	<u>ACTIVATE</u> <u>MODIFY</u> <u>PEND</u> <u>DELETE</u> <u>DEACTIVATE</u> <u>ALTRROUTE</u> <u>NORMALIZE</u> <u>BROWSE</u> <u>COMBINE</u>
	TEST PORT	CREATE TP DIGROUP DELETE TP DIGROUP CREATE TEST PORT DELETE TEST PORT
	NPC	<u>CREATE</u> <u>DELETE</u> <u>REMOVE</u> <u>RESTORE</u> <u>MODIFY</u> <u>QUERY</u> <u>BROWSE</u>
	RECONFIGURATION PLAN	CREATE DESTROY BOOT INSERT REMOVE CHANGE EXECUTE IDLE CHECK CLEAN ABORT
	AUTOMATIC RECONFIGURATION PLAN	<u>CREATE</u> <u>DESTROY</u> <u>INSERT</u> <u>REMOVE</u> <u>CHANGE</u> <u>EXECUTE</u> <u>IDLE</u> <u>CHECK</u> <u>CLEAN</u> <u>ABORT</u>
	NPC ROLL	
SYSTEM ADMINISTRATION	LOGIN PORTS	<u>RESTORE</u> <u>REMOVE</u>

Table 2-7. Summary of Menus and Forms

MAIN MENU	Second Level	Action/Third Level
	X.25 LINK ADMINISTRATION	RESTORE REMOVE
	FRAME ADMINISTRATION	CREATE RESTORE BRESTORE REMOVE DELETE MODIFY CHGSITE
	PRINTER ADMINISTRATION	ENABLE DISABLE LIST CANCEL LOGALL LOGALARMS STOPLOGGING
	SHUTDOWN	
	DATE AND TIME	
	SYNCHRONIZE FRAME DATE & TIME	
	CNC PORTS	RESTORE REMOVE
	DATABASE ADMINISTRATION	DATABASE AUDIT/SYNCHRONIZATION
	DB BACKUP/RESTORE	FORMAT FLOPPY DISKETTE BACKUP/ RESTORE TAPE BACKUP/ RESTORE
	ENTER OUTAGE DATA	INSERT CHANGE DELETE DESTROY

Table 2-7. Summary of Menus and Forms

MAIN MENU	Second Level	Action/Third Level
TASK ADMINISTRATION	TASK MANAGEMENT	LIST DELETE
	PRINTER QUEUE STATUS	LIST CANCEL
USER ADMINISTRATION	USER MANAGEMENT	ADD CHANGE DELETE
	CHANGE PASSWORD	
PASSTHROUGH	MULTIPLYED PASSTHROUGH	
	PASSTHROUGH	
PASSTHROUGH ABORT		
REPORT OPERATIONS	CIRCUITS	CIRCUIT CONNECTIONS CIRCUIT INFORMATION CIRCUIT OPTIONS CIRCUIT AVAILABILITY
	EQUIPMENT	NPC IDS NPCS
	CHANNELS	CHANNEL USAGE
	ALTRUTES/PREEMPTIONS	ALTROUTED CIRCUITS PREEMPTED CIRCUITS
	RECONFIGURATION PLANS	
	RECONFIGURATION PLAN ALTRUTE	PLAN ALTROUTED CIRCUITS PLAN PREEMPTED CIRCUITS
	AUTO RECONFIGURATION PLANS	RP LISTS NPC LISTS
	OUTAGES	

Table 2-7. Summary of Menus and Forms

MAIN MENU	Second Level	Action/Third Level
	TEST ACCESS	TEST PORT STATUS TEST PORT PROVISIONING
	FRAMES/LINKS	PROVISIONING LINK CONNECTIVITY LINK STATUS
	USER ADMINISTRATION	
	DACS ALARM QUERY	
	RECONFIGURATION PLAN RESULTS	SEQUENCE SORTED CP SORTED
	AUTO RECONFIGURATION RESULTS	SEQUENCE SORTED RP ID SORTED
	AUDIT/SYNCHRONIZATION RESULTS	NPC AUD NPC SYNC CH AUD CH SYNC
	NPC ROLL RESULTS	
	ECHOED RESPONSE PROCESSING	CKT NPC TA
	TASK SCHEDULE LIST	
	TASK SCHEDULE RESULTS	
	DACS ALARM LOG	
	DACS HISTORY LOG	
	DISPLAY DACS ALARM QUERY	SCREEN PRINTER
	DISPLAY LAST GENERATED REPORT	SCREEN PRINTER
	EDIT CUSTOM REPORT FORMAT	CREATE DELETE MODIFY RENAME

Table 2-7. Summary of Menus and Forms

MAIN MENU	Second Level	Action/Third Level
TEST ACCESS		MONITOR SPLIT HUB TERMINATE UNTERMINATE RELEASE LOOP
LOGOFF		

SYSTEM ADMINISTRATION

3

Introduction to System Administration

The SYSTEM ADMINISTRATION selections allow the system administrator to perform a number of administrative tasks. Select SYSTEM ADMINISTRATION from the MAIN MENU. The SYSTEM ADMINISTRATION menu is shown below.

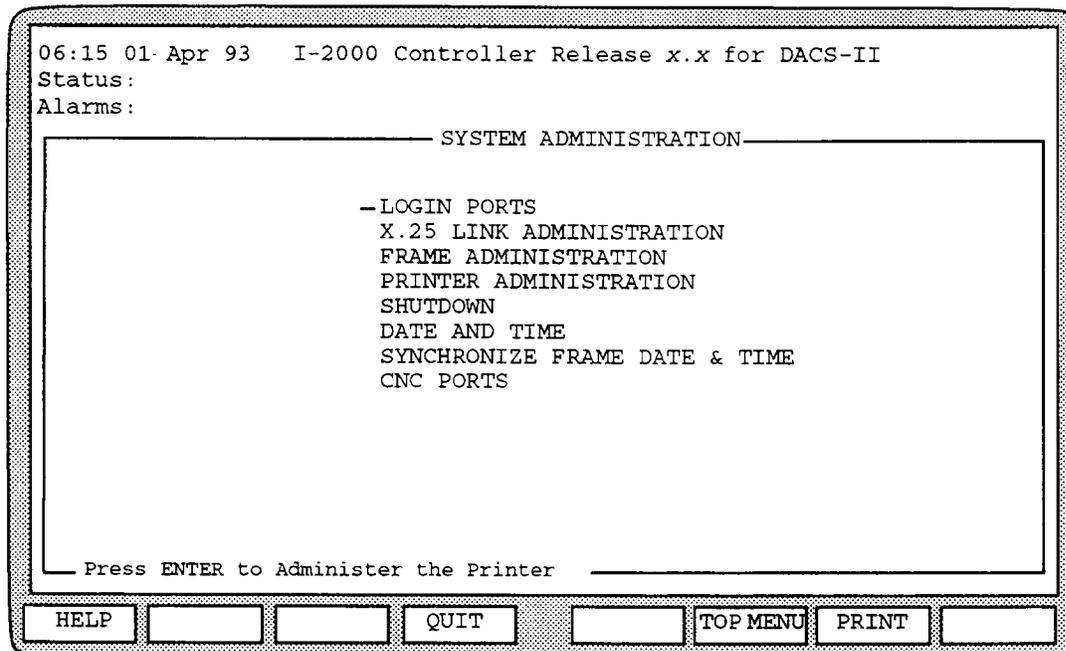


Figure 3-1. SYSTEM ADMINISTRATION Menu

LOGIN PORTS Selection

Introduction to Login Ports

The LOGIN PORTS selection allows you to enable or disable an asynchronous port. An I-2000 asynchronous port is the logical means by which a terminal operator accesses the I-2000 computer through an asynchronous line.

Login ports are not the only use of asynchronous lines. SNIDER connections are made through them as well; however, the two uses are incompatible. If you are going to enable a port, you cannot use the corresponding line for a SNIDER link, and vice versa. For details on SNIDER links, refer to the "FRAME ADMINISTRATION Selection" section later in this chapter.

The number of asynchronous lines available at the I-2000 computer depends on its hardware configuration. For details concerning hardware configuration, see the *I-2000 Controller for DACS II Installation Manual* regarding the IPC-900/IPC-1600, or their equivalents. The hardware makes available lines 1 through n , where n must be known to the administrator.

The system administrator must restore a login port before an operator can log in on it. Restoring the port places a login prompt on the terminal.

Different terminals may require different asynchronous line speeds. It is possible to change the line speed through this selection.

⇒ NOTE:

The console does not communicate with the I-2000 computer via these asynchronous lines. Therefore, the system administrator does not need access through one of these ports.

Link or frame administration are not required prior to the use of this selection.

The LOGIN PORT ADMINISTRATION Form

Select LOGIN PORTS from the SYSTEM ADMINISTRATION menu.

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

LOGIN PORT ADMINISTRATION

Action:	Port:	Speed:	Status:
			NULL

Enter the desired Link Administrative Action: RESTORE or REMOVE

HELP CHOICES [] QUIT [] TOP MENU PRINT EXECUTE

Figure 3-2. LOGIN PORT ADMINISTRATION Form

Field Descriptions

The field values are as follows.

Table 3-1. LOGIN PORT ADMINISTRATION Field Values

Action	Mandatory. The values are RESTORE Enable the port. REMOVE Disable the port.
Port	Mandatory. Numeric, 1 through the number of asynchronous lines up to 16. Pressing CHOICES when the cursor is in Port displays the available ports, their Status , the user log-in, if there is one, and the Speed . Use the display to select a port, or enter the port number. An * before a listed port means that it is configured as a SNIDER link. You may not enable it as a login port. You may not RESTORE or REMOVE a port in INUSE Status for any reason.
Speed	Mandatory. Numeric. The baud rate to be in effect. The possible values are 1200, 2400, 4800, and 9600.
Status	Not accessible to the user. NULL The port has not yet been restored in this database. INUSE The port is currently in use and cannot be accessed via this LOGIN PORT ADMINISTRATION form. You can display the login or the DACS Site Name of a DACS using the port, by pressing CHOICES when the cursor is in Port . IS The port is ready for remote login and may not be pre-empted by a DACS. To disable it, enter a REMOVE Action . OOS The port is no longer available for remote login without restoral, but may be utilized by a DACS. To enable it, enter a RESTORE Action .

Procedure

To set the speed of a login port:

- Step 1:** Obtain the LOGIN PORT ADMINISTRATION form. The **Status** can be any value except INUSE. In the latter case, access will be denied.
- Step 2:** Enter an **Action** of RESTORE.

Step 3: Enter the **Port** number.

The I-2000 displays that port's current speed, if there is one. The **Status** now reflects the status of the **Port**.

Step 4: Enter the new **Speed**.

Step 5: Press **EXECUTE**. Answer YES to ARE YOU SURE?

- The **Status** changes to or remains IS (In Service).
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

X.25 LINK ADMINISTRATION

Selection

Introduction to X.25

This feature is available only to system administrators.

An X.25 link is the logical means by which you access a synchronous line from the I-2000 computer. Therefore, if you are going to access a DACS via the X.25, you need to restore a synchronous link.

The number of links available depends on your hardware configuration. For details concerning hardware configuration, see the *I-2000 Controller for DACS II Installation Manual* regarding the GPSC-AT/E or its equivalent. The hardware makes available lines 1 through n , where you must know n .

The X.25 LINK ADMINISTRATION Form

Select X.25 LINK ADMINISTRATION from the SYSTEM ADMINISTRATION menu.

```

06:15 01 Apr 93  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- X.25 LINK ADMINISTRATION -----

Action:RESTORE           Line No.:           Status:

Connection Type:PDN

--Enter desired action --

HELP  CHOICES  [ ]  QUIT  [ ]  TOP MENU  PRINT  EXECUTE
    
```

Figure 3-3. X.25 LINK ADMINISTRATION Form

Field Descriptions

Descriptions of the fields on the X.25 LINK ADMINISTRATION form follow.

Table 3-2. X.25 LINK ADMINISTRATION Field Values

Action	Mandatory. The values are
RESTORE	Places the X.25 link in service. The Status must be OOS; otherwise, the Action is denied and a message is displayed: Link already in service
REMOVE	Removes the X.25 link from service. The Status must be IS; otherwise, the Action is denied and a message is temporarily displayed: Link already out of service

Table 3-2. X.25 LINK ADMINISTRATION Field Values

Line No.	Mandatory, one numeric character. The physical line number of the link supporting the connection. Valid entries are one through twice the number of X.25 boards. This number depends on the hardware platform. For additional information, refer to the <i>I-2000 Controller for DACS II Installation manual</i> .	
Status	IS	In service. The link can support switched virtual circuits (SVCs). A DACS can be placed in service on this link.
	OOS	Out of service. A DACS cannot be placed in service on this link.
Connection Type	Mandatory.	
	PDN	Packet data network. The network acts as DCE for the connection, and the I-2000 acts as DTE. The X.25 link must be connected to a PDN. Up to 20 virtual circuits are supported by each X.25 board (two X.25 lines). PDN is the default value.
	DIRECT	The I-2000 acts as DCE for the connection. The X.25 link must be connected directly to an X.25 port of the DACS through a synchronous modem eliminator.

Procedure

To place a line in service:

Step 1: Obtain the X.25 LINK PROVISIONING form.

Step 2: Fill in the following fields:

— **Action:** RESTORE

— **Line No.:** *x*

where *x* is the number of the line. The **Status** is now displayed. Verify that it is OOS.

— **Connection Type:** PDN or DIRECT

The default is PDN. Accept it or change it to DIRECT.

Step 3: Press **EXECUTE** and answer YES to ARE YOU SURE?

When the link is successfully established:

— The **Status** field changes to IS.

- THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 4: Enter a new line number to establish another link.

To remove a line from service:

Step 1: Obtain the X.25 LINK ADMINISTRATION form.

Step 2: Fill in the following fields:

- **Action:** REMOVE

- **Line No.:** *x*

where *x* is the number of the line. The **Status** is filled in automatically. Verify that it is IS.

- **Connection Type:** PDN

Step 3: Press **EXECUTE** and answer YES to ARE YOU SURE?

When the link has been taken out of service:

- The **Status** field changes to OOS.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.



NOTE:

If any circuits are active through this link, the **Action** is denied.

FRAME ADMINISTRATION

Selection

Introduction To Frame Administration

A frame is a DACS II or one of the other cross-connect devices in the I-2000 repertoire. Before the I-2000 can communicate with a frame, all the parameters conditioning that communication must be stored in the I-2000 database. Creating the frame through the FRAME ADMINISTRATION selection serves that purpose. In creating the frame, you provide the I-2000 with such information as the protocol and language to be used in communicating with the frame, as well as the line numbers and speeds.



NOTE:

For X.25 configurations, link administration is a prerequisite to frame administration.

Another target of frame administration is to configure the primary and backup lines in the X.25 configuration. These lines are the links that were restored in LINK ADMINISTRATION. You have a few options.

In the next illustration, Line 1 and line 2 are two links from the I-2000 computer to the X.25 network. *net_ad_1* is the **Network Address** of one link from the X.25 network to the frame and *net_ad_2* is the **Network Address** of another. An example of a **Network Address** is a telephone number, such as 5555555555.

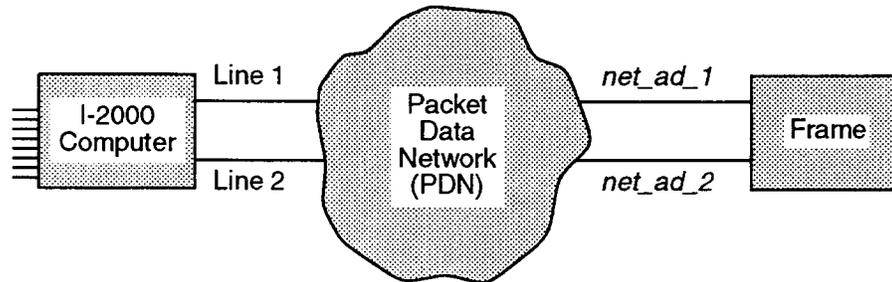


Figure 3-4. Fully Backed-up Configuration

The following configuration backs up the entire path from the I-2000 to the frame:

- **Primary Line:** 1
- **Network Address:** *net_ad_1*
- **Backup Line:** 2
- **Network Address:** *net_ad_2*

In this configuration, a break in line 1 establishes a backup path through line 2 and a break in *net_ad_1* establishes a backup path through *net_ad_2*.

It is possible to back up only *net_ad_1*, if for some reason line 2 is not present or you do not wish to use it to back up line 1:

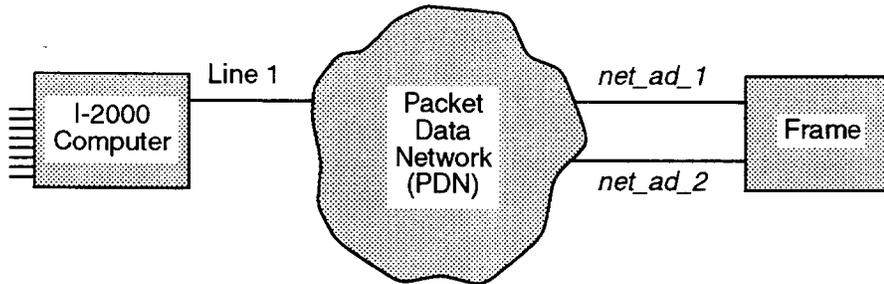


Figure 3-5. Backup of Link to Frame Only

- **Primary Line:** 1
- **Network Address:** *net_ad_1*
- **Backup Line:** 1
- **Network Address:** *net_ad_2*

The path in both the primary and backup case goes through line 1, which is, therefore, not backed up.

It is also possible to back up only line 1, if the frame has only one link available:

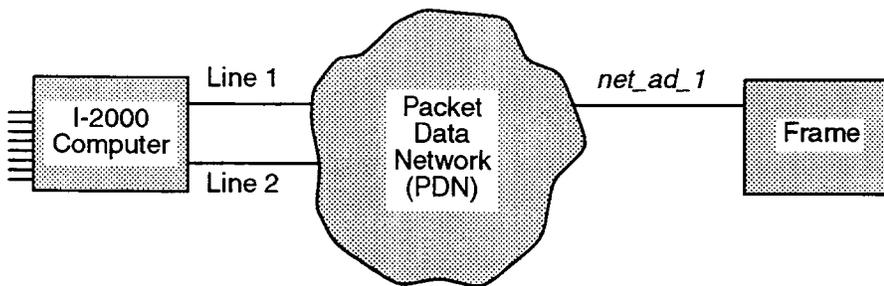


Figure 3-6. Backup of I-2000 Link Only

- **Primary Line:** 1
- **Network Address:** *net_ad_1*
- **Backup Line:** 2
- **Network Address:** *net_ad_1*

The path in both the primary and backup case goes through *net_ad_1*, which is, therefore, not backed up.

The FRAME ADMINISTRATION Form

Select FRAME ADMINISTRATION from the SYSTEM ADMINISTRATION menu.
The FRAME ADMINISTRATION FORM appears:

```

06:15 01 Apr 93  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                FRAME ADMINISTRATION
Action:CREATE      Site Name:          Site Status:
Type:              Protocol:          Language:
NPC Addr:          Location:          Generic:
ERP Control:
NPC Alarm Sync:
Primary Line:      Network Address:    Status:
Primary Line:      Speed:
Backup Line:       Network Address:    Status:
Enter desired action
HELP CHOICES [ ] QUIT [ ] TOP MENU PRINT EXECUTE
    
```

Figure 3-7. FRAME ADMINISTRATION Form

⇒ NOTE:
The subset of possible fields that appear on the FRAME ADMINISTRATION form depend on the **Protocol** that you are using.

Field Descriptions

The FRAME ADMINISTRATION field descriptions are given in the next table.

Table 3-3. FRAME ADMINISTRATION Field Values

Action	Mandatory.
CREATE	Provisions a new frame in the I-2000 as a Site Name and sets the Site Status to OOS. The frame's database(s) is(are) created. This Action is only allowed when the Site Status is UEQD.
RESTORE	Places in service the path to the frame using the Primary Line and Network Address specified on the form. This Action is only allowed when the Site Status is OOS.
BRESTORE	Places in service the backup path to the frame using the Backup Line and Network Address specified on the form. If none were specified, the request is denied. Not available for a Protocol of SNIDER.
REMOVE	Removes from service the path between the I-2000 and the frame specified in Site Name . This Action is only allowed when the Site Status is IS, IS P or IS B.
DELETE	Deletes the frame and related data from the I-2000 database. This Action is only allowed when the Site Status is OOS.
MODIFY	Changes nonlink information of this form when the Site Status is either IS or OOS. For changing line and network data, the Site Status must be OOS. The MODIFY Action does not access Site Name .
CHGSITE	Changes the Site Name for the selected frame.
Site Name	<p>Mandatory. 1-24 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", &, . Leading and trailing blanks are ignored.</p> <p>The unique name by which this frame will be known to the I-2000. It is user-assigned. If the Site Name is already in use and the Action is CREATE, the Action is denied. Use CHOICES to display the existing assigned Site Names.</p>
Site Status	<p>The status of the frame, not user-accessible.</p> <p>IS For SNIDER. In service.</p>

Table 3-3. FRAME ADMINISTRATION Field Values

	IS <i>n</i>	For X.25. In service on line <i>n</i> , where <i>n</i> is P for primary or B for backup. A RESTORE for the DACS referenced in Site Name has successfully been completed and a message has been received saying that this link is on-line. Communications are active.
	OOS	Out of service. Communications are not currently active, either because some portion of the link between the I-2000 and the frame is down or because the frame has been created, but has not yet been restored. If the RESTORE Action succeeded, but the frame is not yet on line, the Site Status will be OOS.
	UEQD	Unequipped. Either a CREATE has never been done for this frame, or a DELETE was done on it.
Type		Mandatory. Specifies the type of frame.
	DACS II	The frame is a DACS II. The Language must be MML.
	DACS	The frame is a DACS I. The Language must be PDS.
	D II ISX	The frame is a DACS II ISX, release 1. The Language must be MML.
Protocol		Mandatory. The transmission protocol to be used over the path between the I-2000 and the frame.
	SNIDER	The configuration is direct. You must enter a line Speed . Only SNIDER is valid for DACS I.
	X.25	The configuration is either PDN, or direct, with synchronous modem eliminators (SMEs) in the lines between the frames and the I-2000 computer. In the PDN case, you must enter a Network Address for the primary line and for the backup line if one was configured.
Language		Mandatory. Specifies the command language to be used for DACS commands generated by the I-2000. You must independently insure that this value conforms to the way the DACS is configured according to Chapter 2, <i>Configuring the DACS</i> .
	MML	Use Man-Machine Language. This selection is the default when the Action is CREATE.
	PDS	Use Product Documentation Standard language.
	CNC	Use a CNC language (Appendix B).

Table 3-3. FRAME ADMINISTRATION Field Values

NPC Addr	Mandatory. Specifies the type of NPC addressing to be used in DACS commands generated by the I-2000. You must independently insure that this value conforms to the way the DACS is configured according to Chapter 2, <i>Configuring the DACS</i> .
HIER	Use hierarchical addressing.
EXT3	Use 3-digit extended addressing.
EXT4	Use 4-digit extended addressing.
Location	Optional. Up to 13 characters. States the physical location of the frame. An informational field only.
Generic	Mandatory. Up to 8 characters. States the software release running at Site Name . For release 6, the entry 06 is required.
ERP Control	The selection or nonselection of conditional echoed response processing.
ON	Process NPC and circuit echoed response messages only on condition that all NPCs cited in the message are already in the I-2000 database.
OFF	Process echoed response messages unconditionally. The default, if the Action is CREATE.
NPC Alarm Sync	The selection or nonselection of NPC alarm synchronization.
00	Do not update the I-2000 database with information concerning the frame's current alarms when the Site Status becomes IS, IS P or IS B.
nn	Provided nn hours have elapsed, when the Site Status becomes IS, IS P or IS B again, query the frame and update the Alarm State information (see under NPC PROVISIONING) for the frame.
Primary Line	The number of the line that will be used for communication between the I-2000 computer and the network or frame in the case of the X.25 configuration, or between the I-2000 computer and the frame in the case of the SNIDER configuration. This link must be In Service (Status of IS, see LINK PROVISIONING).

Table 3-3. FRAME ADMINISTRATION Field Values

	<p>For X.25 one numeric character. Enter the physical line number of the primary connection. Valid entries are one through twice the number of X.25 boards.</p> <p>For SNIDER Two numeric characters. Enter the tty port number on the I-2000 ports card for this connection, provided that the line has not been restored as a login port.</p>
Backup Line	<p>X.25 only. The number of the line to be used as the backup path from the I-2000 computer to the network. This link must be IS.</p> <p>Specifying the same line as in Primary Line means that you are making the primary and backup links to the network the same; i.e., no backup.</p>
Network Address	<p>Appears only for a Protocol of X.25. A maximum of 16 numeric characters. For a primary line, this field contains the PDN address for the X.25 connection to the frame. For a backup line, this field contains the PDN address for the backup line. The address specifies the link from the network to the frame.</p> <p>Specifying the same address for primary and backup lines means that you are making the primary and backup links the same; i.e., no backup.</p>
Status	<p>A display-only field, which can appear twice, once for the primary line and once for the backup line. It displays the status of the link associated with the Network Address. The Status can be IS or OOS.</p>
Speed	<p>Values are 1200, 2400, 4800, and 9600. The baud rate for this I-2000 SNIDER port. You must independently insure that this value conforms to the way the DACS is configured according to Chapter 2, <i>Configuring the DACS</i>. This field only appears if the Protocol is SNIDER.</p>

Procedures

Some examples of how to create, restore, and delete a frame follow.

X.25 Administration

This example creates and restores a frame on the X.25 network. The path is fully backed up (see the "Introduction" to this section).

Step 1: Obtain the FRAME ADMINISTRATION form. The next figure shows the filled-in form for this example:

```

06:15 01-Apr 93  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- FRAME ADMINISTRATION -----
Action:CREATE          Site Name:EREWHON          Site Status:UEQD
Type:DACS II          Protocol:X.25              Language:MML
NPC Addr:HIER         Location:1F-11             Generic:04
ERP Control:OFF
NPC Alarm Sync:00
Primary Line:1        Network Address:6174536499  Status:IS P
Backup Line:2         Network Address:6174536500  Status:IS B

Enter desired action:
HELP CHOICES [ ] QUIT [ ] TOP MENU PRINT EXECUTE
    
```

Figure 3-8. Create a Frame, X.25

Step 2: Fill in the following fields:

- **Action:** CREATE
- **Site Name:** EREWHON

Step 3: After you enter the **Site Name**, the **Site Status** changes to UEQD, provided the site is not already provisioned. If it is provisioned, the provisioning information is filled into the appropriate fields. Verify that the **Site Status** is UEQD. Then fill in the following fields:

- **Type:** DACS II
- **Protocol:** X.25

Step 4: After you enter the **Protocol**, the fields for specifying the **Primary Line** and **Backup Line** appear. Fill in the following fields:

- **Language:** MML
- **NPC Addr:** HIER
- **ERP Control:** OFF

— **NPC Alarm Sync:** 00

— **Primary Line:** 1

Step 5: After you enter the **Primary Line**, the **Network Address** field appears and the **Status** changes to the status of the link from the network to the frame. Fill in the following fields:

— **Network Address:** 6174536499

— **Backup Line:** 2

Step 6: The backup line **Network Address** field appears and the **Status** changes to the associated status. Enter:

— **Network Address:** 6174536500

Step 7: Press **EXECUTE** and answer YES to ARE YOU SURE?

The provisioning request is sent to the frame. When the frame is successfully provisioned:

— The **Site Status** changes to OOS.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 8: Change the **Action** to RESTORE, press **EXECUTE** and verify.

When the frame is in service:

— The **Site Status** changes to IS P.

— THE COMMAND COMPLETED SUCCESSFULLY message is flashed.

To place the frame in service on the backup path, you would enter an **Action** of BRESTORE. The **Site Status** would become IS B.

To change the **Site Name** from a known name to a new, unknown name:

Step 1: Enter an **Action** of CHGSITE on the FRAME ADMINISTRATION form. The following form appears:

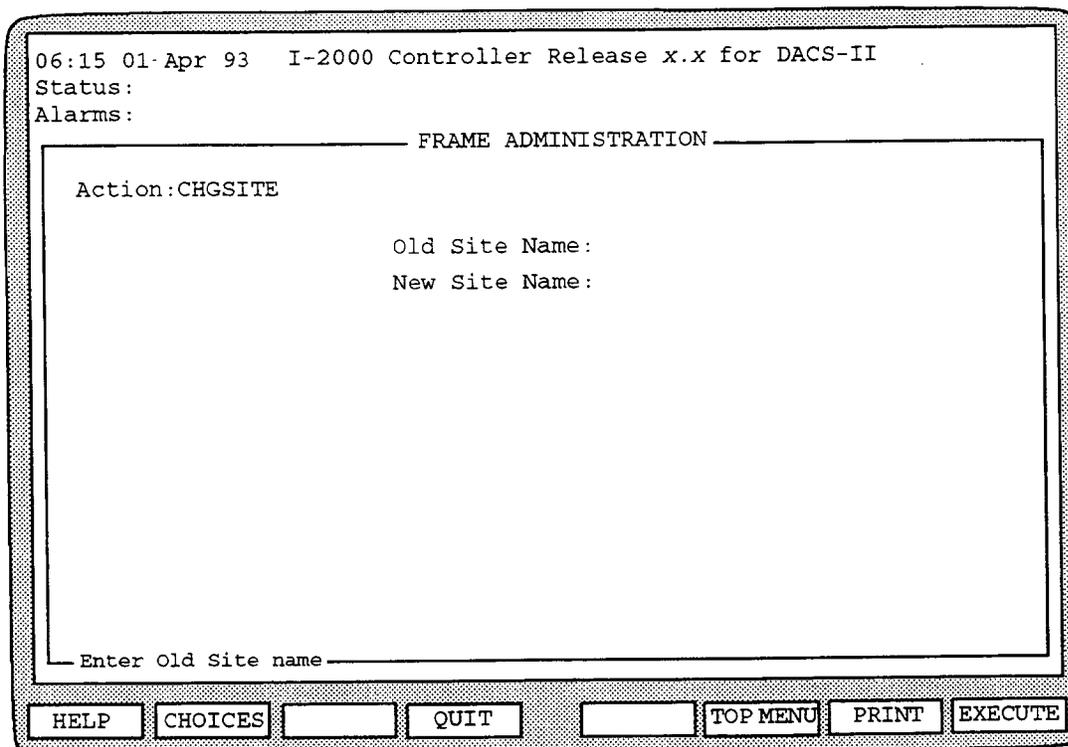


Figure 3-9. Change Site Name

- Step 2:** Select an **Old Site Name** with **CHOICES**.
- Step 3:** Enter the **New Site Name** for the Site. The **New Site Name** must not currently exist in the I-2000.
- Step 4:** Press **EXECUTE** and answer YES to ARE YOU SURE?

The current name is changed to the **New Site Name** throughout I-2000.

SNIDER Administration

This example creates a frame with a direct link and places it in service,

- Step 1:** Obtain the FRAME ADMINISTRATION form.

```
06:15 01 Apr 93   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- FRAME ADMINISTRATION -----
Action:CREATE           Site Name:SHANGRILA       Site Status:UEQD
Type:DACS II           Protocol:SNIDER           Language:MML
NPC Addr:HIER          Location:1F-11           Generic:04
ERP Control:OFF
NPC Alarm Sync:00
Primary Line:01        Speed:4800
-----
Enter the DACS-II generic:_____

HELP CHOICES [ ] QUIT [ ] TOP MENU PRINT EXECUTE
```

Figure 3-10. Create a Frame, SNIDER

Step 2: Fill in the following fields:

- **Action:** CREATE
- **Site Name:** SHANGRILA

Step 3: After you enter the **Site Name**, the **Site Status** changes to UEQD, provided the site is not already provisioned. If it is provisioned, the provisioning information is filled into the appropriate fields. Verify that the **Site Status** is UEQD. Then fill in the following fields:

- **Type:** DACS II
- **Protocol:** SNIDER

Step 4: After you enter the **Protocol**, the fields for specifying **Primary Line** and **Speed** appear. Fill in the following fields:

- **Language:** MML
- **NPC Addr:** HIER
- **ERP Control:** OFF

— **NPC Alarm Sync:** 00

— **Primary Line:** 1

— **Speed:** 4800

Step 5: Press **EXECUTE** and answer YES to ARE YOU SURE? The provisioning request is sent to the frame. When the frame is successfully provisioned:

— The **Site Status** changes to OOS.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 6: Change the **Action** to RESTORE, press **EXECUTE**, and verify. When the frame is in service:

— The **Site Status** changes to IS.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

Unprovisioning a Frame in X.25 or SNIDER

To take a frame out of service on a network or direct link, and remove it from the database; i.e., to unprovision it,

Step 1: Obtain the FRAME ADMINISTRATION form.

Step 2: Fill in the following fields:

— **Action:** REMOVE

— **Site Name:** UTOPIA

As soon as you enter a valid **Site Name**, the fields are filled in.

Step 3: Press **EXECUTE** and answer YES to ARE YOU SURE?

— The **Site Status** changes to OOS.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 4: Change the **Action** to DELETE.

Step 5: Press **EXECUTE**. Along with the ARE YOU SURE? insert, a message appears:

WARNING! You are about to delete a DACS database
from I-2000

Acknowledge by pressing **Enter**; then answer YES to ARE YOU SURE?.

- The **Site Status** changes to UEQD.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

PRINTER ADMINISTRATION

Selection

This selection is reserved for system administrators. However, if you are in operator status, you may use TASK ADMINISTRATION selections (see Chapter 10) to list or delete your own print jobs.

The I-2000 supports printing:

- screens
- DACS output
- reports

Printing is multiplexed and spooled so that users can queue their jobs to the print service, to be sent to the printer one by one.

The **Actions** of the PRINTER MANAGEMENT form do not actually print the reports and screens; that is done under the REPORTS selections, and by pressing the **PRINT** key for screens that offer the option of screen printing. The PRINTER MANAGEMENT **Actions** allow you to enable or disable the printer, to list and cancel print jobs and to print a log of the alarm or other output from one or more DACS.

To view the PRINTER MANAGEMENT **Actions**:

Step 1: Select PRINTER ADMINISTRATION from the SYSTEM ADMINISTRATION menu. The PRINTER MANAGEMENT form appears:

```
06:15 01 Apr 93  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- PRINTER MANAGEMENT -----
Site Name:
Printer Status:DISABLED           Logging Status:OFF
Action:
Enter the frame site name
HELP CHOICES QUIT TOP MENU PRINT EXECUTE
```

Figure 3-11. PRINTER MANAGEMENT Form

Step 2: Select a site. The cursor moves to **Action** automatically.

Step 3: Press **CHOICES**. The PRINTER MANAGEMENT **Actions** are listed:

- ENABLE
- DISABLE
- LIST
- CANCEL
- LOGALL
- LOGALARMS
- STOPLOGGING

ENABLE Action

The **ENABLE Action** turns on the printer for print service. Before any printing can occur, you must enable the printer as follows:

Step 1: Obtain the PRINTER MANAGEMENT form.

Step 2: Enter ENABLE and press **EXECUTE**. The message
printer "Printer" now enabled
appears.

DISABLE Action

The **DISABLE Action** turns the printer off. To disable the printer:

Step 1: Obtain the PRINTER MANAGEMENT form.

Step 2: Enter DISABLE and press **EXECUTE**. The message
printer "Printer" now disabled
appears.

LIST Action

To display a list of the print jobs that are queued to the printer:

Step 1: Obtain the PRINTER MANAGEMENT form.

Step 2: Enter LIST and press **EXECUTE**.

A chronological list of the queued print jobs for all users appears. The list reflects the status of the queue at the time you execute LIST or select JOB STATUS, but the jobs continue to be processed. The list includes the following information for each job in the queue:

- job number
- print request originator
- file size
- date and time submitted

To return to the PRINTER MANAGEMENT form, press **QUIT**.



NOTE:

If you are entering PRINTER MANAGEMENT from TASK ADMINISTRATION as an operator, you can obtain a listing of jobs queued under only your log-in.

If no jobs are on the queue, a message appears:

No jobs queued to the printer.

A sample list is shown next.

```

06:15 01-Apr 93  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- PRINTER MANAGEMENT -----
Site Name: testsite

Printer Status: ENABLED           Logging Status: OFF

----- Printer Queue -----

Job no.   User      Size      Time
-----
16        root      5         Nov 1 14:33 on printer
17        rootadm  6         Nov 1 14:33 on printer

Page x of y   Display Page:n

Enter the page number
    
```

Figure 3-12. Sample Print-Job Status

CANCEL Action

To remove a job from the queue:

- Step 1:** Obtain the PRINTER MANAGEMENT form.
- Step 2:** Enter CANCEL and press **EXECUTE**. The jobs are listed as for the LIST Action. However, an additional field, **Cancel**, appears before **Job No.**
- Step 3:** Using **Enter**, move the cursor to the beginning of the line for the job you wish to cancel and type an x or X.

⇒ NOTE:
 If the cursor remains on **Display Page**, you are in LIST rather than in CANCEL. Press **QUIT** and enter CANCEL as an Action.

LOGALL, LOGALARMS, STOPLOGGING Actions

To print or stop printing the output or alarms of a DACS:

Step 1: Obtain the PRINTER MANAGEMENT form.

Step 2: Enter the **Site Name** of the DACS from which you wish to log all output or alarms only.

Step 3: Enter one of the following **Actions**:

LOGALL	To print a log of all output from the Site Name you selected.
LOGALARMS	To print a log of only the alarms issued by the Site Name you selected.
STOPLOGGING	To stop printing the log of output or alarms for the Site Name you selected.

Depending on the **Action** you chose, the **Logging Status** indicates ALL, ALARMS, or OFF.

To print or stop printing the output or alarms from another site, perform the previous steps again, changing the **Site Name**.

The print buffer holds one page at a time; that is, it does not print until it contains one page (66 lines). A separate page buffer is maintained for each DACS.

SHUTDOWN Selection

From the SYSTEM ADMINISTRATION menu, select SHUTDOWN to power down the I-2000.



CAUTION:

Removing power from the I-2000 without selecting SHUTDOWN may damage or corrupt important files.

The I-2000 status line at the top of the screen now changes to

SYSTEM SHUTDOWN IS NOW IN PROGRESS

A number of messages will be displayed as the I-2000 shuts down. When the software has finished shutting down, follow the established policy regarding turning off the hardware or leaving it on.

DATE and TIME Selection

Occasionally, it may be necessary to reset the I-2000 computer date and time. This example shows how:

Step 1: Select DATE AND TIME from the SYSTEM ADMINISTRATION menu.

```
06:15 01 Apr 93  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- TIME and DATE ADMINISTRATION -----

                Hour:           Minute:

                Day:           Month:

                Year:

Enter the desired hour [0-24]

HELP  [ ]  [ ]  QUIT  [ ]  TOP MENU  PRINT  EXECUTE
```

Figure 3-13. TIME and DATE ADMINISTRATION Form

Step 2: Enter the desired hour, 0-24. Either 24:00 or 00:00 is accepted.



NOTE:

An initial 0 is not necessary, but if you omit it, you need to press **Enter**.

Step 3: Enter the minute, 00-59.



NOTE:

After 24:00, go to 00:01.

Step 4: Enter the day, 1-31.

Step 5: Enter the first three letters of the month: Jan, Feb, Mar . . . Dec.

⇒ NOTE:
Case is irrelevant.

Step 6: Enter all four digits of the year. The range is 1990 through 2038.

Step 7: Press **EXECUTE**.

- The new date and time appear on the screen.
- THE COMMAND COMPLETED SUCCESSFULLY message appears .

SYNCHRONIZE FRAME DATE & TIME Selection

You may change the time on one DACS to the I-2000 time by using this procedure:

Step 1: Select SYNCHRONIZE FRAME DATE AND TIME from the SYSTEM ADMINISTRATION menu.

Step 2: The WHICH DACS? prompt and the list of DACS appear in an insert. Select the desired DACS, confirm and press **Enter**. The I-2000 sends a time and date command to the DACS.

The command is deemed successful if the DACS time is set to within one second of the I-2000 time. If not, a failure message is displayed. A failure can happen when the DACS is too busy to respond to the I-2000 within one second of the request: for example, during backup-memory transfers, error recovery, and other maintenance conditions. If failure occurs, repeat the procedure.

CNC PORTS Selection

This selection is described in Appendix B.

Alarm Notification Feature

The I-2000 alarm status line, labeled **Alarms**, notifies you of alarms from as many DACS frames as will fit on the line. When this line is clear, no unacknowledged alarms are pending. When a minor alarm occurs, the appropriate site name will appear, when a major alarm occurs, the appropriate site name will appear

highlighted, and when a critical alarm occurs, the site name will flash until you acknowledge by pressing **Ctrl(a)**.

When you push **Ctrl(a)**, the WHICH DACS? prompt and a list of **Site Names** appear in an insert. Choose the site name said to be in alarm and the I-2000 will display a report that lists as many as the last 4000 alarms. The acknowledged site name disappears from the status line until a new alarm is received. You can page through the report using the F-keys that are noted at the bottom of the screen as available.

Exiting this alarm report returns you to the previous screen.

⇒ NOTE:

While you are reviewing the report, no new alarms are added, but once the alarm indication is retired, any new alarm appears on the screen when received.

A sample alarm report is shown next:

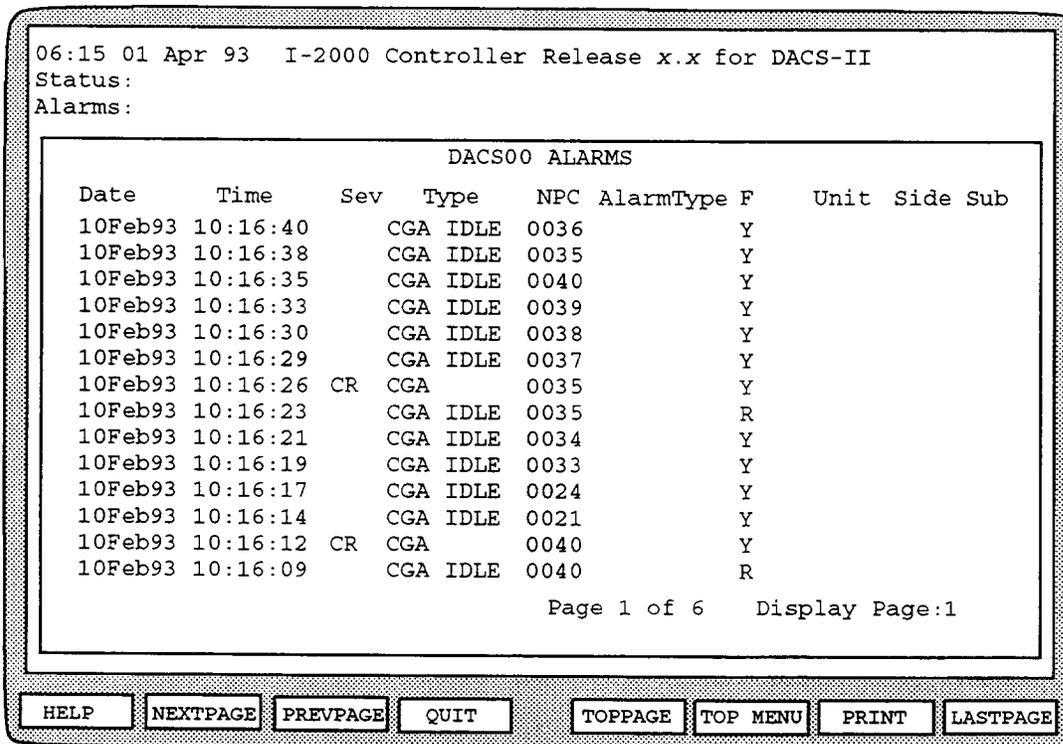


Figure 3-14. Sample Alarm Report

The tables shown next state the possible values of fields that help to identify the type of message and alarm. A - means the field has no value for that message.

Explanation of each message element follow each table.

Table 3-4. DACS I Alarm Message Elements

Sev	Type	AlarmType	F	Unit	Side	Sub
CR, MJ, MN	CGA		NAS: A, B, L, M, R, Y CEPT: A, E, L, M, R, Y	-	-	-
-	CGA IDLE		-	-	-	-
CR, MJ, MN	PARAM ALARM	SLIP, BER, ERS, SERS, COFA	-	-	-	-
-	PARAM IDLE	BER	-	-	-	-
MJ	CI RESET	-	-	-	-	-
MJ	POWER FAIL	-	-	field1	field2	-
MJ	MC REMOVED	-	-	-	-	-
MJ	OOS: SYNC	-	-	-	0,1	-
MJ	OOS: UCR	-	-	-	-	1-8
CR, MJ	OOS: NPC	-	-	-	-	-
MJ	OOS: DM	-	-	1-32	-	-
MJ	OOS: LINK	-	-	1-5	-	-

Table 3-5. Explanation of DACS I Alarm Message Elements

Date, Time	The date and time when the alarm was received. Dates are in order from most recent to least recent.
Sev	The severity of the alarm: CR (critical), MJ (major), MN (minor), and blank (none). Each is defined for each Type and its dependent parameters, if any. CR and MJ imply a priority of corrective action.
Type	The type of alarm message.

Table 3-5. Explanation of DACS I Alarm Message Elements

CGA	Carrier group alarm for NAS digroups; primary block alarm (PBA) for CEPT digroups. This message reports facility alarms. The type of facility alarm is reported in the F column.
CGA IDLE	The message is informationally the same as for CGA. It means that the CGA or PBA has been retired.
PARAM ALARM	Parameter alarm. This message reports an alarm state on a given NPC facility performance parameter, designated under ALMTYPE.
PARAM IDLE	This parameter alarm has been retired.
CI RESET	Communications interface reset. A DACS I outputs this type of message immediately after a hardware reset. The MJ severity notifies remote systems of the reset.
POWER FAIL	Reports a DACS I frame power failure. The severity is MJ. The Unit and Side Columns of the report contain <i>field1</i> and <i>field2</i> reported in the DACS I peripheral interrupt interface (PII) status register. Refer to the description immediately following this table.
MC REMOVED	Main controller removed. Reports that the MC was removed from service. The severity is MJ.
OOS: SYNC	Synchronizer out of service. Reports that the timing extractor circuit, the phase-locked loop, the clock generator unit, or the service and reply circuit are out of service.
OOS: UCR	Unit controller out of service. Severity is MJ.
OOS: NPC	NPC out of service.
OOS: DM	Dual Multiplexer out of service.
OOS: LINK	Link out of service.
NPC	The NPC Number of the NPC that is the subject of the message.
Alarmtype	The type of alarm. A parameter that is subsidiary to the Type and further specifies it. The possible values are
CGA	Specifies a Type of CGA_ALARM as CGA.
SLIP	Specifies the parameter in a Type of PARAM_ALARM as a slip error.

Table 3-5. Explanation of DACS I Alarm Message Elements

	BER	Bit error rate.
	ERS	Number of errored seconds.
	SERS	Number of severely errored seconds.
	COFA	Change of frame alignment error.
	ERS24H	Specifies the facility performance parameter in a Type of THRES_ALARM as errored seconds after 24 hours.
	SERS24H	Severe errored seconds after 24 hours.
F		The type of facility alarm in a message Type of CGA. For NAS NPCs:
	A	Blue signal, also known as alarm indication signal (AIS), non-alarmed, or all ones signal.
	B	Both yellow and red.
	L	Local multiframe alarm (LMA).
	M	Remote multiframe alarm (RMA).
	R	Red alarm.
	Y	Yellow alarm.
		For CEPT NPCs:
	A	Blue signal, also known as alarm indication signal (AIS), non-alarmed, or all ones signal.
	E	10E-3 error rate, major alarm state.
	L	Local multiframe alarm (LMA).
	M	Remote multiframe alarm (RMA).
	R	Red alarm.
	Y	Yellow alarm.
Unit		The unit number of the alarming facility.
Side		The side number of the alarming facility.
Sub		The subunit number of the alarming facility.

For a POWER FAIL message, Unit and Side contain *field1* and *field2* reported in the peripheral interrupt interface (PII) status register. Each field consists of a high byte and a low byte. The bit mask is repeated below from the DACS Input-

output Message Manual. Here, only the significance of a 1 logic value is reported. A 0 value has the opposite meaning.

For *field1* (Unit):

Table 3-6. DACS I PII Status Register *field1* Bit Mask

Bytes 1,0 Bits	Condition
07	Test access receive-in jack control active
06	Test access receive-out jack control active
05	Test access transmit-in jack control active
04	Test access transmit-out jack control active
03	SRDC/SMS power alarm
02	Alarm processor interrupt
01	Alarm processor alarm
00	Critical alarm LED on
07	Minor alarm LED off
06	Major alarm LED off
05	Power sequence to MS
04	Alarm cutoff
03	MS alarm drive pested
02	Critical alarm
01	Minor alarm
00	Major alarm

For *field2* (Side):

Table 3-7. DACS I PII Status Register *field2* Bit Mask

Bytes 3,2 Bits	Condition
07	SRDC message waiting
06	SRDC ready to transmit
05	SRDC ready to receive
04	SSRC 0 select status enabled

Table 3-7. DACS I PII Status Register *field2* Bit Mask

03	SSRC 1 select status enabled
02	MCR select status side 1 enabled
01	Clock bus 1 health bad
00	Clock bus 0 health bad
07	No backup memory power alarm
06	No MS power alarm
05	No cross-connect 1 power alarm
04	No cross-connect 0 power alarm
03	No unit 3 power alarm
02	No unit 2 power alarm
01	No unit 1 power alarm
00	No unit 0 power alarm

Table 3-8. DACS II Alarm Message Elements

Sev	Type	AlarmType	F	Unit	Side	Sub
CR, MJ, MN	CGA, CGA IDLE		A, B, F, L, M, R, V, X, Y	-	-	-
CR, MJ, MN	PBA PBA IDLE		A, B, C, E, F, I, L, M, R, S, V, X, Y	-	-	-
CR, MJ	LOS LOS IDLE			-	-	-
CR	DS3U ALARM, DS3U IDLE	LOS BER OOF IDLE SIG	- - - -	1-16 1-16 1-16 1-16	- - - -	1-6 1-6 1-6 1-6
MJ	CI RESET	-	-	-	-	-
CR, MJ, MN	PARAM ALARM PARAM IDLE (NAS)	SLIP, BER, COFA, SAFE, ERS, SANE, SERS	-	-	-	-

Table 3-8. DACS II Alarm Message Elements

Sev	Type	AlarmType	F	Unit	Side	Sub
CR, MJ, MN	THRES ALARM THRESH IDLE (CEPT)	ERS15M ERS24H SERS15M SERS24H SLIPS15M SLIPS24H DM15M DM1H US15M US24H CRCDAIly FRERDAIly OFSDAIly RSDAIly SESDAIly CSSDAIly CVDAIly UASDAIly UATCDAIly MERDAIly FEBEDAIly FESDAIly FESDAIly FUASDAIly CRC15MIN FRER15MIN OFS15MIN ES15MIN SES15MIN CSS15MIN CV15MIN UAS15MIN UATC15MIN MER15MIN FEBE15MIN FES15MIN FSES15MIN FUAS15MIN	-	-	-	-
MN	DATE RESET	-	-	-	-	-
MJ	BOOT FAILED	-	-	-	-	-
MJ	OOS:CCN	-	-	-	0, 1	-
MJ	POWER FAIL	-	-	<i>field1</i>	<i>field2</i>	-
MJ	MC REMOVED	-	-	-	-	-

Table 3-8. DACS II Alarm Message Elements

Sev	Type	AlarmType	F	Unit	Side	Sub
CR, MJ	OOS:SYNC	-	-	-	0, 1	-
CR, MJ	OOS:SYNC-TB	-	-	-	-	-
MJ, MN	OOS:SYNC-TLI	-	-	1-16	0, 1	1-4
MJ	OOS:CCB	-	-	1-6	0, 1	-
MJ	OOS:TSI	-	-	1-6	0, 1	1-6
MJ	OOS:UC	-	-	1-16	-	-
MN	OOS:FTMI	-	-	1-16	-	1-4
MN	OOS:DSPI	-	-	1-16	-	-
MJ	OOS:FC	-	-	1-16	0, 1	1-4
MJ	OOS:NPC	-	-	-	0, 1	-
MN, MJ	OOS:ECCN	-	-	-	0, 1	-
-	ECCN IDLE	-	-	-	0, 1	-
CR, MJ, MN	OOS:LINK	-	-	1-6	-	-
CR, MJ	OOS:CCNI	-	-	-	0, 1	-
CR, MJ	OOS:CCI	-	-	-	0, 1	-
CR, MJ	OOS:ETSI	-	-	1-16	0, 1	-
CR, MJ	OOS:MMFG	-	-	1-16	-	1-6, P
CR, MJ	OOS:FLI	-	-	1-16	-	S, P
CR, MJ	OOS:FMT	-	-	1-16	0, 1	-
MJ	MC IN MCOND	-	-	-	-	-
MJ, MN	SSP ALARM	-	-	0, 1	0, 1	0, 1
MN	BMTR ALARM	-	-	-	-	-
-	BMTR IDLE	-	-	-	-	-
MJ, MN	SYNC ALARM	-	-	-	0, 1	-
-	SYNC IDLE	-	-	-	0, 1	-
MJ, MN	CCB ALARM	-	-	1-6	0, 1	-
-	CCB IDLE	-	-	1-6	0, 1	-
MJ, MN	CCNI ALARM	-	-	-	0, 1	-

Table 3-8. DACS II Alarm Message Elements

Sev	Type	AlarmType	F	Unit	Side	Sub
-	CCNI IDLE	-	-	-	0, 1	-
MJ, MN	CCI ALARM	-	-	-	0, 1	-
-	CCI IDLE	-	-	-	0, 1	-
MJ, MN	TSI ALARM	-	-	1-6	0, 1	1-6
-	TSI IDLE	-	-	1-6	0, 1	1-6
MJ, MN	ETSI ALARM	-	-	1-16	0,1	-
-	ETSI IDLE	-	-	1-16	0, 1	-
MJ, MN	FC ALARM	-	-	1-16	0, 1	1-4
-	FC IDLE	-	-	1-16	0, 1	1-4
MJ, MN	MC ALARM	-	-	-	-	-
-	MC IDLE	-	-	-	-	-
MJ, MN	UC ALARM	-	-	1-16	-	-
-	UC IDLE	-	-	1-16	-	-
MJ, MN	POWER ALARM	-	-	-	-	-
-	POWER IDLE	-	-	-	-	-
MJ, MN	FTMI ALARM	-	-	1-16	-	1-4
-	FTMI IDLE	-	-	1-16	-	1-4
MJ, MN	DSPI ALARM	-	-	1-16	-	-
-	DSPI IDLE	-	-	1-16	-	-
MJ, MN	FMT ALARM	-	-	1-16	0, 1	-
-	FMT IDLE	-	-	1-16	0, 1	-

The column headings in the report and their values are explained as follows:

Table 3-9. Explanation of DACS II Alarm Message Elements

Date, Time The date and time when the alarm was received. Dates are in order from most recent to least recent.

Table 3-9. Explanation of DACS II Alarm Message Elements

Sev	The severity of the alarm: CR (critical), MJ (major), MN (minor), and blank (none). Each is defined for each Type and its dependent parameters, if any. CR and MJ imply a priority of corrective action.	
Type	The type of alarm message.	
	CGA	Carrier group alarm for NAS digroups. This message reports facility alarms. The type of facility alarm is reported in the F column.
	CGA IDLE	The message is informationally the same as for CGA. It means that the CGA has been retired.
	PBA	Primary block alarm (PBA) for CEPT digroups. Severity MJ is defined not to be informational only. MJ is defined to mean prompt maintenance alarm (PMA) and MN is defined to mean deferred maintenance alarm (DMA).
	PBA IDLE	The PBA has been retired.
	LOS	Loss of signal (LOS) alarm on ANSI T1.403 compatible NPC.
	LOS IDLE	LOS alarm retired.
	DS3U ALARM	Reports a failure detected on an incoming DS3 facility.
	DS3U IDLE	The DSU3 alarm has been retired.
	CI RESET	Communications interface reset. A DACS II outputs this type of message immediately after a hardware reset. The MJ severity notifies remote systems of the reset.
	PARAM ALARM	Parameter alarm. This message reports an alarm state on a given NPC facility performance parameter, designated under AlarmType.
	PARAM IDLE	This parameter alarm has been retired.
	THRES ALARM	Threshold alarm. This message reports that the 15-minute or 24-hour threshold exception alarm for a particular NPC has been equaled or exceeded for the facility performance parameter designated under AlarmType.
	THRESH IDLE	This threshold alarm has been retired.

Table 3-9. Explanation of DACS II Alarm Message Elements

DATE RESET	Reports that a DACS II's date and/or time have been reset as a result of a frame reset. CR and MJ severities are defined.
BOOT FAILED	Reports that a system boot has failed during a RST: :MC or RST: :MC, TAPE command. The severity is MJ.
OOS:CCN	CCN Out of Sequence. Reports when CCN duplexed entities are unprotected. The severity is MJ.
POWER FAIL	Reports that error recovery was instigated by a DACS II because of a frame power failure. The severity is MJ. The Unit and Side Columns of the report contain <i>field1</i> and <i>field2</i> reported in the DACS II error status register. Refer to the description immediately following this table.
MC REMOVED	Main controller removed. Reports that the MC was removed from service. The severity is MJ.
OOS:SYNC	Synchronizer out of service. Reports that the timing extractor circuit, the phase-locked loop, the clock generator unit, or the service and reply circuit are out of service. CR and MJ severities are defined.
OOS:SYNC-TB	Synchronizer time base out of service. Reports that the synchronizer time base has been removed as a clock reference oscillator (CRO). Severities are CR and MJ.
OOS:SYNC-TLI	Synchronizer time link interface out of service. Severities are CR and MJ.
OOS:CCB	Cross-connect buffer out of service. Severity is MJ.
OOS:TSI	Time slot interchange out of service. Severity is MJ.
OOS:UC	Unit controller out of service. Severity is MJ.
OOS:FTMI	Facility terminating module interface out of service. Severity is MJ.
OOS:DSPI	Digital signal processor interface (DSPI) out of service.
OOS:FC	Format converter of a facility terminating unit (FTU) out of service. Severity MJ.
OOS:NPC	Digroup (or NPC) out of service. Severity MJ.

Table 3-9. Explanation of DACS II Alarm Message Elements

OOS:ECCN	Expanded cross-connect network side (ECCN) alarm. The alarm indicates that the ECCN duplexed entities are in an unprotected state. The major alarm is used for an ECCN out of service.
ECCN IDLE	Expanded cross-connect network side (ECCN) alarm retired.
OOS:LINK	Link out of service.
OOS:CCNI	Cross-connect network interface (CCNI) out of service.
OOS:CCI	Clock and control interface (CCI) out of service.
OOS: ETSI	Expanded time slot interchanger (ETSI) out of service.
OOS: MMFG	Multiplexer-multiplexer interface unit functional group (MMFG) of a DS3 unit out of service.
OOS:FLI	Facility line interface out of service. Severities are CR and MJ.
OOS:FMT	Formatter in a DS3 unit is out of service. Severities are CR and MJ.
MC IN MCOND	Maintenance condition (MCOND) in main controller. Reports that the MC has been restored to service in the maintenance condition. Severity is MJ.
SSP ALARM	Synchronizer sync port alarm.
SSP IDLE	Synchronizer sync port alarm retired.
BMTR ALARM	Backup memory transfer alarm.
BMTR IDLE	Backup memory transfer alarm retired.
SYNC ALARM	Synchronizer alarm.
SYNC IDLE	Synchronizer alarm retired.
CCB ALARM	Cross-connect buffer alarm.
CCB IDLE	Cross-connect buffer alarm retired.
CCNI ALARM	Cross-connect network interface alarm.
CCNI IDLE	Cross-connect network interface alarm retired.
CCI ALARM	Clock and control interface alarm.
CCI IDLE	Clock and control interface alarm retired.

Table 3-9. Explanation of DACS II Alarm Message Elements

TSI ALARM	Time slot interchanger alarm.
TSI IDLE	Time slot interchanger alarm retired.
ETSI ALARM	Expanded time slot interchanger alarm.
ETSI IDLE	Expanded time slot interchanger alarm retired.
FC ALARM	Forward converter alarm.
FC IDLE	Forward converter alarm retired.
FMT ALARM	Formatter alarm.
FMT IDLE	Formatter alarm retired.
MC ALARM	Main controller alarm.
MC IDLE	Main controller alarm retired.
UC ALARM	Unit controller alarm.
UC IDLE	Unit controller alarm retired.
POWER ALARM	Power supply alarm.
POWER IDLE	Power supply alarm retired.
FTMI ALARM	Facility terminating module interface alarm.
FTMI IDLE	Facility terminating module interface alarm retired.
DSPI ALARM	Digital signal processing interface alarm.
DSPI IDLE	Digital signal processing interface alarm retired.
FMT ALARM	Formatter alarm.
FMT IDLE	Formatter alarm retired.
NPC	The NPC Number of the NPC that is the subject of the message.
AlarmType	The type of alarm. A parameter that is subsidiary to the Type and further specifies it. The possible values are
SLIP	Specifies the parameter in a Type of PARAM . ALARM as a slip error.
LOS	Loss of signal.
BER	Bit error rate.
OOF	Out of frame.

Table 3-9. Explanation of DACS II Alarm Message Elements

IDLE SIG	Idle signal.
COFA	Change of frame alignment error.
SAFE	Shelf alarm far end.
SANE	Shelf alarm near end.
ERS15M	Specifies the facility performance parameter in a Type of THRES .ALARM as errored seconds after 15 minutes.
ERS24H	Errored seconds after 24 hours.
SERS15M	Severe errored seconds after 15 minutes.
SERS24H	Severe errored seconds after 24 hours.
SLIPS15M	Slip count after 15 minutes.
SLIPS24H	Slip count after 24 hours.
DM1H	Degraded minutes after 1 hour.
DM24H	Degraded minutes after 24 hours.
US15M	Unavailable seconds after 15 minutes.
US24H	Unavailable seconds after 24 hours.
CRCDAILY	Daily CRC block errors.
FRERDAILY	Daily frame errors.
OFSDAILY	Daily out of frame seconds.
ESDAILY	Daily errored seconds.
SESDAILY	Daily severe errored seconds.
CSSDAILY	Daily controlled slip seconds.
CVDAILY	Daily coding violations.
UASDAILY	Daily unavailable seconds.
UATCDAILY	Daily unavailable time count.
MERDAILY	Daily multiframe errors.
FEEDAILY	Daily far end block errors.
FESDAILY	Daily far end errored seconds.
FSESDAILY	Daily far end severely errored seconds.

Table 3-9. Explanation of DACS II Alarm Message Elements

FUASDAILY	Daily far end unavailable seconds.
CRC15MIN	15-minute CRC block errors.
FRER15MIN	15-minute framing errors.
OFS15MIN	15-minute out of frame seconds.
ES15MIN	15-minute errored seconds.
SES15MIN	15-minute severely errored seconds.
CSS15MIN	Daily controlled slip seconds.
CV15MIN	15-minute coding violations.
UAS15MIN	15-minute unavailable seconds.
UATC15MIN	15-minute unavailable time count.
MER15MIN	15-minute multiframe errors.
FEBE15MIN	15-minute far end block errors.
FES15MIN	15-minute far-end seconds.
FUAS15MIN	15-minute far-end unavailable seconds.

The type of facility alarm in a message **Type** of CGA. For NAS NPCs; i.e., the **Type** is CGA and the **AlarmType** is CGA:

- Y Yellow alarm.
- R Red alarm.
- B Both yellow and red.

⇒ NOTE:

B is not valid for TG80 digital digroup circuits.

- L Local multiframe alarm (LMA).
- M Remote multiframe alarm (RMA).
- A Blue signal, also known as alarm indication signal (AIS), non-alarmed, or all ones signal.

For CEPT NPCs; i.e., the **Type** is CGA and the **AlarmType** is PBA:

- A Primary AIS; i.e., Alarm indication signal received in all 32 time slots.

Table 3-9. Explanation of DACS II Alarm Message Elements

V	A16: AIS received in CAS time slot 16.
Y	RAI: Remote alarm indication received in Bit 3 of NFW of TS0.
M	R16: RAI received in Bit 6 of Frame 0 of TS16.
R	LOS PBF: Loss of signal type primary block failure, or primary block alarm (PBA).
L	LMA: Loss of multiframe alignment in CAS Time Slot 16.
E	RBBER: remote bit error rate detected in Bit 4 of TS0.
B	BER: bit error rate detected in received signal.
I	RAIS: remote AIS detected in Bit 4 of TS0.
S	SFI: synchronization failure indication in Bit 5 of TS0.
C	LCMA: Loss of CRC4 multiframe alignment in TS0.
F	LOF PBF: Loss of frame type primary block failure.
X	EER: excessive error rate.
Unit	The unit number of the alarming facility.
Side	The side number of the alarming facility.
Sub	The subunit number of the alarming facility.

For a POWER FAIL message, Unit and Side contain *field1* and *field2* reported in the error status register. These fields are described in the *DACS II, Digital Access and Cross-connect System II, Generic 3 (MML) Core, Input/Output Message Reference Manual*, AT&T 365-301-652, Volume I, under power failure message.

Each field consists of 4 hexadecimal digits that are 16-bit masks. A bit set to 1 indicates a power error and the source of the error. The maps of bit position into power source are repeated here from that manual.

For *field1* (Unit):

Table 3-10. Error Status Register *field1* Bit Mask

Bit	Failed Power Supply	Bit	Failed Power Supply
15-12	Not used	05	DSP 1
11	CCN 1	04	DSP 0
10	CCN 0	03	UC 4
09	SYNC 1	02	UC 3
08	SYNC 0	01	UC 2
07-06	Not used	00	UC 1

For *field2* (Side):

Table 3-11. Error Status Register *field2* Bit Mask

Bit	Failed Power Supply	Bit	Failed Power Supply
15-14	Not used	12	MC 1
13	MC 0	11-00	Not used

Table 3-12. DACS II ISX Alarm Message Elements

Sev	Type	AlarmType	F	Unit	Side	Sub
CR, MJ, MN	CGA, CGA IDLE		A, B, F, L, M, R, V, X, Y	-	-	
CR, MJ, MN	PBA PBA IDLE		A, B, C, E, F, I, L, M, R, S, V, X, Y	-	-	

Table 3-12. DACS II ISX Alarm Message Elements

Sev	Type	AlarmType	F	Unit	Side	Sub
CR, MJ, MN	THRES ALARM THRESH IDLE (CEPT)	ERS15M ERS24H SERS15M SERS24H SLIPS15M SLIPS24H DM1H DM24H US15M US24H CRCDAILY FRERDAILY OFSDAILY RSDAILY SESDAILYCS SDAILY CVDAILY UASDAILY UATCDAILY MERDAILY FEBEDAILY FESDAILY FESDAILY FUASDAILYC RC15MIN FRER15MIN OFS15MIN ES15MIN SES15MIN	-	-	-	-
		CSS15MIN CV15MIN UAS15MIN UATC15MIN MER15MIN FEBE15MIN FES15MIN FSES15MIN FUAS15MIN				
MJ	CI RESET	-	-	-	-	-
MN	DATE RESET	-	-	-	-	-
MJ	MC IN MCOND	-	-	-	-	-
MJ	BOOT FAILED	-	-	-	-	-
MJ	MC REMOVED	-	-	-	-	-

Table 3-12. DACS II ISX Alarm Message Elements

Sev	Type	AlarmType	F	Unit	Side	Sub
CR, MJ, MN	OOS:LINK	-	-	1-6	-	-
MJ	OOS:NPC	-	-	-	0,1	-
CR, MJ	OOS: SXC	-	-	-	0-1	-
-	SXC IDLE	-	-	-	0-1	-
MJ	POWER FAIL	-	-	<i>field1</i>	<i>field2</i>	-
MN	ERR: TREF	-	-	1-2	-	-
-	TREF IDLE			1-2		
MJ, MN	OOS: TREF	-	-	1-2	-	-
MJ, MN	OOS: MEM	-	-	A-B	-	-
MN	ERR:SXC	-	-	-	0-1	-

Table 3-13. Explanation of DACS II ISX Alarm Message Elements

Date, Time	The date and time when the alarm was received. Dates are in order from most recent to least recent.	
Sev	The severity of the alarm: CR (critical), MJ (major), MN (minor), and blank (none). Each is defined for each Type and its dependent parameters, if any. CR and MJ imply a priority of corrective action.	
Type	The type of alarm message. Many of these are the same as for the DACS II and are not repeated here. Refer to the table for the DACS II given previously.	
	ERR: SXC	This autonomous message reports that the synchronizer on the specified synchronizer/cross-connect (SXC) CP has switched to a new phase locked loop operating mode or has switched to a new source of timing.
	OOS: SXC	One of the SXC CPs has gone out of service as a result of either a failure and a protection switch to the duplicated side, or a manual removal of the SXC.
	IDLE: SXC	The SXC has returned to in-service state.

Table 3-13. Explanation of DACS II ISX Alarm Message Elements

POWER FAIL	Reports a frame power failure. The severity is MJ. The <code>Unit</code> and <code>Side</code> Columns of the report contain <i>field1</i> and <i>field2</i> reported in the DACS II ISX error status register. Refer to the description immediately following this table.
ERR:TREF	Synchronization timing reference error.
OOS:TREF	Synchronization timing reference out of service.
OOS:MEM	Non-volatile memory card has been removed from service.
Unit	The unit number of the alarming facility.
Side	The side number of the alarming facility.
Sub	The subunit number of the alarming facility.

For an `ISX_PWR FAIL` message, `Unit` and `Side` contain *field1* and *field2* reported in the error status register. Each field consists of 8 bits. A bit set to 1 indicates a power error or a unit not installed. The maps of bit position into units are as follows. For *field1* (`Unit`):

Table 3-14. Error Status Register *field1* Bit Mask

Bit	Unit
07	Main shelf PU3 not installed.
06	Main shelf PU2 not installed.
05	Main shelf PU1 not installed.
00-04	Reserved

For *field2* (`Side`):

Table 3-15. Error Status Register *field2* Bit Mask

Bit	Unit
15	Expansion shelf +5 V output failure on PU4 or PU5.
14	Expansion shelf feeder B or fuse failure to PU4 or PU5.
13	Expansion shelf feeder A or fuse failure to PU4 or PU5.
12	Main shelf +5 V output failure on PU1, PU2 or PU3.
11	Main shelf feeder B or fuse failure to PU1, PU2 or PU3.
10	Main shelf feeder A or fuse failure to PU1, PU2 or PU3.
09	Expansion shelf PU5 not installed.
08	Expansion shelf PU4 not installed.

Introduction To NPC Provisioning

What It Means to Provision an NPC in the I-2000

NPCs must be provisioned before circuits can be created. Provisioning takes place on two different levels:

- Physical provisioning. This level is beyond the scope of this manual, and must already have taken place before the I-2000 can be operational.

In physical provisioning, individual lines are brought to a DACS frame and are terminated there by circuit cards. A *line* can be ultimately thought of as a signal carried by a single telephone or computer wire. When signals are multiplexed together and are carried by a single cable or other transmission path, they become channels.

Cross-connects between channels within the circuit cards are made under computer control. Each card is intelligent, has its own memory, and responds to direction by the DACS computing system.

- Logical provisioning. This level is the concern of PROVISIONING in the I-2000.

In provisioning NPCs you are providing the I-2000 with the operational characteristics of the pertinent NPCs. You are making the channels in

these NPCs known to the I-2000, so that it can send MML or PDS commands to the DACS to cross-connect them.

The unit of cross-connection is typically the channel. For example, the 1.544 megabits per second (Mbps) of a DS1 signal becomes 24 channels of 64 kilobits per second (Kbps) under the NAS. The channel has a width of 8 bits, or one byte. All 8000 bytes per second being transmitted over this channel belong to the same customer.

You are the agent who provisions NPCs and cross-connects their channels. The I-2000 is only your means of doing so. You command the I-2000 by entering values in the NPC PROVISIONING **Action** field and executing that form.

The major I-2000 logical provisioning **Actions** are CREATE and RESTORE, REMOVE and DELETE. These **Actions** are based on the DACS concepts of "provision" and "place in service," "remove from service," and "unprovision."

In the DACS, provisioning is a process called *growing the NPC*. During provisioning, data concerning the NPC that is being made available is stored in the DACS database. The PDS command to grow an NPC is GRTH; in MML, it is CRTE-EQPT.

In the I-2000 software, the CREATE **Action** performs a similar, but enhanced function. The CREATE **Action** stores NPC information in either or both of the I-2000 and DACS databases, depending on which one(s) you select (see information about the **RECNCILE** key in Chapter 2). To change a DACS database, the I-2000 typically generates one or more GRTH or CRTE commands to the DACS, possibly supplemented by a CHG command for some of the options.

The opposite command, DGRTH or DISC, *de-grows* the NPC, or removes it from the DACS database. De-growth has been expanded into the DELETE **Action**.

In a DACS, a grown NPC must be placed in service, or *restored*, before it can be utilized in cross-connection. The RST command tests and initializes various hardware parameters associated with the NPC, and leaves it ready for cross-connection.

In the I-2000, the restore concept has been expanded into the RESTORE **Action**. On the I-2000 side, restoral means little more than that the NPC is marked restored in the I-2000 database. A RESTORE **Action** applied to both the I-2000 and DACS or just to the DACS generates one or more RST commands.

The opposite command, RMV, is expanded into the I-2000 REMOVE **Action**, which again affects either or both I-2000 and DACS databases. In the case of both or just DACS, REMOVE generates one or more RMV commands.

The information to generate the parameters for these various commands are typically taken from the fields on the I-2000 forms. A person knowledgeable in

DACS concepts will have no trouble discerning the associations between field values and parameters. However, discerning such associations is not necessary; you may work entirely within I-2000 concepts. Informational fields, which do not affect either the I-2000 or the DACS, are also included.

Types of NPCs

For the DACS I, only two-point, channelized cross-connects are supported. These are provided by NPC CPs, such as the digroup circuits. For the DACS II, the type of channel available to you depends on the facility hardware that supports it.

Vanilla-flavored NPCs are provided by dual digroup cards for NAS provisioning or dual primary circuits for CEPT provisioning. One DDC or DPC terminates two NPCs of digitally multiplexed DS0 signals. An NPC is a digroup, or two groups of 12 channels in NAS transmission or 32 channels in CEPT transmission. DDCs and DPCs are used in n DS0 cross-connects, one-way or two-way.

The TG80 Card provides clear DS1 signals for NAS only. In the clear DS1 type, the 193 bits composed of 24 8-bit channels plus one framing bit are available for cross-connection as one, very wide channel. It is considered a nonchannelized, or *clear* DS1 signal. Similarly, the TG191 card can provide clear E1 signals for CEPT only. The 256 bits composed of 32 8-bit channels are connected as one channel; i.e., they are not *terminated* into channels.

The DS3 shelf containing various DS3 circuit packs, such as the KCR1 Multiplexer, provides 28 DS1-level signals per DS3 multiplexer card. These are available as 28 clear DS1 signals or 672 DS0-level channels.

A virtual multipoint circuit requires connection to a virtual node, which is one or more channels in a virtual NPC. As the term *virtual* implies, a virtual NPC is not a real NPC, provided by hardware; instead, it is a software emulation. Its use is covered under virtual broadcast (or virtual multipoint) circuits in Chapter 6.

Virtual NPCs are created automatically during installation. By default, the I-2000 initializes all DACS frames to six virtuals, regardless of type of frame. On the DACS II CEF, you may use all six. On the DACS I, DACS II ISX and non-CEF DACS II, you may use only two. However, this restriction should not present a problem, as the number of channels available in only one virtual NPC is 500.

Virtual NPCs are defined with **NPC IDs** of VIRTUAL1, VIRTUAL2, etc., and are always in service. They are not associated with any one **Type**. They cannot be accessed through the NPC PROVISIONING form, except during the **BROWSE Action**.

The DMB card supports DMB multipoint circuits, which are not the same as the virtual multipoint described under the **Ckt Class** field in Chapter 6. In these

circuits, a DMB NPC is used as a branch point instead of a virtual node, and the cross-connections are two-way. DMB NPCs are located in the DSPU shelf. For additional information, refer to Chapter 6 of this manual and to the *DACS II Operation and Maintenance Manual*.

The specification of a DMB NPC requires a few additional fields on the NPC PROVISIONING form. A DMB provides redundant NPCs, so that any NPC number *n* accesses one of two duplicate NPCs, Side 0 or Side 1. The **SIDE** field appears on the screen in the appropriate circumstances, when you must select a side. Also, the DMB circuit pack is duplexed, requiring the growth of two NPCs at a time, one of which is termed here the *upper NPC*.

The Subrate Multiplexer (SRM) provides subrate circuits, in which the total bit rate available on a 64 Kbps channel is subdivided into subrates at 2.4 Kbps, 4.8 Kbps, 9.6 Kbps or 56 Kbps per subchannel. On one 8-bit channel, every 20th byte is the same subchannel for 2.4, every 10th for 4.8 and every 5th for 9.6. The Subrate Multipoint Junction Unit (MJU) cross-connects subchannels for the DACScan only.

In the DS0-A format, all 20 bytes for 2.4, all 10 for 4.8, etc., contain the same information. The redundancy is used for error checking, which is not available on the same channel used as a purely 64 Kbps DS0 channel. The true subrate capability is provided with the DS0-B format. In it, the 20 bytes for 2.4 represent 20 independent subchannels, the 10 bytes for 4.8 represent 10 subchannels, etc. The 56 Kbps is not used in DS0-B.

The DS0-B subchannels provided by the SRM can be connected in two-point, single-width NAS channels only. Multipoint subrate cross-connection, on the other hand, is provided by the Subrate Multipoint Junction Unit (MJU).

The type of NPC is specified by the first two letters of the **Type** field value on the NPC PROVISIONING form. Not every type of NPC is available for every type of frame; i.e., the **Type** field value of NPC PROVISIONING depends on the **Type** field value of FRAME PROVISIONING (in Chapter 3). The two **Types** are correlated in the table below:

Table 4-1. Supported NPC Types By Frame Type

	PB	PC	PA	DC	DE	TE	DA	TA	MB	SR	MJ	Virtual
DACS I	X			X	X							
DACS II before Release 6.0	X	X			X	X			X	X	X	X
DACS II, R6.0+	X	X	X		X	X	X	X	X	X	X	X

Table 4-1. Supported NPC Types By Frame Type

	PB	PC	PA	DC	DE	TE	DA	TA	MB	SR	MJ	Virtual
DACS II ISX			X*				X*					

* DACS II ISX does not support clear E1/DS1 versions of the PA and DA Types.

Also, circuits on some types of NPC are not compatible with circuits on other types. As a result, a MODIFY of the NPC PROVISIONING form for an in-service NPC can only change the Type field to certain other values, which are listed in the table below:

Table 4-2. Valid Old/New Types for a MODIFY Action

Old	New	PB	PC	PA	Clear PA	DE	Clear DE	DA	Clear DA	TE	Clear TE	TA	Clear TA
PB		X	X	X									
PC		X	X	X									
PA		X	X	X									
Clear PA					X								
DE						X		X					
Clear DE							X		X				
DA						X		X					
Clear DA							X		X				
TE										X		X	
Clear TE											X		X
TA										X		X	
Clear TA											X		X
DC		DC is a DACS I Type only and cannot be changed to anything but itself.											

Moreover, the fields for an NPC PROVISIONING form of a given Type are designed to supply a logically coherent set of information concerning the NPC. Unrestricted use of MODIFY is not permitted if such use would threaten the consistency of the information. The following table states which combinations of

NPC PROVISIONING fields can and cannot be changed together. The X indicates an allowed combination.

Table 4-3. Valid Combinations of NPC PROVISIONING Fields That Can Be Changed By A Single MODIFY Action

	NPC ID	NPC Type	Alarm Aging	FE Site	Insertion Word	TS0	TS0M	NFS	Threshold Settings
NPC ID	X	X	X	X	X	X	X	X	X
Type	X	X	X	X	X				
Alarm Aging	X	X	X	X	X	X	X	X	X
FE Site	X	X	X	X	X	X	X	X	X
IW	X	X	X	X	X				
TS0	X		X	X		X	X		
TS0M	X		X	X		X	X		
NFS	X		X	X				X	
Thresholds	X		X	X					X

NPC Addressing Schemes Supported by the I-2000

Channels are identified by channel numbers within NPC. NPCs are identified by one of two numbering schemes: hierarchical or extended. The hierarchical is a logical hierarchy: NPC identifier within module identifier within shelf identifier. The extended scheme simply offers a set of sequential numbers.

The DACS can be set to recognize either numbering scheme. This sort of DACS configuration is a software operation and is performed just after installation or when the need arises. Refer to Chapter 2 for the procedure. After the DACS has been configured, you must inform the I-2000 which scheme is going to be in use. Refer to the section "Frame Administration Selection" in Chapter 3. The DACS configuration **must** match the I-2000 setting.

Extended numbers in the DACS can be 3-digit or 4-digit, and the FRAME ADMINISTRATION form requires you to make this distinction. The 4-digit numbers apply to a CEF frame; on a non-CEF frame, the numbers do not run as high as 4 digits. I-2000 forms accept 4 digits in all cases and truncate the initial 0 if necessary. Remember, the I-2000 accepting a number does not insure that the DACS will accept it; if the DACS does not, the **Action** is denied. The DACS will not accept a number for an NPC that does not exist.

The I-2000 displays both hierarchical and extended NPC numbers. If you only enter one, the I-2000 obtains the other also, by conversion. The conversion algorithm depends on the type of NPC. You may wish to know what the equivalencies are. They are listed in the following tables:

Table 4-4. NPC Number Equivalents for DACS II Types DE/PB

Extended	Hierarchical	Extended	Hierarchical
0001 to 0160	01101 to 01440	1761 to 1920	12101 to 12440
0161 to 0320	02101 to 02440	1921 to 2080	13101 to 13440
0321 to 0480	03101 to 03440	2081 to 2240	14101 to 14440
0481 to 0640	04101 to 04440	2241 to 2400	15101 to 15440
0641 to 0800	05101 to 05440	2401 to 2560	16101 to 16440
0801 to 0960	06101 to 06440	9961	99101
0961 to 1120	07101 to 07440	9962	99102
1121 to 1280	08101 to 08440	9963	99103
1281 to 1440	09101 to 09440	9964	00104
1441 to 1600	10101 to 10440	9965	99105
1601 to 1760	11101 to 11440	9966	99106

Table 4-5. NPC Number Equivalents for DACS II Types SR/MB/MJ

Extended	Hierarchical	Extended	Hierarchical
0001 to 0002	01101 to 01102
0021 to 0022	01201 to 01202	0301 to 0302	02801 to 02802
...
0141 to 0142	01801 to 01802	2401 to 2402	16101 to 16102
0161 to 0162	02101 to 02102
0181 to 0182	02201 to 02202	2541 to 2542	16801 to 16802

Table 4-6. NPC Number Equivalents for DACS II Type TE/TA

Extended	Hierarchical	Extended	Hierarchical
0001 to 0160	01101 to 01620
016A to 016H	01621 to 01628	2401 to 2560	16101 to 16620
0161 to 0320	02101 to 02620	256A to 256H	16621 to 16628
032A to 032H	02621 to 02628		

Table 4-7. NPC Number Equivalents for DACS II ISX*

Extended	Hierarchica	Extended	Hierarchical
0001 to 0016	01101 to 01116	0065 to 0080	03101 to 03116
0017 to 0032	01201 to 01216	0081 to 0096	03201 to 03216
0033 to 0048	02101 to 02116	0097 to 0112	04101 to 04116
0049 to 0064	02201 to 02216	0113 to 0128	04201 to 04212

*Only extended is supported by the DACS II ISX.

Table 4-8. NPC Number Equivalents for DACS I*

Extended	Hierarchical	Extended	Hierarchical
0001 to 0032	01101 to 01132	0065 to 0096	03101 to 03132
0033 to 0064	03101 to 03132	0097 to 0128	04101 to 04132

*Only extended is supported by the DACS I.

NPC PROVISIONING Forms

To access the NPC PROVISIONING forms:

Step 1: Select PROVISIONING from the MAIN MENU. The PROVISIONING menu appears:

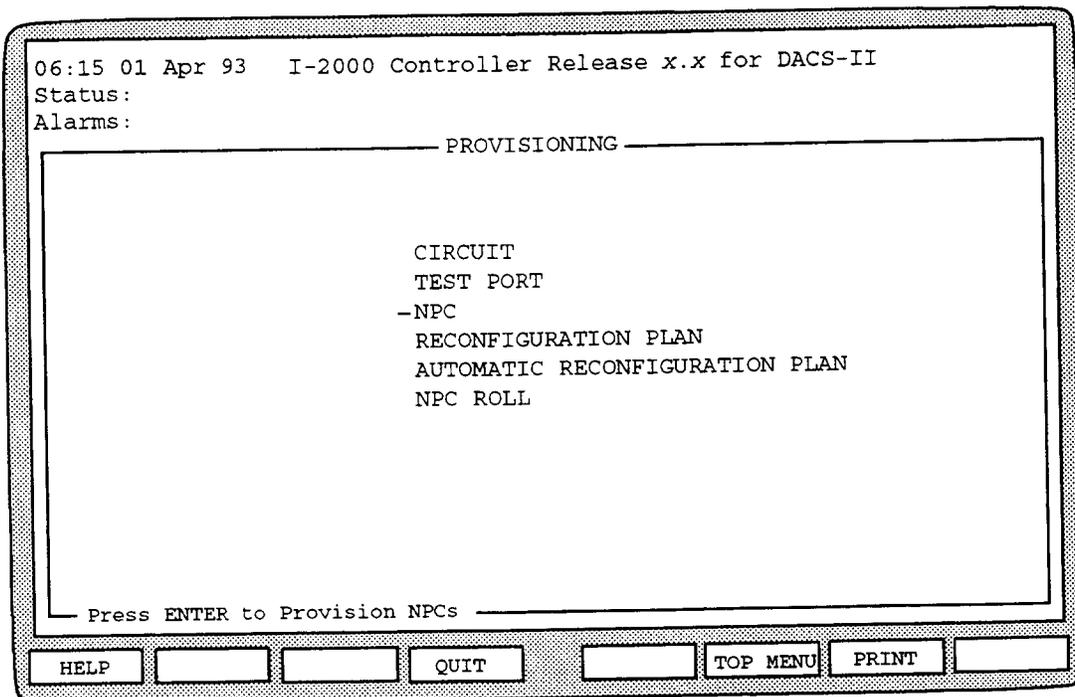


Figure 4-1. Provisioning Menu

Step 2: Select NPC from the PROVISIONING menu. The initial form that appears is shown next.

```

06:15 01 Apr 93  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- NPC PROVISIONING -----
Site Name:                Alarm State:    Service State:
Action:CREATE  NPC ID:
Type:PB100      Number(Hier):    (Ext):    Alarm Aging:000  IW:
FE Site:                TS0:11011111  TSOM:00000000

                                Short Interval Option  Long Interval Option
Slips                    D Inf                    D Inf
Degraded Minutes        D Inf                    D Inf
Unavailable Seconds     D Inf                    D Inf
Errored Seconds         D Inf                    D Inf
Sev Errored Seconds    D Inf                    D Inf

Enter the site name _____
HELP CHOICES NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE
    
```

Figure 4-2. CEPT NPC Provisioning Form (Types PB/PC)

This is the default form. The fields that appear depend on the value of the **Type** and **Action** fields. The form shown above appears for CEPT equipment (**Type** of PB or PC).

The **QUERY Action** has its own forms. These forms are described under *Querying an NPC* later in this chapter.

On all the forms, the default values indicated for **Type**, **IW**, **TS0**, and **TSOM**, if they are present, are those provided as defaults by the frame as well.

The remaining distinct forms are shown below.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
-----NPC PROVISIONING-----
Site Name:                Alarm State:        Service State:
Action:CREATE NPC ID:
Type:PA100   Number(Hier):   (Ext):        Alarm Aging:000 IW:
FE Site:                TSO:11011111  TSOM:00000000 NFS:PPPPPPPP

Daily NE  Daily FE  15-Min NE  15-Min FE
CRC Block Errors      D Inf    D Inf      D Inf      D Inf
Errored Seconds       D Inf    D Inf      D Inf      D Inf
Sev Errored Seconds  D Inf    D Inf      D Inf      D Inf
Unavailable Seconds   D Inf    D Inf      D Inf      D Inf
Framing Errors        D Inf    D Inf      D Inf
Out-of-Frame Seconds D Inf    D Inf      D Inf
Controlled Slip Seconds D Inf    D Inf
Coding Violations     D Inf    D Inf
Unavailable Time Count D Inf    D Inf
Multiframe Errors     D Inf    D Inf

```

Enter the site name

HELP [] NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE

Figure 4-3. Enhanced CEPT NPC Provisioning Form (Type PA)

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
      _____ NPC PROVISIONING _____
Site Name:                Alarm State:    Service State:
Action:CREATE  NPC ID:
Type:DE100      Number(Hier):    (Ext):    Alarm Aging:000  IW:
FE Site:

                Minor Alarm Option      Major Alarm Option
Slips                0                    0
Bit Error Rate      0                    0
Frame Alignment     0                    0
Errored Seconds    0                    0
Sev Errored Seconds 0                    0

-- Enter the site name _____
HELP CHOICES NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE
    
```

Figure 4-4. NAS NPC Provisioning Form (Types DE/TE)

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
      _____ NPC PROVISIONING _____
Site Name:                Alarm State:    Service State:
Action:CREATE  NPC ID:
Type:DA100      Number(Hier):    (Ext):    Alarm Aging:000  IW:
FE Site:

                Minor Alarm Option      Major Alarm Option
Slips                0                    0
Bit Error Rate      0                    0
Frame Alignment     0                    0
Errored Seconds    0                    0
Sev Errored Seconds 0                    0

-- Enter the site name _____
HELP CHOICES NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE
    
```

Figure 4-5. Enhanced NAS NPC Provisioning Form (Types DA/TA)

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
      NPC PROVISIONING
Site Name:           Alarm State:   Service State:
Action:CREATE  NPC ID:
Type:DE919      Number(Hier):   (Ext):   Alarm Aging:000
FE Site:

                Minor Alarm Option   Major Alarm Option
Slips                0                0
Bit Error Rate      0                0

Enter the site name
HELP CHOICES NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE
    
```

Figure 4-6. Clear DS1 NAS NPC Provisioning Form (Type DE9y9)

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
      NPC PROVISIONING
Site Name:           Alarm State:   Service State:
Action:CREATE  NPC ID:
Type:TE919      Number(Hier):   (Ext):   Alarm Aging:000
FE Site:

                Minor Alarm Option   Major Alarm Option
Slips                0                0

Enter the site name
HELP CHOICES NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE
    
```

Figure 4-7. Clear DS1 Through DS3 NAS NPC Provisioning Form (Type TE9y9)

```
06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- NPC PROVISIONING -----
Site Name:                Alarm State:    Service State:
Action:CREATE   NPC ID:
Type:MB100      Number(Hier):      (Ext):
                Upper NPC ID:
                Upper NPC No(Hier):      Ext):

Enter the site name _____

HELP  CHOICES  NEXTPAGE  QUIT  RECNCILE  TOP MENU  PRINT  EXECUTE
```

Figure 4-8. DMB NPC Provisioning Form (Type MB)

```
06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- NPC PROVISIONING -----
Site Name:                Alarm State:    Service State:
Action:CREATE   NPC ID:
Type:MJ100      Number(Hier):      (Ext):

Enter the site name _____

HELP  CHOICES  NEXTPAGE  QUIT  RECNCILE  TOP MENU  PRINT  EXECUTE
```

Figure 4-9. Substrate NPC Provisioning Form (Types MJ/SR)

⇒ NOTE:

When the fields described below are specified as mandatory, it means that for the **CREATE Action** the data must be supplied. For other **Actions** you may select an existing database item by entering the **NPC ID**, and the I-2000 will then retrieve the remaining data from its database. You may enter these data, but for **EXECUTE** to succeed, the displayed data usually must match the database exactly.

Field Descriptions

Descriptions of the NPC PROVISIONING fields follow.

Table 4-9. NPC PROVISIONING Field Descriptions

Site Name	<p>Mandatory. 1 through 24 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %, . Blanks are allowed within a name, but leading and trailing blanks are ignored.</p> <p>The name of the DACS frame where the requested Action will take place. Pressing CHOICES displays WHICH DACS? with a list of the DACS names. These names were established during frame administration, described in Chapter 3.</p>
Alarm State	<p>The status of an alarm currently being received or asserted by this NPC. This field is under software control of the I-2000 and cannot be changed by the user. The possible values are:</p> <p>OOS The NPC has been removed from service autonomously. LOS The alarm is a loss-of-signal alarm. CGA The alarm is a carrier group alarm (NAS). PBA The alarm is a primary block alarm (CEPT). PERF The alarm is a performance alarm of major severity. MAJ The alarm is of major severity and is not a performance alarm. MINR The alarm is of minor severity. NONE No alarm is asserted. blanks The NPC is not yet registered in the I-2000 database.</p>
Service State	<p>The status of the NPC. This field cannot be changed by the user except as the result of an Action. Possible values:</p> <p>UEQD Unequipped. The NPC referenced by the NPC ID is not currently recorded in the I-2000 and/or DACS databases (equipped). To place it there, use the CREATE Action.</p>

Table 4-9. NPC PROVISIONING Field Descriptions

OOS	Out of service. The NPC is currently equipped, but is not operable. To place it in service, use the RESTORE command. To unequip it, use the DELETE command.
IS	In service. The NPC is equipped and operable (ready for CIRCUIT PROVISIONING). To remove it from service, use the REMOVE Action . On currently unmapped channels in an NPC that is IS, the disconnect channel code is asserted repeatedly if there is one; otherwise, the NPC's IW is used as the default disconnect code.
0 IS	With reference to DMB and subrate NPCs, side 0 is in service and side 1 is out of service.
1 IS	With reference to DMB and subrate NPCs, side 1 is in service and side 0 is out of service.
Action	The provisioning actions are:
CREATE	Adds a new NPC to the I-2000 and/or DACS databases. This is the default value.
DELETE	Deletes the specified NPC from the I-2000 and/or DACS databases. Before an NPC can be deleted, it must be OOS and contain no channels that are mapped in ACTIVE circuits, ALTROUTED circuits, or test ports. If the above conditions have not been met, you must deactivate the circuits and REMOVE the NPC. One convenient way to determine which circuits require deactivation is to get a CIRCUITS Report by NPC ID (see Chapter 13).
MODIFY	Changes allowed combinations of fields for the specified NPC. These combinations are stated under <i>Types of NPCs</i> in the <i>Introduction</i> to this chapter. Constraints on possible new values of Type are also stated there.
	⇒ NOTE: A MODIFY to change Type or IW of an IS NPC results in the I-2000 placing the NPC in OOS Service State before making the change and in doing a RESTORE after the change. However, if OOS is set to N, the MODIFY is denied.

Table 4-9. NPC PROVISIONING Field Descriptions

	<p>Only those fields whose specification on the form differs from the I-2000 database cause changes to be sent to the DACS. In particular, if the value is correct in the I-2000 but is not correct in the DACS, a MODIFY, even in DACS Only mode, will not correct the value in the DACS.</p>
RESTORE	Places the specified NPC in service. An NPC must be in service before it can be used for CIRCUIT PROVISIONING .
REMOVE	Removes the specified NPC from service.
	<p> NOTE: Removing an NPC with active circuits may result in transmission loss for those circuits.</p> <p>An NPC carrying red-lined circuits cannot be removed unless INCL is YES.</p>
QUERY	Requests the current state of the NPC from the frame and displays the data received upon successful completion of the QUERY .
BROWSE	Gives you read-only access to the I-2000 database for retrieving and scrolling NPC records. You can use wild-card characters (* ?), in the NPC ID field only, to match any character or set of characters.
NPC ID	<p>Mandatory, 1 through 41 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %, . Blanks are allowed in the name, but leading and trailing blanks are ignored.</p> <p>An identifier, or name, associated with the specified Number. The CREATE Action associates the name and number.</p> <p>Only one NPC ID can be associated with a Number within a DACS, and also, an NPC ID can be associated with only one NPC. An NPC ID uniquely identifies an NPC.</p>
Type	<p>Mandatory for CREATE, the format is <i>ABxyz</i> where <i>AB</i> identifies the type of hardware and <i>xyz</i> sets certain provisioning parameters such as frame and signaling format. The hardware types are listed below. Not every type is available with every frame (refer to the <i>Types of NPCs</i> section of the introduction to this chapter).</p>

Table 4-9. NPC PROVISIONING Field Descriptions

PA	<p>For DACS II, Generic 6.0 only, and DACS II ISX, the hardware is a TG191 enhanced dual primary circuit (EDPC) supporting a CEPT 75/120-ohm NPC with enhanced functionality.</p> <p>Type PAxCz provides clear, framed E1 cross-connections and PAxDz provides clear, unframed E1 cross-connections. (The <i>Introduction</i> to Chapter 6 contains some comments on framing.) Moreover, support of PA-Type NPCs is expanded to include the setting, modifying and querying of performance monitoring thresholds. And finally, you can provision and query the TS0 receive (NFS) spare bit manipulation settings.</p>
PB	<p>The hardware is a dual primary circuit (DPC) supporting a CEPT NPC with 120-Ohm interfaces. PB100 is the default value.</p>
PC	<p>The hardware is a DPC supporting a CEPT NPC with 75-Ohm interfaces.</p>
DA	<p>For DACS II, Generic 6.0 only, and DACS II ISX, the hardware is a TG192 enhanced dual digroup card (EDDC) supporting an ANSI standard NPC with enhanced functionality.</p> <p>Type DAxy9 provides clear, framed cross-connections.</p>
DC	<p>The hardware is a DACS I NPC supporting mxDs0 NAS cross-connects only.</p>
DE	<p>The hardware is a dual digroup card (DDC) supporting a NAS NPC for channelized DS1 signals or a TG80 Card for clear unframed DS1 signals (DE9y9).</p>
TA	<p>For DACS II, release 6.0 only, the hardware is a KCR5 and 6 within a DS3 card.</p> <p>Type TAxy9 provides clear unframed cross-connections.</p>
TE	<p>The hardware is a DS3 card for channelized or clear unframed DS1 (TE9y9).</p>
MB	<p>The hardware is a DMB card for DMB multipoint cross-connections. xyz must be 100.</p>
MJ	<p>The hardware is a subrate multipoint junction unit (MJU) for multipoint subrate cross-connection. xyz must be 100. This feature is only available to the DACScan.</p>

Table 4-9. NPC PROVISIONING Field Descriptions

SR	<p>The hardware is a subrate multiplexer (SRM) for two-point subrate cross-connections. xyz must be 100. This feature is only available to the DACScan.</p> <p>For PA, PB, PC, DA/TA and DE types, the xyz defines facility characteristics. For example, for DE types, xyz defines the framing format (x is 1-3), the line and signaling format (y is 0, 1, 2, 4), and the channel-counting sequence (z is 0 or 4). See the DACS I/O manuals.</p>
Number (Hier)	<p>For CREATE, either this field or (Ext) must be entered. The I-2000 converts and fills in the other.</p> <p>The number of the NPC in hierarchical (hier) numbering. Hierarchical numbers have the following format:</p> <p style="text-align: center;">xxyzz</p> <p>where:</p> <p>xx Is the shelf or unit number in the range 01 to 16. For units less than 10, the leading 0 is required.</p> <p>y Is the module number in the range 1 to 8.</p> <p>zz Is the NPC within the module, ranging from 01 through 40.</p> <p>Not all units are allowed in all frames, nor all positions in all units and modules. A module or shelf of a certain type is associated with a definite range of numbers. If you enter a number within that range, the Type field must be compatible with the type of NPC belonging to the number. If it is not, an error message is displayed:</p> <p style="text-align: center;">NPC type is inconsistent with FTMI type</p>
(Ext)	<p>The number of the NPC in extended numbering. The range is 1 through 256H. Some NPC numbers may not be allowed in a frame, depending on the frame's equipage.</p>
Alarm Aging	<p>The number of seconds after a CGA or PBA message has been received or asserted, before action is taken by the I-2000. The default is 0.</p> <p>x Age the alarm x seconds, where x is 1 through 9999.</p> <p>0 Do not age the alarm, but act immediately.</p> <p>-1 Ignore the alarm.</p>

Table 4-9. NPC PROVISIONING Field Descriptions

IW	<p>Insertion Word. 2 hex digits for NAS, 3 for CEPT, [0-9, A-F/a-f]. Specifies the 8-bit code transmitted by an IS NPC on unassigned channels. The third digit of a CEPT IW contains signaling-channel data. The default for NAS NPCs is 7F and for CEPT is D5D.</p>
	<p>NOTE: This is an open field and the I-2000 lets you enter any 2- or 3-character IW. But for NAS (DE) NPCs only, two characters are allowed, and entering three sends a bad syntax message to the DACS and also displays it on the I-2000 prompt line. If this happens, correct the IW and execute again. For CEPT NPCs, if you do not enter a third digit, it is supplied by the I-2000.</p> <p>On DACS II, Release 6.0, and DACS II ISX frames, a 0 in the 7th bit (from the right) position generates a D4 yellow alarm for the NPC when the IW is transmitted.</p>
FE Site	<p>Far end site. 1-24 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %. Blanks are allowed in the name, but leading and trailing blanks are ignored.</p> <p>The name of the DACS at the far end of the facility terminating on the specified NPC. This field appears only for types PA, PB, PC, DA/TA and DE, and is informational.</p>
Upper NPC ID	<p>1 through 41 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %. Blanks are allowed in the name, but leading and trailing blanks are ignored.</p> <p>The next higher numbered NPC from the NPC specified in NPC ID. This field appears for type MB only, which requires a pair of NPCs to be grown at a time, the second possessing the next highest number. Upper NPC ID must be entered.</p>
Upper NPC No (Hier)	<p>This field appears for type MB only. A number in hierarchical format automatically assigned to the NPC specified in Upper NPC ID.</p>
(Ext)	<p>This field appears for type MB only. A number in extended format automatically assigned to the NPC specified in Upper NPC ID.</p>
SIDE	<p>This field appears for types MB, MJ, and SR only. Specifies the side when the Action will change the Service Status of a duplex NPC. Values are 0 or 1. A value is required when the Action is REMOVE or RESTORE.</p>

Table 4-9. NPC PROVISIONING Field Descriptions

TS0	<p>Time slot 0 transmit. 8 characters. The field appears for CEPT NPCs only, and is accessible via the MODIFY Action.</p> <p>Describes how to process bits in time slot 0 for transmission. A single character is entered for each bit. The bit values are</p> <ul style="list-style-type: none"> - Leave the previous value in effect for this bit. P Cross-connect this bit position unchanged. 0 Overwrite the incoming bit with a 0 for this position. 1 Overwrite the incoming bit with a 1 for this position. <p>If either of the two rightmost bits is P, both must be P. Use either upper or lower case. The default is 11011111.</p>
TS0M	<p>Time slot 0 monitor. Eight characters. The field appears for CEPT NPCs only, and is accessible via the MODIFY Action.</p> <p>Describes what Time Slot 0 bits are to be monitored by the frame. A single character is entered for each bit. The bit values are</p> <ul style="list-style-type: none"> - Leave the previous value in effect for this bit. 0 Stop monitoring the signal in this bit position. 1 Start monitoring the signal in this bit position. <p>Whenever the DACS detects a change in a monitored TS0 bit, it generates an autonomous message. The default is 00000000.</p>
NFS	<p>Non-frame word setting. Nine characters. This field appears for Type PA only, and is accessible by the MODIFY Action.</p> <p>Specifies how the spare bits in timeslot 0 are to be handled when they are cross-connected to a timeslot other than 0. This is a special case, the spare bit manipulation feature. Refer to the discussion of TS0 to non-TS0 cross-connects in the <i>Introduction to Chapter 6</i>.</p> <p>The field format is</p> <p style="text-align: center;"><i>abcdefghi</i></p> <p>where:</p> <ul style="list-style-type: none"> <i>a</i> is bit 1 of the FW <i>bcdefghi</i> are bits 1-8 of the NFW <p>Enter a single character for each bit. The bit values are</p>

Table 4-9. NPC PROVISIONING Field Descriptions

	P	Pass unchanged.
	V	Pass inverted, except for bit <i>c</i> .
	0	Set output to 0, except for bit <i>c</i> .
	1	Set output to 1, except for bit <i>c</i> .
	-	Keep the previous setting.
	Bit <i>c</i> is passed unchanged in every case.	
	If <i>h</i> or <i>i</i> are set to P, then the other of the two must be set to P.	
	The creation default is P P P P P P P P P P.	
INCL	This field appears for the REMOVE Action only. It is parallel to the INCL selection of the Options field on the CIRCUIT PROVISIONING form; however, where the CIRCUIT PROVISIONING option applies to disconnecting or deactivating a circuit, this INCL field applies to removing an NPC.	
	YES	Allow an NPC that is carrying a red-lined circuit to be removed.
	NO	Deny removal of an NPC that is carrying a red-lined circuit.
OOS	This field appears for the MODIFY Action only.	
	YES	Allow the NPC to be taken out of service if the modification requires.
	NO	Deny any modification that would result in the NPC being taken out of service.

The fields on the bottom half of the screen allow you to set the thresholds for generating various types of facility performance alarms. These fields are available for all **Types** except **DA** and **TA**. For the latter **Types**, the threshold fields disappear when you enter a **Type** value.

A DACS II does not send a facility performance alarm message until a parameter error rate has exceeded a stored threshold. Each DACS II stores up to four sets of threshold values for each facility performance parameter for each NPC. Each set is called a dataset: datasets 0, 1, 2, and 3 for NAS or datasets D, 1, 2, and 3 for CEPT. The D stands for default. In NAS, 0 is used for the default.



NOTE:

If a dataset is not defined in the frame, it will reject requests for a dataset value, such as are made when you provision an NPC after setting the performance parameters.

For a CEPT NPC choose a threshold setting in the following format:

n ccc

where:

- n* is 1, 2, 3, or D, referring to dataset 1, dataset 2, dataset 3 or the default dataset.
- ccc* is Maj, Min, or Inf, referring to alarm severities of Major, Minor or Informational. D Inf is the default.

For example, an entry of D Inf in the **Short Interval Option** of **Degraded Minutes** means use the threshold of the default dataset for a **DM1H** alarm and send the alarm with informational severity when the threshold is exceeded.

The performance parameters are classified in the following table. For an explanation of the types, refer to the end of Chapter 3.



NOTE:

Do not confuse the performance parameters shown in the table with the values to be entered on the screen.

Table 4-10. Alarms For CEPT NPC Performance Parameters For Types Other Than PA

	Short Interval Options	Long Interval Options
Slips	SLIP15M alarm	SLIP24H alarm
Degraded Minutes	DM1H alarm	DM24H alarm
Unavailable Seconds	US15M alarm	US24H alarm
Errored Seconds	ERS15M alarm	ERS24H alarm
Severe Errored Seconds	SERS15M alarm	SERS24H alarm

For example, suppose the default threshold on errored seconds is 5. You enter D Maj under the **Short Interval Options** for **Errored Seconds**. If during any 15-minute period the number of errored seconds detected by the NPC exceeds 5 seconds, an ERS15M alarm of severity MJ is asserted and is reported on I-2000 terminals connected to the DACS. After the next 15-minute interval with less than 5 errored seconds, the frame will clear the alarm and send a message to the I-2000 indicating that the performance alarm has been cleared.

The performance parameters of **Type PA** is enhanced. These parameters along with the alarms resulting from their thresholds being exceeded are shown in the

next table, organized by near end (NE) and far end (FE), as they are on the EQUIPMENT PROVISIONING form.

Table 4-11. Alarms For CEPT NPC Performance Parameters For Type PA

	Daily NE	Daily FE	15-Min NE	15-Min FE
CRC Block Errors	CRC DAILY	FEBE DAILY	CRC 15MIN	FEBE 15MIN
Errored Seconds	ES DAILY	FES DAILY	ES 15MIN	FES 15MIN
Sev Errored Seconds	SES DAILY	FSES DAILY	SES 15MIN	FSES 15MIN
Unavailable Seconds	UAS DAILY	FUAS DAILY	UAS 15MIN	FUAS 15MIN
Framing Errors	FRER DAILY		FRER 15MIN	
Out-of-Frame Seconds	OFSDAILY		OFS15MIN	
Controlled Slip Seconds	CSSDAILY		CSS15MIN	
Coding Violations	CVDAILY		CV15MIN	
Unavailable Time Count	UATCDAILY		UATC15MIN	
Multiframe Errors	MERDAILY		MER15MIN	

The possible selections of field values for a NAS NPC are:

n

where:

n is 0, 1, 2, or 3, referring to datasets 0, 1, 2, or 3. The default is 0.

The types of performance parameters are classified in the following table.

Table 4-12. Alarms For NAS NPC Performance Parameters

	Minor Alarm Option	Major Alarm Option
Slips	SLIP, severity Minor	SLIP, severity Major
Bit Error Rate	BER, severity Minor	BER, severity Major
Frame Alignment	COFA, severity Minor	COFA, severity Major
Errored Seconds		severity Major
Severe Errored Seconds		severity Major



NOTE:

A severity of **Minor** is not correctly defined for **Errored Seconds** and **Severe Errored Seconds** for NAS NPCs.

Examples of Operation

Introduction

The following examples demonstrate the use of the NPC PROVISIONING capabilities. Enter information into the forms and then execute the chosen action. These examples are generic in order to serve as a general guide to NPC PROVISIONING functionality.

The **RECNCILE** Key is especially useful in providing additional functionality in this area. The use of this key is described in Chapter 2.



CAUTION:

*Entry of improper data through use of the **RECNCILE** key may result in contradictory data for one or more NPCs between the I-2000 and DACS databases. When you then try to use the NPCs in a circuit, the discrepancies may result in degraded performance or loss of the circuit's ability to carry traffic.*

Creating an NPC and Placing It in Service

Successful creation of an NPC places the NPC in the database, and successful restoral places it in service; i.e., ready to be used in cross-connection. The CREATE or RESTORE will be denied if:

- a mandatory field is missing
- the **Type** is of improper form or content
- the number does not refer to an NPC of that **Type**
- the NPC is already in the desired **Service State**
- the NPC ID is already in use
- some field does not contain a valid value.

CEPT

Step 1: Select NPC from the PROVISIONING menu.

Step 2: Enter, or select from the CHOICES menu, the following information:

— **Site Name:** DACS00

DACS00 must already have been provisioned as a frame (see Chapter 2).

— **Action:** CREATE

— **NPC ID:** dgrp01

— **Type:** PB144

— **Number (Hier):** 01101

If you fill this in, (**Ext**) is automatically supplied. Here it is 0001. The NPC number must be compatible with the Type.

These are the minimum requirements for creating an NPC. You may wish to fill out other fields as well:

— **Alarm Aging:** 5

— **IW:** D5D (the default value)

— **TS0:** 11011111

— **TS0M:** 00000000

— **Slips, Short Interval Option:** D Inf

Go on to fill in all the other threshold selections. In this case, suppose they are all D Inf .

Step 3: Press **EXECUTE** and select IMMEDIATE. (You can create the NPC in Local only mode. Refer to Chapter 2 on the use of the **RECNCILE** Key.) The result is that the

- **Service State** field changes to OOS
- **Alarm State** changes to NONE.
- I-2000 command completion message appears on the screen.

Step 4: Renavigate to the **Action** field and select RESTORE.

Step 5: Press **EXECUTE** and select IMMEDIATE. The result is that the

- **Service State** field changes to IS .
- I-2000 command completion message appears.

NAS

Step 1: Select NPC from the PROVISIONING menu.

Step 2: Enter, or select from the CHOICES menu, the following information:

- **Site Name:** DACS00
- **Action:** CREATE
- **NPC ID:** dgrp02
- **Type:** DE310 (or some other DE value)
- **Number (Hier):** 01201

If you fill this in, **(Ext)** is automatically supplied. Here it is 0002. The NPC number must be compatible with the **Type**.

These are the minimum requirements for creating an NPC. You may wish to fill in other fields as well:

- **Alarm Aging:** 5
- **IW:** 7F (the default value)
- **FE Site:** DACS01
- **Slips, Minor Alarm Option:** 0

Go on to fill in all the other threshold selections. In this case, suppose they are all the default.

Step 3: Press **EXECUTE** and select IMMEDIATE. The result is that the

- I-2000 command completion message appears on the screen.
- **Service State** field changes to OOS.

- **Alarm State** changes to NONE.

Step 4: Renavigate to the **Action** field and select RESTORE.

Step 5: Press **EXECUTE** and select IMMEDIATE. The result is that the

- **Service State** field changes to IS.
- I-2000 command completion message appears.

DMB Multipoint

Step 1: Select NPC from the PROVISIONING menu.

Step 2: Enter, or select from the CHOICES menu, the following information:

- **Site Name:** DACS00

DACS00 must already have been provisioned as a frame (see Chapter 2).

- **Action:** CREATE

- **NPC ID:** dmb01

- **Type:** MB100

- **Number (Hier):** 02101

If you fill this in, (**Ext**) is automatically supplied. Here it is 0161. The NPC number must be compatible with the **Type**. Note that **Upper NPC Number** also is supplied. Here it is 0162.

- **Upper NPC ID:** dmb02

This field is mandatory.

Step 3: Press **EXECUTE** and select IMMEDIATE. The result is that the

- **Service State** field changes to OOS.
- I-2000 command completion message appears on the screen.

Step 4: Renavigate to the **Action** field and select RESTORE.

Step 5: Enter

- **SIDE:** 0

Step 6: Press **EXECUTE** and select IMMEDIATE. The result is that the

- **Service State** field changes to 0 IS.
- **Alarm State** changes to NONE.
- I-2000 command completion message appears.

Step 7: Repeat Steps 5 and 6 for **SIDE** 1.

Removing an NPC

This example demonstrates removal of a NPC from service. It is the opposite **Action** from RESTORE. A REMOVE will fail if:

- a mandatory field is missing
- the NPC is not in service
- the NPC is carrying red-lined circuits and the **INCL** field is set to NO.

Step 1: Assuming the **NPC ID**, **Type**, and other data are still displayed, renavigate to the **Action** field and select REMOVE.

Step 2: Check that the data for the NPC are displayed, and that the **Service State** field is IS. Press **EXECUTE** and select IMMEDIATE. The result is that the

- **Service State** field changes to OOS.
- **Alarm State** changes to NONE.
- I-2000 command completion message appears.

**NOTE:**

The **MB Type** requires entry of **SIDE**.

Deleting an NPC

This example shows how to unprovision an NPC; i.e., remove it from the I-2000 and DACS databases. It is the opposite **Action** from CREATE. You cannot delete the NPC if it:

- isn't there
- has active or deactivated circuits using any of its channels
- is a test port group
- has an alarm listed in an ARP.

Step 1: Assuming the **NPC ID**, **Type**, and other data are still displayed, renavigate to the **Action** field and select DELETE.

Step 2: The data for the NPC are displayed; the **Service State** field is OOS. Press **EXECUTE** and select IMMEDIATE. Observe that the

- **Service State** field now is UEQD.
- **Alarm State** is now blank.
- I-2000 command completion message appears.

Querying an NPC

The QUERY selection retrieves the provisioning and status information concerning an NPC from the frame and displays it on the screen. To use the QUERY selection:

- Step 1:** Select PROVISIONING from the MAIN MENU and NPC from the PROVISIONING menu.
- Step 2:** Navigate to **Action** and select QUERY.
The bottom fields on the lower part of the screen become temporarily blank.
- Step 3:** Enter the NPC number in hierarchical or extended format, or the NPC ID. Whichever identifying field you decide to enter, the values of the other two also are displayed.
- Step 4:** Press **EXECUTE** and select IMMEDIATE.
 - The I-2000 command completion message appears.
 - The first page of the QUERY form is displayed.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- NPC PROVISIONING -----
Site Name:eao123           Alarm State:NONE   Service State:OOS
Action:QUERY   NPC ID:testnpc0001
Type:          Number(Hier):      (Ext):      Alarm Aging:000 IW:
                                   TSO:11011111   TSOM:00000000

<<MISMATCH>>           Interval Reading      Threshold/Option
                        Current  Last  Long           Short    Long

Slips
Degraded Minutes
Unavailable Seconds
Errored Seconds
Sev Errored Seconds

Errors:   CRC:      Framing:   LOFA:   Multiframe Alignment:

THE COMMAND COMPLETED SUCCESSFULLY
Enter the site name _____
    
```

HELP NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE

Figure 4-10. CEPT NPC Query Form, Non-PA

⇒ **NOTE:**

The <<MISMATCH>> advice on the form above appears if there is a mismatch between the data obtained from the frame and the data in the I-2000 database. In that case, all the information on the form reflects the frame values, except for **TS0**, **TSOM** and **NFS**, which still show the values taken from the I-2000 database.

```

06:15 01 Apr 93 I-2000 Controller for DACS II Release x.x
Status:
Alarms:
----- NPC PROVISIONING -----
Site Name:ea0123           Alarm State:NONE   Service State:OOS
Action:QUERY             NPC ID:testnpc0001
Type:PA100               Number(Hier):08103 (Ext):1123 Alarm Aging:000 IW:D44
FE Site:                  TS0:11011111 TSOM:00000000 NFS:PPPPPPPP

          Daily Near-End           15-Min Near-End
          Reading  Threshold/Opt Reading  Threshold/Opt
CRC Block Errors  00000000  00000000  0  00000000  00000000  0
Errored Seconds  00000000  00000000  0  00000000  00000000  0
Sev Errored Seconds 00000000  00000000  0  00000000  00000000  0
Unavailable Seconds 00000000  00000000  0  00000000  00000000  0

CRC Status:0

THE COMMAND COMPLETED SUCCESSFULLY
Enter the site name _____

[HELP] [ ] [NEXTPAGE] [QUIT] [RECNCILE] [TOP MENU] [PRINT] [EXECUTE]
    
```

Figure 4-11. CEPT NPC Query Form, PA, First Page

Use **NEXTPAGE** to obtain the second page of the QUERY form, which is available only for **Type PA**:

```

06:15 01 Apr 93 I-2000 Controller for DACS II Release x.x
Status:
Alarms:
----- NPC PROVISIONING -----
Site Name:eaol23           Alarm State:NONE   Service State:OOS
Action:QUERY      NPC ID:testnpc0001
Type:PA100       Number(Hier):08103 (Ext):1123 Alarm Aging:000

                Daily Near-End           15-Min Near-End
                Reading Threshold/Opt Reading Threshold/Opt

CRC Block Errors      00000  00176947  0  00000  018432  0
Errored Seconds      00000  04320    0  0000   300    0
Sev Errored Seconds  00000  00090    0  0000   030    0
Unavailable Seconds  00000  00090    0  0000   030    0
Framing Errors       00000  00090    0  00000  0018432  0
Out-of-Frame Seconds 00000  00004    0  000    004    0
Controlled Slip Seconds 00000  00004    0  000    001    0
Coding Violations    00000  00004    0  00000  0018432  0
Unavailable Time Count 0000  00009    0  00    03    0
Multiframe Errors    00000  04095    0  000    255    0

THE COMMAND COMPLETED SUCCESSFULLY
Enter the site name _____

```

Figure 4-12. CEPT NPC Query Form, PA, Second Page

```

06:15 01 Apr 93 I-2000 Controller for DACS II Release x.x
Status:
Alarms:
      _____ NPC PROVISIONING _____
Site Name:eaol23           Alarm State:NONE   Service State:OOS
Action:QUERY   NPC ID:testnpc0001
Type:          Number(Hier):      (Ext):      Alarm Aging:000 IW:
              TS0:11011111      TSOM:00000000

              Reading           Minor Alarm   Minor Alarm
              Thresh Opt       Thresh Opt   Thresh Opt

Slips
Bit Error Rate
Frame Alignment
Errored Seconds
Sev Errored Seconds

Errors:   CRC:      Framing:      Bipolar Violations:

THE COMMAND COMPLETED SUCCESSFULLY
- Enter the site name _____
HELP  [ ]  NEXTPAGE  QUIT  RECNCILE  TOP MENU  PRINT  EXECUTE
    
```

Figure 4-13. NAS NPC Query Form

Browsing NPCs

The BROWSE selection retrieves the provisioning and status information concerning each of a range of NPCs. To use the BROWSE selection:

- Step 1:** Select PROVISIONING from the MAIN MENU and NPC from the PROVISIONING menu.
- Step 2:** Navigate to **Action** and select BROWSE.
- Step 3:** Whatever value you enter into the **NPC ID** field limits the range of the BROWSE. Enter the wild card, *, to BROWSE the first 50.
- Step 4:** Press **EXECUTE**.
 - A search is conducted for the specified NPCs.
 - The data for the first NPC is displayed.
- Step 5:** To obtain the next NPC, press **NEXT**. To stop the BROWSE, press **QUIT**.

The following screen illustrates the first item of a BROWSE through all NPCs.

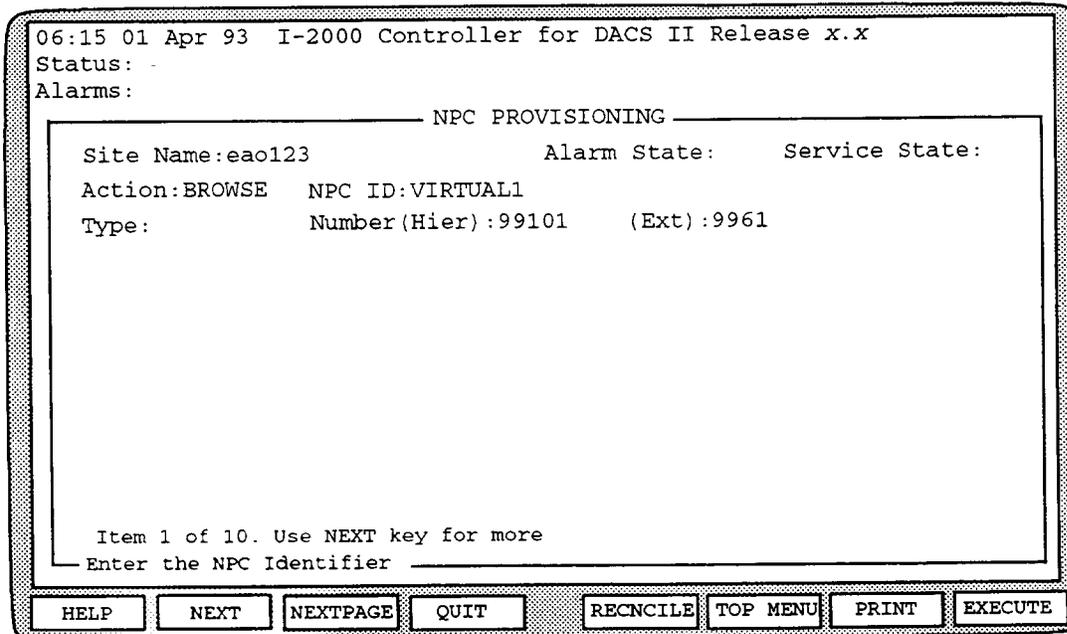


Figure 4-14. NPC Browse Screen

NPC Provisioning ERP

An echoed response is a message that is sent from a DACS to the I-2000 when the I-2000 does not expect a response; i.e., when a change in DACS NPC provisioning has been entered through the DACS console, via a passthrough command to the DACS, or by some other means not initiated by the I-2000. Such provisioning would cause the DACS and I-2000 databases to differ if the I-2000 did not respond to the echoed response message.

The I-2000, therefore, has been designed to respond by provisioning NPCs. It searches for the NPCs and channels referenced in the message. If it does not find them in the I-2000 database, it executes a **CREATE Action**. The I-2000 also executes a **RESTORE, REMOVE, or DELETE** when required by the message.

You may partially control the I-2000 response to a message of this type. Under **FRAME ADMINISTRATION**, if you set the value of **ERP Control** to **ON**, the I-2000 processes echoed response messages only if the NPC is already in the I-2000 database. The database is updated and event messages are published. If the NPC is missing, the message is not processed and no action of any kind is taken.

If, on the other hand, ERP Control is set to `OFF`, the I-2000 responds fully to every message of this type.

If the I-2000 must create an NPC that is not in the I-2000 database at all, it automatically assigns an NPC ID in the following format:

`nnnnnNPC00m`

where:

- `nnnnn` Is the number in hierarchical format of the NPC referenced by the message.
- `m` Is a sequence number assigned to this NPC record. The number is incremented with each new NPC activated by this method.

The default values used by the `CREATE` Action are the same as those specified under *Field Descriptions*. They are displayed on the screens.



CAUTION:

You **SHOULD AVOID** creating NPC IDs according to the ERP scheme.

Like any other I-2000 **Action**, an action generated in ERP can succeed or fail. The result of the attempt is reported in the **Status** field at the top of the screen, in the following format:

`database/result:action explanation`

where:

- `database` Is the **Site Name** field value for this frame.
- `result` Is one of these values:
 - `SUCCESS` The action succeeded.
 - `ERROR` The action failed.
- `action` Is a terse English description of the attempted action.
- `explanation` Is the **NPC ID** field value or an error message.



NOTE:

Due to the length of the **Site Name** and the **NPC ID**, the full message may not fit on the **Status** line. You can obtain it by generating an ERP report under REPORT OPERATIONS.

Echoed responses for circuits and equipment are enabled whenever a DACS screening level is set to 4. Refer to Chapter 2, under *Configuring the DACS*. Echoed responses may be disabled for a particular DACS by changing the link screening options in the DACS. To do so, follow these steps:

Step 1: Enter passthrough mode (see Chapter 12).

Step 2: Type the following command to set the link screening level to 2:

```
SET-PRVG-TERM: : : SCR-2
```

For additional details concerning this command, refer to the input message format for NPC PROVISIONING in the *Generic 3 (MML) Input/Output Message Reference Manual*, V. II.



WARNING:

If you disable echoed responses, the I-2000 database could drift apart from the DACS database, necessitating that you periodically perform a database audit followed by a database synchronization (see Chapter 9).

Introduction To Test Port Provisioning

Test port provisioning is an extension of the NPC provisioning process. Once an NPC has already been created, it can be further designated as a test port group. The NPC need not have been restored; however, it must be restored before it can be cross-connected.

A test port group is an NPC whose channels can be used for test ports, provided test equipment is being connected by them. After the test port groups and test ports have been provisioned, you may then use TEST ACCESS to connect the test ports in test circuits. These circuits test other channels or test the test port channels. Refer to Chapter 14 on TEST ACCESS.

The I-2000 test port provisioning concept, like provisioning in general, extends DACS II test port provisioning. In the DACS II, additional parameters in provisioning commands applying to an already grown NPC further grow the NPC as a test port group. In the I-2000, the TPG designation can apply in the I-2000 only, in the DACS only, or in both databases.

DACS II releases prior to 6.0 allow four possible test port groups: 1, 2, 3, and 4, which do not have to be created in any order. Within each test group are 12 test ports, which must be created in ascending numerical order. For DACS II release 6.0, the test port group capability is increased to 8 and the test port capability to 96.

The following table summarizes, by frame, the number of test port groups supported:

Table 5-1. Test Port Groups Supported, By Frame

Frame Type	No. of TP Groups	No. of TPs
DACS I	Not supported.	
DACS II before R6.0	4	1-48
DACS II R6.0+	8	1-96
DACS II ISX	8	1-96

One test port consists of two channels, designated in the DACS manuals as channel A, or the lower- or odd-numbered channel, and channel B, or the higher- or even-numbered channel. Thus, if a hypothetical NAS NPC, JJ36N24, is designated as a test port digroup through test port provisioning, it makes available 24 test channels configured as 12 test ports: channel 1 is port 1, channel A; channel 2 is port 1, channel B; etc. The uses of these channels are explained in Chapter 14, "TEST ACCESS."

Some constraints on the use of test ports are:

- Test port provisioning is not available to the DACScan-2000 Controller C-Module.

TEST PORT PROVISIONING Form

To obtain the TEST PORT PROVISIONING form, select TEST PORT from the PROVISIONING menu. The TEST PORT PROVISIONING form is shown next.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
_____ TEST PORT PROVISIONING _____
Site Name:DACS00
Action:
Test Port Group:
Test Port No.:          TC:          IW:
NPC Number (Hier):      (Ext):
                        NPC ID:
_____
Enter the site name (at least 5 characters)_____
HELP CHOICES [ ] QUIT RECNCILE TOP MENU PRINT EXECUTE
    
```

Figure 5-1. TEST PORT PROVISIONING Form

Initially, only **Site Name** and **Action** appear on the screen. The remaining fields that appear depend on the **Action**.

Field Descriptions

The TEST PORT PROVISIONING fields are described below.

Table 5-2. TEST PORT PROVISIONING Field Descriptions

Site Name	Enter the name of the DACS on which the test ports are to be provisioned.
Action	<p>Mandatory. The provisioning actions are</p> <p>CREATE TP DIGROUP (CREATETPG) designates a previously provisioned NPC as a test-port digroup.</p> <p>DELETE TP DIGROUP (DELETETPG) removes the designation (and all associated test ports).</p> <p>CREATE TEST PORT (CREATETP) designates a channel pair as a test port within a test port digroup.</p>

Table 5-2. TEST PORT PROVISIONING Field Descriptions

	DELETE TEST PORT (DELETETP) removes the designation.
Test Port Group	This field appears only for Actions of CREATETPG and DELETETPG. With DACS II releases prior to 6.0, the possible values are 1-4. With DACS II Release 6.0, the possible values are 1 through 8. Clear DS1/E1 NPCs are excluded.
Test Port No.	This field appears only for Actions of CREATETP and DELETETP. The number of the test port within the NPC. The test port groups contain the following test ports. TPG1 1-12 TPG3 25-36 TPG5 49-60 TPG7 73-84 TPG2 13-24 TPG4 37-48 TPG6 61-72 TPG8 85-96
TC	This field is shown only for an Action of CREATETP. The test port trunk conditioning. The values are <i>value</i> This value is described in Chapter 6, "Circuit Provisioning," under the section "Field Descriptions." If entered, it applies to all channels put under test on this test port; i.e., the TP conditioning is static. none The conditioning changes to match the circuit under test; i.e., the TP conditioning is dynamic.
IW	This field appears for an Action of CREATETP. The values are <i>value</i> This value is described in Chapter 6, "Circuit Provisioning," in the section "Field Descriptions." If entered, the IW is static. none The IW is dynamic.
NPC Number (Hier)	This field appears only for an Action of CREATETPG. The NPC number in hierarchical format of the NPC to be designated as a test port group. It must already have been equipped, but it does not have to be in service. Alternatively, you may enter the number in extended format, or the NPC ID . Not every type of NPC can be grown as a TP Digroup. Specifically not supported are Types MJ and SR, subrate, MB, multipoint, and DE/TE, clear DS1/E1.
(Ext)	The NPC number in extended format.
NPC ID	The NPC ID of the NPC to be designated as a test port group.

Examples of Operation

Create Test-Port Group

This example demonstrates how to designate an NPC as a NAS test port group. The procedure for a CEPT test port group is the same, except for the values of certain fields, noted at the appropriate places. The NPC is NPC 120 and the type is DE110. The example first provisions the NPC and, in this instance, places it in service. Provisioning and placing in service are discussed in the NPC PROVISIONING section. When the NPC is in service, it is then designated as a test port group.

The **CREATE Action** will fail if

- A mandatory field is missing.
- The TP group already exists.
- The **Test Port No.** is inappropriate to the frame.
- The NPC is already a test port group.

Step 1: Enter the following data on the NPC PROVISIONING form:

- **Site Name:** DACS00
- **Action:** CREATE
- **NPC ID:** 999120
- **Type:** DE110

A CEPT NPC would require a CEPT **Type**.

- **Number (Hier):** 01340

For this example, we assume that neither NPC Number 120 nor an NPC whose ID is 999120 have been created. In that case, the I-2000 assumes a new NPC (no existing data).

Step 2: Press **EXECUTE**, select IMMEDIATE and observe the

- **Service State** field of OOS.
- **Alarm State** of NONE.
- I-2000 command completion message.

Step 3: Enter an **Action** of RESTORE.

Step 4: Press **EXECUTE**, select IMMEDIATE and observe the

- **Service State** field of IS.
- **Alarm State** of NONE.

— I-2000 command completion message.

Step 5: Press the **QUIT** function key to return to the PROVISIONING menu.

Step 6: Select TEST PORT and enter the following data on the TEST PORT PROVISIONING form:

— **Site Name:** DACS00

— **Action:** CREATETPG

Step 7: Additional fields appear on the screen. Enter

— **Test Port Group:** 1

— **(Ext):** 0120

The remaining fields are filled in.

Step 8: Press **EXECUTE** and confirm. The command completion message appears.



NOTE:

The NPC need not be in service (RESTORED) to be designated as a test port group, but it must have been equipped.

Now that test port group 1 exists, test ports 1 through 12 can be created. Within a test port group, test ports must be created in order and deleted in reverse order.

Create Test Port

This example designates a channel pair of a test port group as a test port. A trunk conditioning (TC) code is specified, so the test port will have static trunk conditioning.

You will have the opportunity to create up to 12 test ports for the group; however, test port 2 cannot be created until test port 1 exists; test port 3 cannot be created until test ports 1 and 2 exist, etc. Furthermore, a lower-numbered port cannot be deleted when a higher-numbered port exists in that test port group.

Step 1: Enter the following data:

— **Action:** CREATETPG

Step 2: A third line appears on the screen. Enter

— **Test Port No:** 01

— **TC:** 0011, 0011

For a CEPT test port, the value of TC is not the same. You might use X-AF.

— **IW:** TRB

For a CEPT NPC, the value of **IW** is not the same. You might use AF.

Step 3: Press **EXECUTE** and confirm. Observe the I-2000 command completion message.

Delete Test Port

The following example removes the designation of test port from a channel pair.

Step 1: At the PROVISIONING menu, select TEST PORT and enter these data:

— **Site Name:** DACS00

— **Action:** DELETETP

Step 2: A third line appears on the screen. Enter

— **Test Port No:** 01

Step 3: Press **EXECUTE** and confirm.

Observe the I-2000 command completion message.

Delete Test-Port Group

This example removes the designation of test port group from an NPC (DELETETPG), takes the NPC out of service (REMOVE), and unprovisions it (DELETE).

NOTE:

If test ports are in use, DELETETPG first releases and de-grows the ports, then de-grows the test port group.

Step 1: Proceed from the MAIN MENU to TEST PORT PROVISIONING and enter the following data to remove the designation of Test Port Group from the NPC:

— **Site Name:** DACS00

— **Action:** DELETETPG

Step 2: A third line appears on the screen. Enter

— **Test Port Group:** 1

Step 3: Press **EXECUTE** and confirm. Observe the I-2000 command completion message. Press **QUIT**.

Step 4: To take the NPC out of service, navigate to NPC PROVISIONING.

Step 5: To identify the NPC, enter

- **Site Name:** DACS00
- **Action:** REMOVE
- **NPC ID:** 999120

The NPC Number in hierarchical and extended format appears, as well as the **Type**.

Step 6: Press **EXECUTE** and select IMMEDIATE.

- **Service State** field now says OOS.
- **Alarm State** now says NONE.
- Command completion message appears.

Step 7: Enter the following field:

- **Action:** DELETE

Step 8: Press **EXECUTE** and select IMMEDIATE.

- **Service State** field changes to UEQD.
- Command completion message appears.

Introduction To Circuit Provisioning

Circuit provisioning is a process of defining cross-connections between external facility terminations in the DACS.

One cross-connection can stand alone as an elementary circuit. Specify one cross-connection on one CIRCUIT PROVISIONING form. Or, multiple cross-connections can be combined in complex circuits. Complex circuits in most cases will require multiple forms.

An **EXECUTE** of a properly filled out CIRCUIT PROVISIONING form sends the appropriate commands to the DACS to physically establish the cross-connection. Also, the I-2000 records the circuit definition in the I-2000 and DACS databases.

Alternatively, you may have the circuit recorded in the I-2000 database only, in which case no DACS cross-connection is made, or in the DACS database only, in which case no data is changed in the I-2000 database (refer to *Using the RECNCILE Key* in Chapter 2).

The I-2000 supports a variety of circuit types, depending on what DACS hardware is present. Hardware and NPC types are described in Chapter 4, "NPC PROVISIONING." For complete details concerning the circuit types, refer also to the *DACS II Reference Manual*. A brief summary of those types is stated here.

To make use of an analogy, a cross-connection is like plugging each end of a jumper cable into a selection of plugs, which was the procedure followed on the first types of frames ever built. In the electronic switching environment, the plugs

are represented by external facility terminations (EFTs), or channels, and the former cables are now electronic paths in the supporting hardware switching modules, which are ICs. Cross-connections are between EFTs and are controlled by computer.

The type of connection depends on the circuit pack providing it. Every I-2000 can cross-connect the following types of circuits, supported by standard DDCs and DPCs. (You should be familiar with the DACS terminology used below, but if you are not, we suggest you make use of the Glossary.)

- Single-channel, two-point, one-way or two-way circuits between NAS NPCs of 24 channels each or between CEPT NPCs of 31 channels each.
- Single-channel, two-point, one-way or two-way circuits between NAS NPCs and CEPT NPCs (gateway circuits).
- High-rate, or high bandwidth (multichannel), NAS, CEPT, or gateway two-point, one-way or two-way circuits. The maximum bandwidth for NAS and gateway is 24 channels per circuit; for CEPT, 32.
- Virtual multipoint, one-way, receive-only broadcast circuits of bandwidth 1 through 24 for NAS or 1 through 32 for CEPT. Gateway circuits are allowed, with a bandwidth up to 24.

If DMB circuit packs are installed in the DACS, the following DMB multipoint, two-way circuits are available in single-channel bandwidth only:

- Symmetric voice circuits. Each station can communicate both ways at all times, but the I-2000 allows disabling of transmission in one direction (NTR field).
- Polling data circuits. Equipment is polled one way and the replies are sent the other. Again, the I-2000 allows disabling of transmission in one direction.

If the DACS features a TG80 Card, this circuit is available, NAS only:

- 193-bit, clear DS1, full- or half-duplex only.

If the DACS features a TG191 card, this circuit is available, CEPT only:

- 256-bit, clear E1, full- or half-duplex only.

If a DS3 shelf containing DS3 circuit packs is present in the DACS, these circuits are available, NAS only:

- Channelized DS3; i.e., 28 channelized DS1 signals per DS3 circuit pack. Each DS1 signal becomes 24 NAS-only DS0 channels, which can be connected in bandwidths of up to 24. There are no CEPT DS3s; however, gateway circuits with other NPCs that are CEPT are supported.

- DS3 with 28 clear DS1s, full- or half-duplex only.

For the DACScan-2000 Controller C-Module only, the subrate multiplexer (SRM) provides

- 5, 10, or 20 DS0-B subchannels for each DS0 channel available through the SRM. These can be cross-connected in two-point, two-way, NAS, single-bandwidth circuits only.
- One DS0-A subchannel for each DS0 channel at rates of 2.4 Kbps, 4.8 Kbps, 9.6 Kbps, or 56 Kbps. Cross-connection is two-point, two-way, NAS, single-bandwidth only.

For the DACScan-2000 Controller C-Module only, the subrate multipoint junction unit (MJU) provides

- Subrate multipoint circuits, two-way, NAS, single-bandwidth only.

When a form is executed, the I-2000 makes use of a number of MML or PDS commands to achieve the appropriate cross-connections, or to disconnect them. Some of these commands are CONN and DISC in MML, with the appropriate parameters to specify one- or two-way, or clear, etc. PDS uses OCON, ODIS or TCON, TDIS for one- or two-way connects or disconnects.

This partial list gives you some idea of the large variety of cross-connect and disconnect commands available to the I-2000. In general, there is no one-to-one correspondence between MML or PDS commands and I-2000 circuits. For example, high-rate circuits in the I-2000 are implemented in the DACS as a range command or individual one- or two-way circuits, depending on the **Bandwidth Type** chosen (Contiguous or Alternating). What to the frame operator would be a complex process of building circuits by individual MML commands, selecting from a large variety of types with many possible parameters, becomes to the I-2000 operator a much simpler process of filling out unit forms.

Initially, you must use the NPC PROVISIONING form to **CREATE** the NPCs that will be used in establishing a circuit. At that time, you specify the **Type** of NPC that you wish to **CREATE**. Then you must place the NPCs in service, again under NPC PROVISIONING. At that point you are ready to **ACTIVATE** a specific type of circuit between appropriate NPCs that are in service. Attempts to **ACTIVATE** circuits between NPCs that are inappropriate to the type of circuit are rejected.

The most important characteristic of any circuit is its operating status. When you enter a **Ckt ID** for a circuit that is not on record in the I-2000 database, the **Ckt Status** field on the screen is assigned a **NULL**. Any other **Ckt Status** means that a circuit of that ID is on record.

To successfully **ACTIVATE** a circuit means to cross-connect it as a successful, traffic-bearing¹ circuit. In that case, the **Ckt Status** is **ACTIVE**. However, you do

not have to **ACTIVATE** a circuit to place it on record; a **PEND Action** places it on record in **PENDING Ckt Status**.

When a circuit is disconnected, it does not automatically disappear. It remains in the database as **DEACTIVATED**, **ALTROUTED**, or **PREEMPTED**, depending on how it was disconnected. These **Ckt Statuses** are covered in greater detail in this and the following chapters. To return a circuit to **NULL**; i.e., to get rid of it, enter an **Action** of **DELETE**.

The type of circuit is determined mainly by **Ckt Class**, **Bandwidth**, **Options**, and the **EFT** identifiers.

- **Ckt Class** is the most significant. Through it you can specify two-way, one-way, virtual multipoint and DMB multipoint circuits.
- The **EFT** identifiers determine whether the connections are entirely **NAS**, entirely **CEPT**, or gateway.
- However, if you connect **NAS** with **CEPT** **EFTs**, you need to make sure the **NAM** keyword of **Options** is unselected; i.e., that a-to-mu law companding conversion is in effect.
- High-rate circuits are specified with **Bandwidth**.

For instructions on how to activate specific types of circuits, you need to refer to the section "Examples of Operation" later in this chapter.

A circuit is considered to go from one **EFT** to another, or from one set of **EFTs** to another (high-rate). One side is, therefore, considered **FROM** and the other is considered **TO**. These conventions apply to all circuits established with one **CIRCUIT PROVISIONING** form. For one-way circuits (half duplex), the transmitting side must be considered **FROM**. For two-way circuits, either side may be **FROM** or **TO**, since the circuit is full duplex. Whatever **NPC** and channel you enter under **FROM NPC** and **FROM Ch** is the **FROM EFT**, etc.

The **ACTIVATE Action** sends a command to connect **EFTs** that are **IS**. If the **NPC** of an **EFT** should go **OOS** after the circuit is in **ACTIVE Ckt Status**, the circuit remains **ACTIVE**. You may disconnect it immediately by setting **Options D (OOS)**. Should you neglect to do that and attempt to **DEACTIVATE** the circuit, the I-2000 would need to send two commands before disconnection would be successful.

You may red-line the circuit as not to be disconnected without authorization, through the **RDL** and **INCL Options**.

-
1. Traffic-bearing refers to the fact that the circuit is marked as cross-connected and, in theory, is capable of supporting customer traffic. However, the **Service State** of the **NPC** (In Service or Out of Service), as well as external parameters beyond control of the I-2000, will affect the ability of the cross-connect to actually carry customer traffic.

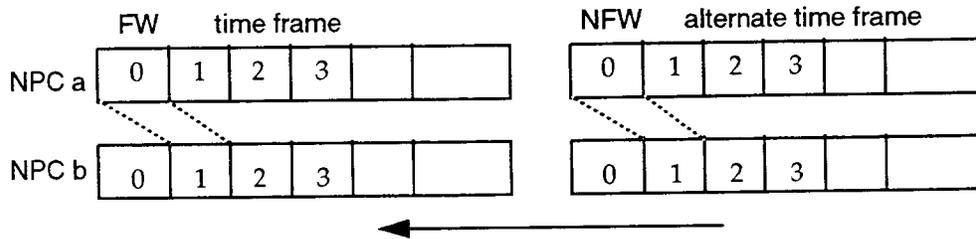
Once a circuit is in place, you may wish to test it. Chapter 5, "TEST PORT PROVISIONING," and Chapter 14, "TEST ACCESS," describe provisioning test ports and connecting test circuits. You may wish to terminate normal traffic through circuits that have also been connected for testing, so that they can be tested under optimum conditions. The *Terminate and Leave* command to the frame is useful for that purpose. It is a switch. When *Terminate and Leave* is activated, normal traffic on the circuit is terminated, or discontinued; when released, continued. Accordingly, the I-2000 defines the TLA **Option** (*Terminate and Leave Activated*), which, when not selected, becomes TLR (*Terminate and Leave Released*).



NOTE:

Do not confuse the CIRCUIT PROVISIONING TLA and TLR **Options** with the test circuit TERMINATE and RELEASE **Actions** or with the frame's TLA and TLR commands.

DACS II release 6.0 includes a TS0 cross-connect feature that is supported by I-2000 NPC and CIRCUIT PROVISIONING, for CEPT circuits of **Type** PA NPCs and **Bandwidth** 1 only. In the CEPT standard, channel 0 (time slot 0) is used to transmit the framing pattern and other data channel information. For various reasons, you may wish to utilize channel 0 for other purposes, such as transmitting alarm information, or for testing, and therefore you may wish to connect it to some channel other than 0 in some other CEPT NPC. This is a special case, and requires a value in the **Framing** field.



The diagram above represents two sequential time frames in one direction for two different NPCs. Channel 0 (time slot 0) is to be connected to channel 1 (time slot 1). The last 7 bits of the first time frame's channel 0 contain an arbitrary pattern, the *framing word* (FW), which is used to identify the beginning of a pair of time frames. Channel 0 of the alternate time frame contains the *non-framing word* (NFW), consisting of 8 bits used to transmit various signals.

If you connected channel 0 unmodified to channel 1, the FW would appear twice within the pair of time frames on NPC b, and therefore would destroy the framing sequence. The **Framing** field allows you to insert another arbitrary pattern, the pseudo-FW, into the stream of frames on NPC b. Alternatively, you may communicate the NFW of NPC a to both frames of NPC b. In either case, the NFW is used to transmit the channel data you wish to transmit.

The FW and the NFW each consist of 8 bits. Bit 1 of the FW and bits 1 through 8 of the NFW are not used for framing purposes and therefore are called *the spare bits*. Spare bit manipulation also is supported. To access these bits, however, use the **NFS** field on the NPC PROVISIONING form.

CIRCUIT PROVISIONING Form

Select CIRCUIT from the PROVISIONING menu.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- CIRCUIT PROVISIONING -----
Site Name:
Action:           Ckt Status:
Ckt ID:           Ckt Class:
BBL ID:

      Hier      Ext      NPC ID              Ch Mode
FROM:
TO:

Bandwidth:  Bandwidth Type:  Options:  NTR:
TC:         IW:           SC:       Framing:

Customer Name:           Service Date:DD MMM YY  Ckt Priority:
Loc A:                  Loc Z:
Rmks:

Enter the site name
    
```

HELP CHOICES NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE

Figure 6-1. CIRCUIT PROVISIONING Form

BBL ID appears only for **Ckt Class** BRD. **NEW ID** appears in place of **BBL ID** for **Action** MODIFY. **Mode** and **NTR** appear only for **Ckt Class** DMB. **TC**, **IW**, **SC**, **Bandwidth**, and **Bandwidth Type** disappear if you enter an NPC that is clear DS1/E1.

Field Descriptions

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

Site Name	<p>Mandatory. 1 through 24 characters from the printable ASCII character set, excluding *, ?, \, [,], ^, ", %, . Blanks are allowed within the name, but leading and trailing blanks are ignored.</p> <p>Enter the name of the frame in which the circuit is to be provisioned. Pressing CHOICES displays WHICH DACS? with a list of the names that were established during frame administration, described in Chapter 2. The default is the first name.</p>
Action	<p>Mandatory. Enter the action to be performed with regard to the circuit.</p>
ACTIVATE	<p>Enters the circuit specified by Ckt ID in the I-2000 database (if it does not yet exist) and cross-connects it in the frame, making it an existing, traffic-carrying circuit. ACTIVATE also changes the Ckt Status of already existing circuits from PENDING, PREEMPTED, or DEACTIVATED to ACTIVE and from ALTROUTED to ACTIVE in local only mode. ACTIVATE is the default Action.</p>
MODIFY	<p>Retrieves the specified circuit from the I-2000 database for purposes of altering circuit attributes or Ckt ID.</p> <p>MODIFY does not change the Ckt Status. Also, traffic-affecting fields cannot be changed for circuits in the ACTIVE, PREEMPTED, or ALTROUTED Ckt Status. You must DEACTIVATE the circuit first.</p>
DELETE	<p>Removes the specified circuit from the I-2000 and DACS databases, returning the Ckt Status to NULL.</p>

Table 6-1. CIRCUIT PROVISIONING Field Descriptions



NOTE:

Deletion of an ACTIVE circuit results in deactivation of the circuit in the DACS before the record is deleted in the I-2000.

Deletion of an ALTROUTED circuit results in normalization of the circuit in the DACS before the record is deleted in the I-2000.

Deletion of a circuit that is listed in a Reconfiguration Plan (see Chapter 8) is not allowed (except in local only mode). First delete it from the plan.

PEND	Enters the specified circuit (including DEACTIVATED ones) in the I-2000 database as PENDING, to indicate it may soon be made ACTIVE. Activation of PENDING circuits may be dependent on equipment installation or on other sections of the circuit being established.
DEACTIVATE	Enters the specified circuit in the I-2000 database as DEACTIVATED and disconnects it in the DACS.
ALTRROUTE	Enters the specified circuit in the I-2000 database as ALTROUTED. The I-2000 may reroute the specified circuit over a path involving the preemption of other circuits. The operator will be informed of each preemption and will be required to confirm it. A circuit can be altrouted only once, and an ALTROUTED circuit cannot be preempted.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

NORMALIZE	<p>Tries to place a real altrouted circuit in ACTIVE Ckt Status or a pseudo-altrouted circuit in DEACTIVATED Ckt Status. If the circuit returns to ACTIVE, it is cross-connected in the DACS over its normal path. If the circuit returns to DEACTIVATED, it is not cross-connected in the DACS.</p>
	<p>During the altrouting, one or more circuits may have been placed in the PREEMPTED Ckt Status. If the circuit now being normalized is the only circuit preempting a PREEMPTED circuit, NORMALIZE attempts to return the PREEMPTED circuit to ACTIVE. Otherwise, NORMALIZE does not make the attempt.</p>
BROWSE	<p>Gives you read-only access to the I-2000 database for retrieving and scrolling circuit records. You can use wild-card characters (*, ?), in the Ckt ID field only, to match any character or set of characters; however, if more than 50 circuits would be specified, the I-2000 displays an error message and prompts you to be more specific.</p>
COMBINE	<p>Combines multiple circuits that exist over either an alternate or a contiguous range of channels into a single, new high-rate circuit in the I-2000 database. The source circuits must be ACTIVE and the combined circuit is made ACTIVE.</p>
	<p>Remember, high-rate circuits are implemented in the DACS as single-channel circuits; thus, they are already in the DACS. After the source circuits have been deleted in the I-2000 database, the combined circuit is created there. At no time during the process is a command sent to the DACS.</p>
	<p>The Circuit Classes of the source circuits must be all HDX or all FDX only. Use of channel 0 and of test circuits is prohibited.</p>

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

		<p>Specify the combined circuit characteristics on a single CIRCUIT PROVISIONING form. The channel numbers in the combined circuit are the same as the source circuits'; however, the Bandwidth of the combined circuit must be made equal to the sum of the Bandwidths of the source circuits. Therefore, the source circuits' channels must run contiguously or alternately upward from the combined circuit's starting channel, and the combined Bandwidth Type must be correct for the channels.</p> <p>The following fields of the source circuits must have the same values: TC, IW, SC, Circuit Class. Options settings of RDL and no NAM must be the same throughout.</p> <p>The Ckt ID of the combined circuit can be unique, or it can be one of the source circuits' Ckt IDs. You can reuse the Ckt ID of a DEACTIVATED or PENDING circuit, provided all the channels of that circuit are also in use by the ACTIVE source circuits. No other cases are allowed.</p>
Ckt Status	A display-only field indicating the operating status of the circuit.	
	NULL	The circuit has not been defined and, therefore, is not in the DACS or I-2000 databases. To define the circuit, use the ACTIVATE Action .
	PENDING	The circuit is in the I-2000 database, but is not cross-connected in the DACS. The circuit has been noted as PENDING with the PEND Action . It is ready to be made ACTIVE on user request. To cross-connect the circuit, use the ACTIVATE Action .
	DEACTIVATED	The circuit is in the I-2000 database but is not cross-connected in the DACS. The I-2000 record is marked DEACTIVATED. To cross-connect the circuit, use the ACTIVATE Action .

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

ALTROUTED	The circuit is present in the DACS and I-2000 databases, is cross-connected in the DACS, and is carrying transmission. However, it was temporarily rerouted over an alternate path with an ALTROUTE Action . If any part of the alternate path was in use by another circuit, that circuit was placed in PREEMPTED Ckt Status . A NORMALIZE Action is required to return the ALTROUTED circuit to its original path.
PREEMPTED	The circuit was ACTIVE in the DACS but has been temporarily disconnected so that one or more of its channels can be used by one or more ALTROUTED circuits. The circuit is in the I-2000 database only and is not carrying transmission. The NORMALIZE commands that return the ALTROUTED circuits to normal also return the PREEMPTED circuits to normal.
ACTIVE	The circuit is present in the DACS and I-2000 databases, is cross-connected in the DACS, and is carrying transmission. A circuit may be defined in the I-2000 database, but if it is not ACTIVE , it is not defined in the DACS database. A circuit that exists in the DACS is in both the DACS and I-2000 databases (unless there is a discrepancy).
DEROUTED	The circuit was in ALTROUTED Ckt Status but was placed in DEROUTED Ckt Status at the beginning of an NPC ROLL, and the system failed during the roll. You may DELETE , DEACTIVATE , or NORMALIZE a DEROUTED circuit. If the roll completes successfully, you will never observe the circuit in DEROUTED Ckt Status .
Ckt ID	Mandatory. Must be unique. 1 through 41 characters from the printable ASCII character set, excluding *, ?, \, [,], ^, ", %, . Blanks are allowed in the name, but leading and trailing blanks are ignored. Associates the name entered in this field with the circuit described by this form.
Ckt Class	Mandatory. Specifies the type of circuit. The choices are

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

FDX Full-duplex. Applies to single-channel or high-rate DS0 cross-connections between NAS or CEPT NPCs and to gateway circuits. Specifies a two-way, two-point circuit. FDX can be abbreviated to F.

In the diagram that follows, a channel has two directions, transmit (Tx) and receive (Rx). An FDX cross-connection utilizes both directions, as shown.

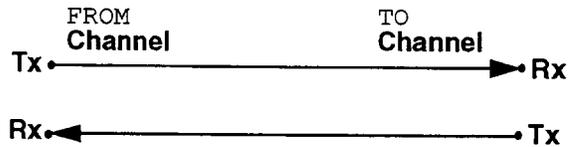


Figure 6-2. Full-duplex Circuit

The NPCs determine whether this circuit is to be NAS-only, CEPT-only, or gateway. If CEPT-only, select the **NAM Option**. Use **Bandwidth** to specify high rate.

One or both channels can be designated as test port channels in TEST PORT PROVISIONING. In that case, the circuit becomes a test circuit and can be terminated.

If this circuit is to be terminated (**Option** of TLA), then the *unassigned* insertion word, specified in **IW** under NPC PROVISIONING for the NPC, is transmitted in the terminated direction. If **TC** is specified, the final A/B signaling bits are also sent to ensure proper treatment of the channel at the far ends.

If you specify **MUX** in the CIRCUIT PROVISIONING **IW** field, **UMC** is sent instead of the *unassigned IW*.

HDX Half-duplex. Applies to single-channel or high-rate DS0 cross-connections between NAS or CEPT NPCs, and to gateway circuits. Specifies a one-way, two-point circuit. HDX can be abbreviated to H.

In the diagram below, one direction of each channel is not used by this circuit. It can be used by another circuit.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

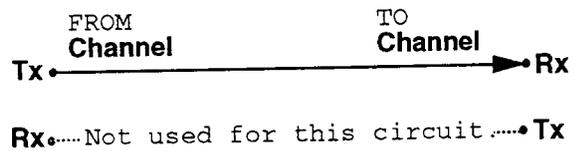


Figure 6-3. Half-duplex Circuit

The NPCs determine whether this circuit is to be NAS-only, CEPT-only or gateway. If CEPT-only, select the **NAM Option**. Use **Bandwidth** to specify high rate.

One or both channels can be designated as test port channels in TEST PORT PROVISIONING. In that case, the circuit becomes a test circuit and can be terminated.

If this circuit is to be terminated, then the *unassigned IW*, specified under NPC PROVISIONING for the NPC, is transmitted in the terminated direction, unless you specified MUX in the CIRCUIT PROVISIONING IW field, in which case Unassigned Multiplex Code (UMC) is sent. See Chapter 14, "TEST ACCESS."

If TC is specified, the final A/B signaling bits are also sent to insure proper treatment of the channel at the far ends.

BBL Backbone leg. Applies to single-channel or high-rate, DS0, virtual multipoint circuits between NAS or CEPT NPCs, and to gateway circuits. These circuits are complex; i.e., are composed of multiple cross-connections requiring multiple CIRCUIT PROVISIONING forms. A **Ckt Class** of BBL identifies this unit as a one-way backbone leg broadcast circuit. Abbreviation not allowed (not unique).

In the diagram below, the legs are cross-connections between NPCs and the branch point. Each leg is automatically made half-duplex.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

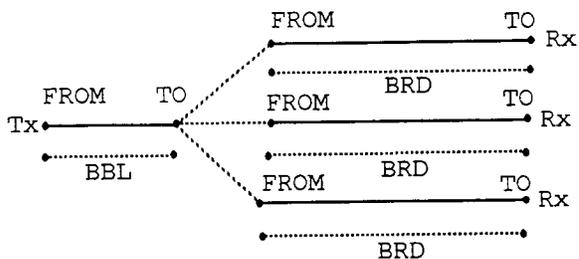


Figure 6-4. Virtual Multipoint Circuit

To set up a virtual multipoint circuit, use as many CIRCUIT PROVISIONING forms as there are BBL and BRDs. If you are pressing **EXECUTE** to send a BBL form, or if you are selecting DACS and local with the **RECONCILE** Key, you may not enter the TO side of the BBL. It is a virtual node, selected by the system.

If you are using DACS Only or Local Only modes, you may select your own virtual node. However, it may not be available when you attempt automatic reconciliation, as in database synchronization (see Chapter 9).

BRD

Broadcast, or branch, leg. Applies to single-channel or high-rate, DS0, virtual multipoint circuits between NAS or CEPT NPCs, and to Gateway circuits. Specifies a one-way branch leg broadcast circuit. Abbreviation not allowed (not unique).

In virtual multipoint operations, enter the BBL first. With existing circuits, **Ckt Class** is known and protected, and the field cannot be changed.

In DACS and local mode, you may not enter the FROM side NPC of any BRD; i.e., the virtual node. It is selected by the system. Up to 20 BRDs can be entered for one BBL.

DMB

Digital multipoint bridge. Applies to single-channel, two-way, multipoint circuits. These circuits are complex; i.e., are composed of multiple cross-connections requiring multiple CIRCUIT PROVISIONING forms. A **Ckt Class** of DMB identifies this cross-connection as a unit in a DMB circuit. The two types of DMB multipoint circuits are the symmetric voice circuit and the polling data circuit.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

In the following diagrams, each leg is automatically made full-duplex. To set up a DMB multipoint circuit, use as many CIRCUIT PROVISIONING forms as there are EFTs. Utilize the **Mode** field to specify the nature of the channel, whether EFT or branch point.

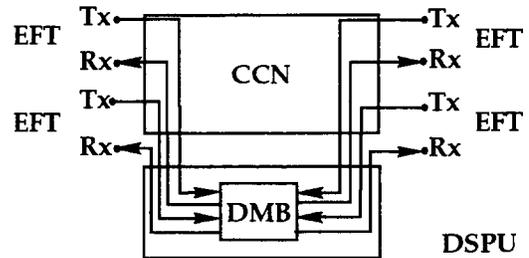


Figure 6-5. Symmetric Voice Circuit

In the symmetric voice circuit, all legs are the same; the terms FROM and TO are meaningless, as well as the terms backbone and branch legs. In setting up this circuit using CIRCUIT PROVISIONING forms, enter the same DMB NPC and channel as one side of each leg, using a **Mode** of *SYM*. Whether it is FROM or TO makes no difference, nor is consistency with the other legs necessary. The DMB channel, or conference, provides a branch point in both the Tx and Rx directions.

The legs are identified as being in one conference by the DMB channel number of each leg, which must be the same for all legs in the conference. The channel number is, therefore, used as a conference number and will be termed as such in this manual.

You specify the use of the channels through the **Mode** field. EFTs are identified with a **Mode** of *LEG*; DMB channels with a **Mode** of *SYM*.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

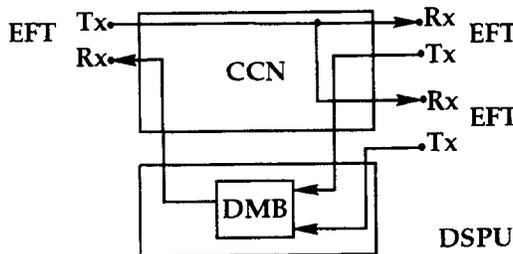


Figure 6-6. Polling Data Circuit

In the case of a polling data circuit, only the return direction from the polled equipment goes through the DMB conference as a branch point. The send branch is provided by the CCN. Therefore, it is legitimate to speak of a backbone and branches. FROM and TO, however, are perfectly arbitrary.

Provision the backbone first and the branches subsequently. Use a **Mode** of LEG to identify an EFT, but a **Mode** of BBL or BRD on the opposite side of each leg to identify its use as a backbone or branch.

Be sure to read the operating examples for DMB. The examples also cover cascading, the building of still more complex circuits using DMB circuits as units.

- BBL ID** Backbone leg ID, which is the BBL circuit ID. 1-41 characters. Appears only for a **Ckt Class** of BRD.
- NEW ID** New circuit ID. 1-41 characters. Appears only when the **Action** is MODIFY.
- Hier** An NPC number in hierarchical format. (See Chapter 4, "NPC PROVISIONING" for an explanation of hierarchical and extended formats.) As shown in the diagrams under **Ckt Class** above, an NPC identifier for the NPC of the FROM channel and another for the NPC of the TO channel are required for one-way and two-way, two-point circuits. The identifier can be a number in hierarchical format, a number in extended format, or the NPC ID. The NPC must have been provisioned.
- Ext** The FROM or TO NPC number in extended format. Automatically provided if **Hier** or **NPC ID** was entered.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

NPC ID	The FROM or TO NPC ID. With the entry of a value in Hier , Ext , or NPC ID , the I-2000 automatically performs a database query and displays the corresponding FROM or TO information in each field.
Ch	<p>The FROM or TO channel number, 0-31 for CEPT or 1-24 for NAS.</p> <p>Virtual channel numbers may range from 1 to 500; however, one is automatically selected by the system during provisioning of virtual multipoint circuits.</p> <p>For DMB circuits, the DMB-side Ch contains the conference number. It can range from 1 through 85 for DACS II.</p> <p>If the NPC identifying information (Hier, Ext, NPC ID) indicates that this is a clear DS1/E1 or DS3 configured as clear DS1 Type of NPC (see Chapter 4), then the value, DS1/E1, appears in the FROM Ch field. The TC, IW, SC, Bandwidth, and Bandwidth Type fields disappear. If you attempt to enter a DS0 TO Ch; i.e., to cross-connect clear DS1 to DS0, the previously mentioned fields reappear and you get a warning message,</p>
WARNING: Non-clear DS1 can not connect to Clear DS1 NPC.	
Mode	<p>Appears only when the Ckt Class is DMB. Specifies the use of the preceding Ch in a DMB multipoint circuit.</p> <p>SYM The associated channel is to be used as the DMB side of a leg in a symmetric voice circuit.</p> <p>BRD The associated channel is to be used as the DMB side of a broadcast, or branch, leg of a polling data circuit.</p> <p>BBL The associated channel is to be used as the DMB side of the backbone leg of a polling data circuit.</p> <p>LEG The associated channel is to be used as an EFT in any leg of the circuit.</p>
Note that a DMB channel must be in a DMB NPC.	
Bandwidth	<p>Mandatory. Two numeric characters. Indicates the number of 64 Kbps channels constituting a high-rate circuit. For example, a 128 Kbps data channel consists of two 64 Kbps channels.</p> <p>For NAS NPCs, the available bandwidth is 1-24 channels; for CEPT NPCs, the available bandwidth is 1 through 32 channels.</p>

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

	<p>If not specified, Bandwidth defaults to 1 channel. It is set to 1 for a Ckt Class of DMB.</p> <p>This field disappears for clear DS1/E1 connections.</p>
Bandwidth Type	<p>Mandatory. Indicates how bandwidth is allocated in an NPC; valid entries are</p> <ul style="list-style-type: none"> C Contiguous. A Alternating. R Random. Available to DACScan-2000/C-module users only. <p>Alternating bandwidth is allocated on alternate channels. A maximum of 12 channels are available for NAS; 16 for CEPT. Contiguous bandwidth is allocated on consecutive channels. For example, starting with Channel 5, a Bandwidth of 3 allocates 5, 6, and 7 for contiguous; 5, 7, and 9 for alternating. Random permits allocation of channels between two NPCs in a random fashion; for example, channel 1 to channel 10, 2 to 5, 3 to 7, etc. The default is A. The value is set to the default for a Ckt Class of DMB.</p> <p>You can scroll through the FROM and TO fields for information on the channel series by pressing [NEXT]. If you do this and find the Bandwidth of the circuit is greater than 1, then the circuit is a high-rate circuit. For example, if the Bandwidth is 5, you can scroll from 1 through 5 and the channels for both the FROM and the TO fields scroll along in synchronization.</p> <p>This field disappears for clear DS1/E1 connections.</p>
Options	<p>Optional. 0 through 7 characters. Names options for activating or deactivating the circuit.</p> <p>⇒ NOTE:</p> <p>When you press [CHOICES] to see the menu of Options, [SELECT] and [UNSELECT] F-keys appear. The [CHOICES] menu for this field is a <i>multiselect</i> menu and operates differently from any other I-2000 menu. Pressing [Enter] does not select the item, as is the case with all other I-2000 menus. Instead, pressing [SELECT] selects the item. Use [SELECT] to choose as many options as are appropriate. Press [Enter] to place them on the screen.</p> <p>Only RDL D, OOS, and INCL are available for clear DS1 circuits.</p> <p>The choices are as follows. If you type into the field, use only the letter.</p>

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

-
- | | |
|---|--|
| A | Keyword NAM. No a-to-mu law conversion is to be applied to the circuit if it is CEPT only; i.e., if it is not a gateway. |
| B | Keyword AIS. Alarm indication signal (all 1s, including the framing bit) is to be asserted on the downstream NPC when it is detected on the upstream NPC or when the upstream NPC asserts a CGA. Applies to NAS, FDX, high-rate circuits of bandwidth 24 only. |
| C | Keyword RDL D. Red-lined. The circuit is to require specific authorization to disconnect; the INCL keyword must be set. For DMB circuits, if one leg of a conference is designated as RDL D, all legs must be. This condition applies only to AT&T DACS II. |
| D | Keyword OOS. Out of service. A disconnect is to be effected when the NPC at one or both ends of the circuit are OOS. |
| E | Keyword INCL. Included. Authorizes disconnects of RDL D circuits. |
| F | Keyword DCC. Disconnect channel code. Causes the DACS to assert the user-defined disconnect code (specified in the IW field) on disconnected channels. |
| G | Keyword TLA. <i>Terminate and Leave Activated</i> . If it is unselected, TLR, <i>Terminate and Leave Released</i> is to be in effect for this circuit. |

**NOTE:**

TLR is the normal state for traffic-carrying circuits. It means that the circuit is not terminated. (*Terminate and Leave released*. Refer to the "Introduction" and to Chapter 14, "TEST ACCESS.") TLA is a state generally used only for initial testing from end to end. If you make a circuit ACTIVE (or ALTROUTED) on the DACS in the TLA state, the I-2000 system automatically reverses this state to TLR in the I-2000 database once the command has been sent. To change the termination state of the circuit on the DACS back to TLR, send the command again. You would have to reset this field manually to TLA to override this automatic reversal.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

	The <i>unassigned IW</i> , specified under NPC PROVISIONING for the NPC, is transmitted in the terminated direction(s).	
NTR	No transmit. Appears only when Ckt Class is DMB. Specifies whether the leg is one-way or two-way.	
	The NTR capability applies only to AT&T DACS II.	
	F	Transmission is shut off toward the FROM direction.
	T	Transmission is shut off toward the TO direction.
	blanks	Transmission is not shut off.
TC	Trunk conditioning specifies whether A/B-robbed-bit signaling is to be used to signal failure on the specified circuit.	
	This information will only be used during failure of either an incoming signal or an NPC. When the NPC can no longer frame on the signal, it initiates trunk conditioning on all DS0 channels of the NPC. The signaling bits sent during failure are intended to disconnect active calls and hold the circuits busy (if appropriate) for the duration of the failure.	
	DDS circuits require a TC of TRSP and an IW of MUX, which inserts MUX for the duration of the failure, and does not send the signaling bits. The value of TC also is set at TRSP for a Ckt Class of DMB.	
	The TC field disappears for clear DS1/E1 connections; trunk conditioning is not supported for them.	
	The trunk-conditioning codes are	
	0011, 0011	
	Default. Indicates the circuit will use A/B signaling. The A/B bits sent upon detection of a failure condition are	
	Duration of failure	FROM Facility TO Facility
	First 2.5 sec	00 00
	Remainder	11 11
	Logic 0 is an on-hook (idle). Logic 1 is an off-hook (busy).	
	Circuits that use A/B signaling must always have an IW specified.	

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

**NOTE:**

The TC-value format shown is for FDX, full duplex. For HDX, replace the FROM side's number with hyphens. For an FDX version of X-05, X-63 the HDX result would be X---, X-63.

It is important to remember that with HDX, you must put hyphens on one side. Virtual multipoint circuits also are HDX.

0101, 0101

----, 0011

The previous value is used in connection with four-state signaling only.

TRSP

Transparent. Indicates the circuit will not use A/B signaling.

X-FF, X-FF

X-99, X-99

X---, X-FF

The above two values are used in connection with 16-state signaling only.

11111111, 11111111

-----, 11111111

If your preferred code is not in the list shown in the **CHOICES** menu, you may type it on the TC line. However, the syntax must be correct or the DACS will not accept it. The I-2000 does not correct or complete it for you. If you specify it incorrectly, the MML command line appears toward the screen bottom with = = (equation marks) surrounding the offending string. See the DACS I/O manual for other valid TC codes and for more information about trunk conditioning.

IW

Insertion Word. Specifies the 8-bit alternate code to be inserted into the DS0 outgoing time slots of mapped channels of an NPC during OOS conditions, including carrier failure and removal of an NPC. The DDC is still sent toward both DS1 lines on unmapped channels. A yellow alarm is sent toward the failed DS1. The selections are

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

TRB	Insert the standard trouble code, Hex E4, or 11100100. You may also enter X-E4.
MUX	Insert the MUX out-of-sync code, Hex 1A, or 00011010. You may also enter 1A. When DS0 channels of DDS lines are cross-connected in the CCN, TRSP is used for TC and MUX for IW. The latter is inserted in the mapped DS0 channels of the outgoing DS1 line away from the failure. UMC is still inserted on unmapped channels.
nn	Insert an 8-bit pattern specified by Hex nn. Currently 7F, FF, and BF are selections.
SC	Optional. Signaling conversion is used in CEPT and GATEWAY cross-connections in conjunction with CAS signaling. If the SC field is not specified, all four signaling bits will be cross-connected unchanged. The SC field is defined as xxxx,yyyy where the first four bits, xxxx, represent the FROM side and the last four bits, yyyy represent the TO side. The comma separator is mandatory. All eight bits may be controlled independently. The valid values for these bits are P Pass unchanged. V Pass inverted. 0 Set output to 0. 1 Set output to 1. - No value, the circuit is one-way. All 8 bits are used only for FDX, full duplex. For HDX, replace the FROM side's number with hyphens. For example, a 0011,0011 in FDX would become ----,0011 in HDX. If - is used, all four characters in the group must be -. If they are not, the DACS may deny the command. This field disappears for clear DS1/E1 connections.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

Framing	The value of the framing bits in the FW in cases where a CEPT channel 0 (time slot 0) is being connected to some other CEPT channel (non-TS0). Refer to the <i>Introduction</i> to this chapter.
	<i>abcdefg, hijklmn</i> An arbitrary bit pattern of 0s and 1s, where <i>abcdefg</i> is the pseudo-FW in the TO-FROM direction and <i>hijklmn</i> is the pseudo-FW in the FROM-TO direction. Make sure that the pseudo-FW can in no case be the same as the FW or the NFW.
	<i>NFW</i> Use the NFW in channel 0 of all time frames.
Customer Name	Optional. Up to 12 characters. An informational field only. The name of the customer to be associated with the circuit of this screen. An automatically supplied value of <i>C2000</i> identifies circuits created by the DACScan-2000 Controller C-Module. An automatically supplied value of <i>ERP</i> identifies circuits created by the ERP feature.
Service Date	Three fields. Enter the date the circuit is first placed into service. The format is
	<i>dd mmm yy</i>
	<i>dd</i> 1 or 2 digits that represent the day. Days 1 through 9 do not have to be entered as 01 through 09.
	<i>mmm</i> The first three letters of the month, as in Jan, Feb, Mar. . . Dec. Upper- or lower-case or any combination is acceptable.
	<i>yy</i> The last two digits of the year, as in 90 (this is the starting year), 91, 92, etc. An entry of 01, 02, etc., implies 2001, 2002, etc. The limit is 2038.
	For example,
	25 Apr 90
	The default date is today's date.
Ckt Priority	Circuit priority. Informational only, one or two alphanumeric characters. Indicates to the user the relative importance of the circuit for restoral actions. Regardless of its use, a circuit may not be assigned more than one CP. The default is 00.
Loc A	Optional. Up to 24 characters. The Station ID of the FROM side of the circuit being provisioned. This field is informational only.

Table 6-1. CIRCUIT PROVISIONING Field Descriptions

Loc Z	Optional. Up to 24 characters. The Station ID of the TO side of the circuit being provisioned. This field is informational only.
Rmks	0-77 characters. A user-defined informational field. An I-2000 operator can enter informational comments.

Summary of Fields And Values

Table 6-2. Summary of CIRCUIT PROVISIONING Field Values

Name	Field Size	Values
◦ Site Name	24	Previously created under frame administration.
◦ Action	10	ACTIVATE, MODIFY, PEND, DELETE, DEACTIVATE, ALTRROUTE, NORMALIZE, BROWSE.
Ckt Status	11	NULL, PENDING, DEACTIVATED, ALTROUTED, PREEMPTED, ACTIVE.
◦ Ckt ID	41	All printable characters except *, ?, \, [,], ^, ", %, .
◦→ Ckt Class	3	FDX, HDX, BBL, BRD, DMB.
BBL ID	41	Previously activated.
NEW ID	41	All printable characters except *, ?, \, [,], ^, ", %, .
Hier	5	xxyzz, xx is 01-16, y is 1-8, zz is 01-40.
Ext	4	0001-256H
◦ NPC ID	41	All printable characters except *, ?, \, [,], ^, ", %, .
◦→ Ch	3	00-24 NAS, 00-31 CEPT, 1-500 virtual, 1-85 DMB with DACS II, 1-64 with DACS I.
◦→ Mode	3	SYM, BRD, BBL, LEG
◦→ Bandwidth	2	1-24 NAS, 1-31 CEPT.
◦→ Bandwidth Type	1	A or C
→ Options	7	A-G. The → applies only to A-C.
→ NTR	1	F, T

Table 6-2. Summary of CIRCUIT PROVISIONING Field Values

Name	Field Size	Values
⊕ TC	17	0011, 0011 0101, 0101 ----, 0011 TRSP X-FF, X-FF X-99, X-99 X---, X-FF 11111111, 11111111 -----, 11111111
→ IW	3	TRB, MUX, 7F, FF, BF.
→ SC	9	xxxx,yyyy where x, y = [P, V, 0, 1, -].
Framing		abcdefghijklmn where a letter is 0 or 1. Alternatively, NFW.
Customer Name	12	All printable characters except *, ?, \, [,], ^, ", %, .
Service Date	7	dd mmm yy
Ckt Priority	2	a-z, A-Z, 0-9
Loc A	24	All printable characters except *, ?, \, [,], ^, ", %, .
Loc Z	24	All printable characters except *, ?, \, [,], ^, ", %, .
Rmks	77	All printable characters except .

→ Traffic-affecting field.

⊕ Mandatory field.

Examples of Operation

The examples that follow illustrate how to provision the various types of circuits available. Provisioning is achieved with the **ACTIVATE Action**. If it succeeds, the **Ckt Status** becomes ACTIVE. If it fails, or is denied:

- The **Ckt Status** becomes NULL. No entry for the circuit is made in any database.
- Messages relating to the conflict appear in a pop-up. You must press **Enter** to continue.

**CAUTION:**

Entry of improper data through use of the **RECNCILE** key may result in contradictory data for one or more circuits between the I-2000 and DACS databases. When you then try to use the circuits, the discrepancies may result in degraded performance or loss of the circuit's ability to carry traffic.

Full-duplex Circuit

One CIRCUIT PROVISIONING form is required to provision a two-way, two-point circuit of **Ckt Class** FDX.

**NOTE:**

Selection of the NPC determines whether the DS0 channels are provided by NAS DDCs, CEPT DPCs, or DS3 Cards (channelized configuration). The procedure is the same in each case.

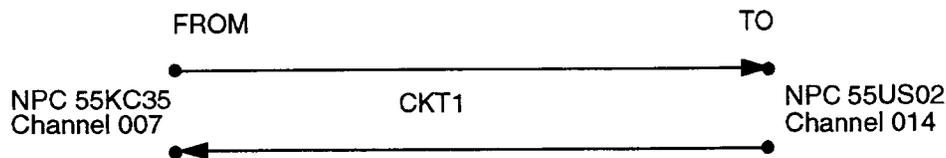


Figure 6-7. Sample Full-duplex Circuit

Step 1: Select PROVISIONING from the MAIN MENU and then select CIRCUIT from the PROVISIONING menu. The CIRCUIT PROVISIONING form may already have values in it; these are defaults. The **Ckt Status** field displays NULL.

Step 2: Enter the following data, or use the displayed defaults:

- **Site Name:** DACS00
- **Action:** ACTIVATE
- **Ckt ID:** CKT1

If you are making a change to an existing circuit, the current values are filled into the fields on the screen.

- **Ckt Class:** FDX

You may wish to fill in **Hier** or **Ext** instead of **NPC ID**, shown next. Whichever of the three fields you pick, the values of the other two are filled in automatically.

- FROM NPC ID: 55KC35
- FROM Ch: 007
- TO NPC ID: 55US02
- TO Ch: 014
- Bandwidth: 1
- Bandwidth Type: A
- TC: 0011, 0011
- IW: TRB

Step 3: Press **EXECUTE** and select IMMEDIATE, or use the **RECNCILE** key to select the database and then press **EXECUTE**.

If the command completes successfully:

- The **Ckt Status** field changes from NULL to ACTIVE.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

Clear DS1 Full-duplex Circuit

One CIRCUIT PROVISIONING form is required to provision a two-way, two-point circuit of **Ckt Class** FDX, where the NPCs are clear DS1.



NOTE:

A clear DS1/E1 NPC can only connect to another clear DS1/E1 NPC.

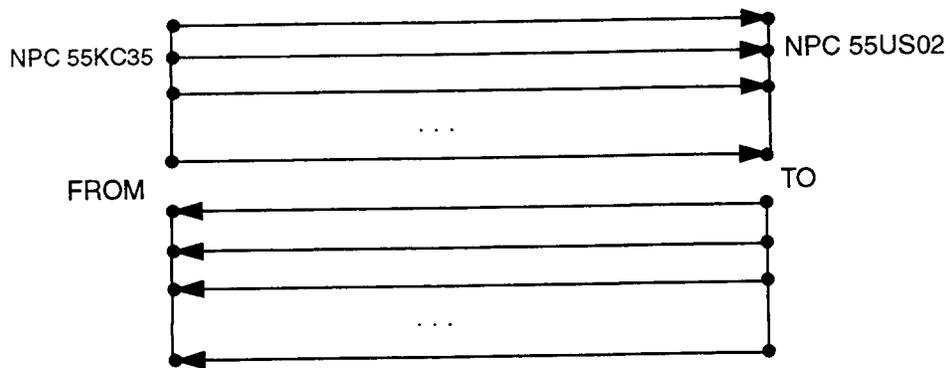


Figure 6-8. Sample Clear DS1 Full-duplex Circuit

Step 1: Select PROVISIONING from the MAIN MENU and then select CIRCUIT from the PROVISIONING menu.

Step 2: Enter the following data, or use the displayed defaults:

- **Site Name:** DACS00
- **Action:** ACTIVATE
- **Ckt ID:** CKT1
- **Ckt Class:** FDX
- **FROM NPC ID:** 55KC35

TC, IW, SC, Bandwidth, and Bandwidth Type disappear from the form. **FROM Ch** assumes a value of DS1.

- **TO NPC ID:** 55US02
- TO Ch** assumes a value of DS1.

Step 3: Press **EXECUTE** and select IMMEDIATE, or use the **RECNCILE** key to select the database and then press **EXECUTE**.

If the command completes successfully:

- The **Ckt Status** field changes from NULL to ACTIVE.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

Half-duplex Circuit

One CIRCUIT PROVISIONING form is required to provision a one-way, two-point circuit of **Ckt Class** HDX. Here trunk conditioning is specified and the circuit is TLR (not terminated); i.e., it will carry normal traffic.

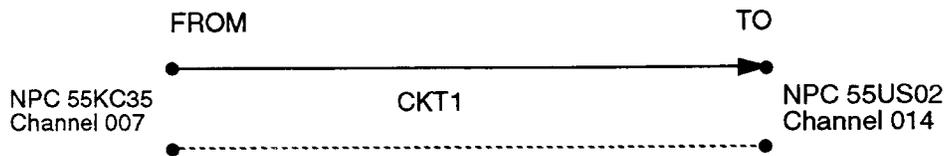


Figure 6-9. Sample Half-duplex Circuit

Step 1: Select CIRCUIT from the PROVISIONING menu.

Step 2: Enter the following data:

- **Site Name:** DACS00
- **Action:** ACTIVATE

- **Ckt ID:** CKT1
- **Ckt Class:** HDX
- **FROM NPC ID:** 55KC35
- **FROM Ch:** 007
- **TO NPC ID:** 55US02
- **TO Ch:** 014
- **Bandwidth:** 1
- **Bandwidth Type:** A
- **TC:** ----,0011
- **IW:** TRB

- Step 3:** Press **EXECUTE** and select IMMEDIATE. The result is
- The **Ckt Status** field changes from NULL to ACTIVE.
 - THE COMMAND COMPLETED SUCCESSFULLY message appears.
 - Transmission is shut off toward the FROM direction.
 - Transmission is shut off toward the TO direction.

Loopback Circuit

One CIRCUIT PROVISIONING form is required to provision a loopback circuit, which is a kind of half-duplex circuit. In it, the FROM and TO sides must be the same channel of the same NPC. The cross-connect must be HDX, freeing the return direction. The Tx then loops around to the Rx of the same channel.

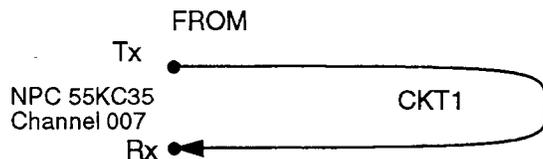


Figure 6-10. Sample Loopback Circuit

Step 1: Select CIRCUIT from the PROVISIONING menu.

Step 2: Enter the following data:

- **Site Name:** DACS00
- **Action:** ACTIVATE
- **Ckt ID:** CKT1
- **Ckt Class:** HDX
- **FROM NPC ID:** 55KC35
- **FROM Ch:** 007
- **TO NPC ID:** 55KC35
- **TO Ch:** 007
- **Bandwidth:** 1
- **Bandwidth Type:** A
- **TC:** -----,0011
- **IW:** TRB

Step 3: Press **EXECUTE** and select IMMEDIATE. The result is

- The **Ckt Status** field changes from NULL to ACTIVE.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

New Two-point nx64 Kb/s High-rate Circuits

One CIRCUIT PROVISIONING form is required to provision a high-rate, or multichannel, two-point circuit. You specify a bandwidth, or number of channels to be included in the circuit, greater than 1. The limit to the bandwidth depends on the standard. NAS circuits can have 24 channels; CEPT circuits, 30 with channel-associated signaling, or 31 without it. Before provisioning a high-rate circuit on an NPC, you may want to ascertain the number of channels already in use there.

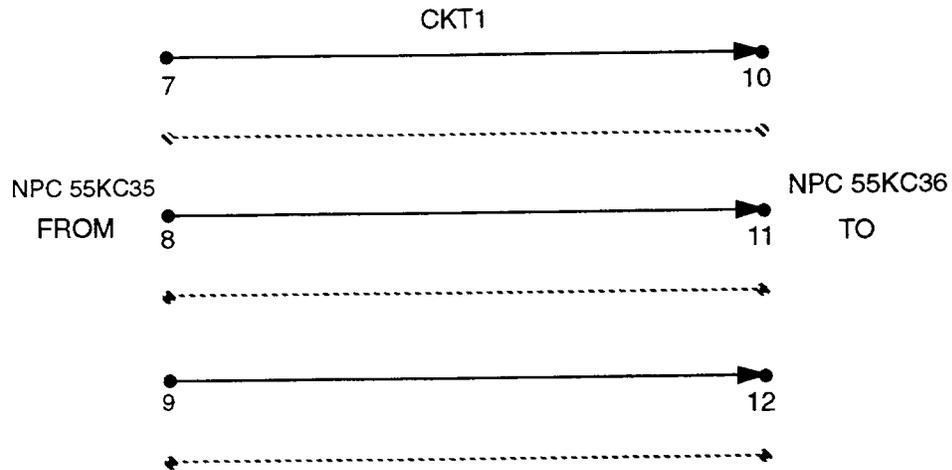


Figure 6-11. Sample Two-point High-rate Circuit

Here the multiple channels are provisioned in contiguous (consecutive) sequence. For example, if you start with channel 7 and specify a **Bandwidth** of 3, a **Bandwidth Type** of C (contiguous), the channels provisioned will be 7, 8, and 9. Be careful that the first channel is followed by enough unused channels to accommodate the **Bandwidth** you are going to specify.

The FROM and TO lines of the screen initially display the starting channels. To view the other channels provisioned in this sequence, scroll through them by pressing **[NEXT]**. Each consecutive channel is displayed on the line. Channels are displayed on both the FROM and TO lines in synchronization.

Step 1: Select CIRCUIT from the PROVISIONING menu.

Step 2: Enter the following information:

- **Site Name:** DACS00
- **Action:** ACTIVATE
- **Ckt ID:** CKT1
- **Ckt Class:** HDX
- **FROM NPC ID:** 55KC35
- **FROM Ch:** 007
- **TO NPC ID:** 55KC36
- **TO Ch:** 010
- **Bandwidth:** 3

— **Bandwidth Type:** C

— **TC:** ----, 0011

This value is required for a NAS HDX circuit. A CEPT HDX circuit would require a value such as ----, X-FF.

— **IW:** TRB

This value is required for a NAS HDX circuit. A CEPT HDX circuit would require a value such as BF.

Step 3: Press **EXECUTE** and select IMMEDIATE, or use the **RECNCILE** key to select the database and then press **EXECUTE**.

— The **Ckt Status** field changes from NULL to ACTIVE.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

High-Rate Circuits From Multiple Circuits

You may combine multiple circuits into one high-rate circuit on the same NPCs. The procedure given in this example can be used to recombine an original high-rate circuit of **Bandwidth** *n* that was restored in the I-2000 as *n* single-channel circuits by an UPLOAD or CHANNEL SYNC **Action** under database synchronization (see Chapter 9, *Database Administration*).

The technical reason for this anomaly during synchronization is that the DACS, when queried by the I-2000 for its cross-connect map, cannot provide information that *n* DS0 cross-connects were actually *n*xDS0 cross-connects of one high-rate circuit in the I-2000. Therefore, without this critical information, the I-2000 during synchronization is required to generate separate circuit records for each cross-connect extracted from the DACS.

You must perform this procedure prior to the DACScan™-2000 Controller Circuit Module placing an existing wide-band circuit In Effect (IE-IE).

You can identify circuits resulting from a CHANNEL SYNC or from an UPLOAD, which utilizes a CHANNEL SYNC, by the format of their circuit IDs.

The format is

SYNC *from_npc-from_ch to_npc-to_ch* **BW/01 FDX:000**

where:

- from_npc* Is either the 4-character extended number of the FROM NPC or the 5-character hierarchical number of the same NPC.
- from_ch* Is the 3-character FROM channel number.
- to_npc* Is either the 4-character extended number of the TO NPC or the 5-character hierarchical number of the same NPC.
- to_ch* Is the 3-character TO channel number.

You should verify that the source circuits conform to the requirements for a successful COMBINE. These requirements are stated in the CIRCUIT PROVISIONING Field Descriptions. You can obtain the information by

- Generating a CIRCUIT CONNECTIONS report through the CIRCUITS selection of the REPORT OPERATIONS menu using wild-cards in the SEARCH CRITERIA form to obtain only circuits of the given FROM NPC.

For circuits to be recombined after a CHANNEL SYNC, we recommend a circuit ID search string of

SYNC *from_npc**

- Obtain a display, which you can print with the **PRINT** key, through the BROWSE **Action** of the CIRCUIT PROVISIONING form. Utilize the same search string in the **Ckt ID** field.

To combine single-channel circuits, follow the example below. (But source circuits can be high-rate.) Here, we are going to recall the channel information of the first circuit to the screen, so that we can reuse it; however, such a step is not necessary. You could enter the information for the combined circuit independently.

Step 1: Verify the range of the single-channel circuits.

In this example, we are going to use

```

SYNC 0001-001 ... BW/01 FDX:00
SYNC 0001-002 ... BW/01 FDX:00
...
SYNC 0001-024 ... BW/01 FDX:00
    
```

The **Ckt ID** search string would in that case be

```

SYNC 0001*
    
```

Step 2: Select CIRCUIT from the PROVISIONING menu.

Step 3: Recall the first circuit to the screen:

— **Site Name:** DACS00

— **Ckt ID:** SYNC 0001-002 ... BW/01 FDX:000

The circuit information is displayed. The **Ckt Status** is ACTIVE.

Step 4: Enter the following information, noting that we are reusing the previous **Ckt ID** and therefore do not have to change it:

- **Action:** COMBINE
- **Bandwidth:** 24
- **Bandwidth Type:** C

Step 5: Press **EXECUTE** and select Y or IMMEDIATE.

- The source circuits are deleted.
- THE COMMAND COMPLETED SUCCESSFULLY message appears, indicating that the combined circuit has been created successfully.

⇒ NOTE:

If you get a time-out message, the COMBINE may yet succeed without intervention on your part. If full-**Bandwidth** COMBINES are issued simultaneously, on different terminals, all but one are placed on queue and time-out messages may appear while they are there. They are then executed successively on completion of the first.

The reason for this anomaly is that a full-**Bandwidth** COMBINE typically requires over a minute to complete. Lower-rate COMBINES require less time.

Virtual Multipoint Circuits

To visualize the virtual multipoint, broadcast model, imagine a black box with one input and multiple outputs:

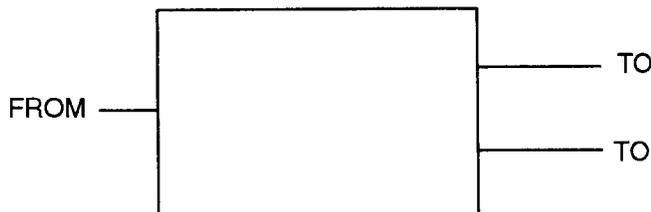


Figure 6-12. Ideal Broadcast Circuit

What happens inside the box is a matter of design. The I-2000 design is shown in the exhibit for the BBL and BRD values of **Ckt Class** under the preceding "CIRCUIT PROVISIONING Field Descriptions" table.

In the single-channel bandwidth case, the initial FROM side and the final TO sides are single directions of one channel each on an NPC. In the high-rate case, the FROM and the TO points must be represented by multichannel circuits.

Internally, within the black box, branching is accomplished by means of a *virtual node*. This node is a logical channel that is both the TO side of the input FROM side and the FROM side of the output TO sides. In effect, the I-2000 sets up an input one-way, two-point circuit and one such output circuit for each broadcast point.

Ordinarily the channel for this virtual node is system-selected from the 1-500 range, but you can select one yourself, as is explained under **Ckt Class**. Such a procedure is unusual. The connection through the node is handled by the I-2000 software once you enter a **Ckt Class** of BBL or BRD.

As many CIRCUIT PROVISIONING forms are required as there are legs. Each form must have a different **Ckt ID**. High-rate circuits count as one leg and take one form to specify. In that case, channels are displayed on the real EFT line only.

There are a few caveats:

- All legs must have the same **Bandwidth**, and the **Bandwidth Type** must be C (contiguous).
- You must establish the backbone leg first. The broadcast legs cannot exist without it; if you try to create a BRD before a BBL, your attempt is denied.
- The NPCs must not be UEQD. If they are OOS, the I-2000 accepts the form, but the DACS does not accept the command. A successful circuit must contain NPCs that are all IS.

Once you have provisioned the BRD Legs, if the cursor is positioned on the **FROM NPC ID**, you can scroll through the branch legs by pressing **NEXT**. The **TO NPC ID** and **TO Ch** change. To display CIRCUIT PROVISIONING data for a branch leg, press **Enter** at the appropriate **NPC ID**

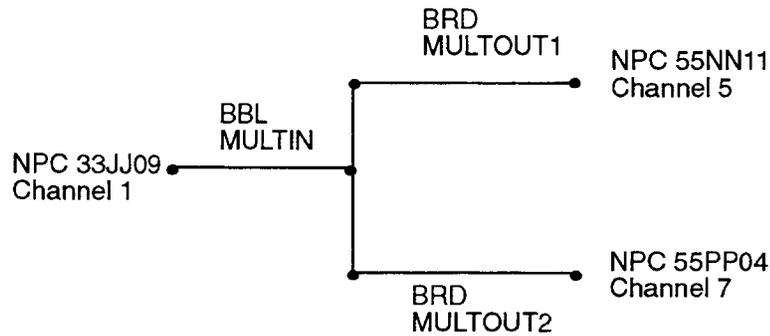


Figure 6-13. Sample Broadcast Circuit

Step 1: Select CIRCUIT from the PROVISIONING menu.

Step 2: Enter the following information:

- **Site Name:** DACS01
- **Action:** ACTIVATE
- **Ckt ID:** MULTIN
- **Ckt Class:** BBL
- **FROM NPC ID:** 33JJ09
- **FROM Ch:** 001

Note that you cannot access the **TO** fields.

- **Bandwidth:** 1
- **Bandwidth Type:** C
- **TC:** TRSP
- **IW:** FF

Enter or select values for any other relevant data fields for this circuit (the rest are primarily informational).

Step 3: Press **EXECUTE** and select IMMEDIATE, or use the **RECNCILE** key with **EXECUTE**.

- **Ckt Status** field displays ACTIVE.
- The virtual node appears in the TO fields.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 4: Renavigate and enter the following fields to provision one BRD:

- **Ckt ID:** MULTOUT1

- **Ckt Class:** BRD
- **BBL ID:** MULTIN
- The virtual node appears in the FROM fields.
- **TO NPC ID:** 55NN11
- **TO Ch:** 005
- **Bandwidth:** 01
You must enter the same **Bandwidth** as the BBL.
- **Bandwidth Type:** C
You must enter C.
- **TC:** TRSP
- **IW:** FF

Step 5: Press **EXECUTE** and select IMMEDIATE.

- The **Ckt Status** changes to ACTIVE.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 6: Renavigate and enter the following fields to provision the other BRD.

- **Ckt ID:** MULTOUT2
- **Ckt Class:** BRD
- **BBL ID:** MULTIN
- **TO NPC ID:** 55PP04
- **Bandwidth:** 01
- **Bandwidth Type:** C
- **TC:** TRSP
- **IW:** FF

Step 7: Press **EXECUTE** and select IMMEDIATE.

- The **Ckt Status** changes to ACTIVE.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

DMB Multipoint Circuits

DMB multipoint is supported only for DACS II.

The model for a DMB multipoint circuit is similar to that of the virtual multipoint circuit, except that a DMB multipoint circuit is two-way, and, therefore, the concept of FROM and TO sides becomes arbitrary. Either direction of a circuit can be the FROM or the TO. Also, DMB multipoint circuits require the selection of a DMB NPC and channel as a branch point.

⇒ NOTE:

The DMB NPC number must be in the range supported by the DMB circuit pack. If it is not, the NPC is not a DMB NPC. If you do not know the ranges of each type of NPC, consult your system administrator.

The next illustration is a symmetric voice circuit.

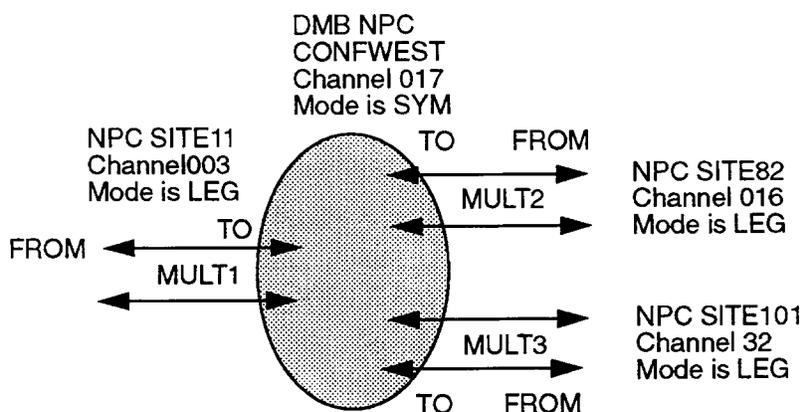


Figure 6-14. Sample Symmetric Voice Circuit

In this example, three CIRCUIT PROVISIONING forms are required. Each form must have a different Ckt ID.

Step 1: Select CIRCUIT from the PROVISIONING menu.

Step 2: Enter the following information:

- **Site Name:** DACS01
- **Action:** ACTIVATE
- **Ckt ID:** MULT1
- **Ckt Class:** DMB
- **FROM NPC ID:** SITE11
This NPC contains EFTs.
- **FROM Ch:** 003
- **FROM Mode:** LEG

— **TO NPC ID:** CONFWEST

This is the DMB NPC.

— **TO Ch:** 017

— **TO Mode:** SYM

Enter or select values for any other relevant data fields.

Step 3: Press **EXECUTE** and confirm.

— The **Ckt Status** changes to ACTIVE.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 4: Renavigate on the form and enter the following information, understanding that the **Ckt Class** is still DMB:

— **Ckt ID:** MULT2

— **FROM NPC ID:** SITE82

— **FROM Ch:** 016

— **FROM Mode:** LEG

— **TO NPC ID:** CONFWEST

— **TO Ch:** 017

— **TO Mode:** SYM

Step 5: Press **EXECUTE** and confirm.

— **Ckt Status** displays ACTIVE.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 6: Renavigate on the form and enter the following information, understanding that the **Ckt Class** is still DMB:

— **Ckt ID:** MULT3

— **FROM NPC ID:** SITE101

This NPC contains EFTs.

— **FROM Ch:** 032

— **FROM Mode:** LEG

— **TO NPC ID:** CONFWEST

This is the DMB NPC.

— **TO Ch:** 017

— **TO Mode:** SYM

Step 7: Press **EXECUTE** and confirm.

- **Ckt Status** displays ACTIVE .
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

The next example with its diagram is a polling data circuit. The same diagram as in the previous figure is shown, but here it is strictly conventional. The Tx direction of the backbone does not really go through the DMB NPC.

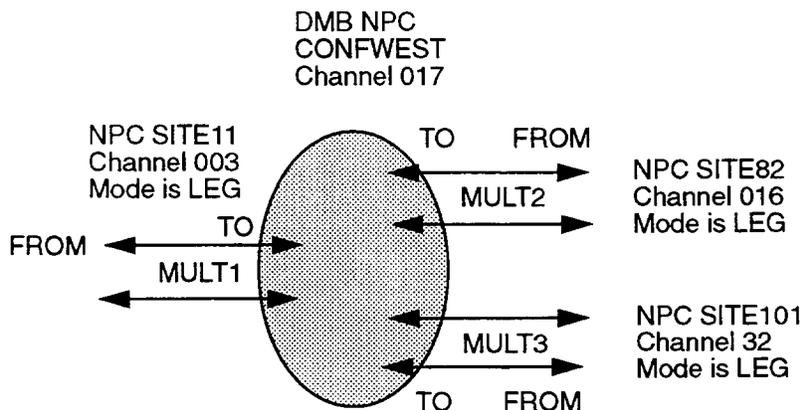


Figure 6-15. Sample Polling Data Circuit

In this example, three CIRCUIT PROVISIONING forms are required. Each form must have a different **Ckt ID**.

Step 1: Select CIRCUIT from the PROVISIONING menu.

Step 2: Enter the following information:

- **Site Name:** DACS01
- **Action:** ACTIVATE
- **Ckt ID:** MULT1
- **Ckt Class:** DMB
- **FROM NPC ID:** SITE11
This NPC contains EFTs.
- **FROM Ch:** 003
- **FROM Mode:** LEG
- **TO NPC ID:** CONFWEST

This is the DMB NPC.

- **TO Ch:** 017
- **TO Mode:** BBL

Enter or select values for any other relevant data fields.

Step 3: Press **EXECUTE** and confirm.

- **Ckt Status** displays ACTIVE.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 4: Renavigate on the form and enter the following information, understanding that the **Ckt Class** is still DMB:

- **Ckt ID:** MULT2
- **FROM NPC ID:** SITE82
- **FROM Ch:** 016
- **FROM Mode:** LEG
- **TO NPC ID:** CONFWEST
- **TO Ch:** 017
- **TO Mode:** BRD

Step 5: Press **EXECUTE** and confirm.

- **Ckt Status** displays ACTIVE.
- THE COMMAND COMPLETED SUCCESSFULLY message appears.

Step 6: Renavigate on the form and enter the following information, understanding that the **Ckt Class** is still DMB:

- **Ckt ID:** MULT3
- **FROM NPC ID:** SITE101
- **FROM Ch:** 032
- **FROM Mode:** LEG
- **TO NPC ID:** CONFWEST
- **TO Ch:** 017
- **TO Mode:** BRD

Step 7: Press **EXECUTE** and confirm.

- **Ckt Status** displays ACTIVE.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

Cascaded Multipoint Circuits

The number of legs that can be hung from one branch point in a DMB multipoint circuit is limited by the number of time slots in a DMB circuit pack. Some limits are stated for the DACS II in the following table. Note that DMB is supported only for the DACS II.

Table 3-3. DMB Conference Information

Machine	DMB Conference Number Range	Maximum Number of DMB Conferences Per Frame	Maximum Number of DMB Conference Legs Per Pack
DACS II	1-85 (per pack)	1360 [♦]	512
DACS II (CEF)	1-85 (per pack)	5440 [▼]	512

♦ If you assume eight DMB packs per DSPU and two DSPUs per frame, the maximum number of conferences is 85x8x2, or 1360.

▼ If you assume eight DMB packs per DSPU and eight DSPUs per frame, the maximum number of conferences is 85x8x8, or 5440.

The above limitations can be overcome for multipoint circuits by a configuration called cascading, in which two or more conferences are included in the same network of DMB multipoint circuits.

The next illustration represents a cascaded symmetric voice circuit.

⇒ NOTE:

The representations shown in this section are not to be taken as circuit diagrams. They represent graphically the relations between the cross-connects to be entered on the various CIRCUIT PROVISIONING forms required by the cascade.

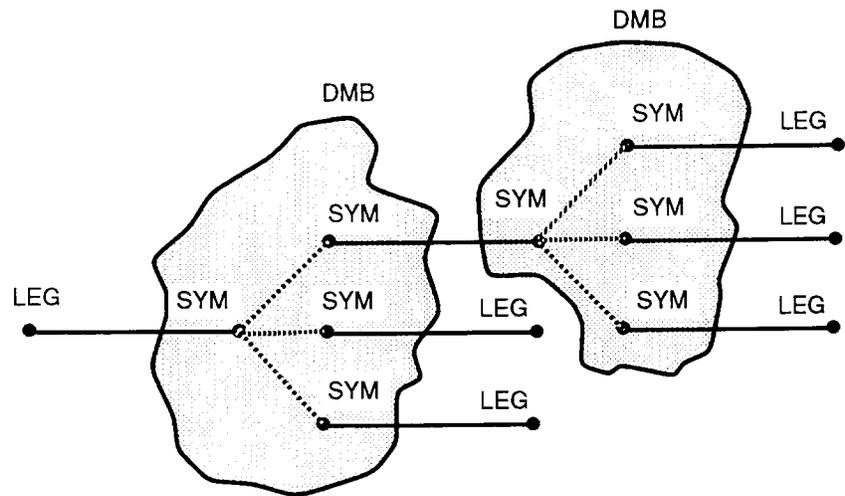


Figure 6-16. Cascaded Symmetric Voice Circuit

From the illustration, the following rules are evident:

- LEG always connects to SYM.
- Clusters of SYM must be the same NPC and channel, and it must be a DMB NPC.
- The number of SYM-to-SYM cross-connects is equal to one less than the number of DMB conferences in the circuit.

In the illustration, seven cross-connects are shown, requiring seven CIRCUIT PROVISIONING forms. The **Mode** Field values associated with each channel are shown. Whether a channel is TO or FROM has no bearing, except, of course, that a FROM and a TO have to appear in every cross-connect.

The following illustration represents a single polling data circuit for comparison purposes:

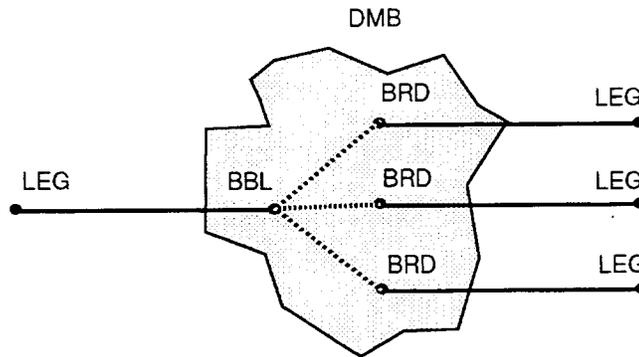


Figure 6-17. Single Polling Data Circuit

Notice that the same DMB NPC and channel are labeled BBL in one form and BRD in three forms.

The next illustration shows two polling data circuits cascaded through the backbone legs:

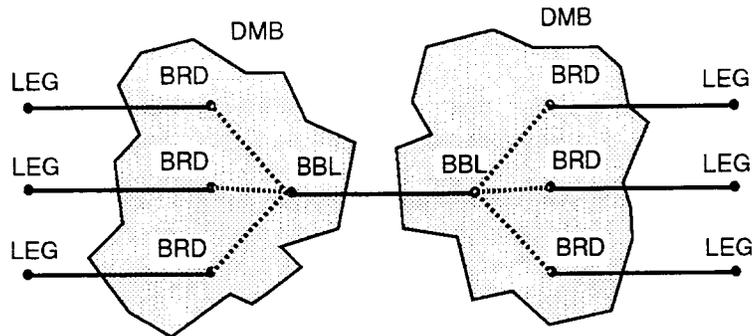


Figure 6-18. BBL-to-BBL Cascaded Polling Data Circuit

Notice that the LEG to BBL cross-connects of a single circuit have been replaced by a common BBL to BBL cross-connect. Seven CIRCUIT PROVISIONING forms are required.

The next illustration shows two polling data circuits cascaded through a BBL to BRD cross-connect.

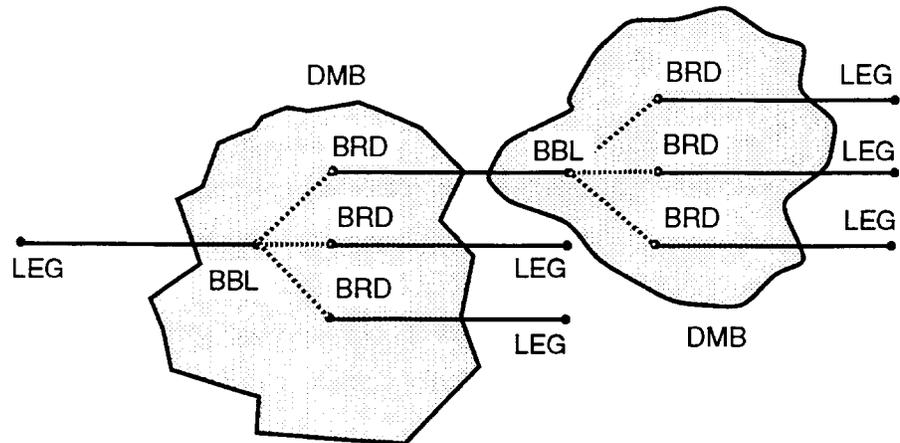


Figure 6-19. BBL-to-BRD Cascaded Polling Data Circuit

From the previous diagram, the following rules are evident:

- LEG always connects to BBL or BRD.
- A cluster of points representing one DMB and channel must include one BBL with the rest being BRD.
- As many BRD to BBL cross-connects are required as one less than the number of DMB conferences in the circuit.

Circuit Provisioning ERP

Echoed response processing (ERP) is an autonomous circuit provisioning feature; i.e., it is not under menu control. An echoed response is a message that is sent from a DACS to the I-2000 when the I-2000 does not expect a response; i.e., when a change in DACS circuit provisioning has been entered through the DACS console or by some other means not initiated on the I-2000. Such provisioning means that the DACS and I-2000 databases no longer correspond.

The I-2000, therefore, has been designed to respond to the following types of DACS output message:

- O.11001: connection of two-way or a range of cross-connect circuits
- O.11011: connection of two-way clear DS1/E1 circuits
- O.11021: connection of two-way multipoint circuits

- O.11101: connection of one-way or a range of cross-connect circuits
- O.11131: connection of one-way clear DS1/E1 circuits
- O.11121: connection of one-way multipoint or a range of cross-connect circuits
- O.15001: disconnection of two-way or a range of cross-connect circuits
- O.15002: disconnection of two-way or a range of cross-connect circuits
- O.15011: disconnection of two-way clear DS1/E1 circuits
- O.15101: disconnection of one-way circuits
- O.15111: disconnection of one-way clear DS1/E1 circuits
- O.15102: disconnection of one-way multipoint or a range of cross-connect circuits.

You may partially control the I-2000 response to a message of this type. In the FRAME ADMINISTRATION form, if you set the value of **ERP Control** to OFF, the I-2000 processes echoed response messages only if all point terminations are already in the I-2000 database. The database is updated and event messages are published. If any terminations are missing, the message is not processed and no action of any kind is taken.

If, on the other hand, **ERP Control** is set to ON, the I-2000 responds fully to every message of this type.

The I-2000 automatically activates or deactivates one-way, two-way, virtual multipoint or DMB multipoint circuits. It searches for the NPCs and channels referenced in the message. If it does not find them in the I-2000 database, it logs the message, but takes no action. If it finds the terminations, but no circuit is active, it activates a circuit, if that is what is required.

If the I-2000 must activate a circuit that is not in the I-2000 database at all, it automatically assigns a **Circuit ID** of the following format:

```
ERP fromnpc-fromchan tonpc-tochan BW/ bw class:seq
```

where:

fromnpc is the FROM NPC number in hierarchical or extended format, depending on how the frame was provisioned.

fromchan is the FROM channel number.

tonpc is the TO NPC number in hierarchical or extended format.

tochan is the TO channel number.

bw is the bandwidth, which is either 1 or the number of contiguous channels of a high-rate circuit.

class is the **Ckt Class**: FDX, HDX, BBL, BRD or DMB.

seq is a sequence number assigned to this circuit record. The number is incremented with each new circuit of the same **Ckt Class, BW**, and end points activated by this method.

If a nonexistent circuit must be deactivated, a message is logged but no action is taken. If an ERP circuit, a SYN circuit or a C2000 circuit must be deactivated, it is deleted. Otherwise, a circuit taken out of service is placed in **DEACTIVATED Ckt Status**.

The DACS does not recognize high-rate circuits with an alternating type of bandwidth. If the I-2000 receives a deactivation message for a circuit included in such a bandwidth, it deactivates all the circuits of the bandwidth and reactivates the ones not specified in the message.

All actions taken by ERP are logged and the log can be retrieved as a report (see Chapter 13).

Like any other I-2000 **Action**, an action generated in ERP can succeed or fail. The result of the attempt is reported in the **Ckt Status** field at the top of the screen, in the following format:

database/result:action explanation

where:

database Is the **Site Name** field value for this frame.

result Is one of these values:

SUCCESS	The action succeeded.
FAILURE	The action failed.

action Is a terse English description of the attempted action.

explanation Is the **Ckt ID** field value or an error message.

Echoed response processing for circuits and equipment are enabled whenever a DACS screening level is set to 4. See the section "Configuring the DACS" in Chapter 2. Echoed response processing may be disabled for a particular DACS by changing the link screening options in the DACS. To do so, follow these steps:

Step 1: Enter passthrough mode (see Chapter 12).

Step 2: Type the following command to set the link screening level to 2:

SET-PRVG-TERM: : : : SCR-2

For additional details concerning this command, refer to the input message format for NPC provisioning in the *Generic 3 (MML) Input/Output Message Reference Manual, V. II*.



NOTE:

If you disable ERP, the I-2000 database could drift apart from the DACS database, necessitating that you periodically perform a database audit followed by a database synchronization (see Chapter 9).

ALTERNATE ROUTING

7

When a transmission facility fails, it may be necessary for the I-2000 operator to switch circuits connected to that facility to an alternate route. This section describes how to use the **ALTRROUTE Action** to execute alternate routing, or altrouting, from the I-2000, and how the I-2000 handles circuit preempting and normalizing of altrouted circuits.

Also, the NPC ROLL selection moves all the circuits on one NPC to another.

Altrouting

The following constraints apply to altrouting:

- A circuit in any **Ckt Status** can be altrouted (rerouted to an alternate route), except circuits that are already in the **ALTROUTED Ckt Status**. You can even create a new circuit in the **ALTROUTED Ckt Status**.
- You can only **ALTRROUTE** a circuit once. Before altrouting a second time, you must first **DEACTIVATE** or **NORMALIZE** (return it to its primary route).
- An **ALTROUTED** circuit is not available for being preempted (bumped from a channel assignment) until it has been deactivated or normalized.
- An **ALTROUTED** circuit can only be deactivated, normalized, or deleted. It can be activated in **local only** mode.

In addition, for high-rate circuits:

ALTERNATE ROUTING

- When you ALTRROUTE an EFT in a multichannel circuit, all the channels on that side of the circuit get altrouted, possibly requiring the preempting of multiple circuits (see the section "Preempting" later in this chapter).

For multipoint circuits:

- Only the EFTs can be altrouted; the virtual node of a broadcast circuit or the DMB channel of a symmetric voice circuit or of a polling data circuit cannot be. Multipoint altrouting means that you change the EFTs of the legs, but not the branch point.

Most altrouting occurs when you use the I-2000 to route a circuit that is connected in the DACS (**ACTIVE Ckt Status**) through another DACS channel. This is a "real" ALTRROUTE **Action**.

However, an ALTRROUTE in which each channel end is altrouted to itself is called a "pseudo-"ALTRROUTE. The pseudo-ALTRROUTE allows you to put up a temporary circuit, in ALTRROUTE **Ckt Status**, that becomes deactivated on normalization, without special action to deactivate it.

Specify a **real** altroute via the ALTRROUTE screen, obtained as follows:

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

_____ CIRCUIT PROVISIONING _____

Site Name:DACS00	Ckt Status:NULL
Action:ALTRROUTE	Ckt Class:FDX
Ckt ID:circ1	
BBL ID:	

Hier	Ext	NPC ID	Ch	Mode
FROM:				
TO:				

Bandwidth:1	Bandwidth Type:A	Options:	NTR:
TC:0011,0011	IW:TRB	SC:	Framing:
Customer Name:	Service Date:DD MMM YY	Ckt Priority:00	
Loc A:	Loc Z:		
Rmks:			

Enter site name _____

HELP CHOICES NEXTPAGE QUIT RECNCILE TOP MENU PRINT EXECUTE

Figure 7-1. CIRCUIT PROVISIONING Form

Step 1: Obtain the CIRCUIT PROVISIONING form.

Step 2: Enter the **Site Name**, an **Action** of ALTRROUTE and the **Ckt ID**.

⇒ NOTE:

You must press **Enter** after entering the Ckt ID.

Step 3: Press **NEXTPAGE**.

The ALTRROUTE screen is available only in this way. It enables you to perform alternate channel connections and informs you what the PREEMPTED circuit(s) will be.

⇒ NOTE:

A *pseudo*-ALTRROUTE is entered on the CIRCUIT PROVISIONING form only.

The ALTRROUTE screen is as follows:

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- CIRCUIT PROVISIONING -----
Site Name:DACS00           Altroute Date & Time:
Ckt ID:circ1              Ckt Status:ACTIVE
Ckt Priority:00 Bandwidth:1   Bandwidth Type:A   Ckt Class:HDX
Rmks:
NORMAL      Hier  Ext           NPC ID           Ch
          FROM: 01101 0001  firstnpc        007
          TO:  01101 0001  firstnpc        008
ALTRROUTE
FROM:
TO:
Preempted
Ckt ID:              Status:           CP:
Enter the FROM Side NPC Number (Hierarchical format)
HELP  [ ]  NEXTPAGE  QUIT  RECNCILE  TOP MENU  PRINT  EXECUTE
    
```

Figure 7-2. The ALTRROUTE Screen

The ALTRROUTE screen contains the following sections of information:

CIRCUIT PROVISIONING

The fields on the top half of the screen are the essential fields from the first page of the CIRCUIT PROVISIONING form, which concern the circuit being altrouted. When the altrouting operation is complete, the **Ckt Status** field is ALTROUTED and the **Altroute Date & Time** field indicates the date and time the ALTRROUTE took effect.

NORMAL

The fields under **NORMAL** display the primary channel assignment of the ALTROUTED circuit, carried over from the first page.

ALTRROUTE

The fields under **ALTRROUTE** specify the channel assignment to which you are going to ALTRROUTE the circuit.

Preempted

The fields under **Preempted** identify information concerning circuits that are being preempted by this ALTRROUTE.

The following constraints apply to the use of the ALTRROUTE screen:

- If you enter an altrouted channel connection and press **EXECUTE**, the I-2000 verifies whether the channel you picked is spare.
- If you enter a **NPC ID** without a channel number, the I-2000 picks a spare channel from that NPC, if one is available. If one is not available, you must enter a channel.
- If the channel entered in any case is not spare, the I-2000 prompts you for preemption confirmation. Note that if you do not answer YES to all confirmation prompts, the entire altroute is terminated and you must start again from the beginning.
- If the ALTRROUTE is successful, the **Altroute Date & Time** indicates when these circuits were altrouted.
- When any circuit is in the ALTROUTED **Ckt Status**, you can call up the I-2000 database record for the circuit via the CIRCUIT PROVISIONING screen and observe the ALTRROUTE screen to see the routing destination, the time of altrouting and the circuit(s) preempted by the altrouting.
- The Preempted fields indicate the **Ckt ID**, **Ckt Status**, and **CP** fields of the PREEMPTED circuit. Use **NEXT** to scroll through the PREEMPTED circuits (if there are more than one).

The following table summarizes the fields of the ALTRROUTE screen and their values. For full descriptions, refer to Chapter 6.

Table 7-1. Summary of ALTRROUTE Screen Values

Name	Field Size	Values
Site Name	24	Established on the FRAME ADMINISTRATION form
Altroute Date & Time	19	DD MMM YY HH:MM:SS
Ckt ID	41	All printable characters except *, ?, \, [,], ^, ", %,
Ckt Status	11	ACTIVE, DEACTIVATED, ALTROUTED, PRE-EMPTED, PENDING, NULL
Ckt Priority	2	a-z, A-Z, 0-9
Bandwidth	2	1-24 NAS, 1-31 CEPT
Bandwidth Type	1	A or C
Ckt Class	3	FDX, HDX, BBL, BRD, DMB
Rmks	77	All printable characters except *, ?, \, [,], ^, ", %,
Hier	5	xyzz, xx is 01-16, y is 1-8, zz is 01-40
Ext	4	0001-256H
NPC ID	41	All printable characters except *, ?, \, [,], ^, ", %,
Ch	3	0-31 CEPT or 0-24 NAS
Preempted Ckt ID	41	All printable characters except *, ?, \, [,], ^, ", %,
Ckt Status	11	ACTIVE, PREEMPTED
CP	2	a-z, A-Z, 0-9

To complete a *real* ALTRROUTE:

Step 4: Fill in the **FROM** line under ALTRROUTE:

- **NPC ID:** facility01
- **Ch:** 001

Step 5: Fill in the **TO** line:

- **NPC ID:** facility01
- **Ch:** 002

Step 6: Press **EXECUTE** and select IMMEDIATE.

- The **Ckt Status** changes according to your circuit setup; hopefully, an **ALTROUTED** appears.
- A completion message appears.

Preempting

A circuit can be altrouted to a spare, unused channel (which is preferable but may be unavailable), or to a channel already in use by other circuits. In this latter case, the other circuits are preempted; that is, they are temporarily bumped off their channel assignment.

- Preempted circuits stay in the **PREEMPTED Ckt Status** until they are normalized or you manually change them to another **Ckt Status**.
- Once you manually change the **Ckt Status** of a **PREEMPTED** circuit, it can no longer be automatically normalized to its primary channel assignment; you would have to do this via a **CIRCUIT PROVISIONING Action**.
- An NPC and channel cannot be preempted twice. A second attempt is denied.
- Some channels on a **PREEMPTED** circuit may not be required for the **ALTROUTED** circuit. They are still available for preemption by other circuits.
- Once any channels on a circuit are preempted, that circuit is in the **PREEMPTED Ckt Status** and cannot be activated to carry traffic until all preempted channels on the circuit are normalized.
- If more than one circuit preempts the channels on a **PREEMPTED** circuit, the **PREEMPTED** circuit cannot be reactivated until all the preemption has been removed from its channels. The normalizing of the last preempted channel reactivates the **PREEMPTED** circuit.

In addition, for multipoint circuits:

- Any or all of the EFTs can be preempted. For DMB, either or both directions of an EFT can be preempted. For both virtual and DMB, the corresponding legs are then placed in **PREEMPTED Ckt Status**. However, the virtual node or DMB channel remains **ACTIVE**, meaning that additional legs can be attached to it at any time.

When you specify an altrouting operation that preempts **ACTIVE** circuits, the I-2000 displays a pop-up insert prompting for a confirmation of the preemption, and you must enter **YES** to authorize the preemption. When you **ALTROUTE** a multichannel circuit requiring the preemption of multiple circuits, you must authorize the preemption of each circuit. A new confirmation insert pops up for

each preempted channel. If you select NO at any point, the entire **ALTROUTE Action** is canceled.

Normalizing

When you **NORMALIZE** an **ALTROUTED** circuit, the circuit is rerouted from its temporary channel to the original channel for which it was provisioned and is returned to its **pre-ALTROUTED** connection **Ckt Status**. Any **PREEMPTED** circuits are reactivated.

- When you **NORMALIZE** a real **ALTROUTED** circuit, the original circuit is restored to **ACTIVE Ckt Status**.
- When you **NORMALIZE** a pseudo-**ALTROUTED** circuit, the original circuit is restored to **DEACTIVATED Ckt Status**.
- **DEACTIVATE** also performs a **NORMALIZE** and leaves the original circuit in the **DEACTIVATED Ckt Status**, whether it was a real or a pseudo-**ALTROUTE**.
- If another circuit was preempted by the **ALTROUTED** circuit, the I-2000 attempts to reactivate the **PREEMPTED** circuit, provided that the circuit just returned to **ACTIVE** was the only one preempting it.
- Circuits which cannot be reactivated for any reason are put in **DEACTIVATED Ckt Status** so that the user can work on them when conditions permit.
- If a conflict arises during a normalization, the preempted circuits are put into a **DEACTIVATED Ckt Status** to be worked on later by the user.

To normalize:

- Step 1:** From the **CIRCUIT PROVISIONING** form, call up the record for the **ALTROUTED** circuit you want to normalize. You can do this by entering the **Site Name** and **Ckt ID**.
- Step 2:** Enter an **Action** of **NORMALIZE**.
- Step 3:** Press **EXECUTE** and select **IMMEDIATE**.
- The **ALTROUTED** circuit is disconnected and reactivated on its primary channel assignments.
 - The screen is updated to reflect the new **Ckt Status** of the circuit.

To normalize an NPC that was out of service,

- Step 1:** Obtain the **CIRCUIT PROVISIONING** form.

- Step 2:** Enter or select:
- **Action:** MODIFY
 - **Options:** D
- This option selects OOS.

⇒ NOTE:
You must also select the options previously in effect.

- Step 4:** Press **EXECUTE** and confirm.
- Step 5:** NORMALIZE as described in the previous procedure.

Examples of Altrouting and Normalizing

This section contains integrated examples of altrouting and normalizing. The model underlying these examples is shown below.

In the figure, the following NPCs have been provisioned:

Table 7-2. Sample Provisioned NPCs

NPC NO.	NPC ID	NPC TYPE	NPC NO.	NPC ID	NPC TYPE
001	dgrpA	DE210	004	dgrpF	DE210
002	dgrpD	DE210	121	dgrpB	PB144
003	dgrpG	DE210	122	dgrpC	PB144

Also the following circuits have been provisioned:

Table 7-3. Sample Provisioned Circuits

CKT ID	CLASS	BW	BW TYPE	FROM		TO	
				NPC	CHAN	NPC	CHAN
MM01	FDX	3	C	dgrpA	06	dgrpB	02
MM02	FDX	4	C	dgrpC	12	dgrpB	12
MM03	HDX	2	A	dgrpA	18	dgrpA	21
MM04	HDX	1	-	dgrpA	19	dgrpA	20
MM05	FDX	1	-	dgrpD	15	dgrpG	17

Table 7-3. Sample Provisioned Circuits

CKT ID	CLASS	BW	BW TYPE	FROM		TO	
				NPC	CHAN	NPC	CHAN
MM06	HDX	1	-	dgrpF	05	dgrpG	09
MM07	HDX	1	-	dgrpG	08	dgrpF	04

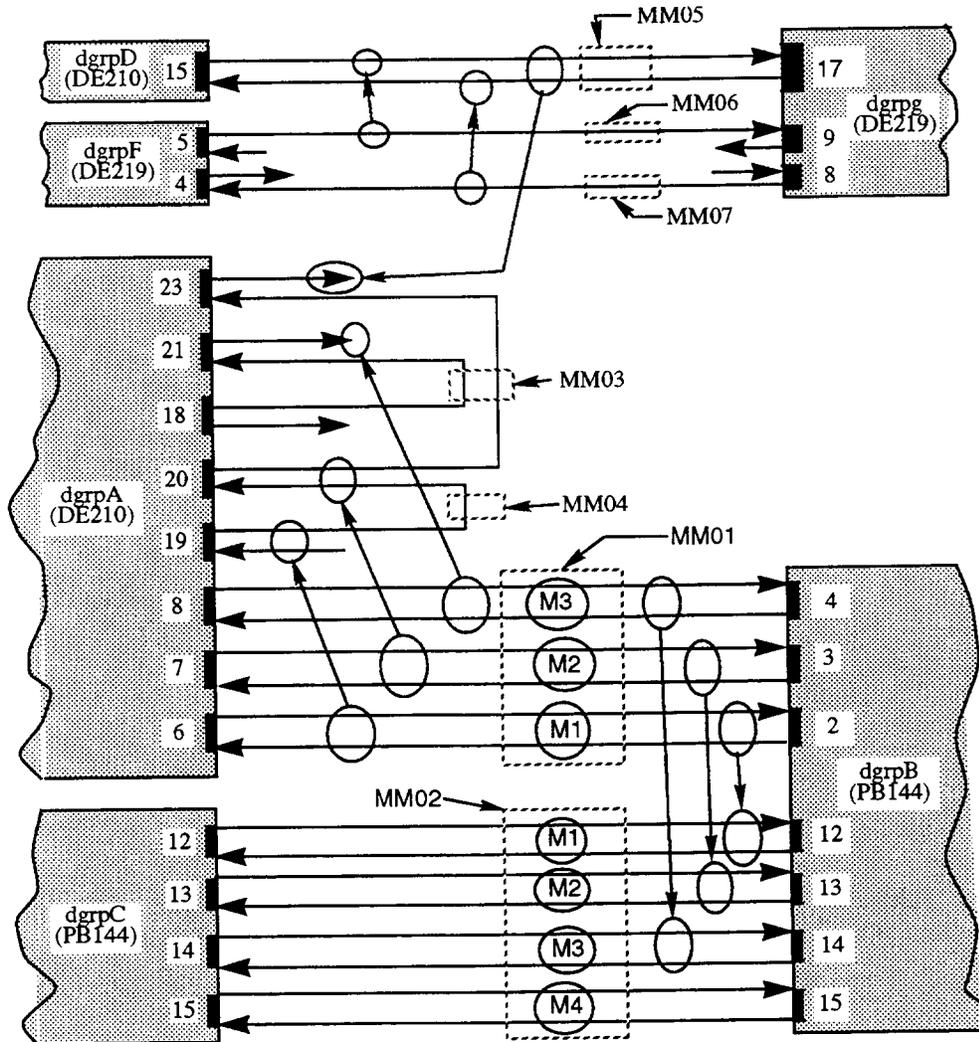


Figure 7-3. Example of Altrouting

Single-channel Circuits

Real ALTRROUTE

This example illustrates how to do an ALTRROUTE of a real, single-channel, two-point, full-duplex, NAS-only circuit. The TO side is changed to a spare channel. Circuit MM05 currently goes from dgrpD, Channel 15, to dgrpG, Channel 17. The example altroutes MM05 to dgrpG, Channel 1, which is spare, and is not shown. No preemptions are necessary.

Step 1: Select CIRCUIT from the PROVISIONING menu.

Step 2: Enter the following data, being sure to press **Enter**:

— **Action:** ALTRROUTE

— **Ckt ID:** MM05

The I-2000 confirms the existing circuit. The **Ckt Status** is ACTIVE.

Step 3: Press **NEXTPAGE**.

Step 4: Enter the following data under ALTRROUTE:

— **TO NPC ID:** dgrpG

— **TO Ch:** 1

Step 5: Press **EXECUTE** and select IMMEDIATE. The result is

— The I-2000 sends commands to disconnect the original TO and connect the altrouted TO.

— **Altroute Date & Time** is filled in.

— The **Ckt Status** field changes to ALTROUTED.

— A completion message from the I-2000 appears.

To normalize the previous example:

Step 1: After selecting CIRCUIT under PROVISIONING, enter

— **Action:** NORMALIZE

— **Ckt ID:** MM05

The I-2000 confirms the existing circuit. The **Ckt Status** is ALTROUTED.

Step 2: Press **EXECUTE** and select IMMEDIATE.

— The I-2000 sends commands to the DACS to disconnect the altrouted TO and connect the original TO.

- The **Ckt Status** field changes to ACTIVE.
- A completion message from the I-2000 appears.

Pseudo-ALTRROUTE

This example performs a pseudo-ALTRROUTE on the same original circuit as in the previous example; i.e., on MM05.

Step 1: Select CIRCUIT under PROVISIONING.

Step 2: Enter the following data:

- **Action:** ALTRROUTE
- **Ckt ID:** MM05

The I-2000 displays the information for the **Ckt ID**.

- **TO NPC ID:** dgrpG
- **TO Ch:** 017

Step 3: Press **EXECUTE** and select IMMEDIATE.

- The **Ckt Status** field changes to ALTROUTED.
- The completion message appears.

To normalize the previous example:

Step 1: After selecting CIRCUIT under PROVISIONING, enter

- **Action:** NORMALIZE
- **Ckt ID:** MM05

The I-2000 confirms an existing circuit. The **Ckt Status** is ALTROUTED.

Step 2: Press **EXECUTE**, select IMMEDIATE.

- The **Ckt Status** field changes to DEACTIVATED.
- The completion message appears.

ALTRROUTE of a Half-duplex Circuit to Part of a Full-duplex Circuit

This example performs a real ALTRROUTE of a single-channel, half-duplex, NAS-only circuit, MM06. The FROM end is changed to one direction of an EFT, dgrpD, Channel 15, which is already in use for a full-duplex circuit, MM05. The result is its preemption.

Step 1: Enter the following data under CIRCUIT PROVISIONING:

— **Action:** ALTRROUTE

— **Ckt ID:** MM06

The I-2000 confirms the existing circuit. The **Ckt Status** is ACTIVE.

Step 2: Press **NEXTPAGE**, and then enter the following data under ALTRROUTE:

— **FROM NPC ID:** dgrpD

— **FROM Ch:** 15

Step 3: Press **EXECUTE** and select IMMEDIATE, and also answer YES when asked if it is OK to preempt circuit MM05.

— The **Ckt Status** of the MM06 circuit changes to ALTROUTED.

Step 4: Enter the following data:

— **Ckt ID:** MM05

— The **Ckt Status** field now says PREEMPTED.

To normalize the previous example:

Step 1: Enter the following data in CIRCUIT PROVISIONING:

— **Action:** NORMALIZE

— **Ckt ID:** MM06

The I-2000 confirms the existing circuit. The **Ckt Status** is ALTROUTED.

Step 2: Press **EXECUTE** and select IMMEDIATE; observe that the **Ckt Status** of MM06 changes to ACTIVE.

Step 3: Enter the following data:

— **Ckt ID:** MM05

— The **Ckt Status** field now says ALTROUTED.

ALTRROUTE of a Half-duplex Circuit to the Unused Part of a Preempted Full-duplex Circuit

This example performs a real ALTRROUTE of a single-channel, half-duplex circuit, MM07. The TO side is changed to the unused side of a full-duplex circuit, MM05, that has already been preempted by another half-duplex circuit.

Step 1: Enter the following data within CIRCUIT PROVISIONING:

— **Action:** ALTRROUTE

— **Ckt ID:** MM07

The I-2000 confirms the existing circuit. The **Ckt Status** is ACTIVE.

Step 2: Enter the following data under ALTRROUTE:

— **TO NPC ID:** dgrpD

— **TO Ch:** 15

Step 3: Press **EXECUTE**, select IMMEDIATE, and also reply YES when asked if it is OK to preempt circuit MM05. Soon, after the completion message appears, the **Ckt Status** field changes to ALTROUTED.

To normalize the previous circuit:

Step 1: Enter on the CIRCUIT PROVISIONING form:

— **Action:** NORMALIZE

— **Ckt ID:** MM07

The I-2000 confirms the existing circuit. The **Ckt Status** is ALTROUTED.

Step 2: Press **EXECUTE** and select IMMEDIATE. Then observe that the completion message appears and that the **Ckt Status** field changes to ACTIVE.

Step 3: Enter

— **Ckt ID:** MM05

The **Ckt Status** field now says ALTROUTED.

High-rate Circuits

ALTRROUTE of a Real, High-rate Circuit

This example demonstrates the ALTRROUTE of a real, high-rate, two-point, full-duplex gateway circuit, MM01. Both ends (FROM and TO) are changed to EFTs already in use by other circuits: the initial FROM **Ch** is changed to dgrpA, Channel 19, and the corresponding TO **Ch** is changed to dgrpB, Channel 12. These ends are already in use by circuits MM04 and MM02, respectively, and dgrpA, Channel 21 is in use by Circuit MM03. The result is preemption of MM02, MM03 and MM04.

Step 1: After selecting CIRCUIT PROVISIONING, enter the following data, being sure to press **Enter**:

— **Action:** ALTRROUTE

— **Ckt ID:** MM01

The I-2000 confirms the existing circuit. The **Ckt Status** is ACTIVE.

Step 2: Press **NEXTPAGE**, and then enter the following data under ALTROUTE:

- **FROM NPC ID:** dgrpA
- **FROM Ch:** 19
- **TO NPC ID:** dgrpB
- **TO Ch:** 12

Step 3: Press **EXECUTE** and select IMMEDIATE.

Step 4: Also answer YES when asked if it is OK to preempt circuits MM02, MM03, and MM04.

Step 5: The following actions occur:

- The I-2000 sends a disconnect command for the MM01 circuit.
- The frame sends a COMPLD message.
- The I-2000 sends a disconnect command for the MM02 circuit.
- The frame sends a COMPLD message.
- The I-2000 sends two disconnect commands for the MM03 circuit.
- The frame sends a COMPLD message.
- The I-2000 sends a disconnect command for the MM04 circuit.
- The frame sends a COMPLD message.
- The I-2000 sends a connect command for the MM01 circuit on DGRPA/channel 19 and DGRP B/channel 12.
- The frame sends a COMPLD message.
- The **Ckt Status** of MM01 circuit changes to ALTROUTED.
- The I-2000 displays a completion message.

Step 6: Enter the following data:

- **Ckt ID:** MM02

The **Ckt Status** field changes to PREEMPTED.

Step 7: Enter the following data:

- **Ckt ID:** MM03

The **Ckt Status** field changes to PREEMPTED.

Step 8: Enter the following data:

- **Ckt ID:** MM04

The **Ckt Status** field changes to PREEMPTED.

The circuit of the previous example is normalized as follows. Note the restoration of multiple circuits.

Step 1: In CIRCUIT PROVISIONING, enter the following data:

- **Action:** NORMALIZE
- **Ckt ID:** MM01

The I-2000 confirms the existing circuit. The **Ckt Status** is ALTROUTED.

Step 2: Press **EXECUTE** and select IMMEDIATE. The result is

- The I-2000 sends a disconnect command for the MM01 circuit on dgrpA/channel 19 and dgrpB/channel 12.
- The frame sends a COMPLD message.
- The I-2000 sends a connect command for the MM01 circuit on dgrpA/channel 6 and dgrpB/channel 2.
- The frame sends a COMPLD message.
- The I-2000 sends a connect command for the MM02 circuit.
- The frame sends a COMPLD message.
- The I-2000 sends a connect command for the MM04 circuit:
- The frame sends a COMPLD message.
- Finally, the **Ckt Status** of the MM01 circuit changes to ACTIVE.

Step 3: Now enter these data:

- **Ckt ID:** MM02

The **Ckt Status** field changes to ACTIVE.

Step 4: Enter the following:

- **Ckt ID:** MM03

The **Ckt Status** field changes to PREEMPTED.

Step 5: Enter the following data:

- **Ckt ID:** MM04

The **Ckt Status** field changes to ACTIVE.

ALTROUTE of a Single-channel Circuit to the Unused Part of a Preempted High-rate Circuit

This example performs a real ALTROUTE of a single-channel, full-duplex circuit, MM05. The FROM end is changed to an unused EFT of a high-rate circuit, MM03, that has already been preempted.

Step 1: Enter the following data under CIRCUIT PROVISIONING:

- **Action:** ALTRROUTE
- **Ckt ID:** MM05

The I-2000 confirms the existing circuit. The **Ckt Status** is PRE-EMPTED.

Step 2: Enter the following data under ALTRROUTE CHANNEL CONNECTION:

- **FROM NPC ID:** dgrpA
- **FROM Ch:** 23

Step 3: Press **EXECUTE**, select IMMEDIATE, and reply YES when asked if it is OK to preempt circuit MM03. After the completion message, the **Ckt Status** of the MM05 circuit changes to ALTROUTED.

Step 4: Generate and print an ALTROUTED CIRCUITS data report:

- Press **TOP MENU**, select REPORT OPERATIONS from the MAIN MENU, and select ALTROUTES/PREEMPTIONS from the REPORT OPERATIONS menu.
- Select ALTROUTED CIRCUITS.
- Press **EXECUTE** and confirm to get a listing of all ALTROUTED circuits.
- Wait for the report to be generated, select DISPLAY LAST GENERATED REPORT, and then select PRINTER.

Step 5: Observe that the report lists circuits MM01, MM05, MM06, and MM07.

Step 6: Now print a PREEMPTED CIRCUITS report:

- Proceed as in Step 4 except select PREEMPTED CIRCUITS instead of ALTROUTED CIRCUITS.
- Press **EXECUTE** and confirm to get a listing of all ALTROUTED circuits.
- Wait for the report to be generated, select DISPLAY LAST GENERATED REPORT, then select PRINTER.

The report lists circuits MM02, MM03, and MM04.

To normalize circuit MM05:

Step 1: At CIRCUIT PROVISIONING enter the following data:

- **Action:** NORMALIZE
- **Ckt ID:** MM05

The I-2000 confirms the existing circuit. The **Ckt Status** is ALTROUTED.

- Step 2:** Press **EXECUTE** and select IMMEDIATE. The result is
- The I-2000 sends a disconnect command for the MM05 circuit on dgrpA/channel 23.
 - The frame sends a COMPLD message.
 - The I-2000 sends a connect command for the MM05 circuit on dgrpD/channel 15.
 - The frame sends a COMPLD message.
 - The I-2000 sends two connect commands for the MM03 circuit.
 - The frame sends a COMPLD message.
 - The **Ckt Status** of the MM05 circuit changes to ACTIVE.
 - The I-2000 sends a completion message.
- Step 3:** Repeat the steps given earlier for printing an ALTROUTED CIRCUITS report. The report should NOT list circuits MM01, MM05, MM06, and MM07.
- Step 4:** Then print a PREEMPTED CIRCUITS report. It should NOT list circuits MM02, MM03, and MM04.

Multipoint Circuits

ALTROUTE of a Leg in a Broadcast Circuit

This example demonstrates how to move the source of the broadcast in the virtual multipoint example from Chapter 6, "CIRCUIT PROVISIONING," from NPC 33JJ09, Channel 1, to a spare channel, NPC 33KK16, Channel 10.

- Step 1:** On the CIRCUIT PROVISIONING form, enter:
- **Action:** ALTROUTE
 - **Ckt ID:** MULTIN
- The I-2000 confirms the existing circuit. The **Ckt Status** is ACTIVE.
- Step 2:** Press **NEXTPAGE**, and then enter the following data under ALTROUTE:
- **FROM NPC ID:** 33JJ09
 - **FROM Ch:** 001
- Step 3:** Press **EXECUTE** and select IMMEDIATE.
- The **Ckt Status** of circuit MULTIN changes to ALTROUTED.
 - A completion message from the I-2000 appears.

Step 4: Navigate to **FROM NPC ID** and use **NEXT** to scroll through the BRDs. Their **Ckt Statuses** remain **ACTIVE**.

The leg can be returned to service as it was, and any other leg can be restored by normalization.

NPC ROLL Selection

Introduction

Using the NPC ROLL selection of the PROVISIONING menu, you may switch all circuit connections from one facility NPC to another. NPC types that can be rolled are DC, DE, TE, PB, PC, DA, PA, and TA. The following constraints apply:

- The NPCs must be present on the frame.
- Both NPCs must be in the I-2000 database.
- The **Roll To** NPC must have a **State** of **IS**.
- No channel in the **Roll To** NPC may be assigned to any circuit in the **ACTIVE**, **ALTROUTED**, or **PREEMPTED Ckt Status**.
- No channel in the **Current NPC** may be assigned to any substrate circuit.
- The NPCs must not be Test Port Groups.

An NPC ROLL affects circuits in **ACTIVE** or **ALTROUTED Ckt Status** only. At the beginning of the roll, **ACTIVE** circuits are placed in **DEACTIVATED Ckt Status** and **ALTROUTED** circuits are placed in **DEROUTED Ckt Status**. If the system fails during the roll, they remain in those **Ckt Statuses**. At the end of the roll, they are returned to their original **Ckt Statuses**.

An NPC ROLL changes every reference to the NPC throughout the I-2000 system; for example, in all RPs, ARPs and in stored data resulting from NPC PROVISIONING.

NPC ROLL Form

To transfer circuit connections from one NPC to another, select NPC ROLL from the PROVISIONING menu.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
_____ NPC ROLL _____
Site Name:DACS00
      Hier  Ext      NPC ID      Type
Current:
Roll To:

Enter site name _____
HELP CHOICES QUIT TOP MENU PRINT EXECUTE
    
```

Figure 7-4. NPC ROLL Form

Field Descriptions

Table 7-4. NPC ROLL Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the printable ASCII character set, excluding *, ?, \, [,], ^, ", %, !. Blanks are allowed within a name, but leading and trailing blanks are ignored. Enter the name of the frame on which the Current and Roll To NPCs are provisioned.
Current Hier, Ext, NPC ID	Mandatory. The hierarchical number, extended number, or NPC ID of the NPC from which the circuits are to be rolled. Whichever field you select, the others will be filled in automatically.
Current Type	Display only. The Type of the Current NPC, from the NPC PROVISIONING form. The value of this field is determined by the DACS hardware supporting the NPC of this number.

Table 7-4. NPC ROLL Field Descriptions

Roll To Hier, Ext, NPC ID	<p>Mandatory. The identifiers of the NPC to which the circuits are to be rolled. The Current and Roll To NPCs must match as follows, or you will not successfully complete a roll with these NPCs:</p> <ul style="list-style-type: none"> — Any DE**x, TE**x, DC**x or DA**x will match any other DE**x, TE**x or DA**x respectively except where x is 9 (Clear DS1 types). — Any DE**9, TE**9, DC**9 or DA**9 will match any other DE**9, TE**9, DC**9 or DA**9 respectively. — Any PA***, PB*** or PC*** will match any other PA***, PB*** or PC*** respectively, so long as both are CAS type or NAS type.
----------------------------------	--

Examples of Operation

Circuits are to be rolled from 55US23 to 43TZ86. Both are IS NPCs of **Type DE**.

Step 1: Select PROVISIONING from the MAIN MENU and NPC ROLL from the PROVISIONING menu.

Step 2: Enter the following data, or use the displayed defaults:

- **Site Name:** DACS00
- **Current NPC ID:** 55US23
- **Roll To NPC ID:** 43TZ86

Step 3: Press **EXECUTE** and confirm. The task executes in the background only.

- The I-2000 **Status** line displays an IN PROGRESS message.
- All references to the current NPC in the I-2000 are replaced with **Roll To NPC** data.
- The IN PROGRESS changes to NO LONGER IN PROGRESS.

A circuit failure during the roll is logged the same way as a failure at any other time. The roll continues.

To see the results of the roll, access the NPC ROLL Report (see Chapter 13, "REPORT OPERATIONS"). Only the results of the last NPC ROLL are available.

Introduction To Reconfiguration Plans

A reconfiguration plan specifies a sequence of circuit-provisioning **Actions** to be executed automatically when you execute the plan. The number of **Actions** you can enter is virtually unlimited. These **Actions** reconfigure the **Ckt Status** of circuits already in the database. They cannot be used to **ACTIVATE** a new circuit from **NULL Ckt Status**.

A plan is defined in two steps:

- First you **CREATE** the plan, which opens a blank plan in the I-2000 database associated with the **Site Name** you specify in the creation screen.
- Then you **INSERT** the items, which are the allowed circuit-provisioning **Actions**, into the plan one by one. Each is assigned a sequence number.

When you **EXECUTE** the plan, the I-2000 simply goes down the list executing the items. The completion results of each step are logged. If some time has elapsed since the plan was created, some circuits may no longer exist on the I-2000. In that case, the I-2000 does not try to execute the item.

Ordinarily the I-2000 waits three minutes for a reply from the frame before reporting a `timeout` error message in the **COMMAND RESPONSE** box. For a circuit reconfiguration **Action**, the I-2000 waits a default time of 30 minutes. Since the RP is being executed in the background, the I-2000 does not report a timeout on the screen. Instead, it places the `timeout` error message in the database, to be retrieved with an RP report.

An automatic reconfiguration plan (ARP) is a plan of plans. Just as a single plan lists a sequence of circuit-provisioning **Actions** to be executed, the automatic plan lists a sequence of plans to be executed. An ARP is defined in the same way as an RP, and typically whatever applies to the items of the RP also applies to the items of the ARP.

An ARP can be set to execute when triggered by the receipt of a major or critical alarm from a specified NPC. Within each ARP is a list of RPs and also a list of NPCs whose alarms will be triggers for that ARP. The items of an ARP can, therefore, be one of two types: an RP to be executed or an NPC to be added to (or removed from) the list.

Single Plans

RP PROVISIONING Form

Select RECONFIGURATION PLAN from the PROVISIONING menu.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- RECONFIGURATION PLAN PROVISIONING -----
Site Name:DACS00                               RP Status:
RP Action:INSERT                               RP ID:
Ckt ID:                                         Sequence:
Class:                                         Action:ALTRROUTE
Bandwidth:1                                   CP:00:                                         Status:
                                           Bandwidth Type:A
NORMAL      Hier  Ext          NPC ID          Ch
FROM:
TO:
ALTRROUTE
FROM:
TO:
Preempted                                     Status:      CP:
Ckt ID:
Enter the FROM Side NPC Number (Hierarchical format)
HELP  [ ]  [ ]  QUIT  [ ]  TOP MENU  PRINT  EXECUTE
    
```

Figure 8-1. RECONFIGURATION PLAN (RP) PROVISIONING Form

If the **RP Action** is not INSERT, REMOVE, or CHANGE, then only **Site Name**, **RP Status**, **RP Action**, and **RP ID** appear. The **ALTRROUTE** and **Preempted Ckt ID** fields appear only if the circuit **Action** is ALTRROUTE.

Field Descriptions

Table 8-1. RP Field Descriptions

Site Name Mandatory. 1 through 24 characters from the ASCII printable character set, excluding *, ?, \, [,], ^, ", %, |. Blanks are allowed within a name, but leading and trailing blanks are ignored.

Enter the name of the DACS frame on which this circuit action (**Action**) is to be executed.

Table 8-1. RP Field Descriptions

RP Status	<p>Inaccessible through form. Indicates whether the plan has been EXECUTED or is IDLE: either never executed or executed and subsequently made IDLE by an RP Action of IDLE.</p> <p>Note that reconfiguration plans are executed in the background. The status displayed on the screen is the status retrieved from the database. Therefore, if you execute the plan, the RP Status may still indicate IDLE.</p> <p>You can update the screen at any time by entering the RP ID. The I-2000 retrieves the current RP Status.</p>
RP Action	<p>Mandatory. Reconfiguration plan action.</p> <p>CREATE Applies to plans only. Creates a reconfiguration plan, uniquely identified by an RP ID.</p> <p>DESTROY Applies to plans only. Deletes the RP. Once the DESTROY form has been filled in and executed, the RP is no longer in the I-2000.</p> <p>If the RP is listed in an ARP, the DESTROY is rejected.</p> <p>BOOT Applies to plans only. Locates all ACTIVE and ALTROUTED circuits in the I-2000 database, and places an item for each one of them in a special RP having the RP ID of BootDacs. Each item will bring about the same circuit status in the DACS as exists in the I-2000.</p> <p>BOOT then performs an EXECUTE on this plan in the DACS-only mode, thereby booting the DACS database. If every item completes successfully, the DACS database will record the same in-service circuits as does the I-2000 database. Unlike other RP Actions, which log both successes and failures, BOOT only logs the failures.</p> <p>INSERT Applies to items only. Inserts an item into the plan in the position indicated by the Sequence.</p> <p>If the position is already occupied, the I-2000 places your item in front of the existing entry and adjusts the rest of the sequence numbers.</p> <p>If you specify a sequence number that is higher than any existing entries, the I-2000 inserts the item at the end of the plan and assigns it the last number in the sequence.</p>

Table 8-1. RP Field Descriptions

	<p>A circuit must have some status before it can be inserted; i.e., it must exist in the I-2000 database.</p> <p>A circuit can only be inserted in a plan once. However, the same circuit can be used in different plans.</p>
REMOVE	<p>Applies to items only. Removes an item from the plan. The I-2000 automatically renumbers all subsequent entries in that plan.</p>
CHANGE	<p>Applies to items only. Changes the information in an item. An exception is the Sequence. It identifies the items in the plan and, therefore, cannot be changed directly.</p> <p>To change the position (Sequence) of an item in the plan, you must REMOVE the item and INSERT it where you want it to be.</p>
EXECUTE	<p>Applies to plans only. Executes the plan specified by RP ID. Execution consists of first performing a CHECK, then executing the Actions of all items not internally marked null, in order of Sequence. Nullified items are logged anyway.</p> <p>EXECUTE does not affect circuits already in the desired circuit status.</p> <p>Upon completion, EXECUTE reports the number of circuit provisioning actions that were attempted and the number that were successfully completed. You can inspect these results by running the reconfiguration plan results report (see Chapter 13).</p> <p>The results of only the most recent CHECK, EXECUTE or IDLE are saved in the results log for an RP.</p> <p>If a circuit provisioning action was unsuccessful, you can modify the plan or correct the condition that prevented execution and then execute the plan as many times as it takes to bring about all the desired circuit statuses.</p>

Table 8-1. RP Field Descriptions

IDLE	<p>Applies to plans only. Reverses the provisioning accomplished by a previous execution of the plan specified in RP ID; i.e., changes each circuit status back to what it is presumed to have been before. We presume you will be starting from ACTIVE, DEACTIVATED, or PENDING.</p> <p>Exception: a circuit that had been in the PENDING status before the plan was executed is placed into the DEACTIVATED status by IDLE.</p> <p>IDLE undoes the provisioning in the reverse order of the plan, starting with the last item and finishing with the first, regardless of the order in which the circuits actually were provisioned. If IDLE discovers an action that cannot be reversed, because the circuit does not exist, it internally marks the Status null.</p>
CHECK	<p>Applies to plans only. Checks the circuits in the plan specified by RP ID against the circuits in the current I-2000 database, to determine which circuits have been deleted from the database. If an item specifies a circuit that does not now exist, the item is internally marked null.</p> <p>When CHECK completes, it displays an I-2000 status message listing how many items can be successfully completed. To find out which items cannot complete and why, run the reconfiguration plan results report (see Chapter 13). Then correct the problems and perform CHECK again.</p> <p>EXECUTE, IDLE, and CHECK keep a results log for each RP. The reconfiguration plan results report is taken from the log. One use of one of these commands overwrites the data in the log from the previous use.</p>
CLEAN	<p>Applies to plans only. Looks for every circuit referenced in the plan. If it does not find the circuit in the appropriate I-2000 DACS database, CLEAN removes its reference from the plan.</p>

Table 8-1. RP Field Descriptions

	<p>ABORT Applies to plans only. Aborts the plan currently running as a background process. Background plans are started by BOOT, IDLE, EXECUTE, or CHECK. Once an ABORT is entered, the I-2000 finishes the current circuit and stops. Circuits already reconfigured remain reconfigured.</p>
RP ID	Mandatory, up to 12 characters. Identifies the reconfiguration plan that is to be affected by the RP Action .
Sequence	Up to 5 characters. Mandatory for RP Actions of INSERT , REMOVE , CHANGE ; not accessible in other cases. Specifies the sequence number identifying the item in the plan.
Ckt ID	For items only. 1 through 41 characters. Identifies the circuit to which the Action of this item pertains. The circuit must already be in the database, but it can have any status there.
Action	For items only. Specifies the operation to be performed when the plan is executed. The possible Actions are
	<p>ACTIVATE Changes the Status of an already existing I-2000 circuit from PENDING or DEACTIVATED to ACTIVE, and cross-connects it in the DACS, making it a traffic-carrying circuit. The I-2000 validates all fields before activating a circuit. If the circuit Status is ACTIVE, ALTROUTED, or PRE-EMPTED, this RP ACTIVATE will fail.</p>
	<p>DEACTIVATE Changes the specified circuit in the I-2000 database to DEACTIVATED and disconnects it in the DACS.</p>
	<p>ALTROUTE Changes the specified circuit to ALTROUTED. Altrouting may involve the preemption of other circuits. The operator will be informed of each preemption and will be required to confirm before this item can be successfully placed in the plan. A circuit can be altrouted only once, and an ALTROUTED circuit cannot be preempted. ALTROUTE is the default Action.</p>

Table 8-1. RP Field Descriptions

	Between the time when the ALTROUTE item is entered and the time when the RP is executed, the EFTs to which the circuit is to be altrouted may have changed status. The user will be notified in the preemption confirmation pop-up inserts of their new status, and may then alter the ALTROUTE .
Class	A display-only field indicating the Ckt Class (see Chapter 6, "Circuit Provisioning") of the circuit identified by Ckt ID .
FDX	Full-duplex, a two-way, two-point circuit.
HDX	Half-duplex, a one-way, two-point circuit.
BBL	Backbone leg, a one-way, backbone leg broadcast circuit.
BRD	Branch leg, a one-way, branch leg broadcast circuit.
DMB	Digital multipoint bridge, a two-way, multipoint circuit leg.
CP	A display-only field indicating the CP (circuit priority). Indicates the relative importance of the circuit for restoral actions. 1 is the highest priority, then 2, 3, 4, 5; 00 is the lowest. Note that each such number is a level comprising six bands of equivalence, A-F; e.g., 2A-2F, 3A-3F, etc. Level 1 has 7 bands, 1A-1G.
Status	A display-only field indicating the current operating status of the circuit, as follows:
NULL	The Ckt ID does not identify a circuit currently in the I-2000 or DACS databases. The RP Action will not be accepted, and, therefore, the circuit cannot be used in the plan.
PENDING	The circuit is in the I-2000 database, but is not cross-connected in the DACS. It is ready to be made ACTIVE on user request. To cross-connect the circuit, use the ACTIVATE Action , in the plan.
DEACTIVATED	The circuit is in the I-2000 database but is not cross-connected in the DACS. It was ACTIVE , but was disconnected with a DEACTIVATE Action . To cross-connect the circuit, use the ACTIVATE Action .

Table 8-1. RP Field Descriptions

	ALTROUTED	The circuit is present in the DACS and I-2000 databases, is cross-connected in the DACS, and is carrying transmission. However, it was temporarily rerouted over an alternate path with an ALTROUTE Action . If any part of the alternate path was in use by another circuit, that circuit was placed in PREEMPTED Ckt Status . An IDLE RP Action is required to return the ALTROUTED circuit to its original path.
	PREEMPTED	The circuit was ACTIVE in the DACS, but has been temporarily disconnected for use by an ALTROUTED circuit. The circuit is in the I-2000 database only and is not carrying transmission. One or more of its channels are being used by one or more ALTROUTED circuits. The IDLE RP Action that returns the ALTROUTED circuits to normal also returns the PREEMPTED circuits to normal.
	ACTIVE	The circuit is present in the DACS and I-2000 databases, is cross-connected in the DACS, and is carrying transmission.
Bandwidth		A display-only field indicating the circuit bandwidth, as described in Chapter 6.
Bandwidth Type		A display-only field indicating how bandwidth is allocated in an NPC, as described in Chapter 6.
NORMAL fields		Display-only fields indicating the initial TO and FROM identifying information of the circuit: the NPC number in both hierarchical and extended format, the NPC ID , and channel number (Ch).
ALTROUTE fields		User-accessible fields specifying the altrouting information, if the Action is ALTROUTE . Fill in the FROM and TO NPC and channel identifiers for this ALTROUTE destination, just as you would on the ALTROUTE screen (see Chapter 7).
Preempted fields		The circuit identifiers for circuits that are preempted by this ALTROUTE , as they would appear on the ALTROUTE screen (see Chapter 7).

Examples of Operation

Creating a Reconfiguration Plan

Step 1: Select RECONFIGURATION PLAN from the PROVISIONING menu.

Step 2: Enter the following data:

— **Site Name:** dacs00

— **RP Action:** CREATE

— **RP ID:** testplan

Step 3: Press **EXECUTE** and confirm.

— **RP Status** says IDLE.

— A completion message from the I-2000 appears.

If the plan already exists, you are notified:

THE SPECIFIED PLAN ID IS ALREADY IN DATABASE

Inserting Activations and Deactivations

In this example, we assume Ckt01 is in the I-2000 database with a **Ckt Status** of PENDING.

Step 1: Enter these data:

— **Site Name:** DACS01

— **RP Action:** INSERT

The appropriate fields appear on the form.

— **RP ID:** testplan

The **RP Status** is filled in.

— **Sequence:** 1

— **Ckt ID:** Ckt01

The circuit information is filled in.

— **Action:** ACTIVATE

The appropriate fields appear on the form.

Step 2: Press **EXECUTE** and confirm.

— All but the default information disappears.

— The **Sequence** increases by one.

— A completion message from the I-2000 appears.

Step 3: Go on and insert as many more **Ckt IDs** as you wish.

To remove an item from the plan:

Step 1: Enter these data:

- **Site name:** DACS01
- **RP Action:** REMOVE
- **RP ID:** testplan
- **Sequence:** 1

The information for that item appears on the form.

Step 2: Press **EXECUTE** and confirm.

- The information on the form reverts to the previous item, if any.
- A completion message from the I-2000 appears.

Inserting Altrouting

Step 1: Enter these data:

- **Site name:** DACS01
- **RP Action:** INSERT
- **RP ID:** testplan
- **Sequence:** 1
- **Ckt ID:** Ckt01
- **Action:** ALTRROUTE
- **ALTRROUTE, FROM, NPC ID:** msc217
- **ALTRROUTE, FROM, Ch:** 010
- **ALTRROUTE, TO, NPC ID:** msc212
- **ALTRROUTE, TO, Ch:** 011

Step 2: Press **EXECUTE** and confirm.

Step 3: If any circuits will be preempted, their data appears in the **Preempted** fields successively. The I-2000 prompts you to approve each one as follows:

OK TO PREEMPT CIRCUIT?

Answer YES in each case, if that is what you intend.

- All but the default information disappears.
- The **Sequence** increases by one.

— A completion message appears.

Generating a Report

This example displays a listing of an existing reconfiguration plan (`testplan`) for the DACS at **Site Name** `DACS00`.

- Step 1:** Select REPORT OPERATIONS from the MAIN MENU.
- Step 2:** Select RECONFIGURATION PLAN RESULTS.
- Step 3:** Select SEQUENCE SORTED to sort the items by **Sequence** for the report only, or select CP SORTED to sort the items by circuit priority for the report only.
- Step 4:** On the RECONFIGURATION PLAN RESULTS SEARCH CRITERIA form, enter the following data:
 - **Site Name:** `DACS00`
 - **Reconfiguration ID:** `testplan`
- Step 4:** Press **EXECUTE** and confirm.
- Step 5:** Wait for the message:

THE REPORT IS COMPLETE

to appear on the I-2000 Status line, and for the REPORT OPERATIONS menu to appear.
- Step 6:** Select DISPLAY LAST GENERATED REPORT, and choose SCREEN from the ALLOWED CHOICES.

Wait for the report to appear on the screen and confirm the correctness of the plan's content.

Modifying a Plan

Checking the Plan

- Step 1:** Select RECONFIGURATION PLAN from the PROVISIONING menu. Enter the following data:
 - **Site Name:** `DACS01`
 - **RP Action:** `CHECK`
 - **RP ID:** `testplan`
- Step 2:** Press **EXECUTE** and confirm. You are notified that the plan will be executed in the background, and are required to confirm.
 - A message appears in the I-2000 status line, stating the number of items attempted and the number successful.

Step 3: Display RECONFIGURATION PLAN RESULTS report, following the steps given under "Generating a Report" in the previous section. The report should list all conflicts. Some examples of conflicts are as follows:

Seq. no. 1: Circuit MM07 is already ACTIVE
Seq. no. 2: Circuit MM03 is already ACTIVE
Seq. no. 3: Circuit MM06 is already DEACTIVATED

Changing the Plan

Change the existing reconfiguration plan by inserting, removing, and changing operations. First an existing circuit is made DEACTIVATED to remove one of the conflicts found in checking the plan, then other conflicts are removed by changing the plan.

Step 1: In the CIRCUIT PROVISIONING form, enter

- **Site Name:** DACS01
- **Action:** DEACTIVATE
- **Ckt ID:** MM07

Step 2: Press **EXECUTE** and confirm.

Step 3: Press **QUIT**. Return to the PROVISIONING menu.

Step 4: Select RECONFIGURATION PLAN.

Step 5: Enter these data:

- **Site Name:** DACS01
- **RP Action:** CHANGE
- **RP ID:** testplan
- **Sequence:** 3
- **Ckt ID:** MM06
- **Action:** ACTIVATE.

Step 6: Press **EXECUTE** and confirm.

Step 7: Enter the following data:

- **RP Action:** INSERT
- **Ckt ID:** MM05
- **Action:** DEACTIVATE
- **Sequence:** 5

Step 8: Press **EXECUTE** and confirm.

Rechecking the Plan

Repeat the steps under "Generating a Report" above, and confirm that the report displays the changed plan data. Also repeat the steps under "Checking the Plan" above, to do a check of the revised plan and display the results. See that there are now no execution conflicts.

Executing and Idling Reconfiguration Plans

To execute a plan:

- Step 1:** Select RECONFIGURATION PLAN from the PROVISIONING menu.
Enter the following data:
- **Site Name:** DACS01
 - **RP Action:** EXECUTE
 - **RP ID:** testplan
- Step 2:** Press **EXECUTE** and confirm.
- The entire plan is now executed. The I-2000 sends the appropriate commands to the specified DACS.
 - A completion message appears.
- Step 3:** Display a RECONFIGURATION PLAN RESULTS report to determine if there were any execution conflicts.

To idle a plan:

- Step 1:** Select RECONFIGURATION PLAN from the PROVISIONING menu,
Enter the following data:
- **Site Name:** DACS01
 - **RP Action:** IDLE
 - **RP ID:** testplan
- Step 2:** Press **EXECUTE** and confirm.
- The entire plan is now idled. The appropriate commands are sent to the specified DACS
 - A completion message appears.
- Step 3:** Display a RECONFIGURATION PLAN RESULTS report to determine if there were any execution conflicts.

Automatic Plans

ARP Form

Select AUTOMATIC RECONFIGURATION PLAN from the PROVISIONING menu.

```
06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
AUTOMATIC RECONFIGURATION PLAN PROVISIONING
Action:          ARP ID:          ARP Status:
List Type:      Sequence:
Site Name:      RP ID:
Number (Hier):  (Ext):
NPC ID:
Enter the desired action:
HELP CHOICES QUIT TOP MENU PRINT EXECUTE
```

Figure 8-2. AUTOMATIC RECONFIGURATION PLAN Form

Initially only the first line appears. The fields that appear subsequently depend on the **Action** and **List Type**.

Field Descriptions

Table 8-2. ARP Field Descriptions

Action	ARP action. Mandatory.
---------------	------------------------

Table 8-2. ARP Field Descriptions

CREATE	Applies to ARPs only. Creates an automatic reconfiguration plan (ARP), uniquely identified by an ARP ID .
DESTROY	Applies to ARPs only. Deletes the ARP. Once the DESTROY form has been filled in and executed, the ARP is no longer in the I-2000.
INSERT	<p>Applies to ARP items only. Inserts an item into the ARP in the position indicated by the Sequence.</p> <p>If the position is already occupied, the I-2000 places your item in front of the existing entry and adjusts the rest of the sequence numbers. If you specify a sequence number that is higher than any existing entries, the I-2000 inserts the item at the end of the plan and assigns it the last number in the sequence.</p>
REMOVE	Applies to items only. Removes an item from the ARP. The I-2000 automatically renumbers all subsequent entries in the ARP.
CHANGE	<p>Applies to items only. Changes the information in an item. An exception is the Sequence. It identifies the items in the ARP, and, therefore, cannot be changed directly.</p> <p>To change the position (Sequence) of an item in the plan, you must REMOVE the item and INSERT it where you want it to be.</p>
EXECUTE	<p>Applies to ARPs only. Sequentially executes the RPs in the plan specified by ARP ID.</p> <p>Once a provisioning command has been sent to the DACS specified by the RP's Site Name, the I-2000 does not wait for a reply, but goes on to the next item. The replies, when they arrive, are logged.</p> <p>Upon completion, EXECUTE reports the number of items for which it sent commands, and the number that succeeded.</p> <p>The results of the most recent CHECK, EXECUTE, or IDLE overwrite the previous results in the results log for an ARP.</p>

Table 8-2. ARP Field Descriptions

IDLE	<p>Applies to ARPs only. Idles the plan specified by ARP ID. Idling consists of parsing each RP in the plan sequentially from last to first, and from last item to first item within a plan, and taking immediate action on each item as it is encountered.</p> <p>Upon completion, IDLE reports the number of items for which it sent commands and the number that succeeded.</p> <p>The results of the most recent CHECK, EXECUTE, or IDLE overwrite the previous results in the results log for an ARP.</p>
CHECK	<p>Applies to ARPs only. Checks the contents of each RP in the plan specified by ARP ID against the NPCs in the current I-2000 database to determine which NPCs have been deleted from the database. If an item specifies a NPC that does not now exist, the item is internally marked null.</p> <p>When CHECK completes, it displays an I-2000 status message listing how many items can be successfully completed. To find out which items cannot complete and why, run the reconfiguration plan results report (see Chapter 13). Then correct the problems and perform CHECK again.</p> <p>EXECUTE, IDLE and CHECK keep a results log for each RP. The reconfiguration plan results report is taken from the log. One use of one of these Actions overwrites the data in the log from the previous use.</p>
CLEAN	<p>Applies to items only. Looks for every RP referenced in the ARP. If it does not find the RP in the appropriate I-2000 DACS database, CLEAN removes its reference from the ARP.</p> <p>If the ARP item is an ALARM, CLEAN determines whether the NPC is still provisioned. If it is not, CLEAN removes the ALARM from the list.</p>
ABORT	<p>Applies to ARPs only. Aborts all the RPs that were started by this ARP. Background RPs are started by BOOT, IDLE, EXECUTE, or CHECK. Once an ABORT is entered, the I-2000 allows the current item to finish and stops.</p>

Table 8-2. ARP Field Descriptions

ARP ID	Mandatory. Up to 12 characters. Identifies the automatic reconfiguration plan that is to be affected by the Action .
ARP Status	Inaccessible through this form. Indicates whether the specified item has been EXECUTED or is IDLE. IDLE means either never been executed or executed and subsequently made IDLE. This field appears only if List Type is RP.
List Type	Specifies the type of item to which this Action applies: RP The item is an RP. ALARM The item is an NPC to be placed on or removed from the alarm list. If an NPC is on the list, a critical or major alarm from it will trigger the ARP.
Sequence	Up to five characters. Specifies the sequence number identifying the entry, in the plan, that is to be affected by the Action .
Site Name	Mandatory. 1-24 alphanumeric characters. Identifies the site to which the items of the RP specified in RP ID are to apply, provided the List Type is RP. If the List Type is ALARM, Site Name identifies the site where the NPC to be placed on the alarm list is located.
RP ID	Up to 12 characters. Identifies the RP that is to execute.
Number (Hier)	Appears only for a List Type of ALARM. The NPC number in hierarchical format of the NPC whose alarm will trigger the ARP.
(Ext)	Appears only for a List Type of ALARM. The previous NPC number, but in extended format.
Facility ID	Appears only for a List Type of ALARM. 1-41 characters. The NPC ID of the NPC whose alarm will trigger the ARP. The NPC must be in the database; i.e., must have been created under NPC PROVISIONING.

Examples of Operation

Creating an ARP

Step 1: Select AUTOMATIC RECONFIGURATION PLAN from the PROVISIONING menu.

Step 2: Enter the following data:

- **Action:** CREATE
- **ARP ID:** newplan

The I-2000 searches the database for a plan of that ID.

Step 3: Press **EXECUTE** and select IMMEDIATE or YES.

- The **ARP Status** changes to IDLE.
- A completion message for the I-2000 appears.

If the plan already exists, you are notified:

New Automatic Reconfiguration Plan must have unique ID
You are required to acknowledge.

Inserting RPs and Alarm List Items

Step 1: Select AUTOMATIC RECONFIGURATION PLAN from the PROVISIONING menu.

Step 2: Enter the following data:

- **Action:** INSERT

Additional fields appear on the screen.

Step 3: Enter

- **ARP ID:** newplan
- **List Type:** RP

The next sequence number is automatically displayed.

Step 4: Enter

- **Site Name:** DACS02
- **RP ID:** testplan

Step 5: Press **EXECUTE** and select IMMEDIATE or YES.

- A completion message appears.

Step 6: To add an NPC to the alarm list, navigate to **List Type** and enter

- **List Type:** ALARM
- **Sequence:** automatically supplied.
- **Site Name:** DACS02
- **NPC ID:** dgrp01

Step 7: Press **EXECUTE** and select IMMEDIATE or YES.

- A completion message appears.

Reports are available for each ARP. The Reports list the RPs and NPCs whose alarms will trigger the ARP. Refer to Chapter 13.

DATABASE ADMINISTRATION

9

These selections are available only to the system administrator. Select DATABASE ADMINISTRATION from the MAIN MENU.

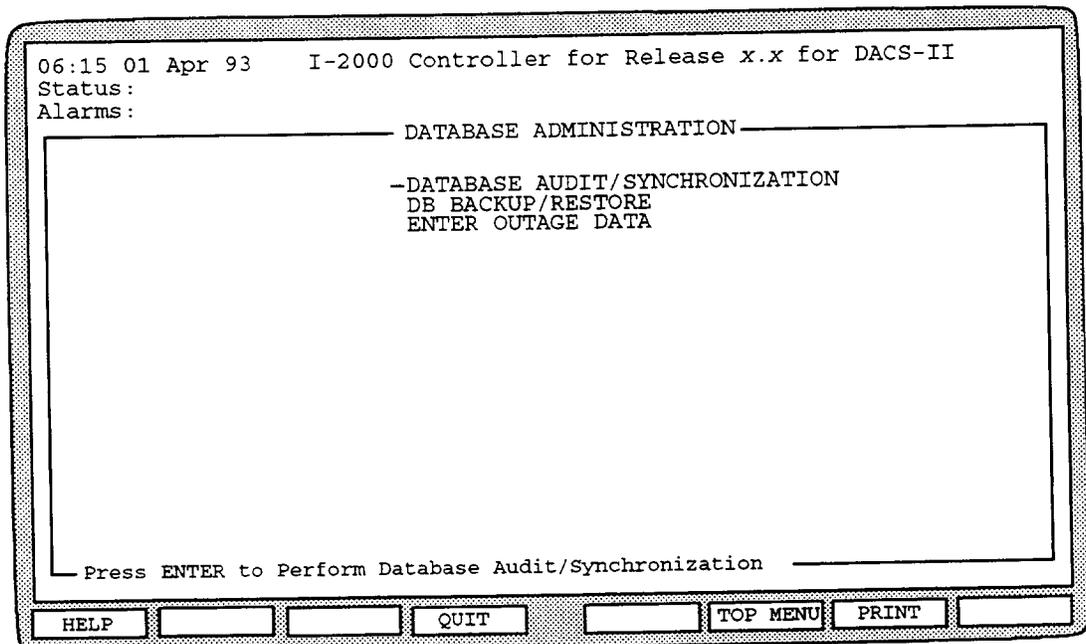


Figure 9-1. DATABASE ADMINISTRATION Menu

Database Audit/Synchronization

Introduction to Database Audit/Synchronization

DATABASE AUDIT/SYNCHRONIZATION consists of two capabilities: database audit and scheduled database synchronization. Ordinarily you schedule periodic audits for inspection purposes and do scheduled synchronization whenever the audits indicate that it is necessary.

The echoed response processing capabilities, which are described in Chapters 4 and 6, also perform synchronization. That synchronization is *automatic* and is performed in the background on a continual basis if echoed response processing is enabled. Automatic synchronization insures that the data in the I-2000 and DACS databases are kept approximately the same.

The DATABASE AUDIT/SYNCHRONIZATION capabilities allow you to compare databases without synchronizing, to synchronize if a special need arises, and to upload DACS provisioning data into the I-2000 databases all at once. An example of a special need is the gap that develops between I-2000 and DACS databases resulting from the link to the frame being down for a time.

Introduction to Database Audit

The local database is defined as the I-2000 database for a specified DACS. The facility or remote database is defined as the corresponding DACS database. A database audit compares the NPC or channel information in a facility database with the same information in its corresponding local database and records certain discrepancies between the two in the audit/synchronization log, which can be accessed through a report.

You can specify the range of NPCs or channels to be checked. A range of all facility NPCs causes every NPC to be checked. A range of all local NPCs causes only NPCs equipped in the I-2000 to be checked. In either case, it is possible to select one NPC or a range between and including specified NPCs. All channels can be selected for one NPC, or only one channel.

You can specify an NPC audit or a channel audit. In general, the former compares NPC provisioning in the two databases, while the latter compares circuit provisioning. More specifically, the audit of NPCs compares the values of the following fields in the local database with the same fields in the remote database for every NPC of the range. The comparison proceeds in the order in which the fields are listed. These fields appear on the I-2000 NPC provisioning form. An "X" means, "comparison supported."

Table 9-1. NPC Parameters Audited

Type of NPC	DE/TE	PB/PC	DA/TA	PA	DC	Clear DE/TE	Clear DA/TA	Clear PA	MB/SR/MJ
Service State	X	X	X	X	X	X	X	X	
Type	X	X	X	X	X	X	X	X	
NPC number	X	X	X	X	X	X	X	X	
Alarm State [▼]	X	X	X	X	X	X	X	X	
IW	X	X	X	X	X				
TS0		X [◆]		X					
TS0M		X [◆]		X					
NFS [♣]				X					
Performance thresholds	X [♣]	X [♣]		X		X		X	

▼ Only synchronized when the frame is the master.

◆ Applies only to DACS II.

♣ Applies only to clear framed provisioning.

♠ NFS (non-framing setting) is the NFW value of **Framing** on **CIRCUIT PROVISIONING**.

The allowed values of each field can be found under Chapter 4, "NPC PROVISIONING." If no difference in value between the same field in the same NPC record of each database is found, then no further action is taken.

If a difference is found, it is recorded in one of four possible records in the audit/synchronization log. One record notes discrepancies in the **Service State**, **Type**, or **IW** fields; another in the **TS0** or **TS0M** fields; another in the performance threshold fields; and still a fourth in the **Alarm State** field. Four discrepancy records per NPC are thus possible.

Each of the above fields of every NPC record of the range is checked and all discrepancies are logged.

An audit of channels cross-compares the values of the following fields for each circuit in which the channels are cross-connected, in the order listed.

Table 9-2. Circuit Parameters Audited*

Type of circuit	CEPT nxDS0	NAS nxDS0	Gateway nxDS0*	DMB ^{▼*}	Clear DS1 ^{▼*}	Clear E1 ^{▼*}	Virtual multipoint ^{▼*}
Ckt Status	X	X	X	X	X	X	X
Ckt Class	X	X	X	X	X	X	X
FROM NPC	X	X	X	X	X	X	X
FROM Ch	X	X	X	X			X
TO NPC	X	X	X	X	X	X	X
TO Ch	X	X	X	X			X
DMB Mode*				X			
NTR*				X			
Bandwidth	X	X	X	X			X
Bandwidth Type	X	X	X	X			X
IW	X	X	X	X			X
TLA[♦]	X	X	X	X	X	X	X
NAM*	X	X	X	X			X
AIS	X	X	X	X			
RDLD	X	X	X	X	X	X	X
TC	X	X	X	X			X
SC*			X				
Framing*	X		X				

*DCC, INCL and OOS are not audited.

*Does not apply to DACS I.

▼DACs II ISX does not support these circuit types.

♦Only synchronized when the frame is the master and one end for one-way or two ends for two-way are terminated or unterminated.

The allowed values for each field can be found in Chapter 6, "Circuit Provisioning." If no difference in the value of a field between databases is found, no further action is taken. If a difference is found in one field, it is recorded in the

audit/synchronization log. The remaining fields of the record are checked and remaining discrepancies are noted internally, but are not logged.

To display all differences, utilize the CHANNEL AUDIT **Action** in SINGLE CHAN **Mode**. All the differences are shown on the CIRCUIT PROVISIONING form(s), except for **Mode**, **NTR** and **Framing**.

Introduction to Database Synchronization

Synchronization makes the data that is checked in an audit the same in both the local and facility databases, subject to certain constraints, which are detailed in this section. You select one database as the master. The other database is forced to conform to it.

An NPC synchronization first performs an NPC audit. Then it attempts to insure that the discrepancies noted in the audit/synchronization log as a result of that audit are removed:

- If the I-2000 is the master, then the NPC SYNC sends commands to the DACS to provision it in such a way as to change the values of the fields noted as inconsistent. The results of each command are then noted in additional records in the audit/synchronization log as success or failure, with the reason for the failure.
- If the frame is the master, the NPC SYNC changes the existing field in the I-2000 database. If no corresponding NPC provisioning record exists, one is created.

New NPC IDs created by NPC synchronization are in the format:

NPCxxxxx

for frames provisioned with link hierarchical numbering or

NPCyyyy

for frames provisioned with link extended numbering, where:

xxxxxx is the hierarchical number for the NPC.

yyyy is the extended number for the NPC.

If the identifier is already in use, a .z is suffixed to create a unique identifier, where z is an integer from 0 to 9.

The limitations on the use of NPC synchronization are as follows:

- When the I-2000 is the master, and the **Mode** is set to ALL LOCAL NPCS or RANGE OF LOCAL NPCS, then NPCs that are UEQD in the local I-2000 database are not processed; that is, synchronization commands are not sent to the DACS to unequip the associated NPCs.

A channel synchronization insures that the end-points and circuit characteristics noted as different in a channel audit are reconciled, subject to limitations.

- If the DACS is chosen as the master, then the circuit provisioning records of the local database are either updated, or are deleted and new records are created.
- If the I-2000 is the master, then circuit provisioning commands are sent to the DACS.

New circuit IDs have the following format:

```
SYN fromnpc-fromchan tonpc-tochan BW/ bw class
```

where:

fromnpc is the FROM NPC number in hierarchical or extended format, depending on how the frame was provisioned.

fromchan is the FROM channel number, or DS1 or E1.

tonpc is the TO NPC number in hierarchical or extended format.

tochan is the TO channel number, or DS1 or E1.

bw is the bandwidth, which is either 1 or the number of contiguous channels of a high-rate circuit.

class is the **Ckt Class**: FDX, HDX, BBL, BRD or DMB.

If the identifier is already in use, a .z is suffixed to create a unique identifier, where z is an integer from 0 to 9.

The limitations on the use of channel synchronization are as follows:

- Channel synchronization does not automatically equip NPCs. If an NPC is missing from one database, the synchronization of channels within it is not performed. It is suggested, therefore, that you precede a channel synchronization with an NPC synchronization.
- Channels that are connected to a test port in either the I-2000 or the DACS are not audited or synchronized.
- DMB cascades are not audited or synchronized.

- Channels that are established for substrate cross-connection are not audited or synchronized. Their existence is logged.

In addition, when the I-2000 is the master:

- There is no command to modify provisioning in the DACS. The I-2000 always disconnects and connects when it changes DACS provisioning.
- If NPCs are equipped in the I-2000, but their channels are not cross-connected, the channel synchronization disconnects all circuits in the same NPCs of the DACS.
- Discrepancies of **Class**, **Status**, end points, **TC**, **SC**, **IW**, and **Options** result in disconnection in the DACS and connection of new circuits with the matching attributes.
- The Termination State (TLA or TLR, **Option G**) of a circuit is not changed in the DACS during synchronization, unless the circuit is being disconnected and reconnected because of another discrepancy.
- A number of limitations apply to virtual conference circuits when the I-2000 is the master. Refer to the diagram below.

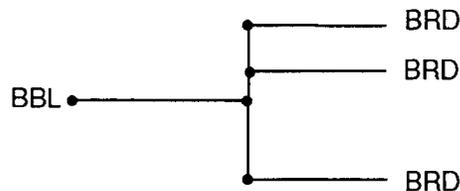


Figure 9-2. Virtual Multipoint Circuit

- If a BBL required by the synchronization of the circuit is already in use in the DACS, the synchronization does not change it in any way.
- If the BBL is already in use in the DACS, the synchronization does not connect its BRDs unless the facility BBL is the same as the local BBL in every field of interest.
- The synchronization does not connect a BRD unless its bandwidth is the same as that of the BBL.
- The synchronization does not disconnect a virtual conference type if the bandwidth does not match.



NOTE:

The limitations on virtuals are designed to protect the DACS user who is not utilizing the I-2000. The I-2000 is not allowed to automatically interfere in existing DACS circuits by preempting control of a virtual node or of virtual conference circuits already in use by others.

When the DACS is the master:

- Channel synchronization and circuit echoed response processing delete records that cannot be corrected.
- Differences of end points, **Ckt Class**, **Ckt Status**, **DMB Mode**, or **Bandwidth** result in deletion of the circuit record containing them and activation of a new circuit record with matching attributes.
- Differences of **TC**, **IW**, **SC**, **NTR** (DMB), Termination State, or **Options** result in modification of the existing circuit record.
- The termination state can only be fully synchronized if both ends of the connection in the DACS are the same, either TLA or TLR. If they are not the same you may use the **TERMINATE Action** with the **Direction** field in **TEST ACCESS** to reset the termination state of one side.
- Circuits that use the end points but that do not match are deleted.
- If the bandwidths do not match in corresponding virtual conference circuits, the entire circuit in the I-2000 is deleted.
- The DACS provisions I-2000 high-rate circuits as individual channels. As a result:
 - If the I-2000 record no longer exists, a separate I-2000 record is created for each channel of a circuit that was originally high-rate in the I-2000.
 - If the I-2000 record is still present and the circuit corresponds in every way to the DACS circuit, no changes are made.
 - If the I-2000 record is still present, but some of the circuit characteristics have changed, they may be made to correspond to the DACS.
 - If there is a discrepancy that cannot be corrected globally, over the entire circuit; e.g., the **TC** in the DACS is not the same as for all the I-2000 circuit's channels, then the I-2000 record is deleted and new records are written.
- If a channel was originally in the high-rate circuit but for some reason is not now the same as in the DACS, synchronization will delete the I-2000 high-rate record and will create individual records of single-channel BW for all remaining connections in the high-rate that still match.

NPC and channel synchronizations are combined in the **UPLOAD Action**. An **UPLOAD** loads the NPC and channel cross-connection information located in the remote DACS database into the local, or I-2000, database for the DACS. It does so in two stages.

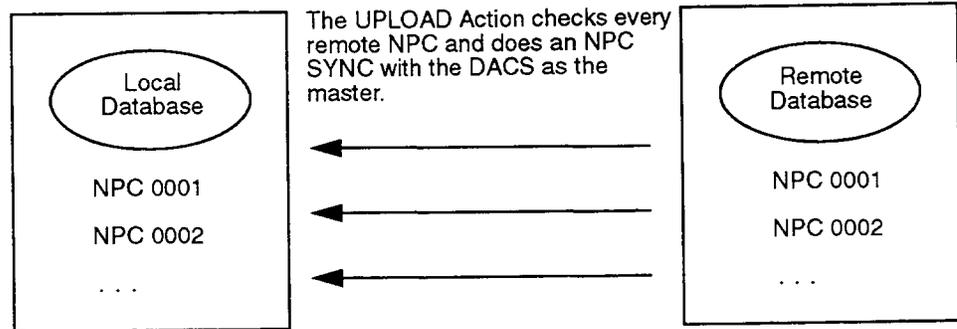


Figure 9-3. Stage 1 of the UPLOAD Action: NPC SYNC

The result of the first stage is that the NPC provisioning in the local database conforms to the NPC provisioning in the remote database, subject to the limitations of an NPC SYNC.

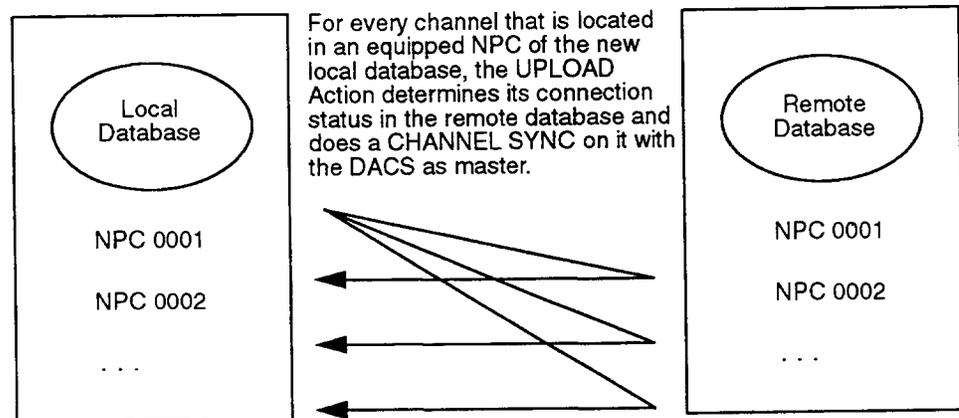


Figure 9-4. Stage 2 of the UPLOAD Action: CHANNEL SYNC

An important point to remember is that UPLOAD does not first delete the existing information in the local database. The information is checked as in an audit. If matches are found in the values of the fields of interest, no action is taken, and the information remains. Otherwise, records are deleted, revised or created according to the rules for NPC SYNC or CHANNEL SYNC. You may thus execute an UPLOAD repeatedly to bring about a successively closer correspondence of the databases, without loss of data you may wish to keep, such as the previous circuit attributes.

There may be some exceptions in the second stage according to the limitations on the use of NPC SYNC, CHANNEL SYNC, and UPLOAD (below). For example, circuits for remote channels under test or used as test ports, or circuits that are

not supported by the I-2000, are not recorded in the local database. Instead, an exception report is placed in the log.

The additional limitations of the use of `UPLOAD` are

- Discrepancies in NPC and channel data are tracked internally. Only failed synchronization attempts are logged. To get full reports on discrepancies, perform a separate `NPC AUDIT` or `CHANNEL AUDIT`.

Other Features and Constraints

Database audit/synchronization may take a lot of time – longer than 4 hours for a 320-NPC DACS with all channels connected in one-way circuits. Therefore, scheduling these activities for off-peak times is suggested. However, there are some constraints. A channel audit for a single channel runs in the foreground. Everything else, whether scheduled or not, runs in the background.

There are some limitations on the use of audit/synchronization:

- Audit/synchronization is available on the stand-alone and unified hardware platforms. It is not accessible from the C-2000 for the distributed platform.
- Audit synchronization applies to these frame types only: AT&T DACS II Releases 4, 5 and 6; DACS II ISX Release 1; DACS I. A table of NPC types supported for each frame follows:

Table 9-3. NPC Types Supported in Audit/Synchronization

	PB	PC	PA	DC	DE	TE	DA	TA	MB	SR	MJ	Virtual
DACS I	X			X	X							
DACS II before R6	X	X			X	X						
DACS II R6 and after	X	X	X		X	X	X	X				
DACS II ISX			X*				X					

*DACS II ISX does not support the clear DS1/E1 versions of Types PA and DA.

- Audit/synchronization cannot be performed when any user is in passthrough mode, doing a database backup or restoral, or doing provisioning.
- Any system administrator can terminate an audit/synchronization from any terminal.

- Scheduling relieves the administrator of some repetitive work; however, the administrator should be aware that some circumstances can inadvertently change scheduled operations. Unintended change of a scheduled audit or synchronization will occur if the following sequence of operations is performed:
 1. The I-2000 database is backed up onto floppy disk.
 2. The time schedule for the audit/synchronization is added, changed, or deleted.
 3. The I-2000 database is then restored from floppy disk.

When the database is restored, the schedule that existed before backup also is restored, and the new schedule that was entered after backup is lost. Therefore, it is recommended that whenever you restore the I-2000 database from floppy disk, you reenter any scheduled operations.

A log is kept during auditing of all mismatches and during synchronization of all connects and disconnects in a DACS, or of all deactivations, deletions and activations in the I-2000. The log also records successes and failures of synchronization. The log is accessible to the user through REPORT OPERATIONS (see Chapter 13).

The log contains records of activity related to NPCs. Data from each successive audit/synchronization overwrites the previous records. Data not overwritten remains. Thus, an ALL FACILITY NPC **Mode** NPC SYNC would create records for every NPC, but a succeeding SINGLE NPC **Mode** NPC SYNC would overwrite the records for one NPC only.

The log may be large if this is the first audit or synchronization and the differences are great. In this case, use the UPLOAD **Action**, which logs only unsuccessful synchronization operations.

New Additions

Audit/synchronization has been extended to support the following new features:

- DACS II ISX NPCs
- Clear E1 cross-connections for DACS II only
- TS0 to non-TS0 cross-connections
- TS0 spare bit manipulation
- NPC alarm synchronization
- **Type** PA performance threshold values

Table 9-4. DATABASE AUDIT/SYNCHRONIZATION Field Descriptions

Action	Mandatory. Specifies the type of audit/synchronization to be executed. For full details, be sure to refer to the introduction to each Action , given previously in this chapter.
NPC AUDIT	Compares local and facility NPC provisioning databases and logs differences in parameters that are common to the two. The range of NPCs to be compared is specified by Mode or by Mode and NPC selection fields.
NPC SYNC	Compares local and facility NPC provisioning databases, logs differences in parameters that are common to the two, and synchronizes by eliminating those differences according to restrictions. The range of NPCs to be compared is specified by Mode or by Mode and NPC selection fields.
CHANNEL AUDIT	Compares local and facility cross-connection databases and logs differences in parameters that are common to the two. The range of channels to be compared is specified by Mode and channel selection fields.
CHANNEL SYNC	Compares local and facility cross-connection databases, logs differences in parameters that are common to the two, and synchronizes by eliminating those differences according to restrictions. The range of channels to be synchronized is specified by Mode and channel selection fields.
UPLOAD	Initiates an NPC SYNC Action in ALL FACILITY NPC'S Mode , with DACS as Master DB , followed by a CHANNEL SYNC Action in ALL LOCAL NPC'S Mode , again with DACS as Master DB . You can use UPLOAD to load the I-2000 database initially with data taken from the DACS database. The UPLOAD action only logs failures.
ALARM SYNC	Performs a synchronization of Alarm State only, on the same NPCs as would be specified by ALL LOCAL NPC'S Mode . This Action is opposed to the automatic alarm synchronization described in the NPC Alarm Sync field under frame administration in Chapter 3.

Table 9-4. DATABASE AUDIT/SYNCHRONIZATION Field Descriptions

	ABORT	Cancels the audit/synchronization currently executing in the background or on queue.
Mode	Mandatory. Specifies the range of NPCs or channels to which the Action is to apply. A selection that is explicit about the NPCs, such as ALL FACILITY NPCS, also implies all the associated channels. The values are	
	ALL FACILITY NPCS	Selects all NPCs that can be equipped in the frame.
	ALL LOCAL NPCS	Selects all NPCs that are currently equipped in the local database.
	RANGE OF LOCAL NPCS	Indicates that the range of local NPCs to be considered is bounded by the NPC ID field or its corresponding Hier or Ext fields and the Last NPC ID field.
	RANGE OF FACILITY NPCS	Indicates that the range of facility NPCs to be considered is bounded by the NPC ID and Last NPC ID fields.
	SINGLE NPC	Selects the channels of the NPC specified by NPC ID or the associated hierarchical or extended number.
	SINGLE CHANNEL	Selects the channel specified by the NPC ID or its Hier or Ext equivalents and the Channel .
Master DB	Appears for SYNC Action values only. Selects the master database for a synchronization. The values are	
	DACS	Use the facility database as the master.
	LOCAL	Use the local database as the master.
NPC ID	Appears for AUDIT and SYNC Actions when the RANGE or SINGLE Mode values are in effect.	
	1-41 characters. Specifies the NPC ID to be considered, or the NPC ID of the channel to be considered, or the first NPC of a range. If it appears, you must enter either it or the associated Hier or Ext .	

Table 9-4. DATABASE AUDIT/SYNCHRONIZATION Field Descriptions

Hier	Appears with NPC ID . The NPC number in hierarchical format. Enter either this field or NPC ID or Ext .
Ext	Appears with NPC ID . The NPC number in extended format.
Channel	Appears for AUDIT and SYNC Actions when the Mode is SINGLE CHANNEL . The channel number of the single channel to be audited or synchronized.
Last NPC ID	Appears for AUDIT and SYNC Actions when the RANGE Mode values are in effect. Specifies the last NPC ID of the range. Enter either it or the associated Hier or Ext .
Hier	Appears with Last NPC ID . The NPC number in hierarchical format.
Ext	Appears with Last NPC ID . The NPC number in extended format.

This discussion and the fields below apply to **SINGLE CHANNEL Mode** only. Refer to the figure shown below.

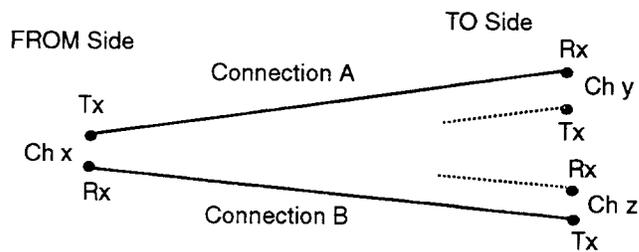


Figure 9-6. Two Two-point, One-way Circuits

One channel has two directions. The figure depicts two one-way, two-point circuits (**Class** of **HDX**) utilizing the same channel, Ch x, at the FROM side.

In the case of a two-way, two-point circuit (**Class** of **FDX**) Ch y and Ch z are the same channel, and both directions are used for channel operation.

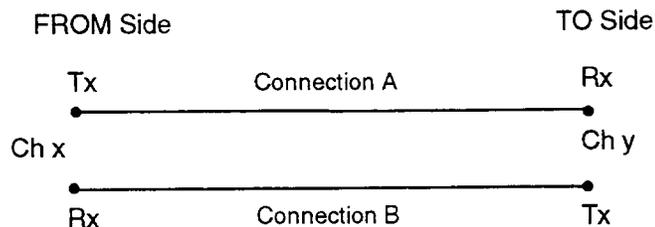


Figure 9-7. A Two-point, Two-way Circuit

The FROM side **NPC ID** and **Channel** are stated in the upper screen. The fields in the bottom half of the screen, if they appear, state the TO side information. The **Fr NPC** states the hierarchical or extended number of the Tx side of Connection B; i.e., at the TO side. In the **FDX** case, it is the same as the Rx side of Connection A.

The field descriptions that appear at the bottom of the screen are shown next:

- LOCAL INFO Fr** Display-only. The identifying information of the TO side Tx channel as that information appears in the local database. **NPC** is the hierarchical or extended number. The other fields: **Ch, IW, Term, Opts, SC,** and **TC** are as they are described in Chapters 9 and 6.
- LOCAL INFO To** Display-only. The identifying information of the TO side Rx channel as that information appears in the local database.
- DACS INFO Fr** Display-only. The identifying information of the TO side Tx channel as it appears in the DACS database.
- DACS INFO To** Display-only. The identifying information of the TO side Rx channel as it appears in the DACS database.

Examples of Database Audit/Synchronization

Scheduling an NPC Audit

This example schedules an NPC audit to run every day at 8:00 P.M.

- Step 1:** Select DATABASE ADMINISTRATION from the MAIN MENU and DATABASE AUDIT/SYNCHRONIZATION from the DATABASE ADMINISTRATION menu. The DATABASE AUDIT/SYNCHRONIZATION form appears:

```
06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- DATABASE AUDIT/SYNCHRONIZATION -----
Site Name:dacs01
Action:NPC AUDIT  Mode:ALL FACILITY NPCS

Enter site name_____

HELP CHOICES [ ] QUIT [ ] TOP MENU PRINT EXECUTE
```

Figure 9-8. DATABASE AUDIT/SYNCHRONIZATION Form

Step 2: Enter these values in the following fields:

- **Site Name:** dacs01
- **Action:** NPC AUDIT
- **Mode:** ALL FACILITY NPCS

Step 3: Press **EXECUTE** and select SCHEDULE. Enter

- **Date:** 01 Aug 93
- **Time:** 20 00
- **Number of Times:** 00



NOTE:

00 indicates continuous.

- **Interval:** 01
- **Scale:** DAYS

Step 4: Press **EXECUTE** again.

- THE COMMAND COMPLETED SUCCESSFULLY message appears.

The audit is initiated at the scheduled time. You are notified of its completion status in the I-2000 **Status** field at the top of the screen. To print the results of the NPC audit, return to the MAIN MENU and follow this procedure.

- Step 1:** Select REPORT OPERATIONS from the MAIN MENU and AUDIT/ SYNCHRONIZATION RESULTS from the REPORT OPERATIONS menu. The AUDIT/SYNCHRONIZATION SEARCH CRITERIA form appears.
- Step 2:** Enter the **Site Name** and **Action** NPC AUD. Then press **EXECUTE** and confirm. You are notified that the report request will be executed in the background. When the report is complete, the following status appears:
- A REPORT IS COMPLETED I-2000 **Status** message appears.
 - The cursor moves to DISPLAY LAST GENERATED REPORT.
- Step 3:** Press **Enter** to select DISPLAY LAST GENERATED REPORT.
- Step 4:** Select SCREEN or PRINTER from the insert. The AUDIT/SYNCHRONIZATION RESULTS report is printed or displayed.

Performing a Channel Audit

This example shows how to perform a channel audit.

- Step 1:** Select DATABASE ADMINISTRATION from the MAIN MENU and DATABASE AUDIT/SYNCHRONIZATION from the DATABASE ADMINISTRATION menu.
- Step 2:** Enter the following fields:
- **Site Name:** dacs01
 - **Action:** CHANNEL AUDIT
 - **Mode:** RANGE OF LOCAL NPCS
- The NPC range fields appear:

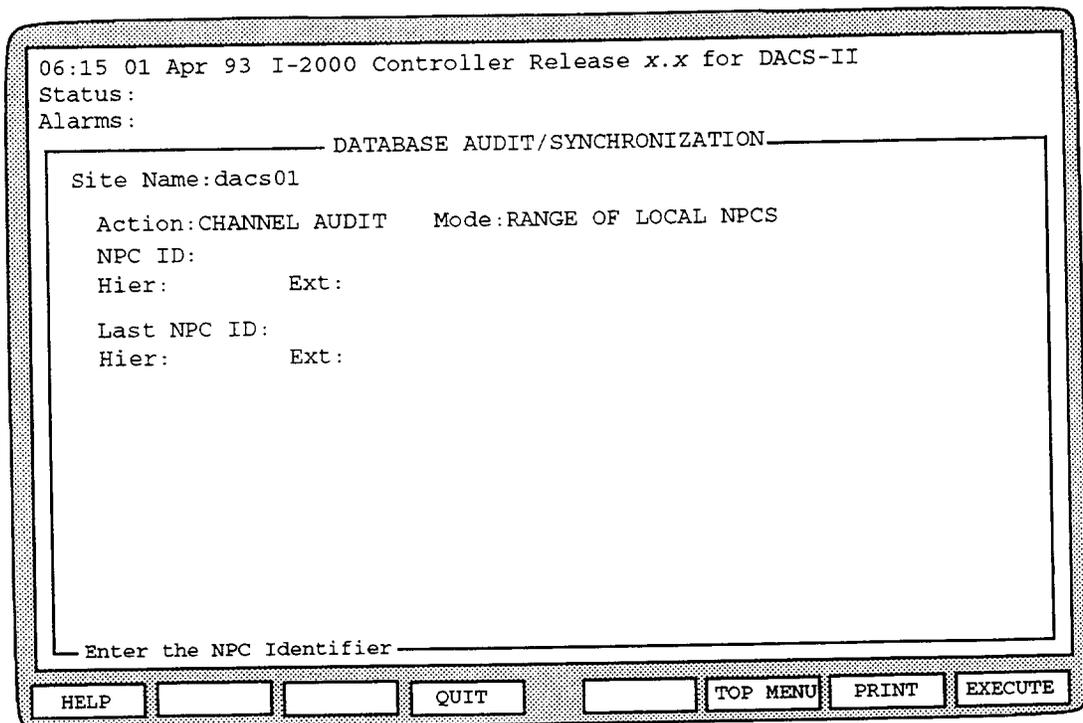


Figure 9-9. NPC Range Fields

Step 3: Enter the following fields:

— **NPC ID:** firstnpc

The **Hier** and **Ext** fields are automatically filled in. You could have entered one of them and the other two fields would have been filled in.

— **Last NPC ID:** lastnpc

The **Hier** and **Ext** fields are automatically filled in.

Step 4: Press **EXECUTE** and select IMMEDIATE.

- A command response window appears notifying you that the job will be run in the background. Press **Enter**.
- The audit is placed on queue to be executed in the background.
- An IN PROGRESS message is displayed in the I-2000 **Status** line.
- When the job is complete, IN PROGRESS changes to NO LONGER IN PROGRESS.

Performing a Synchronization

This example illustrates how to schedule a one-time background synchronization at 6:00 A.M.

Step 1: Obtain the DATABASE AUDIT/SYNCHRONIZATION form.

Step 2: Enter the following fields:

— **Site Name:** dacs01

— **Action:** NPC SYNC

The **Master DB** field appears.

Step 3: Enter the following fields:

— **Mode:** ALL FACILITY NPCS

— **Master DB:** DACS



NOTE:

The **Mode** must be compatible with the **Master DB**. If you enter LOCAL with ALL FACILITY NPCS, you get an error message on execution.

Step 4: Press **EXECUTE** and select SCHEDULE.

Step 5: Enter these values:

— **Date:** 01 Aug 93

— **Time:** 06 00

— **Number of Times:** 01

Step 6: Press **EXECUTE**.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

The synchronization is initiated at the scheduled time. You are notified of its completion status in the I-2000 **Status** field at the top of the screen.

Uploading the I-2000 Database

This example illustrates how to upload the I-2000 database from a specified DACS.

Step 1: Obtain the DATABASE AUDIT/SYNCHRONIZATION form.

Step 2: Enter the following fields:

— **Site Name:** dacs01

— **Action:** UPLOAD

Step 3: Press **EXECUTE** and select SCHEDULE. Enter

— **Date:** 01 Aug 93

— **Time:** 06 00

— **Number of Times:** 01

The upload is initiated at the scheduled time. You are notified of its completion status in the I-2000 **Status** field at the top of the screen.

To obtain reports of the results of an UPLOAD, print AUDIT/SYNCHRONIZATION RESULTS reports, selecting **Actions** of NPC SYNC and CHANNEL SYNC on the SEARCH CRITERIA forms.

Initiating an ABORT Action

The **ABORT Action** causes the currently executing audit/synchronization task to terminate after receiving the response to the last query sent to the frame. If the task queued, it is just removed from the queue.

Step 1: Obtain the DATABASE AUDIT/SYNCHRONIZATION form.

Step 2: Enter the following fields:

— **Site Name:** dacs01

— **Action:** ABORT

The **Mode** field disappears from the screen.

Step 3: Press **EXECUTE** and confirm.

— THE COMMAND COMPLETED SUCCESSFULLY message is displayed.

Backing Up and Restoring the I-2000 Databases

The I-2000 maintains the following databases:

- The I-2000 common database, named COMMON. It contains information common to all configured DACS.
- The I-2000 report formats database, named REPORT FORMATS.

⇒ NOTE:

The REPORT FORMATS database is contained within the COMMON database. It is made available separately to allow easy transport of report formats. However, backing up COMMON also backs up REPORT FORMATS.

- One database for each DACS in the system, with names the same as the **Site Names**. Each database contains data specific to one DACS frame.

The DACS have their own databases, apart from the I-2000 system, which they utilize even if they are not connected to the I-2000. Backing up or restoring an I-2000 database, whether it is COMMON, REPORT FORMATS, or a database named with a site name, does not affect a DACS-installed database in any way.

One database is backed up at a time. To back up all databases, use the DB BACKUP/RESTORE selection for each database.

Obtaining the DB BACKUP/RESTORE Menu

To obtain the DATABASE BACKUP/RESTORE menu, select it from the DATABASE ADMINISTRATION menu. The following menu appears:

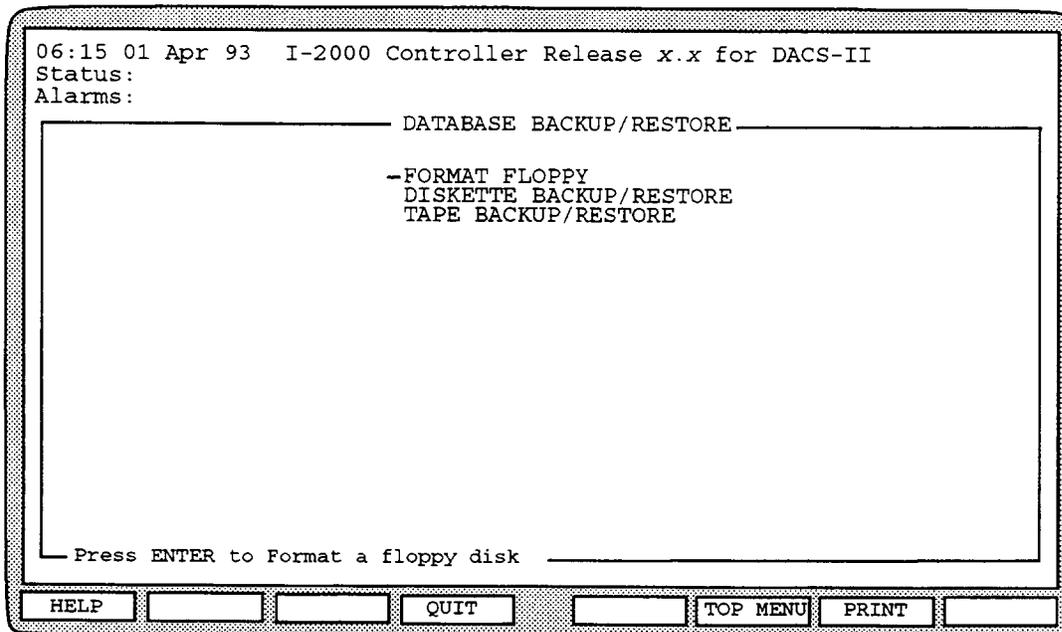


Figure 9-10. DATABASE BACKUP/RESTORE Menu

⇒ NOTE:

At times in the processing of each selection when the keyboard is not locked, you may abort the selection by pressing the **Delete** key. The keyboard is not locked when you are being prompted.

Backup or restore will fail if attempted during the following operations in progress on the DACS of choice: database audit, database synchronization, execution of a reconfiguration plan, or passthrough on a SNIDER link.

Backup or restore may fail if any scheduled tasks (see Chapter 10) are running in the background. To prevent the failure, delete the scheduled tasks first.

Before restoring the COMMON database or the report formats, REMOVE all frames from service (see Chapter 3 under frame provisioning). If any are in service, the command may fail.

Formatting the Floppy Diskette

Backing up a database to floppy diskette requires previously formatted diskettes. You will need a number of diskettes: the COMMON and REPORT FORMATS databases each require one diskette, and each DACS database will require one to three diskettes. To be on the safe side, it is best to format several diskettes ahead of time.

To format a diskette:

- Step 1:** Select FORMAT FLOPPY from the menu above.
- Step 2:** Following the prompt, insert the floppy into the drive. But first, make sure the write-protect notch is uncovered.
- Step 3:** Press **Enter**. The diskette is formatted. You are notified:

```
formatting...
```

where the number of dots after the word `formatting` increases as the format progresses. On completion, diskette format statistics are displayed.
- Step 4:** Press any key to continue. You are returned to the DATABASE BACKUP/RESTORE menu.
- Step 5:** Repeat the procedure for the remaining diskettes.

Backing Up a Database on Diskette

To back up a database on a diskette:

Step 1: Select DISKETTE BACKUP/RESTORE.

06:15 01 Apr 93 I-2000 Controller for DACS-II Release-x.x
 Status:
 Alarms:

DISKETTE BACKUP/RESTORE

Action: BACKUP Database Name:

Enter desired action

HELP CHOICES QUIT TOP MENU PRINT EXECUTE

Figure 9-11. DISKETTE BACKUP/RESTORE Form

Step 2: Enter **BACKUP** in the **Action** field.

Step 3: Enter the name of the database in the **Database Name** field. The possibilities can be listed with **CHOICES**, which lists the site or default name and **COMMON(Local)**. If you prefer, you may back up just the report formats by selecting **Report Formats**.

Step 4: Press **EXECUTE** and confirm.

An **IN PROGRESS** message appears in the I-2000 **Status** line. The named database is unloaded to ASCII temporary files. A dot appears on the screen for each file or relation unloaded. The files are reread and are split into sections. The number of sections is the number of diskettes required. You are informed of this number and are asked to press **Enter**.

Step 5: Press **Enter**. The following screen appears:

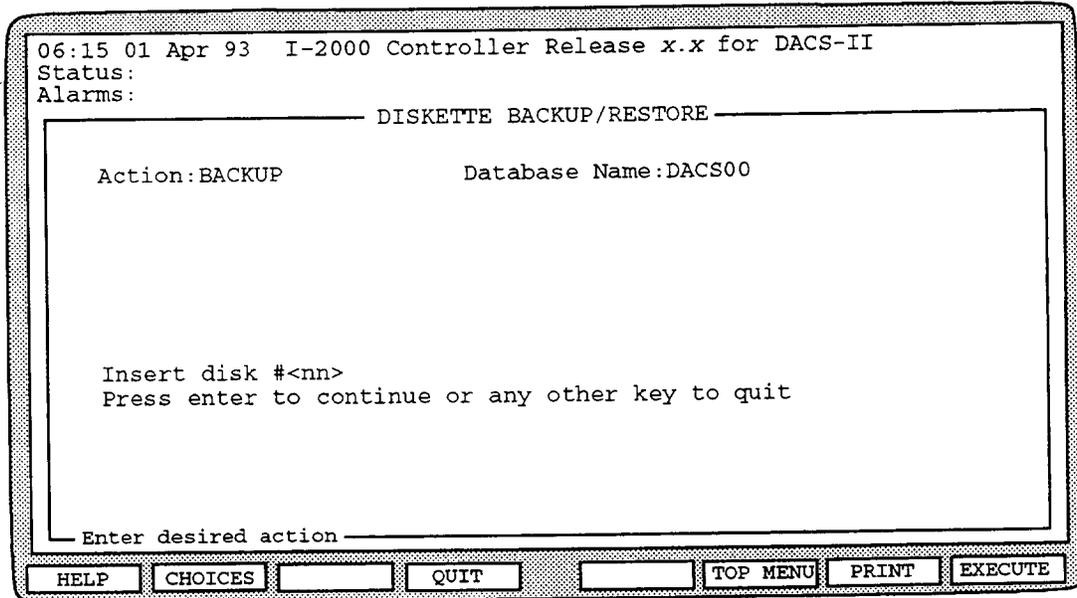


Figure 9-12. Insert Disk Prompt

Step 6: Insert a diskette and press **Enter**. The I-2000 writes one section on the diskette. When the backup is complete,

- THE COMMAND COMPLETED SUCCESSFULLY message is displayed.
- COMPLETED message appears in the I-2000 **Status** line.

Step 7: Repeat Step 6 for as many diskettes as are requested.



NOTE:

After each diskette is formatted, be sure to label it with number sequence and contents.

All databases should be backed up routinely so your I-2000 system can successfully recover in the unlikely event of a hard-disk failure. We suggest backing up every night.

Restoring a Database from Diskette

One diskette contains a section of the database. When the sections have all been read, they are concatenated and placed in temporary ASCII files on disk.

The I-2000 deletes the existing content of the database that is to be restored. It then restores the database from the ASCII files. The following process takes place to insure that no loss of data will occur:

- The existing contents of the database are copied. A row of dots is displayed, one for each file or relation copied.
- The contents of the database at the original location are erased. A second row of dots tracks the progress of the erasure.
- The contents to be restored are moved into the database from the temporary ASCII files. A third row of dots is displayed as the database is filled in.

Along with the accompanying status message, three rows of dots of equal length indicate a successful restore. If more or fewer than three rows of dots are output a failure has occurred.

In the unlikely event of a failure to restore the database from disk, the database content unloaded prior to erasure is loaded back to the database. The I-2000 system keeps running, even though the `RESTORE` failed.

A failure is indicated on the screen by two extra rows of dots, one generated during the erasure of the data that could not be satisfactorily restored and the other generated during the replacement of the data that had been set aside.

For a large database, the `RESTORE` will require an hour or more.

 **NOTE:**

You cannot restore a `COMMON` database into a `DACS`-specific database, but you can restore one `DACS`-specific database into another.

 **NOTE:**

On successful completion of a `COMMON` database `RESTORE`, the system automatically reboots.

 **WARNING:**

Restoral of the `COMMON` database where the current I-2000 hardware ports configuration is not identical to that of the backup I-2000 may cause the system to run in a degraded manner.

To restore a database, first collect all the diskettes for the database, relying on the external labels to identify them.

Step 1: From the `DATABASE BACKUP/RESTORE` menu, select `DISKETTE BACKUP/RESTORE` and enter an **Action** of `RESTORE`.

- Step 2:** Enter the name of the database in the **Database Name** field. Pressing **[CHOICES]** lists the names of the I-2000 databases, the COMMON (Local) database, and the selection to restore just the Report Formats.
- Step 3:** Press **[EXECUTE]** and confirm.
- Step 4:** You are prompted for the first diskette. Insert the diskette into the drive. Press **[Enter]**.
- Step 5:** The database and backup identification information are read from the diskette and are displayed for your verification. Press **[Enter]** if this is the correct diskette.
- IN PROGRESS message appears in the I-2000 **Status** line.
- When the RESTORE is complete,
- THE COMMAND COMPLETED SUCCESSFULLY message appears.
 - COMPLETED message appears in the I-2000 **Status** line.
- Step 6:** Repeat the previous steps for as many diskettes as contain the database.

After restoring a database, it is advisable to obtain a report of the data in that database. If it is necessary to determine the database differences between the I-2000 and the DACS, perform an NPC AUDIT on ALL FACILITY NPCS.



NOTE:

Discrepancies should be expected for any circuits provisioned after the backup was created.

Backing Up a Database on Tape

The tape backup feature offers capabilities to back up all databases (**Action** of FULL BACKUP) or selected databases (**Action** of SELECTIVE BACKUP). The following example demonstrates how to select databases.

- Step 1:** Select TAPE BACKUP/RESTORE from the DATABASE BACKUP/RESTORE menu. The TAPE BACKUP/RESTORE form appears:

```

06:15 01 Apr 93  I-2000 Controller for DACS-II Release x.x
Status:
Alarms:
----- TAPE BACKUP/RESTORE -----
Action:

Enter desired action

HELP CHOICES QUIT TOP MENU PRINT EXECUTE
    
```

Figure 9-13. TAPE BACKUP/RESTORE Form

- Step 2:** Enter `SELECTIVE BACKUP` in the **Action** field or select it with the `CHOICES` key. An insert pops up asking `WHICH DATABASES?` and displaying the existing database names. This is a multiselect menu. The `SELECT` and `UNSELECT` keys are enabled.
- Step 3:** Use the `SELECT` key to select as many databases as you desire. Selected databases remain highlighted even though the cursor is not on them. When finished, press `Enter`. The selected databases are listed in the form.
- Step 4:** Insert the tape cartridge into the drive.
- Step 5:** Press `EXECUTE` and confirm. The following messages appear in this order:
 - An `IN PROGRESS` message on the I-2000 **Status** line.
 - An `Unloading name database into files` message
 - A `Copying name database files onto tape` message

Messages similar to those above are repeated for as many databases as are selected.

When the I-2000 successfully completes the backup, the following messages appear:

- A message, THE COMMAND COMPLETED SUCCESSFULLY
- A COMPLETED message on the I-2000 **Status** line.

If the command fails, an insert appears stating the reason. To try again, reselect the databases.

Restoring a Database From Tape

The tape restore feature offers capabilities to restore:

- All databases (**Action** of FULL RESTORE)
- Selected databases (**Action** of SELECTIVE RESTORE).



NOTE:

On successful completion of a COMMON database RESTORE, the system automatically reboots.



WARNING:

Restoral of the COMMON database where the current I-2000 hardware ports configuration is not identical to that of the backup I-2000 may cause the system to run in a degraded manner.

The following example demonstrates how to restore selected databases.

- Step 1:** Select TAPE BACKUP/RESTORE from the DATABASE BACKUP/RESTORE menu. The TAPE BACKUP/RESTORE form appears.
- Step 2:** Insert the tape cartridge into the drive.
- Step 3:** Enter SELECTIVE RESTORE in the **Action** field or select it with the **[CHOICES]** key. The tape is read. An insert pops up asking WHICH DATABASES? and displaying the names of the databases on diskette. This is a multiselect menu.
- Step 4:** Use the **[SELECT]** key to select as many databases as you desire.
- Step 5:** When finished, press **[Enter]**. The databases selected along with the time stamp on the tape are displayed.
- Step 6:** Press **[EXECUTE]** and confirm. The following messages appear in this order:
- An IN PROGRESS message in the I-2000 **Status** line
 - A Copying name database files from tape message
 - A Loading name database files... message
 - A message, THE COMMAND COMPLETED SUCCESSFULLY

— The I-2000 **Status** line changes to a COMPLETED message

If the command fails, an insert appears stating the reason.

Entering and Retrieving Outage Data

Entering Outage Data

The ENTER OUTAGE DATA selection allows you to keep one or two electronic notebooks, or logs, on outages that have occurred on a DACS. You collect the data to be placed in a log. The advantage to keeping the log is that you can generate a report to obtain a formatted, hard-copy log.

Two logs are available: an NPC outage log and a circuit outage log. The logs allow you to record when an NPC or circuit, respectively, became nonfunctional, and when you restored service on them. You may store, change, or remove records for each log.

To obtain the OUTAGE LOG form:

- Step 1:** Select DATABASE ADMINISTRATION from the MAIN MENU.
- Step 2:** Select ENTER OUTAGE DATA from the DATABASE ADMINISTRATION menu. The OUTAGE LOG form appears:

```

06:15 01 Apr 93  I-2000 Controller Release x.x for DACS II
Status:
Alarms:
----- OUTAGE LOG -----
Site Name:DACS00

Outage Type:NPC           Action:INSERT           Record No:

Outage ID:

Date Out:                Time Out:      :      :

Date In:                 Time In:       :      :

Enter site name-----
HELP CHOICES [ ] QUIT [ ] TOP MENU PRINT EXECUTE
    
```

Figure 9-14. OUTAGE LOG Form

The field descriptions are as follows:

Table 9-5. Outage Log Field Descriptions

Site Name	Mandatory. 1 through 24 characters. The name of the DACS where the log is kept.
Outage Type	Mandatory. The log to be affected by the Action . NPC Selects the outage log for an NPC. CIRCUIT Selects the outage log for a circuit.
Action	Mandatory. The type of record handling to be performed. INSERT Places the record in the log. CHANGE Modifies the record. DELETE Removes the record from the log. DESTROY Removes all records from the log.

Table 9-5. Outage Log Field Descriptions

Record No.	A sequence number, 1 through 9999, that is automatically assigned during an INSERT Action , and can be entered in other Actions . Each circuit or NPC can have up to 9999 outage records. The default is the next highest value for the set of entries for a circuit or NPC. After a deletion, the records in the sequence are renumbered automatically.
Outage ID	Mandatory. 1 through 41 characters. The ID of the NPC or circuit for which the outage is being recorded. IDs that are not provisioned are not accepted.
Date Out	Mandatory. Three fields stating the date on which the outage began, in the format <i>dd mmm yy</i> where <i>dd</i> can be one or two digits, <i>mmm</i> is the first three letters of the month in either upper or lower case, and <i>yy</i> is the last two digits of the current year. 90-99 represent 1990-1999, and any other two digits imply the 21st century.
Time Out	Mandatory. Three fields stating the time on which the outage began, in the format <i>hh:mm:ss</i> where <i>hh</i> is 0 through 24 hours (00:01 follows 24:00), <i>mm</i> is 0 through 59 minutes, and <i>ss</i> is 0 through 59 seconds.
Date In	Mandatory. The date the outage was cleared.
Time In	Mandatory. The time the outage was cleared.

An example of inserting a record in the NPC outage log follows.

Step 1: On the OUTAGE LOG form, enter

- **Site Name:** DACS01
- **Outage Type:** NPC
- **Action:** INSERT.
- **Record No:** 0001
- **Outage ID:** NPC01101
- **Date Out:** 01 Jan 92
- **Time Out:** 01:34:26
- **Date In:** 01 Feb 92
- **Time In:** 06 15 22

- Step 2:** Press **EXECUTE** and confirm.
— The I-2000 completion message appears.

⇒ NOTE:
If you get a **COMMAND DENIAL WINDOW** with a message **CANNOT INSERT OR CHANGE OUTAGE LOG WHEN OUTAGE ID NOT IN SYSTEM**, then your NPC has not been provisioned when the **Outage Type** is NPC or your circuit has not been provisioned when the **Outage Type** is CIRCUIT.

Retrieving Outage Data

To obtain a report on the data from an outage data log,

- Step 1:** Select **REPORT OPERATIONS** from the **MAIN MENU**.
- Step 2:** Select **OUTAGES** from the **REPORT OPERATIONS** menu.
- Step 3:** On the **OUTAGE SEARCH CRITERIA** form, only the **Site Name** and **Outage Type** are required. Enter them. **Outage Type** selects the log.
- Step 4:** The ID field that appears on the screen depends on the **Outage Type** that you entered. Not entering an ID selects all NPCs or circuits in the log.

Another method of selecting is to enter a **Record Number** expression, if you know or can guess the record sequence numbers of the log. The **Record Number** field description follows.

Record Number Two fields specifying a range of record numbers:

- <number* specifies all numbers less than *number*.
- >number* specifies all numbers greater than *number*.
- number* specifies only the *number*.

The default of blanks in both fields selects all numbers, except as qualified by the additional fields.

- Step 5:** When you have entered the selection criteria, press **EXECUTE** and confirm. The screen temporarily displays
- SENDING REPORT GENERATION REQUEST. WAITING FOR REPLY.
- and then

COMMAND WILL BE EXECUTED IN BACKGROUND.

- Step 6:** Press **[Enter]** to acknowledge the command response.
- Step 7:** The REPORT OPERATIONS screen is displayed with DISPLAY LAST GENERATION REPORT selected. Press **[Enter]**.
- Step 8:** Select SCREEN or PRINTER. The report is printed or displayed.

Moving a Frame

You can use DATABASE BACKUP/RESTORE to move a frame to another site. First, back up the frame's database on portable media. Port the media to the other site, provision a frame at the new site and restore the ported database there. Finally, delete the frame at the old site.



WARNING:

If the same version of I-2000 software is not running at both sites, a database conversion is necessary.

TASK ADMINISTRATION

10

The TASK ADMINISTRATION selection of the MAIN MENU allows you to list or delete scheduled tasks. These tasks were scheduled by the user with the TASK SCHEDULING insert (see the Chapter 2 section "Using the EXECUTE Key"). Once they have been deleted, you will have to reschedule to run them again.

To obtain the TASK ADMINISTRATION menu, select TASK ADMINISTRATION from the MAIN MENU.

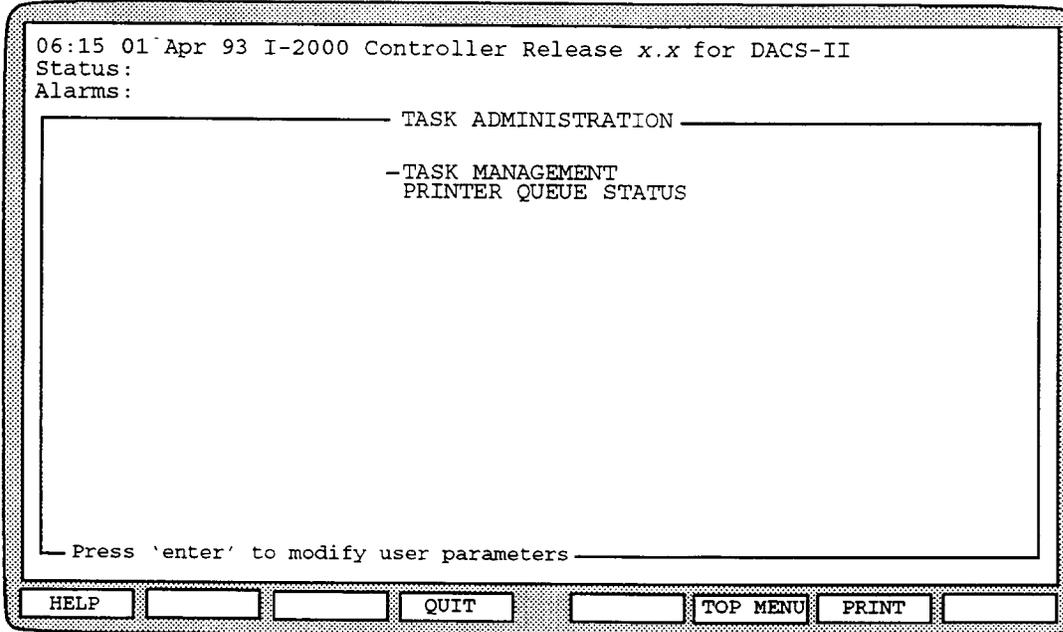


Figure 10-1. TASK ADMINISTRATION Menu



NOTE:

The PRINTER QUEUE STATUS selection chooses the PRINTER ADMINISTRATION selection of the SYSTEM ADMINISTRATION menu (see Chapter 3, "SYSTEM ADMINISTRATION").

However, only the LIST and CANCEL **Actions** of the PRINTER MANAGEMENT form are available here.

LIST and CANCEL list only print jobs placed on queue by your user login.

Select TASK MANAGEMENT.

Figure 10-2. TASK ADMINISTRATION Form

The fields that appear on the screen depend on the value of **Type**. Field descriptions follow.

Table 10-1. Task Administration Field Descriptions

Action	Mandatory. The selections for this field are
LIST	Lists the scheduled tasks that you have specified in Type
DELETE	Deletes the scheduled tasks that you have specified in Type . A DELETE of any tasks but your own is in all cases reserved to the system administrator.
Type	Mandatory. Specifies which scheduled tasks you wish to list or delete. The selections are
TASK	All tasks for a specified Site Name and User ID .
SITE	All tasks for a specified Site Name .
USER	All tasks for a specified User ID .
ALL	All scheduled tasks.

Table 10-1. Task Administration Field Descriptions

Site Name	Enter the name of the DACS frame where the requested Action will take place. Pressing [CHOICES] displays WHICH DACS? with a list of the DACS names. These names were established during frame administration.
User ID	Mandatory for TASK and USER Types only. Enter the I-2000 login name for the user whose task schedules you wish to LIST or DELETE .

Before you delete specified tasks, it is a good idea to take a look at them. A **DELETE Action** does not automatically list tasks.

The following example illustrates how to list scheduled tasks.

Step 1: Select **TASK ADMINISTRATION** from the **MAIN MENU** and **TASK MANAGEMENT** from the **TASK ADMINISTRATION** menu.

Step 2: Enter the following fields.

- **Action:** LIST
- **Type:** SITE
- **Site Name:** testsite

Step 3: Press **[EXECUTE]**. The **TASK SELECTION** insert pops up, describing the first task. Use **[NEXT]** and **[PREVIOUS]** to display descriptions of the other tasks on the list. An example of a displayed task is shown below.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- TASK ADMINISTRATION -----
Action:          Type:          Site Name:      User ID:
----- TASK SELECTION -----
User ID:ems      Site:testsite   Task:NPC Provisioning
Next Run:29Feb92 12:15:00  Last Run:      Interval:ONCE
Desc:CREATE NPC 01101 PB144
Enter desired action
HELP  PREVIOUS  NEXT  QUIT  TOP MENU  EXECUTE
    
```

Figure 10-3. A Displayed Task

In the example,

- User ID** is the the login ID of the user who created the task.
- Site** is the **Site Name** of the DACS on which the task is scheduled to be implemented.
- Task** is the name of the form on which the task was created.
- Next Run** is the time when next execution of the task is scheduled to begin.
- Last Run** is the time when last execution of the task is scheduled to begin, if this is a task that runs more than once.
- Interval** is the interval, in minutes, hours or days, at which the task is scheduled to run.
- Desc** is a brief description of the task to be implemented.

The following example illustrates how to delete the tasks specified in the previous example.

Step 1: Press **QUIT** and navigate to **Action**.

Step 2: Enter DELETE.

Step 3: Press **EXECUTE** and confirm.

— THE COMMAND COMPLETED SUCCESSFULLY message appears.

Features and Constraints

The I-2000 supports a total of 64 logins: one system administrator and 63 operators. An operator can be a user or a controller; i.e., a DACScan-2000 Controller C-Module. After setup and configuration of ports and links, the system administrator adds operator logins and can ADD, CHANGE, or DELETE them thereafter. A CHANGE or DELETE on an active login is delayed until the operator logs off.

System administrators and operators are distinguished from each other by the I-2000 functions they are permitted to use. System administrators always have unrestricted access to the I-2000; operators are restricted from certain selections, which are noted by shading in the "Summary of Menus And Forms" table located at the end of Chapter 2, "Getting Started." For example, all of the SYSTEM ADMINISTRATION, DATABASE ADMINISTRATION and USER ADMINISTRATION selections are reserved for the administrator. User access is defined by the **User Class** field on the USER MANAGEMENT form.

The I-2000 supports up to 6 simultaneous login sessions. Some of them may be reserved for controllers. Users may log in after stating their **Login Name** and **Password**, provided a session is available. If it is not, login is denied. Controllers log in automatically.

USER ADMINISTRATION

To obtain the USER ADMINISTRATION menu, select USER ADMINISTRATION from the MAIN MENU.

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

USER ADMINISTRATION

-USER MANAGEMENT
CHANGE PASSWORD

Press ENTER to modify user parameters

HELP [] [] QUIT [] TOP MENU PRINT []

The screenshot shows a terminal window with a header line containing the date and time (06:15 01 Apr 93), the system name (I-2000 Controller), and the release version (Release x.x for DACS-II). Below the header, the words 'Status:' and 'Alarms:' are listed. The main content area is a large rectangle containing the text 'USER ADMINISTRATION' at the top, followed by a sub-menu with two options: '-USER MANAGEMENT' and 'CHANGE PASSWORD'. At the bottom of this rectangle, there is a prompt: 'Press ENTER to modify user parameters'. Below the main content area, there is a row of seven buttons: 'HELP', a blank button, another blank button, 'QUIT', a blank button, 'TOP MENU', and 'PRINT'. The buttons are arranged in a horizontal line with small gaps between them.

Figure 11-1. USER ADMINISTRATION Menu

USER MANAGEMENT Selection

The USER MANAGEMENT form is shown below.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                                USER MANAGEMENT
Action:                          Login Name:
User Class:                       Password:
User Name:
Phone:
Address:                           City:
Alarms Audible:                    UI Idle Option:OFF

Enter desired action
HELP CHOICES [ ] QUIT [ ] TOP MENU PRINT EXECUTE
    
```

Figure 11-2. USER MANAGEMENT Form

Table 11-1. USER MANAGEMENT Field Values

Action	Mandatory.
	ADD Adds a user login to the I-2000.
	CHANGE Changes USER MANAGEMENT fields other than the Login Name and Password . To change the Login Name , DELETE and ADD the login. To change the password, use the CHANGE PASSWORD selection.
	DELETE Deletes a user login from the I-2000.
Login Name	Mandatory. Three through eight alphanumeric characters including the hyphen and the apostrophe. The login name by which the user will be known to the I-2000, and which will be required on login.
User Class	The type of login:
	OPERATOR The login is for an operator.
	ADMIN The login is for an administrator.

Table 11-1. USER MANAGEMENT Field Values

	CONTROLLER	The login is for a DACScan-2000 Controller C-Module.
Password		Mandatory. Appears only for an Action of ADD. The password, which will authorize entry to the I-2000 system with the User Class field value in effect, and will be required on login.
User Name		Up to 40 alphanumeric characters. The name of the person owning the login specified in Login Name .
Phone		Up to 13 alphanumeric characters, including (,) and -. The telephone number of the person cited in User Name .
Address		Up to 20 alphanumeric characters. The address of the person cited in User Name .
City		Up to 20 alphanumeric characters. The city of the person cited in User Name .
Alarms Audible	A switch:	
	ON	An audible signal should sound at the terminal where the user is logged in when an alarm occurs.
	OFF	An audible signal should not sound.
UI Idle Option	Set a threshold value for terminal idle time:	
	ON	Log off automatically after 60 minutes of idle time.
	OFF	Remain logged on until the user logs off.

The following example adds a user login:

Step 1: On the USER MANAGEMENT form, enter the following information:

- **Action:** ADD
- **Login Name:** GISH
- **User Class:** OPERATOR
- **User Name:** Willoughby Tarkington Gish
- **Phone:** (923)-624-5978
- **Address:** 8 Rotunda Place
- **City:** Neelock, Maryland
- **Alarm Audible:** OFF
- **UI Idle Option:** OFF

- Step 2:** Navigate to the **Password** field and enter the password. The letters you type do not appear on the screen.
- Step 3:** Press **[Enter]**. The PASSWORD VERIFY FORM appears with the prompt
- ```
Reenter the password
```
- The message at the bottom of the screen is
- ```
Reenter the password and type VERIFY key
```
- The label of the 8th key becomes **[VERIFY]**.
- Step 4:** Retype the password and press **[VERIFY]**. The cursor goes to **User name**. The password is never displayed.
- Step 5:** Press **[EXECUTE]** and confirm.
- THE COMMAND COMPLETED SUCCESSFULLY message is displayed.

CHANGE PASSWORD Selection

The following restrictions apply to changing the password.

- The password can be changed only for the current user.
- Passwords must be at least six characters.
- Passwords must contain at least two letters and one nonletter, meaning one number or special character.
- #, @, -, **[Backspace]**, **[Delete]**, and other functional keystrokes are excluded.

Changing the Password as an Operator

To change the password:

- Step 1:** Select CHANGE PASSWORD from the USER ADMINISTRATION menu. The message
- ```
Changing password for login name
```
- is flashed.
- Step 2:** You are prompted
- ```
Old password:
```

Enter the old password. What you type does not appear on the screen. If you decide to abort the procedure, simply press **Delete** without typing a password. The message

Sorry. Incorrect password.

is displayed, and you are returned to the USER ADMINISTRATION menu.

Step 3: You are prompted

New password:

Enter a new password and press **Enter**. If you decide to abort the procedure, press **Enter** anyway and continue pressing.

Step 4: You are again prompted

Reenter new password:

Reenter the new one and press **Enter**. It is accepted only if it matches the new password just entered letter for letter, including case. At the bottom of the screen a

Password successfully changed.

message should appear.

Changing the Password as a System Administrator

To change the password:

Step 1: Select CHANGE PASSWORD from the USER ADMINISTRATION menu. The PASSWORD CHANGE FORM appears:

⇒ NOTE:

This procedure can only be followed by the system administrator at the console. If you are at a remote, call the console site.

Step 1: At the login prompt, enter the word **root**:

```
login: root
```

and press **Enter**.

Step 2: Enter the **root** password that was established at software installation:

```
Password: root
```

⇒ NOTE:

It is extremely important to enter and to remember a root password, both to prevent unauthorized access from the root login, and for purposes of recovery.

Step 3: At the # prompt, type a command in the format

```
passwd {user}
```

For example, if the password is to be entered for a *user* of *ems*, type

```
# passwd ems
```

Step 4: The system asks for a new password. Enter it, and be sure not to forget it.

Step 5: Reenter the same new password on request.

Step 6: At the # prompt, type **exit**:

```
# exit
```

and press **Enter**.

Step 7: Now log in under *ems* with the new password.

The PASSTHROUGH selection of the MAIN MENU sets up direct communication with a DACS frame, bypassing the I-2000. This transparent mode is for DACS maintenance and administrative operations.

Two types of passthrough are supported: MULTIPLEXED PASSTHROUGH and full PASSTHROUGH. Both types of passthrough are available on all frames.

MULTIPLEXED PASSTHROUGH

This type of passthrough lets you communicate directly with the frame in a multiplexed mode, sharing the link with others. It allows simultaneous access by all operators to a frame over either a SNIDER link or a single X.25 SVC.

The I-2000 supports these MULTIPLEXED PASSTHROUGH functions:

- Simultaneous passthrough sessions for each logged-in user on any frame that is in service
- Command processing via the forms interface simultaneously with any active passthrough sessions
- Automatic termination of idle passthrough sessions
- Multiplexing of passthrough sessions onto a single communications circuit (SVC for X.25 or link for SNIDER) with the forms command processing interface for any frame
- Aborting a session.

The essence of the MULTIPLEXED PASSTHROUGH capability is that it does not usurp an entire communication link with a frame just for the passthrough functions. Moreover, as far as is possible, it provides the same kinds of functionality as does full PASSTHROUGH.

Some constraints on the use of MULTIPLEXED PASSTHROUGH are stated more fully as follows:

- Do not use the ? help mode on the DACS.
- Do not use interactive commands to the DACS; for example, commands to log on to the DACS, or to edit macros and maps. If you inadvertently enter an interactive command, access to the DACS is temporarily suspended, until the DACS times out.



WARNING:

The I-2000 language and the link to the frame must both be set for either PDS or MML. If they are opposite, then responses to commands may not be received or incomprehensible data may be received. Normally they are the same, but there is a possible condition of which you should be aware. If you enter a DACS login while in multiplexed passthrough (not recommended), and if the link language associated with the login is different from the I-2000 language setting, then the link will transition to the opposite setting from the I-2000.

To enter MULTIPLEXED PASSTHROUGH:

- Step 1:** Select PASSTHROUGH from the MAIN MENU. The PASSTHROUGH Choices insert appears:

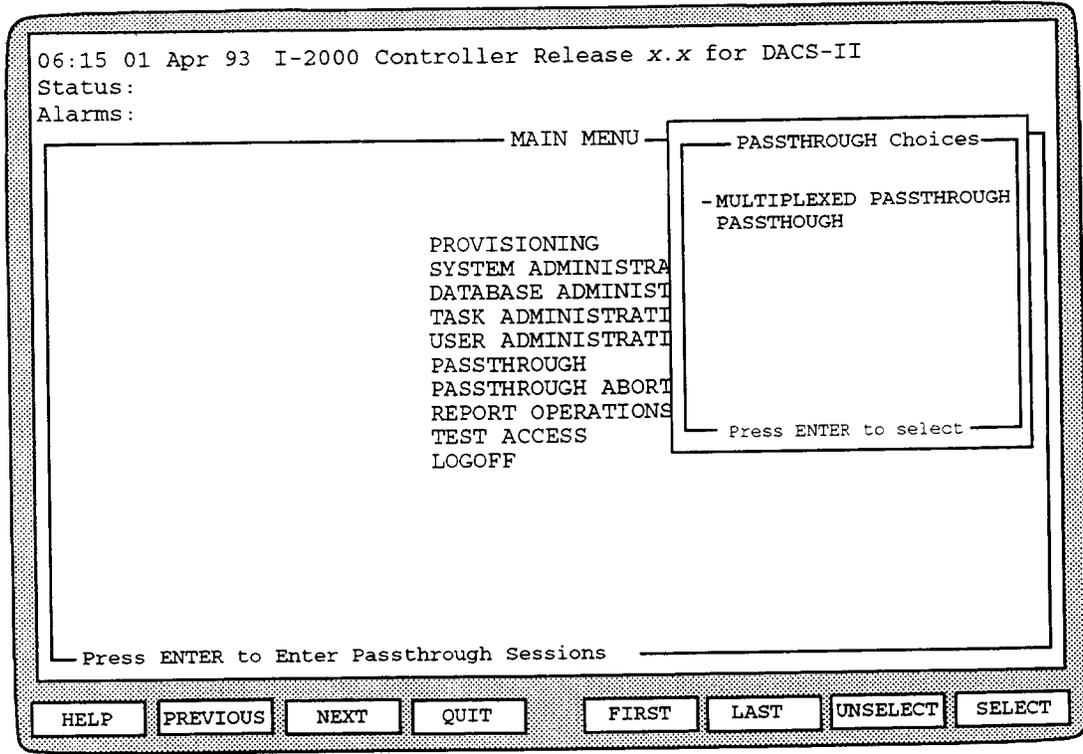


Figure 12-1. PASSTHROUGH Choices Menu

- Step 2:** Select MULTIPLEXED PASSTHROUGH. The WHICH DACS? menu pops up.
- Step 3:** Select the DACS. The Output Choices? menu appears. These selections describe the types of output messages that are to appear on the PASSTHROUGH screen:

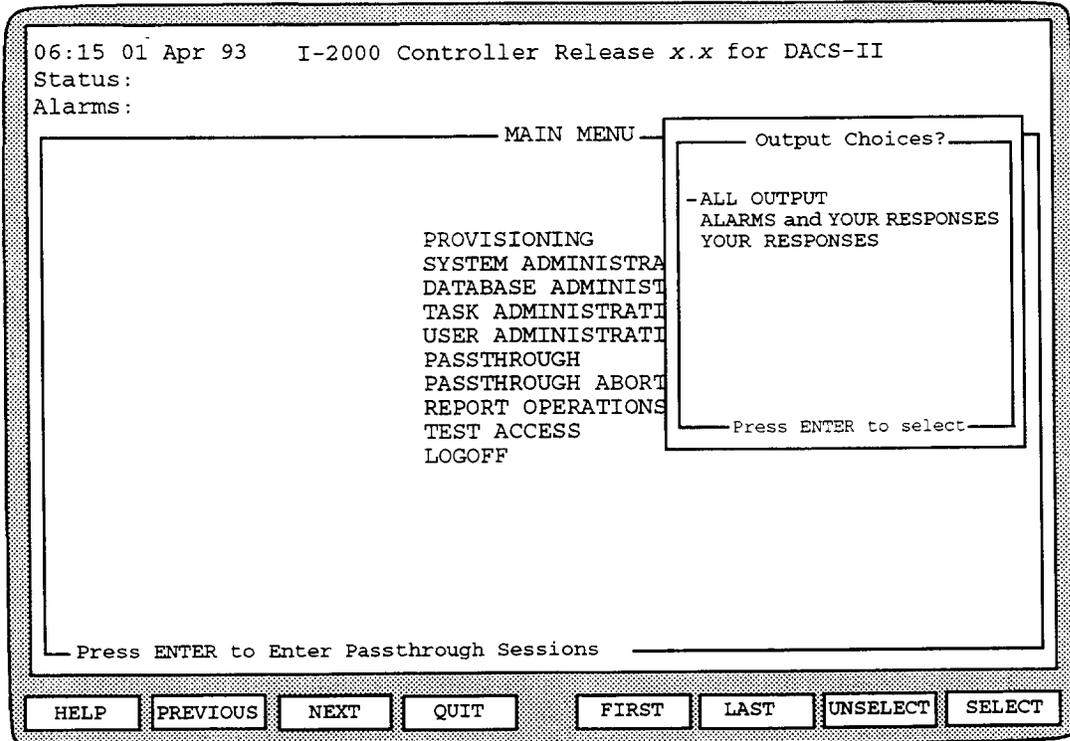


Figure 12-2. Output Choices Menu

Step 4: Select the desired choice of output. The MULTIPLEXED PASSTHROUGH screen appears:

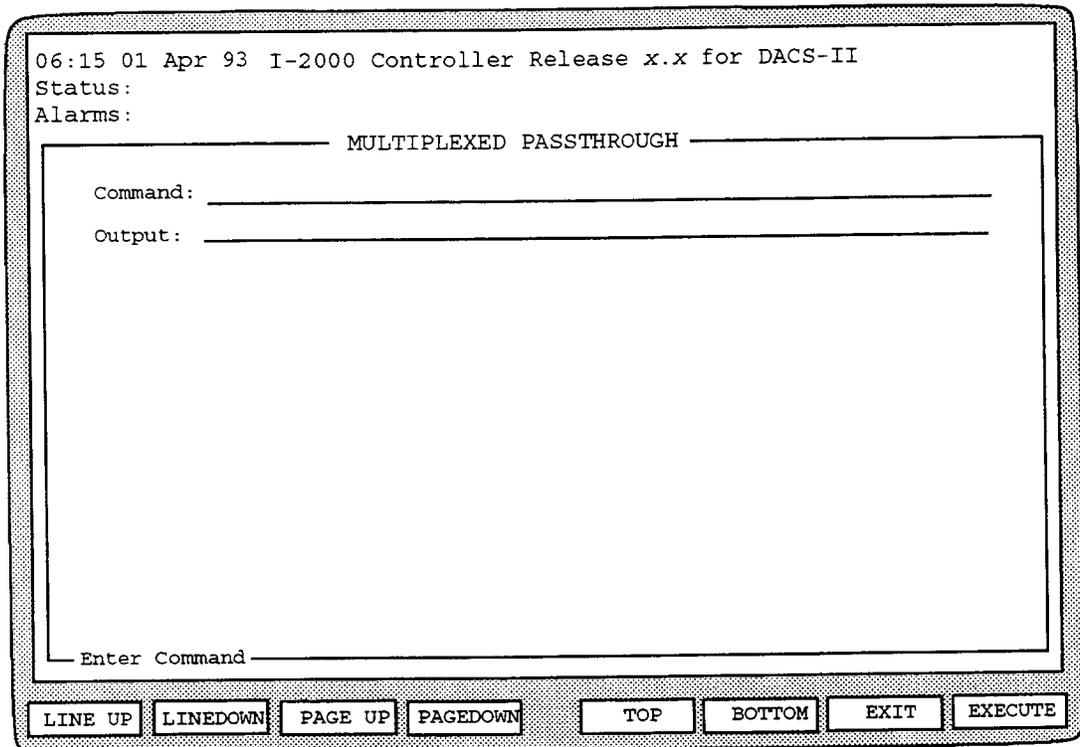


Figure 12-3. MULTIPLEXED PASSTHROUGH Screen

To leave MULTIPLEXED PASSTHROUGH, press **EXIT**. You are immediately returned to the main menu.

The I-2000 returns control of the terminal to you if it waits longer than a default of 60 seconds for the response to a command. The I-2000 ends the multiplexed passthrough session autonomously and returns you to the previous menu if the session remains idle for more than a default of eight hours.

Full PASSTHROUGH

This type of passthrough lets you communicate directly with the frame, but does not allow other users to share the link. Select this type when you must enter interactive commands to the frame; for example, commands that require frame logon.

Constraints on the use of full PASSTHROUGH are stated more fully as follows. Note that they apply only to this type of PASSTHROUGH.

- If the DACS was connected to the I-2000 in a direct configuration during installation, and a **Protocol** of SNIDER was specified during frame administration, entry of full PASSTHROUGH by one user restricts I-2000 access to the DACS: no other I-2000 users can send commands to it. An attempt to do so results in a message:

PASS THROUGH IS IN PROGRESS

- The system administrator has priority for PASSTHROUGH. If an operator is in the passthrough mode, the system administrator can terminate that relationship instantly with the PASSTHROUGH ABORT selection from the MAIN MENU. A pop-up box prompts WHICH USERS? Select the user(s) from the list given. A successful PASSTHROUGH ABORT results in the message:

PASS THROUGH IS AVAILABLE

Then the system administrator may enter PASSTHROUGH and, once in, cannot be displaced by I-2000 terminal operators. However, more than one system administrator can be logged in, and any of those can terminate the passthrough session of any other with PASSTHROUGH ABORT.

- If the DACS was connected to the I-2000 as a node on a Packet Data Network (PDN) and a **Protocol** of X.25 was specified during frame administration, as many users are allowed to be in PASSTHROUGH to one DACS as there are available Switched Virtual Circuits (SVCs). One X.25 card provides 20 SVCs, but the number available to the user at any one time depends on the number of DACS provisioned and the number of SVCs in use.
- If a **Protocol** of X.25 was specified during frame administration and you change the DACS link in PASSTHROUGH to communicate in PDS, the I-2000 automatically resets the DACS to communicate in MML when you leave PASSTHROUGH. If, on the other hand, the protocol is SNIDER, the I-2000 does not automatically reset the DACS to MML. Unless you do it manually before leaving PASSTHROUGH, the I-2000 will not be able to communicate with the DACS at all after you leave PASSTHROUGH.

To enter full PASSTHROUGH:

- Step 1:** Select PASSTHROUGH from the PASSTHROUGH Choices menu. The WHICH DACS? menu pops up.
- Step 2:** Select the DACS. The PASSTHROUGH screen appears, represented below:

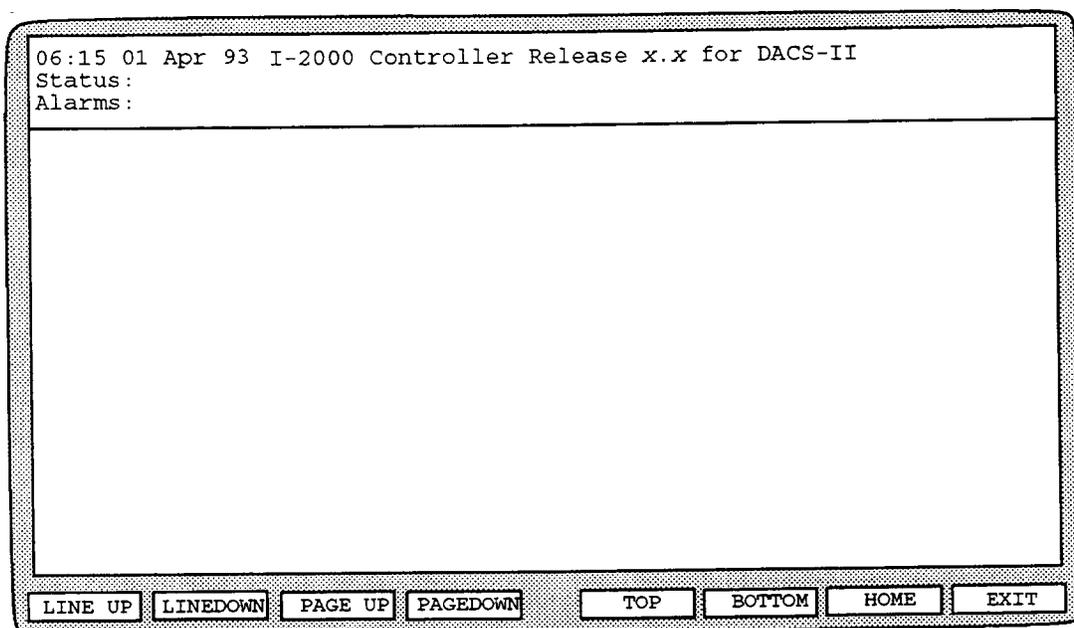


Figure 12-4. Passthrough Screen

To leave full PASSTHROUGH, press **EXIT**. You are immediately returned to the MAIN MENU.

How to Use the PASSTHROUGH Selections

In PASSTHROUGH, the I-2000 temporarily stores the last 120 lines of screen display in a special area called a screen buffer. The display includes both the commands you type and the DACS' responses to them. The screen displays 18 of those lines at any time.

In MULTIPLEXED PASSTHROUGH, the command remains on the screen. The I-2000 saves the last 120 lines of DACS responses only. The screen displays 14 lines at a time.

The 14 or 18 lines are, therefore, a "window" to the 120 screen buffer lines. You may move, or scroll, the window up and down through the buffer by means of the

F-keys. However, a different set of F-keys is valid for each type of passthrough. The tables below list these sets of keys.

Table 12-1. Full PASSTHROUGH Control Keys

<p>F1</p> <p>LINE UP</p> <p>Ctrl U</p>	<p>Scroll up (backward) one line.</p>
<p>F2</p> <p>LINE DOWN</p> <p>Ctrl D</p>	<p>Scroll down (forward) one line.</p>
<p>F3</p> <p>PAGE UP</p> <p>Ctrl B</p>	<p>Scroll up (backward) a full page.</p>
<p>F4</p> <p>PAGE DOWN</p> <p>Ctrl F</p>	<p>Scroll down (forward) a full page.</p>
<p>F5</p> <p>TOP</p> <p>Ctrl T</p>	<p>Go to top of first page.</p>
<p>F6</p> <p>BOTTOM</p> <p>Ctrl I</p>	<p>Go to top of last page.</p>
<p>F7</p> <p>HOME</p> <p>Ctrl I</p>	<p>Go back to last-displayed line.</p>
<p>F8</p> <p>EXIT</p> <p>Ctrl E</p>	<p>Exit.</p>

Table 12-2. MULTIPLEXED PASSTHROUGH Control Keys

<p>LINE UP</p>	<p>Scroll up (backward) one line.</p>
<p>LINE DOWN</p>	<p>Scroll down (forward) one line.</p>

Table 12-2. MULTIPLEXED PASSTHROUGH Control Keys

PAGE UP	Scroll up (backward) a full page.
PAGE DOWN	Scroll down (forward) a full page.
TOP	Go to top of first page.
BOTTOM	Go to top of last page.
EXIT	Exit
EXECUTE	Send command to frame.

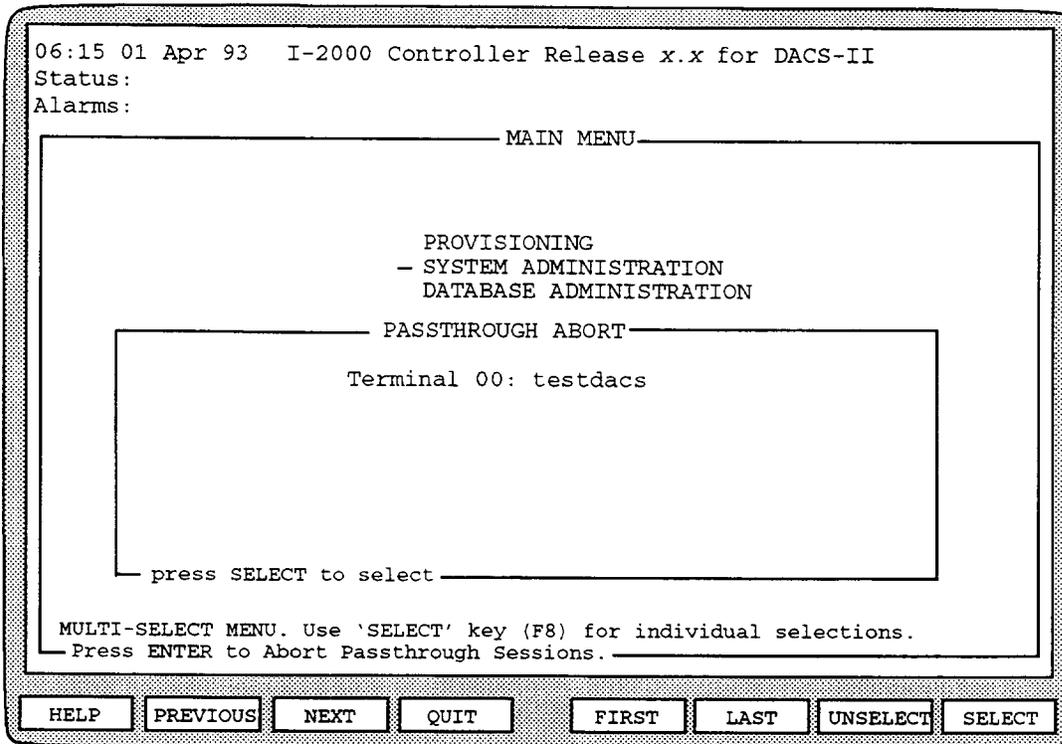
If a printer is attached to the I-2000 console monitor, typing **Ctrl** **O** prints the contents of the screen. If no printer is attached, or if an error is encountered during the screen dump, the screen flashes and the terminal beeps once.

Terminating Passthrough

To terminate the passthrough session of another user, you must be logged in as a system administrator.

Step 1: Select PASSTHROUGH ABORT from the MAIN MENU.

A window appears displaying the names of the DACSs being used in passthrough and the terminals using them:



Step 2: Use **SELECT** to select the sessions to be terminated.

Step 3: Press **ENTER**.

The selected passthrough sessions are cancelled.

REPORT OPERATIONS

13

Select REPORT OPERATIONS from the MAIN MENU.

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

REPORT OPERATIONS MENU

- CIRCUITS	RECONFIGURATION PLAN RESULTS
NPCS	AUTO RECONFIGURATION RESULTS
CHANNELS	AUDIT/SYNCHRONIZATION RESULTS
ALTROUTES/PREEMPTIONS	NPC ROLL RESULTS
RECONFIGURATION PLANS	ECHOED RESPONSE PROCESSING
RECONFIGURATION PLAN ALTROUTE	TASK SCHEDULE LIST
AUTO RECONFIGURATION PLANS	TASK SCHEDULE RESULTS
OUTAGES	DACS ALARM LOG
TEST ACCESS	DACS HISTORY LOG
FRAMES/LINKS	DISPLAY DACS ALARM QUERY
USER ADMINISTRATION	DISPLAY LAST GENERATED REPORT
DACS ALARM QUERY	EDIT CUSTOM REPORT FORMAT

Press ENTER to specify report search criteria

HELP [] [] QUIT [] TOP MENU PRINT []

Figure 13-1. REPORT OPERATIONS MENU

Introduction To Report Operations

The REPORT OPERATIONS MENU allows you to generate and display or print reports containing data from the I-2000 database. You may also create and edit custom formats.

When you generate a report, the I-2000 extracts data from the database and prepares it to be displayed or printed. The generated data is saved in a file. One such file is maintained for each I-2000 user. It contains the data for the report most recently generated.

When generating a report, you are allowed to specify search criteria for the records that are to be extracted from the I-2000 database. The search criteria restrict the report to records that have certain values in certain fields.

A custom format allows you to specify which data items will be shown in the report and the way in which those items will be arranged. Several standard formats are supplied with the I-2000. You may select any of them or create formats of your own, which then appear as format selections.

Preformatted report categories appear in the left-hand column of the REPORT OPERATIONS MENU. Several fixed formats are also supplied and are shown in the right-hand column.

All reports can be displayed on the user-terminal screen or printed on the I-2000 printer. Displayed reports are paged (divided into screen-sized segments). You can move through the report using **FIRST**, **LAST**, **NEXT**, and **PREVIOUS**, or by entering the page number in the **Display Page** field. Reports sent to the printer are also paged, but with a different page size than is used on the screen.

Generating Reports

- Step 1:** Select the data category on the REPORT OPERATIONS MENU.
- Step 2:** If you selected a category in the left-hand column, a pop-up window appears listing the available format names. Select the format.
- Step 3:** For all categories except the DACS HISTORY LOG, a SEARCH CRITERIA form appears displaying the fields for the selected category. Enter values into these fields to limit the data. If you leave all fields blank, all records in the database are reported.

For example, in a CHANNEL USAGE report (under CHANNELS) you might want to limit the search to a single NPC, which you would indicate by entering a specific **NPC ID**. If you want a report of the NPCs and channels involved in a particular circuit, enter the circuit name in

the **Used by Circuit ID** field. To list all spare or unused channels enter the value **NULL** in the **Status** field. If you want a report of all channel usage data for the specified **Site Name**, leave all fields blank.

```

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
_____ CHANNEL USAGE SEARCH CRITERIA _____
Site Name:DACS00
      Hier      Ext      NPC ID      Ch
NPC:
Status:
Used by circuit ID:
      TC:      IW:      Termination State:      Class:
      Hier      Ext      NPC ID      Ch
TC NPC:
Enter site name _____
HELP CHOICES [ ] QUIT [ ] TOP MENU PRINT EXECUTE
    
```

Figure 13-2. CHANNEL USAGE SEARCH CRITERIA Form

Use wild-card abbreviations (metacharacters) as follows:

- * stands for any number of any alphanumeric characters (including none) at that position in the string.
- ? stands for a single occurrence of any single character at that position in the string.

For example, AB5* finds AB544, AB54, AB5, AB55D, etc. ABC?5 finds ABC45, ABCD5, etc., but not ABC or ABC5.

In numeric fields you can enter:

>**number** All numbers greater than *number*.

<**number** All numbers less than *number*.

REPORT OPERATIONS

In a time/date field these values translate to: before (<) or after (>) the time/date given.

Step 6: When you have entered the selection criteria, press **EXECUTE** and answer YES to ARE YOU SURE? A command response window notifies you that the

COMMAND WILL BE EXECUTED IN BACKGROUND.

Step 7: Press **Enter** to acknowledge the command response. The screen flashes

SENDING REPORT GENERATION REQUEST. WAITING FOR REPLY.

The REPORT OPERATIONS MENU is displayed, with the cursor at DISPLAY LAST GENERATED REPORT. Report generation will not be complete until a

REPORT IS COMPLETED

message is displayed on the I-2000 Status line at the top of the screen. At this point, you may wait for the completion message and display or print the report (see following section), or proceed to any other I-2000 operation.



NOTE:

With large databases, report generation can sometimes take 20 minutes or more.

Displaying and Printing Reports

Display or print the most recently generated report as follows:

Step 1: Select DISPLAY LAST GENERATED REPORT from the REPORT OPERATIONS MENU. A pop-up window appears listing the output medium choices. Select SCREEN or PRINTER.

Step 2: If you select SCREEN, the last generated report appears on your terminal screen. Use **NEXT**, **PREVIOUS**, **FIRST**, and **LAST** to page through the report or specify a page in the **Display Page** field.

If you select **PRINTER**, the report is sent to the system printer and the message

REPORT HAS BEEN SENT TO PRINTER

appears on the message line.

Report Categories

This section describes the report categories that are available with the I-2000 system. The default formats mentioned under each category are listed in Appendix A.

In the descriptions below, the reports shown are examples of the displays only. These examples may have been abbreviated and may not contain data that were obtained by printing a report. However, they closely approximate the formats of the real reports.

CIRCUITS

CIRCUITS provides reports on circuit records. Four default formats are provided. Each concentrates on a different aspect of the information that has been created about the circuit. The data is from information that was entered in the CIRCUIT PROVISIONING form.

- CIRCUIT CONNECTIONS

Identifies circuit and end points by Circuit ID. For each cross-connection, the channel number and ID of the NPC in which it occurs is stated for both the FROM and the TO sides. High-rate and multipoint circuits are presented as multiple cross-connections.

The report includes **CP** (Circuit Priority), **Status**, **Class (Cls)**, **Bandwidth (BW)**, and **Bandwidth Type (BT)**.

```
-----stest1-----CIRCUITS-----CIRCUIT CONNECTIONS-----
Circuit_ID                CP  Status  Cls  BW  BT  F_NPC  Ch  T_NPC  Ch
SYNC 0001-010 0002-010 BW/01 FDX:000 00  IS      FDX  01  C   01101 010 01102 010
SYNC 0001-023 0002-005 BW/01 FDX:000 00  IS      FDX  01  C   01101 023 01102 005
SYNC 0004-004 0004-005 BW/01 FDX:000 00  IS      FDX  01  C   01104 004 01104 005
```

The SEARCH CRITERIA form is similar to the CIRCUIT PROVISIONING form. You can search for circuits of a given **Status** and other fields given on the form in addition to the ones that will appear in the report.

- CIRCUIT INFORMATION

Concentrates on the circuit characteristics for each Circuit ID. The report includes Trunk Conditioning (TC) and Insertion Word (IW).

REPORT OPERATIONS

```

-----stest1-----CIRCUITS-----CIRCUIT INFORMATION-----
Circuit_ID          TC          IW    F_NPC  Ch    T_NPC  Ch
SYNC 0001-011 0002-012 BW/01 FDX:000  TRSP      TRB  0001  011  0002  012
SYNC 0001-021 0002-012 BW/01 FDX:000  0011,0011 TRB  0001  021  0002  012
SYNC 0001-023 0002-005 BW/01 FDX:000  0011,0011 TRB  0001  023  0002  005
  
```

■ CIRCUIT OPTIONS

Concentrates on the circuit characteristics specified in the **Options** field.

```

-----stest1-----CIRCUITS-----CIRCUIT OPTIONS-----
Circuit_ID          TC    IW    SC    NAM  AIS  RDL  OOS  INCL  DCC
SYNC 0123-006 0124-007 BW/01 FDX:000  NAM
SYNC 0139-011 9961-005 BW/01 BBL:000  RDL
SYNC 0139-020 0151-021 BW/01 HDX:000  NAM  RDL
  
```

■ CIRCUIT AVAILABILITY

Concentrates on the availability of the circuits. The Service Date (Svc_Date), Circuit Priority (CP) and **Status** are listed for each Circuit ID, as well as the user informational Loc_A and Loc_Z fields.

```

-----stest1-----CIRCUITS-----CIRCUIT AVAILABILITY-----
Circuit_ID          Status    CP    Svc_Date  Loc_A  Loc_Z
SYNC 0001-011 0002-012 BW/01 FDX:000  DEACTIVATED  00    05May92
  SYNC 0001-021 0002-023 BW/01 FDX:000  DEACTIVATED  00    05May92
  SYNC 0001-023 0002-005 BW/01 FDX:000  ACTIVE       00    05May92
  
```

NPCS

NPCS provides reports on NPC records. Two default formats are provided. Each contains similar information, but the records are sorted on different fields. The data was entered in the NPC PROVISIONING form.

■ NPC IDS

REPORT OPERATIONS

Contains a record of NPCs that were provisioned. The NPC ID and various information such as the `Type` and `Status` are included. The NPC is the hierarchical number.

```
-----stest2-----NPCS-----NPC IDS-----
NPC_ID      Number      Svc_St      Type      FE_Site      Alm_stat      IW
NPC02439    02439                      DE200
NPC02440    02440                      DE200
VIRTUAL1    99101
VIRTUAL2    99102
```

Note that the NPCs named `VIRTUAL1`, `VIRTUAL2`, etc., are system-reserved virtual nodes for broadcast circuits.

The `SEARCH CRITERIA` form is similar to the `NPC PROVISIONING` forms. You can specify search criteria for fields that do not appear on the report. Moreover, you can use search criteria in the status fields, which are not accessible on the `NPC PROVISIONING` form.

■ NPCS

Contains records that are sorted by hierarchical NPC number. Alarm and service state information is included.

```
-----stest2-----NPCS-----NPC NUMBERS-----
Number      NPC_ID      Svc_St      Type      FE_Site      Alm_Stat      IW
01101      0001      OOS      DE200                      NONE      7F
01102      0002      IS      DE200                      NONE      7F
01103      0003      OOS      DE200                      NONE      7F
```

CHANNELS

`CHANNELS` provides reports on channel usage data. One default format is provided.

■ CHANNEL USAGE

Lists the use of each channel within each NPC that has been equipped. An important field for that purpose is `Used_by_Ckt_ID`, which states the

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Circuit ID of the circuit in which the channel is an end point, if it is being used.

```
-----stest1-----CHANNELS-----CHANNEL USAGE-----
NPC          Ch    Status   Circuit_ID          Cls   To_NPC    Ch
01101        000    NULL
01101        001    ACTIVE   fdx1                FDX    01102    001
01101        002    ACTIVE   fdx2                FDX    01102    002
01101        003    ACTIVE   fdx3                FDX    01102    003
01101        004    ACTIVE   fdx4                FDX    01102    004
```

The information in this report is taken from the data on both NPC and circuit provisioning; thus, no single screen covers it. The SEARCH CRITERIA form is a unique form. On it you can select by circuit characteristic, circuit ID, or test circuit. You can select any range of FROM or TO NPCs or channels.



NOTE:

Entering NULL in the **Status** field of the SELECTION CRITERIA form for this category selects channels which are not in use.

A full CHANNELS report takes some time to generate, since the I-2000 must check every channel of every NPC. It is suggested you limit the search to one or a few NPCs.

ALTROUTES/PREEMPTIONS

ALTROUTES/PREEMPTIONS provides reports on ALTROUTED and/or PREEMPTED circuits. Two default formats are provided. The fields that appear in the reports contain information that was entered in the CIRCUIT PROVISIONING form, and its second page, the ALTRROUTE form (Chapter 7).

■ ALTROUTED CIRCUITS

Identifies circuits in ALTROUTED **Status**. One line lists the ALTROUTED circuit ID and identifies one end point of the ALTROUTED circuit. The normal hierarchical number (NPC) and channel is listed along with the ALTROUTED hierarchical number (A_NPC) and channel.

One two-point circuit is thus identified by two report lines, one for each point. A multipoint circuit results in more than two report lines. Note that NPC and its Ch will not be different from A_NPC and its Ch if that point was not changed.

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An example depicting two ALTRouted circuits follows.

```
-----stest1-----ALTRUTES/PREEMPTIONS-----ALTRouted CIRCUITS-----
Circuit_ID          CP   NPC   Ch   A_NPC   Ch   Date   Time   Pr_Ckt_ID
Circuit1            00   01103 005   01103   004   3/23/93 8:01
Circuit1            00   01104 011   01104   012   3/23/93 8:01
Circuit2            00   01104 004   01104   004   3/23/93 8:02
Circuit2            00   01104 005   01104   006   3/23/93 8:02
```

The SEARCH CRITERIA form allows you to select by circuit ID of the ALTRouted circuits, circuit characteristics, end point NPC and channel number, and PREEMPTED circuit ID.

■ PREEMPTED CIRCUITS

Identifies the PREEMPTED circuits and the ALTRouted end points that caused their preemption.

The example below is a result of one preemption. The TO channel of Circuit8 was altrouted from NPC 01102, Channel 010, to NPC 01102, Channel 005, which was already in use. Circuit ID Circuit7 was, therefore, preempted:

```
-----stest1-----ALTRUTES/PREEMPTIONS-----PREEMPTED CIRCUITS-----
Circuit_ID          CP   NPC   Ch   Alt_Ckt_ID  CP   Date   Time
                  01101 010   Circuit8    00   22May92 09:26:22
Circuit7            00   01102 005   Circuit8    00   22May92 09:26:28
```

Two lines are required to record the altrouting, one for each point (NPC, Ch) of the ALTRouted circuit. For additional details, such as the ID of the ALTRouted circuit and the original end points of the PREEMPTED circuit, obtain the ALTRouted CIRCUITS report.

The SEARCH CRITERIA form allows you to select by ALTRouted or PREEMPTED circuit identifiers and by PREEMPTED circuit characteristics.

RECONFIGURATION PLANS

RECONFIGURATION PLANS reports on the contents of reconfiguration plans. One default format is provided. The fields that appear in the report contain information that was entered in the RECONFIGURATION PLAN PROVISIONING screen (Chapter 8).

■ PLAN CONTENTS

Lists the circuits and actions for the items of a reconfiguration plan.

```
-----stest1-----RECONFIGURATION PLANS-----PLAN CONTENTS--
```

Plan_ID	Status	Seq	Circuit_ID	Ckt_Action
RPlan001	IDLE	1	Circuit1	DEACTIVATE
RPlan001	IDLE	2	Circuit2	DEACTIVATE
RPlan001	IDLE	3	Circuit3	ACTIVATE

SEARCH CRITERIA form allows you to select by circuit **State** as well as by the fields listed on the report.

RECONFIGURATION PLAN ALTROUTE

RECONFIGURATION PLAN ALTROUTE provides reports on the altroutes and preemptions contained in a reconfiguration plan. Two default formats are provided. The fields that appear in the reports contain information that was entered in the RECONFIGURATION PLAN PROVISIONING form (Chapter 8).

■ PLAN ALTROUTED CIRCUITS

Lists the ALTROUTED circuit ID for ALTROUTE action items in a reconfiguration plan. One line is reported for each end point. The example below reports one ALTROUTE.

```
----stest1----RECONFIGURATION PLAN ALTROUTES----PLAN ALTROUTED CIRCUITS-----
```

Plan_ID	Seq	Alt_Ckt_ID	CP	NPC	Ch	A_NPC	Ch	Pr_Ckt_ID
RPlan001	5	Circuit1	00	0001	001	0003	003	Circuit3
RPlan001	5	Circuit2	00	0002	003	0004	004	Circuit4

The SEARCH CRITERIA form permits you to select by RP identifying data, or by ALTROUTED or PREEMPTED circuit identifiers.

■ PLAN PREEMPTED CIRCUITS

Lists the PREEMPTED circuit ID for circuits preempted by the ALTROUTE action items in a reconfiguration plan. One line is reported for each end point. The example below reports a preemption of a two-point circuit. The preemption was on the From side, represented by the second line.

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```
-----stest1-----RECONFIGURATION PLAN ALTROUTES-----PLAN PREEMPTED CIRCUITS-----  
Plan_ID      Seq      Pr_Ckt_ID  CP      NPC      Ch      Alt_Ckt_ID  CP  
RPlan001     5  
RPlan001     5          Circuit1  00
```

The SEARCH CRITERIA form is the same as for PLAN ALTROUTED CIRCUITS.

AUTOMATIC RECONFIGURATION PLANS

AUTOMATIC RECONFIGURATION PLANS reports the two lists located in each ARP. The fields that appear in the reports were entered in the AUTOMATIC RECONFIGURATION PROVISIONING form (Chapter 8).

■ RP LISTS

Reports the RPs listed in the ARP. The execution status of the ARP and the location at which the RP will execute are stated.

```
-----COMMON-----AUTO RECONFIGURATION PLANS-----RP LISTS-----  
ARP_ID      Seq      ARP_Stat  RP_Site  RP_ID      Date      Time  
ARP001      1        IDLE      stest1   RP001      27May92   11:16:58  
ARP001      2        IDLE      stest1   RP002      27May92   11:18:32
```

The SEARCH CRITERIA form allows searching by site, plan, ARP Status, date and time.

■ NPC LISTS

Reports the NPCs whose alarm will trigger the ARP. The same information as in RP LISTS is reported, except the site identification and hierarchical number of the NPC is substituted for the RP site and identifier.

```
-----stest1-----AUTO RECONFIGURATION PLANS-----NPC LISTS-----  
ARP_ID      Seq      ARP_Stat  NPC_Site  NPC      Date      Time  
ARP001      1        IDLE      stest1    01105     27May92   11:14:29
```

The SEARCH CRITERIA form is the same as for RP LISTS.

OUTAGES

OUTAGES provides reports on outage data records. One default format is provided. The fields that appear in the report are also shown in the OUTAGE LOG screen (Chapter 9).

- OUTAGE INFORMATION

This report is a printed version of the OUTAGE LOG.

```
-----stest1-----OUTAGES-----OUTAGE INFORMATION-----
Type      Num      Outage_ID                      Date_Str      Date_End
NPC        1        NPC01101                      27May92      27May92
```

The SEARCH CRITERIA form permits searching of log entries by type, record number, NPC or circuit ID, and time or date in or out.

TEST ACCESS

TEST ACCESS reports on test access status. Two default formats are provided. The fields that appear in the reports contain information that was entered in the TEST PORT PROVISIONING form (Chapter 5) and in the TEST ACCESS form (Chapter 14).

- TEST PORT PROVISIONING

Provides identifying information on the test ports and lists conditioning information on the circuits under test.

```
-----stest1-----TEST ACCESS-----TEST PORT PROVISIONING-----
TP_Grp    TP_NPC    TP          Static_TC   Static_IW
1          01103    1           0011,0011  7f
```

- TEST PORT STATUS

Lists Test Port and test circuit identifying and status information. The test port number, hierarchical number of its NPC, ID of the circuit under test and type of test connection is stated.

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In the example below, the circuit listed is being monitored. The other ports in NPC 01112 are not being used.

```
-----stest1-----TEST ACCESS-----TEST PORT STATUS-----
TP          TP_State   Ckt_ID_Under_Test      F_NPC      F_Ch   T_NPC   T_Ch
1           RELEASE
2           MONITOR    Circuit2                01110      004   01112   005
```

The SEARCH CRITERIA form permits search by test port or test circuit connection data and characteristics.

FRAMES/LINKS

FRAMES/LINKS provides reports on information entered during provisioning of frames and also on the links through which communication to the frames is effected. Four default formats are provided. The fields that appear in the reports contain information that was entered in the FRAME ADMINISTRATION and X.25 LINK ADMINISTRATION forms (Chapter 3).

■ PROVISIONING

Lists identifying information for the frames that have been provisioned.

```
-----COMMON-----FRAMES/LINKS-----PROVISIONING-----
Sitename   Status   C      Type      Protocol  lang    NPCAdd
stest1     IS P    *      DACS II   X.25     MML     EXT3
```

SEARCH CRITERIA form allows you to search by both frame and link characteristics.

■ LINK CONNECTIVITY

Lists information for primary and backup links that have been connected to a given frame. If the backup line data is not present, the backup line has not been provisioned.

```
-----COMMON-----FRAMES/LINKS-----LINK CONNECTIVITY-----
Sitename   Protcl   Pr      Network_Addr  Speed   Bk   Network_Addr
stest1     X.25    1       6174301311
```

The SEARCH CRITERIA form is the same as for PROVISIONING.

■ LINK STATUS

REPORT OPERATIONS

Lists status information about each link connected to a given frame. The status, protocol, and connection type of the primary and backup lines are stated. Blanks under the backup-line data headings indicate no backup line was placed in service.

```
-----COMMON-----FRAMES/LINKS-----LINK STATUS-----
Sitename  Protcl  Pr      C_Type  Status  Bk      C_Type  Status
stest1    X.25    1       PDN     IS
```

The SEARCH CRITERIA form is the same as for PROVISIONING.

■ FRAME CONTROL

States the values of various control fields from the FRAME PROVISIONING form..

```
-----COMMON-----FRAMES/LINKS-----FRAME CONTROL-----
Sitename      Location      Generic      ERP_Cont      NPC_Alm_S
```

USER ADMINISTRATION

USER ADMINISTRATION reports user login information. One format is provided. The fields that appear in the report contain information that was entered in the USER ADMINISTRATION form (Chapter 11).

■ USER LOGINS

Lists **Login name**, **User Name**, **Phone**, and **User Class** for each login

```
-----COMMON-----USER ADMINISTRATION-----USER LOGINS-----
Login      Name      Phone      Class
cscan     CSCAN     CONTROLLER
dacsadm   I-2000 administrator  ADMIN
```

The SEARCH CRITERIA form allows selection on every USER ADMINISTRATION form fields.

DACS ALARM QUERY REPORT

This is a fixed-format report, but the format depends on the content. It provides you with an alarm profile for a given frame. The following constraints apply:

- The report can only be obtained on a DACS II.

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- Only one user at a time may run the report for a given frame.
- The report does not provide instructions on how to respond to alarms.

The report contains two classes of information:

1. Statistics: totals and subtotals of alarms by category.
2. Alarm information specific to objects within the frame.

The categories of alarms are

- Frame summary alarms, resulting from malfunction of some hardware object within the frame.
- DS3 facility alarms, reporting on DS3 termination conditions.
- DS3 FTU alarms, reporting on termination conditions of NPCs within the DS3 shelf.
- FTU alarms, reporting on termination conditions of NPCs provided by DDCs and DPCs.
- DSPU alarms, reporting on termination conditions of DSPU NPCs (such as DMB).

Alarm information specific to objects within the frame are frame summary alarms. The hardware objects whose malfunction causes a frame summary alarm are tabularized below:

Table 13-1. DACS II Hardware Objects

DACS II Entities	FTU Equipment	DSPU Equipment	DS3 Equipment
Main Controller	Unit Controller	Unit Controller	Unit Controller
Main Processor	FTU Module Interfaces	Cross-connect Buffers	Formatters
Communications Interface	Format Converters	DSPU Interface	Facility Line Interface
Secondary Service Controller	Cross-connect Buffers		Protection Facility Line Interface
Disk			Multiplexers
Tape			Protection Multiplexers
Administrative Links			Multiple Interface Units
Cross-connect Networks			Protection Multiple Interface Unit

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Table 13-1. DACS II Hardware Objects

Clock and Control Interfaces			
Time and Date			
Tape Backup			

In addition are power converters, synchronizers, clock reference oscillator, timing link interfaces, and time slot interchangers.

To generate the report:

Step 1: Select it from the REPORT OPERATIONS MENU.

Step 2: Enter the **Site Name** on the DACS ALARM QUERY SEARCH CRITERIA form.

Press **EXECUTE** and confirm. Wait for the completion message.

To access the report, select DISPLAY DACS ALARM QUERY from the REPORT OPERATIONS MENU.

⇒ NOTE:

This is the only report not accessed via DISPLAY LAST GENERATED REPORT. Although of fixed format, the format has virtually unlimited instances, due to the virtually unlimited possible contents. The special selection copes with this variability.

An instance of a DACS ALARM QUERY REPORT follows:

pnfstst-----DACS ALARM QUERY REPORT-----

Alarm Conditions Outstanding:

pnfstst is alarming
Major

Summary of alarm totals for pnfstst:

pnfstst has 1 major alarm(s).
pnfstst has 2 autonomously removed component(s).

Subtotals of frame summary alarms:

1 Major alarms(s).

DACS II Entities:

Cross Connect Network (XC) 1 is in major alarm.

Subtotals for FTU Network Processing Circuit (NPC) Alarm(s):

2 Autonomously removed component(s).

Facility Terminating Unit (FTU) NPC Alarm(s):

Unit 01 module 3 npc 39 (0119) has been autonomously removed.
Unit 01 module 3 npc 40 (0120) has been autonomously removed.

RECONFIGURATION PLAN RESULTS

This fixed format report gives the results of the latest execution of a reconfiguration plan (**RP Action** of **ACTIVATE**, **CHECK**, or **IDLE**). It includes one entry for each step in the plan showing either successful completion or what type of conflict occurred, and an indication of what the last plan action was. Selection criteria include plan name and sorting field.

The plan is available sorted by sequence number (**Seq**) or by circuit priority (**CP**).

In the samples below, the **PLAN CONTENTS** report (see the section "RECONFIGURATION PLANS," in Chapter 13) shows the current circuit actions that are in the plan. The **RECONFIGURATION PLAN RESULTS** report indicates that the actions failed because, after the plan was created, the circuits specified in it came under test.

```
-----stest1-----RECONFIGURATION PLANS-----CP SORTED-----
```

Plan_ID	Circuit_ID	CP	Seq	Action
RP001	SYNC 0001-002 0001-003 BW FDX:000	00	1	ALTRROUTE
RP001	SYNC 0001-010 0002-005 BW FDX:000	01	2	DEACTIVATE

```
-----stest1-----RECONFIGURATION PLAN RESULTS-----SEQUENCE SORTED-----
```

Plan_ID	Action	Circuit_ID	CP	Seq
RP001	EXECUTE	SYNC 0001-002 0001-003 BW/01 FDX:000	00	1
THE SPECIFIED NPC "NPC01101" CHANNEL 2 IS UNDER TEST BY TEST PORT 1				
RP001	EXECUTE	SYNC 0001-010 0005-003 BW/01 FDX:000	00	2

BOTH sides of termination are under test

AUTOMATIC RECONFIGURATION PLAN RESULTS

This report gives the results of the latest execution of an ARP. It includes one entry for each RP in the plan. The RP status indicates whether an RP was executed. Example:

```
-----COMMON-----AUTO RECONFIGURATION RESULTS-----SEQUENCE SORTED-----
```

ARP_ID	Seq	RP_Site	RP_ID	RP_St	Date	Time
ARP001	1	stest1	RP001	EXECUTED	29May92	15:40:09

stest1 RECONFIGURATION PLAN ID "RP001": 2 ATTEMPTED, 1 SUCCESSFUL.

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ARP001 2 stest1 RP002 IDLE 27May92 11:18:32

The plan is available sorted by sequence number (Seq) or by reconfiguration plan ID (RP_ID).

AUDIT/SYNCHRONIZATION RESULTS

This report lists discrepancies found between the I-2000 and DACS databases during the most recent database audit/synchronization operation. The selection criteria comprise **Site Name, Action, NPC Hier, Ext, ID, Date, and Time**.

Use of the SEARCH CRITERIA form parallels use of the DATABASE AUDIT/ SYNCHRONIZATION form. You need to enter the same **Action** and range in the SEARCH CRITERIA form as you did on the AUDIT/SYNCHRONIZATION form in order to obtain only the data of interest.

NPC ROLL RESULTS

This report lists the results of NPC rolls. The circuit IDs of rolled circuits, as well as their statuses, are included. The selection criteria are the NPC identifiers.
Example:

```
-----pnfstst-----NPC ROLL-----RESULTS-----  
Cur_NPC      Roll_NPC      Circuit_ID      Ckt_Status  
npc105        npc100        Ckt1            ACTIVE  
  
THE COMMAND COMPLETED SUCCESSFULLY
```

ECHOED RESPONSE PROCESSING

The ECHOED RESPONSE PROCESSING Report lists messages that are received by the I-2000, and were initiated by a frame independently; i.e., they report changes in provisioning that were not in response to user requests through

REPORT OPERATIONS

the I-2000. A sample report follows:

```
06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

-----test-----ECHOED RESPONSE PROCESSING-----RESULTS-----
Date      Time      Type      Action      Identifier
08Jul93  18:18:30  CIRCUIT  DEACTIVATE  /          03 961/006 013/001
DISC: MISMATCH BANDWIDTH 3 FOR CIRCUIT bb16/M1 BANDWIDTH 4
08Jul93  18:21:56  CIRCUIT  DEACTIVATE  /          08 99101/006 011/001
DISC: MISMATCH BANDWIDTH4 FOR CIRCUIT bb16/M2 BANDWIDTH 4

01 Apr 93      14:35:04      Page 1 of 1      Display Page:

[HELP] [NEXT] [PREV] [QUIT] [FIRST] [TOP MENU] [PRINT] [LAST]
```

Figure 13-3. Sample ERP Report

TASK SCHEDULE LIST

The TASK SCHEDULE LIST is a list of all I-2000 tasks scheduled to be executed. Selection criteria are **Site Name** and **User ID**.

```
-----COMMON-----TASK SCHEDULE-----LIST-----
User_ID  Sitename  Next_Date  Time      Interval  Last_Date_Time  Status
ems      stest1    29May92    17:20:00  ONCE      DORMANT
CREATE NPC NPC01101 01101 (0001) PB100
ems      stest1    29May92    17:20:00  ONCE      DORMANT
CREATE NPC NPC01101 01101 (0002) PB100
```

TASK SCHEDULE RESULTS

The TASK SCHEDULE RESULTS report is a list of all scheduled tasks that were executed, along with the results of the execution. The example below continues

REPORT OPERATIONS

the TASK SCHEDULE LIST example above. As you can see, the attempt to provision two NPCs failed.

```
-----COMMON-----TASK SCHEDULE-----RESULTS-----  
  
User_ID          Sitename          Cmp_Date          Time  
ems              stest1            29May92           17:20:00  
  
CREATE NPC NPC01101 01101 (0001) PB100  
THE NPC ALREADY EXISTS  
  
ems              stest1            29May92           17:20:00  
  
CREATE NPC NPC01101 01101 (0002) PB100  
THE NPC ALREADY EXISTS
```

DACS ALARM LOG

The DACS ALARM LOG reports all alarms received by the I-2000. The selection criterion is just **Site Name**. For an example and explanation of the report, refer to Chapter 3.

DACS HISTORY LOG

The DACS HISTORY LOG does not have to be generated each time it is displayed or printed. It lists messages exactly as they were sent to the I-2000 from the DACS, in chronological order. The only selection criterion is **Site Name**.

However, messages initiated by the I-2000 as part of an audit/synchronization operation will not be logged. The following table cites these messages.

Table 13-2. Messages Not Logged In DACS History Log

Category	Command Code	Number	Use
NPC Provisioning	RTRV-STATE-EQPT::NPC	O.56311	Utility query NPC state
Audit/sync	RTRV-CRS-T1	O.52011	Cross-connect map
Audit/sync	RTRV-PRMTR-T0	O.52041, O.52051	Utility query to/from
Audit/sync	RTRV-PRMTR-T1	O.52061, O.52071	Utility query to/from

An example of a logged message follows.

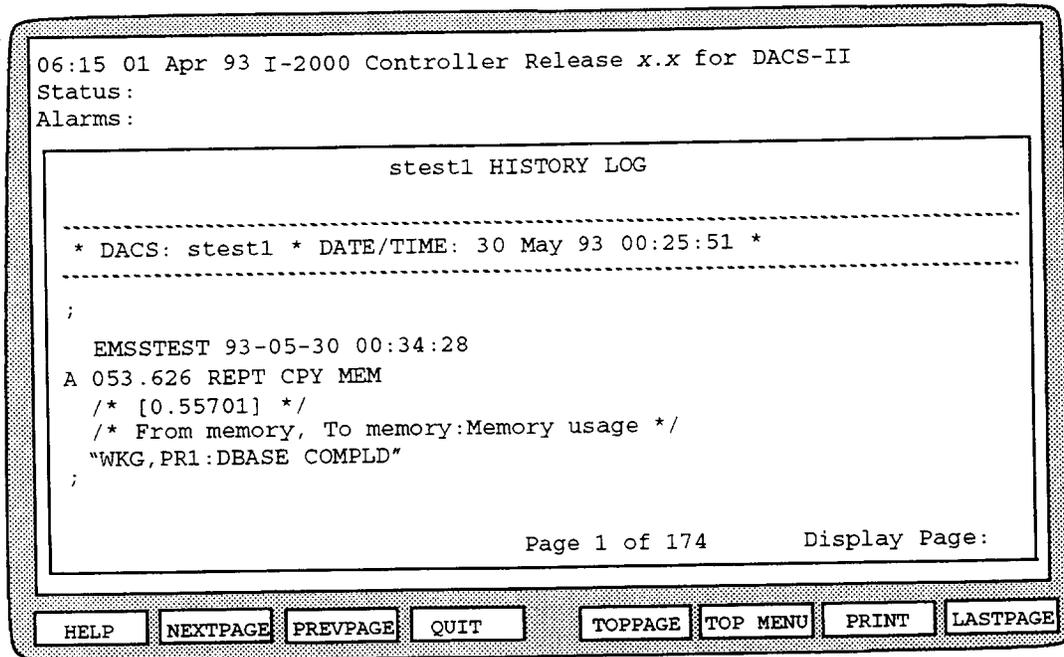


Figure 13-4. DACS History Log

Custom Report Formats

The formats listed in Appendix A are provided with the I-2000 system and will supply most needs, but the user may customize or add to these using the procedures which follow. Once a custom format has been created or modified, it will be listed in the format selection pop-up window, which appears during report generation.

Edit Screen and Fields

Choose the EDIT CUSTOM REPORT FORMAT selection on the REPORT OPERATIONS MENU. You are then asked to choose from the report format

categories, but the initial screen is the same in every case:

Figure 13-5. Edit Custom Report Format Form

Table 13-3. Edit Custom Report Format Field Descriptions

Action	Mandatory. CREATE Creates an initial report format. DELETE Deletes an existing format by name. MODIFY Displays an existing format for editing. RENAME Renames an existing format.
Report Name	Mandatory. 1 through 30 alphanumeric characters. Enter the name of the report you wish to create or otherwise access with the Action .
SELECT	Accessible in MODIFY only, as are the remaining fields of this screen. You can select or deselect display items by inserting or deleting an X in this field.

Table 13-3. Edit Custom Report Format Field Descriptions

ORDER	Numeric, 1 through the number of Xs marked in the SELECT column. The order in which the item is to appear across the report, from left to right. As you edit this format, a line is displayed across the upper portion of the screen with each column name given in the specified order.
SORT	Numeric. The sort order priority of the item. For example, to sort report records first by Circuit ID , and then by Circuit Type , enter a 1 on the line at which Circuit ID is named and a 2 on the line at which Circuit Type is named. You can specify sorting priority down to the eighth level. You must enter Priority 1 first, Priority 2 second, etc.
DEFAULT COLUMN NAME	1 through 18 alphanumeric characters. The item names appear as the column names unless you enter an alternative name as the OPTIONAL COLUMN NAME . Use PREVIOUS and NEXT to scroll through the whole listing.
OPTIONAL COLUMN NAME	1 through 18 alphanumeric characters. Column names of your own choosing. They replace the default names.
DEF DATA WIDTH	Numeric. The widths of the database items selected. The default is used unless you enter an alternative value under OPTIONAL DATA WIDTH .
OPT DATA WIDTH	Numeric. Column widths of your own choosing. The data is truncated to these widths, if necessary.
TOTAL WIDTH	Numeric. The sum of the column widths with single spacing between columns. This sum automatically changes as you select or deselect data items, or modify the OPTIONAL COLUMN NAME or OPTIONAL DATA WIDTH fields. The maximum width of the report is 78 characters.

Create New Format

To create a new format:

- Step 1:** Select EDIT CUSTOM REPORT FORMAT from the REPORT OPERATIONS MENU. The pop-up menu REPORT FORMAT CATEGORIES is displayed.
- Step 2:** Select the category for which you want to create a format. A new screen appears with mandatory fields **Action** and **Report Name** highlighted.
- Step 3:** Enter CREATE in the **Action** field.
- Step 4:** Enter a **Report Name** for the format you are creating.



NOTE:

If the sum of the site name, report format category name and report name would exceed 78 characters, which is the width of the screen, then the report format category name is truncated.

Step 5: Press **EXECUTE** and confirm. When the database has been updated, the following message appears:

REPORT FORMAT HAS BEEN CREATED



NOTE:

If you exit at this point, you have created a default report format with database items taken in the order they appear in the database (for this category) and as many as can fit across the page (78 columns). You can modify this basic format to suit your own needs.

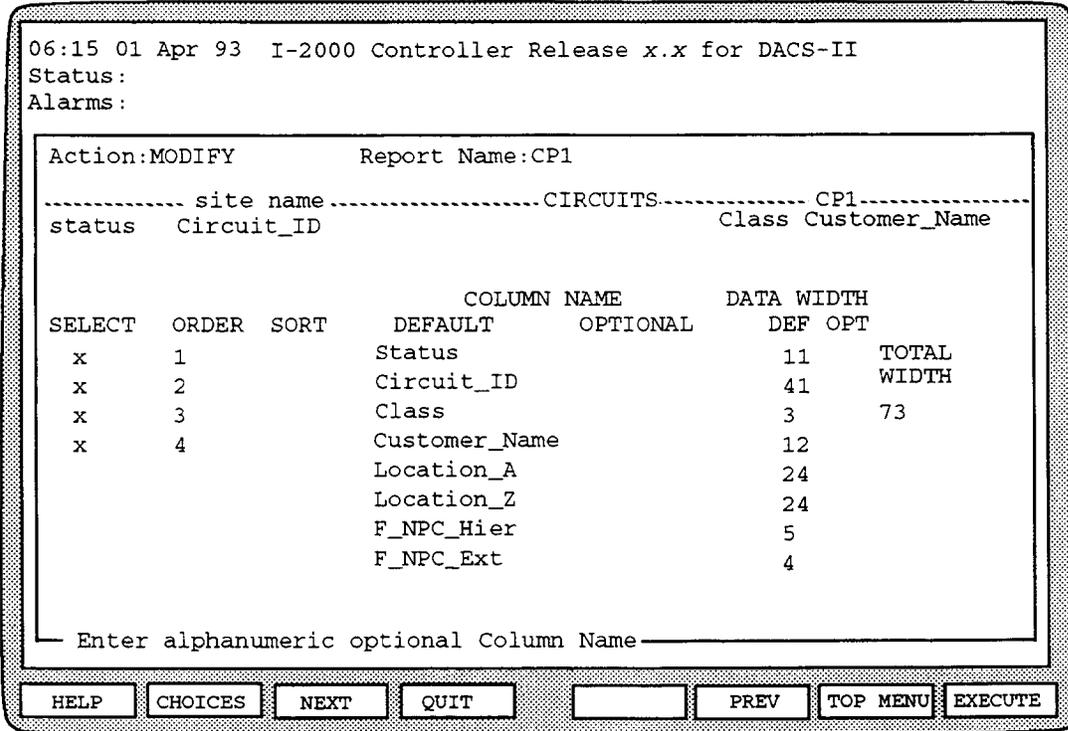


Figure 13-6. Sample Report Format

Modify Format

To modify; i.e., to edit, an existing report format:

- Step 1:** Select EDIT CUSTOM REPORT FORMAT from the REPORT OPERATIONS MENU.
- Step 2:** Select the category for which the format was created. A new screen appears with mandatory fields **Action** and **Report Name** highlighted.
- Step 3:** Enter MODIFY in the **Action** field.
- Step 4:** Enter the **Report Name**. The screen flashes
SEARCHING
in the upper right corner.
- Step 5:** The lower fields on the screen become active and are filled in with values representing the current state of the format. Change the values in these fields to redesign your format.
- Step 6:** Press **EXECUTE** and confirm. When the database has been updated, the following message appears:
REPORT FORMAT HAS BEEN MODIFIED

Rename Format

To rename a format:

- Step 1:** Select EDIT CUSTOM REPORT FORMAT from the REPORT OPERATIONS MENU.
- Step 2:** Select the category for which the format was created. A new screen appears with mandatory fields **Action** and **Report Name** highlighted.
- Step 3:** Enter RENAME in the **Action** field.
- Step 4:** Enter the **Report Name**.
- Step 5:** A new field appears, **New Name**. Enter the new report name.
- Step 6:** Press **EXECUTE** and confirm. When the database has been updated, the following message appears:
REPORT FORMAT HAS BEEN RENAMED

Delete Format

To delete a format:

REPORT OPERATIONS

- Step 1:** Select EDIT CUSTOM REPORT FORMAT from the REPORT OPERATIONS MENU.
- Step 2:** Select the category for which the format was created. A new screen appears with mandatory fields **Action** and **Report Name** highlighted.
- Step 3:** Enter DELETE in the **Action** field.
- Step 4:** Enter the **Report Name**.
- Step 5:** Press **EXECUTE** and confirm. When the database has been updated, the following message appears:

REPORT FORMAT HAS BEEN DELETED

Introduction To Test Access

The TEST ACCESS selection provides a capability to connect the test port channels that were provisioned in TEST PORT PROVISIONING (Chapter 5) to other DACS channels and to each other for purposes of testing. The actual testing is done outside of the I-2000 system. The DACS equipment must be configured in such a way that the test ports terminate lines from test equipment.

Typically you enter TEST ACCESS when a communication problem is discovered in an existing I-2000 circuit. The **Action** field on the TEST ACCESS screen lets you determine the type of test connection to the channels of the problem circuit.

**NOTE:**

The I-2000 does not support test access for the DACS I.

Not every type of circuit may be tested through TEST ACCESS. Test connections to the following circuits are not supported:

- Subrate.
- Clear DS1/E1.
- A node in a real or virtual multipoint circuit. However, the EFTs can appear in test circuits.

A brief summary of the test circuits supported is stated below. More complete descriptions are to be found in the DACS II manuals, such as the *DACS II Reference manual*.

⇒ **NOTE:**

The logical diagrams shown in this section apply to two-way circuits. You can derive the equivalent diagrams for one-way circuits by mentally erasing the second direction (Rx to Tx) and all the connections to it.

⇒ **NOTE:**

The diagrams shown in this section are from an internal point of view. Thus, an Rx from an external point of view; i.e., a receiving point for line transmission, becomes the Tx for cross-connection within the frame. This same convention is used consistently throughout this manual.

The most common type of access is **MONITOR**. It allows test equipment to “listen” to an existing circuit without interrupting transmission on the circuit. Signals from the FROM and the TO channels are communicated along their intended route, but are also received at the test port.

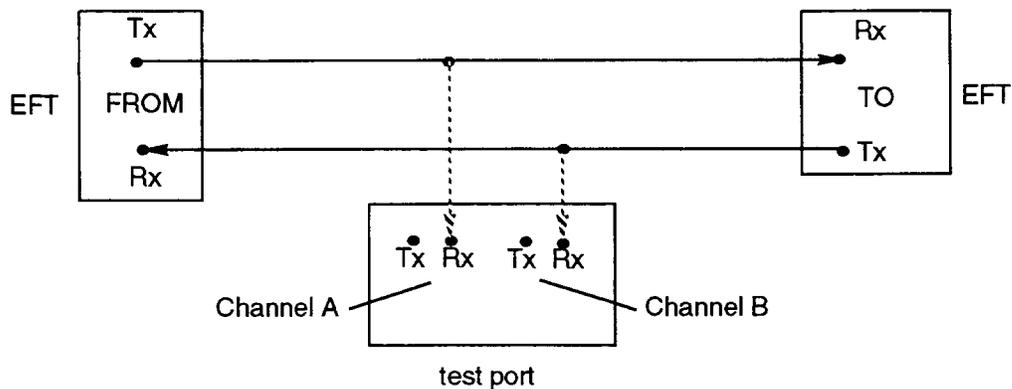


Figure 14-1. Monitor Test Circuit

In the diagram above, the normal circuit, which is in this case duplex, sends data from the FROM side Tx to the TO side Rx, and from the TO side Tx to the FROM side Rx. A test circuit in **MONITOR Status** also connects the TO side Rx to Channel A Rx of the test port, and the FROM side Rx to Channel B Rx. Normal transmission on the circuit is, thus, received at both the TO side Rx and a test port Rx, and at both the FROM side Rx and a test port Rx. If the circuit were half-duplex, only the TO side Rx and one test port Rx would receive.

If *Terminate and leave* is applied to the TO side, the TO Rx receives only the IW signal; i.e., traffic is replaced by an insertion word on that side. However, the test port Rx continues to monitor normal traffic on that side.

If you have not entered an IW in either the NPC or circuit provisioning forms, the frame uses its own default; typically, the UMC. An IW entered in NPC provisioning takes precedence over the frame default, and an IW entered in circuit provisioning takes precedence over either of those.

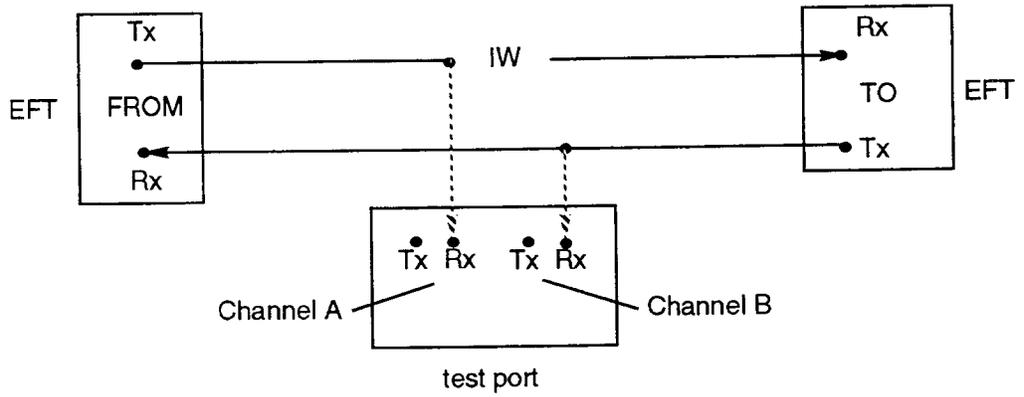


Figure 14-2. Monitor Test Circuit, TLA Applied in T Direction

The same may be said of FROM side TLA.

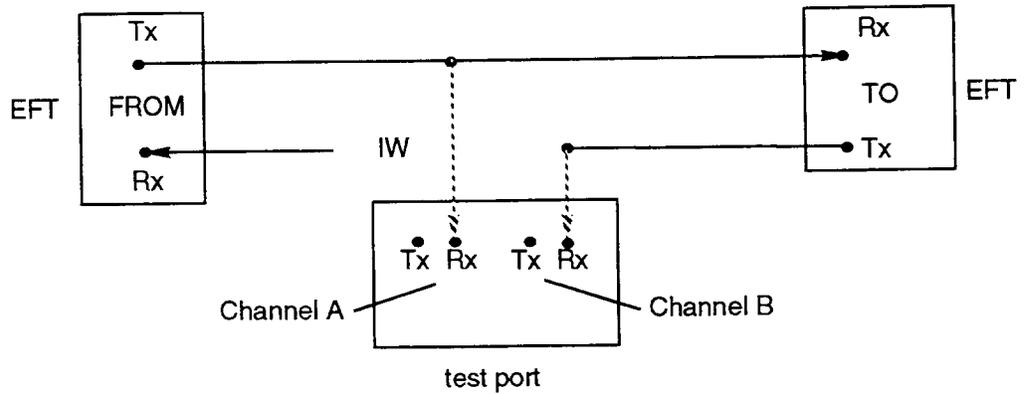


Figure 14-3. Monitor Test Circuit, TLA Applied in F Direction

If TLA is applied to both sides, then no normal traffic is sent on the circuit being tested, but the test port stands in its place.

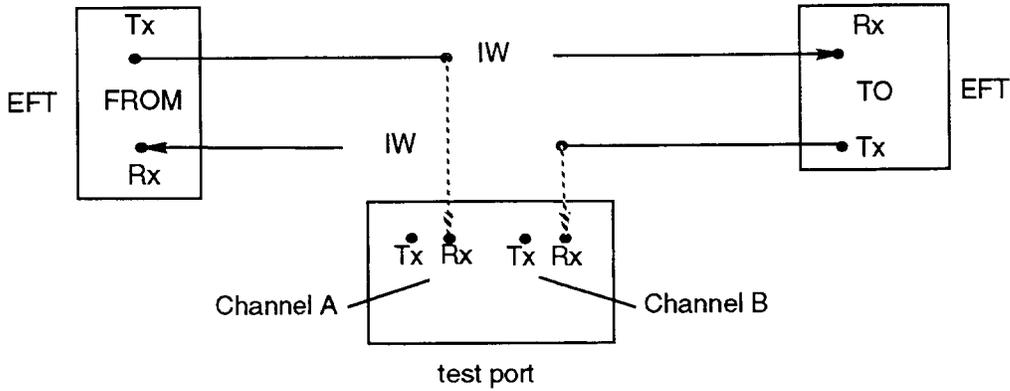


Figure 14-4. Monitor Test Circuit, TLA Applied in B(oth) Directions

In SPLIT access, the circuit is broken and the test signal is inserted at the break.

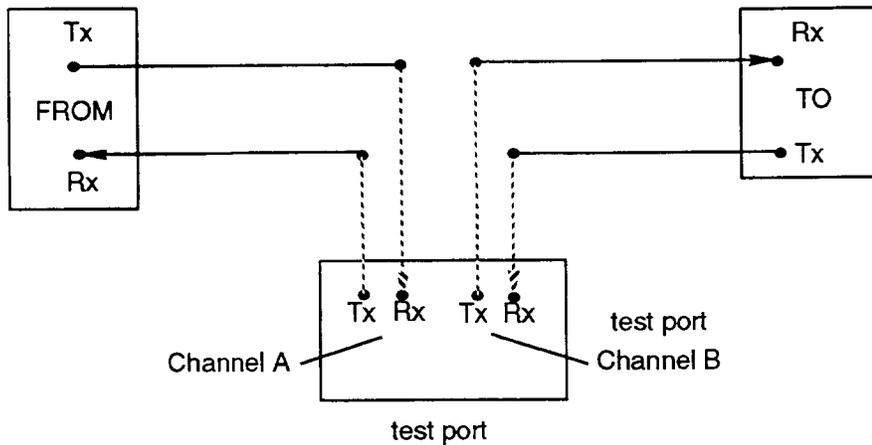


Figure 14-5. Split Test Circuit

The circuit is completed through Channel A by connecting Channel A Tx to the FROM side Rx, and through Channel B by connecting Channel B Tx to the TO side Rx. Moreover, the directions from FROM Tx to TO Rx and from TO Tx to FROM Rx are broken. Although the old circuit still nominally exists, the TO channel is connected to one of the test port channels and the FROM channel is connected to the other test port channel. The TO and FROM channels can transmit to each other only if the test port channels pass on the transmission externally to the DACS.

The test port both sends and receives. User test equipment can send signals to both the FROM and the TO sides of the original circuit simultaneously and independently, simulating the old circuit if such simulation is desired.

If TLA is applied to the TO side, the traffic from TO Tx to Channel B Rx is replaced with the IW.

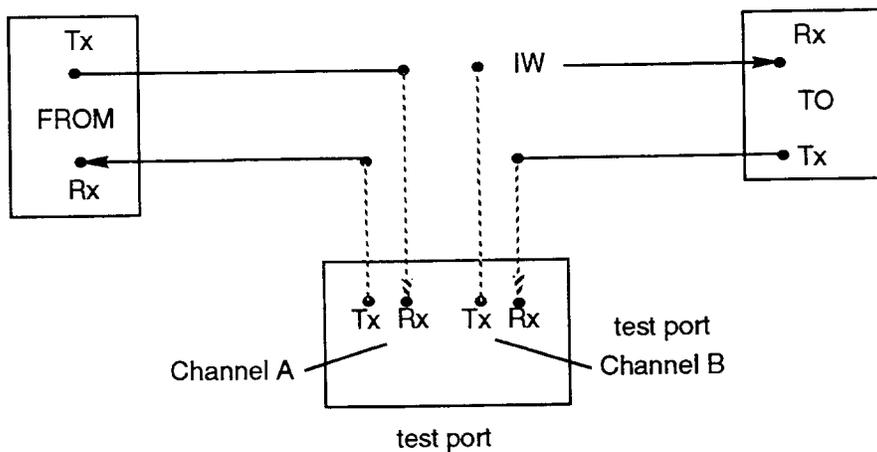


Figure 14-6. Split Test Circuit, TLA Applied in T Direction

If TLA is applied to the FROM side of a circuit being tested in **SPLIT Status**, the return traffic from Channel A Tx to the FROM side Rx is replaced by the IW.

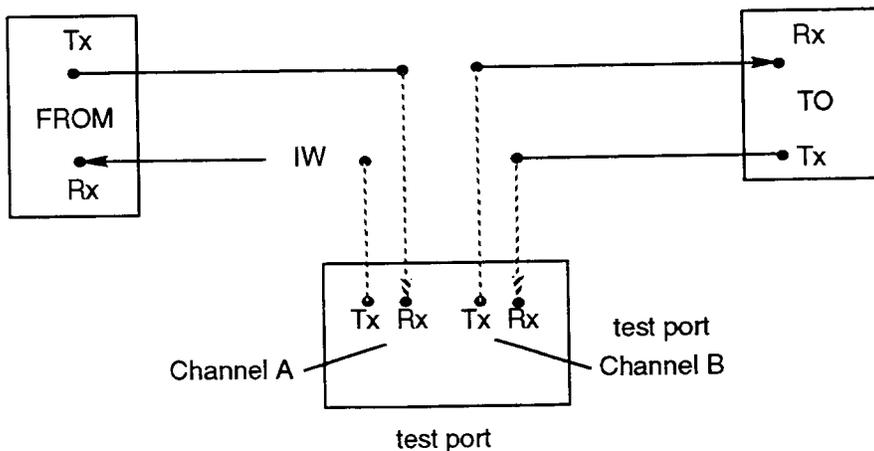


Figure 14-7. Split Test Circuit, TLA Applied in F Direction

If TLA is applied to both sides, there is still traffic from FROM side Tx to Channel A and from Channel B to TO side Rx.

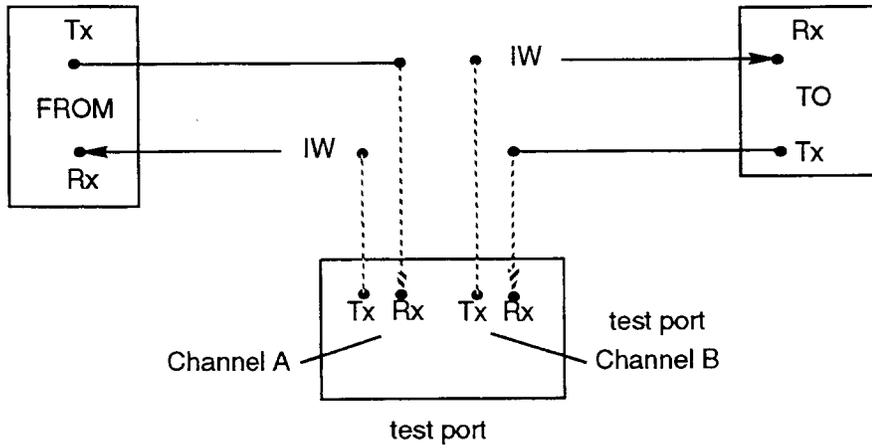


Figure 14-8. Split Test Circuit, TLA Applied in B(oth) Directions

A test port can connect to a channel that is not mapped in a circuit. In that case, it is part of an independent circuit between the channel and the TO test port channel. This use of the TEST ACCESS capability can test a channel before it is placed in service in any circuit.

The HUB Action provides a two-way cross-connection between a pair of test port channels and any pair of adjacent channels. With this capability, a remote test system in a hub office can have test access to a frame located in other offices via the hub frame. The HUB Action is, in fact, a way of displacing test ports to remote frames.

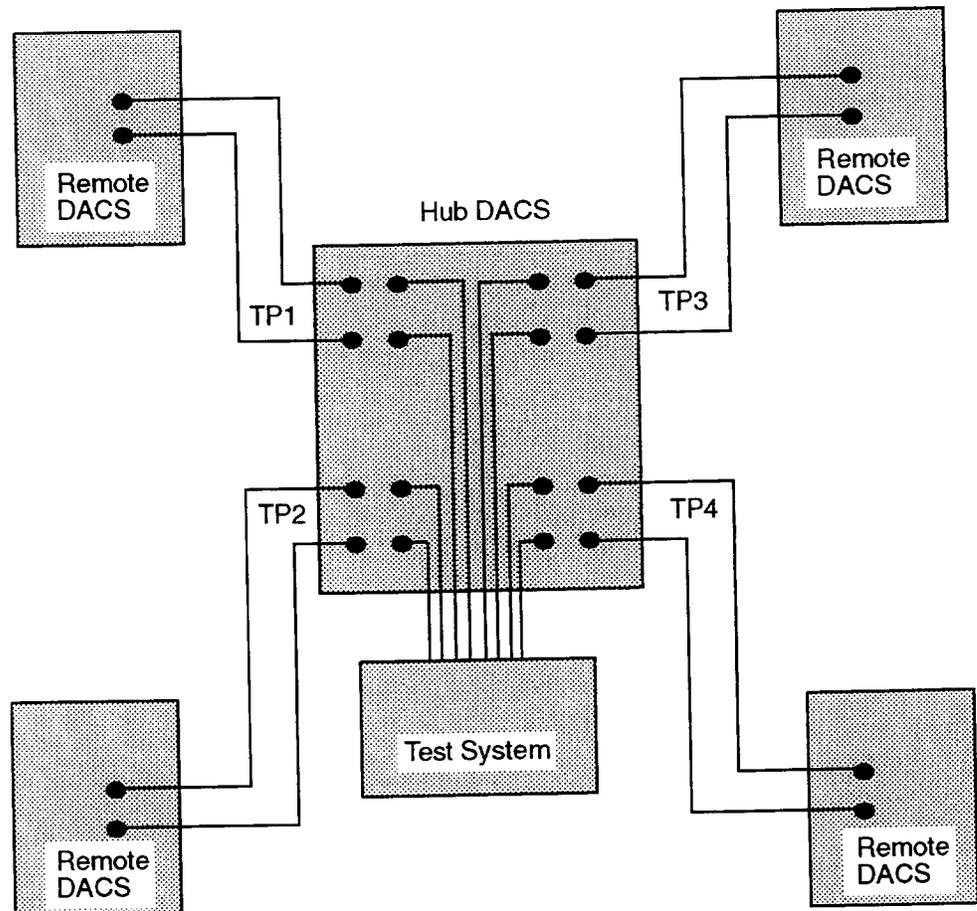


Figure 14-9. Hub Test Configuration

In the figure above, channels for Test Ports 1 through 4 at the Hub DACS have been connected to a monitoring test system. In the Hub DACS, these channels have been provisioned as test ports and then have been cross-connected with a **HUB Action** to pairs of adjacent EFTs, which lead to remote DACS. At a remote DACS, the far ends of a pair have been provisioned as a test port and may now be cross-connected in test circuits with a **MONITOR Action**. The monitoring is displaced to the test equipment at the hub.

TEST ACCESS

The LOOP **Action** cross-connects the two channels of a test port to each other. The test system can monitor and test the health of each test port.

TEST ACCESS Form

Select TEST ACCESS from the MAIN MENU.

The screenshot shows a terminal window with the following content:

```
06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
----- TEST ACCESS -----
Site Name:
Action:          Test Port No.:          TP Status:
NPC Number (Ext):
NPC ID:          (Hier):          Ch
TC:              IW:          A to x Law Conv:
OOS:      Direction:
CIRCUIT UNDER TEST:
FROM:      Hier      Ext          NPC ID      Ch
TO:
Enter site name (at least 5 characters) _____
```

At the bottom of the window, there is a row of buttons: HELP, CHOICES, [blank], QUIT, [blank], TOP MENU, PRINT, EXECUTE.

Figure 14-10. TEST ACCESS Form

Field Descriptions

The fields that appear on the screen depend on the **Action** and whether or not you have entered a valid **Test Port No.** The screen shown above contains all the fields, which you obtain only in certain cases.

Table 14-1. Test Access Field Descriptions

Site Name	Mandatory. 1 through 24 alphanumeric characters. Enter the name of the DACS frame in which the test connection will occur.
Action	Mandatory. Specifies the TEST ACCESS operation.
MONITOR	connects a channel, and any ACTIVE or ALTROUTED circuit containing the channel, to a test port. The test port will receive data from the existing circuit without disrupting it. The TP Status field must be RELEASED or SPLIT.
SPLIT	connects both transmit and receive FROM and TO sides of an existing two-way circuit to the test port channels. The FROM and TO sides can then be tested simultaneously and independently. The FROM channel of the test port receives data from the FROM side of the circuit being tested, and the TO test port channel transmits data to the TO side of the circuit. The TP Status field must be MONITOR. SPLIT access of a one-way circuit permits testing of only the TO side.
HUB	connects a circuit to a test port in such a way that the local DACS is used as a test access concentrator, with the local test port connected to a remote test port on another DACS.
TERMINATE	for a test port testing a cross-connected channel in the MONITOR or SPLIT mode, replaces the normal signal with MUX. The Direction field appears and you must enter a direction, when the Action is TERMINATE or UNTERMINATE. The extent of the replacement depends on the direction selected. You can select a replacement of the signal in the TO direction of the circuit under test, in the FROM direction or in BOTH directions for a two-way circuit or on all branch LEGS toward facilities for a multipoint circuit. See also under the Direction field.

Table 14-1. Test Access Field Descriptions

UNTERMINATE	resumes the normal signal(s) when a TERMINATE has been in effect. As in the case of TERMINATE, the part of the circuit to be affected is specified by the Direction field.
RELEASE	disconnects a test port from a circuit or channel and makes the test port available for reuse. With the OOS option, the test port may be released even if the test port digroup or circuit digroup is out of service.
LOOP	loops both channels of a test port so that they can be tested.
Test Port No	The number of the test port to be used for performing tests on a channel. The range is 1 through 48 with DACS II generics prior to 6.0 and 1 through 96 with DACS II Generic 6.0.
TP Status	A display-only field indicating the operating status of the test port connections, as follows: <ul style="list-style-type: none"> RELEASED is displayed when the test port is not in use. MONITOR is displayed when a MONITOR connection is in effect. SPLIT is displayed when a SPLIT connection is in effect. HUB is displayed when a HUB connection is in effect. LOOP is displayed when a LOOP connection is in effect. <p>The TP Status field reflects the last successful Action.</p>
NPC Number (Ext)	This and the following two fields appear for the MONITOR and HUB Actions only. Enter one of the three. The NPC number, in extended format, of the TO side of an existing circuit, or the number of an unmapped channel, to be tested. If the circuit is multipoint, only the EFTs may be tested. The DMB NPC may not be.
(Hier)	The NPC number in hierarchical format.
NPC ID	The NPC ID.
Ch	This field appears for the MONITOR and HUB Actions only. Enter the Channel Number of the TO side of an existing circuit to be tested, or enter the number of an unmapped channel to be tested independently.

Table 14-1. Test Access Field Descriptions

TC	This field appears for the LOOP, MONITOR, and HUB Actions only. Enter the Trunk Conditioning Code that is to apply to the test circuit. For valid TC codes, refer to the TC field description under CIRCUIT PROVISIONING.
IW	This field complements Test Access TC . For valid IW codes, refer to the IW field description under CIRCUIT PROVISIONING.
A to x Law Conv	This field appears for the MONITOR and HUB Actions only. The values are <ul style="list-style-type: none"> Y Specifies A-law to x-law (also called Mu-law) conversion on a CEPT-type NPC in a Gateway type of test connection; this conversion can apply to the signal coming from either the tested circuit or from the test port itself. N Default. Disables the A-law to x-law conversion.
OOS	This field appears for the RELEASE Action only. The values are <ul style="list-style-type: none"> Y Requests DACS to allow the release request to succeed when the test port NPC or a circuit NPC is out of service. N Default. Allows DACS to deny the release request if the test port NPC or circuit NPC is out of service.
Direction	The circuit ends for which MUX is to be substituted for the normal signal when the TERMINATE Action is requested, or the circuit ends for which normal transmission is to resume when the UNTERMINATE Action is requested. This field only appears when you request a TERMINATE or UNTERMINATE Action . The CHOICES are <ul style="list-style-type: none"> F Replace the signal to the FROM channel with MUX. T Replace the signal to the TO channel with MUX. B Replace the signals to the FROM and TO channels with MUX. L Replace the signals on all branch LEGS toward facilities for a multipoint circuit with MUX.
CIRCUIT UNDER TEST	A display-only field, the Circuit ID of the circuit under test.
FROM	Display-only fields, the Hier, Extd, NPC ID, and Ch of the FROM side of the circuit under test.
TO	Display-only fields, the Hier, Extd, NPC ID, and Ch of the TO side of the circuit under test.

With the exception of **TERMINATE** and **UNTERMINATE**, a **TEST ACCESS Action** requests a change in the **TP Status**. **TP Status** values can succeed each other only in a certain order; i.e., certain **Actions** succeed only when requested from certain **TP Statuses**. The **TP Status** sequences are shown in the table below. To read the table:

- Step 1:** Look up the row of the current **TP Status** down the left-hand column of the table.
- Step 2:** Look up the column of the desired **TP Status** across the top of the table.
- Step 3:** Read the **Action** at the intersection of the row and column. A - means that the **Action** is not allowed. Find some other path to it.

Table 14-2. Allowed TP Status Sequences

Current/ Desired	MONITOR	SPLIT	HUB	LOOP	RELEASED
MONITOR	-	SPLIT	-	-	RELEASE
SPLIT	MONITOR	-	-	-	RELEASE
HUB	-	-	-	-	RELEASE
LOOP	-	-	-	-	RELEASE
RELEASED	MONITOR	-	HUB	LOOP	-

An attempt to enter an **Action** that is not allowed for the **TP Status** results in the appropriate denial message.

Examples of Operation

Examples of **TEST ACCESS** are given in the following subsections. Assume that communication between the I-2000 and the DACS frame has been established, and the following facility NPCs have been created and restored:

Table 14-3. Sample Test Connections

Ext	NPC ID	TYPE	TP GRP	TP
0001	NPC0001	DE200	NPCTP-1	1-2
0002	NPC0002	DE200		
0003	NPC0003	DE200		

Table 14-3. Sample Test Connections

0004	NPC0004	DE100		
0005	NPC0005	DE100		
0006	NPC0006	DE100		
0041	NPCC1	PB900	NPCTP-2	13-14
0042	NPCC2	PBAC0		
0043	NPCC3	PBAC0		
0044	NPCC4	PBAC0		
0045	NPCC5	PBAC0		

The following cross-connects and test ports have been provisioned:

- Two-point (one-way) between each channel in NPC0002 and the corresponding channels in NPC0003.
- Two-point (two-way) between each channel in NPC0004 and the corresponding channels in NPC0005.
- Two-point (one-way) between each channel in NPC0042 and the corresponding channels in NPC0043.
- Two-point (two-way) between channels 11-20 in NPC0006 and the corresponding channels in NPC0044.
- Multipoint (one-way) backbone NPC0006 channel 007, with legs channels 005, 006 of NPC0006 and channels 005 and 006 of NPC0044.
- Test port 01 is a static test port created with TC(0011,0011)TRB.
- Test port 13 is a static test port created with TC-X-5A:IWAAA.
- Test ports 02 and 14 are created dynamic.

The detailed example places a NAS two-way, two-point DACS circuit in various test modes using the I-2000. By replacing its NPC-channel pair with a NPC-channel pair of a different type of circuit (two-way, one-way, multipoint, NAS, CEPT, and Gateway), chosen from those given above, you can configure any of a variety of circuit types into various test-access states. By specifying Test Port 02, 13, or 14 you can repeat these examples with a variety of test port types (NAS dynamic, CEPT static, CEPT dynamic).

NAS Two-point (Two-way) Circuit

This example places a two-point (two-way) cross-connect between two NAS NPCs under test using static and dynamic test ports. Channel 1 of NPC0005 is placed under test using static test port 1. Thus, channel 1 of NPC0005 is the TO channel and the test port channel connected to it is the TO TP channel. Since it is in a circuit connected to channel 1 of NPC0004, channel 1 of NPC0004 is the FROM channel and the test port channel connected to it is the FROM TP channel.

The steps are the same whether the TO channel specified is in a one-way circuit, or in a multipoint circuit. Furthermore, the steps are the same whether the channel is in a CEPT, NAS, or Gateway circuit. Unmapped circuits cannot be terminated and when placing them under test by a dynamic test port you must give a TC and IW specification. With these exceptions, the tests given below can be done with unmapped channels chosen from NPC0006, NPC0044, or NPC0045.

Place Circuit in MONITOR State

- Step 1:** Select TEST ACCESS from the MAIN MENU.
- Step 2:** Enter the following data:
- **Site Name:** DACS00
 - **Action:** MONITOR
 - **Test Port No:** 01
- Observe that the NPC and channel identification fields appear.
- **NPC ID:** NPC0005
 - **Ch:** 01
- Step 3:** Press **EXECUTE** and confirm. The I-2000 prints a completion message at the bottom of the screen and updates fields in the form.

Apply TERMINATE

- Step 1:** Enter
- **Action:** TERMINATE
 - **Direction:** T
- Step 2:** Press **EXECUTE** and confirm. The I-2000 prints a completion message at the bottom of the screen.

Modify Status to SPLIT State

- Step 1:** Enter

— **Action:** SPLIT

Observe that the NPC and channel identification fields appear and are filled.

Step 2: Press **EXECUTE** and confirm. The I-2000 prints a completion message at the bottom of the screen and updates the TP fields in the form.

Remove TERMINATE

Step 1: Enter

— **Action:** UNTERMINATE

— **Direction:** T

Step 2: Press **EXECUTE** and confirm. The I-2000 prints a completion message at the bottom of the screen.

RELEASE Test Port

Step 1: Enter

— **Action:** RELEASE

Step 2: Press **EXECUTE** and confirm. The I-2000 prints a completion message at the bottom of the screen and updates the fields in the form.

Unmapped NAS Circuit

This example places an unmapped NAS circuit under test using static and NAS test ports. The channel used is Channel 21 of NPC0006. Static test port 1 is used. This example may be repeated using a dynamic test port (e.g., 2 or 13) but, in this case, a TC specification for the test access must be given.

Step 1: Select TEST ACCESS and enter

— **Site Name:** DACS00

— **Action:** MONITOR

— **Test Port No:** 01

— **NPC ID:** NPC0006

For an unmapped circuit, only one **NPC ID** and **Ch** appear on the screen.

— **Ch:** 021

Step 2: Press **EXECUTE** and confirm. The I-2000 prints a completion message and updates the fields in the form.

NAS Multipoint (One-way) Circuit

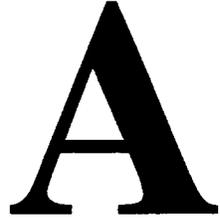
This example places a channel, which is a leg in a multipoint cross-connect, under test using static test port 01. The channel is channel 5 of NPC0006.

Step 1: Select TEST ACCESS and enter

- **Site Name:** DACS00
- **Action:** MONITOR
- **Test Port No:** 01
- **NPC ID:** NPC0006 (of the LEG)
- **Ch:** 05 (of the LEG)

Step 2: Press **EXECUTE** and confirm. The I-2000 prints a completion message and updates the fields in the form.

PRECUSTOMIZED REPORT FORMATS



This appendix states the precustomized report formats supplied with the I-2000 system. Customized report formats are described in Chapter 13, REPORT OPERATIONS.



NOTE:

The formats shown in this appendix are not representations of the reports.

One report consists of a series of vertical columns. At the top of each column is an identifying header.

In the format, the header titles are listed under `HEADER` followed by the number of characters (`#COLS`) allotted to the column, the `ORDER`, from left to right, of the titles, and the `SORT` priority. For example, if `ckt_ID` has a `SORT` priority of 1, then the horizontal lines of the report are sorted by `ckt_ID`.

Above the header description in the format is the layout of one horizontal report line.

The header titles are typically acronyms of field names appearing on some form. Exceptions are noted in each case.

CIRCUITS Formats

REPORT CATEGORY: CIRCUITS

FORMAT NAME: CIRCUIT CONNECTIONS

```

Circuit_ID                CP Status      Cls EW BT F_NPC Ch  T_NPC Ch
12345678901234567890123456789012345678901234567890123456789012345678
                1                2                3                4                5                6                7
    
```

HEADER	#COLS	ORDER	SORT
Circuit_ID	33	1	1
CP	2	2	-
Status	11	3	-
Cls	3	4	-
EW	2	5	-
BT	2	6	-
F_NPC	5	7	-
Ch	3	8	-
T_NPC	5	9	-
Ch	3	10	-
-----		69	(plus 9 -> total width = 78)

⇒ NOTE:
 These fields are from the CIRCUIT PROVISIONING form (Chapter 6).

PRECUSTOMIZED REPORT FORMATS

REPORT CATEGORY: CIRCUITS

FORMAT NAME: CIRCUIT INFORMATION

```

Circuit_ID          TC          IW  F_NPC Ch  T_NPC Ch
12345678901234567890123456789012345678901234567890123456789012345678
          1          2          3          4          5          6          7
    
```

HEADER	#COLS	ORDER	SORT
Circuit_ID	36	1	1
TC	17	2	-
IW	3	3	-
F_NPC	5	4	-
Ch	3	5	-
T_NPC	5	6	-
Ch	3	7	-
-----		72	(plus 6 -> total width = 78)

⇒ NOTE:
 These fields are from the CIRCUIT PROVISIONING form (Chapter 6).

REPORT CATEGORY: CIRCUITS

FORMAT NAME: CIRCUIT OPTIONS

```

Circuit_ID          TC          IW  SC          NAM AIS RDLD OOS INCL DCC
12345678901234567890123456789012345678901234567890123456789012345678
          1          2          3          4          5          6          7
    
```

HEADER	#COLS	ORDER	SORT
Circuit_ID	20	1	1
TC	17	2	-
IW	3	3	-
SC	9	4	-
NAM	3	5	-
AIS	3	6	-
RDLD	4	7	-
OOS	3	8	-
INCL	4	9	-
DCC	3	10	-
-----		69	(plus 9 -> total width = 78)

⇒ NOTE:
 These fields are values of **Options** on the CIRCUIT PROVISIONING form (Chapter 6).

PRECUSTOMIZED REPORT FORMATS

REPORT CATEGORY: CIRCUITS

FORMAT NAME: CIRCUIT AVAILABILITY

```

Circuit_ID          Status      CP Svc_Date Loc_A      Loc_Z
|                   |         | |         |         |
12345678901234567890123456789012345678901234567890123456789012345678
      1             2             3             4             5             6             7
    
```

HEADER	#COLS	ORDER	SORT
Circuit_ID	28	1	1
Status	11	2	-
CP	2	3	-
Svc_Date	8	4	-
Loc_A	12	5	-
Loc_Z	12	6	-

	73	(plus 5 -> total width = 78)	

⇒ NOTE:
 These fields are from the CIRCUIT PROVISIONING form (Chapter 6).

NPC Formats

REPORT CATEGORY: NPCS

FORMAT NAME: NPC IDS

```

NPC_ID                               Number Svc_St Type  FE_Site      Alm_st IW
12345678901234567890123456789012345678901234567890123456789012345678
      1             2             3             4             5             6             7
    
```

HEADER	#COLS	ORDER	SORT
NPC_ID	34	1	1
Number	6	2	-
Svc_St	6	3	-
Type	5	4	-
FE_Site	12	5	-
Alm_st	6	6	-
IW	3	7	-
-----		72	(plus 6 -> total width = 78)

⇒ NOTE:
 These fields are from the NPC PROVISIONING form (Chapter 4).

CHANNELS Format

REPORT CATEGORY: CHANNELS

FORMAT NAME: CHANNEL USAGE

```

NPC      Ch  Status      Circuit_ID                      Cls To_NPC Ch
|        |          |          |                      |   |   |
12345678901234567890123456789012345678901234567890123456789012345678
          1          2          3          4          5          6          7

```

HEADER	#COLS	ORDER	SORT
NPC	5	1	1
Ch	3	2	2
Status	11	3	-
Circuit_ID	41	4	-
Cls	3	5	-
To_NPC	6	6	-
Ch	3	7	-
-----		72	(plus 6 -> total width = 78)

ALTROUTES/PREEMPTIONS Formats

REPORT CATEGORY: ALTROUTES/PREEMPTIONS

FORMAT NAME: ALTROUTED CIRCUITS

```

Circuit_ID      CP NPC  Ch  A_NPC Ch  Date   Time   Pr_Ckt_ID
| | | | | | | | |
12345678901234567890123456789012345678901234567890123456789012345678
      1          2          3          4          5          6          7
    
```

HEADER	#COLS	ORDER	SORT
Circuit_ID	18	1	1
CP	2	2	-
NPC	5	3	2
Ch	3	4	3
A_NPC	5	5	-
Ch	3	6	-
Date	8	7	-
Time	8	8	-
Pr_Ckt_ID	18	9	-
	70		(plus 8 -> total width = 78)

⇒ NOTE:

These fields are from the CIRCUIT PROVISIONING form and its second page, the ALTRROUTE screen (Chapter 7).

If more than one channel-end of the circuit is altrouted, there will be a separate entry for each channel-end.

Only the FROM side channel end of a pseudo-ALTROUTED circuit will be shown in the report.

REPORT CATEGORY: ALTRUTES/PREEMPTIONS

FORMAT NAME: PREEMPTED CIRCUITS

```

Circuit_ID          CP NPC   Ch  ALT_Ckt_ID          CP Date   Time
12345678901234567890123456789012345678901234567890123456789012345678
      1             2             3             4             5             6             7
    
```

HEADER	#COLS	ORDER	SORT
Circuit_ID	22	1	1
CP	2	2	-
NPC	5	3	2
Ch	3	4	3
Alt_Ckt_ID	21	5	-
CP	2	6	-
Date	8	7	-
Time	8	8	-
-----		71	(plus 7-> total width = 78)



NOTE:

These fields are from the CIRCUIT PROVISIONING form and the bottom of its second page, the ALTRUTE screen (Chapter 7).

RECONFIGURATION PLANS Format

REPORT CATEGORY: RECONFIGURATION PLANS

FORMAT NAME: PLAN CONTENTS

```

Plan_ID      Status   Seq   Circuit_ID      Ckt_Action
|           |       |       |           |
12345678901234567890123456789012345678901234567890123456789012345678
      1         2         3         4         5         6         7
    
```

HEADER	#COLS	ORDER	SORT
Plan_ID	12	1	1
Status	8	2	-
Seq	5	3	2
Circuit_ID	39	4	-
Ckt_Action	10	5	-
	74		(plus 4 -> total width = 78)

⇒ NOTE:
 These fields are from the PREPLANNED RECONFIGURATION PROVISIONING form (Chapter 8).

RECONFIGURATION PLAN ALTROUTE

Formats

REPORT CATEGORY: RECONFIGURATION PLAN ALTROUTE

FORMAT NAME: PLAN ALTROUTED CIRCUITS

```

Plan_ID      Seq  Alt_Ckt_ID      CP NPC      Ch A_NPC Ch  Pr_ckt_ID
12345678901234567890123456789012345678901234567890123456789012345678
          1          2          3          4          5          6          7
    
```

HEADER	#COLS	ORDER	SORT
Plan_ID	12	1	1
Seq	5	2	2
Alt_Ckt_ID	18	3	-
CP	2	4	-
NPC	5	5	-
Ch	3	6	-
A_NPC	5	7	-
Ch	3	8	-
Pr_ckt_ID	17	9	-
	70		(plus 8-> total width = 78)

⇒ NOTE:

These fields are from the PREPLANNED RECONFIGURATION PROVISIONING form (Chapter 8).

If more than one channel-end of the circuit is altrouted, there will be a separate entry for each channel-end.

PRECUSTOMIZED REPORT FORMATS

REPORT CATEGORY: RECONFIGURATION PLAN ALTRROUTE

FORMAT NAME: PLAN PREEMPTED CIRCUITS

```

Plan_ID      Seq  Pr_Ckt_ID      CP NPC  Ch  Alt_ckt_ID      CP
12345678901234567890123456789012345678901234567890123456789012345678
      1          2          3          4          5          6          7
    
```

HEADER	#COLS	ORDER	SORT
Plan_ID	12	1	1
Seq	5	2	2
Pr_Ckt_ID	21	3	-
CP	2	4	-
NPC	5	5	-
Ch	3	6	-
Alt_ckt_ID	21	7	-
CP	2	8	-
-----		71	(plus 7-> total width = 78)

⇒ NOTE:
 These fields are from the RECONFIGURATION PLAN PROVISIONING form (Chapter 8).

AUTOMATIC RECONFIGURATION PLAN Formats

REPORT CATEGORY: AUTO RECONFIGURATION PLANS

FORMAT NAME: RP LISTS

```
ARP_ID      Seq  ARP_Stat RP_Site      RP_ID      Date      Time
12345678901234567890123456789012345678901234567890123456789012345678
      1          2          3          4          5          6          7
```

HEADER	#COLS	ORDER	SORT
ARP_ID	12	1	1
Seq	3	2	2
ARP_Stat	8	3	-
RP_Site	12	4	-
RP_ID	12	5	-
Date	8	6	-
Time	8	7	-

	63	(plus 6 -> total width = 69)	

⇒ NOTE:
These fields are from the AUTOMATIC RECONFIGURATION PROVISIONING form (Chapter 8).

PRECUSTOMIZED REPORT FORMATS

REPORT CATEGORY: AUTO RECONFIGURATION PLANS

FORMAT NAME: NPC LISTS

```
ARP_ID      Seq ARP_Stat NPC_Site      NPC      Date      Time
|          | |          |          |          |          |
12345678901234567890123456789012345678901234567890123456789012345678
          1          2          3          4          5          6          7
```

HEADER	#COLS	ORDER	SORT

ARP_ID	12	1	1
Seq	3	2	2
ARP_Stat	8	3	-
NPC_Site	12	4	-
NPC	5	5	-
Date	8	6	-
Time	8	7	-

	55		(plus 6 -> total width = 61)

⇒ NOTE:
These fields are from the AUTOMATIC RECONFIGURATION PROVISIONING form (Chapter 8).

OUTAGE Format

REPORT CATEGORY: OUTAGES

FORMAT NAME: OUTAGE INFORMATION

```

Type      Num      Outage_ID                      Date_Str Date_End
|         |         |                      |         |
12345678901234567890123456789012345678901234567890123456789012345678
          1         2         3         4         5         6         7

```

HEADER	#COLS	ORDER	SORT
Type	7	1	1
Num	5	2	3
Outage_ID	41	3	-
Date_Str	8	4	2
Date_End	8	5	-
-----		69	(plus 4 -> total width = 73)



NOTE:

These fields are from the OUTAGE LOG screen (Chapter 9).

PRECUSTOMIZED REPORT FORMATS

TEST ACCESS Formats

REPORT CATEGORY: TEST ACCESS

FORMAT NAME: TEST PORT PROVISIONING

```
TP_Grp TP_NPC TP Static_TC      Static_IW
      |         | |         |
12345678901234567890123456789012345678901234567890123456789012345678
      1         2         3         4         5         6         7
```

HEADER	#COLS	ORDER	SORT
TP_Grp	6	1	1
TP_NPC	6	2	-
TP	2	3	2
Static_TC	17	4	-
Static_IW	9	5	-
-----		40	(plus4 -> width = 44)

REPORT CATEGORY: TEST ACCESS

FORMAT NAME: TEST PORT STATUS

```

TP TP_State Ckt_ID_Under_Test          F_NPC F_Ch T_NPC T_Ch
|      |                          |   |   |   |
12345678901234567890123456789012345678901234567890123456789012345678
      1          2          3          4          5          6          7
    
```

HEADER	#COLS	ORDER	SORT
TP	2	1	1
TP_State	8	2	-
Ckt_ID_Under_Test	41	3	-
F_NPC	5	4	-
F_Ch	4	5	-
T_NPC	5	6	-
T_Ch	4	7	-
-----		69	(plus 6 -> width = 75)

PRECUSTOMIZED REPORT FORMATS

FRAMES/LINKS Formats

REPORT CATEGORY: FRAMES/LINKS

FORMAT NAME: PROVISIONING

```
Sitename                Status C Type      Protocl Lang NPC_Addr
|          |          | |          |          |          |
12345678901234567890123456789012345678901234567890123456789012345678
          1          2          3          4          5          6          7
```

HEADER	#COLS	ORDER	SORT
Sitename	24	1	1
Status	6	2	-
C	1	3	-
Type	8	4	-
Protocl	8	5	-
Lang	4	6	-
NPCAddr	8	7	-

	59	(plus 6-> total width = 65)	



NOTE:

These fields are from the FRAME ADMINISTRATION form (Chapter 3).

REPORT CATEGORY: FRAMES/LINKS

FORMAT NAME: LINK STATUS

```

Sitename          Protcl Pr C_Type Status Bk C_Type Status
|                | |   |   |   |   |   |   |
1234567890123456789012345678901234567890123456789012345678
          1         2         3         4         5         6         7
    
```

HEADER	#COLS	ORDER	SORT
Sitename	24	1	1
Protcl	6	2	-
Pr	2	3	-
C_Type	6	4	-
Status	6	5	-
Bk	2	6	-
C_Type	6	7	-
Status	6	8	-

	58	(plus 7-> total width = 65)	

⇒ NOTE:
 These fields are from the FRAME ADMINISTRATION form (Chapter 3).

PRECUSTOMIZED REPORT FORMATS

REPORT CATEGORY: FRAMES/LINKS

FORMAT NAME: LINK CONNECTIVITY

```

Sitename          Protcl Pr Network_Addr      Speed Bk Network_Addr
|                | |      |                | |      |
12345678901234567890123456789012345678901234567890123456789012345678
      1              2              3              4              5              6              7
    
```

HEADER	#COLS	ORDER	SORT
Sitename	24	1	1
Protcl	6	2	-
Pr	2	3	-
Network_Addr	16	4	-
Speed	5	5	-
Bk	2	6	-
Network_Addr	16	7	-

	71	(plus 6 -> total width = 77)	

⇒ NOTE:
 These fields are from the FRAME ADMINISTRATION form (Chapter 3).

REPORT CATEGORY: FRAMES/LINKS

FORMAT NAME: FRAME CONTROL

```

Sitename           Location           Generic  ERP_Cont NPC_Alm_St
|                 |                 |         |         |
12345678901234567890123456789012345678901234567890123456789012345678
      1             2             3             4             5             6             7
    
```

HEADER	#COLS	ORDER	SORT
Sitename	24	1	1
Location	13	2	-
Generic	8	3	-
ERP_Cont	8	4	-
NPC_Alm_S	9	5	-
	62		(plus4 -> total width = 66)

⇒ NOTE:
 These fields are from the FRAME ADMINISTRATION form (Chapter 3).

CNC PORTS OPTION

B

This feature is available only by special arrangement with AT&T.

The Customer Network Controller (CNC) is a computer system that provides a user command-level interface for the control of frames. CNC user commands are translated into PDS language commands that are then sent to the frame through a hard-wired SNIDER link.

The I-2000 CNC PORTS selection allows a CNC to connect to the frames controlled by the I-2000 as though they were being accessed through a hard-wired SNIDER link. The user enters the I-2000 and enables the CNC ports. The I-2000 then becomes invisible to the CNC user, who can proceed as he normally would on the CNC computer system.

 **NOTE:**

The port speed is 1200 baud.

Some limitations on the use of the CNC PORTS selection follow. With regard to a frame setup for CNC:

1. PASSTHROUGH is not available to the CNC operator, but it is available to the I-2000 operator.
2. Normal I-2000 **Actions**, such as provisioning, are not available to the I-2000 operator.

The hardware interface from both the CNC and the frame must be through the AT&T IPC-1600 Intelligent Ports Card (Chapter 2). A maximum of four such cards

are supported, providing up to 54 CNC ports. As many as eight CNC systems may connect to one frame through one CNC port. The table below depicts the use of ports when four IPC-1600 Cards are installed, six frames are made available through them, and eight CNCs connect to each frame. It is assumed that the ports not used are required for other I-2000 connections.

⇒ NOTE:

1.1 means the first connection to the first frame, 1.2 means the second connection to the first frame, etc., 2.1 means the first connection to the second frame, etc.

Table B-1. CNC Port Use

IPC-1600 Port	IPC-1600			
	Card 1	Card 2	Card 3	Card 4
01	DACS #1	CNC 2.1	CNC 4.1	CNC 6.1
02	DACS #2	CNC 2.2	CNC 4.2	CNC 6.2
03	DACS #3	CNC 2.3	CNC 4.3	CNC 6.3
04	DACS #4	CNC 2.4	CNC 4.4	CNC 6.4
05	DACS #5	CNC 2.5	CNC 4.5	CNC 6.5
06	DACS #6	CNC 2.6	CNC 4.6	CNC 6.6
07		CNC 2.7	CNC 4.7	CNC 6.7
08		CNC 2.8	CNC 4.8	CNC 6.8
09	CNC 1.1	CNC 3.1	CNC 5.1	
10	CNC 1.2	CNC 3.2	CNC 5.2	
11	CNC 1.3	CNC 3.3	CNC 5.3	
12	CNC 1.4	CNC 3.4	CNC 5.4	
13	CNC 1.5	CNC 3.5	CNC 5.5	
14	CNC 1.6	CNC 3.6	CNC 5.6	
15	CNC 1.7	CNC 3.7	CNC 5.7	
16	CNC 1.8	CNC 3.8	CNC 5.8	

The CNC PORTS selection is used as part of the initial setup when the I-2000 will interface to one or more CNCs. Obtain the CNC PORT ADMINISTRATION Form by selecting SYSTEM ADMINISTRATION from the MAIN MENU, and then CNC PORTS from the SYSTEM ADMINISTRATION menu. The CNC PORT ADMINIS-

TRATION Form is shown below.

06:15 01 Apr 93 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

_____ CNC PORT ADMINISTRATION _____

Action: Port: Port Status:

_____ Enter the desired Link Administrative Action: RESTORE or REMOVE _____

HELP CHOICES QUIT TOP MENU PRINT EXECUTE

Figure B-1. CNC PORT ADMINISTRATION Form

The fields on the CNC PORT ADMINISTRATION Form are:

Table B-2. CNC PORT ADMINISTRATION Field Values

Action	Mandatory. The values are
RESTORE	Enable the port named in the Port field as a CNC port.
REMOVE	Disable the port named in the Port field as a CNC port.
Port	Numeric. 9 through the number of IPC-1600 ports up to 54.

Table B-2. CNC PORT ADMINISTRATION Field Values

Port Status	This field is not user-accessible. It indicates the status of the port. Possible values are
IS	In service. The port is connected to a CNC.
OOS	Out of service. A CNC cannot access a frame through this port.

To set up a CNC port:

- Step 1:** Obtain the CNC PORT ADMINISTRATION Form.
- Step 2:** Enter an **Action** of RESTORE.
- Step 3:** Enter the **Port** number.
The I-2000 displays that port's current **Port Status**.
- Step 4:** Press , and confirm.

To remove a CNC port, follow the same procedure but use an **Action** of REMOVE.

Glossary

A

Action

An operation specified to the I-2000 by entry of a pre-defined value into the **Action** field of many I-2000 forms. The **Action** value is the command verb of the I-2000 user interface. It may generate one or more MML or PDS command verbs to the frame, or it may designate an operation that is strictly local to the I-2000 computer.

Activate

Place in service as a transmission-carrying circuit.

Aging

With reference to alarms, delaying action on the alarm after its receipt.

Alarm

A message sent by an NPC indicating that transmission is impaired. Alarms are classified by cause as Circuit Pack Failure, Carrier Failure (see CGA) and Facility Performance. They are also classified by severity for purposes of response or notification.

Alarm Broadcast Port

An RS232C asynchronous port of the I-2000 computer. On the port are placed all alarm messages sent to the I-2000 from a DACS.

Alarm Indication Signal (AIS)

See Blue Alarm.

A-law

A set of companding rules used for CEPT transmission. See Compander, Gateway.

Alternate Bandwidth

Channels that are allocated alternately to a high-rate circuit; e.g., 3, 5, 7.

Altroute -ed -ing

Alternate routing of transmissions paths. See also Real Altroute and Pseudo-Altroute.

Asynchronous Transmission

A method of transmitting digital signals in which the bits are sent when they are initiated, rather than in

synchronization with a timing signal; for example, keystrokes. Communication between the I-2000 computer and its terminals is asynchronous.

Audit

An I-2000 **Action** under DATABASE ADMINISTRATION by which differences between the I-2000 database and a DACS database are tracked and logged.

Automatic Reconfiguration Plan (ARP)

A file containing a sequence of references to Reconfiguration Plans to be executed when the ARP is executed. See also Reconfiguration Plan.

B

Backbone Leg

In a Broadcast Circuit, the transmission source: the one-way circuit from the FROM side to the virtual branch point. In a Polling Data Circuit, it is the branch between the Rx of the transmission EFT and the DMB channel, along with the corresponding Tx side of the same EFT, which branches to the other EFTs without going through the DMB. In the latter case, the Tx branch point is in the CCN only, while the Rx branch point is the DMB channel.

Backup Line

In the I-2000, the SVC designated as a backup line in the FRAME ADMINISTRATION form. It will be the path to the frame to which the I-2000 automatically reverts when the primary line is not operable.

Bandwidth

The number of channels used for a high-rate circuit.

Baud Rate

The number of bauds per second. One baud, named after J.M.E. Baudot, is one signaling element. For example, in an 8-state code system, one baud is one code representing one state of the 8. If such a code were represented by bits, one baud would be three bits. In a two-state system, one baud is one bit, and the baud rate is identical to the bit rate; however, the term baud rate is preferred when it refers to the speed at which terminals communicate. Here, "baud rate" is used of the terminal line speed and "bit rate" is used of channel transmission speed.

Bit Error Rate

A DACS concept referring to the rate at which wrong bits are received. The number of wrong bits over an interval is calculated from a checksum.

Bit Rate

The speed at which binary digital signals are transmitted, usually expressed in bits per second (bps).

Blue Alarm

Also known as an Alarm Indication Signal (AIS). An all 1s pattern asserted at an intermediary point in a facility when loss of transmission is detected. A yellow alarm is sent in the direction of the loss and a blue alarm is sent downstream. See also Alarm.

Bold, Boldface

A heavy typeface used for emphasis; in the I-2000 manuals, primarily to mark field names.

Boot

In general, to load and start the operating system of a computer. In the I-2000, boot means to load an I-2000 database with data reflecting the provisioning present in a specified DACS, or to provision the DACS so that it matches provisioning data stated in the I-2000 database.

Branch Legs

In a virtual broadcast circuit, the one-way circuits from the virtual branch point to the broadcast points. In a Polling Data Circuit, a DMB channel takes the place of the virtual branch point on the Rx side. On the Tx side, the branch is in the CCN. See also Backbone Leg.

Broadcast Circuit or Cross-connection

A virtual multipoint circuit, connecting a channel on one side with multiple channels on the other. The cross-connection is one-way, and can be high-rate. Connection is through a virtual node, which is a logical, or software, entity performing the signal switching. The circuit on the FROM side is the Backbone Leg and the circuits on the TO side are the Branch Legs.

C

Capacity Expanded Frame (CEF)

An expanded DACS II frame able to configure up to 2560 NPCs.

Carrier Group Alarm (CGA)

Also called a Carrier Failure Alarm. One of three classes of DACS-II alarms (see Alarm). An alarm asserted by an NAS NPC to indicate loss of an incoming signal or receipt of a remote alarm signal from the other side of the line. The loss of an incoming signal is reported in an output message as a Red Alarm, and an alarm from the other end is reported as a Yellow Alarm. A variety of other types of CGA alarms can be generated. The equivalent type of alarm for CEPT NPCs is a PBA.

Cascade

There are many kinds of cascade in the electronics industry and in the communications business. In general, it signifies a circuit in which one configuration branches to another of its kind indefinitely. With reference to DMB multipoint circuits, a cascade of conferences is achieved when a leg of one conference is simultaneously the leg of another; i.e., two DMB channels are connected. Additional DMB channels can be connected also, leading to a longer cascade of conferences.

CEPT Facility

An NPC terminating DS1 signals that were multiplexed according to the CEPT standard.

Channelized

Said primarily of DS1 to distinguish it from Clear DS1.

Circuit

A cross-connection between channels. A two-point circuit connects two channels; a multipoint circuit connects more than two. A circuit may be a one-way circuit, where one transmission direction is used for each channel or a circuit may be a two-way circuit, where both transmission directions are used for each channel. Thus, the same channel can be in two active one-way circuits.

Circuit Pack

A hardware module that can be easily installed or removed from a DACS frame. Units such as power supplies, CCNs and DDCs are implemented as CPs.

Clear DS1 Signal

A nonchannelized, 193-bit DS1 signal on an NAS NPC. The 24 8-bit DS0 channels and one framing bit are cross-connected as one DS1 signal, 193 bits wide.

Clear E1 Signal

A nonchannelized, 256-bit DS1 signal on a CEPT NPC. The 32 8-bit DS0 channels are cross-connected as one DS1 signal, 256 bits wide.

Channel

A DS0-level signal that can be cross-connected in a circuit. Channels are provided by NPCs. An NPC makes available two directions per channel.

Channel Associated Signaling (CAS)

A signaling format in which the signal bits for all channels in an NPC are placed in a signaling channel, separate from the message channels. In CEPT facilities the signaling channel is Channel 31.

Command

In the I-2000, a command is, strictly speaking, an MML or PDS command generated by an I-2000 **Action**; however, a command may also be, by analogy, any I-2000 **Action**, whether it generates one or more, or no, commands to the frame.

Compander

Compressor-expander, a device used to protect low-level voice volumes from noise by increasing them for transmission; i.e., compressing the range of volumes and expanding the range again at the other end of the transmission. See also A-law and Mu-law.

Conference

A multipoint circuit. The Symmetric Voice Circuit most closely fits the English meaning of *conference*, although the term is used of any multipoint circuit. In DMB multipoint circuits, *conference* also means the DMB channel number.

Conference Number

The channel number of the DMB side of a leg in a circuit of **Class DMB**. Since one conference includes only one DMB channel, which is used as one side of every leg, this channel number uniquely identifies the conference. For an exception, see under Cascade.

Conference European Postale et Telephonique (CEPT)

The standard of DS1 level telephone transmission used predominantly outside the United States. CEPT NPCs consist of 32 channels containing 64 Kilobits per second each. Numbering is from 0 to 31, but not all 32 are ordinarily available to the user: 0 and 31 are not available. Channel 0 is available as a special case in DACS II release 6, as an option under CIRCUIT PROVISIONING.

Constant Width (CW)

A typewriter-style typeface used for emphasis; in the I-2000 manuals, primarily to mark field values that you type or that appear on the screen. Displayed messages also are quoted in CW.

Contiguous Bandwidth

Channels that are allocated contiguously to a high-rate circuit.

Contiguous Cross-connections

Multiple cross-connections such that the channels on the FROM side and the TO side are each consecutively numbered channels in a single NPC.

Controller

A device that takes the initiative in sequencing operations, and which uses feedback to make decisions. In the I-2000's case, switching of multiplexed telephone communications is controlled.

Create

An I-2000 **Action** used in a number of forms to register an object in the I-2000 database. Some objects that can be created are a frame and an NPC.

Cross-connect-ion -ing

A circuit between two or more channels. The frame interchanges channels from a time slot in one NPC to another time slot in the same or in a different NPC, as designated by the I-2000. The hardware module that accomplishes cross-connection is the Cross-connect Network (CCN).

Cross-connect Network (CCN)

A hardware module that is used to implement cross-connection. It contains Time Slot Interchangers (TSIs).

Custom Report

A report for which the format can be changed by use of the Edit Custom Report Format form. A fixed-format report may not be changed in format. Some custom report formats are predesigned and are furnished with the I-2000. These can be selected like fixed-format reports; nevertheless, they can be changed and are custom formats.

D**DACScan-2000 Controller C-Module**

A multi-DACS control network that can utilize the I-2000 as a controller via machine-to-machine communication.

DACS Database

The I-2000 database that is named with a DACS Site Name and stores I-2000 information concerning that DACS. This database is distinct from the DACS's own database, here termed the *remote* or *facility* database, which is installed on the DACS itself.

DACS I, DACS II

An AT&T product that terminates DS1-level multiplexed signals and has the capability of separating them into DS0 signals for purposes of cross-connecting them. The I-2000 provides a user-friendly interface to generate the commands that instruct the DACS to perform the appropriate cross-connections.

Database

A collection of logically united data. Here, the term does not imply any specific structure of code or organization of data on disk or in memory. The data might be tracked in various ways and be stored at disparate locations. A screen, for example, is not necessarily a record in a file, as it would be in COBOL or PL-1.

Data Circuit-terminating Equipment (DCE)

A type of equipment recognized by standards organizations such as the EIA, the CCITT and the ISO. A data circuit is a network equipment configuration that provides data services. The frame is DCE.

Dataset

In DACS II, a stored set of Facility Performance Parameters.

Data Terminal Equipment (DTE)

A type of equipment recognized by standards organizations such as the EIA, the CCITT and the ISO. A data terminal is a remote device used with a computer for data input and output: teletypewriters, CRTs and host computers. Each I-2000 terminal is DTE

Default Disconnect Code (DDC)

The DDC is a disconnect channel code asserted by an equipped NPC on all of its unmapped channels, unless it is replaced by a value entered into the **IW** field on the NPC PROVISIONING form.

Delete

An I-2000 **Action** used in a number of forms to delete an object from the I-2000 database. Some objects that can be deleted are a frame and an NPC.

De-grow

A DACS II term meaning to delete from the DACS database perhaps with a DGRTH (de-growth) command in MML or a DISC command in PDS. In the I-2000, the DELETE Action takes its place. The DELETE functionality is a superset of DGRTH functionality.

Digital Multipoint Bridge (DMB)

A physical module containing the electronic circuits that can establish two types of two-way multipoint circuits, beginning with Release 2.0: the Symmetric Voice Circuit and the Polling Data Circuit. The DMB makes available DMB NPCs and channels, from which the user may select one as the branch point. This DMB channel number is used as the conference number.

Digital Signal Processing Unit (DSPU)

A type of DACS unit containing the ICs used to create specialized circuits, such as DMB or subrate. These units contain more specialized TSIs than a CCN.

Digroup

For NAS transmission, a digroup is 24 (two groups of 12) DS0-level signals. It is a specific kind of NPC, provided by a DDC.

Digroup Roll

The former name of the NPC Roll feature.

Disconnect Channel Code

A signal, a digital word, that is sent on the unmapped (unassigned) channels of an equipped NPC. If it is not supplied by the operator as an **IW** field value on the NPC PROVISIONING form, the Default Disconnect Code is used.

Display

In the I-2000, to display always means to show on the screen.

Distributing Frame

A mechanical chassis on which multiple transmission lines are terminated to allow cross-connections of transmission signals. In early equipment, the cross-connections were made by jumpers. Today's frames provide an electronic cross-connection capability.

See DACS II.

Domestic

A term in use in earlier DACS documentation and I-2000 manuals to mean North American Standard; however, strictly speaking, it only applies to within the U.S.

DS0

A level in the TDM hierarchy, at which one channel is sampled and the digital transmission rate is 64 kilobits per second.

DS0-A

A subrate facility format. In it, only one sub-channel per channel is available for cross-connection. For example, if the subrate is 4.8 Kbps, the sub-channel consists of every 10th byte on an 8-bit channel. The other 9 bytes are used for error-checking purposes. DS0-A is available in the I-2000 for DACScan-2000 Controller C-Module only; i.e., when the user is a controller.

DS0-B

A subrate facility format. In it, a channel is divided into sub-channels that can be cross-connected independently. A 2.4 Kbps subrate makes available 20 sub-channels, 4.8 makes available 10, 9.6 makes available 5 and 56 makes available 1. For example, at 4.8 Kbps, each of 10 successive bytes in successive frames represent 10 different sub-channels. DS0-B is available in the I-2000 for DACScan-2000 Controller C-Module only.

DS1

A level in the TDM hierarchy. For NAS transmission, 24 channels are sampled and the transmission rate is 1.544 Mbps. For CEPT transmission, 32 channels are sampled and the transmission rate is 2.048 Mbps.

DS3

A level in the TDM hierarchy. For NAS transmission, 672 channels are sampled and the transmission rate is 44.736 Mbps.

Dual Digroup Card (DDC)

A card containing two NPCs for NAS transmission.

Dual Primary Circuit (DPC)

A card containing two NPCs for CEPT transmission.

Dumb

Used of terminals; incapable of doing any preprocessing.

E

Echoed Response Processing (ERP)

An Echoed Response Message is a message from a frame to the I-2000 that is not in response to an I-2000 process waiting for it. Echoed Response Messages often indicate that provisioning has been performed in the frame but is not matched by provisioning in the I-2000. Echoed Response Processing is I-2000-only NPC or circuit provisioning automatically performed for the purpose of making the I-2000 provisioning match the frame provisioning indicated by the message.

Encoding

Representing by 8-bit binary numbers the numbers resulting from quantizing a PAM Signal. See Pulse Code Modulation.

Enhanced Small Device Interface (ESDI)

A standard interface, which achieves faster throughput than standard fixed-disk controllers by shifting functionality to the Hard Disk Unit (HDU). It also defines a disk format.

Equipment Provisioning

Prior to I-2000 Release 3.2, the term used for NPC provisioning in I-2000 forms.

Equipped

In the DACS II, "to equip" is to grow with a GRTH command in PDS or a CRTE command in MML. In the I-2000, the **CREATE Action** performs this function, sending commands to the DACS when necessary. An NPC that has been created can, therefore, be said to have been equipped. "Equipped" is thus a status that is NOT unequipped (UEQD); i.e., a **Service Status** value referencing an object that is described in the I-2000 database. However, no explicit "equipped" **Service Status** is used; instead, IS or OOS is used to mean "equipped" by implication.

Errored Seconds

The number of seconds a transmission facility was not working properly over an interval.

Execute

In general, to set a software procedure in motion. In the I-2000, "to execute" implies to use the **EXECUTE** special function key to set an I-2000 or frame procedure in motion; however, sometimes it is used in the general sense.

Extended Numbering or Addressing

A system of numbers used to address NPCs in I-2000 forms and DACS commands. Extended numbering maps a whole number from 1 through 2564 to an NPC.

External Facility Termination (EFT)

A channel that is coming from outside the DACS and terminates in a DDC or DPC. A node in a multipoint circuit is NOT an EFT.

F

Facility

In the telephone vocabulary, a device for transmitting telephone signals. With reference to a DACS, "facility" is typically used to mean NPC.

Facility Performance Alarm Parameters

One of the categories of frame alarms (see Alarms). A line status error alarm resulting when errors on a monitored line exceed a stored threshold value for a defined parameter. Microprocessor circuits in the line interface circuits detect and count various types of line error conditions for each NPC. The parameters monitored are the Bit Error Rate, Frame Alignment Errors, Errored Seconds, Severely Errored Seconds, Slips, Degraded Minutes and Unavailable Seconds.

Facility Terminating Module (FTM)

A hardware module contained in an FTU. The FTM contains up to 20 NPC Cards, supporting 40 digroups, or NPCs.

Facility Terminating Unit (FTU)

A hardware module mounted on a DACS II. It contains up to 4 FTMs.

Far End

With regard to a cross-connection, the far end is the NPC at the other end of a line terminating in one of the sides of the circuit. Thus, a two-point, single-channel cross-connection has two far ends.

Field

A named and delineated space on the screen, where data entry is expected; also, the logical entity associated with the name. Fields are not necessarily mapped into any scheme of I-2000 data records, C language structures or shell variables; however, all of these devices are utilized to store fields.

Form, Screen

A terminal display showing field names into which you enter data.

Form Control Keystroke

A keystroke that positions the cursor among the fields within a form.

Frame

See Time Frame, Distributing Frame. In this manual, frame is used most often to mean any distributing frame that becomes an object in the I-2000 system through provisioning.

Frame Alignment Error

A concept referring to errors detected in framing bits received. The errors must be severe enough to require the receiver to be resynchronized with the transmitter.

Framing, Framing Bits, Framing Word

The process of marking the beginning of a time frame or two time frames in a PCM stream. The NAS standard uses one bit, the framing bit, making a total of 193 bits per frame. The CEPT standard uses an 8-bit pattern, the framing word, in alternate time slots. The other alternate contains the non-framing word.

FROM Side

One side in a cross-connection. For one-way circuits (two-point or multipoint), the FROM side is the channel that sends the transmission (Tx) and the TO side is the channel that receives the transmission (Rx). The name derives from the fact that the DACS II command that establishes the cross-connection identifies the channel number of this point with a FROM qualifier. For two-way circuits, the second direction of the FROM and TO channels is used. It also has Tx and Rx sides. Thus, the FROM side and the TO side each have a Tx and Rx direction.

Front End

Hardware or software that preprocesses data before it is massaged by the main hardware or software under consideration. The I-2000 is a front end to the DACS, because it generates DACS switching commands.

Full Duplex Circuit

A two-way cross-connection.

Function Key

One of the keys across the top row of the keyboard. Many of them are assigned special functions in the I-2000. These functions are labeled pictorially in a

display line at the bottom of the screen, for functions that are valid with that screen.

G

Gateway

A cross-connection between a channel in an NAS NPC and a channel in a CEPT NPC. For transmission of digitized voice signals, the difference in companding rules must be taken into consideration; i.e., an A-to-Mu Law Conversion may be necessary. This conversion is not necessary for transmission of data signals.

Generate a Report

To instruct the I-2000 to create a report in an electronic file. Printing or displaying the file is a separate step.

Generic

Formerly the release number of the software and, therefore, the "type" of software. One generic is not necessarily compatible with another. Currently the use of generic has been dropped and "release" is being used instead.

Grow

A DACS II term meaning to record an NPC in the DACS database with a GRTH (growth) command in PDS or a CRTE command in MML. In the I-2000, the CREATE Action takes its place, and is a superset of it.

H

Half Duplex Circuit

A one-way cross-connection.

Hierarchical Numbering or Addressing

A system of numbers used to address NPCs in I-2000 forms and DACS commands. Hierarchical numbering maps, to each NPC, a number consisting of the shelf or unit number followed by the module number followed by the NPC within the module.

High-rate Circuit

A single circuit defined to be multiple one-way or two-way two-point cross-connections. The number of

cross-connections, which is the same as the number of channels on a side, is the bandwidth. Bandwidth is allocated on channels numbered contiguously or alternately.

History File

A file storing I-2000/DACS communications just as they were generated or received, in circumstances for which a history file has been defined.

Hub Test Configuration, Hub DACS

A test circuit configuration in which any number of signals to be tested are brought from remote DACSs to a hub DACS and there are routed to test equipment.

I

Idle

A concept based on the IDLE Action of Reconfiguration Plan Provisioning. To idle a plan means to restore all circuits acted upon by actions in the plan to their previous status.

In Service (IS)

A value that can be had by a status field, indicating that the object referenced by the form is fully operable. For example, if the object is an NPC, an NPC that is IS has been created and restored. Only in-service NPCs can provide transmission.

INSERT Mode

A typing mode in which the typed character pushes other characters to the right.

Insertion Word (IW)

In general, an insertion word is a signal, an 8-bit data word, that is inserted into a DS0 channel for some reason. The I-2000 defines two types of insertion words:

NPC Provisioning. The *unassigned* insertion word. Entered into the **IW** field of the NPC PROVISIONING form, this word replaces the DDC as a standard disconnect code to be sent on all unmapped (unassigned) channels on an equipped NPC.

Circuit Provisioning. Entered into the **IW** field of the CIRCUIT PROVISIONING form, this word is sent on mapped channels of an NPC after it has gone out of service (carrier or NPC failure).

Integral Shelf Cross-connect (ISX)

A member of the DACS II family of products that combines the capacity expanded frame with the single bay frame. Offering a subset of DACS II capabilities, it is positioned for smaller applications. Both NAS and CEPT DS0 cross-connects are supported.

Interval

In the I-2000, the number of scale units between successive executions of scheduled tasks.

Italics

A slanted typeface used for emphasis; in the I-2000 manuals, in quotations and for variable names.

I-2000 Controller for DACS II

A controller that offers a user-friendly interface between operators at terminals and multiple frames stationed on a Packet Data Network or in a point-to-point configuration.

K

Keystroke

The signal resulting from pressing a key once. Be sure to do so sharply, since more than one keystroke may result from holding the key down.

L

Leg

In a multipoint circuit, the connection from an EFT to the branch point. The branch point can be a virtual node if the circuit is one-way (Broadcast Circuit) or a DMB channel if the circuit is two-way (Symmetric Voice Circuit or Polling Data Circuit).

Line

A connection between a computer and a peripheral, such as a terminal. In general, however, a line can be any stream of transmission or facility for carrying it.

Link

A connection to a network.

Local Database

The I-2000 database, named after a DACS Site Name, that stores information concerning the DACS.

Log

A file containing records of predefined events resulting from various defined circumstances. Some logs are automatically generated by the I-2000; others can be electronically kept by the user in the I-2000.

Log-in Port

An asynchronous connection to the I-2000 computer, to which a user terminal is attached.

Loop Circuit

A cross-connect in which the Tx direction is connected to the Rx direction of the same channel.

M

Man-Machine Language

A software command language that is used in the human interface to the frame.

Master

In database audit/synchronization, the database designated as the standard to which other databases are made to conform.

Menu

A list of selections on the screen. Make your selection by pressing **Enter** or **SELECT** when the cursor is opposite the selection.

Menu Control Keystroke

A keystroke that positions the cursor relative to the selections within a menu.

Modem

Modulator-demodulator, a device that converts signals from data processing into signals suitable for transmission over telephone lines (modulation) and vice versa (demodulation). A modem is required to transmit the synchronous signals to and from the PDN.

Monitor Test Circuit

A test circuit configuration in which the Tx and Rx signals in a cross-connection also are received at test ports. The circuit being tested is not interrupted.

Multiplexing

Multiplexing is the combining of a number of signals into one transmission stream. Demultiplexing is the separation of a multiplexed stream into consistent signals. See Time Division Multiplexing.

Multipoint Circuit

A cross-connection in which a signal can be sent from a single source to a number of destinations. A virtual multipoint is one-way and features a virtual node as a branch point. The virtual node is a software entity. A true DACS multipoint is two-way and features a DMB channel as a branch point. See also Broadcast Circuit.

Mu-law

A set of companding rules used for NAS transmission. See Componder, Gateway.

N

NAS Facility

An NPC terminating DS1 signals that were multiplexed according to the Time-Division Multiplexing (TDM) hierarchy in use in the North American Standard (NAS).

Near End

With regard to a cross-connection, the near end is the cross-connected NPC in the frame on which you are working in the I-2000 system.

Network

A set of communication pathways. Networks consist of nodes connected by links.

Network Address

In the FRAME PROVISIONING form, the address of the synchronous link between the PDN and the frame. This link must already be operable. The "address" is in the form of the link's telephone number.

Network Management System

The DACScan-2000 Controller C-Module interface, an AT&T product.

Network Processing Circuit (NPC)

As used in this manual, an NPC is any IC that provides terminations for cross-connection. FTU NPCs provide digroups of EFTs, but other types of NPC, such as DMB and Subrate, provide other types of terminations. In the DACS I, an NPC is implemented as one CP, but in the DACS II, the NPC is one digroup on a DDC or DPC, which is implemented as a CP.

Non-framing Word (NFW)

The 8 bits of time slot 0 in alternate frames of a CEPT transmission. The other alternates contain the framing word.

Normalize

Return an ALTROUTED circuit to its original path or a PREEMPTED circuit to ACTIVE.

North American Standard (NAS)

A standard of transmission in use in the United States and elsewhere. Within the US it is termed domestic.

NPC Provisioning

The process of growing NPCs through use of the NPC PROVISIONING form. Prior to release 3.2, this was called the EQUIPMENT PROVISIONING form.

NPC Roll

The transfer of all the circuits connected to an NPC to another NPC. Only certain kinds of NPC can be rolled.

NULL Status

A value returned to a status field, after you press , when no record of the object described by the form exists in the I-2000 database. An example of an object that can have a NULL status is a login port.

O

One-way Cross-connect or Circuit

A cross-connect that utilizes only one transmission direction.

Operator

As used in the I-2000, a person who has logged on with a login and password assigned by the system administrator. An operator does not have access to the selections listed on the SYSTEM ADMINISTRATION menu.

Outage Log

A DATABASE ADMINISTRATION feature by which the system administrator is allowed to keep electronic logs of NPC or circuit outages, and can print a log at any time.

Out of Service (OOS)

A value that can be had by a status field indicating that the object referenced by the form exists in the database but is not yet operable. For example, an

NPC that is OOS is equipped but is not placed in active service. An out-of-service NPC cannot be expected to transmit data.

OVERLAY Mode

A typing mode in which the typed character replaces the character on which it is typed.

P

Packet Data Network (PDN)

A network on which data is transmitted by breaking it up into packets. Commonly, the X.25 protocol is used in a PDN. Connection to a customer X.25 PDN by the I-2000 is through the X.25 Interface Board. See also Switched Virtual Circuit.

Passthrough

A special mode of the I-2000, which allows an operator at an I-2000 terminal to communicate directly to a frame as though the terminal were a frame terminal.

Passthrough Control Keystroke

A keystroke that positions the cursor in passthrough mode.

Pattern Matching Buffer

The logical entity that stores keystrokes as you type them.

Pending

Said of circuits that exist in the I-2000 only and are marked with a **PENDING Ckt Status**. They are waiting to be activated.

Performance Alarm

See Facility Performance Alarm.

Permanent Virtual Circuit (PVC)

A virtual circuit set up for longer than the duration of a call on an X.25 Packet Data Network; i.e., across calls.

Point-to-point

Used of a connection between pieces of hardware (nodes) where a network does not intervene.

Polling Data Circuit

A type of multipoint circuit in which the backbone leg broadcasts information (polling) to the branch, or tributary legs, and they return the replies through a DMB to the backbone leg.

Port

A physical and logical connection to a computing system. The I-2000 features asynchronous, RS232C ports for its operator terminals and also for the Alarm Broadcast Port. These ports are provided by the IPC-900 and IPC-1600 Boards. Synchronous ports, for connection to the PDN, are provided by GPSC-AT/E Boards.

Preempt -ing, -ed, -ion

Deactivate a circuit and place it in **PREEMPTED Ckt Status** so that one or more of its channels can be used by another circuit.

Primary Block Alarm (PBA)

An alarm asserted by a CEPT NPC. A variety of PBA alarms can be generated. The equivalent type of alarm for NAS NPCs is a CGA.

Primary Line

In the I-2000, the SVC designated as primary in the FRAME ADMINISTRATION form. It will be the path over which the I-2000 will communicate with the frame, so long as that SVC is operable.

Print

In the I-2000, to print is always to place on the printer; i.e., you never "print" to screen.

Product Documentation Standard (PDS) Language

A command language used in the interface to the DACS I.

Protocol

A conventional format and set of rules for initiating, maintaining and terminating data communications. The I-2000 utilizes one of two for communication with each DACS: SNIDER or X.25.

Provisioning

The process of making available various communication resources. In the I-2000, the resources are mainly NPCs and circuits.

Pseudo-Altroute

An altroute in which each channel end is altrouted to itself. Note that a pseudo-altroute does not merely reroute to the same circuit: an altroute in which the channel ends are reversed is a real altroute, even though the circuit is the same. See also Real Altroute.

Pulse Amplitude Modulation (PAM) Signal

A stream of pulses resulting from Pulse Code Modulation of an analog signal. See Time Division Multiplexing.

Pulse Code Modulation (PCM)

Digital transmission of an analog voice signal by converting it into a digital signal.

Q

Quantizing

Assigning numbers to the amplitudes of the pulses in a PAM signal. See Pulse Code Modulation.

R

Real Altroute

Alternate routing of circuits to different end points. See also Pseudo-Altroute.

Reconcile

In the I-2000, making the I-2000 databases and the DACS databases contain the same or nearly the same NPC and circuit configuration data. Alarm data also can be reconciled. "To reconcile" can be to use the **RECNCILE** key or to perform a database synchronization.

Reconfiguration

In the I-2000, the alteration of a circuit in any way, whether by changing its **Ckt Status** or its terminations.

Reconfiguration Plan (RP)

A defined collection of circuit provisioning actions.

Red Alarm

A CGA alarm signaled by an NPC when it detects loss of transmission. See also Alarm.

Red-lined

Selected out for some purpose. In the I-2000, circuits can be red-lined via the RDL **Option** for purposes of not being allowed to be disconnected without additional authorization.

Released

See Terminate and Leave Activated, Released.

Remote Database

The DACS-installed database utilized by the DACS to record provisioning information. The DACS con-

tains this database of its own even if it is not connected to an I-2000.

Remove

As used in the I-2000, to take an object out of service. Some objects that can be removed are an asynchronous port, a synchronous link, a frame and an NPC.

Reset

A restart of a computer's executive software. Turning the power switch off and on accomplishes a reset, but there is typically a reset button. Reset of the I-2000 is not recommended; instead, shut it down, if possible.

Restore

As used in the I-2000, to place an object in service. Some objects that can be restored are an asynchronous port, a synchronous link, a frame and an NPC. The term is also applied to retrieving a database from backup.

Robbed-Bit Signaling

A signaling format in which the signal bits associated with a DS0 channel overwrite some of the message bits in that channel.

Root

The highest-level directory of any UNIX system. In the I-2000 system, root is the initial login of the system and also grants full access to it. The root password is the password associated with root.

S

Scale

In the I-2000, the unit in which time frequency is measured: MINUTES, HOURS, DAYS.

Schedule

In the I-2000, to place an **EXECUTE** on queue, to be executed at the time and frequency specified in the scheduling insert.

Screen, Form

A terminal display showing named fields into which you enter data.

Search Criteria

In the I-2000, a field value or range of values, specified on a SEARCH CRITERIA form, that restrict the

scope of the report data to be found by keying in on that field.

Severely Errored Seconds

A concept referring to the number of seconds transmission was severely impaired on a facility.

Severity

The importance of an alarm message. Three severities are recognized: Major (MJ), Minor (MN) and Informational (Inf).

Side

One of two duplicate NPCs with the same address provided by a DMB circuit pack. They are identified as Side 0 and Side 1.

Signaling

A method of sending network-level signals bits, which can be used in the transmission network to determine the treatment of DS0 channels at the receiving side of the transmission. Channel Associated Signaling and Robbed-Bit Signaling are two commonly used signaling formats.

Slip Error

A transmission concept referring to a difference in the number of bits received on a facility over an interval relative to the number expected.

Small Computer Systems Interface

An interface established to support mass storage for microcomputers and minicomputers. Published in ANSI Standard X3.131, it defines a standard for attaching intelligent peripherals to computers. In the case of HDUs, SCSI defines a disk format also.

SNIDER

The Asynchronous Data Link Protocol, an EIA RS-449 based AT&T handshaking routine used to handle input transactions to a frame and output messages from it.

Speed

The baud rate over an asynchronous line. The I-2000 offers baud rates of 1200, 2400, 4800, or 9600.

Split Test Circuit

A test circuit configuration in which the circuit being tested is broken and its traffic is rerouted to test ports.

Stand-alone

Hardware or software that function without the assistance of other hardware or software. A DACS can be used as a stand-alone device, without either the I-2000 or the DACScan-2000 Controller C-Module.

Status or Service Status

In the I-2000, one of a number of fields not accessible to the user, which display the current predefined mode of activity of an object. Some of the objects that have a status are a login port, a synchronous link, an NPC and a circuit. Sometimes state is used as a synonym. Some of the major status values are IS (In Service), OOS (Out of Service), UEQD (Unequipped), NULL.

Subchannel

A facility provided by the DS0-B format.

Subrate

A facility consisting of less than the full bit rate available on a DS0 channel. Subrate facilities are available at 2.4 Kbps, 4.8 Kbps, 9.6 Kbps, and 56 Kbps. Two formats are available, DS0-A and DS0-B.

Subrate Multiplexer

The hardware module that provides two-point subrate circuits.

Subrate Multipoint Junction Unit

The hardware module that provides multipoint circuits between sub-channels.

Switched Virtual Circuit (SVC)

A virtual circuit set up for the duration of a call on an X.25 Packet Data Network. An X.25 card provides 20 SVCs. Each installed DACS reserves one for its primary link and possibly another for backup.

Symmetric Voice Circuit

A type of circuit in which all (possibly more than two) the terminations are on-line all the time; i.e., all the legs are two-way circuits. Symmetric voice circuits provide customers with the ability to carry on round table discussions. This is one type of DMB circuit.

Synchronize, Synchronization

To make predefined logical objects contain the same or similar data in parallel. An example of parallel objects are the time and date in both the I-2000 and a frame. Synchronization is also an I-2000 **Action** under DATABASE ADMINISTRATION by which differences between the I-2000 database and the DACS database for a given DACS are reconciled, subject to certain restrictions. This is termed "manual" synchronization. Echoed Response Processing also performs some automatic synchronization. Synchronization of alarm information can be turned on or off in I-2000 CIRCUIT PROVISIONING.

Synchronous Modem Eliminator (SME)

A line device for simulating a network connection by providing synchronous timing signals. In I-2000, SMEs can be used to establish a direct connection with an X.25 interface, which normally connects to a PDN.

Synchronous Transmission

A method of transmitting digital signals in which the bits are moved in synchronization with a cyclical timing signal.

System Administrator

As used in the I-2000, a person who has logged on as dacsadm with the root password. The system administrator has access to the selections listed on the SYSTEM ADMINISTRATION menu.

T

Task

As used in the I-2000, a set of commands or an I-2000-only operation that has been initiated on the I-2000 system with the **EXECUTE** key. It may or may not be identical with one or more UNIX tasks. An I-2000 task may be executed in the background or foreground, or may be placed on queue for scheduled execution.

TDM Hierarchy

A set of digital levels determining the number of channels that will be sampled during one time frame in Pulse Code Modulation transmission. Since the time frame is fixed at 1/8000 sec., a number of channels implies a digital transmission rate. For example, at the DS0 level, 1 channel is sampled and the rate is 0.064 Mbps. At the DS1 level for the NAS, 24 channels are sampled and the rate is 1.544 Mbps. The higher rate comes from the greater number of words per frame. For the CEPT standard, 32 channels are sampled and the transmission rate is 2.048 Mbps. See Time Division Multiplexing.

Test Access

Cross-connecting test ports in test circuits.

Terminate And Leave Activated, Released

A term that is somewhat ambiguous in English, but is to be construed as follows. "Terminate" means "end normal traffic on this circuit". "Terminate And Leave" makes the inhibition of normal traffic a condition that can be switched on or off. "Terminate And

Leave Activated" (TLA) activates the condition, ending the traffic. "Terminate And Leave Released" (TLR) releases the condition, restoring the traffic.

Test Port

Two contiguous channels that have been designated as a test port through TEST PORT PROVISIONING. They must be located in an NPC that has been designated as a Test Port Group.

Test Port Group

An equipped NPC that has been further designated as a collection of test ports through TEST PORT PROVISIONING.

TG80

A hardware module that makes available Clear DS1.

Threshold

An error rate below which no alarm is generated for a Facility Performance Parameter. A DACS II stores sets of Facility Performance Parameter Thresholds for each performance parameter.

Time Division Multiplexing (TDM)

The multiplexing of a number of channels for transmission purposes by taking samples of the signal on each channel at time intervals.

Sampling occurs once every time frame, where the time frames are contiguous. Since the sampling rate is 8000 samples per sec., a time frame is 1/8000 sec.

The number of channels sampled depends on the level in the TDM hierarchy at which multiplexing has been designed to operate. See TDM hierarchy. A DACS II assumes multiplexing is at the DS1 or DS3 levels.

One sample of one channel obtains a number representing the amplitude of the signal on that channel. The resulting stream of numbers is termed a Pulse Amplitude Modulation (PAM) Signal.

The PAM outputs from each channel for one frame are switched sequentially into a common encoder, which represents each one by an 8-bit word. The frame can then be sent as a stream of 8-bit words. The conversion of pulses into words is called Pulse Code Modulation (PCM).

In the transmission phase, the frame of words is transmitted via a single line. At the far end of the line, the PCM signal is converted back to analog signal in demultiplexing.

Time Frame

A 1/8000 sec. time interval within which analog signals are sampled for digitization and transmission. See Pulse Code Modulation, Time Division Multiplexing.

Time Slot

A timed position in a formatted stream of 8-bit words resulting from TDM. An NAS NPC provides time frames of 193 bits divided into 24 channels plus one framing bit. The first 8 data bits are time slot 0, channel 1, the second 8 are time slot 1, channel 2, etc.

A CEPT NPC provides time frames of 256 bits divided into 32 channels. The first 8 bits are time slot 0, channel 0, the second 8 are time slot 1, channel 1, etc. Time slot 0 in alternate frames contains a framing word. The other frame contains signalling information in those bits, called the non-framing word.

Time Slot Interchanger (TSI)

One of many circuits within a CCN that accomplish cross-connection by routing output from a time slot in one NPC to a time slot in another (or the same) NPC.

TO Side

One side in a two-point cross-connection. In one-way circuits, the TO side is the receiving side (Rx). Its name is derived from the fact that the frame command that establishes the cross-connection identifies the channel number of this point with a TO qualifier. In two-way circuits, the second direction also has a Tx side and Rx side. Thus, if two channels are connected in a two-way circuit, the FROM side and the TO side each have a Tx and Rx side.

Transparent

For the object of which it is predicated, not exhibiting any of its distinguishing characteristics. To the DAC-Scan-2000 Controller C-Module operator, the I-2000 is transparent.

Tributary Leg

Same as branch leg.

Trunk Conditioning Code

A code associated with cross-connected channels or a provisioned test port. The code tells the frame what signals to place on each channel if the facility fails. It indicates signaling bits to be sent in each direction on the circuit for the first 2.5 seconds after transmission is lost and another set to be sent thereafter.

Two-point Circuit or Cross-connection

A cross-connection between two DS0 channels.

Two-way Cross-connection

A two-point cross-connection that connects the channels in both transmission directions.

Type

The kind of NPC, where "type" gets its significance from the **Type** field of the NPC PROVISIONING form. Different types of NPC are provided by different hardware modules.

U

UB

A DACS II power unit.

Unassigned Multiplexer Channel Code

A value of Hex 18, or 00011000. A code that is sent as the disconnect channel code on unmapped channels of a provisioned NPC when the DS1 lines terminate at the far end on DDS second stage multiplexers.

Unequipped (UEQD)

A value returned to a status field, after you press **Enter**, when no record of the object described by the form exists in the I-2000 database. The major objects referenced by this status are an NPC or a frame.

Unprovision

A term used in this manual to mean to remove from the I-2000 database, after having taken out of service.

Upload

An I-2000 **Action** under DATABASE ADMINISTRATION, by which the current provisioning of a frame is recorded in the I-2000 database, subject to certain restrictions.

Upper NPC

The higher-addressed NPC of the two contiguously numbered DMB NPCs that must be grown at a time.

V

Virtual

Apparent, simulating some function or other entity, but not actually it. "Virtual memory", for example, is

not really electronic memory, but is disk storage space.

Virtual Multipoint Circuit

A Broadcast Circuit. It is called virtual because the connection is not provided by a DMB, as it is in a true multipoint circuit. Instead, it is a software emulation.

Virtual Node

The branch point in a Virtual Multipoint Circuit. It is not a channel of a DMB NPC, as it is in DMB multipoint, but is a software emulation. Ordinarily the virtual node is system-selected from the 0 through 500 range.

received, and both sending and transmitting DACSs will signal red alarm. See also Alarm.

W

Wild-card Character

More technically called a metacharacter, it is a character that can stand for a defined range of other characters in a name, just as a joker can stand for any other card when jokers are wild. The major I-2000 metacharacters are *, which can replace any number of characters, and ?, which can replace one character.

X

X.25

An AT&T implementation of CCITT Recommendation X.25, a packet-switching protocol defining standards of communication between DTE and DCE; i.e., the DTE/DCE interface. The recommendation defines the physical, data link, and network layers of the Reference Model For Open Systems Interconnection, an international convention for data communication.

Y

Yellow Alarm

A CGA alarm sent by an NPC in the direction of transmission when it detects loss of signal. At the same time, the card signals a red alarm to its own DACS. If the line is down, the yellow alarm will not be

Abbreviations and Acronyms

4GL
Fourth-generation language

A

A
Alarm indication signal

ac
Alternating current

Ac
Alternating current

adm
Administrat-or, -ive

admn
Administrat-or, -ive

AIS
Alarm Insertion Signal

Alm
Alarm

alt
Altroute

ANSI
American National Standards Institute

arp
Automatic Reconfiguration Plan

ARP
Automatic Reconfiguration Plan

ASCII
American Standard Code for Information Interchange

AT&T
American Telephone and Telegraph

B

b
Bits

B
Bytes

B
Both red and yellow alarms

BBL
Backbone leg

BCD
Business Communications Device

Bd
Baud

BER
Bit-error rate

bf
Boldface

BF
Boldface

bps
bits per second

BPSS
Basic Packet-Switching Service

BRD
Broadcast

C

CAS
Channel Associated Signaling

CCB
Cross-connect Buffer

CCI
Clock and control interface

CCITT
Comite Consultatif International Telegraphique et
Telephonique

List of Abbreviations

CCN
Cross-connect Network

CCNI
CCN interface

cd
Change Directory

CEF
Capacity Expanded Frame

CEPT
Conference European Postale et Telephonique

CGA
Carrier-group alarm (carrier group = digroup)

Ch
Channel

CH
Channel

Chan
Channel

CHAN
Channel

CHG
Change

CI
Communications interface

Ckt
Circuit

CKT
Circuit

CNC
Customer Network Controller

COFA
Change of Frame Alignment Error

COMCODE
Component Code

CP
Circuit Pack

CPU
Central Processing Unit

CR
Critical

CRC
Cyclic Redundancy Check

CRO
Clock Reference Oscillator

CRT
Cathode Ray Tube

CRTE
Create

CSS
Controlled slip seconds

Ctrl
Control

CTS
Clear to Send

CUS
Customer

CV
Coding violation

cw
Constant Width

CW
Constant Width

D

DACS
Digital Access and Cross-connect System

DB
Database

dc
Direct current

DCC
Disconnect-channel code

DCD
Data Carrier Detect

DCE
Data Circuit-terminating Equipment

List of Abbreviations

D

DCON
Disconnect

dd
Day (2 chars.)

DD
Day (2 chars.)

DDC
Default Disconnect Code

DDC
Dual-digroup card

DDS
Digital Data System

DE
Digroup-enhanced

DEX
Digital Electronic Cross-connect System

DGRTH
De-growth

DM
Degraded Minutes

DM
Dual multiplexer

DMA
Deferred Maintenance Alarm

DMB
Digital Multipoint Bridge

DPC
Dual primary circuit

DSPU
Digital Signal Processing Unit

DSR
Data Set Ready

DSX
Digital Signal Cross-Connect

DS0
Digital signal level 0

DS1
Digital signal level 1

DS3
Digital signal level 3

DS3U
DS3 Unit

DTE
Data Terminal Equipment

DTR
Data Terminal Ready

E

E
Extended

ECCN
Extended cross-connect network

ECEF
Extended Capacity Expanded Frame

EDDC
Enhanced Dual Digroup Circuit

EDPC
Enhanced Dual Primary Circuit

EER
Excessive error rate

EFT
External Facility Termination

EIA
Electronic Industries Association

EISA
Extended Industry Standard Architecture

EQD
Equipped

EQL
Embedded Query Language

EQPT
Equipment

ERM
Echoed Response Message(s)

ERM
Errored Minutes

ERP
Echoed Response Processing

List of Abbreviations

ERS
Errored Seconds

ES
Errored seconds

Esc
Escape

ESD
Electrostatic discharge

ESDI
Enhanced Small Device Interface

ESQL
Embedded Structured Query Language

ETSI
Extended time slot interchange

Ext
Extended

Extd
Extended

F

F
Female

FACE
Framed Access Command Environment

FAX
Facsimile

FC
Format converter

FDD
Floppy Disk Drive

FDX
Full duplex

FE
Far end

FEBE
Far end block error

FFER
Frame Format Error rate

FMLI
Form and Menu Language Interpreter

Fr
From

FR
From

FRER
Framing errors

FTM
Facility Terminating Module

FTMI
Facility Terminating Module Interface

FTU
Facility Terminating Unit

FUAS
Far end unavailable seconds

FW
Framing Word

G

GPSC
General Purpose Synchronous Controller

GRP
Group

GRTH
Growth

H

H
Hierarchical

HDU
Hard Disk Unit

HDX
Half duplex

List of Abbreviations

I

IC

Integrated Circuit

ID

Identifier or identification

IF

Interface

IMX

Informix

INCL

Inclusive

ipc

Interprocess communications

IPC

Intelligent Ports Card

IRQ

Interrupt request

IS

In service

ISA

Industry Standard Architecture

ISO

International Organization For Standardization

ISX

Integral Shelf Cross-connect

IW

Insertion Word

K

k

Kilo or x 1000

kb

Kilobits

kB

kilobytes

KB

kilobytes

kbd

Keyboard

KBD

Keyboard

Kbps

Kilo-bits per second

L

L

Local multiframe alarm

LAN

Local Area Network

LED

Light Emitting Diode

LFER

Line Format Error rate

lgn

Login

LMA

Local Multiframe Alarm

LMA

Loss of Multiframe Alignment

Loc

Location

LOFA

Loss of Frame Alignment

LOS

Loss of Signal

M

M

Male

M

Remote multiframe alarm

List of Abbreviations

M	Mega or x 1,000,000	msg	Message
Maj	Major alarm	mux	Multiplex, -ed, -ing, -or
Mb	Megabits	MUX	Multiplex, -ed, -ing, -or
MB	Megabytes	M1X	DS1 to DSX Multiplexer
MB	Multipoint Bridge		
Mbps	Megabits per second	N	
MC	Main Controller	NAM	No a-to-mu-law conversion
MCOND	Maintenance Condition	NAS	North American Standard
MEM	Memory	NAU	Network-access unit
MER	Multiframe errors	NE	Near end
Mj	Major alarm	NFS	Non-framing Word Setting
MJ	Major alarm	NFW	Non-framing Word
MJ	Multipoint Junction Unit	NI	Network Interface
MJU	Multipoint Junction Unit	NMS	Network Management System
mml	Man Machine Language	NPC	Network Processing Circuit
MML	Man Machine Language	NPCTP	NPC Test Port
mmm	Month (3 chars.)	NTR	No Transmit
MMM	Month (3 chars.)	Num	Number
MN	Minor Alarm		
MP	Multipoint		

List of Abbreviations

O

OCON

One-way cross-connect

OFS

Out-of-frame seconds

OOF

Out of Frame

OOS

Out of service

O&M

Operation and Maintenance

P

PAM

Pulse Amplitude Modulation

passwd

password

PB

Primary block

PBA

Primary Block Alarm

PBF

Primary block failure

PC

Personal computer

PCM

Pulse Code Modulation

PDN

Packet Data Network

PDS

Product Documentation Standard

PEC

Price Element Code

PII

Peripheral Interrupt Interface.

PMA

Prompt Maintenance Alarm

PVC

Permanent Virtual Circuit

Q

QIC

Quarter-Inch Cartridge

R

R

Red alarm

RAI

Remote Alarm Indicat-or -ion

RAIS

Remote AIS

RAM

Random Access Memory

RBER

Remote bit error rate

RCNCILE

Reconcile

RDLD

Red-lined

RMA

Remote Multiframe Alarm

Rmks

Remarks

RMV

Remove

RP

Restoration or restoral priority

RP

Reconfiguration Plan

RST

Restore

List of Abbreviations

RTS
Request to Send

Rx
Receive

S

s
Second(s)

SAFE
Shelf Alarm Far End

SANE
Shelf Alarm Near End

SC
Signal(ing) Conversion

SCSI
Small Computer Systems Interface

SE
Standard Engine

Seq
Sequence

SERS
Severe errored seconds

SES
Severe errored seconds

SEV
Severity

SFI
Synchroniz-er -ation Failure Indicat-or -ion

SHMEM
Shared memory

SIMM
Single In-Line Memory Module

SME
Synchronous Modem Eliminator

SQL
Structured Query Language

SR
Subrate (multiplexer)

SRD
Software Release Description

SRM
Subrate Multiplexer

Str
String

stty
Set tty

SV
System V

SVC
Switched Virtual Circuit

SW
Software; switch

SWX
Synchronizer cross-connect

T

TB
Time Base

TC
Trunk conditioning

TCS
T-Carrier Cross-Connect System

TDM
Time Division Multiplexing

TE
Timing Extractor

Telco
Telephone Company

TLA
Terminate and Leave Activated

TLI
Time link interface

TLR
Terminate and Leave Released

TP
Test port

List of Abbreviations

TPG
Test Port Group

TRB
Trouble word

TREF
Timing reference error

TRSP
Transparent signaling

TSI
Time Slot Interchanger

TS0
Time slot zero

TS0M
Time Slot 0 Monitor

tty
Teletype

Tx
Transmit

U

UAS
Unavailable seconds

UATC
Unavailable time count

UC
Unit Controller

UEQD
Unequipped

UI
User interface

UMC
Unassigned Multiplexer Channel Code

US
Unavailable Seconds

V

VDC
Video Display Console

VGA
Video Graphics Analog

W

WGS
Work-Group Station

Y

Y
Yellow alarm

yy
Year (2 chars.)

YY
Year (2 chars.)

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