Lucent Technologies
Bell Labs Innovations

I-2000 Controller for DACS II Release 5.1

User's Guide

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Identification No.: 365-353-925   Issue No.: 2   Date: August 1998

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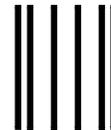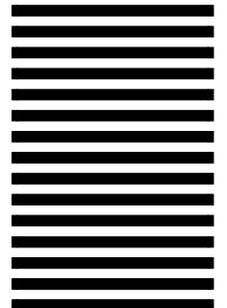
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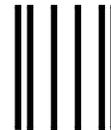
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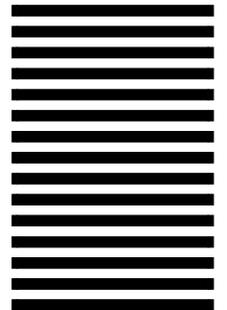
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About This Manual

Purpose of This Manual

This manual provides step-by-step procedures on how to use the I-2000 Controller for DACS II. For information on installation and maintenance, refer to the list of documents in "Accompanying Documents" in this chapter.

Intended Audience

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

How to Use This Manual

A brief description of each chapter's contents is provided to give the user an overview of the document:

- **About This Manual** provides information on how to use this manual, information about related documents, documentation conventions, and descriptions of new features for this release.

- **Chapter 1: Introduction** provides information on the I-2000 Controller and its features.

- **Chapter 2: Getting Started** provides information on configuring the DACS II frame, setting environment variables, logging into and using the I-2000 software.

- **Chapter 3: System Administration** provides an introduction to system administration, such as login ports, X.25 link administration, frame administration, and printer administration.

- **Chapter 4: NPC Provisioning** provides information on NPC provisioning, its forms, field descriptions and examples of operations, such as creating an NPC and placing it in service, removing an NPC, and querying an NPC.

- **Chapter 5: Test Port Provisioning** provides information on test port provisioning and its forms, field descriptions, and examples of operations, such as creating and deleting a test port group.

- **Chapter 6: Circuit Provisioning** provides information on circuit provisioning, its forms, field descriptions, and examples of circuit provisioning, such as full duplex circuit, loopback circuit, and cascaded multipoint circuits.

- **Chapter 7: Subrate Provisioning** provides information on provisioning DS0 channels, and establishing subrate cross connections.

- **Chapter 8: Alternate Routing** provides information on alternate routing, preempting, normalizing, and examples, such as altrouting and normalizing single channel circuits, and multipoint circuits.

- **Chapter 9: Reconfiguration Plans** provides information and examples on reconfiguration plans, single plans, and automatic plans for the I-2000 Controller.

- **Chapter 10: Database Administration** provides information on database audit synchronization, backing up and restoring the database, entering and retrieving outage data, and moving a frame.

- **Chapter 11: Task Administration** provides information on task administration and printer status.

- **Chapter 12: User Administration** provides information on I-2000 features and constraints, user management, and password administration.

- **Chapter 13: Passthrough** provides information on multiplexed passthrough, full passthrough, and how to use the passthrough feature, as well as field descriptions and examples.

- **Chapter 14: Report Operations** provides information on report operations, such as generating and displaying reports, report categories, and report formats.

- **Chapter 15: Test Access** provides information on Test access, field descriptions, and examples, such as NAS two-point circuits, unmapped NAS circuits, and NAS multipoint circuits.

- **Chapter 16: Fault Management** provides information on the Alarm Notification feature, a list of DACS II alarm message elements, and an explanation of these elements.

- **Chapter 17: 24-Hour Performance Monitoring** provides information on how to RESET and BROWSE performance statistics for the I-2000.

- **Appendix A: Summary of Report Fields** provides information on the fields for the reports.

- **Appendix B: Error Messages** provides information on the error messages that appear on the I-2000 STATUS line. Procedures for resolving problems are also included.

- **Glossary** defines the terms used throughout this document.

- **Abbreviations and Acronyms** provides the definitions for the acronyms used throughout this document.

- **Index** allows you to quickly locate information on topics covered in the document. To use the index, look up the topic you want and turn to the page references listed by that topic.

What's New in This Release?

New features for the I-2000 Controller for DACS II Release 5.1 are:

- **DACS II Release 8.2.x and DACS II ISX Release 3.1.2 support**

  All features are supported. Exceptions are the DS3 hybrid unit and subrate features of DACS II and LSIU NPCs feature of DACS II ISX.

- **Year 2000 compliance**

  This release of I-2000 is fully year 2000 compliant.

Additional Documents

The following documents provide additional information on DACS, and can be useful when using the I-2000 with DACS II and DACS II ISX.

Some documents are not specifically relevant to I-2000 features; however, they can be useful; for example, to an expert user in passthrough mode.

The DACS II and DACS II ISX documents are issued to support each release. Be sure to obtain the documents that support the release that is running with your I-2000 system.

DACS II Additional Documents

The list below provides additional DACS II documentation for Release 8.2.2:

- *DACS II Operations and Maintenance*
  Release 8.2.2 MML
  2.048-Mbit/s Interface
  Number: 365-353-191

- *DACS II Commands and Messages*
  Release 8.2.2 MML
  2.048-Mb/s Interface
  Number: 365-353-192

- *DACS II Quick Reference Guide*
  Release 8.2.2 MML
  2.048-Mb/s Interface
  Number: 363-353-193

DACS II ISX Additional Documents

The list below provides additional DACS II ISX documentation for Release 3.1.2:

- *DACS II ISX Operations and Maintenance*
  Release 3.1.2 MML
  Number: 365-359-103

- *DACS II ISX Commands and Messages*
  Release 3.1.2 MML
  Number: 365-359-104

- *DACS II ISX Quick Reference Guide*
  Release 3.1.2 MML
  Number: 365-359-105

- *DACS II ISX Installation Manual*
  Number: 365-359-080

Ordering Information

Documentation for the I-2000, DACS II, and DACS II ISX can be ordered through the Customer Information Center (CIC) in Indianapolis. Many documents are available in hard copy and on compact disk. For more information, call:

1-888-LUCENT-8 (1-888-582-3688)

1-317-322-6416 (Outside North America)

For automatic updates (for one year), request that the document be given "standing order" status. The mailing address follows:

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selection will take you to the area through which numerous types of customer information products can be located, ordered, and/or downloaded.

Documentation Conventions

The following conventions are used throughout 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 Return key on your keyboard.

■ Function key labels are in all capital letters and are enclosed in a box; for example:

EXECUTE

■ Field names appear in bold type; for example:

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:

  mm dd yy

- 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 you 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.

Screen Conventions

The I-2000 screens shown in this manual depict the system with these options enabled: X.50 subrate feature and 24-hour performance monitoring. The screens on your system may appear differently depending on the features that are installed.

The I-2000 screens display the host name of the workstation and a user interface session number just above the list of function keys on each screen (**UI-00** to **UI-15**). This number is used to identify the user commands and print jobs associated with a user interface session. This information is not shown on the screens in this manual.

Training

This document, as well as the I-2000 course material, are used in the I-2000 Controller for DACS II training courses.

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Introduction

1

Contents

Introduction

1

Product Description

The Lucent Technologies I-2000 Controller for DACS II is a computing system configuration that allows up to 16 users, which includes the console, to simultaneously manage multiple cross-connect DACSs through a user-friendly interface. In addition, the I-2000 supports up to 30 DACS and/or 15,360 NPCs, whichever is less. In addition, optional connections to the Event Management System Interface are also available through the I-2000 Controller.

The elements of the configuration are the DACS frames and the I-2000 computing system. Figure 1-1 illustrates how the I-2000 connects to the DACS and user terminals.
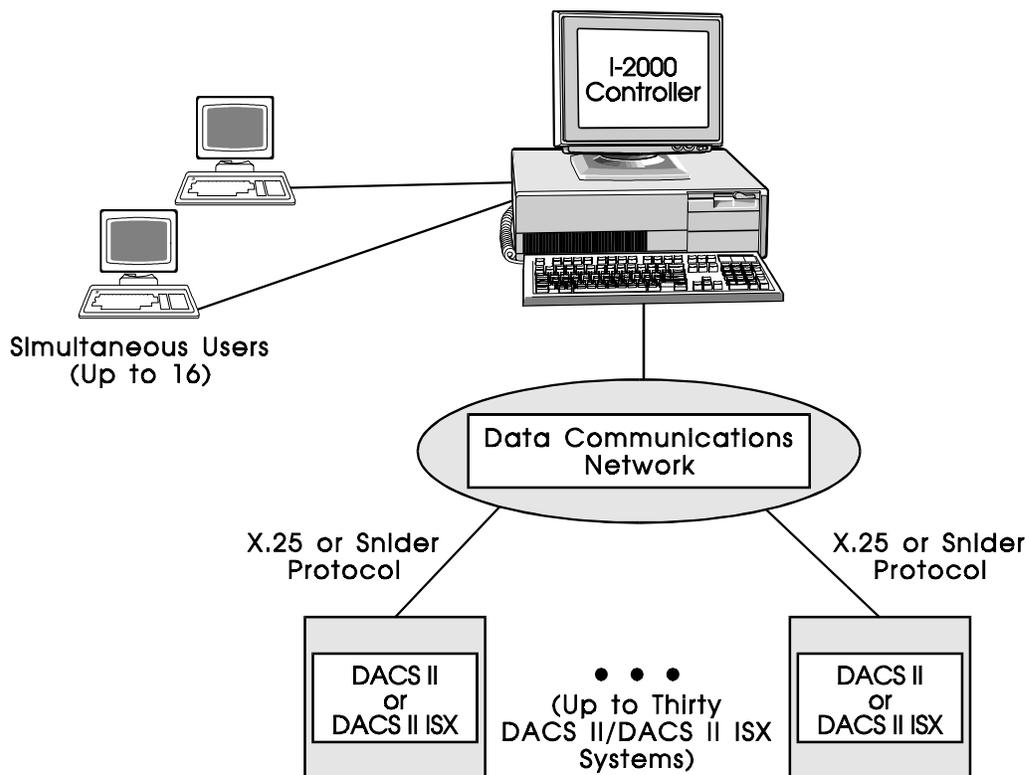
Figure 1-1.   Example I-2000 Configuration

The terms *DACS* and *frame* used in this manual refer to any supported configured cross-connect frame.

The I-2000 Controller allows you to configure a variety of products, and establish links to a range of DACS.

⇒ **NOTE:**
You must make hardware and networking selections before installing the I-2000 Controller.

A Digital Access and Cross-connect System (DACS) is a device for cross-connecting, or switching, between lines that have been time-division multiplexed; for example, 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 is 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 that can easily be replaced.

In the DACS I, the basic integrated circuits to make cross-connections are located in a circuit pack, the digroup circuit, which receives a multiplexed, Digital Signal, level 1 (DS1) signal and makes available two groups of 12 channels each. As other types of circuit packs were added to implement different types of cross-connection, such as multipoint and subrate, a more generic name was needed for the other circuit packs that accomplish cross-connection and are interchangeable in the same slots. The term Network Processing Circuit (NPC) was applied.

DACS II upgrades DACS I functions and takes advantage of a more advanced technology; specifically, miniaturization.

For DACS II, two digroups are located on a single circuit pack, which is called a Dual Digroup Card (DDC). NPC is one digroup of 24 channels for the North American Standard (NAS) transmission.

DACS II circuit packs, which are designed for transmission according to the Conference European Postale et Telephonique (CEPT) standard, feature Dual Primary Circuits (DPCs). One DPC contains two NPCs of 32 channels each; however, one channel is used for timing signals and one channel is used for signalling bits. When signalling is used there are 30 voice/data channels available, when signalling is not used, there are 31 voice/data channels.

DACS II is a cross-connect frame which provides for:

- Terminating DS1/E1 multiplexed signals:

    — Digital Signal, level 3 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 NPCs.

    — Facility Terminating Units (FTUs) contain a maximum of four 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 four 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 2,688 NPCs.

- 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 Digital Signal, level 0 (DS0) signals and re-time and switch the constituent DS0s into the desired channels.

■ Establishing multipoint cross-connections.

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

Additional hardware supports other 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 allows you to take advantage of DACS capabilities in a more user-friendly way. Prior to the I-2000, an operator utilized a command-line interface to generate DACS commands. You can still use the DACS as a stand-alone in this way.

The I-2000 adds a control interface to generate DACS commands; for example, it is a user-friendly front-end, as well as a circuit and facility management system. Provisioning operations are selected from menus and the number of circuit characteristics through preformatted screens (forms). The I-2000 automatically generates the appropriate DACS commands and sends them to the target DACS.

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

Types of Provisioning

The I-2000 provides four types of provisioning:

■ **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.

For more information on NPC provisioning, refer to Chapter 4 "NPC Provisioning."

■ **Subrate Provisioning**—allows you to provision subrate circuits on a specified NPC for X.50 and X.57 subrate functionality.

For more information on Subrate provisioning, refer to Chapter 7 "Subrate Provisioning."

■ **Test Port Provisioning**—establishes logical test ports that can be connected to test equipment that can be used for testing channels. The equipment must be physically in place.

For more information on Test Port provisioning, refer to Chapter 5 "Test Port Provisioning."

■ **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 DACS. Circuits can also be created, deleted or changed automatically according to stored, user-defined reconfiguration plans.

For more information on Circuit Provisioning, refer to Chapter 6 "Circuit Provisioning."

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

Additional functionality includes the following features:

Circuit reconfiguration allows the operator to create, execute, and store circuit reconfiguration plans.

- Test access lets the operator route circuits to test ports or test groups.

- Alarm reporting notifies the operator of all major and critical DACS alarms.

There is also an I-2000-transparent mode of operation, called passthrough, in which an expert operator can communicate with a DACS directly, as though the I-2000 console were a DACS console. You can also write scripts of DACS commands in huMan Machine Language (MML), store them on a DOS diskette, or retrieve them from there, and execute them.

The I-2000 maintains its own databases in order to track its operations and record the state of its circuits. You can back them up on tape or diskette, and restore from there. 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.

There are occasions when the I-2000 and DACS databases may not correspond; that is, they can 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 a password. Within an I-2000, the system administrator assigns logins. In addition, access to the network is also limited.

The quantity and arrangement of the pool of available resources: DACSs, 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 DACS 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 X.25 network, each DACS 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 DACS is defined by the Comite Consultatif Internationel
Telegraphique et Telephonique (CCITT) standard X.25 Data Terminal Equipment/
Data Circuit-terminating Equipment (DTE/DCE) interface.

Users may access the I-2000 and obtain a user interface over X.25. The user
must have access to the PDN, an X.25 PAD, and the I-2000 network address(es).

The network supports link protection. Without link protection, the I-2000 computer
is connected to the network by two links, and a DACS by one. With full link
protection, the I-2000 computer is connected by up to four lines: two primary and
two backup, and a DACS is connected by one primary and one backup, as shown
in Figure 1-2.
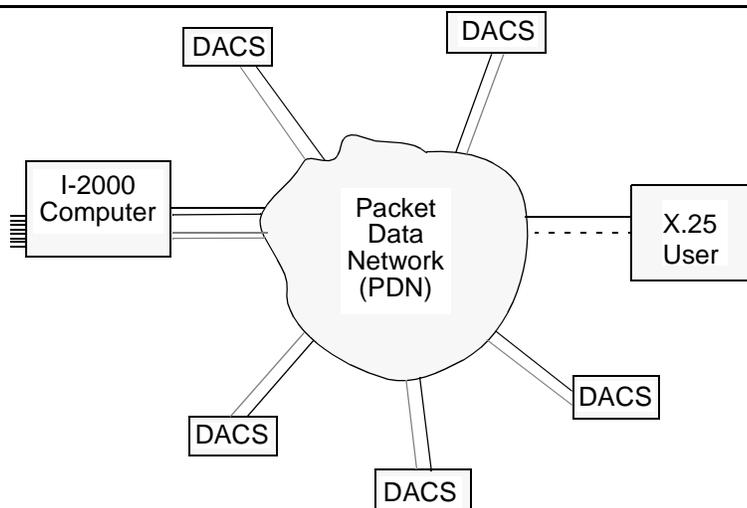
Figure 1-2.   PDN X.25 Configuration

The automatic switching of the Primary to Backup X.25 communication link is not
revertive. For example, if the Primary link fails the system will automatically switch
to the Backup link, but it will not automatically switch back when the Primary is
fixed. The Backup link will need to fail for the system to switch back to the fixed
Primary or it can be manually switched back.

In the direct configurations, the user terminals and the DACSs 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 DACS) if each DACS line contains a Synchronous Modem Eliminator (SME) to provide the timing signals.

Figure 1-3 shows a point-to-point X.25 configuration with link protection.
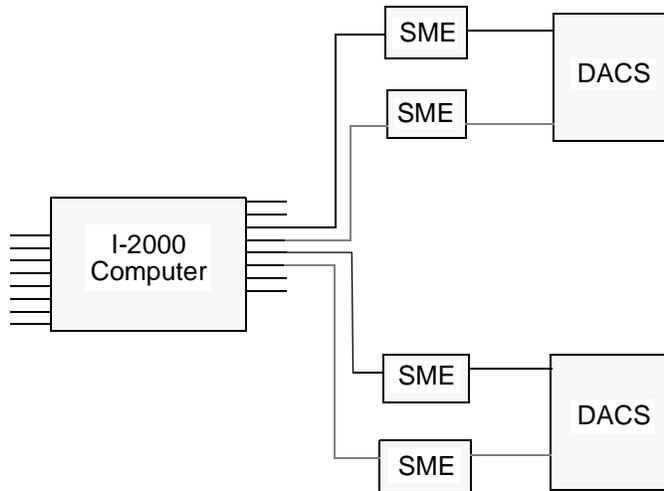
Figure 1-3.   Point-to-point X.25 Configuration

Figure 1-4 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.

⟹ **NOTE:**
X.25 configuration files are set up, by default, to support PDN. X.25. Configuration files must be modified to support direct connection. Contact Lucent technical support for information.
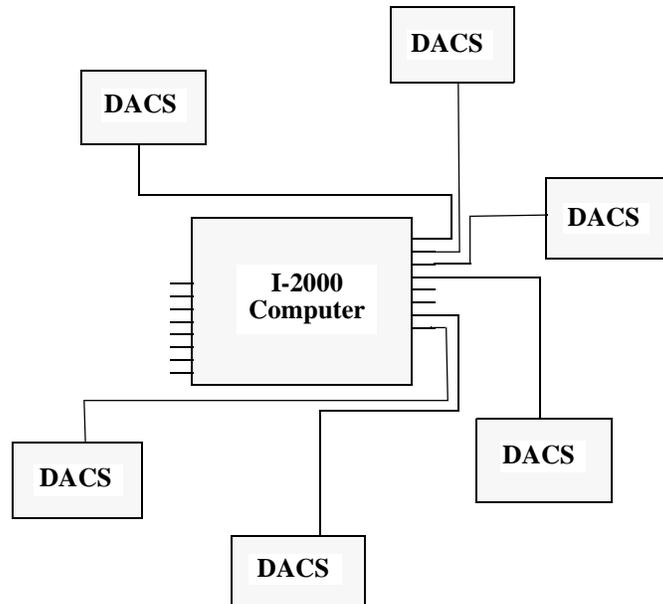
Figure 1-4.   Point-to-point SNIDER Configuration

Features

I-2000 features are packaged into basic configurations called releases. A number of releases have been issued and they continue on an ongoing basis. This manual covers Release 5.1 only.

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

System Features

The hardware and system software features for the I-2000 Controller are listed below:

- A variety of hardware platforms described in the I-2000 Controller for DACS II Installation Manual and the Software Release Description for this release.

- 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 input/output (I/O) ports.

- Optional remote printer connection through a DECserver 700.

- Control of one through 30 DACS in DACS II Releases 4 and higher, and DACS II ISX Releases 1.0 and higher.

- Cross-connections for a combined total of up to 15,360 DACS II NPCs. For example, 20 DACS IIs of 512 NAS NPCs per DACS would make available approximately 10,240 digroups and 345,760 channel ends, supporting 123,880 full-duplex circuits.

- With DACS II only, clear DS1-level cross-connections through the DACS II's TG80 and TG191 Cards. DACS II Release 6 adds CEPT clear E1 cross-connections through the TG192 Card.

- Support for the DACS II's DS3-level circuit packs.

- TS0 to non-TS0 CEPT cross-connections.

- Login and password protection. Support of up to 16 simultaneous sessions and 64 different logins. Each window counts as a user session.

- Remote terminal support for AT&T 605, 615, 620, 705, 4425, TELETYPE® 5425 asynchronous user terminals, and DEC vt220®.

- Color monitor and a keyboard.

- Selection of communication with individual DACS through the X.25 or SNIDER interfaces.

- 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 DECserver 700 interface to remote printers through Transport Control Protocol/Internet Protocol (TCP/IP) networking services.

- Subrate provisioning for X.50 and X.57 circuits.

Features Under Menu Control

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

- User-defined names (IDs) for cross-connects and NPCs.

- Cross-connect altrouting, preempting and normalizing.

- Preplanned circuit reconfigurations, executed on command, 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 nxDS0 cross-connections
  - — One-way cross-connections
  - — Virtual broadcast (one-way) cross-connections
  - — Symmetric voice circuits
  - — Polling data circuits
  - — Test access to single-channel or nxDS0 cross-connections
  - — Subrate cross-connections through the DACScan only
- DACS alarm logging and notification.
- Passthrough (expert DACS user) mode, direct to the DACS.
- MML script editing, storage and execution.
- Querying of database from forms, including NPC and circuit browse selections.
- Remote printing, if a DECserver 700 is configured and a remote printer is in the network.
- Database backup and recovery to/from diskette or tape.
- Report capability, including user-defined reports.
- Database administration:
  - — Upload I-2000 database with frame provisioning data
  - — NPC audit
  - — Scheduled NPC, channel or alarm synchronization between the I-2000 and a DACS

Autonomous Features

The I-2000 offers some features that are not controllable through menus and screens, such as the Alarm monitor port.

Alarm Monitoring

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

You *must* provide your own equipment to connect to the port and receive the alarms. The hardware connection procedure also is stated in the *I-2000 Controller for DACS II Installation Manual*. 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.

By default, the Alarm Monitor Port is on. You can turn it off by changing the value of the ALARM_DEV variable. For more information, refer to "Setting Environmental Variables" in Chapter 2 "Getting Started."

Alarms are placed on the Alarm Monitor Port exactly as they are received from the DACS. Since multiple alarms can be received simultaneously, the I-2000 buffers them for output.

Echoed Response Processing

Real-time Echoed Response Processing (ERP) is the automatic response of the I-2000 to provisioning changes made in the DACS through the DACS console or via other frame 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 can 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 DACS output. Alarm synchronization also can also be turned on or off by entering a field value.

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Introduction

This chapter gets you started configuring the frame for DACS II and DACS II ISX, as well as configuring the DACS using the X.25 and SNIDER protocols. After the I-2000 controller has been successfully installed, use this chapter to start configuring the system.

Configuring the DACS

When the I-2000 system is operational, configure the DACS administrative link that will be connected to the I-2000. Perform this step at the DACS.

Compatibility with I-2000 is crucial. If DACSs are already operative, see your system administrator for the details of their settings.

Procedure: Configuring the DACS II & DACS II ISX

To configure the DACS II and DACS II ISX Releases 1.0 and higher, follow these steps:

1. Log in directly on a dumb DACS terminal as a frame administrator using either MML or PDS.

    a. For **MML**, type in the following commands:

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

    b. For **PDS**, type in the following commands:

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

2. If the USER DAX input language is **PDS**, change it to **MML** following these steps:

    a. Type in the following command:

       `ADD::USER DAX, LANG M`

    b. Log off:

       `LOGOFF::USER DAX`

    c. Log in again:

       `LGN-USER::::DAX`

3. Follow one of the procedures below to configure the frame using either the SNIDER or X.25 protocols.

    a. To configure the DACS as a node in a direct configuration utilizing the SNIDER protocol, refer to "Procedure: Configuring the Frame Using SNIDER Protocol."

    b. To configure the DACS as a node in a direct or network configuration utilizing the X.25 protocol, refer to "Procedure: Configuring the Frame Using X.25 Protocol."

**Procedure: Configuring Frame Using
SNIDER Protocol**

⇒ **NOTE:**
The procedures for configuring the frame for a SNIDER protocol differ slightly between the DACS II and DACS II ISX. The differences are noted below.

To configure the DACS as a node in a SNIDER configuration using MML, follow these steps:

1. Set the baud rate to 1200 (`12`), 2400 (`24`), 4800 (`48`), or 9600 (`96`) and the protocol to SNIDER (`S`):

    a. For DACS II:

       `ED-PRMTR-LINK::n::BAUD-bb,PTCOL-S;`
       where n is `1`, `2`, `3`, or `4` and refers to the DACS link, and bb is `12`, `24`, `48` or `96`.

    b. For DACS II ISX:

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

⇒ **NOTE:**
On reset, the DACS re-establishes the port default speed of 1200 baud until the DACS reboot is completed. If the administrative link is set to any other speed through I-2000 FRAME ADMINISTRATION, communication will be temporarily lost during the DACS reboot. Either change the I-2000 administrative link to match the DACS port, or change the DACS port to match the link. If you use PASSTHROUGH to change the DACS port, you must first set the administrative link to 1200. As soon as you press Enter, communication is lost again. Leave PASSTHROUGH and reset the I-2000 link.

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 (default for DACS II ISX)
`X` for 4-digit extended numbering
`H` for hierarchical numbering (recommended for DACS II)

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

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

4. 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&-1&-0&-1;
```

For more information on echoed responses, refer to Echoed Response Processing in Chapter 4 "NPC Provisioning" and Chapter 6 "Circuit Provisioning."

Procedure: Configuring Frame Using X.25 Protocol

To configure a frame as a node in a direct or network configuration for DACS II using the X.25 protocol, follow these steps:

1. Using MML, initialize one or both frame links to handle X.25.

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

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

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;
```

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 (`501` to `516` and `601` to `616`), and m is:

- `E`   for 3-digit extended NPC numbering
- `X`   for 4-digit extended numbering
- `H`   for hierarchical numbering

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

5. 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;
```

6. 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&-1&-0&-1;
SET-PRVG-TERM::::n02:SCR-4,GR-1&-1&-1&-1&-0&-1;
...
SET-PRVG-TERM::::n16:SCR-4,GR-1&-1&-1&-1&-0&-1;
```

7. Set the frame level 2 parameters to match the parameters of the I-2000:

```
ED-PRMTR-LINK::n::K-3,N2-7,T1-6;
```

Procedure: Configuring DACS for 24-Hour Performance Monitoring

1. If 24-Hour Performance Monitoring is enabled on the I-2000, schedule 24-Hour Performance Monitoring at the DACS and DACS II ISX using the following commands:

   At a gateway DACS II:
   ```
   SCHED-PMREPT-ALL::::HH-MM-SS,FAC-X-0002b5,,PRIM-X-FBFF
   SCHED-PMREPT-ALL::::HH-MM-SS,MONDAT
   ```

   At a DACS II ISX or a non-gateway CEPT DACS II:
   ```
   SCHED-PMREPT-ALL::::HH-MM-SS,PRIM-X-FBFF
   SCHED-PMREPT-ALL::::HH-MM-SS,MONDAT
   ```

   See the DACS II or DACS II ISX *Command and Message Manual* for more details on these commands.

> **NOTE:**
> For an I-2000 supporting multiple DACSs, it is recommended that each DACS has a different execution time for performance monitoring reports, so that two or more DACSs are not reporting performance data at the same time. It is also recommended that the time of execution be set to off-peak usage hours, when the I-2000 is not being heavily used. Do not schedule performance reports to be executed at midnight.

Setting Environment Variables

To insure proper operation of the I-2000 system, you may need to check that some environmental variables used by the I-2000 have the proper values. Also, you can vary the values to achieve different operational effects.

Table 2-1 describes the environment variables, their purposes and their values.

⚠ CAUTION:
If a variable appears in the variable file, but does not appear in the table, it is recommended that you **do not** *alter it.*

A specification of no value means the variable name followed by an =.

Table 2-1.   Environmental Variables

ALARM_DEV	The device name of the alarm monitor port. The default is **/dev/ttyb** for the Sun, and **/dev/tty01** for all other systems.
ALARM_DEV_SPEED	The baud rate of the alarm monitor port. The default is **9600**. Other possible values are **1200**, **2400**, **4800** and **19200**.
BROWSE_TIMEOUT	The time, in seconds, for which the I-2000 will wait for a response from a circuit BROWSE **Action**. At the end of that time, the I-2000 will return control of the terminal to the user. The default is **1800** seconds (30 minutes). The range is **60** through **3600** seconds (1 through 60 minutes).
BTCHLOOP	Whether or not the enhanced test access feature is enabled. It it is enabled, the I-2000 will execute channel loop and release actions. Otherwise, the I-2000 will ignore them. A value of 1 enables. Any other value disables. The default is 0.
BTEMI	Whether or not messages will be sent to the Event Management System Interface. The default of no value presumes this interface is not present. If a value is entered, it should be the name of the device entered into the **/etc/printcap** file for this interface. The recommended name is **btemi**.
BTHOTSTANDBY	Whether or not the hot standby feature is enabled. It it is disabled, the I-2000 will process echoed responses normally. A value of 1 enables. Any other value disables. The default is 0.

Table 2-1.   Environmental Variables (Contd)

BTLP	Whether or not messages will be sent to the Event Management System Alarm Logging Printer. The default of no value presumes that this interface is not present. If a value is entered it should be the name of the device entered into the **/etc/printcap** file for this interface. The recommended name is **btlp**.
BTLP_ALARM_STATE	Ignored if BTLP is not set. Which DACS alarm messages, by alarm state, are sent to the Event Management System Alarm Logging Printer Interface. The default is all alarm messages, regardless of alarm state.
BTLP_DATE_FORMAT	Ignored if BTLP is not set. The format of the date string in messages to the Event Management System Alarm Logging Printer Interface. The default is the UNIX long time value. For example, to have the date appear as 2_digit_month/2_digit_day/2_digit_year hour:min:sec use the following line: %m/ %d/ %y %H:%M:%S You can find descriptions of the specifiers in the Tables 2-2 through 2-4.
BTLP_EXCLUDE	Ignored if BTLP is not set. Which frame alarm messages are sent to the Event Management System Alarm Logging Printer Interface. The default is only to send non-NPC alarms: 65011 65021 65031 65035 65036 65041 65045 65046 65061 33351
BTLP_FMT_STRING	Ignored if BTLP is not set. The format of output messages to the Event Management System Alarm Logging Printer Interface. The default is: ae\n\ttid\t%d\n\teqtype\t%1\n\teqid\t%E\n\tcondtype\t%C\n\ \talarmtype\t%F\n\talarm_state\t%V\n\tdacsmsgno\t%m\n\tsum-mary\t%n\n\ \tttime\t%T\n\tnpc_id\t%N\n\tckts\t%K\n\n Descriptions of the specifiers are listed in Table 2-2.
COMMAND_TIMEOUT	The time for which the I-2000 will wait for a response from the DACS to a command issued by the user during a multiplexed passthrough session. At the end of that time, the I-2000 will return control of the terminal to the user. The default is **60** seconds. The range is **15** through **180** seconds.

Table 2-1.   Environmental Variables (Contd)

D2_MIN_TG	For DACS II. This variable specifies the minimum number to be used as a test group ID when using Test Access.
D2_MAX_TG	For DACS II. This variable specifies the maximum number to be used as a test group ID when using Test Access.
D2_MIN_NPCTG	For DACS II. This variable specifies the minimum number to be used as an NPC test group ID when using Test Access.
D2_MAX_NPCTG	For DACS II. This variable specifies the maximum number to be used as an NPC test group ID when using Test Access.
DACSCAN_STRING	The system name that will be appended to the header lines of history and alarm reports. The default is no value. A typical value that can be used for the unified application is **"DACScan-2000 Controller"**.
DACS_HIST_SIZE	The maximum number of characters in a single history log. The default is **60000**. The range is **60000-600000**.
DACS_TIMEOUT	The timeout for frame commands. The default is **180** seconds (three minutes). The range is **180-600** (ten minutes).
DATE_FORMAT	The format of the date in the alarm report, the history log report header, the non-NPC alarm events sent to the DACScan, and all other I-2000 reports. The default of no value obtains a format of ddmmmyy. A value of **AMERICAN** changes it to mm/dd/yy and a value of **EUROPEAN** changes it to dd/mm/yy.
FDX_CKT_LOOP	Controls the two-way loopback circuit for I-2000. The default value is **0**, which denies provisioning of two-way loop circuits. A value of **1** allows to you to provision two-way loop back circuits, echo response processing, and audit/synchronization.
G2_ALARM_STATE	Ignored if BTEMI is not set. Which DACS alarm messages, by alarm state, are sent to the Event Management System Interface. The default is to send all alarm messages regardless of alarm state. The values can be **OOS**, **CRIT**, **MAJ**, **MIN**, **INFO**, **IDLD**.

Table 2-1.   Environmental Variables (Contd)

G2_DATE_FORMAT	Ignored if BTEMI is not set. The format of the date string in messages sent to the Event Management System Interface. The default is the UNIX long time value. For example, to have the date appear as: hour:min:sec 2_digit_month/2_digit_day/2_digit_year use the following line: %H:%M:%S %m/ %d /%y You can find descriptions of the specifiers in Tables 2-2 through 2-4.
G2_DELIMITER	The character to be used between selected G2 Data Language message fields. The default is a **/**, which will delimit aid1, aid2 and condition fields. However, if the **/** will be used in a DACS name, you may wish to set this variable to another delimiter.
G2_EXCLUDE	Ignored if BTEMI is not set. Which DACS alarm messages are sent to the Event Management System Interface. The default is to send all alarms.
G2_FMT_STRING	The format of output messages to the Event Management System Interface. The default of no value causes the G2 data language to be used. For the Event Management System Interface, this variable can be set to the following value: ae\n\ttid\t%d\n\teqtype\t%1\n\teqid\t%E\n\tcondtype\t%C\n\\ \talarmtype\t%F\n\talarm_state\t%V\n\tdacsmsgno\t%m\n\tsum- mary\t%n\n\\ \ttime\t%T\n\tnpc_id\t%N\n\tckts\t%K\n\n You can find descriptions of the specifiers in Tables 2-2 through 2-4.

Table 2-1.   Environmental Variables (Contd)

`INFO_ALARMS`	Authorization to alter the I-2000 algorithm for processing DACS II 0.65011 CGA/PBA messages. Two alterations are available, specified by **PA** and **MINOR**. The default is no value. In that case, the algorithm is not altered. For both **PA** and **MINOR** record the alarm in the I-2000 alarm log and NPC databases, and transmit the DACS II output message from the alarm monitoring port exactly as it was received from the DACS. The difference is in the severity recorded for the alarm and therefore appearing in reports. For a value of **PA**, the severity will be made the same as the priority of action (pa) field, except that, if the "pa" field has a value of **A** (autonomous), the severity is made minor. For a value of **MINOR**, the severity will depend on the value of the alarm state field. For an **MI** or a **DMA**, the severity will be made minor; for a **PMA**, the severity will be made the same as the pa field.
`ISX_MIN_TG`	For DACS II ISX. This variable specifies the minimum number to be used as a test group ID when using Test Access.
`ISX_MAX_TG`	For DACS II ISX. This variable specifies the maximum number to be used as a test group ID when using Test Access.
`ISX_MIN_NPCTG`	For DACS II. This variable specifies the minimum number to be used as an NPC test group ID when using Test Access.
`ISX_MAX_NPCTG`	For DACS II. This variable specifies the maximum number to be used as an NPC test group ID when using Test Access.
`LINES_PER_PAGE`	The number of lines per page in I-2000 reports sent to the printer. The default is **66**. It is standard for printing 6 lines per inch on 8.5 inch by 11.0 inch paper.
`MAX_ALM_LOGS`	The maximum number of alarms in the alarm log. The default is **1000**. The allowed range is **100-10000**. Once this number of records is inserted in a frame's alarm log, the next alarm will cause the number of alarms in the log to be reduced to the value contained in the `SAVE_ALMS` variable.

Table 2-1.   Environmental Variables (Contd)

MAX_PM_LOGS	The maximum number of messages in the 24-Hour PM log. The default is 1000. The allowed range is 100-1000. Once this number of records is inserted in a DACS' PM log, the next record entry will cause the number of records in the log to be reduced to the value contained in the SAVE_PM_LOGS variable.
PM24HR_NONFT	Enables the 24-Hour Performance Monitoring feature. **YES** makes the Performance Monitoring feature available. The Performance Monitoring feature is available for CEPT type NPCs only. No Performance Monitoring data is stored or processed for non-CEPT NPCs.
RP_DACS_TIMEOUT	The number of seconds the I-2000 will wait before timing out commands associated with a restoration plan. The default is **1800** (30 minutes). The range is **180** (3 minutes) **- 86400** (24 hours).
SAVE_ALMS	The number of alarms to leave in the alarm log when the maximum has been reached. The default is **60**. Allowed values are **1** through 1 less than the value of MAX_ALM_LOGS.
SAVE_ERPS	The number of echoed response messages to leave in the ERP Log when the maximum number of messages has been reached. The default is **60**. The allowed range is 1 to 1 less than the value in the MAX_ERP_LOGS variable.
SAVE_PM_LOGS	The number of entries to leave in the 24-Hour PM log when the maximum has been reached. The default is 60. Allowed values are 1 through 1 less than the value of MAX_PM_LOGS.
SEND_ALARM_EVENTS	Authorization to send alarm event messages to a network controller connected to the I-2000 in accordance with the appropriate interface agreement. The default is no value. A **YES** value sends the messages.
SEND_NON_NPC_ALARMS	Authorization to send non-NPC alarm messages to a network controller connected to the I-2000 in accordance with the appropriate interface agreement. The default is no value. A **YES** value sends the messages.

Table 2-1.   Environmental Variables (Contd)

SESSION_TIMEOUT	The time in minutes over which the I-2000 will wait for some activity during a multiplexed passthrough session. After that time, the I-2000 will end the idle session autonomously and will return the user to the previous menu. The default is **480** minutes (8 hours). The range is 0 through **10080** (1 week).
SH_TMOUT	The I-2000 shell inactivity timer. This variable sets the shell TMOUT variable when a user logs in to the system as an I-2000 user. When TMOUT seconds have elapsed with no terminal activity, a 60-second warning displays. If there is no further activity, the shell times out and the user is logged off. The SH_TMOUT variable is set by the user login .profile. It is disabled when an I-2000 user interface session is started and is imposed again when the user quits the I-2000 interface. Examples: SH_TMOUT=0 no timer (unlimited login time) SH_TMOUT=1800 30-minute timeout (default) If the value for SH_TMOUT is changed, users who are currently logged in, must log out and log in again for the new timeout value to take effect. The IDLE_THRESHOLD variable performs a similar function for the I-2000 user interface.
SITENAME_SIZE	Controls the number of characters allowed in the **Site Name** field on the FRAME ADMINISRATION form. If not set, the field is a maximum of 17 characters. The value range of this variable is 18-24.
SORT_NAME_BY	The list order of the DACS names in the WHICH DACS? pop-up window. **ALPHA**, the default, displays the DACS names in alphabetic order. **CREATE** displays the names in the order created through the Frame Provisioning form. <**blank**> displays the names in the same order as displayed in older releases, that is, sequential as per global memory.

Table 2-1.   Environmental Variables (Contd)

SYNC_DEACTIVATE_CKTS	Controls whether or not channel synchronization, when the DACS is master, or circuit echoed response processing, will delete all non-matching I-2000 circuits (any other value than 1) or only non-matching circuits created by channel synchronization or circuit echoed response processing (a value of **1**). Non-matching circuits not deleted are deactivated.
X25BRXDBIT	For delivery confirmation for X.25 data packets. The default value is NULL. Otherwise, a value of 1 will enable delivery confirmation.

Table 2-2 shows the G2_FMT_STRING and BTLP_FMT_STRING characters.

Table 2-2.   G2_FMT_STRING And BTLP_FMT_STRING Characters

Character	Definition
\n	Newline.
\t	Tab.
\r	Carriage return.
%[d12EcCfFtsvVTnmNK]	Conversion specification (see the succeeding table)
%%	Same as %
Any other character	Copy as is

Table 2-3 shows the conversion specifications for the G2_FMT_STRING and BTLP_FMT_STRING.

Table 2-3.   G2_FMT_STRING And BTLP_FMT_STRING Conversion Specifications

Conversion Specification	Field name for Ev. Sys.	Description
%d	tid	Name of DACS II in I-2000.
%1	eqtype	Kind of equipment.
%2		Number(s) of failed equipment.
%E	eqid	Number(s) of failed equipment.
%c		Performance parameter or condition type.
%C	condtype	**PBA**, **CGA**, **LOS**, **THR** or null.
%f		Type of alarm.

Table 2-3. G2_FMT_STRING **And** BTLP_FMT_STRING **Conversion Specifications (Contd)**

Conversion Specification	Field name for Ev. Sys.	Description
%F	alarmtype	Kind of CGA, PBA or THR alarm.
%t		Message counter tag.
%s		Alarm status.
%v		Alarm severity.
%V	alarm_state	**OOS**, **CRIT**, **MAJ**, **MIN**, **INFO** or **IDLD**.
%T	time	I-2000 time of alarm.
%n	summary	DACS message summary.
%m	dacsmsgno	DACS output message number.
%N	npc_id	Name of NPC for NPC alarm.
%K	ckts	Name of ckts on NPC for NPC alarm.

Table 2-4 shows the conversion specifications for G2_DATE and BLTP_FORMAT.

Table 2-4. G2_DATE_FORMAT **And** BTLP_DATE_FORMAT **Conversion Specifications**

Character	Description
%a	Abbreviated weekday name.
%A	Full weekday name.
%b	Abbreviated month name.
%B	Full month name.
%d	Day of month {**01**-**31**}.
%e	Day of month {**1**-**31**}.
%H	Hour {**00**-**23**}.
%I	Hour {**00**-**12**}.
%j	Day number of year {**001**-**366**}.
%m	Month {**01**-**12**}.
%M	Minute {**00**-**59**}.
%S	Seconds {**00**-**59**}.
%y	Year within century {**00**-**99**}.

Table 2-4. `G2_DATE_FORMAT` **And** `BTLP_DATE_FORMAT` **Conversion Specifications (Contd)**

%Y	Year as ccyy {**1995**}.
%D	Date as %m/%d/%y.
%R	Time as %H:%M.
%T	Time as %H:%M:%S.
%%	Same as %.
Any other character	Copy as is.

Procedure: Changing Environment Variables

To change a system environment variable, you *must* log in as a system administrator.

To change the environment variables, follow these steps:

➭ **NOTE:**
You must know the UNIX text editor "vi."

1. Log into the I-2000 Controller system as **dacsadm**.

2. The system will display the following message:

   ```
   Do you want to escape to unix ...?
   ```

3. Type **y** to go to the UNIX environment.

4. The system will display the following message:

   ```
   Do you want to start windows ...?
   ```

5. Type **n**. You are now placed in the UNIX environment.

6. Type **vienv** to edit the environment file.

7. Find the name of the variable and change the value:

   name**=**value
   export name

   where name is the name of the variable and value is the new value. Use only one entry per line. White space is allowed in value only, provided value is enclosed in double quotes, and is only allowed for strings (not numbers).

   Examples:

   ```
   SEND_ALARM_EVENTS=YES
   export SEND_ALARM_EVENTS
   SEND_ALARM_EVENTS= Enter
   export SEND_ALARM_EVENTS
   ```

8. The first example sets the variable to YES. The second example sets it to no value.

9. Exit from vi.

10. Restart the I-2000 by executing **kill_I**.

11. This step is not necessary if you are changing the following variables only:

```
BTEMI
BTLP
BTLP_ALARM_STATE
BTLP_DATE_FORMAT
BTLP_EXCLUDE
BTLP_FMT_STRING
G2_ALARM_STATE
G2_DATE_FORMAT
G2_DELIMITER
G2_EXCLUDE
G2_FMT_STRING
```

12. Log off by typing **exit**, if necessary.

Setting/Changing Default Form Values for NPC and Circuit Provisioning

To set/change the default field values for the NPC and Circuit Provisioning forms you *must* log in as *root*.

When setting/changing these values, the following files *must* be edited and the same changes made to all files:

■ ui_dval.ini

■ ui_dval.fre

■ ui_dval.eng

To change the default form values, follow these steps:

⇒ **NOTE:**
You must know the UNIX text editor "vi."

1. Log into the I-2000 Controller system as **root**.

2. Type **cd /usr/ems/initstr**. You are now placed in the directory where the ui_dval file resides.

3. Type **vi ui_dval.ini** to edit this file.

4. Find the default value to be changed:

The default value is surrounded by double quotes. A description of the default value is contained in the comment on the same line, as shown in the example file below. Edit the word within the double quotes.

5. Use **:w!** to save the changes.

6. Exit from vi.

7. Next, you *must* make the same changes in the following files: ui_dval.fre and ui_dval.eng.

8. Log out, then log back in. Default values take effect in the next session.

```
/*ENGLISH customized default values for CIRCUIT and NPC
provisioning forms */

     /* CIRCUIT PROVISIONING DEFAULTS */

1 "0011.0011"   /*trunk conditioning (CKT_TC) */
2 "TRB"         /* insertion word (CKT_IW) */
3 ""            /*tso to non-ts0 framing bits in FW
(CKT_FW) */
4 ""            /* framing other */
5 ""            /* Signaling conversion (CKT_SC) */
6 "A"           /* bandwidth type */

     /* NPCPROVISIONING DEFAULTS */

7 "PB100"       /* NPC type for DACS II (NPC_TYPE_DACS2)
*/
8 "PA100"       /* NPC type for DACS II ISX
(NPC_TYPE_ISX) */
9 ""            /* insertion word (NPC_TYPE_IW) */
10 "MJ"         /* AIS (NPC_AIS) */
11 "PPPPPPPP"   /* NFS (NPC_NFS) */
12 "10"         /* cbit aging (CBIT_AGING) */
```

Figure 2-1.   Sample ui_dval.eng File

Time Zone

Time zone information is set on the Sun workstation at installation and usually does not need to be reset during the life of the workstation. Time zone information and daylight savings time adjustments take place automatically for most time zones around the world.

Use the timezone command in the following procedure if any of these conditions apply:

■ You wish to change the default time zone for special applications. For example, when all users are in a time zone that is different from the location of the I-2000.

■ The installation procedure was unable to identify the proper time zone for your region.

■ The automatic time zone adjustments made by the workstation are inaccurate, and there is another time zone that better reflects the regional adjustments.

> ➡ **NOTE:**
> If you adjust the time zone manually using the I-2000 timezone command, you must use the timezone command on a yearly basis to update the daylight savings time information for that year.I

Procedure: Setting the Time Zone

To set the time zone for I-2000, follow these steps:

1. Log in as an administrator and verify that the current year is displayed in the top line of the menu. If necessary, use SYSTEM ADMINISTRATION to set the date and time.

2. Log off from the I-2000.

3. Log in as **dacsadm**

4. The system will display the following message:

   ```
   Do you want to escape to unix ...?
   ```

5. Type **y** to go to the UNIX environment.

6. The system will display the following message:

   ```
   Do you want to start windows ...?
   ```

7. Type **n**. You are now placed in the UNIX environment.

8. Type **timezone** to start the timezone command.

9. A series of menus are displayed to facilitate time zone selection. Enter the menu item that corresponds to the appropriate country or time zone

> ➡ **NOTE:**
> **Help** provides additional information about menu items.

10. Fill out the menu items to select time zone parameters.

11. You will be prompted to confirm time zone modification and restart I-2000. Type **y** to confirm the time zone modification restart.

12. Log in as an I-2000 administrator and verify that the correct time and date is displayed on the top line of the main menu.

Logging Into the I-2000

This section provides procedures on how to login in directly, remotely, through I-2000 X.25 ports, and through another host for the I-2000 Controller.

Direct Access

Procedure: Changing the Root Password

The root password is the password assigned to the login, `root`, which grants full access to the system. The I-2000's computing system is supplied with a default root password. Immediately following installation, you must change this password to one you have devised.

⚠ CAUTION:
It is important to remember this password, since it is the only way to recover from forgotten I-2000 passwords (refer to "CHANGE PASSWORD" in Chapter 12 "User Administration".) If the worst case does occur, please contact your Lucent Technologies representative for assistance.

To change the root password, follow these steps:

1. Log in as **root**.

2. At the `password` prompt, enter the default password.

3. At the # prompt, enter **passwd**.

4. Enter the old password as requested.

5. Enter the new password twice as requested.

6. At the # prompt, enter **exit**.

Procedure: Logging In, I-2000 Operator on Console

To log into the I-2000 computer on the console as an operator, follow these steps:

1. Turn on the I-2000's computer. The `login` prompt is displayed.
   Ensure that Caps Lock is not on.

⟹ NOTE:
You can log on with Caps Lock on if both login name and password are lower case. If the password is mixed or all uppercase, you will not get beyond the login name. To return to the initial prompt, press Ctrl + d until lower-case letters appear.

2. Enter your login name and password.

   After accepting the login name and password, the system runs OpenWindows™, which displays the root window (background), one I-2000 USER INTERFACE window, containing the I-2000 MAIN MENU, and a read-only CONSOLE window, in which messages from the UNIX system are displayed.

➡ **NOTE:**
You are automatically logged off if you do not enter a keystroke within IDLE_THRESHOLD minutes, provided the **UI Idle Option** field on the USER MANAGEMENT form is set to ON. See "Setting Environmental Variables," earlier in this chapter for information on changing the value of the IDLE_TRESHOLD variable.

Once your logged into the I-2000 system, there are two control capabilities: the I-2000 User Interface and the Root window. Follow one of the procedures below, depending on the type of control you need.

Procedure: Using the Windows Environment and the Root Window

To use the windows environment, use these tips:

1. Shrink the window to an icon by pointing the cursor at the small box in the upper left corner and clicking the left-hand mouse button once. Restore the window by clicking twice on the icon.

2. Move the window by pointing the cursor to the top margin, pressing the right-hand mouse button, moving the window to where you want it, and releasing the button.

3. Obtain a pop-up menu, offering a number of choices concerning window disposition, by pointing the cursor to the top margin and holding down the right-hand mouse button. Select by pointing the cursor at the choice and releasing the right-hand mouse button.

To use the Root window interface, use these tips:

1. Obtain a pop-up window allowing you to lock the screen.

2. Exit, refresh, or start another I-2000 USER INTERFACE window, running another I-2000 session, by placing the cursor in the root window and holding down the right-hand mouse button.

3. Select by pointing the cursor at the selection and releasing the right-hand mouse button. You can have as many as 16 I-2000 USER INTERFACE windows open.

4. Enter any one of the windows by placing the cursor in it and clicking the left-hand mouse button once.

5. You have the following logoff options:

   a. Select LOGOFF from the MAIN MENU to logoff from one session. If no other sessions are running, the system logs you off also.

   b. Bring up an I-2000 USER INTERFACE window menu and select Quit. If no other sessions are running, the system logs you off.

   c. Bring up the Root window menu and select Exit. You are logged off from all sessions and the system.

Procedure: Logging In, I-2000 Administrator

To log into the I-2000 computer as a I-2000 administrator, follow these steps:

1. Turn on the I-2000's computer. The `login` prompt is displayed. Ensure that `Caps Lock` is not on.

⇒ **NOTE:**
You can log on with `Caps Lock` on if both login name and password are lower case. If the password is mixed or all uppercase, you will not get beyond the login name. To return to the initial prompt, press `Ctrl` + `d` until lower-case letters appear.

2. Log in as **dacsadm** and enter the dacsadm password. The system displays the following message:

    `Do you want to escape to UNIX (y/[n])?`

⇒ **NOTE:**
The system can manage up to 62 operator logins: 61 operator logins can be created in addition to the default **ems** operator login. Refer to Chapter 12"User Administration." 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 DACS as part of the initial setup.

    a. If you type **n**, the system runs OpenWindows, which displays the root window (background) and one I-2000 USER INTERFACE window, containing the I-2000 MAIN MENU.

    b. If you type **y** to the UNIX escape prompt, the system will display the following message:

    `Do you want to start windows (y/[n])?`

3. If you type **n**, the `unix>` prompt is displayed.

4. To run the I-2000 at a later time, type `openwin`, which will start a windows environment. The result is the same as for an I-2000 operator login, with one exception: logoff from the last I-2000 USER INTERFACE window returns you to the `unix>` prompt. Log off by typing `exit`.

5. If you type **y**, you are placed in an enhanced OpenWindows environment.

Enhanced OpenWindowsUNIX

The enhanced OpenWindows environment consists of the following:

- CONSOLE window for UNIX system messages
- Cmd-tool window running a UNIX shell
- Clock
- Wastebasket
- File manager

To obtain a pop-up menu on any of these objects, place the cursor on the object and hold down the right-hand key. For windows, use the top margin. You can quit any object or exit from the entire system by typing exit after the `unix>` prompt or selecting Exit from the root window pop-up menu. To start an I-2000 USER INTERFACE window, select it from that same menu.

You are automatically logged off if you do not enter a keystroke within `IDLE_THRESHOLD` minutes, provided the **UI Idle Option** field on the USER

MANAGEMENT form is set to ON. See "Setting Environmental Variables," earlier in this chapter for information on changing the value of the IDLE_TRESHOLD variable.

Remote Access

The I-2000 can be accessed by logging into the I-2000's X.25 ports.

When the I-2000 is accessed through the X.25 ports, the system tracks logins over the X.25 network. When the user disconnects or a link failure occurs, the I-2000 updates the list of users connected. The total number of X.25 sessions that can be used to access the I-2000 cannot exceed 15. The I-2000 reserves one session for an I-2000 console user interface.

Procedure: Logging in Through X.25 Ports

To access the I-2000 using this method, follow these steps:

1. Dial into the I-2000 through the X.25 Packet Data Network (PDN).

⇒ **NOTE:**
The assigned I-2000 X.25 PDN number must be used to dial into the I-2000.

2. Log in as **dacsadm** or **username** (use the user name assigned to you by the system administrator).

3. The system will display the following message:

```
Do you want to escape to UNIX?
```

4. Type **n**. The system runs OpenWindows, and displays the I-2000 USER INTERFACE window.

Procedure: Logging In From DECserver 700

In this login scenario, both the I-2000 and the remote station must be located on the same LAN. The I-2000 interface is through the DECserver 700.

As a prerequisite for a successful remote login, your remote station and the network must be recognized by the I-2000. Refer to "Procedure: Administering Remote Printers" in this chapter.

In addition, the **/etc/hosts** file of your login station *must* contain entries for each DECServer that it will access.

To login in remotely using the DECserver 700, follow these steps:

1. At the DECserver 700 system prompt, enter **telnet hostname**

   where:

   hostname is the name of the I-2000.

2. Enter the login name, password and terminal type, which you will be successively prompted.

Procedure: Logging In Using I-2000

This login procedure is for remote access from one I-2000 to another on the same local area network (LAN), or on a bridged LAN.

To log in remotely from the I-2000, follow these steps:

1. Log in as a system administrator.

2. From the cmd-tool window, create an xterm window by typing **uixterm**.

3. Activate the xterm window by placing the cursor in it and clicking the left mouse button.

4. Type **rlogin netname**

   where:

   netname is the name of the network on which the I-2000 to be accessed resides. The I-2000 responds with a prompt.

5. Enter the login name, password and terminal type, for which you will be successively prompted.

Once you have logged in, the I-2000 behaves as it would for the I-2000 operator or system administrator login.

Procedure: Logging In Using Another Host

This login procedure is for remote access from a terminal other than an I-2000 located on the same LAN or on a bridged LAN.

The initial procedure depends on the capabilities available to the other host. Typically, you will be starting a window. In that case, follow the same procedure as for access from another I-2000.

If the host does not support multiple windows, refer to "Procedure: Logging In Using DECserver 700."

Remote Printers

The DECserver 700, if installed, can make remote printers and connections to other asynchronous interfaces, such as event management systems, available to the I-2000 through TCP/IP networking. The I-2000 application software treats all output type devices connected to DECserver 700 ports as printers and thus accesses all of them through the SunOS line printer spooling system.

The I-2000 system administrator *must* make entries in certain operating system files. If the entries are made correctly, the remote printer name appears in CHOICES menus for fields requiring entry of a printer name.

To make these entries, you can use any UNIX editor on the I-2000 platform, such as "vi" or "ed", or you can open a window on the Sun and use the Administration Tools menu, or you can use UNIX support tools, such as **lpadmin** or **snap** commands. Any of these methods require that you be logged on as **root**.

Using the Sun tools is the preferred method over direct entries in files, since several activities need to be coordinated. For information on how to use Sun tools,

refer to the Sun manuals. For information on the precise form of the entries, refer to the Sun System Administrator's Manual.

Procedure: Administering Remote Printers

To administer remote printers, follow these steps:

1. Make these changes or check that they have been made:

2. Enter, into the **/etc/defaultdomain** file, the domain name of the network containing the remote printer.

3. Reboot the system.

4. Enter, into the **/etc/hosts** file, the TCP/IP address and host name of the DECserver 700 interfacing to the network containing the remote printer.

5. Enter, into the **/etc/networks** file, the name and number of the network.

6. Enter, into the **/etc/printcap** file, specific information identifying each remote printer. The name by which the I-2000 will refer to the printer goes here.

7. As a guide to you in making the proper printcap file entries for a remote printer connected to DECserver 700 ports, AT&T has placed in the file a template, which you can modify. Replace nameofprinter with the actual name you want to give the printer, and remove the initial # comment line markers.

```
#nameofprinter:\

#   :lp=/dev/null1:\
#   :lp=/dev/null2:\
#   ...
#   :sf:\
#   :sh:\
#   :of=/usr/ems/bin/nameofprinter_o:\
#   :if=/usr/ems/bin/nameofprinter_i:\
#   :lf=/usr/spool/nameofprinter/log:\
#   :sd=/usr/spool/nameofprinter:
```

8. Examine the **/etc/services** file and determine what unused tcp port numbers can be used as a relay port number for communication between the input and output line printer filters for each of the printers added to the **/etc/printcap** file.

9. Enter, into the **/etc/services** file, a line for each port selected. For example, suppose three remote printer entries were added to the **//printcap** file and the tcp port numbers: 3000, 3001 and 3002, are not being used in the **/etc/services** file.

The following three lines would then be added to the end of the **/etc/services** file. Replace `nameofprinter` with the actual name given the printer in the /**etc/printcap** file

```
nameofprinter_r 3000/tcp
nameofprinter_r 3001/tcp
nameofprinter_r 3002/tcp
```

⇒ **NOTE:**
Each printer entered in the **printcap** file needs one and only one **:lp=** line. The first must contain **null1**, the second, **null2**, and so on.

10. Log in as **root** and create directories appearing in any **:sd=** lines added to **printcap**.

11. Create files appearing in any **:lf=** lines added to **printcap**.

12. Create files appearing in any **:lp=** lines added to **printcap**. Use the **mknod** command to create these special files. They must be created as "character-type" and the major/minor device numbers should be the same as /dev/null.

13. Execute **chmod 666** on the files just created in the previous step.

14. Log off as **root**.

15. Log in as **dacsadm** and create files appearing in any **:of=** lines added to **printcap**. Make them executable with **chmod a+x**. These files must contain two lines only:

    #!/bin/ksh
    exec /usr/ems/bin/d700_filter -o -h DECserver_name **-p** port# **-r** relayport#

    where:

    DECserver_name   is the name added in the **/etc/hosts** file.

    port#   is the port number selected for the physical device when the DECserver-700 setup was done. The range is `2001-2016`.

    relayport#   is the tcp port number added to the **/etc/services** file used to communicate between the input and output scripts for this printer.

16. Create files added in any **:if=** lines added to **printcap**. Make them executable with **chmod a+x**. They must contain just two lines:

    #!/bin/ksh
    exec /usr/ems/bin/d700_filter -i -h I2000_name **-r** relayports#

    where:

    I2000_name   is the name of the I-2000 as recorded in the **/etc/hosts** file.

relayport#	is the tcp port number chosen for the output filter script.

17. Restart the I-2000 by executing **kill_I** (where the last letter is an I as in Iota). This is necessary so the I-2000 can rebuild its internal table that is used to repopulate the list of printers displayed in the `Printer Name` field of the USER MANAGEMENT, PRINTER MANAGEMENT and PRINTER QUEUE STATUS forms (refer to the appropriate sections of this manual for the form descriptions).

All printers in the **/etc/printcap** file with the exception of those defined in the `BTEMI` and `BTLP` environment variables (refer to Table 2-1) will be in this list.

> **NOTE:**
> It is NOT necessary to modify **/etc/ethers**, **/etc/protocols**, or **/etc/inetd.conf** files, as they already support Telnet and TCP/IP protocols and services. Moreover, if the default domain, host and network are already specified, simply make **printcap** and **/etc/services** entries for each printer.

Administering X.25 Links

> **NOTE:**
> 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. Refer to the next section, "Administering Frames". For the details on how to administer an X.25 link, refer to "X.25 LINK ADMINISTRATION " in Chapter 3 "System Administration."

Administering Frames

> **NOTE:**
> 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. Refer to the preceding section, "Administering X.25 Links."

For the details on how to administer a frame, refer to "FRAME ADMINISTRATION" in this chapter.

Configuring Login Ports

⇒ **NOTE:**
This feature is available *only* to system administrators.

Configuring a login port means placing an asynchronous line in service. The I-2000 supports up to 16 login ports. These appear as login ports 1 through x. They represent the first 16 ports. For example, if 32 ports are available on the system, only the first 16 can be used as login ports. The I-2000 supports up to six simultaneous login sessions, including the console session. For the details on how to administer the login ports, refer to ''LOGIN PORTS'' in Chapter 3 "System Administration."

Changing Passwords

⇒ **NOTE:**
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, refer to ''CHANGE PASSWORD'' in Chapter 12 "User Administration."
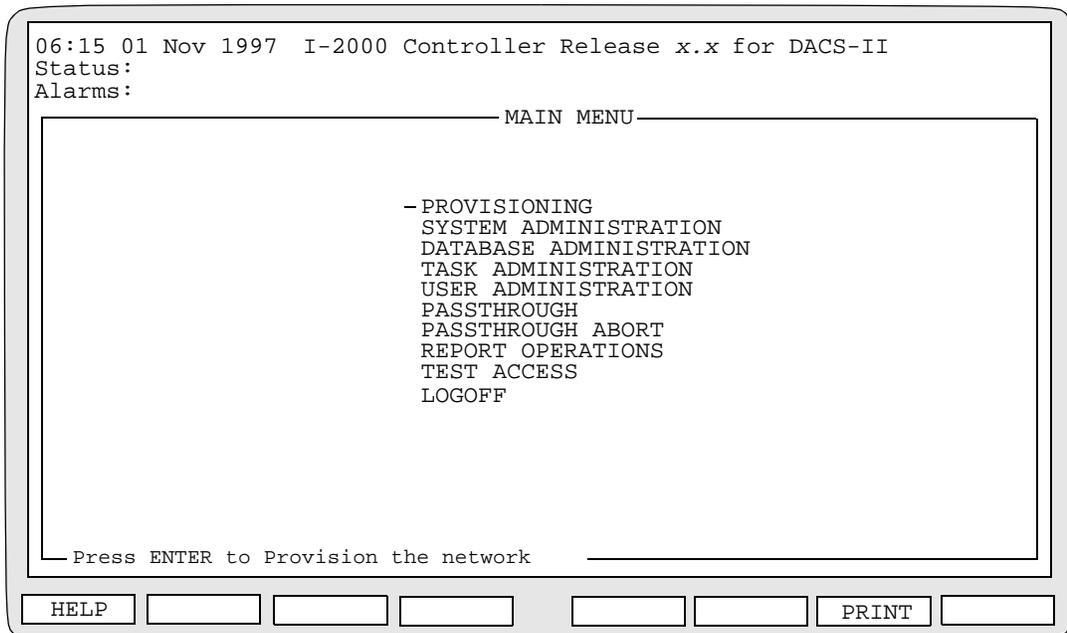
Using the System

MAIN MENU

When you log into the I-2000 system, the MAIN MENU is displayed, as shown in Figure 2-2.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                              ─MAIN MENU─


                             ─PROVISIONING
                              SYSTEM ADMINISTRATION
                              DATABASE ADMINISTRATION
                              TASK ADMINISTRATION
                              USER ADMINISTRATION
                              PASSTHROUGH
                              PASSTHROUGH ABORT
                              REPORT OPERATIONS
                              TEST ACCESS
                              LOGOFF




    ─ Press ENTER to Provision the network ─


  ┌───────┐ ┌───────┐ ┌───────┐ ┌───────┐   ┌───────┐ ┌───────┐ ┌───────┐ ┌───────┐
  │ HELP  │ │       │ │       │ │       │   │       │ │       │ │ PRINT │ │       │
  └───────┘ └───────┘ └───────┘ └───────┘   └───────┘ └───────┘ └───────┘ └───────┘
```

Figure 2-2.   MAIN MENU

Procedure: 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:

1. Press Enter if the cursor is already at the desired choice; otherwise, use the arrow keys to get there.

2. 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 (does not apply to vt220).

3. 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.

4. 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.

5. To switch to OVERLAY typing mode, press $\boxed{\text{Esc}}$ (not available on vt220). A keystroke appears at the cursor position, overlaying the character there, and the cursor moves over the next character to the right. $\boxed{\text{Esc}}$ switches between INSERT and OVERLAY typing modes, but entry to a field is always in INSERT.

6. To remove the contents of the field and start over, type $\boxed{\text{Ctrl}}$ + $\boxed{\text{x}}$ (not supported for vt220).

7. Once you press $\boxed{\text{Enter}}$, if the information entered is not in the correct format for that field, an error message is displayed with a request to re-enter the information. Once the information in the field is correct, the cursor advances to the next field.

8. $\boxed{\text{Tab}}$ (does not apply to vt220) can be used to move forward between fields. However, not all fields allow user input. In such cases, the next field is the next that allows user input.

9. Some fields are mandatory; for example, **NPC ID** in an NPC PROVISION-ING 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 $\boxed{\text{QUIT}}$. Refer to ''Using Function Keys'' in this chapter.

For further information on allowed keystrokes for menus, forms and passthrough, refer to Tables 2-5 through 2-8.

⇛ **NOTE:**
The title of each table states the proper application of its keystrokes. For example, $\boxed{\text{PAGE DOWN}}$ as a menu control keystroke obtains the next page of a menu, but not necessarily the next page of a displayed report, form, or report.

Table 2-5.   Menu Control Keystrokes

Keystrokes	Function
⌃	Return to the MAIN MENU.
⟨?⟩	Pop-up Help menu for current item.
Enter Return Ctrl + j Ctrl + m	Select an item from the menu.
Ctrl + a	Get an alarm report.
Ctrl + b Pg Dn	Scroll down a page.
Ctrl + d	Scroll menu down a line.
Ctrl + c	Return to the MAIN MENU from a second level menu; log the user off from the MAIN MENU level.
Ctrl + n Ctrl + i ↓	Move to the next item.
Ctrl + f Pg Up	Scroll up a page.
Ctrl + u	Scroll menu up a line.
Ctrl + h	Erase the last character in the pattern matching buffer.
Ctrl + o	Output the screen to the printer.

Table 2-5. **Menu Control Keystrokes (Contd)**

Keystrokes	Function
Ctrl + p ↑	Move to the previous item. ⚠ **CAUTION:** *When connected to the I-2000 using the X.25 network, pressing* Ctrl *+* p *will disconnect you from the network. Use the* ↑ *key to move to a previous item.*
Ctrl + w	Refresh the screen.
Ctrl + x	Clear the pattern matching buffer.
Ctrl + z	Move to the previous pattern match.

⮕ **NOTE:**
The pattern matching buffer holds keystrokes as you type them. For example, typing p 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 2-6. **Form Control Keystrokes**

Keystrokes	Function
Enter Ctrl + m	Enter the information in the field.
Ctrl + a	Get an alarm report.
Ctrl + b	Move down a character.
Ctrl + d	Move down to a field.
Ctrl + e	Move to a position just to the right of the last input character of the field.
Ctrl + f	Move up a character.

Table 2-6.   Form Control Keystrokes (Contd)

Keystrokes	Function
Ctrl + g	Delete the word at the cursor.
Ctrl + h	Backspace and erase a character.
Ctrl + i Tab Ctrl + m	Request new line. For single-line fields, move to the next field. For multi-line fields, operation depends on whether insert or overlay editing mode is in effect at the time of the request. For insert mode, a cursor at the beginning of a field or on the last line moves to the next field. Otherwise, the text on the current line, to the cursor's right, moves to the next line. The cursor itself moves to the beginning of the next line. For overlay mode, a cursor at the beginning of a field moves to the next field. If the cursor is on the last line of the field, all data from the cursor position to the end of the line is erased, and then the cursor moves to the next field. Otherwise, all data from the cursor position to the end of the line is erased, and the cursor moves to the beginning of the new line.
Ctrl + k	Clear to the end of the field.
Ctrl + l	Move left to a field.
Ctrl + n	Move to the next field.
Ctrl + o	Output the screen to the printer.
Ctrl + p ↑	Move to the previous field. ⚠ **CAUTION:** *When connected to the I-2000 using the X.25 network, pressing Ctrl + p will disconnect you from the network. Use the ↑ key to move to a previous item.*
Ctrl + r	Move right to a row.
Ctrl + u	Move up to the next closest field.

Table 2-6.   Form Control Keystrokes (Contd)

Keystrokes	Function
Ctrl + q	Move to the next line of a multiline field.
Ctrl + s	Move to the previous line of a multiline field.
Ctrl + t	Move to the previous word in the field.
Ctrl + v	Delete a character.
Ctrl + w	Refresh the screen.
Ctrl + x	Clear the field.
Ctrl + y	Delete the line at the cursor.
Ctrl + z	Move to the previous listed choice.
Esc	Toggle the editing mode between insert and overlay. In insert mode (the default), new text is inserted at the current character position, while existing text gets moved to the right. In overlay mode, entered text overlays (replaces) existing text in the field. In either mode, the cursor advances one character position as you enter each character.

Table 2-7.   Passthrough Control Keystrokes

Keystrokes	Function	Application
Home	Position the cursor at the input line.	Full PASSTHROUGH only
Ctrl + a	Get an alarm report.	All
Ctrl + b	Scroll back a page.	Full only
Ctrl d	Scroll forward a line.	Full only
Ctrl + e	EXIT from passthrough	Full only

Table 2-7.   Passthrough Control Keystrokes (Contd)

Keystrokes	Function	Application
Ctrl + f	Scroll forward a page.	Full only
Ctrl + h	Backspace and erase a character.	All
Ctrl + l	Move to the last page of the buffer.	Full only
Ctrl + o	Output the screen to the printer.	All
Ctrl + t	Move to the top of the buffer.	Full only
Ctrl u	Scroll back a line.	Full only

Using Function 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. For a DEC vt220, the function keys
are F7 through F14.

⇒ **NOTE:**
  If environmental considerations necessitate changing the VT220 function
  keys F7 through F14 to some other combination, refer to the System V
  curses and terminfo section of the SunOS documentation.

⇒ **NOTE:**
  The function keys 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 function keys.

Some of the common preprogrammed function keys are described in Table 2-8.

Table 2-8.   Preprogrammed Function Keys

Keystrokes	Function
CHOICES	Displays a pop-up window showing the list of choices available for this field.
EXECUTE	Sends the requested operation to the I-2000 for processing. In most cases, a pop-up window is displayed asking you if "you are sure?" about the command you are about to execute.
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.
RECNCILE	Provides the following choices about updating the database after selecting a provisioning **Action**: Site and Local - Updates both DACS and I-2000 database. (default) Site Only Updates only the DACS database. Local Only Updates only the I-2000 database. See "Using the RECNCILE Key," later in this chapter for more details. ⇒ **NOTE:** The EXECUTE must be performed after choosing your RECNCILE choice. Hitting any other key after choosing the non-default choice will reset the choice back to "Site and Local."
QUIT	Returns to the previous menu.
TOP MENU	Returns to the MAIN MENU.

Other function 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`. Refer to ''Using the EXECUTE Key'' and ''Using the RECNCILE Key'' in this chapter.

Using the EXECUTE Key

By entering data through a screen you set 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 displays a pop-up window.

In some cases, the system will display a pop-up window asking you "`ARE YOU SURE`?" about the command you are about to execute. At this point you either answer **Yes** or **No**. In other cases, a pop-up window is displayed asking when you want the task to be run; for example, `IMMEDIATE` or `SCHEDULE`.

In addition, the I-2000 begins by making a number of consistency checks before deciding that the command might succeed and passing it on to the DACS. If the consistency checks indicate that the command cannot succeed, an error message is placed at the bottom of the screen.

It the consistency check passes, the command will begin execution. This will be noted in a message in the left-hand corner of the screen.

If an error occurs, then a Command Response pop-up window will appear. To acknowledge the error message and close the command response pop-up window, press `Enter`.

Some commands execute in the background. After the `EXECUTE`, a command pop-up window appears describing the operation. See Figure 2-3.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:




                         COMMAND RESPONSE WINDOW

         The command will be executed in the background


         Press RETURN or ENTER to acknowledge

```
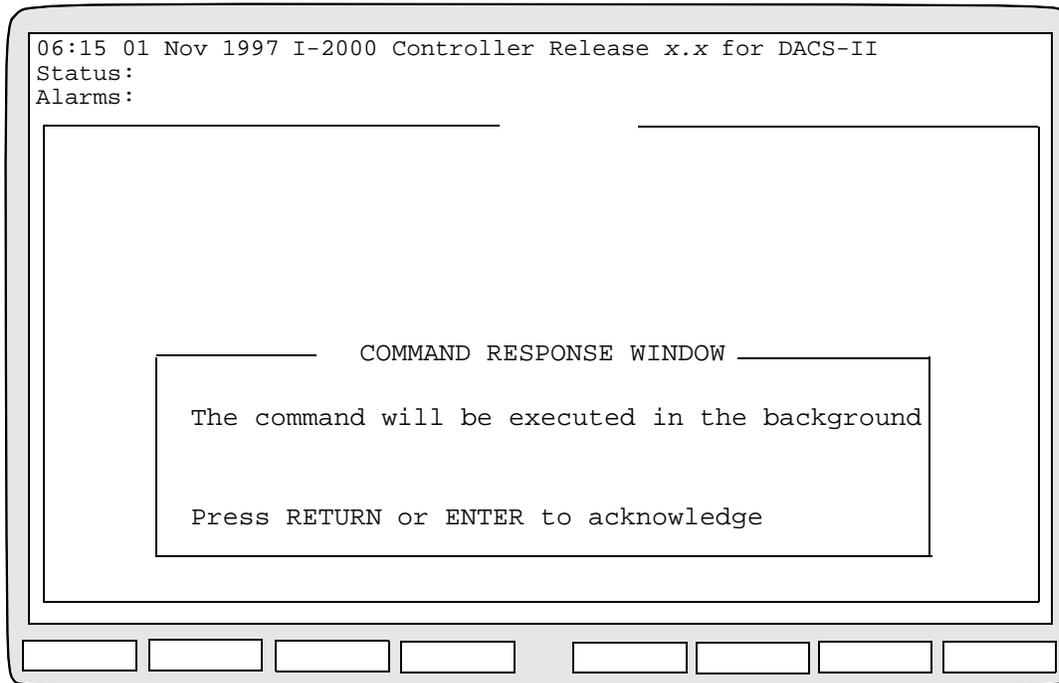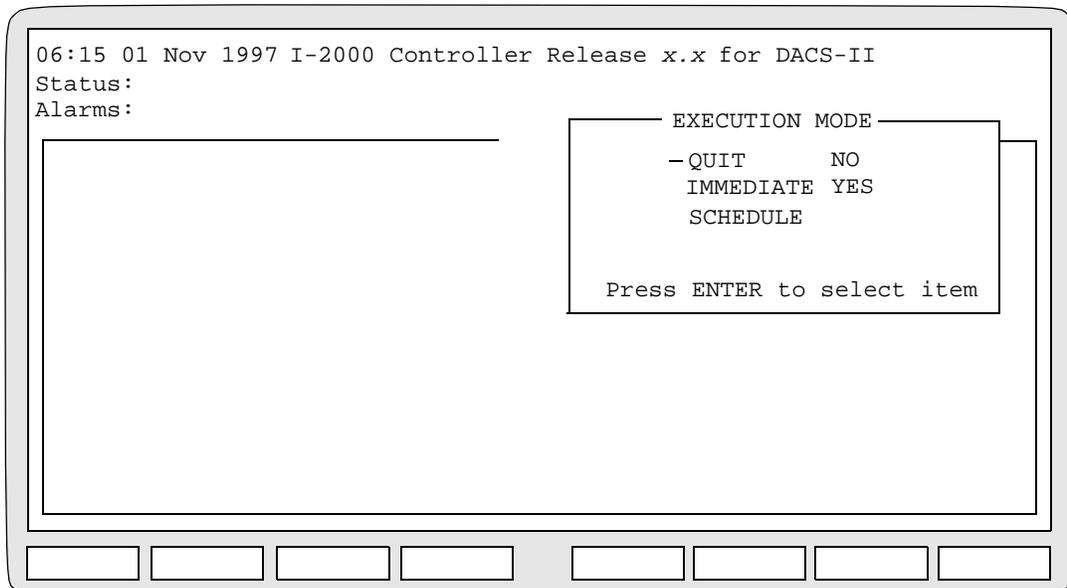
Figure 2-3.   Command Response Pop-up Window

⇒ **NOTE:**
The DACS 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 are displayed, as shown in Figures 2-4 and 2-5.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                                      ARE YOU SURE?

                                         -NO
                                          YES


                                   Press ENTER to select
```
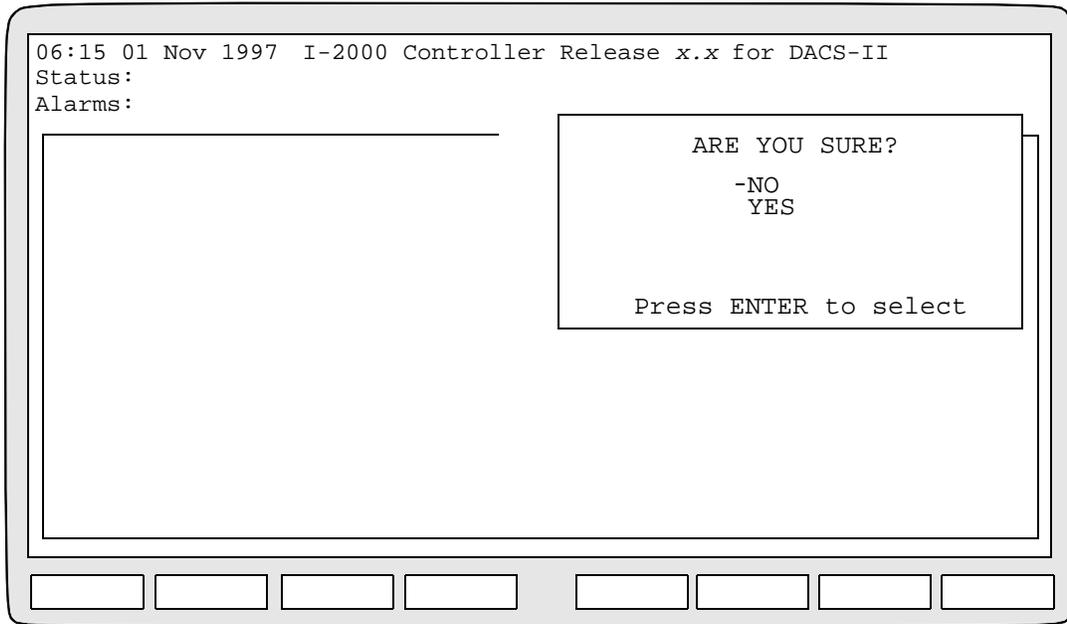
Figure 2-4.   Confirmation Window

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:                            ─ EXECUTION MODE ─
                                    ─QUIT      NO
                                     IMMEDIATE YES
                                     SCHEDULE

                                   Press ENTER to select item
```

Figure 2-5.   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 DACS, it may not receive a timely reply. The I-2000 waits a period equal to the time stored in the DACS_TIMEOUT environment variable and then displays a timeout error message in the COMMAND RESPONSE box. The default is three minutes. For information on how to change it, refer to "Setting Environmental Variables" in this chapter.

Scheduling is an important I-2000 feature. Many operations can be performed immediately or scheduled to occur at a more convenient time. 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.

For operations that can be scheduled, the EXECUTION MODE window appears when you press EXECUTE. It allows you to select a scheduling menu. You can 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; for example, the screen is not usable until the operation is complete. If you select SCHEDULE, the TASK SCHEDULING window is displayed, as shown in Figure 2-6.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:




                                            ┌──── TASK SCHEDULING ────┐
                                            │ Date:DD MMM YY          │
                                            │ Time:   :               │
                                            │                         │
                                            │ Number of Times:01      │
                                            │ Interval:01  Scale:DAYS │
                                            │                         │
                                            └── Enter date as DD MMM YY ──┘
```
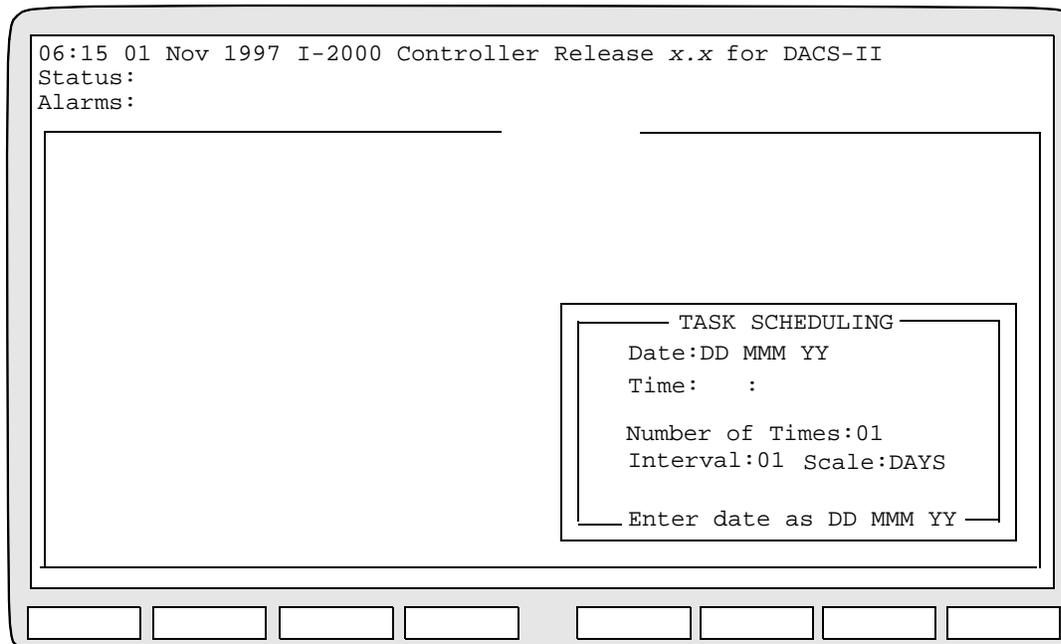
Figure 2-6.   Task Scheduling Window

⟹ **NOTE:**
Database audit/synchronization is always performed in the background, no matter which choice you select.

Field Descriptions

Table 2-9 provides field descriptions for all fields on the TASK SCHEDULING screen.

Table 2-9.   TASK SCHEDULING Field Descriptions

Date	The date of first scheduled execution. The format is dd mmm yy where:
	dd The day of the month, `1` through `31`.
	mmm 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.
	yy The last two numbers of the year, `90` through `37`.
Time	The time of first scheduled execution. The format is hh:mm where:
	hh The hour on a 24-hour clock, `00-23`.
	mm The minute, `00-59`.
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, refer to Chapter 11 "Task Administration."

Using the RECNCILE Key

Pressing $\boxed{\text{EXECUTE}}$ 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 $\boxed{\text{RECNCILE}}$ followed by $\boxed{\text{EXECUTE}}$ lets you provision the I-2000 database independently, without sending a corresponding command to the DACS.

Understanding the Screen Line

Table 2-10 describes the areas of the screen and the type of information
they contain.

Table 2-10.   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:** 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 (**Alarm** line)	Shows any unacknowledged DACS alarms on supported DACSs that have occurred since user login. Pressing Ctrl + a displays a report of the most recent alarms for the chosen DACS and retires the alarm indication. See Chapter 16, "Fault Management," for more information.
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 labels for the function keys in effect for that screen. Also displays the number assigned to the current user interface session (**UI1** to **UI16**). This number is used to identify the user commands and print jobs associated with a user interface session.

Procedure: Updating the Database

To update the I-2000 database independently, follow these steps.

1. Fill out the screen.

2. Press RECNCILE . The WHICH DATABASE? window is displayed, as shown in Figure 2-7.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

                              ┌─── WHICH DATABASE? ───┐
                              │                        │
                             ─│ Site and Local         │
                              │  Site Only             │
                              │  Local Only            │
                              │                        │
                              │                        │
                              │                        │
                              │  Press ENTER to select │
                              └────────────────────────┘
```
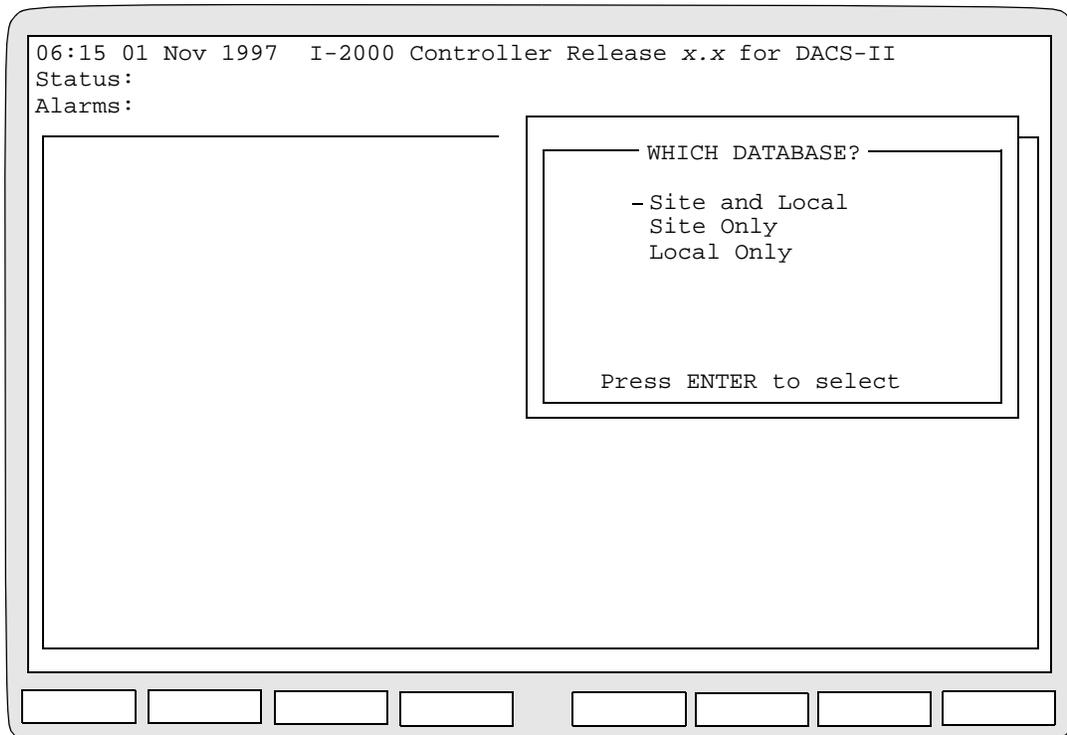
Figure 2-7.   Database Selection Window

3. Select `Local Only`. The following message is displayed toward the bottom of the screen:

> DATABASE CHOSEN: LOCAL ONLY

4. Press EXECUTE .

The `Site 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 DACSs without the need for you to enter passthrough mode.

⟹ **NOTE:**
If you select a database; for example, `Local Only`, and press
EXECUTE , *only* the local database is updated.

If you select a database and change other information and press
EXECUTE the database selected is lost and both the local and site
databases will be updated.

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 `Site and Local`, except that no com-
  mands 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 `Site 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.*

For example, if you store an illegal `TC` *value. A later attempt to synchronize
the circuit will result in a 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 `Site 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.

Table 2-11 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 **Action**s available.

Table 2-11.   Summary of Menus and Forms

MAIN MENU	Second Level	Action/Third Level
PROVISIONING	CIRCUIT	ACTIVATE MODIFY PEND DELETE DEACTIVATE ALTROUTE NORMALIZE COMBINE BROWSE ADDLEG DELLEG CHGRPATH
	TEST PORT	CREATE TP DIGROUP DELETE TP DIGROUP CREATE TEST PORT DELETE TEST PORT
	NPC	BROWSE CREATE DELETE REMOVE RESTORE MODIFY QUERY LOOPBACK
	RECONFIGURATION PLAN	CREATE DESTROY BOOT INSERT REMOVE CHANGE EXECUTE IDLE CHECK ABORT CLEAN
	AUTOMATIC RECONFIGURATION PLAN	CREATE DESTROY INSERT REMOVE CHANGE EXECUTE IDLE CHECK CLEAN ABORT

Table 2-11.   Summary of Menus and Forms (Contd)

MAIN MENU	Second Level	Action/Third Level
PROVISIONING (Continued...)	ESTABLISHED DS0 CHANNELS[1]	ACTIVATE MODIFY DELETE DEACTIVATE BROWSE
	SUBRATE CROSS CONNECT[1]	ACTIVATE MODIFY DELETE DEACTIVATE BROWSE
	NPC ROLL	
	24-HOUR PERFORMANCE[2]	BROWSE RESET
SYSTEM ADMINISTRATION	LOGIN PORTS	RESTORE REMOVE
	X.25 LINK ADMINISTRATION	RESTORE REMOVE
	FRAME ADMINISTRATION	CREATE RESTORE BRESTORE REMOVE DELETE MODIFY CHGSITE
	NAME CHANGE	
	PRINTER ADMINISTRATION	ENABLE DISABLE LIST CANCEL LOGALL LOGALARMS STOPLOGGING
	SHUTDOWN	QUIT IMMEDIATE 1 MINUTE 5 MINUTE 10 MINUTE NO
	DATE AND TIME	
	SYNCHRONIZE FRAME DATE & TIME	

Table 2-11. Summary of Menus and Forms (Contd)

MAIN MENU	Second Level	Action/Third Level
DATABASE ADMINISTRATION	DATABASE AUDIT/SYNCHRONIZATION	ALARM SYNC CHANNEL AUDIT CHANNEL SYNC NPC AUDIT NPC SYNC UPLOAD ABORT
	BACKUP/RESTORE	DATABASE BACKUP/ RESTORE (TAPE) LOG BACKUP/RESTORE (TAPE) LOG BACKUP/RESTORE (DISKETTE) REPORT FORMAT BACKUP/RESTORE (DISKETTE) FORMAT DISKETTE
	ENTER OUTAGE DATA	INSERT CHANGE DELETE DESTROY
TASK ADMINISTRATION	TASK MANAGEMENT	LIST DELETE
	PRINTER QUEUE STATUS	LIST CANCEL
USER ADMINISTRATION	USER MANAGEMENT	ADD CHANGE DELETE
	CHANGE PASSWORD	
PASSTHROUGH	MULTIPLEXED PASSTHROUGH	
	PASSTHROUGH	
	FRAME COMMAND SCRIPT	EDIT DELETE EXECUTE ABORT DOSREAD DOSWRITE
PASSTHROUGH ABORT		

Table 2-11.   Summary of Menus and Forms (Contd)

MAIN MENU	Second Level	Action/Third Level
REPORT OPERATIONS	CIRCUITS	CIRCUIT CONNECTIONS CIRCUIT OPTIONS CIRCUIT INFORMATION CIRCUIT AVAILABILITY
	NPCS	NPC IDS NPC NUMBERS
	CHANNELS	CHANNEL USAGE
	ALTROUTES/PREEMPTIONS	ALTROUTED CIRCUITS PREEMPTED CIRCUITS
	OUTAGES	
	TEST PORT	TEST PORT STATUS TEST PORT PROVISIONING
	TEST ACCESS	
	FRAMES/LINKS	PROVISIONING LINK STATUS LINK CONNECTIVITY FRAME CONTROL
	USER ADMINISTRATION	USER LOGINS
	NPC ALARMS	
	CIRCUIT ALARMS	
	ALARM LOG	
	AUDIT/SYNCHRONIZATION RESULTS	ALARM SYNC CHANNEL AUDIT CHANNEL SYNC NPC AUDIT NPC SYNC UPLOAD
	NPC ROLL RESULTS	
	ECHOED RESPONSE PROCESSING	CKT NPC TA
	TASK SCHEDULE LIST	

Table 2-11.   Summary of Menus and Forms (Contd)

MAIN MENU	Second Level	Action/Third Level
REPORT OPERATIONS (Continued)	TASK SCHEDULE RESULTS	
	LOST RESPONSE LOG	CIRCUIT NPC FRAME
	HISTORY LOG	SCREEN PRINTER DOS DISKETTE
	SCRIPT LOG	SCREEN PRINTER DOS DISKETTE
	DISPLAY LAST GENERATED REPORT	SCREEN PRINTER DOS DISKETTE
	EDIT CUSTOM REPORT FORMAT	CREATE DELETE MODIFY RENAME
	ALARM QUERY	
	DISPLAY ALARM QUERY	SCREEN PRINTER DOS DISKETTE
	RECONFIGURATION SUB-MENU	RECONFIGURATION PLANS RECONFIGURATION PLANS ALTROUTE RECONFIGURATION PLAN RESULTS AUTO RECONFIGURA-TION PLAN RESULTS
	ESTABLISHED DS0 CHANNELS[1]	
	SUBRATE CIRCUITS [1]	
	COMMON EQUIPMENT ALARMS	
	24-HOUR PERFORMANCE[2]	

Table 2-11.   Summary of Menus and Forms (Contd)

MAIN MENU	Second Level	Action/Third Level
TEST ACCESS		MONITOR SPLIT HUB TERMINATE UNTERMINATE RELEASE LOOP CHLOOP[3] CHUNLOOP[3]
LOGOFF		

1   This option appears if the X.50 subrate feature is enabled.

2   This option appears if the 24-hour performance monitoring feature is enabled.

3   This option appears if the BT feature is enabled.

System Administration

3

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System Administration

3

Introduction

⇒ **NOTE:**
This chapter is *only* for users with system administration privileges.

The SYSTEM ADMINISTRATION menu allows the system administrator to perform a number of administrative tasks, such as:

- Login Ports
- X.25 Link Administration
- Frame Administration
- Printer Administration
- Shutdown
- Date and Time
- Synchronize Date and Time

SYSTEM ADMINISTRATION Menu

To obtain the SYSTEM ADMINISTRATION menu, select SYSTEM ADMINISTRATION from the MAIN MENU. The SYSTEM ADMINISTRATION menu is displayed, as shown in Figure 3-1.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                       ──── SYSTEM ADMINISTRATION ────

                      ─ LOGIN PORTS
                        X.25 LINK ADMINISTRATION
                        FRAME ADMINISTRATION
                        NAME CHANGE
                        PRINTER ADMINISTRATION
                        SHUTDOWN
                        DATE AND TIME
                        SYNCHRONIZE FRAME DATE & TIME




      ─ Press ENTER to configure user RS-232 Ports. ─

  ┌────────┐┌────────┐┌────────┐┌────────┐ ┌────────┐┌──────────┐┌────────┐┌────────┐
  │  HELP  ││        ││        ││  QUIT  │ │        ││ TOP MENU ││ PRINT  ││        │
  └────────┘└────────┘└────────┘└────────┘ └────────┘└──────────┘└────────┘└────────┘
```
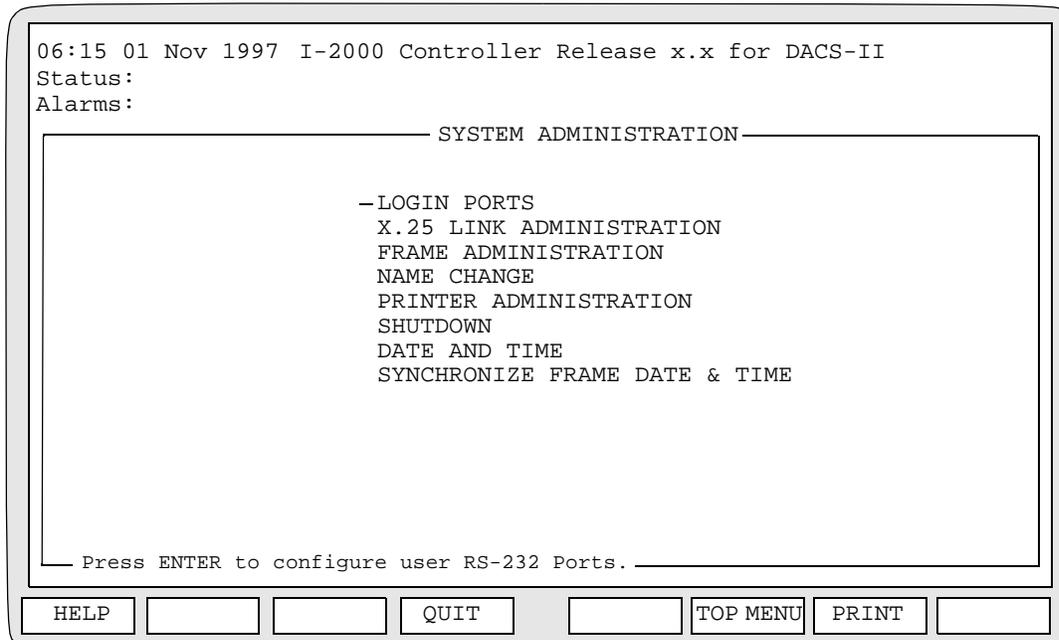
Figure 3-1.   SYSTEM ADMINISTRATION Menu

LOGIN PORTS

LOGIN PORTS allow 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 "FRAME ADMINISTRATION" in this chapter.

The number of asynchronous lines available at the I-2000 computer depends on its hardware configuration. For details concerning hardware configuration, refer to the I-2000 Controller for DACS II Installation Manual regarding the Aurora 800 SX, or their equivalents. The hardware makes available lines 1 through n, where n must be known to the administrator.

⇒ **NOTE:**
Although Aurora products support line 0 through n, the I-2000 numbering starts at 1. See Table 3-1.

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.

Table 3-1. Port Numbering Scheme

Aurora Lines	1-2000 Lines
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
10	11
11	12
12	13
13	14
14	15
15	16

The system administrator must restore a login port before a user 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.

LOGIN PORT ADMINISTRATION Form

Select LOGIN PORTS from the SYSTEM ADMINISTRATION menu. The LOGIN
PORTS ADMINISTRATION menu is displayed, as shown in Figure 3-2.

```
06:15 01 Nov 1997 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 for the LOGIN PORTS ADMINISTRATION form are described
in Table 3-2.

Table 3-2.   LOGIN PORT ADMINISTRATION Field Descriptions

Action	Mandatory. The values are:
	RESTORE Enable the port. REMOVE Disable the port.

Table 3-2.   LOGIN PORT ADMINISTRATION Field Descriptions (Contd)

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. If you have a port configured as a SNIDER link, CHOICES will display the site name. An * before a listed port means that it is being used as a SNIDER link to a DACS. You may not enable it as a login port. ⚠️ **CAUTION:** *You can* REMOVE *an* INUSE *port by a remote terminal, but the user will be logged off. You cannot* REMOVE *an* INUSE *port by a DACS.*
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. You can display the login by pressing CHOICES when the cursor is in **Port**.S. You may not enable it as a login port. ⚠️ **CAUTION:** *You can* REMOVE *an* INUSE *port by a remote terminal, but the user will be logged off. You cannot* REMOVE *an* INUSE *port by a DACS.* 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: Setting the Login Port Speed

To set the speed of a login port, follow these steps:

1. Obtain the LOGIN PORT ADMINISTRATION form. The **Status** can be any value except `INUSE`. In the latter case, access will be denied.

2. Enter an **Action** of `RESTORE`.

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**.

4. Enter the new **Speed**.

5. Press ⬚EXECUTE⬚ and answer YES to ARE YOU SURE? The results are:

    — The **Status** changes to or remains `IS` (In Service).

    — `The command completed successfully` message is displayed.

X.25 LINK ADMINISTRATION

⇒ **NOTE:**
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 frame through the X.25, you need to restore a synchronous link.

X.25 links are configured at installation time. Lines 1 through 4 should already be in place, and you have only to put them in service or take them out of service.

X.25 LINK ADMINISTRATION Form

Select X.25 LINK ADMINISTRATION from the SYSTEM ADMINISTRATION menu.The X.25 LINK ADMINISTRATION form is displayed, as shown in Figure 3-3.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                      ┌──── X.25 LINK ADMINISTRATION ────┐



   Action:RESTORE              Line No.:            Status:

   Connection Type:




   └── Enter desired action ──
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 3-3.   X.25 LINK ADMINISTRATION Form

Field Descriptions

The field values for the X.25 LINK ADMINISTRATION form are described in Table 3-3.

Table 3-3.   X.25 LINK ADMINISTRATION Field Descriptions

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. This **Action** is allowed whether the **Status** indicates IS, in service, or OOS, out of service.
	
	A rejection with the message:
	
	`There are active circuits on this`
	`link. Link not removed.`
	
	refers to extant packet-level connections to the DACS. To remove the link, you must first place the DACS sites in an OOS **Site Status** through FRAME ADMINISTRATION.

Table 3-3.   X.25 LINK ADMINISTRATION Field Descriptions (Contd)

Line No.	Mandatory, one numeric character. The physical line number of the link supporting the connection. Entries are one through four.
Status	The status of the link, not user-accessible. `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	Not accessible through the I-2000. The information shown reflects how the links were set up during installation. If X.25 links have been configured during installation, this field assumes the appropriate value. If X.25 links have not been configured, then this field is blank, and any attempt to `RESTORE` a line is rejected. `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 250 virtual circuits are supported. `DIRECT` The I-2000 act as DCE for the connection. The X.25 link must be connected directly to an X.25 port of the DACS II ISX frame through a synchronous modem eliminator.

Procedure: Placing a Line in Service

To place a line in service, follow these steps:

1. Obtain the X.25 LINK PROVISIONING form.

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`.

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 is displayed.

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

Procedure: Removing a Line From Service

To remove a line from service, follow these steps:

1. Obtain the X.25 LINK ADMINISTRATION form.

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.

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 is displayed.

➡ **NOTE:**
   If any packet level connections are active through this link, this action is denied.

FRAME ADMINISTRATION

A frame is a DACS II or DACS II ISX. Before the I-2000 can communicate with a DACS, identify each DACS through the FRAME ADMINISTRATION form. On the FRAME ADMINISTRATION form, you provide the I-2000 with such information as the protocol and language to be used in communicating with the DACS, as well as the line numbers and speeds.

Before you can use FRAME ADMINISTRATION, perform all the set-up procedures described in "Configuring the Frame" in Chapter 2.

➡ **NOTE:**
   For X.25 configurations, link administration is a prerequisite to frame administration.

X.25 Configurations

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.

Fully Backed-Up Configuration

Figure 3-4 shows a configuration example for DACS II, where line 1 and line 2 are two links from the-2000 computer to the X.25 network. net_ad_1 is the **Network Address** of one link from the X.25 network to the DACS and net_ad_2 is the **Network Address** of another. An example of a **Network Address** is a telephone number, such as 5555555555.
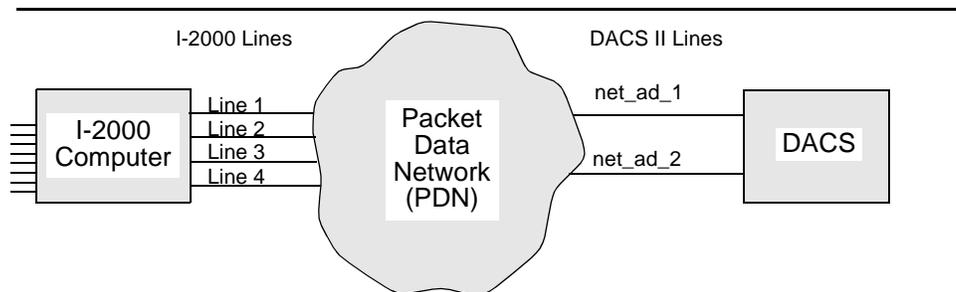
Figure 3-4.   Fully Backed-up Configuration (DACS II)

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

- **Primary Line**: 1

- **Network Address**: net_ad_1

- **Backup Line**: 2

- **Network Address**: net_ad_2

Figure 3-4 shows a configuration example for DACS II, where 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.

Backup of Link to Frame Only

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:
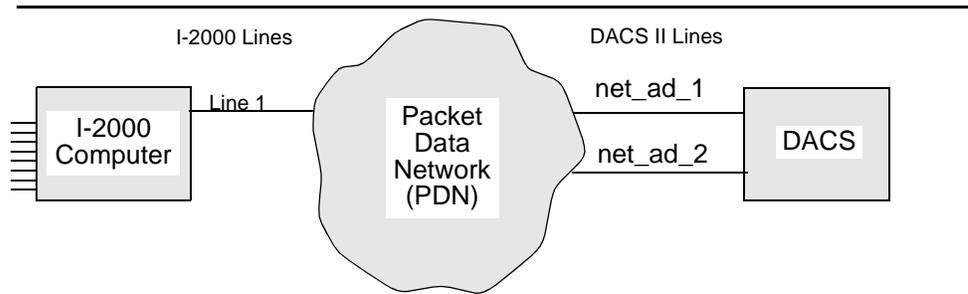
Figure 3-5.   Backup of Link to Frame Only (DACS II)

- ■ **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, as shown in Figure 3-5.

Backup of I-2000 Link Only

It is also possible to back up only line 1, if the DACS has only one link available, as shown in Figure 3-6.
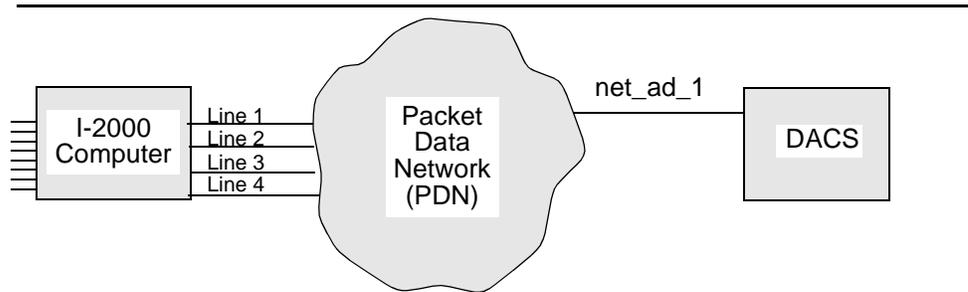
Figure 3-6.   Backup of I-2000 Link Only

- — **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, not backed up, as shown in Figure 3-6.

The I-2000 attempts to establish communication over an X.25 link when it receives a `RESTORE` **Action** or a `BRESTORE` **Action** through FRAME ADMINISTRATION, or when the SVC is lost to a DACS that was previously restored on the primary line. While reading the discussion below, refer to the subsequent FRAME ADMINISTRATION form and the field descriptions, if necessary.

If you are executing a `RESTORE`, and are using only the primary line, or if the primary line has been restored without a backup line and the SVC has been lost, the I-2000 makes up to two attempts to establish communication through the **Primary Line** and **Network Address**. A third try is preceded by a 60-second delay. If all three fail, the I-2000 begins the three-try sequence again, to an indefinite number of attempts, only terminated when it succeeds or you enter a `REMOVE` **Action**.

If you are executing a `BRESTORE`, the I-2000 goes through the same cycle of attempts, over the **Backup Line** and its **Network Address**.

If the SVC is lost to a DACS that was previously restored with both a primary and a backup line, the I-2000 makes up to two attempts to restore communication over the primary line, then one attempt over the backup line, then one more attempt over the primary line, ending the cycle with a 60-second delay. Then it starts the cycle again, up to an indefinite number of attempts.

When communication "switches" from one line to another because of a failure, the switch is non-revertive. That is, the DACS will not automatically switch back to the original line when the failure clears.

The Aurora X.25 interface provides a cause code and a diagnostic code to the I-2000 when a link is broken.

The I-2000 then displays one of three diagnostic messages in the I-2000 **Status** field:

```
Primary link n is down for site sitename, cause xx diag yy.
Backup link n is down for site sitename, cause xx diag yy.
Net addr mmm is down for site sitename, cause xx diag yy.
```

For the meanings of xx and yy in each case, refer to the vendor manual entitled X.25 Software From Aurora Technology.

FRAME ADMINISTRATION Form

Select FRAME ADMINISTRATION from the SYSTEM ADMINISTRATION menu. The FRAME ADMINISTRATION form is displayed, as shown in Figure 3-7.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ── FRAME ADMINISTRATION ──
  Action:CREATE        Site Name:NJ1              Site Status:UEQD

  Type:DACS II         Protocol:X.25             Language:MML

  NPC Addr:HIER        Location:New Jersey        Generic:7.0

  ERP Control:OFF      Programmable Priority Output:OFF

  NPC Alarm Sync:00

  Primary Line:1       Network Address:2016151106 Status:IS



  Backup Line:2        Network Address:2016151107 Status:IS




  ── 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 depends on the **Protocol** that you are using.

Verification of FRAME ADMINISTRATION Information

When a DACS is restored, the I-2000 queries the DACS for the language, generic, and NPC addressing format as entered on the FRAME ADMINISTRATION form. During this time, the **Site Status** for the DACS is set to QRY (query).

If the DACS and the I-2000 database match, the **Site Status** will change to IS (In Service). If there are differences between the DACS and the I-2000 database or the I-2000 does not receive a response to its queries, the **Site Status** will change to ERR (error). The errors will appear on the STATUS line.

In both the QRY and ERR conditions, the DACS continues to process echo responses and DACS alarms. However, provisioning commands cannot be processed, such as cross connect. Non-provisioning commands, such as reports and passthrough are allowed.

> **NOTE:**
> If you modify the Type, Protocol, Language, NPC Addressing, Generic, or
> Line Information on the FRAME ADMINISTRATION form, first remove the
> DACS from service, enter the modifications, then restore the DACS to
> service. You must also remove the DACS from service before switching to
> a backup X.25 link.

Field Descriptions

The field values for the FRAME ADMINISTRATION form are described in
Table 3-4.

Table 3-4.   FRAME ADMINISTRATION Field Descriptions

Action	Mandatory. Valid entries are:
	CREATE — Provisions a new DACS in the I-2000 as a **Site Name** and sets the **Site Status** to OOS. The frame's database(s) is(are) created.
	RESTORE — Establishes the administrative link to the DACS using the **Primary Line**.
	BRESTORE — Establishes the administrative link to the DACS 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 — Disconnects the virtual administrative link between the I-2000 and the DACS specified in **Site Name**.
	DELETE — Deletes the DACS and related data from the I-2000 database.
	MODIFY — Changes non-link information of this form when the **Site Status** is either IS or OOS. For changing line and network data: **Type**, **Protocol**, **Primary Line**, **Backup Line**, **Network Address** and **Speed**, the **Site Status** must be OOS. The MODIFY **Action** does not access **Site Name**.
	CHGSITE — Changes the **Site Name** for the selected DACS.
Site Name	Mandatory. 1 through *n* characters (as specified in the SITENAME_SIZE environment variable) from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name. The name of the DACS 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 this chapter.

Table 3-4.   FRAME ADMINISTRATION Field Descriptions (Contd)

Site Status	The status of the DACS, not user-accessible.
	`IS P` For SNIDER. In service.
	`IS n` For X.25. In service on line n, where n 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 DACS is down or because the DACS has been created, but has not yet been restored. If the `RESTORE` **Action** succeeded, but the DACS is not yet on line, the **Site Status** will be `OOS`.
	`UEQD` Unequipped. Either a `CREATE` has never been done for this DACS, or a `DELETE` was done on it.
	`ALM` The DACS has been `RESTORED`, but the communication to the DACS is not currently active.
	`AS` An audit/sync is in progress on this DACS.
	`QRY` Query. The DACS is in-service but is in a "query" state. The I-2000 queries the DACS to verify the language, generic, and NPC addressing information. On an X.25 link, the query is in progress. On a SNIDER link, the query is sent when communications are established, which may be some time after the link is placed in service.
	`ERR` The information entered through the Frame Provisioning form is inconsistent with the connected DACS or the query for information failed (e.g. timeout). This condition must be corrected before any other commands can be entered into the system. In this condition, the DACS will still continue to process echo responses and DACS alarms.
Type	Mandatory. Specifies the type of DACS.
	`DACS II` The frame is a DACS II. The **Language** *must* be `MML`.
	`D II ISX` The frame is a DACS II ISX, Releases 1.0 and higher. 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**.
	`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.

Table 3-4.   FRAME ADMINISTRATION Field Descriptions (Contd)

Language	Mandatory. Specifies the command language to be used for frame commands generated by the I-2000. You must independently insure that this value conforms to the way the DACS is configured according to "Configuring the DACS" in Chapter 2 "Getting Started."
	MML Use HuMan-Machine Language.
	⇛ **NOTE:**
	MML is the *only* language allowed for I-2000 when the **Action** is CREATE.
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 "Configuring the DACS" in Chapter 2 "Getting Started."
	HIER Use hierarchical addressing.
	EXT3 Use 3-digit extended addressing.
	EXT4 Use 4-digit extended addressing.
	For the CREATE **Action**, this field defaults to the appropriate value for the Type of DACS. The default for DACS II ISX is EXT3, which also is the only valid choice for those systems. Changing to some other value will prevent the I-2000 from communicating properly with the DACS.
Location	Optional. Up to 13 characters. States the physical location of the DACS. An informational field only.
Generic	Mandatory. Up to eight printable characters. The first must be numeric. States the DACS software release number of DACS II or DACS II ISX software running at **Site Name**.
	For release 7 of DACS II, the entry 7.0 is required. This field distinguishes between releases prior to 7, release 7, and subsequent releases. The I-2000 supports NPC type PA only beginning with release 7.
	For DACS II ISX, only Release 1.1 and higher support the nxDS0 test access feature.
ERP Control	The selection or nonselection of conditional echoed response processing for this DACS.
	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.

Table 3-4.   FRAME ADMINISTRATION Field Descriptions (Contd)

Alarm Sync	The selection or nonselection of NPC alarm synchronization for this DACS. 00 Do not update the I-2000 database with information concerning the DACS'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 DACS and update the **Alarm State** information for the DACS. For more information, refer to Chapter 4 "NPC Provisioning."
Programmable Priority Output	This field allows you to specify whether to activate/deactivate the Programmable Priority feature. When an NPC or another hardware component goes down, there are many DACS alarm messages that are generated and queued based on the order they are received. When Programmable Priority is set to "ON", any MML command entered from the DACS with the keyword "PRIOUT" is automatically prioritized and placed before other messages in the DACS queue. This request only impacts the order of the output and does not change the execution of commands. This option can be specified on a frame-by-frame basis. The values are: OFF Default value. ON Activates this feature on a frame-by-frame basis. ⇒ **NOTE:** This field is only available for DACS II, Release 7.0 and later.
Primary Line	The number of the line that will be used for communication between the I-2000 computer and the network or DACS in the case of the X.25 configuration, or between the I-2000 computer and the DACS in the case of the SNIDER configuration. This link must be In Service (**Status** of IS, see LINK PROVISIONING). **For X.25** One numeric character. Enter the physical line number of the primary connection. Valid entries are one through four times the number of X.25 boards. **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.

Table 3-4.   FRAME ADMINISTRATION Field Descriptions (Contd)

Backup Line	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`. Specifying the same line as in **Primary Line** means that you are making the primary and backup links to the network the same; for example, no backup.
Network Address	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 DACS. For a backup line, this field contains the PDN address for the backup line. The address specifies the link from the network to the DACS. Specifying the same address for primary and backup lines means that you are making the primary and backup links the same; for example, no backup.
Status	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`.
Speed	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 "Configuring the DACS" in Chapter 2 "Getting Started." This field only appears if the **Protocol** is `SNIDER`.

To Create and Restore a Frame

The procedures below describe how to create and restore a DACS using either the X.25 or SNIDER protocol.

Procedure: Creating and Restoring a Frame, X.25 Administration

To create and restore a DACS on the X.25 network, follow these steps:

1. Obtain the FRAME ADMINISTRATION form, as shown in Figure 3-8.

```
06:15 01 Nov 1997 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:7.0

   ERP Control:OFF       Programmable Priority Output:OFF

   Alarm Sync:00

   Primary Line:1        Network Address:6174536499     Status:IS

   Backup Line:2         Network Address:6174536500     Status:IS




  ── Enter desired action ──

  HELP    CHOICES           QUIT              TOP MENU   PRINT   EXECUTE
```

Figure 3-8.   Creating a Frame Using X.25

2. Fill in the following fields:

   — **Action**: CREATE

   — **Site Name**: EREWHON

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 infor-mation is filled into the appropriate fields. Verify that the **Site Status** is UEQD.

4. Then fill in the following fields:

   — **Type**: DACS II

   — **Protocol**: X.25

5. After you enter the **Protocol**, the fields for specifying the **Primary Line** and **Backup Line** appear.

6. Fill in the following fields:

   — **Language**: MML

   — **NPC Addr**: HIER

   — **ERP Control**: OFF

— **NPC Alarm Sync**: `00`

— **Programmable Priority Output:** `OFF`

— **Primary Line**: `1`

7. 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 DACS. Fill in the following fields:

— **Network Address**: `6174536499`

— **Backup Line**: `2`

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

— **Network Address**: `6174536500`

9. Press `EXECUTE` and answer YES to ARE YOU SURE?

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

— The **Site Status** changes to `OOS`.

— `The command completed successfully` message is displayed.

10. Change the **Action** to `RESTORE`, press `EXECUTE` and verify.

   When the DACS is in service:

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

— The I-2000 **Status** field displays: `Primary link 1 is on for site EREWHON`

— `The command completed successfully` message is flashed.

11. To place the DACS in service on the backup path, you would enter an **Action** of `BRESTORE`. The **Site Status** would become `IS B`. The I-2000 Status field would display: `Backup link 2 is on for site EREWHON`.

⇒ **NOTE:**
`The command completed successfully` message indicates that the I-2000 has successfully started all processes involved with servicing that DACS. It does not necessarily indicate that communication was successfully established. If communications are not established, the **Site Status** will display `ALM`. When the connection has been established, the I-2000 notifies all users and makes an entry in the I-2000 Alarm Log. You can view the log by pressing `Ctrl` + `a`, or you can view the **Site Status** in a FRAMES/LINKS report, selected from the REPORT OPERATIONS MENU.

The **Site Status** of a successfully linked DACS will be `IS P` or `IS B`; of an unsuccessfully, `OOS`.

Procedure: Changing the Site Name

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

1. Enter an **Action** of CHGSITE on the FRAME ADMINISTRATION form. An example of a FRAME ADMINISTRATION form is shown in Figure 3-9.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                      ———— FRAME ADMINISTRATION ————

   Action:CHGSITE      Old Site Name:
                       New Site Name:

 ——— Enter the first fifteen characters of the old site name ———
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 3-9.   Change Site Name

2. Select an **Old Site Name** with CHOICES .

3. Enter the **New Site Name** for the Site. The **New Site Name** must not currently exist in the I-2000.

4. Press EXECUTE and answer YES to ARE YOU SURE?

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

Procedure: Creating and Restoring a Frame,
SNIDER Administration

To create and restore a DACS with a direct link and place it in service, follow
these steps:

1. Obtain the FRAME ADMINISTRATION form. An example of the FRAME
   ADMINISTRATION form is shown in Figure 3-10.

```
06:15 01 Nov 1997  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:7.0

                        Programmable Priority Output:OFF
  ERP Control:OFF

  Alarm Sync:00

  Primary Line:01     Speed:4800




  ─ Enter the type of frame ─
```

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

Figure 3-10.   Creating a Frame, Using SNIDER

2. Fill in the following fields:

   — **Action**: CREATE

   — **Site Name**: SHANGRILA

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 infor-
   mation is filled into the appropriate fields. Verify that the **Site Status** is
   UEQD. Then fill in the following fields:

   — **Type**: DACS II

   — **Protocol**: SNIDER

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

— **Programmable Priority Output:** OFF

— **Primary Line**: 1

— **Speed**: 4800

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

— The **Site Status** changes to OOS.

— The command completed successfully message is displayed.

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

— The **Site Status** changes to IS.

— The command completed successfully message is displayed.

Procedure: Unprovisioning a Frame in X.25 or SNIDER

To take a DACS out of service on a network or direct link, and remove it from the database (unprovision), follow these steps:

1. Obtain the FRAME ADMINISTRATION form.

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.

3. Press EXECUTE and answer YES to ARE YOU SURE?

— The **Site Status** changes to OOS.

— The I-2000 **Status** field displays one of the following two messages, depending on whether the primary or backup link was in service:

```
Primary link 1 is off for site  UTOPIA
Backup link 2 is off for site UTOPIA
```

— The command completed successfully message is displayed.

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

5. Press EXECUTE. Along with the ARE YOU SURE? insert, a message is displayed:

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

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

   — The **Site Status** changes to UEQD.

   — The command completed successfully message is displayed.

Changing The I-2000 Name

Release 5.0 and higher of the I-2000 provides the capability to change the name of the I-2000. This name will be placed on the tape of a database backup and will be displayed when the database is restored. The change can be performed by the System Administrator from the I-2000 user interface.

The same character set for the **Site Name** also applies to the I-2000 name. Valid entries for this field are A-Z, a-z, 0-9, /, _ , and -. All other characters are illegal. Blanks are allowed within a name, but leading and trailing blanks are ignored.

Procedure: Changing the I-2000 Name Using the I-2000 User Interface

This procedure enables you to change the I-2000 name using the I-2000 user interface.

NOTE:
This feature is available *only* to system administrators.

To change the I-2000 name using the I-2000 user interface, follow these steps:

1. Select NAME CHANGE from the SYSTEM ADMINISTRATION menu. An example of the I-2000 NAME CHANGE form is shown in Figure 3-11.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
State:
Alarms:
                        ── I-2000 NAME CHANGE ──

  Current I-2000 Name: CENTRAL NJ

  New I-2000 Name:     CENTRAL NJ -- 1













── Enter 23 character new I-2000 name.
```

| HELP | | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 3-11.   I-2000 NAME CHANGE Form

2.   The current I-2000 name is displayed in the **Current I-2000 Name** field.
     Enter the new I-2000 name in the **New I-2000 Name** field.

3.   Press EXECUTE . A confirmation message is displayed.

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

     —   The command completed successfully message is displayed.

         Or

     —   The command can be denied if no new name is specified or an
         invalid new name is specified.

PRINTER ADMINISTRATION

This selection is reserved for system administrators. However, if you are in operator status, you can use TASK ADMINISTRATION selections (refer to Chapter 11 "Task Administration") to list or cancel your own print jobs.

The I-2000 supports printing of screens, DACS output, and 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 **Action**s 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 **Action**s allow you to enable or disable the printer, to list and cancel print jobs and to allow printer logging of the alarm or other output from one or more DACSs.

The PRINTER MANAGEMENT **Action**s allow you to:

- enable or disable the printer,

- list and cancel print jobs

- allow printer logging of the Alarm Messages or DACS Messages from one or more DACS.

Field Descriptions

The field values for the PRINTER MANAGEMENT form are listed in Table 3-5..

Table 3-5.   PRINTER MANAGEMENT Field Descriptions

Action	Mandatory. Enter the action to be performed with regard to the printer job.	
	ENABLE	Select ENABLE to enable the printer.
	DISABLE	Select DISABLE to disable the printer.
	LIST	Select LIST to display the printer queue.
	CANCEL	Select CANCEL to cancel any printer job.
	LOGALL	Select LOGALL to log the DACS output messages to the printer.
	LOGALARMS	Select LOGALAMRS to log the DACS alarm messages to the printer.
	STOPLOGGING	Select STOPLOGGING to cancel message logging.
Printer Name	Press CHOICES when the cursor is in the **Printer** field to display the available printers. Use the display to select a printer.	
Printer Status	The status of the printer.	

Procedure: Viewing Printer Management

To view PRINTER MANAGEMENT actions, follow these steps:

1. Select PRINTER ADMINISTRATION from the SYSTEM ADMINISTRATION menu. The PRINTER MANAGEMENT form is displayed, as shown in Figure 3-12.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                          ── PRINTER MANAGEMENT ──

  Action:                              Printer Name:CONSOLE PRINTER

  Printer Status:DISABLED

  Site Name:                           Logging Status:OFF




  ── Enter the desired action ──
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 3-12.   PRINTER MANAGEMENT Form

The **Site Name** and **Logging Status** are shown only for **Action**s of LOGALL, LOGALARMS and STOPLOGGING. Also for those **Action**s, the **Printer Name** is display-only, and cannot be modified by the user.

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

3. Press CHOICES. The PRINTER MANAGEMENT **Action**s are listed:

   — ENABLE: PRINTER

   — DISABLE: PRINTER

   — LIST: PRINTER JOBS

   — CANCEL: PRINTER JOBS

   — LOGALL: DACS MESSAGES

   — LOGALARMS: ALARM MESSAGES

   — STOPLOGGING: MESSAGES

Procedure: Enabling a Printer

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

To enable the printer, follow these steps:

1. Obtain the PRINTER MANAGEMENT form.

2. Select an **Action** of ENABLE from the CHOICES menu.

3. Select a **Printer Name** from the CHOICES menu.

4. Press EXECUTE.

— The **Printer Status** field changes to ENABLED.

— Printer now enabled message is displayed.

Procedure: Disabling a Printer

The DISABLE **Action** turns the printer off.

To disable the printer, follow these steps:

1. Obtain the PRINTER MANAGEMENT form.

2. Select an **Action** of DISABLE from the CHOICES menu.

3. Select a **Printer Name** from the CHOICES menu.

4. Press EXECUTE.

— The **Printer Status** field changes to DISABLED.

— Printer now disabled message is displayed.

Procedure: Displaying Print Jobs Queued

To display a list of the print jobs that are queued to the printer, follow these steps:

1. Obtain the PRINTER MANAGEMENT form.

2. Select an **Action** of LIST from the CHOICES menu.

3. Select a **Printer Name** from the CHOICES menu.

4. Press EXECUTE.

A chronological list of the queued print jobs for all users is displayed. 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

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

If no jobs are on the queue, a message is displayed:

```
No jobs queued to the printer.
```

An example of a printer queue is shown in Figure 3-13.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                         ──── PRINTER MANAGEMENT ────

  Action:LIST                        Printer Name:CONSOLE PRINTER



                         ──── Printer Queue ────

     Job no.      User      Size
     ────────────────────────────────────────────────────

     16           root      5
     17           rootadmn  6




                              Page 1 of 3    Display Page:1
  ── Enter the page number ──
```

```
 HELP    │ NEXTPAGE │ PREVPAGE │  QUIT  │         │ TOP MENU │  PRINT  │
```

Figure 3-13.   Sample Print-Job Status

Procedure: Removing Prints Jobs Queued

To remove a print job from the queue, follow these steps:

1. Obtain the PRINTER MANAGEMENT form.

2. Select an **Action** of CANCEL from the CHOICES menu.

3. Select a **Printer Name** from the CHOICES menu.

4. Press EXECUTE. The jobs are listed as for the LIST **Action**. However, an additional field, **Cancel**, appears before **Job No.**

5. Using Enter, move the cursor to the beginning of the line for the job you wish to cancel and type an x or X.

6. Press CANCEL.

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

Procedure: Printing/Stop Printing Output
or Frame Alarms

To print or stop printing the output or alarms of a DACS, follow these steps:

1. Obtain the PRINTER MANAGEMENT form.

2. Enter one of the following **Action**s:

   ■ LOGALL To print a log of all output from the **Site Name** you select.

   ■ LOGALARMS To print a log of only the alarms issued by the **Site Name** you select.

   ■ STOPLOGGING To stop printing the log of output or alarms for the **Site Name** you select.

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

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

   — The command completed successfully message is displayed.

4. 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.

Procedure: Enabling/Disabling Banner Page

To enable/disable the banner page printed before each output, follow these steps:

1. Log into the I-2000 Controller system as **dacsadm**.
2. The system will display the following message:

       Do you want to escape to unix?
3. Type **y** to go to the UNIX environment.
4. The system will display the following message:

       Do you want to start windows?
5. Type **n**. You are now placed in the UNIX environment.
6. Type **vi /etc/printcap**.

7. Edit the second line in the file. (To disable printing the banner page, the **:sh** should be present as shown below. To enable printing the banner page, remove the **:sh**.

```
:br#9600:tr=\f:lf=/usr/adm/lpd-errs:sf:sh:if=/usr/ems/bin/epson_if
```

8. Exit from vi.

9. Log off by typing **exit**, if necessary.

Procedure: Enabling/Disabling Form Feed

To enable/disable the form feed initiated before each output, follow these steps:

1. Log into the I-2000 Controller system as **dacsadm**.
2. The system will display the following message:

   ```
   Do you want to escape to unix?
   ```

3. Type **y** to go to the UNIX environment.

4. The system will display the following message:

   ```
   Do you want to start windows?
   ```

5. Type **n**. You are now placed in the UNIX environment.

6. Type **vi /etc/printcap**.

7. Edit the second line in the file. To disable printing the banner page, type **:sf** as shown below.To enable printing the banner page, remove the **:sf**.

```
:br#9600:tr=\f:lf=/usr/adm/lpd-errs:sf:sh:if=/usr/ems/bin/epson_if
```

8. Exit from vi.

9. Log off by typing **exit**, if necessary.

SHUTDOWN

The I-2000 system can be shutdown immediately, or you can specify a time DACS from one to 10 minutes.

To shutdown the I-2000 system, follow these steps:

1. From the SYSTEM ADMINISTRATION menu, select SHUTDOWN to power down the I-2000. The SHUTDOWN TIME pop-up menu is displayed, as shown in Figure 3-14.

⚠ **CAUTION:**
Do not remove power from the I-2000 without selecting SHUTDOWN. Important files may be damaged or corrupted.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                            SYSTEM ADMINISTRA          SHUTDOWN TIME

                        LOGIN PORTS                      QUIT
                        X.25 LINK ADMINISTRAT            IMMEDIATE
                        FRAME ADMINISTRATION             1 MINUTE
                        NAME CHANGE
                        PRINTER ADMINISTRATIO  Scroll for additional items
                      ─ SHUTDOWN
                        DATE AND TIME
                        SYNCHRONIZE FRAME DATE & TIME




    ─ Press ENTER to Shut Down the I-2000 System. ─

    HELP    PREVIOUS    NEXT    QUIT        FIRST    LAST            SELECT
```

Figure 3-14.   SHUTDOWN TIME Pop-up Menu

2. From the SHUTDOWN TIME pop-up menu, select the appropriate value:

QUIT	Do not execute a shutdown.
IMMEDIATE	Shut down immediately.
1 MINUTE	Shut down after 1 minute.
5 MINUTES	Shut down after 5 minutes.
10 MINUTES	Shut down after 10 minutes.
NO	Do not execute a shutdown.

3. If you selected the 1, 5 or 10 minute options, at intervals of 1 minute, a command line message appears at the bottom of the screen:

   SHUTDOWN STARTING IN X MINUTES

4. A **Status** message is broadcast to every terminal:

   SYSTEM GOING DOWN IN X MINUTE(S), PLEASE LOG OFF

5. At the end of the last minute, the **Status** displays:

   SYSTEM GOING DOWN, PLEASE LOG OFF NOW

6. The SHUTDOWN TYPE pop-up menu is displayed, as shown in Figure 3-15.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                         SYSTEM ADMINISTRA          SHUTDOWN TYPE

                   LOGIN PORTS                     QUIT
                   X.25 LINK ADMINISTRAT           SHUTDOWN
                   FRAME ADMINISTRATION            REBOOT
                   PRINTER ADMINISTRATIO
                 ─ SHUTDOWN                  Scroll for additional items
                   DATE AND TIME
                   SYNCHRONIZE FRAME DATE & TIME




     ─ Press ENTER to Shut Down the I-2000 System. ─

  HELP      PREVIOUS    NEXT      QUIT        FIRST    LAST              SELECT
```

Figure 3-15.   SHUTDOWN TYPE Pop-up Menu

7. From the SHUTDOWN TYPE menu, select the appropriate value.

QUIT	Do not execute a shutdown.
SHUTDOWN	Shut down the computer and the I-2000. This is done as preparation for powering down the computer.
REBOOT	Shut down and restart the computer and the I-2000.
I-2000 REBOOT	Shut down and restart only the I-2000. The workstation continues to run; only the I-2000 software restarts.
I-2000 UPDATE	Shut down only the I-2000, update the port information in the I-2000 database and restart. This procedure compares the hardware configuration to the I-2000 database and, if required, modifies to I-2000 database. The **/etc/passwd** is updated from the I-2000 database.
NO	Do not execute a shutdown.

8. If you selected QUIT or NO, the following **status** message is displayed:

   SYSTEM SHUTDOWN HAS BEEN ABORTED

9. If you chose any of the shutdown selections, the I-2000 **Status** 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

Occasionally, it may be necessary to reset the I-2000 computer date and time. Be sure to notify the users that you are going to reset the date and time.

> **NOTE:**
> Setting the Data and Time *must* be done from the console.
>
> The reset of the I-2000 date and time may affect time-dependent activities, such as the execution of scheduled tasks, and timeouts on commands to a DACS, as well as on terminating passthrough sessions, or other tasks. We suggest that you shut down and restart immediately after resetting the date and time, so that all time parameters also will be reset.

Procedure: Setting the Date and Time

To set the date and time on the I-2000 computer, follow these steps:

1. Select DATE AND TIME from the SYSTEM ADMINISTRATION menu. The DATE and TIME ADMINISTRATION form is displayed, as shown in Figure 3-16.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    ──── DATE and TIME ADMINISTRATION ────


               Hour:                 Minute:



               Day:                  Month:


                          Year:




 ── Enter the desired hour [0-24] ──
  ┌───────┐ ┌───────┐ ┌───────┐ ┌───────┐   ┌───────┐ ┌────────┐ ┌───────┐ ┌─────────┐
  │ HELP  │ │       │ │       │ │ QUIT  │   │       │ │TOP MENU│ │ PRINT │ │ EXECUTE │
  └───────┘ └───────┘ └───────┘ └───────┘   └───────┘ └────────┘ └───────┘ └─────────┘
```

Figure 3-16.   TIME and DATE ADMINISTRATION Form

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.

3. Enter the minute, 00-59.

➡ **NOTE:**
After 24:00, go to 00:01.

4. Enter the day, 1-31.

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

➡ **NOTE:**
Case is irrelevant.

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

7. Press EXECUTE.

— The new date and time appear on the screen.

— `The command completed successfully` message is displayed.

8. Perform SHUTDOWN and restart so that the new time and date will be reflected by automatic functions that use them.

SYNCHRONIZE FRAME DATE & TIME

Procedure: Synchronizing Frame Date & Time

To change the time on one DACS to the I-2000 time, follow these steps:

1. Select SYNCHRONIZE FRAME DATE & TIME from the SYSTEM ADMINISTRATION menu.

2. The WHICH DACS? prompt and the list of DACSs appears 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 successful if the frame time is set to within one second of the I-2000 time. A message, `The command completed successfully`, means that the time has been successfully reset.

A failure can happen when the frame 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 a failure occurs, you will get a message, `Frame time is within X seconds of local time`, which is displayed in a pop-up window, and requires you to press `Enter`.

The time has been reset, but not to within one second.

A third possibility is that the I-2000 cannot complete the synchronization. In that case, an explanation of denial is displayed in the pop-up window.

If the time synchronization fails, try to reset again.

NPC Provisioning

4

Contents

NPC Provisioning

4

Introduction

Network Processing Circuits (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 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 frame 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 HuMan Machine Language (MML) 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 Digital Signal 1 (DS1) signal becomes 24 channels of 64 kilobits per second (Kbps) under the North American Standard (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 that provisions NPCs and cross-connects their channels. The I-2000 is only your means of doing so. You use 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 **Action**s 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 command to grow an NPC in MML 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. For more information about the ⟦RECNCILE⟧ key, refer to Chapter 2 "Getting Started." 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 is 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 can 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 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 Dual Digroup Card (DDC) or Dual Primary Circuit (DPC) terminates two NPCs of digitally multiplexed Digital Signal 0 (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 DS3 shelf containing various Digital Signal 3 (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 "conferences" 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 "Circuit Provisioning."

Virtual NPCs are created automatically during installation. By default, the I-2000 initializes all DACSs to six virtuals, regardless of type of DACS. On the DACS II Capacity Expansion Frame (CEF), you may use all six. On the non-CEF DACS II, you may use only two, and none on the DACS II ISX Release 1.0. 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 ID**s 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 Digital Multipoint Bridge (DMB) card supports DMB multipoint circuits, which are not the same as the virtual multipoint described under the **Ckt Class** field in Chapter 6 "Circuit Provisioning." 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 "Circuit Provisioning" and 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 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 DACS; for example, the **Type** field value of NPC PROVISIONING depends on the **Type** field value of FRAME PROVISIONING (refer to Chapter 3 "System Administration").

The NPC **Type**s are correlated in Table 4-1.

Table 4-1. **NPC Provisioning Types**

	PB	PC	PA	DC	DE	TE	DA	TA	MB	SR	SD	MJ	Virtual
DACS II before Release 6.0	X	X			X	X			X	X		X	X
DACS II, R6.0 to Release 8.0	X	X	X		X	X	X	X	X	X		X	X
DACS II Release 8.2 and higher	X	X	X		X	X	X	X	X	X	X	X	X
DACS II ISX Release 1.0 and higher			X				X				X*		

* Applies only to SD111 and DACS II ISX Release 2.0 or higher with X.50 subrate application.

I-2000 supports X.50 subrate cross-connect provisioning for DACS II ISX; it does not fully support the other DSP applications. DSP NPCs can be created using the NPC PROVISIONING form, however circuits on DSP NPCs cannot be provisioned from the I-2000. The same support applies for echoed response processing. The following table summarizes the supported activities for the available DSP applications and the associated echoed response processing.

Table 4-2. **Supported Activities for DSP Applications and Echoed Response Processing**

DSP	DACS II	DACS II ISX
SD411 (x.50)	NPC provisioning	NPC provisioning and circuit provisioning
SD111 (DDS)	NPC provisioning	NPC provisioning
SD311 (DMB)	NPC provisioning	NPC provisioning

NOTE:
I-2000 does not support TE/TH type NPCs as provided by the HYbrid DS3U feature of DACS II Release 8.0 and higher. Echoed response processing for provisioning of Hybrid DS3U equipment is discarded by the I-2000.

Modifying NPC Provisioning

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 Table 4-3.

Table 4-3. **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									
PC		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

The NPC PROVISIONING form provides fields based on the NPC type. You can change one or more of the parameters that appear on the form. If an error occurs when you execute the command, the command stops and a message appears in the Command Response window. The NPC parameters are processed in the following order: NPC ID (local database update only), Alarm Aging (local database update only), Type, IW, AIS, TSO, TSOM, NFS, and PM options.

If you attempt to MODIFY the **Type** for an NPC, be aware of the following:

■ The DACS may deny certain changes based on the **Service State** of the NPC and the type of modification. In this case, you may want to delete the NPC and create it again with the new type.

■ When you choose the MODIFY action, the default for the **Service State** field is In-Service (IS). If any part of the command fails, the NPC remains in service. If you set the Service State to Out of Service (OOS), the NPC may be removed from service in order to make the modifications and traffic may be interrupted. When the command completes, the NPC will be restored to service.

■ NPC provisioning parameters are based on NPC type. If you change the NPC type, the NPC parameters may change also. Any new parameters will be given default values.

I-2000 Supported NPC Addressing Schemes

Channels are identified by channel numbers within an NPC. NPCs are identified by one of two numbering schemes: hierarchical or extended. The hierarchy 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 type of DACS configuration is a software operation and is performed just after installation or when the need arises. Refer to Chapter 2 "Getting Started" 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 "Frame Administration Selection" in Chapter 3 "System Administration."

NOTE:
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. To find out what the equivalencies are, refer to Tables 4-4 through 4-6.

Table 4-4.   NPC Number Equivalents for DACS II FTU-type Units

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 DSPU-type Units**

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 DS3U-type Units**

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		

NPC PROVISIONING Form

The sections below provide information on the types of NPC Provisioning forms.

Procedure: Provisioning an NPC

To access the NPC PROVISIONING forms, follow these steps:

1. Select PROVISIONING from the MAIN MENU. The PROVISIONING menu is displayed, as shown in Figure 4-1.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ┌─────── PROVISIONING ───────┐



                            CIRCUIT
                            TEST PORT
                          ─ NPC
                            RECONFIGURATION PLAN
                            AUTOMATIC RECONFIGURATION PLAN
                            NPC ROLL
                            ESTABLISH DS0 CHANNEL
                            SUBRATE CROSS CONNECT
                            24-HOUR PERFORMANCE




   ─ Press ENTER to Provision NPCs ─
  ┌──────┐┌──────┐┌──────┐┌──────┐  ┌──────┐┌────────┐┌──────┐┌──────┐
  │ HELP ││      ││      ││ QUIT │  │      ││TOP MENU││PRINT ││      │
  └──────┘└──────┘└──────┘└──────┘  └──────┘└────────┘└──────┘└──────┘
```
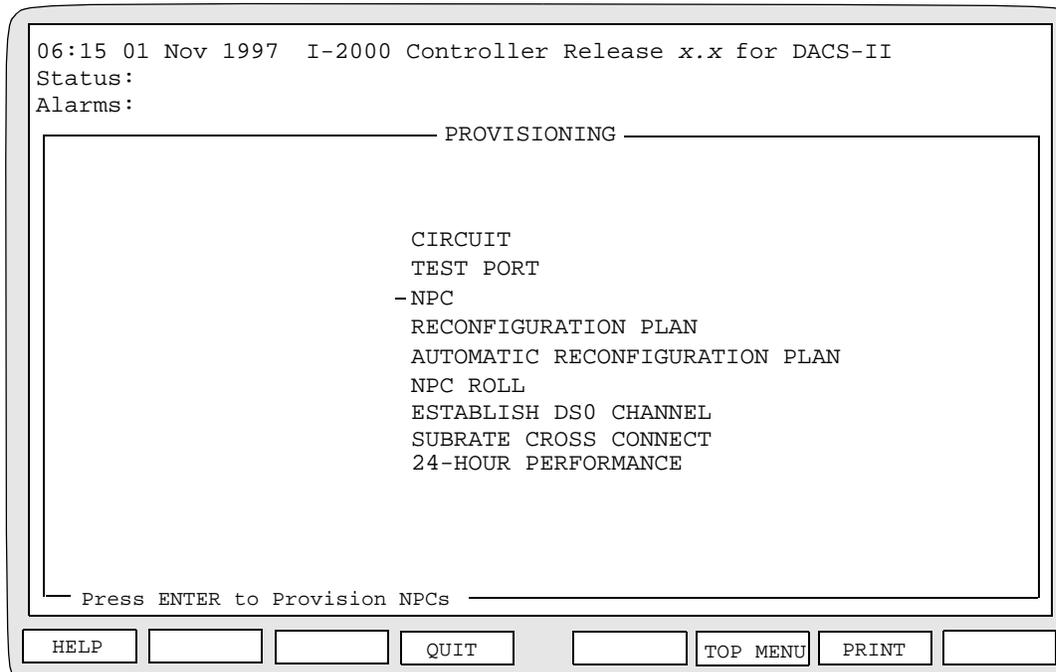
Figure 4-1.   PROVISIONING Menu

2. Select NPC from the PROVISIONING menu. The NPC PROVISIONING
form is displayed, as shown in Figure 4-2.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                           NPC PROVISIONING
 Site Name: DACS00            Alarm State:   Service State:
 Action: CREATE NPC ID:
 Type:PB100 Number(Hier):  (Ext):   Alarm Aging:0000 IW:   AIS: MJ
 FE Site:                TS0:11011111  TS0M:00000000
     Lpbk Trans: N                          Usage:


                       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 NPC number in extended format.

 HELP          NEXTPAGE  QUIT       RECNCILE TOP MENU  PRINT   EXECUTE
```

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

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    ─────────── NPC PROVISIONING ───────────
  Site Name: ISX            Alarm State:      Service State:

  Action: CREATE       NPC ID:

  Type:SD111 Number(Hier):   (Ext):












 ── Enter the NPC number in hierarchical format.
```

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

Figure 4-3.   Subrate NPC Provisioning Form (Type SD)

This is the default form. The fields that appear depend on the value of the default form **Type** and **Action** fields. In addition, the defaults that appear may be different depending if you are using a DACS II or DACS II ISX. 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 **TS0M**, if they are present, are those provided as defaults by the DACS as well.

Figures 4-4 through 4-9 illustrate the remaining NPC distinct forms.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ─ NPC PROVISIONING ─
 Site Name: ISX              Alarm State:       Service State:
 Action: CREATE   NPC ID:
 Type:PA100 Number(Hier):   (Ext):    Alarm Aging:0000 IW:   AIS: MJ
 FE Site:               TS0:11011111 TS0M:00000000 NFS:PPPPPPPPP
     Lpbk Trans: N   Dir: N

                        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
 Out-of-Frame Seconds     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 NPC number in extended format. ─

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

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

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                          ─ NPC PROVISIONING ─
 Site Name: ISX               Alarm State:    Service State:
 Action: CREATE NPC ID:
 Type:DE100 Number(Hier):   (Ext):    Alarm Aging:0000 IW:  AIS:
 FE Site:


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

 ─ Enter the NPC number in extended format. ─
┌────────┐ ┌──────┐ ┌─────────┐ ┌──────┐   ┌──────────┐ ┌─────────┐ ┌───────┐ ┌─────────┐
│ HELP   │ │      │ │NEXTPAGE │ │ QUIT │   │ RECNCILE │ │ TOP MENU│ │ PRINT │ │ EXECUTE │
└────────┘ └──────┘ └─────────┘ └──────┘   └──────────┘ └─────────┘ └───────┘ └─────────┘
```

Figure 4-5.   NAS NPC Provisioning Form (Types DE/TE)

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                          ─ NPC PROVISIONING ─
 Site Name: ISX               Alarm State:    Service State:
 Action:CREATE          NPC ID:
 Type:DA100 Number(Hier):   (Ext):  Alarm Aging:000  IW:    AIS:MJ
 FE Site:








 ─ Enter the NPC number in hierarchical format. ─
┌────────┐ ┌──────┐ ┌─────────┐ ┌──────┐   ┌──────────┐ ┌─────────┐ ┌───────┐ ┌─────────┐
│ HELP   │ │      │ │NEXTPAGE │ │ QUIT │   │ RECNCILE │ │ TOP MENU│ │ PRINT │ │ EXECUTE │
└────────┘ └──────┘ └─────────┘ └──────┘   └──────────┘ └─────────┘ └───────┘ └─────────┘
```

Figure 4-6.   Enhanced NAS NPC Provisioning Form (Types DA/TA)

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                         ┌─────── NPC PROVISIONING ───────┐
   Site Name: ISX                 Alarm State:    Service State:

   Action: CREATE  NPC ID:

   Type:DE919  Number(Hier):      (Ext):     Alarm Aging:0000 AIS: MJ

   FE Site:


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




   The NPC number is required
  └─ Enter the NPC number in extended format. ──┘

┌──────┐ ┌────────┐ ┌────────┐ ┌──────┐   ┌────────┐ ┌────────┐ ┌───────┐ ┌─────────┐
│ HELP │ │CHOICES │ │NEXTPAGE│ │ QUIT │   │RECNCILE│ │TOP MENU│ │ PRINT │ │ EXECUTE │
└──────┘ └────────┘ └────────┘ └──────┘   └────────┘ └────────┘ └───────┘ └─────────┘
```

Figure 4-7.   Clear DS1 NAS NPC Provisioning Form (Type DE9*y*9)

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                         ┌─────── NPC PROVISIONING ───────┐
   Site Name:ISX                  Alarm State:     Service State:

   Action: CREATE  NPC ID:

   Type:TE919   Number(Hier):     (Ext):      Alarm Aging:0000 AIS: MJ

   FE Site:


                          Minor Alarm Option      Major Alarm Option

   Slips                           0                         0




   The NPC number is required
  └─ Enter the NPC number in extended format. ──┘

┌──────┐ ┌────────┐ ┌────────┐ ┌──────┐   ┌────────┐ ┌────────┐ ┌───────┐ ┌─────────┐
│ HELP │ │        │ │NEXTPAGE│ │ QUIT │   │RECNCILE│ │TOP MENU│ │ PRINT │ │ EXECUTE │
└──────┘ └────────┘ └────────┘ └──────┘   └────────┘ └────────┘ └───────┘ └─────────┘
```

Figure 4-8.   Clear DS1 Through DS3 NAS NPC Provisioning Form (Type TE9*y*9)

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ━━ NPC PROVISIONING ━━
  Site Name: CEF              Alarm State:    Service State:

  Action:CREATE    NPC ID:
  Type:MB100       Number(Hier):              (Ext):



  Upper NPC ID:

  Upper NPC No(Hier):




   The NPC number is required
   └─ Enter the NPC number in extended format. ━━

  ┌──────┐ ┌────────┐ ┌─────────┐ ┌──────┐    ┌─────────┐ ┌────────┐ ┌───────┐ ┌─────────┐
  │ HELP │ │CHOICES │ │NEXTPAGE │ │ QUIT │    │RECNCILE │ │TOP MENU│ │ PRINT │ │ EXECUTE │
  └──────┘ └────────┘ └─────────┘ └──────┘    └─────────┘ └────────┘ └───────┘ └─────────┘
```

Figure 4-9.   DMB NPC Provisioning Form (Type MB)

For the CREATE **Action**, you must fill in the **Site Name**, **NPC ID**, and **Number** fields. Most other fields contain default values.

After an NPC is created, you can use the other actions: MODIFY, RESTORE, and QUERY. For these actions, enter the **Site Name**, **Action**, and **NPC ID** or the **Number**, and the I-2000 automatically displays the related data for the NPC on the NPC PROVISIONING form.

Field Descriptions

Descriptions of the NPC PROVISIONING fields are described in Tables 4-7 through 4-10.

Table 4-7.   NPC PROVISIONING Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name.
	The name of the DACS 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 "System Administration."

Table 4-7. NPC PROVISIONING Field Descriptions (Contd)

Alarm State	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:
	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.
Service State	The status of the NPC. This field cannot be changed by the user except as the result of an **Action**. Possible values:
	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**.
	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, CB102 circuit pack, and subrate NPCs, side 0 is in service and side 1 is out of service.
	1 IS — With reference to DMB, CB102 circuit pack, and subrate NPCs, side 1 is in service and side 0 is out of service.

Table 4-7.   NPC PROVISIONING Field Descriptions (Contd)

Action		
	CREATE	Adds a new NPC.
	DELETE	Deletes the specified NPC. An NPC must be removed from service before it can be deleted.
	MODIFY	Changes allowed combinations of fields for the specified NPC. These combinations are stated under "Types of NPCs" in this chapter. Constraints on possible new values of **Type** are also stated there.

> **NOTE:**
> If **OOS** is set to Yes, changing the **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 No, the MODIFY is denied.

> **NOTE:**
> 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 Site Only mode, will not correct the value in the DACS.

Action		
	RESTORE	Places the specified NPC in service. An NPC must be in service before it can be used for CIRCUIT PROVISIONING.
		For TRANSMIC 2G circuit packs, a restore consists of an NPC restoral and a cross connect to the CPR circuit pack in the DSPU
	QUERY	Requests the current state of the NPC from the DACS and displays the data received upon successful completion of the QUERY.

Table 4-7.   NPC PROVISIONING Field Descriptions (Contd)

Action (Continued)	REMOVE	Removes the specified NPC from service.

		⇒ **NOTE:** Removing an NPC with active circuits may result in transmission loss for those circuits. An NPC carrying red-lined circuits cannot be removed unless **INCL** is YES.
	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.
	LOOPBACK	Allows you to start, change, and stop the loopback setting on an NPC. You can select LOOPBACK for NPCs that are out of service (OOS), or in service (IS). In addition this actions can also be applied to a traffic-carrying NPC.
NPC ID		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. An identifier, or name, associated with the specified **Number**. The CREATE **Action** associates the name and number. 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. An identifier, or name, associated with the specified **Number**. The CREATE **Action** associates the name and number. 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.
Type	PA	For DACS II, Generic 6.0 and higher, and DACS II ISX Release 1.0, the hardware is a TG192 enhanced dual primary circuit (EDPC) supporting a CEPT 75/120-ohm NPC with enhanced functionality. PA100 is the default value for ISX systems. **Type** PAxCz provides clear, framed E1 cross-connections and PAxDz provides clear, unframed E1 cross-connections. 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.

Table 4-7.   NPC PROVISIONING Field Descriptions (Contd)

Type (Continued)	DE	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`).
	TA	For DACS II, release 6.0 only, the hardware is a KCR5 and 6 within a DS3 card. **Type** `TAxy9` provides clear unframed cross-connections.
	TE	The hardware is a DS3 card for channelized or clear unframed DS1 (`TE9y9`).
	MB	The hardware is a DMB card for DMB multipoint cross-connections. xyz must be `100`.
	MJ	Not available.
	SR	Not available.
	SD	For subrate provisioning for X.50 and X.57. The only option for this type is `SD111`. 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.

Number (Hier)	For `CREATE`, either this field or **(Ext)** must be entered. The I-2000 converts and fills in the other.
	
	The number of the NPC in hierarchical (hier) numbering. Hierarchical numbers have the following format:
	    xxyzz
	
	where:
	xx Is the shelf or unit number in the range `01` to `16`. For units less than `10`, the leading 0 is required.
	
	y Is the module number in the range `1` to `8`.
	
	zz Is the NPC within the module, ranging from `01` through `40`. 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:
	    `NPC type is inconsistent with FTMI type`		

(Ext)	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.		
SIDE	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`.		

Table 4-7.   NPC PROVISIONING Field Descriptions (Contd)

Alarm Aging	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`. x Age the alarm x seconds, where x is `1` through `9999`. `0` Do not age the alarm, but act immediately. `-1` Ignore the alarm.
IW	Insertion Word. Two 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`. ⟹ **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. On DACS II, Release 6.0, and DACS II ISX Release 1.0 frames, a `0` in the 7th bit (from the right) position generates a D4 yellow alarm for the NPC when the **IW** is transmitted.
AIS	The user-defined severity of an AIS alarm on this NPC. `MJ` An AIS alarm is to be major. `MN` Minor. `MI` A maintenance information alarm.
FE Site	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. 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.

Table 4-7. NPC PROVISIONING Field Descriptions (Contd)

Upper NPC ID	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. An identifier, or name, associated with the specified **Number**. The CREATE **Action** associates the name and number. 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. An identifier, or name, associated with the specified **Number**. The CREATE **Action** associates the name and number. 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.
Upper NPC No (Hier)	This field appears for type MB only. A number in hierarchical format automatically assigned to the NPC specified in **Upper NPC ID**.
(Ext)	This field appears for type MB only. A number in extended format automatically assigned to the NPC specified in **Upper NPC ID**.
TS0	Time slot 0 transmit. Eight characters. The field appears for CEPT NPCs only, and is accessible via the MODIFY **Action**. Describes how to process bits in time slot 0 for transmission. A single character is entered for each bit. The bit values are: 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. V For **Type** PA only, invert the value of this bit. If either of the two rightmost bits is P, both must be P. Use either upper or lower case for P or V. The default is 11011111.
TS0M	Time slot 0 monitor. Eight characters. The field appears for CEPT NPCs only, and is accessible via the MODIFY **Action**. Describes what Time Slot 0 bits are to be monitored by the DACS. A single character is entered for each bit. The bit values are: 0 Stop monitoring the signal in this bit position. 1 Start monitoring the signal in this bit position. Whenever the DACS detects a change in a monitored TS0 bit, it generates an autonomous message. The default is 00000000.

Table 4-7.   NPC PROVISIONING Field Descriptions (Contd)

NFS	Non-frame word setting. Nine characters. This field appears for **Type** PA only, and is accessible by the MODIFY **Action**. 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 Introduction in Chapter 6 "Circuit Provisioning." The field format is: abcdefghi where: a is bit 1 of the FW bcdefghi are bits 1-8 of the NFW Enter a single character for each bit. The bit values are: P Pass unchanged. V Pass inverted, except for bit c. 0 Set output to 0, except for bit c. 1 Set output to 1, except for bit c. Bit c is passed unchanged in every case. If h or i are set to P, then the other of the two must be set to P. The creation default is PPPPPPPP.
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.

Table 4-7.   NPC PROVISIONING Field Descriptions (Contd)

Lpbk Trans	This option can be changed while a loopback is active to change the loopback signal transmission or the Performance Monitoring options. A Starts looping the signals. Also sends AIS downstream or upstream, turns off facility Performance Monitoring, freezes alarm and parameter counts for the NPC. B **(PA type NPCs only)** Starts looping the signals. Also sends AIS downstream or upstream and continues normal Performance Monitoring and alarm processing for the NPC. C **(PA type NPCs only)** Starts looping the signal and transparently passes through the received signal. Turns off facility Performance Monitoring and freezes alarm and parameter counts for the NPC. T Starts looping the signal and transparently passes through the received signal. Continues facility Performance Monitoring and alarm processing for the NPC. N Stops looping the signal.
Dir	Direction. This is a one character field to indicate the direction of the loopback. This is a mandatory field when the action selected is LOOPBACK and the NPC is a PA type. F Facility Loopback. This loops the incoming 2 Mbit/s bipolar signal back to the facility. E Equipment loopback. This loops the outgoing 2 Mbit/s signal back to the DACS II equipment. This option is not applicable to PB/PC type NPCs. N Stop loopback.
Usage	Optional. This is a 10-character field for data entry and display. Valid entries for this field are: UNKNOWN INTER DACS ACCESS The default value is ACCESS, which also applies to the ERP/SYNC generated NPC.

Performance Monitoring Fields

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 **Type**s except DA and TA. For the latter **Type**s, 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 data set: data sets 0, 1, 2, and 3 for NAS or data sets D, 1, 2, and 3 for CEPT. The D stands for default. In NAS, 0 is used for the default.

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

NOTE:
For any options other than D-xxx, refer to the ED-OPT-T1 command in the *DACS II Command and Message Manual* for setting up secondary databases.

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

n ccc

where:

n	is 1, 2, 3, or D, referring to data set 1, data set 2, data set 3 or the default data set.
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 data set 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 "System Administration."

NOTE:
Do not confuse the performance parameters shown in Table 4-7 with the values to be entered on the screen.

Table 4-8.   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, if 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 `MAJ` 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 DACS 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 NPC PROVISIONING form.

Table 4-9.   Alarms For CEPT NPC Performance Parameters For Type PA

	Daily NE	Daily FE	15-Min NE	15-Min FE
CRC Block Errors	CRCDAILY	FEBEDAILY	CRC15MIN	FEBE15MIN
Errored Seconds	ESDAILY	FESDAILY	ES15MIN	FES15MIN
Sev Errored Seconds	SESDAILY	FSESDAILY	SES15MIN	FSES15MIN
Unavailable Seconds	UASDAILY	FUASDAILY	UAS15MIN	FUAS15MIN
Framing Errors	FRERDAILY		FRER15MIN	
Out-of-Frame Seconds	OFSDAILY		OFS15MIN	
Controlled Slip Seconds	CSSDAILY		CSS15MIN	

Table 4-9. **Alarms For CEPT NPC Performance Parameters For Type PA (Contd)**

	Daily NE	Daily FE	15-Min NE	15-Min FE
Coding Violations	CVDAILY		CV15MIN	
Unavailable Time Count	UATCDAILY		UATC15MIN	
Multiframe Errors	MERDAILY		MER15MIN	

The possible selections of field values for an NAS NPC are: n

where: n is 0, 1, 2, or 3, referring to data sets 0, 1, 2, or 3. The default is 0.

The types of performance parameters are classified in Table 4-10.

Table 4-10. **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

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

NPC Provisioning Examples

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 "Getting Started."

⚠ **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; for example, ready to be used in cross-connection. The CREATE or RESTORE will be denied if:

■ mandatory field information 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

■ a field contains an invalid value.

Example: Creating a CEPT NPC

To create a CEPT NPC, follow these steps:

1. Select NPC from the PROVISIONING menu.

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

   — **Site Name**: DACS00

   The site name must already have been provisioned as a frame (refer to Chapter 2 "Getting Started").

   — **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`

3. Fill in all the other threshold selections. In this case, suppose they are all `D Inf`.

4. Press `EXECUTE` and select IMMEDIATE. (You can create the NPC in `Local only` mode. Refer to Chapter 2 "Getting Started" 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 is displayed on the screen.

5. Move to the **Action** field and select `RESTORE`.

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

— **Service State** field changes to `IS`.

— I-2000 command completion message is displayed.

Procedure: Creating an NAS NPC

To create an NAS NPC, follow these steps:

1. Select NPC from the PROVISIONING menu.

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 "Getting Started.")

— **Action**: `CREATE`

— **NPC ID**: `dgrp02`

— **Type**: `DE310` (or some other `DE` value)

— **Number (Hier)**: `01102`

— If you fill this in, **(Ext)** is automatically supplied. 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`

3. Fill in all the other threshold selections. In this case, suppose they are all the default.

4. 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.

5. Move to the **Action** field and select RESTORE.

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

   — **Service State** field changes to IS.

   — I-2000 command completion message appears.

Example: Creating an NPC as a Subrate Type

To create an NPC as a subrate type, which will then allow you to provision DS0 channels and subrate cross connections for the X.50 and X.57 subrate standards, follow these steps.

1. Select NPC from the PROVISIONING menu. The NPC PROVISIONING form is displayed.

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

   — **Site Name:** DACS00

      DACS00 must already have been provisioned as a frame (refer to Chapter 2 "Getting Started."

   — **Action:** CREATE

   — **NPC ID:** DS01

   — **Type:** SD111

   — **Number (Hier):** 01101

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

3. Press EXECUTE and select IMMEDIATE. (You can create the NPC in local only mode. Refer to Chapter 2 "Getting Started" 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 completed message is displayed on the screen.

4. Move to the **Action** field and select RESTORE.

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

   — Subrate NPC is in service.

   — **Service State** field changes to IS

   — I-2000 command completion message is displayed.

For more information on provisioning DS0 channels and subrate cross connections for this subrate NPC, refer to Chapter 7 "Subrate Provisioning."

Example: Creating an NPC Using DMB Multipoint

To create an NPC using DMB multipoint, follow these steps:

1. Select NPC from the PROVISIONING menu.

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

   — **Site Name**: DACS00

   The site name must already have been provisioned as a frame (see Chapter 2 "Getting Started)."

   — **Action**: CREATE

   — **NPC ID**: dmb01

   — **Type**: MB100

   — **Number (Hier)**: 02101

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

   — **Upper NPC ID**: dmb02

   This field is mandatory.

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

   — **Service State** field changes to OOS.

   — I-2000 command completion message is displayed.

4. Move to the **Action** field and select RESTORE.

5. Enter **SIDE**: 0

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 is displayed.

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

Example: 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`.

To remove an NPC, follow these steps:

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

2. Check that the data for the NPC are displayed, and that the **Service State** field is `IS`. Press $\boxed{\text{EXECUTE}}$ and select IMMEDIATE. The result is that the:

   — **Service State** field changes to `OOS`.

   — **Alarm State** changes to `NONE`.

   — I-2000 command completion message is displayed.

⟹ **NOTE:**
The `MB` **Type** requires entry of **SIDE**.

Example: Deleting an NPC

This example shows how to unprovision an NPC (remove) it from the I-2000 and frame 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.

To delete an NPC, follow these steps:

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

2. The data for the NPC are displayed; the **Service State** field is `OOS`. Press $\boxed{\text{EXECUTE}}$ and select IMMEDIATE. Observe that the:

   — **Service State** field now is `UEQD`.

   — **Alarm State** is now blank.

   — I-2000 command completion message is displayed.

Example: Querying an NPC

The `QUERY` selection retrieves the provisioning and status information concerning an NPC from the DACS and displays it on the screen.

To query an NPC, follow these steps:

1. Select PROVISIONING from the MAIN MENU and NPC from the PROVISIONING menu.

2. Navigate to **Action** and select `QUERY`.

3. The bottom fields on the lower part of the screen become temporarily blank.

4. 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.

5. Press EXECUTE and select IMMEDIATE.

The I-2000 command completion message is displayed. In addition, the first page of the QUERY form is displayed, as shown in Figure 4-10.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ── NPC PROVISIONING ──
  Site Name:eao123              Alarm State:NONE   Service State:IS
  Action:QUERY          NPC ID:testnpc0001
  Type:PB100 Number(Hier):  (Ext):   Alarm Aging:000  IW:FFD  AIS:MN
                                TS0:11011111        TS0M:00000000


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

  Slips                 00000   00000  00000      00000/NONE  00000/NONE
  Degraded Minutes      00000   00000  00000      00000/NONE  00000/NONE
  Unavailable Seconds   00000   00000  00000      00000/NONE  00000/NONE
  Errored Seconds       00000   00000  00000      00000/NONE  00000/NONE
  Sev Errored Seconds   00000   00000  00000      00000/NONE  00000/NONE


  Errors:  CRC:00000 Framing:00000 LOFA:00000 Multiframe Alignment:00000

 The command completed successfully
  ── Enter the site name ──
```

| HELP | | NEXTPAGE | QUIT | | RECNCILE | TOP MENU | PRINT | EXECUTE |

Figure 4-10.   CEPT NPC Query For PB Type

⇒ **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.

```
06:15 01 Nov 1997  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:PA100 Number(Hier):08103(Ext):1123 Alarm Aging:000 IW:D5D AIS:MJ
 FE Site:                    TS0:11011111 TS0M:00000000 NFS:PPPPPPPPP


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

 CRC Block Errors      00000000 00000000/D Inf 00000000 00000000/D Inf
 Errored Seconds       00000000 00000000/D Inf 00000000 00000000/D Inf
 Sev Errored Seconds 00000000  00000000/D Inf 00000000 00000000/D Inf
 Unavailable Seconds 00000000  00000000/D Inf 00000000 00000000/D Inf


 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

6. Use ⎹NEXTPAGE⎸ to obtain the second page of the QUERY form, which is
   available only for **Type** PA.

```
06:15 01 Nov 1997  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:PA100     Number(Hier):08103 (Ext):1123 Alarm Aging:000 AIS:MJ

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

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

| HELP | | NEXTPAGE | QUIT | | RECNCILE | TOP MENU | PRINT | EXECUTE |

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

```
06:15 01 Nov 1997   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:   AIS:
                                  TS0:11011111       TS0M:00000000


                                      Minor Alarm    Minor Alarm
                          Reading     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

Example: Browsing NPCs

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

To browse an NPC, follow these steps:

1. Select PROVISIONING from the MAIN MENU and NPC from the PROVISIONING menu.

2. In the **Action** field, select BROWSE.

3. Enter search criteria. The BROWSE action can retrieve information for up to 50 NPCs at one time.

   — Enter data in the **NPC ID** field. You can use wild-card characters (*?), in the **NPC ID** field only, to match any character or set of characters.

   — To browse the first 50 NPCS, enter * in the **NPC ID** field.

   — To search for NPCs that match certain criteria, enter search criteria in the other fields.

4. Press EXECUTE .

   A search is conducted for the specified NPCs. Also, the data for the first NPC is displayed.

5. To obtain the next NPC, press ⌈NEXT⌉.

6. To stop the BROWSE, press ⌈QUIT⌉.

Figure 4-14 shows the first item of a BROWSE through all NPCs.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS II
Status:
Alarms:
                         ─── NPC PROVISIONING ───
 Site Name:eao123              Alarm State:       Service State:
 Action:BROWSE            NPC ID:testnpc0001
 Type:PA100     Number(Hier):08103 (Ext):1123 Alarm Aging:000 AIS:MJ


                       Daily NE Daily FE        15-Min NE 15 Min FE
                       Reading Threshold/Opt Reading Threshold/Opt
 CRC Block Errors         00000    00176947/D Inf 00000  018432   /D Inf
 Errored Seconds         00000    04320   /D Inf 0000    300      /D Inf
 Sev Errored Seconds      00000    00090   /D Inf 0000    030      /D Inf
 Unavailable Seconds      00000    00090   /D Inf 0000    030      /D Inf
 Framing Errors          00000    00090   /D Inf 00000  0018432  /D Inf
 Out-of-Frame Seconds     00000    00004   /D Inf 000     004      /D Inf
 Controlled Slip Seconds 00000    00004   /D Inf 000     001      /D Inf
 Coding Violations        00000    00004   /D Inf 00000  0018432  /D Inf
 Unavailable Time Count  0000     00009   /D Inf 00      03       /D Inf
 Multiframe Errors        00000    04095   /D Inf 000     255      /D Inf



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

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; for example, when a change in frame NPC provisioning is entered through the DACS console, through 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, is 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, MODIFY, or DELETE when required by the message.

You can 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:

nnnnn**NPC00**m

where:

nnnnn	Is the NPC number as represented at the DACS. The nnnnn is in hierarchical format if the DACS is provisioned for hierarchical format, or in extended format if provisioned for extended numbering.
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 ID***s from the NPC Provisioning form according to the ERP scheme.*

With 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.

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 frame screening level is set to 4. Refer to "Configuring the Frame" in Chapter 2, "Getting Started."

Procedure: Disabling Echoed Responses

Echoed responses can be disabled for a particular DACS by changing the link screening options in the frame.

To disable an echoed response, follow these steps

1. Enter passthrough mode (refer to Chapter 13 "Passthrough").

2. Log in as `USER DAX`.

3. Type the following command to 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;
    ```

    If you disable echoed responses, the I-2000 database could drift apart from the frame database, necessitating that you periodically perform a database audit followed by a database synchronization (refer to Chapter 10 "Database Administration").

4. Log off.

Test Port Provisioning

5

Contents

Test Port Provisioning

5

Introduction

Test port provisioning is an extension of the NPC provisioning process. Once an NPC is created, it can be further designated as a test port group. The NPC does not have to be 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 can 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 15 "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.

Table 5-1 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 II before Release 6.0	4	1-48
DACS II Release 6.0 and higher	8	1-96
DACS II ISX Release 1.0 and higher	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 15, "Test Access."

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 displayed, as shown in Figure 5-1.

```
06:15 01 Dec 1995   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

Field Descriptions

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

The field values for the TEST PORT PROVISIONING form are described in Table 5-2.

Table 5-2.   TEST PORT PROVISIONING Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name. The name of the DACS 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 "System Administration."
Action	Mandatory. The provisioning actions are: `CREATE TP DIGROUP (CREATETPG)` designates a previously provisioned NPC as a test-port digroup. `DELETE TP DIGROUP (DELETETPG)` removes the designation (and all associated test ports). `CREATE TEST PORT (CREATETP)` designates a channel pair as a test port within a test port digroup. `DELETE TEST PORT (DELETETP)` removes the designation.
Test Port Group	This field appears only for **Action**s 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 **Action**s 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

Table 5-2.   TEST PORT PROVISIONING Field Descriptions (Contd)

TC	This field is shown only for an **Action** of CREATETP. The test port trunk conditioning. The values are: *value* 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; for example, the TP conditioning is static. *none* The conditioning changes to match the circuit under test; for example, the TP conditioning is dynamic.
IW	This field appears for an **Action** of CREATETP. The value of **IW** depends on the value of **TC**. You can not enter an **IW** when you have not entered a **TC**. In that case, the **IW** is dynamic. If you have entered a **TC**, whether you enter a value for **IW** or not, the **IW** is static. For DACS II, the static/dynamic designation has meaning only for access to unmapped terminations. For access to a mapped circuit, trunk conditioning is always adopted from the circuit under test.
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 can 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.

Procedure: Creating a Test-Port Group

The procedure below shows how to designate an NPC as a NAS test port group. This 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 DACS.

- The NPC is already a test port group.

To create a Test-Port group, follow these steps:

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 or an NPC whose ID is 999120 have been created. In that case, the I-2000 assumes a new NPC (no existing data).

2. Press EXECUTE, select IMMEDIATE and observe the:

   — **Service State** field of OOS.

   — **Alarm State** of NONE.

   — I-2000 command completion message.

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

4. Press EXECUTE, select IMMEDIATE and observe the

   — **Service State** field of IS.

   — **Alarm State** of NONE.

   — I-2000 command completion message.

5. Press the QUIT function key to return to the PROVISIONING menu.

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

   — **Site Name**: DACS00

   — **Action**: CREATETPG

7. Additional fields appear on the screen. Enter:

   — **Test Port Group**: 1

   — **(Ext)**: 0120

     The remaining fields are filled in.

8. Press ⎡EXECUTE⎤ and confirm. The command completion message is displayed.

➡ **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.

Procedure: Creating a Test Port

This procedure 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 can 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. In addition, a lower-numbered port cannot be deleted when a higher-numbered port exists in that test port group.

To create a Test Port, follow these steps:

1. Enter the following data: **Action**: CREATETP

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.

3. Press ⎡EXECUTE⎤ and confirm. I-2000 command completion message is displayed.

Procedure: Deleting a Test Port

This procedure removes the designation of test port from a channel pair.

To delete a Test Port, follow these steps:

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

   — **Site Name**: DACS00

   — **Action**: DELETETP

2. A third line appears on the screen. Enter **Test Port No**: 01

3. Press EXECUTE and confirm. A I-2000 command completion message is displayed.

Procedure: Deleting a Test-Port Group

This procedure 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.

To delete a Test Port Group, follow these steps:

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

2. A third line appears on the screen. Enter **Test Port Group**: 1

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

4. Press QUIT.

5. To take the NPC out of service, navigate to NPC PROVISIONING.

6. To identify the NPC, enter:

    — **Site Name**: DACS00

    — **Action**: REMOVE

    — **NPC ID**: 999120

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

7. Press EXECUTE and select IMMEDIATE. The result is that:

    — **Service State** field now says OOS.

    — **Alarm State** now says NONE.

    — Command completion message is displayed.

8. Enter the following field: **Action**: DELETE

9. Press EXECUTE and select IMMEDIATE.

    — **Service State** field changes to UEQD. In addition, a command completion message is displayed.

Circuit Provisioning

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Circuit Provisioning

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Introduction

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

A cross-connection can be established either as an elementary circuit (one cross-connection) or as multiple cross-connections. Multiple cross-connections are combined in complex circuits. These cross-connections are established on the CIRCUIT PROVISIONING form. Complex circuits, in most cases, require using multiple forms.

The execution of a properly filled out CIRCUIT PROVISIONING form sends the appropriate commands to the DACS to physically establish the cross-connection. In addition, the I-2000 records the circuit definition in the I-2000 and DACS databases.

Alternatively, you can 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 "Getting Started."

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 Operations and Maintenance Manual*. A brief summary of the supported circuit types is stated here.

A cross-connection is similar to 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 integrated circuits (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 frame terminology used below; however, if you are not, refer to the Glossary.)

- Single-channel, two-point, one-way or two-way circuits.

- 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.

- BCON 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 frame, 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 frame features a TG80 Card, this circuit is available, NAS only:

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

If the frame features a TG192 card, this circuit is available, CEPT only:

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

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

- Channelized DS3; such as 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.

When a form is executed, the I-2000 makes use of a number of MML 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.

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 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`, `Alternating`, or `Random`). To the frame operator, the complex process of building circuits by individual MML commands, and selecting from a large variety of types with many possible parameters; becomes a much simpler process using I-2000 by 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 want 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.

If an `ACTIVATE` **Action** fails, the I-2000 will attempt to undo any connection it has already put up. In the case of a timeout, the I-2000 sends a disconnect command.

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-bearing[*] 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 Status**es are covered in greater detail in this and the following chapters. To return a circuit to `NULL`; for example, to delete 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 or, one-way, virtual multipoint, DMB multipoint, and BCON 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; for example, that a-to-mu law conversion is in effect.

- High-rate circuits are specified with **Bandwidth.**

For instructions on how to activate specific types of circuits, refer to "Circuit Provisioning" in this chapter.

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[*] 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.

A circuit is considered to go from one external facility termination (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 can 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.

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 can disconnect it immediately by setting **Options** D (OOS). If you neglect to do that and attempt to DEACTIVATE or DELETE the circuit, the I-2000 would need to send two commands before disconnection would be successful.

You can red-line the circuit as not to be disconnected without authorization, through the RDLD and INCL **Option**s.

Once a circuit is in place, you may want to test it. Refer to Chapter 5, ''Test Port Provisioning,'' and Chapter 15, ''Test Access,'' which describes provisioning test ports and connecting test circuits. You may want 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 **Option**s with the test circuit TERMINATE and RELEASE **Action**s or with the frame's TLA and TLR commands.

A TS0 cross-connect feature 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 want to utilize channel 0 for other purposes, such as transmitting alarm information, or for testing, and therefore you may want 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.

Figure 6-1 shows 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.
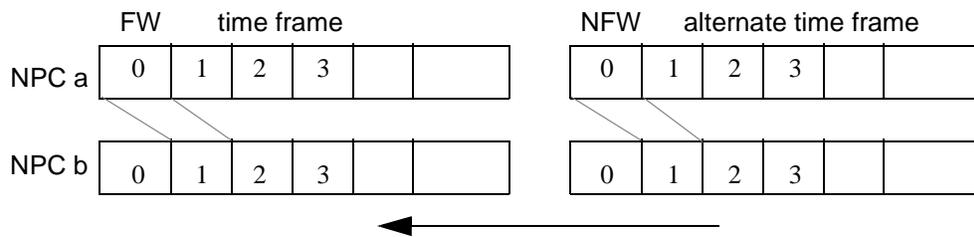
Figure 6-1.   Circuit Provisioning Example—Two Sequential Time Frames

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 can 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 want 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.

There are two types of BCON circuit classes *backbone circuits* (BKB) and *tributary circuits* (LEG). BKB circuits are used as the backbone circuit in BCON provisioning. LEG circuits are used as the tributary circuit in BCON provisioning. To create a BCON circuit through the I-2000 user interface, create a Full Duplex circuit and add a LEG. The Full Duplex circuit will be converted into a BCON backbone with the new leg. Similarly, when the last LEG of a BCON circuit is deleted through the I-2000 user interface, the remaining backbone will be converted back to a Full Duplex circuit automatically. The Circuit ID of a LEG circuit is automatically generated during execution of the ADDLEG action, and is displayed after the action completes.

You can modify a BCON circuit by adding a leg (ADDLEG), deleting an existing leg (DELLEG), or by changing the base name (MODIFY of BKB). BCON circuits cannot be DEACTIVATED, ALTROUTED, PREEMPTED, or COMBINED.

CIRCUIT PROVISIONING Form

Select CIRCUIT from the PROVISIONING menu. The CIRCUIT PROVISIONING form is displayed, as shown in Figure 6-2.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                      ─────── CIRCUIT PROVISIONING ───────

  Site Name:
  Action:                                    Ckt Status:
  Ckt ID:                                     Ckt Class:BRD
  BBL ID:                                       Bandwidth Type:

        Hier       Ext     NPC ID                 Ch    Mode

   FROM:
   TO:


  Bandwidth:              Options:


  TC:                    IW:     SC:              Framing:
  Loc A:                         Loc Z:
  Customer Name:                 Service Date:DD MMM YY   Ckt Priority:00


  Rmks:
   ─ Enter the site name ─
```

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

Figure 6-2.   CIRCUIT PROVISIONING Form

⇒ **NOTE:**

BBL ID appears only for **Ckt Class** BRD. **NEW ID** appears in place of **BBL ID** for **Action** MODIFY. **LEG ID** appears in place of **BBL ID** for **Action** ADDLEG, DELLEG, and CHGRPATH. **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. If the **Bandwidth Type** is Random, the **Ch** column will be removed and rows for the FROM and TO random channels (**F_CH**) and **T_CH**) will appear. A row for BCON LEG channels (**L_CH**) will appear for Random BCON circuits.

You can browse through the circuits stored in the I-2000 database. In that case, you will use the CIRCUIT PROVISIONING SEARCH CRITERIA form, which is displayed after you enter an **Action** of BROWSE and press EXECUTE. The CIRCUT PROVISIOING SEARCH CRITERIA form is displayed, as shown in Figure 6-3.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                  ─ CIRCUIT PROVISIONING SEARCH CRITERIA ─
 Site Name:
 Ckt ID:
 Ckt Status:        Ckt Class:



 FROM/TO Connection:
      Hier      Ext     NPC ID                          Ch  Mode



 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 Circuit ID ─
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 6-3.   CIRCUIT PROVISIONING SEARCH CRITERIA Form

Field Descriptions

Field descriptions for Circuit Provisioning are described in Table 6-1.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name. The name of the frame where the requested **Action** will take place. Pressing CHOICES displays WHICH DACS? with a list of the frame names. These names were established during frame administration, described in Chapter 3 "System Administration."
Action	Mandatory. Enter the action to be performed with regard to the circuit. ACTIVATE 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**. MODIFY Retrieves the specified circuit from the I-2000 database for purposes of altering circuit attributes or **Ckt ID**. MODIFY does not change the **Ckt Status**. You can MODIFY any user-accessible field for circuits in the PENDING or DEACTIVATED **Ckt Status**. You can MODIFY the following fields for circuits in the ACTIVE or, PREEMPTED or ALTROUTED **Ckt Status**: Non-service affecting fields: **Ckt ID**, **Customer Name**, **Service Date**, **Ckt Priority**, **Loc A**, **Loc Z**, **Rmks**, **Options**: OOS, INC, DCC. Service affecting fields: **TC**, **IW**, **SC**, **Framing**, **NTR**, **Options**: NAM, AIS, RDLD. ⚠ **CAUTION:** *Changes to service affecting fields will interrupt traffic.*

Table 6-1. **CIRCUIT PROVISIONING Field Descriptions (Contd)**

Action		
Action **(Continued)**	DELETE	Removes the specified circuit from the I-2000 and DACS databases, returning the **Ckt Status** to NULL. ➡ **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 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 frame.
	ALTROUTE	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 pre-emption and will be required to confirm it. A circuit can be altrouted only once, and an ALTROUTED circuit cannot be preempted.
	NORMALIZE	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 frame over its normal path. If the circuit returns to DEACTIVATED, it is not cross-connected in the frame. 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.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

Action		
Action **(Continued)**	BROWSE	Gives you read-only access to the I-2000 database for retrieving and scrolling circuit records. As soon as you press EXECUTE after entering an **Action** of BROWSE, the I-2000 displays the CIRCUIT PROVISIONING SEARCH CRITERIA form. Its fields are taken from the CIRCUIT PROVISIONING form. Entering a value in any defined field restricts the search. To initiate the search, press EXECUTE. To return to CIRCUIT PROVISIONING without executing, press QUIT. The following rules apply: — You can search on **Ckt ID**, **Ckt Status**, **Ckt Class**, **NPC ID**, **Mode**, **Bandwidth Type**, **Options**, **NTR**, **TC**, **IW**, **SC**, **Framing**, **Customer Name**, **Ckt Priority**, **Loc A**, **Loc Z**, **Rmks**. — The default for all fields is all values of the fields. — The wildcard character, *, replaces zero or more characters. The ? replaces any single character. Wildcards are allowed in all alphanumeric fields except **Options**. — The character, <, followed by a value, in numeric fields: **Hier**, **Ext**, **Ch**, **Bandwidth**, **Service Date**, obtains records for values less than the entered value; the character, >, greater.
	COMBINE	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. Remember, high-rate circuits are implemented in the frame as single-channel circuits; thus, they are already in the frame. 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 frame. The **Circuit Class**es of the source circuits must be all HDX or all FDX only. Use of channel 0 and of test circuits is prohibited.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

Action (Continued)		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 **Bandwidth**s 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
		The following fields of the source circuits must have the same values: **TC**, **IW**, **SC**, **Circuit Class**. **Options** settings of RDLD and no NAM must be the same throughout. The **Ckt ID** of the combined circuit can be unique, or it can be one of the source circuits' **Ckt ID**s. 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.
	ADDLEG	Adds a LEG to an existing BKB circuit. This action can also convert an existing FDX circuit to a BKB and add the first LEG Ckt ID (automatically populated and displayed) when this action is completed successfully.
	DELLEG	Deletes a LEG from an existing BKB circuit. If it is the last LEG in the remaining backbone (BKB) circuit, it will be automatically converted to a FDX circuit.
	CHGRPATH	Changes the return path for a BCON circuit to the specified LEG. It has the effect of swapping the BKB and LEG circuit.
Ckt Status		A display only mode indicating the status of the circuit.
	NULL	The circuit has not been defined and, therefore, is not in the frame 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 frame. 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 frame. The I-2000 record is marked DEACTIVATED. To cross-connect the circuit, use the ACTIVATE **Action**.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

Ckt Status **(Continued)**	ALTROUTED	The circuit is present in the frame and I-2000 databases, is cross-connected in the frame, 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 frame 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 frame and I-2000 databases, is cross-connected in the frame, and is carrying transmission. A circuit can be defined in the I-2000 database, but if it is not ACTIVE, it is not defined in the frame database. A circuit that exists in the frame is in both the frame and I-2000 databases (unless there is a discrepancy).
	P_ACTIVE	The P_ACTIVE status will be applied to partially connected n x 64 Kbps BCON circuits through the echoed response process (ERP). P_ACTIVE status marks the n x 64 Kbps circuit when there is at least one disconnected cross-connect in the LEG circuit from ERP. The bandwidth in a P_ACTIVE LEG circuit is the number of ACTIVE (connected) cross-connects in that circuit.
	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 can 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. One 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.	

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

BBL ID	Appears when the **Ckt Class** is BRD. Mandatory, when activating a new BRD circuit. One through 41 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %, |. Blanks are allowed in the name, but leading and trailing blanks are ignored.
LEG Ckt ID	Appears when the action is ADDLEG, DELLEG, or CHGRPATH. When the Action is ADDLEG, this is a display-only field that is automatically filled in after the action is executed. One through 41 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %, |. Blanks are allowed in the name, but leading and trailing blanks are ignored.
Ckt Class	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.
	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.
	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; which 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).
	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 Site and local mode, you can not enter the FROM side NPC of any BRD, such as the virtual node. It is selected by the system. Up to 20 BRDs can be entered for one BBL.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

Ckt Class (Continued)	DMB	Digital multipoint bridge. Applies to single-channel, two-way, multipoint circuits. These circuits are complex; for example, 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. 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.
	BKB	A circuit is classified as a BKB class if it is being used as the backbone circuit in BCON provisioning.

	LEG	A circuit is classified as a LEG class if it is being used as the tributary circuit in BCON provisioning. LEG circuits have the same parameters as the BKB circuit that it belongs to except for the following:
		
		    Circuit ID
		    Circuit status
		    Circuit class
		    Service date
		
		If a LEG circuit is classified as P_ACTIVE, its bandwidth will be smaller than the bandwidth of its BKB circuit.

Dir	Optional. This field appears only when the action is ADDLEG or when browsing a BCON BKB. This field defines which side of the backbone is the source broadcast side, **FROM** or **TO**. Mandatory. This field is mandatory when the first leg is added to a FDX circuit which will become the BKB.	
NEW ID	New circuit ID. 1-41 characters. Appears only when the **Action** is MODIFY. One through 41 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %, |. Blanks are allowed in the name, but leading and trailing blanks are ignored.	

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

Bandwidth Type	Mandatory. Indicates how bandwidth is allocated in an NPC; valid entries are:
	C Contiguous A Alternating R Random
	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 C for a **Ckt Class** of DMB.
	You can scroll through the **FROM** and **TO** fields for information on the channel series by pressing $\boxed{\text{NEXT}}$. 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.
	This field disappears for clear DS1/E1 connections.
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. For the ADDLEG action, there is an identifier for the NPC of the leg channel. 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. For the ADDLEG action, there is an identifier for the NPC of the leg channel. Automatically provided if **Hier** or **NPC ID** was entered.
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. For the ADDLEG action, there is an identifier for the NPC of the leg channel.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

Ch	The FROM or TO channel number, `0-31` for CEPT or `1-24` for NAS. This field is displayed for contiguous or alternating circuits.
	
	Virtual channel numbers can range from `1` to `500`; however, one is automatically selected by the system during provisioning of virtual multipoint circuits.
	
	For the `ADDLEG` action there is an identifier for the LEG channel.
	For DMB circuits, the DMB-side **Ch** contains the conference number. It can range from `1` through `85` for DACS II.
	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**; for example, to cross-connect clear DS1 to DS0, the previously mentioned fields reappear and you get a warning message:
	
	`WARNING: Non-clear DS1 can not connect to`
	`Clear DS1 NPC.`

Mode	Appears only when the **Ckt Class** is `DMB`. Specifies the use of the preceding **Ch** in a DMB multipoint circuit. `SYM` The associated channel is to be used as the DMB side of a leg in a symmetric voice circuit. `BRD` The associated channel is to be used as the DMB side of a broadcast, or branch, leg of a polling data circuit. `BBL` The associated channel is to be used as the DMB side of the backbone leg of a polling data circuit. `LEG` The associated channel is to be used as an EFT in any leg of the circuit. A DMB channel must be in a DMB NPC.
Bandwidth	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. For NAS NPCs, the available bandwidth is `1-24` channels; for CEPT NPCs, the available bandwidth is `1` through `32` channels. If not specified, **Bandwidth** defaults to `1` channel. It is set to `1` for a **Ckt Class** of `DMB`. The bandwidth of a random circuit must be greater than 1. This field disappears for clear DS1/E1 connections.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

Options	
Options	Optional. 0 through 7 characters. Names options for activating, deleting, or deactivating the circuit. When you press CHOICES to see the menu of **Options**, SELECT and UNSELECT function keys appear. The CHOICES menu for this field is a multiselect 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.

> **NOTE:**
> Only RDLD, OOS, and INCL are available for clear DS1/E1 circuits.

The choices are as follows. If you type into the field, use only the letter.

A   NAM. No a-to-mu law conversion is to be applied to the circuit if it is CEPT only; for example, if it is not a gateway.

B   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   RDLD. 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 RDLD, all legs must be. This condition applies only to DACS II.

D   OOS. Out of service. A disconnect is to be effected when the NPC at one or both ends of the circuit are OOS.

E   INCL. Included. Authorizes disconnects of RDLD circuits.

> **NOTE:**
> This INCL keyword applies to a DACS II disconnect only. The INCL keyword (like the CUS keyword) from a DACS II connect is not supported.

F   DCC. Disconnect channel code. Causes the frame to assert the user-defined disconnect code (specified in the **IW** field) on disconnected channels.

G   TLA. Terminate and Leave Activated. If it is unselected, TLR, Terminate and Leave Released is to be in effect for this circuit.

Table 6-1. **CIRCUIT PROVISIONING Field Descriptions (Contd)**

Options (Continued)	➤ **NOTE:** TLR is the normal state for traffic-carrying circuits. It means that the circuit is not terminated. (Terminate and Leave released. Refer to ''Introduction'' in this chapter and Chapter 15, "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 frame 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 frame back to TLR, send the command again. You would have to reset this field manually to TLA to override this automatic reversal. ➤ **NOTE:** The unassigned **IW**, 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 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.
F_CH	Mandatory. These FROM channel fields appear when the bandwidth is Random (up to 32 fields each).
T_CH	Mandatory. These TO channel fields appear when the bandwidth is Random (up to 32 fields each).
L_CH	Mandatory. These LEG channel fields appear when a bandwidth is Random and the action is ADDLEG.
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. DDC 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.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

TC (Continued)	The trunk-conditioning code is:
	`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.

⇒ **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`.

⇒ **NOTE:**
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 previous 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 can type it on the **TC** line. However, the syntax must be correct or the frame 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.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

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: `TRB` Insert the standard trouble code, Hex E4, or 11100100. You can also enter `X-E4`. `MUX` Insert the MUX out-of-sync code, Hex 1A, or 00011010. You can 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 can 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:
	
	 `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 frame may deny the command.
	
	 This field disappears for clear DS1/E1 connections.

Table 6-1.   CIRCUIT PROVISIONING Field Descriptions (Contd)

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 Introduction to this chapter. abcdefg**,** hijklmn An arbitrary bit pattern of `0s` and `1s`, where abcdefg is the pseudo-FW in the TO-FROM direction and hijklmn 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. `NFW` Use the NFW in channel 0 of all time frames.
Loc A	Optional. Up to 24 characters. The Station ID of the FROM side of the circuit being provisioned. This field is informational only.
Loc Z	Optional. Up to 24 characters. The Station ID of the TO side of the circuit being provisioned. This field is informational only.
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 `C2000` identifies circuits created by the DACScan-2000 Controller C-Module. An automatically supplied value of `ERP` identifies circuits created by the ERP feature.

Service Date	Three fields. Enter the date the circuit is first placed into service. The format is:
	
	       dd mmm yy
	
	dd 1 or 2 digits that represent the day. Days 1 through 9 do not have to be entered as 01 through 09.
	mmm The first three letters of the month, as in `Jan, Feb, Mar, ...`
	       `Dec.` Upper- or lower-case or any combination is acceptable.
	
	yy The last two digits of the year. Entries of `90` through `99` are for the years 1990 through 1999. Entries of `00` through `89` are for the years 2000 through 2089.
	
	For example,
	
	    `01 Dec 97`
	The default date is today's date.

Ckt Priority	Optional. 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 can not be assigned more than one CP. The default is `00`.
Rmks	Optional. 0-72 characters. A user-defined informational field. An I-2000 operator can enter informational comments.

Summary of Fields And Values

Field values for CIRCUIT PROVISIONING are described in Table 6-2.

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, ALTROUTE,NORMALIZE, BROWSE,COMBINE, ADDLEG, DELLEG,` and `CHGRPATH.`
Ckt Status	11	`NULL, PENDING, DEACTIVATED,ALTROUTED, PRE-EMPTED, ACTIVE, DEROUTED,` and `P_ACTIVE.`
Ckt ID*	41	All printable characters except *, ?, \, [,], ^, ", %, |.
BBL ID	41	Previously activated.
NEW ID	41	All printable characters except *, ?, \, [,], ^, ", %, |.
LEG Ckt ID	41	All printable characters except *, ?, \, [,], ^, ", %, |.
Ckt Class †	3	`FDX, HDX, BBL, BRD, DMB, BKB,` and `LEG.`
Dir	1	`F, T`
Hier	5	xxyzz, xx is `01-16`, y is `1-8`, zz is `01-40`.
Ext	4	`1-x`, depending on the frame type and hardware configuration.
NPC ID*	41	All printable characters except *, ?, \, [,], ^, ", %, |.
Ch†	3	`00-24` NAS, `00-31` CEPT, `1-500` virtual, `1-85` DMB with DACS II.
Mode†	3	`SYM, BRD, BBL,` and `LEG`
Bandwidth†	2	`1-24` NAS, `1-31` CEPT.
Bandwidth Type†	1	`A, C, or R`
Options**	7	`A-G.` (applies only to `A-C`).
NTR**	1	`F,T`
F_CH	3 (up to 32 fields)	`000-031`
T_CH	3 (up to 32 fields)	`000-031`

Table 6-2.   Summary of CIRCUIT PROVISIONING Field Values (Contd)

Name	Field Size	Values
L_CH	3 (up to 32 fields)	`000-031`

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	15	abcdefg,hijklmn where a letter is `0` or `1`. Alternatively, `NFW`.
Loc A	24	All printable characters except *, ?, \, [,], ^, ", %, |.
Loc Z	24	All printable characters except *, ?, \, [,], ^, ", %, |.
Customer Name	12	All printable characters except *, ?, \, [,], ^, ", %,|.
Service Date	7	dd mmm yy
Ckt Priority	2	`a-z, A-Z, 0-9`
Rmks	72	All printable characters except	(pipe).

* Mandatory field
** Traffic-affecting field
† Both Mandatory and Traffic-affecting fields

Circuit Provisioning Examples

In I-2000 you can provision various types of circuits, such as:

- Full duplex
- Clear DS1/E1
- Half duplex
- BCON circuits
- Loopback
- High rate from multiple circuits
- Virtual multipoint
- DMB multipoint
- Polling data

The examples that follow describe 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 frame databases.*

**Example: Circuit Provisioning,
Full-duplex Circuit**

One CIRCUIT PROVISIONING form is required to provision a two-way, two-point circuit of **Ckt Class** FDX. Figure 6-4 shows a sample of a full duplex circuit.

➡ **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.
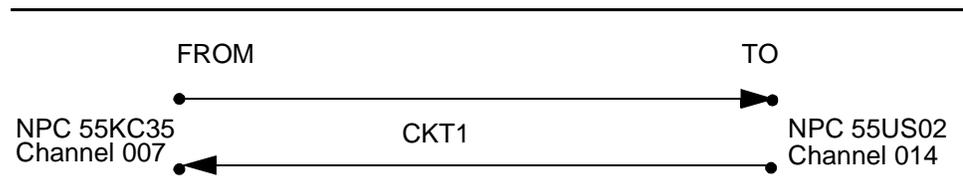
Figure 6-4.   Sample Full-duplex Circuit

To provision a full duplex circuit, follow these steps:

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.

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 can 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.

   — **Bandwidth Type**: A

   — **FROM NPC ID**: 55KC35

   — **FROM Ch**: 007

   — **TO NPC ID**: 55US02

   — **TO Ch**: 014

   — **Bandwidth**: 1

   — **TC**: 0011,0011

— **IW**: TRB

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. In addition, the command completed successfully message is displayed.

Example: Circuit Provisioning, 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, as shown in Figure 6-5.

⇒ **NOTE:**
A clear DS1/E1 NPC can only connect to another clear DS1/E1 NPC.
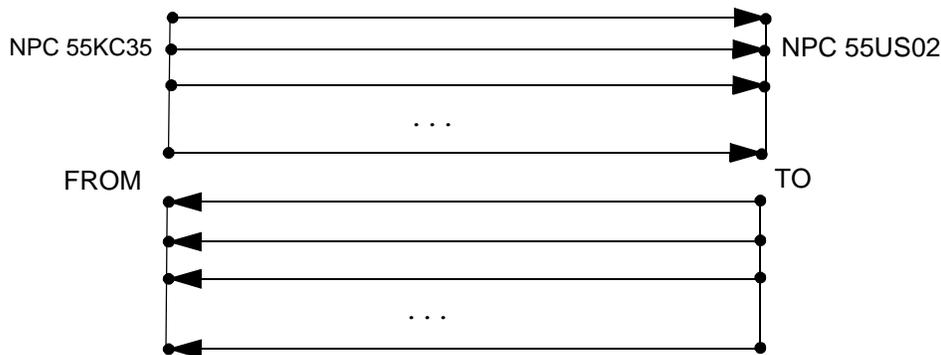
Figure 6-5.   Sample Clear DS1 Full-duplex Circuit

To provision a circuit with a clear DS1 full duplex circuit, follow these steps:

1. Select PROVISIONING from the MAIN MENU and then select CIRCUIT from the PROVISIONING menu.

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.

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. In addition, the command completed successfully
message is displayed.

Example: Circuit Provisioning, Half-duplex Circuit

One CIRCUIT PROVISIONING form is required to provision a one-way, two-point
circuit of **Ckt Class** HDX. Figure 6-6 shows trunk conditioning is specified and the
circuit is TLR (not terminated); for example, it will carry normal traffic.

FROM   TO

NPC 55KC35   CKT1   NPC 55US02
Channel 007   Channel 014
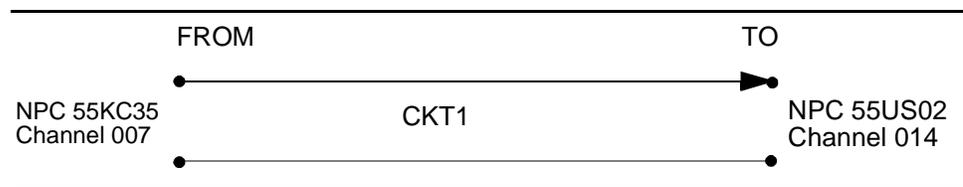
Figure 6-6. **Sample Half-duplex Circuit**

To provision a circuit with a half-duplex circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

— **Site Name**: DACS00

— **Action**: ACTIVATE

— **Ckt ID**: CKT1

— **Ckt Class**: HDX

— **Bandwidth Type**: A

— **FROM NPC ID**: 55KC35

— **FROM Ch**: 007

— **TO NPC ID**: 55US02

— **TO Ch**: 014

— **Bandwidth**: 1

— **TC**: ----,0011

— **IW**: TRB

3. Press ⌈EXECUTE⌉ and select IMMEDIATE. The result is:

— The **Ckt Status** field changes from NULL to ACTIVE.

— The command completed successfully message is displayed.

— Transmission is shut off toward the FROM direction.

— Transmission is shut off toward the TO direction.

Example: Circuit Provisioning, Half-Duplex Loopback Circuit

One CIRCUIT PROVISIONING form is required to provision a half-duplex loopback circuit. 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, as shown in Figure 6-7.

Figure 6-7.   Sample Half-Duplex Loopback Circuit

To provision a circuit with a loopback circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

— **Site Name**: DACS00

— **Action**: ACTIVATE

— **Ckt ID**: CKT1

— **Ckt Class**: HDX

— **Bandwidth Type**: A

— **FROM NPC ID**: 55KC35

— **FROM Ch**: 007

— **TO NPC ID**: 55KC35

— **TO Ch**: 007

— **Bandwidth**: 1

   — **TC**: ----,0011

   — **IW**: TRB

 3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** field changes from NULL to ACTIVE. In addition, the command completed success-fully message is displayed.

Example: Circuit Provisioning, Full-Duplex Loopback Circuit

One CIRCUIT PROVISIONING form is required to provision a full-duplex loopback circuit. 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, as shown previously in Figure 6-7.

⇒ **NOTE:**
The full-duplex loopback circuit is *only* available when the environment variable FDX_LOOP_CKT is set to 1. For more information on environment variables, refer to Chapter 2 "Getting Started."

To provision a circuit with a loopback circuit, follow these steps:

 1. Select CIRCUIT from the PROVISIONING menu.

 2. Enter the following data:

   — **Site Name**: DACS00

   — **Action**: ACTIVATE

   — **Ckt ID**: CKT1

   — **Ckt Class**: FDX

   — **Bandwidth Type**: A

   — **FROM NPC ID**: 55KC35

   — **FROM Ch**: 007

   — **TO NPC ID**: 55KC35

   — **TO Ch**: 007

   — **Bandwidth**: 1

   — **TC**: 0011,0011

   — **IW**: TRB

 3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** field changes from NULL to ACTIVE. In addition, the command completed success-fully message is displayed.

**Example: Circuit Provisioning, Full-Duplex
Random Loopback Circuit**

One CIRCUIT PROVISIONING form is required to provision a full-duplex loopback circuit. The FROM and TO sides must be the same channel of the same NPC. The cross-connect must be FDX. The Tx then loops around to the Rx of the same channel.

⇒ **NOTE:**
The full-duplex loopback circuit is *only* available when the environment variable FDX_LOOP_CKT is set to 1. For more information on environment variables, refer to Chapter 2 "Getting Started."

To provision a FDX circuit with a random loopback circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS00

   — **Action**: ACTIVATE

   — **Ckt ID**: CKT1

   — **Ckt Class**: FDX

   — **Bandwidth Type**: R

   — **FROM NPC ID**: 55KC35

   — **TO NPC ID**: 55KC35

   — **Bandwidth**: 4

   — **F_CH:** 10 11 13 25

   — **T_CH:** 10 11 13 25

   — **TC**: X-FF, X-FF

   — **IW**: FF

3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** field changes from NULL to ACTIVE. In addition, the command completed successfully message is displayed.

**Example: Circuit Provisioning, 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 10, Database Administration.)

The technical reason for this anomaly during synchronization is that the frame, when queried by the I-2000 for its cross-connect map, cannot provide information that *n* DS0 cross-connects were actually *nx*DS) 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 frame.

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:

```
SYN from_npc-from_ch to_npc-to_ch BW/01 FDX:000
```
where:

from_npc   is the FROM NPC number in hierarchical or extended format, depending on how the frame was provisioned.

from_ch   is the FROM channel number.

to_npc   is the TO NPC number in hierarchical or extended format.

to_chan   is the TO channel number.

You should verify that the source circuits conform to the requirements for a successful COMBINE. These requirements are started 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:

```
SYN from_npc *
```

■ Obtain a display, which you can print with the PRINT key, through the BROWSE **Action** of the CIRCUIT PROVISIONING form. Use the same search string in the **Ckt ID** field.

To combine single-channel circuits, follow the example below. 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 this step is not necessary. You could enter the information for the combined circuit independently.

1. Verify the range of the single-channel circuits.

   In this example, the **Ckt ID** search string is SYN 000* which lists the following:

   ```
   SYN 0001-001 ...BW/01 FDX:00
   ```

```
SYN 0001-002 ...BW/01 FDX:00

...

SYN 0001-024 ...BW/01 FDX:00
```

2.   Select CIRCUIT from the PROVISIONING menu.

3.   Recall the first circuit to the screen:

— **Site Name**: DACS00

— **Ckt ID**: SYN 0001-002 ... BW/01 FDX:000

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

5.   Press EXECUTE and select Y or IMMEDIATE. The source circuits are deleted. In addition, the command completed successfully message is displayed, indicating that the combined circuit has been created successfully.

NOTE:
If a time-out message appears, the COMBINE may be in-progress. If full-Bandwidth COMBINEs are issued simultaneously, on different terminals, all but one are placed on queue and timeout messages may appear while there are in the queue. They are then executed successively after completion of the first one. A full-Bandwidth COMBINE requires over a minute to complete. Lower-rate COMBINEs require less time.

Example: Circuit Provisioning, Virtual Multipoint Circuits

To visualize the virtual multipoint, broadcast model, imagine a black box with one input and multiple outputs, as shown in Figure 6-8.
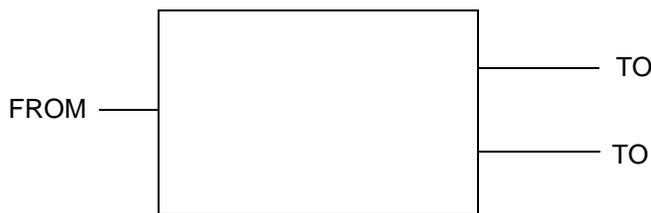
Figure 6-8.   Ideal Broadcast Circuit

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 frame does not accept the command. A successful circuit must contain NPCs that are all `IS`.

Figure 6-9 shows an example of a broadcast circuit. 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**.
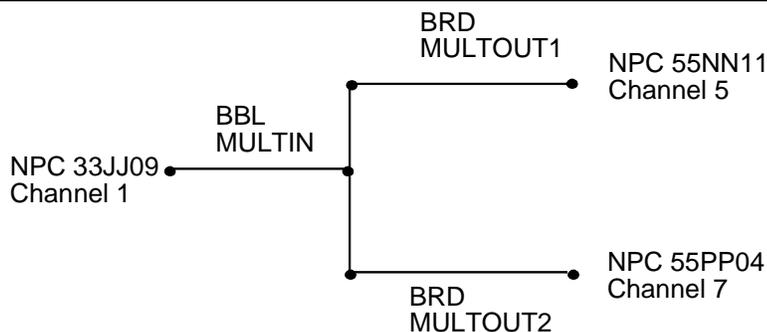
Figure 6-9.   Sample Broadcast Circuit

To provision a circuit with virtual multipoint circuits, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS01

   — **Action**: ACTIVATE

   — **Ckt ID**: MULTIN

   — **Ckt Class**: BBL

   — **Bandwidth Type**: C

   — **FROM NPC ID**: 33JJ09

   — **FROM Ch**: 001

$\Longrightarrow$ **NOTE:**
   Note that you cannot access the **TO** fields.

   — **Bandwidth**: 1

   — **TC**: TRSP

   — **IW**: FF

3. Enter or select values for any other relevant data fields for this circuit (the rest are primarily informational).

4. Press EXECUTE and select IMMEDIATE, or use the RECNCILE key with EXECUTE. The **Ckt Status** field displays ACTIVE and the The virtual node appears in the TO fields. In addition, the command completed successfully message is displayed.

5. 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.

— **Bandwidth Type**: C

You must enter C.

— **TO NPC ID**: 55NN11

— **TO Ch**: 005

— **Bandwidth**: 01

You must enter the same **Bandwidth** as the BBL.

— **TC**: TRSP

— **IW**: FF

6. Press EXECUTE and select IMMEDIATE. The **Ckt Status** changes to ACTIVE. In addition, the command completed successfully message is displayed.

7. Enter the following fields to provision the other BRD.

— **Ckt ID**: MULTOUT2

— **Ckt Class**: BRD

— **BBL ID**: MULTIN

— **Bandwidth Type**: C

— **TO NPC ID**: 55PP04

— **Bandwidth**: 01

— **TC**: TRSP

— **IW**: FF

8. Press EXECUTE and select IMMEDIATE. The **Ckt Status** changes to ACTIVE. In addition, the command completed successfully message is displayed.

Example: Circuit Provisioning, DMB Multipoint Circuits

➡ **NOTE:**
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.

Figure 6-10 shows an example of a symmetric voice circuit.
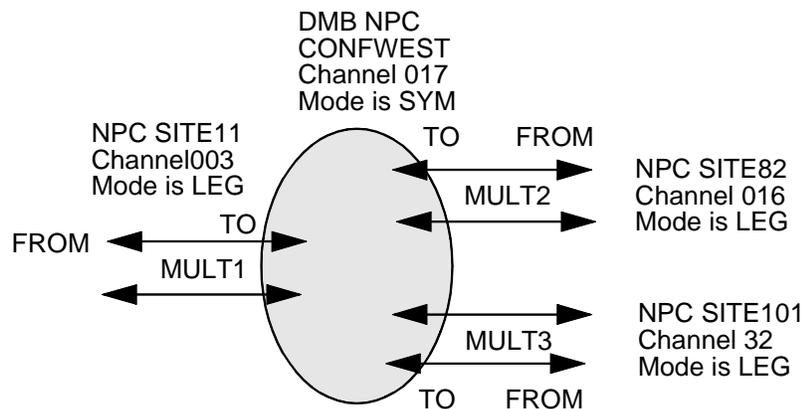
Figure 6-10.   Sample Symmetric Voice Circuit

In this example, three CIRCUIT PROVISIONING forms are required. Each form must have a different **Ckt ID**.

To provision a circuit with DMB multipoint circuits, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

    — **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

3. Enter or select values for any other relevant data fields.

4. Press ⬚EXECUTE and confirm. The **Ckt Status** changes to ACTIVE. In addition, the command completed successfully message is displayed.

5. 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

6. Press ⬚EXECUTE and confirm. The **Ckt Status** displays ACTIVE. In addition, the command completed successfully message is displayed.

7. 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

8. Press ⬚EXECUTE and confirm. The **Ckt Status** displays ACTIVE. In addition, the command completed successfully message is displayed.

Procedure: Circuit Provisioning, Polling Data Circuit

Figure 6-11 shows an example of a polling data circuit. This figure is essentially the same as Figure 6-10; however, it is strictly conventional. The Tx direction of the backbone does not really go through the DMB NPC.
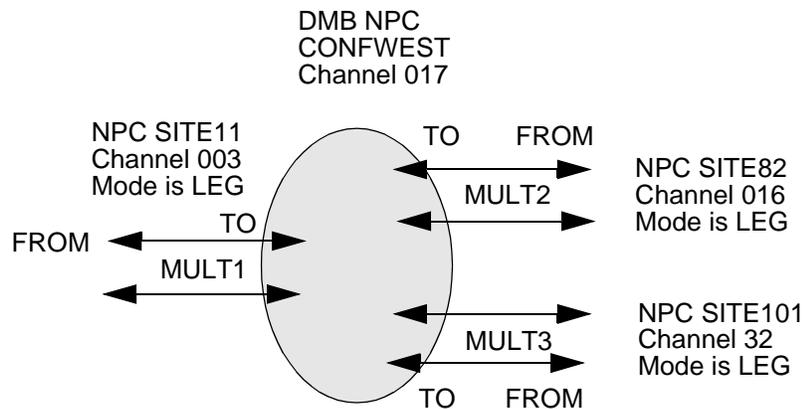
Figure 6-11.   **Sample Polling Data Circuit**

In this example, three CIRCUIT PROVISIONING forms are required. Each form must have a different **Ckt ID**.

To provision a circuit with a polling data circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

    — **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

3. Enter or select values for any other relevant data fields.

4. Press EXECUTE and confirm. The **Ckt Status** displays `ACTIVE`. In addition, The `command completed successfully` message is displayed.

5. 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`

6. Press EXECUTE and confirm. The **Ckt Status** displays `ACTIVE.` In addition, the `command completed successfully` message is displayed.

7. 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`

8. Press EXECUTE and confirm. The **Ckt Status** displays `ACTIVE`. In addition, the `COMMAND COMPLETED SUCCESSFULLY` message is displayed.

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, as shown in Table 6-3.

⇛ **NOTE:**
DMB is supported *only* for the DACS II.

Table 6-3.   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 (170 per pack)	2720	512
DACS II (CEF)	1-85 (170 per pack)	10880	512

⇛ **NOTE:**
* If you assume eight DMB packs per DSPU per frame, and two DSPUs per frame, the maximum number of conferences is 170x8x2, or 2720.

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.

Figure 6-12 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.
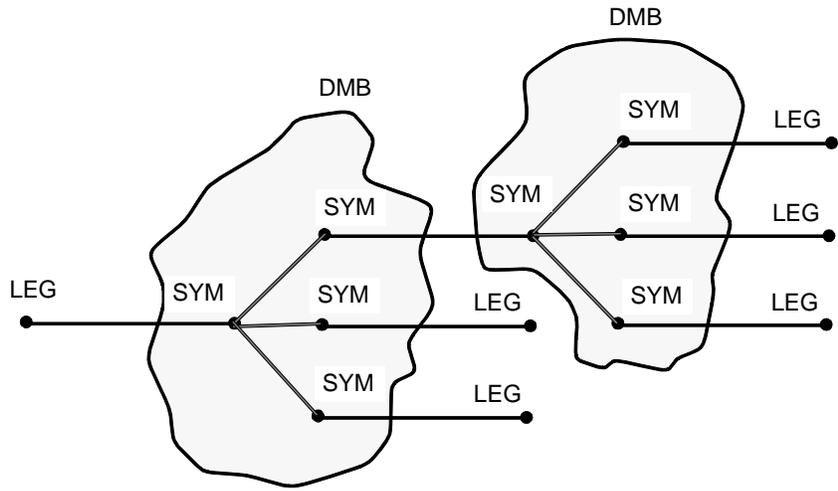
Figure 6-12.   Cascaded Symmetric Voice Circuit

Using Figure 6-12 as an example, 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.

Figure 6-13 represents a single polling data circuit for comparison purposes.
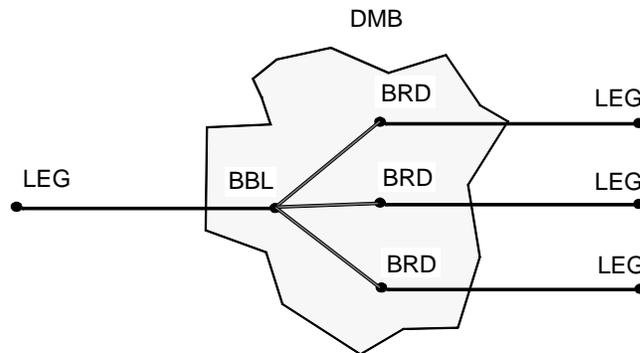
Figure 6-13.   Single Polling Data Circuit

Notice that the same DMB NPC and channel are labeled BBL in one form abd BRD in three forms.

Figure 6-14 shows two polling data circuits cascaded through the backbone legs.
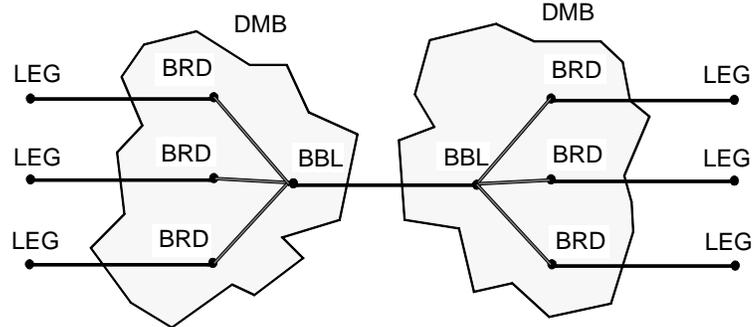
Figure 6-14.   BBL-to-BBL Cascaded Polling Data Circuit

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.

Figure 6-15 shows an example of a BBL to BRD cross-connect.
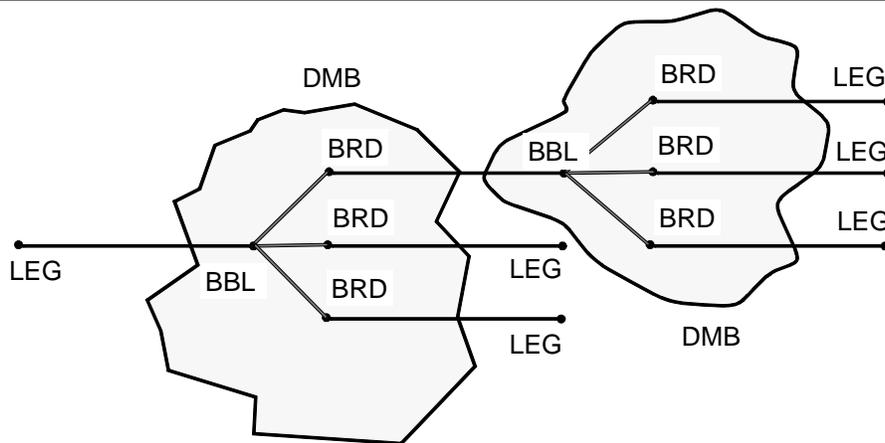
Figure 6-15.   BBL-to-BRD Cascaded Polling Data Circuit

From this figure, 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.

BCON Circuits

BCON circuits provide the capability to provision multi-point circuits. For additional information on BCON circuits, refer to *DACS II Release 7.1 MML Operation and Maintenance Manual* or *DACS II ISX Release 2.1 MML Operation and Maintenance Manual*.

A BCON circuit cannot be created directly through the I-2000 user interface, however a BCON circuit can be directly created by an ERP. To create a BCON circuit through the I-2000 user interface, create a Full Duplex circuit and add a LEG. The Full Duplex circuit will be converted to a BCON. Similarly, when the last LEG of a BCON circuit is deleted through the I-2000 user interface, the remaining backbone will be converted back to a Full Duplex circuit automatically.

Example: Adding a LEG to a Full-Duplex Contiguous 64 Kbps Circuit

To add a LEG to a contiguous 64 Kbps circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: `DACS00`

   — **Action**: `ADDLEG`

   – **BKB Ckt ID**: `CKT2`

   — **LEG NPC ID**: `55US02`

   — **LEG Ch**: `002`

   — **Dir:** `F`

3. Press EXECUTE and select `IMMEDIATE`. The **Ckt Status** field changes from `NULL` to `ACTIVE`. In addition, the `command completed success-fully` message is displayed. The **LEG Ckt ID** field will be filled in automatically after the form executes.

Figure 6-16 shows an example of the CIRCUIT PROVISIONING form when the action selected is `ADDLEG`.

The **Circuit Class** field is hidden when the action is `ADDLEG`.

```
06:15 01 Nov 1997        I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                          CIRCUIT PROVISIONING
 Site Name:DACS00
 Action :ADDLEG                              Ckt Status:
 BKB Ckt ID:CKT2                              Ckt Class :
 LEG Ckt ID:                                 Bandwidth Type: C
        Hier     Ext       NPC ID                    Ch   dir
 FROM: 01104    0004    55KC35                        001
 TO:   01105    0005    55US02                        001
 LEG:  01105    0005    55US02                        002 FSIDE
 Bandwidth:01          Options:




                        Service Date: 01 Nov 97


  — Enter the service data as 'DD MMM YY'

  HELP  |        | NEXT PAGE | QUIT      RECNCILE | TOP MENU | PRINT | EXECUTE
```

Figure 6-16.   CIRCUIT PROVISIONING Form, Adding a LEG for Contiguous Circuits

Example: Adding a LEG to a Random Bandwidth 4 Circuit

To add a LEG to a random 64 Kbps circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

— **Site Name**: DACS00

— **Action**: ADDLEG

— **BKB Ckt ID**: CKT1

— **LEG NPC ID**: 55US02

— **Dir:** F

— **L_CH:** 2 9 11 17

3. Press $\boxed{\text{EXECUTE}}$ and select IMMEDIATE. The **Ckt Status** field changes from blank to ACTIVE. In addition, the command completed success-fully message is displayed. The **LEG Ckt ID** field will be filled in automatically after the form executes.

Figure 6-17 shows an example of the CIRCUIT PROVISIONING form when the action selected is ADDLEG.

$\Longrightarrow$ **NOTE:**
The **Circuit Class** field is hidden when the action is ADDLEG.

```
06:15 01 Nov 1997          I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                          CIRCUIT PROVISIONING
 Site Name:DACS00
 Action :ADDLEG                          Ckt Status:
 BKB CKT ID:CKT1                            Ckt Class :
 LEG Ckt ID:                              Bandwidth Type: R
       Hier      Ext        NPC ID                     dir
 FROM:  01104     0004       55KC35
 TO:    01105     0005       55US02
 LEG:   01105     0005       55US02                    FSIDE
 Bandwidth: 1           Options:
 F_CH:003 007 009 010

 T_CH:005 006 008 010

 L_CH: 002 009 011 017


                          Service Date: 01 Nov 97


  Enter the first fifteen characters of the BCON backbone ID

   HELP              NEXT PAGE   QUIT        RECNCILE  TOP MENU   PRINT   EXECUTE
```

Figure 6-17.   CIRCUIT PROVISIONING Form, Adding a LEG for Random Circuits

Example: Adding a LEG to a Clear E1 Circuit

To add a LEG to a clear E1 circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS00

— **Action**: ADDLEG

— **BKB Ckt ID**: CKT3

— **LEG NPC ID**: NPC3

— **Dir**: T

3. Press ⌷EXECUTE⌷ and select IMMEDIATE. The **Ckt Status** field changes from blank to ACTIVE. In addition, the command completed success-fully message is displayed. The **LEG Ckt ID** field will be filled in auto-matically after the form executes.

Figure 6-18 shows an example of the Circuit Provisioning Form when the action selected is ADDLEG.

⇒ **NOTE:**
The **Circuit Class** field is hidden when the action is ADDLEG.

```
06:15 01 Nov 1997        I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                         CIRCUIT PROVISIONING
  Site Name: DACS00
  Action :ADDLEG                          Ckt Status:
  BKB Ckt ID: CKT3                        Ckt Class:
  LEG Ckt ID:
       Hier        Ext          NPC ID              Ch dir
  FROM: 01101     0001    NPC1                      E1
  TO:   01102     0002    NPC2                      EI
  LEG:  01103     0003    NPC3                      E1 TSIDE

                         Options:




                         Service Date: 01 Nov 97

  ─ Enter the service data as 'DD MMM YY'

  HELP  │        │ NEXT PAGE │ QUIT │  RECNCILE │ TOP MENU │ PRINT │ EXECUTE
```

Figure 6-18.   CIRCUIT PROVISIONING Form, Adding a BKB for E1 Circuits

Example: Modifying a BKB From an Existing Circuit

To modify a BKB from an active circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS00

   — **Action**: MODIFY

   — **BKB Ckt ID**: CKT3

   — **New ID**: NEWCKT3

3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** field changes from blank to ACTIVE. In addition, the command completed success- fully message is displayed. When you change the **Ckt ID** field of a **BKB**, all **LEG Ckt ID**s will be updated automatically.

Figure 6-19 shows an example of the CIRCUIT PROVISIONING form when the action selected is MODIFY.

➡ **NOTE:**
The **Circuit Class** field is hidden when the action is ADDLEG.

➡ **NOTE:**
The BKB Circuit ID can be modified. No other parameters can be changed. When a BKB Circuit ID is modified, the base name of all corresponding LEG circuits will also be modified.

```
06:15 01 Nov 1997        I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ┌──────── CIRCUIT PROVISIONING ────────┐
 Site Name: DACS00
 Action:MODIFY                              Ckt Status: ACTIVE
 Ckt ID:CKT3                                Ckt Class:BKB
 New ID: NEWCKT3
        Hier      Ext       NPC ID                   Ch
 FROM: 01101     0001      NPC1                       E1
 TO:   01102     0002      NPC2                       E1


                             Options:



 Loc A:                  Loc Z:
 Customer Name:          Service Date: 01 Nov 97   Ckt Priority:00
 Rmks:
  Enter the next fifteen characters of New Circuit

 ┌──────┐ ┌──────┐ ┌─────────┐ ┌──────┐   ┌─────────┐ ┌─────────┐ ┌───────┐ ┌─────────┐
 │ HELP │ │      │ │NEXT PAGE│ │ QUIT │   │RECNCILE │ │TOP MENU │ │ PRINT │ │ EXECUTE │
 └──────┘ └──────┘ └─────────┘ └──────┘   └─────────┘ └─────────┘ └───────┘ └─────────┘
```

Figure 6-19.   CIRCUIT PROVISIONING Form, Modifying a BKB E1 Circuits

Example: Deleting a LEG from a BCON Circuit

To delete a LEG from an active circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS00

   — **Action**: DELLEG

   — **LEG Ckt ID**: CKT2 01

3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** field changes from to ACTIVE to NULL. In addition, the command completed successfully message is displayed.

Figure 6-20 shows an example of the CIRCUIT PROVISIONING form when the action selected is DELLEG.

```
06:15 01 Nov 1997          I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                            CIRCUIT PROVISIONING
 Site Name:  DACS00
 Action:DELLEG                              Ckt Status: ACTIVE
                                             Ckt Class: LEG
                                             Bandwidth Type: C
 LEG Ckt ID: CKT2 01
        Hier     Ext            NPC ID              Ch
 FROM:  01104    0004    55KC35                     001
 TO:    01105    0005    55US02                     002
 Bandwidth: 01                  Options:




                             Service Date: 01 Nov 97


 — Enter the first fifteen characters of the BCO leg ID —

  HELP              NEXT PAGE   QUIT        RECNCILE  TOP MENU   PRINT   EXECUTE
```

**Figure 6-20.   CIRCUIT PROVISIONING Form, Deleting a LEG
                  from a BKB Circuit**

Example: Changing the Return Path of a BCON Circuit

To change the return path of an active BCON circuit, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS00

   — **Action**: CHGRPATH

   — **LEG Ckt ID**: CKT2 01

3. Press EXECUTE and select IMMEDIATE. The command completed
   successfully message is displayed.

Figure 6-21 shows an example of the CIRCUIT PROVISIONING form when the
action selected is CHGRPATH.

```
06:15 01 Nov 1997         I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                          CIRCUIT PROVISIONING
  Site Name: DACS00
  Action:CHGRPATH                          Ckt Status: ACTIVE
                                             Ckt Class: LEG
                                               Bandwidth Type: C
  LEG Ckt ID: CKT2 01
         Hier     Ext            NPC ID            Ch
  FROM:  01104    0004    55KC35                   001
  TO:    01105    0005    55US02                   002
  Bandwidth:01              Options:




                            Service Date: 01 Nov 97



  Enter the first fifteen characters of the BCON leg ID
```

| HELP | | NEXT PAGE | QUIT | | RECNCILE | TOP MENU | PRINT | EXECUTE |

**Figure 6-21.   CIRCUIT PROVISIONING Form, Changing the Return
Path of a BCON Circuit**

TS0 to Non-TS0 Circuits

The I-2000 allows you to provision a circuit between a TS0 and non-TS0. One
side of the termination must be a TS0 on a channelized PA type NPC and the
other termination must be a channel/time slot other than TS0 on the channelized
CEPT NPC. In addition, the circuit class must be set to FDX. In order to provision
this type of circuit, the framing field must be specified.

Example: Provisioning TSO to Non-TSO Circuits

To provision TS0 to Non-TS0 circuits, follow these steps:

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.

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 can to fill in **Hier** or **Ext** instead of **FROM NPC ID** or **To NPC ID**, shown next. Whichever of the three fields you pick, the values of the other two are filled in automatically.

- — **Bandwidth Type**: `C`
- — **FROM NPC ID**: `55KC35`
- — **FROM Ch**: `000`
- — **TO NPC ID**: `55US02`
- — **TO Ch**: `014`
- — **Bandwidth**: `1`
- — **TC**: `0011,0011`
- — **IW**: `TRB`
- — **Framing**: `NFW`

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` and the **Framing** changes to `NFW`. In addition, the `command completed successfully` message is displayed.

Circuit Provisioning ERP

Echoed response processing (ERP) is an autonomous circuit provisioning feature; for example, it is not under menu control. An echoed response is a message that is sent from a frame to the I-2000 when the I-2000 does not expect a response; for example, when a change in frame circuit provisioning has been entered through the frame console or by some other means not initiated on the I-2000. Such provisioning means that the frame and I-2000 databases no longer correspond.

The I-2000, is designed to respond to the following types of frame output messages:

Table 6-4.   ERP Messages

ERP Message Number	Message Description
0.11001	connection of two-way or a range of cross-connect circuits
0.11011	connection of two-way clear DS1/E1 circuits
0.11021	connection of two-way multipoint circuits
0.11101	connection of one-way or a range of cross-connect circuits
0.11121	connection of one-way multipoint or a range of cross-connect circuits
0.11131	connection of one-way clear DS1/E1 circuits
0.13001	addition of up to eight legs for BCON circuits
0.13002	addition of one leg for a BCON circuit
0.13011	addition of up to eight clear legs for BCON circuits
0.13021	addition of one clear leg for a BCON circuit
0.15001	disconnection of a two-way or a range of cross-connect circuits
0.15002	disconnection of two-way or a range of cross-connect circuits
0.15011	disconnection of two-way clear DS1/E1 circuits
0.15101	disconnection of one-way circuits
0.15111	disconnection of one-way clear DS1/E1 circuits
0.15102	disconnection of one-way multipoint or a range of cross-connect circuits
0.15201	disconnection of one leg for a BCON circuit
0.15211	disconnection of up to eight legs for a BCON circuit
0.15221	disconnection of up to eight clear legs for a BCON circuit
0.15231	disconnection of one clear leg for a BCON circuit
0.18001	change the return path for up to eight BCON circuits
0.18011	change the return path for up to eight clear circuits

You can 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 ON, 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 OFF, the I-2000 responds fully to every message of this type.

The I-2000 automatically activates or deletes one-way, two-way, virtual multipoint, DMB multipoint, or BCON 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 the I-2000 must activate a circuit that is not in the I-2000 database at all, it automatically assigns a **Ckt ID** of the following format:

> **ERP** 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.
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 circuit class

If an ERP message indicating a disconnect has occurred, I-2000 will delete the circuit using the same **From** point and **To** point. 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 frame does not recognize high-rate circuits with an alternating or random type of bandwidth. If the I-2000 receives a deactivation message for a circuit included in such a bandwidth, it deletes 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. For more information, refer to Chapter 14 "Report Operations."

As with 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.
	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.

For BCON ERP messages which result in the addition or modification of LEGs to an existing BCON circuit, the standard LEG circuit naming is used. However, for new BCON circuits that have been created via ERP, the I-2000 assigns a **Ckt ID** of the following format:

BRP fromnpc-fromchan tonpc-tochan **BW**

Procedure: Disabling Echoed Response Processing

Echoed response processing for circuits and equipment are enabled whenever a frame screening level is set to 4. Refer to "Configuring the Frame" in Chapter 2 "Getting Started." Echoed response processing can be disabled for a particular frame by changing the link screening options in the frame.

To disable echoed response processing, follow these steps:

1. Enter passthrough mode (refer to Chapter 13 "Passthrough.")

2. Type the following command to 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;
```

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 frame database, necessitating that you periodically perform a database audit followed by a database synchronization. For more information, refer to Chapter 10 "Database Administration."

Subrate Provisioning

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Introduction

⇒ **NOTE:**
   The subrate application described in this chapter is *only* for DACS II ISX.

There is a growing market to support Digital Data Networks (DDNs) at the 2.4, 4.8, 9.6, and 19.2 kbit/s rates. The I-2000 supports these digital data rates by being able to cross-connect individual DDN circuits and the ability to connect to multiplexed DNN circuits and individual DNN circuits.

The following subrate circuits are supported by the I-2000:

- **X.50**—A 64 kbit/s circuit that carries a number of multiplexed circuits of lower data rates using the International Telecommunications Union (ITC) X.50 recommendation.

- **X.57**—DACS II ISX supports these data rates by cross connecting individual DNN circuits and the ability to connect to individual or multiplexed DNN circuits.

The subrate application requires the use of the Digital Signal Processing Platform (DSPP), which consists of both hardware and software. The hardware consists of the Digital Signal Processing (DSP) TG193 circuit pack. The software that runs on the DSPP is referred to as application software because DACS II ISX treats it as a separate application.

Cross-Connection Architecture

X.50 and X.57 circuits are all cross-connected to a DSPP circuit pack (TG193), which performs the function of demultiplexing and multiplexing customer circuits that are being carried on the X.50 and X.57 circuits. Figure 7-1 illustrates this cross connection architecture.
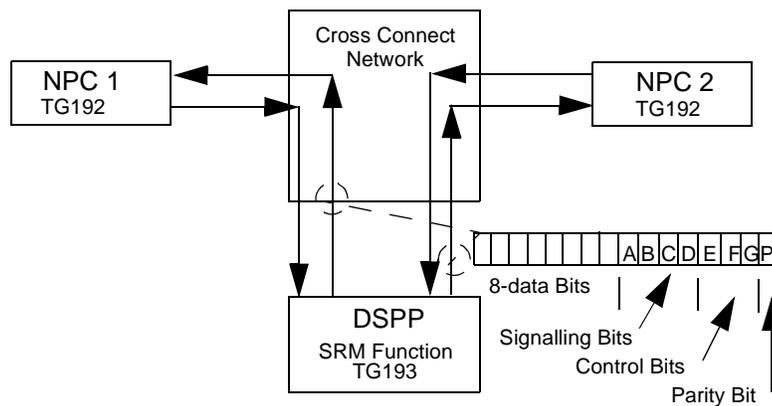
Figure 7-1.   Cross Connection Architecture

The information is cross-connected in its original form, at 16 bits at a time. A set of 16 bits is sent through the cross-connect network every 125 microseconds per each cross-connected channel. The lower eight bits of the 16 bit set consists of customer circuit data and overhead bits. These eight bits consists of four signalling bits, three control bits, and one parity bit.

⇒ **NOTE:**
It cannot be assumed that the data in the form of 8-bit envelopes lines up with the lower 8 bits shown in Figure 7-1. However, for X.57 circuits it can be assumed that the 8-bit envelopes will line up with the lower 8 bit bits shown in this figure.

**Relevant Architecture Elements
the DSPP Circuit Pack**

The DSPP circuit pack (TG193) contains 64 channels (time slots), which can be cross-connected to another channel on another NPC in the system. This is illustrated by a dashed line in Figure 7-2. In addition, the DSPP circuit packs can have access to an Inter-NPC bus that connects the DSPP circuit packs among themselves.

Each DSPP circuit pack has the ability to write data for up to 64 channels to the Inter-NPC bus, if present. This is illustrated in Figure 7-2 by a "W". This can be modified or unmodified data. Each DSPP circuit pack can read up to 1024 channels from the Inter-NPC bus, which is illustrated as "R" in Figure 7-2. These 1024 channels represent the total number of channels for up to 16 DSPP circuit packs. Each DSPP circuit pack can read the channels of all other DSPP circuit packs as well as its own from the Inter-NPC bus, if these channels are written to the Inter-NPC bus by the individual DSPP circuit pack.
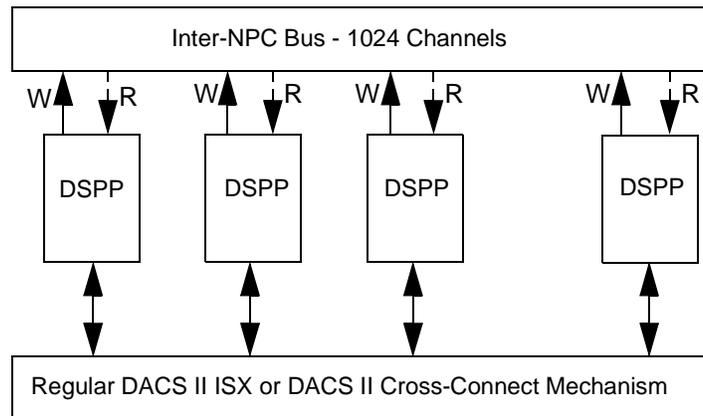
Figure 7-2.   Inter-NPC Bus Architecture for DSPP Circuit Pack

This Inter-NPC bus allows subrate cross-connections between more than 64 X.50 circuits, if the Inter-NPC bus is not used, the number of circuits that can exchange subrate circuits between themselves is 64.

The limit of 64 channels without the Inter-NPC bus and a limit of 1024 channels with the Inter-NPC bus are theoretical limits. The actual limits depend on the capacity of the DSP1611 chip on the DSPP circuit pack.

With the exception of growing and restoring the DSPP circuit pack, the I-2000 will ignore all commands that pertain to the DSPP circuit pack.

X.50 Customer Circuit Cross-Connections

To connect X.50 customer circuits to each other, a total of three cross connects are required. Two of these cross-connects are illustrated in Figure 7-1, which illustrates how two X.50 circuits are connected from their NPCs to the DSPP circuit packs. These two cross-connects are established by the DACS II ISX cross-connect network.

The cross-connection of customer circuits takes place in the DSPP circuit packs along with the demultiplexing/multiplexing necessary. Figure 7-3 shows a schematic view of how these customer circuit cross-connections are made. In Figure 7-3, the left side the column of 8-bit envelopes represents an incoming X.50 data stream in memory and on the right side of the column of 8-bit envelopes in memory go out to NPC 2.
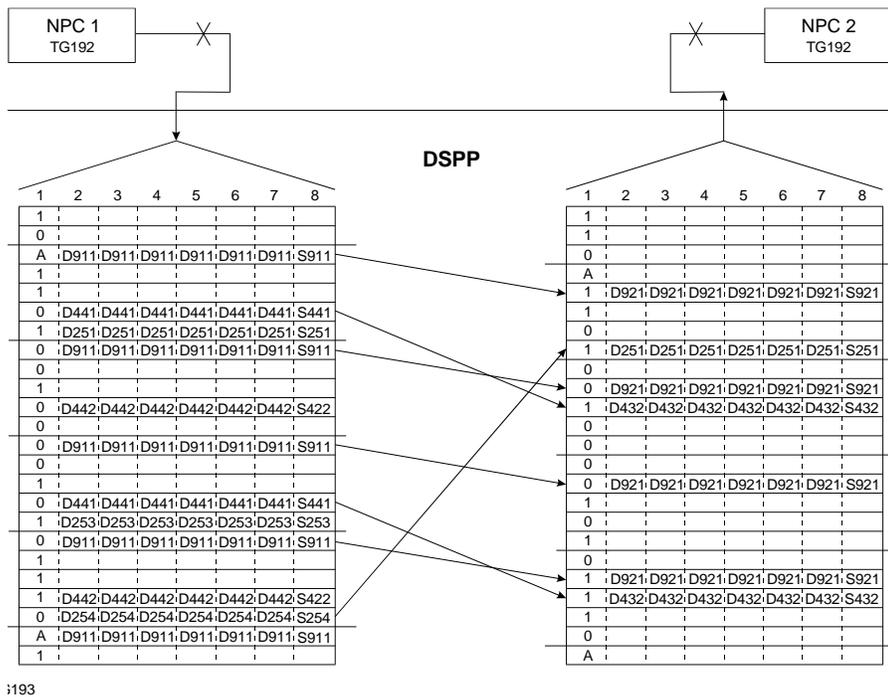
Figure 7-3.   X.50 Customer Circuit Cross-Connection Diagram

Only one direction of the cross-connection is shown for clarity. Both columns have the X.50 framing bit pattern in the first bit position, which is column one. On the incoming side, this framing pattern needs to be checked to maintain subrate framing, on the outgoing side this framing pattern is set by the program. Figure 7-2 shows the "A" (alarm) bit in the beginning of each framing patter. The long lines that from the column show a single frame, and the shorter lines divide the 20 envelope frame into four sets of five envelopes.

Individual 9.6 kbit/s circuits occupy one of the five envelope positions in a set of five. For example, if a circuit is designated as 911* in Figure 7-2 occupies the first envelope position of each set of five.

There are six data bits "D" and one status bit "S", which is the eighth bit position. In addition, the 9.6 kbit/s circuit envelopes occupy the data stream in every fifth envelope position.

The customer circuit 411 is a 4.8 kbit/s circuit that occupies the fourth envelope (phase) position and it is the first of a possible set of two 4.8 kbit/s circuits that can be in that envelope position. The envelopes from circuit 411 repeat every 10 envelopes because it is a 4.8 kbit/s circuit. Another 4.8 kbit/s circuit is called 442 and is located in the fourth envelope (phase) position, but it occupies the second position. Note that from Figure 7-2,circuit 442 occupies the second and fourth set of five envelopes in the frame, while circuit 411 occupies the first and third set of five envelopes in the frame.

Finally there are three 2.4 kbit/s circuits in the incoming frame, which are 251, 253, and 254. All three circuits occupy the fifth envelope (phase) position in the frame. Circuit 251 is the first set of five envelopes, circuit 253 is the third set of five envelopes, and circuit 254 is the fourth set of five envelopes. Note that 2.4 kbit/s circuits occupy every 20th envelope position, which is one envelope per frame.

Using Figure 7-2 as an example, three customer circuit cross-connects are established between the incoming and outgoing frame. Circuit 911 is cross-connected to circuit 921 in the outgoing frame. This means there are four envelopes per frame that are transferred from the incoming stream to the outgoing stream. In addition, there are only seven bits of the envelope that are transferred since the framing bit is not transferred. Circuit 441 is cross connected to circuit 432 in the outgoing frame, and circuit 254 (2.4 kbit/s) is cross connected to circuit 251 in the outgoing frame.

* The 9 in the 911 designation refers to a 9.6 kbit/s circuit. The first 1 in 911 refers to the first envelope position, which is also called phase 1. The second 1 is the position phase 1;since 9.6 kbit/s circuits occupy all positions in their phase, this number is always 1 for 9.6 kbit/s circuits.

X.50 to X.57 Customer Circuit Cross-Connections

Figure 7-4 shows the customer circuit cross-connections between an X.50 and X.57 circuit.
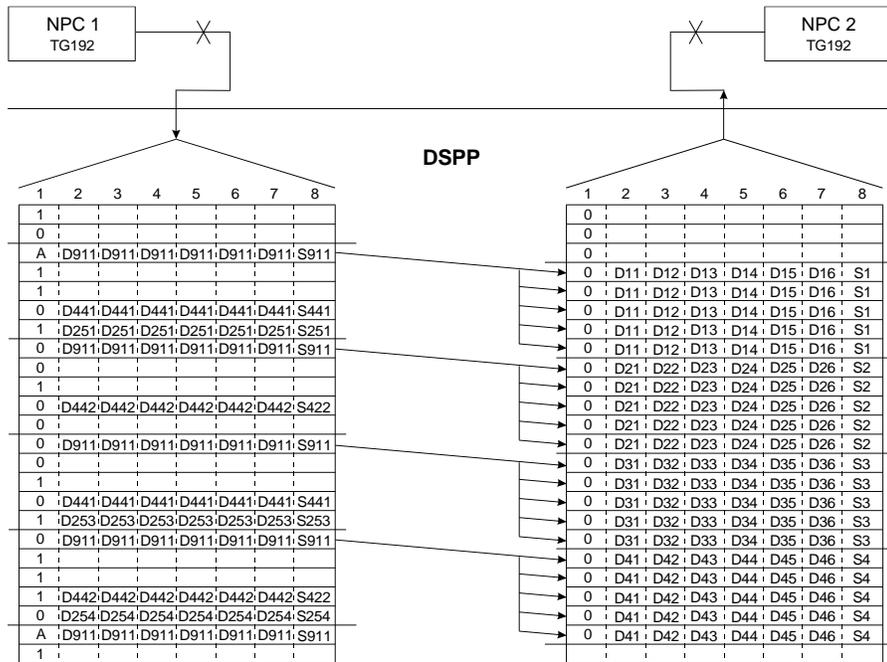
Figure 7-4.   X.50 to X.57 Customer Circuit Cross-Connection Diagram

The incoming frame is identical to the frame in Figure 7-3; however, the outgoing frame is a X.57 circuit. Note that all framing bits are "0" because there is no agreed upon framing patter for X.57 circuits. The cross-connection is between 9.6 kbit/s circuit 911 and the X.57 circuit. Each envelope that is obtained from the X.50 circuit is transferred, with the exception of the framing bit, to the X.57 circuit and repeated five times.

Figure 7-4 illustrates the direction from an X.50 circuit to a X.57 circuit and not in the other direction. The other direction the cross-connection is comparable to the one shown in this figure. Every fifth envelope in the X.57 circuit is used and multiplexed onto the X.50 circuit. If a 4.8 kbit/s circuit was cross-connected, every 10th envelope would have been transferred and for 2.4 kbit/s circuits every 20th envelope would have been transferred.

Subrate Provisioning

Subrate provisioning allows you to provision subrate circuits *only* on DACS II ISX Releases 2.0 and higher.

This chapter describes the procedures to:

- Create a subrate NPC

- Activate, deactivate, delete, and modify a DS0 channel

- Activate, deactivate, delete, and modify a subrate cross connection

The Report Operations menu provides two forms that allow you to search subrate channels and cross connections:

- The `ESTABLISHED DS0 CHANNELS SEARCH CRITERIA` form allows you to search established channel information.

- The `SUBRATE CIRCUITS SEARCH CRITERIA` form allows you to search subrate cross connect information.

For more information on these reports, refer to Chapter 14 "Report Operations."

In addition, the Database Audit/Synchronization feature allows you to perform a `SUBRATE AUDIT` and `SUBRATE SYNC` to synchronize subrate circuit in the I-2000 and/or DACS database. Fore more information on database synchronization, refer to Chapter 10 "Database Administration."

➡️ NOTE:
I-2000 will deny NPC Roll commands if a DS0 channel is connected to a DSPP platform.

DS0 Channel Provisioning

Before a subrate cross-connect can be performed, a DSO channel needs to be established to carry subrate traffic. This DS0 channel then needs to be connected to the DSPP platform, which is referred to as an *established channel*.

➡️ NOTE:
Before you can establish a DS0 channel, you must create an NPC that is a subrate type (SD111).

Procedure: Creating an NPC as a Subrate Type

To create an NPC as a subrate type, follow these steps:

1. Select NPC from the PROVISIONING menu. The NPC PROVISIONING form is displayed.

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

   — **Site Name:** DACS00

   DACS00 must already have been provisioned as a frame (refer to Chapter 2 "Getting Started."

   — **Action:** CREATE

   — **NPC ID:** DS01

   — **Type:** SD111

   — **Number (Hier):** 01101

   — If you fill this in, **(Ext)** is automatically supplied. The NPC number must be compatible with the Type. Note that the NPC number should always be an odd.

3. Press EXECUTE and select IMMEDIATE. (You can create the NPC in local only mode. Refer to Chapter 2 "Getting Started" 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 completed message is displayed on the screen.

4. Move to the **Action** field and select RESTORE.

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

   — Subrate NPC is in service.

   — **Service State** field changes to IS

   — I-2000 command completion message is displayed.

Now that you have created a subrate NPC, you can establish DS0 channels for that NPC. Follow the procedures below establish a DS0 channel.

ESTABLISH DS0 CHANNEL Form

To access the ESTABLISH DS0 CHANNEL form, follow these steps:

1. Select PROVISIONING from the MAIN MENU. The PROVISIONING menu is displayed, as shown in Figure 7-5.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ─── PROVISIONING ───


                         CIRCUIT
                         TEST PORT
                         NPC
                         RECONFIGURATION PLAN
                         AUTOMATIC RECONFIGURATION PLAN
                         NPC ROLL
                         ESTABLISH DS0 CHANNEL
                         SUBRATE CROSS CONNECT
                         24-HOUR PERFORMANCE




  ─ Press ENTER to Establish a DS0 Channel ─

 HELP              QUIT              TOP MENU  PRINT
```
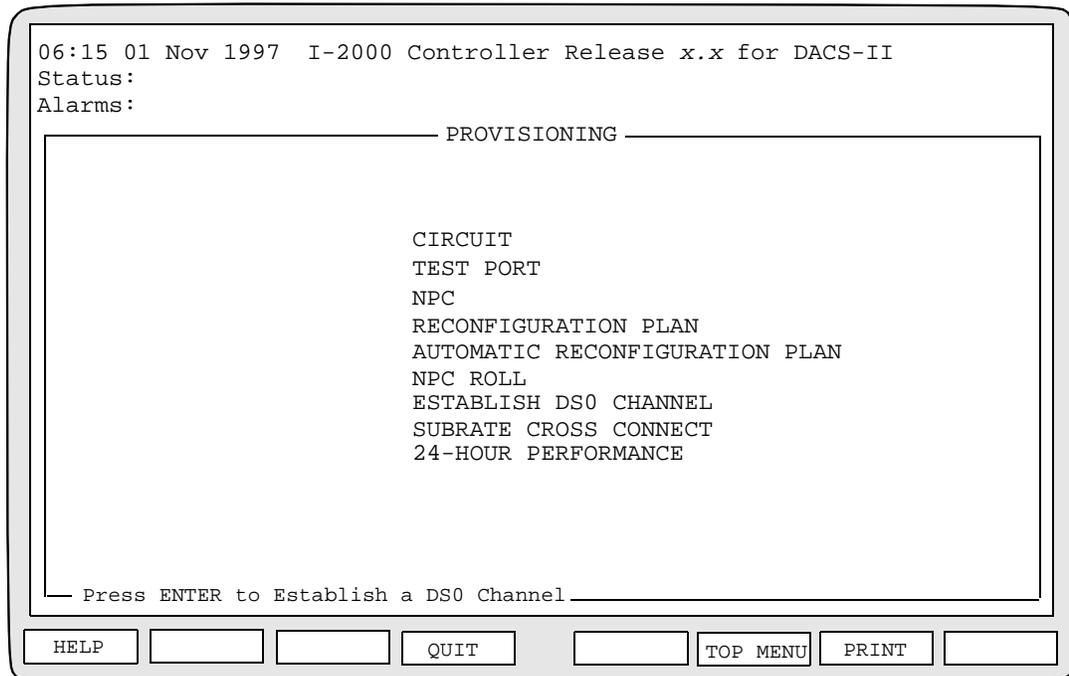
Figure 7-5.   PROVISIONING Menu

2. Select ESTABLISH DS0 CHANNEL from the PROVISIONING menu. The ESTABLISH DS0 CHANNEL form is displayed, as shown in Figure 7-6.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ┌─── ESTABLISH DS0 CHANNEL───┐
  Site Name:
  Action:                                        Ckt Status:
  Ckt ID:                                        Ckt Class:



        Hier      Ext        NPC ID              Ch      TYPE
  FROM:
  TO:


  Transmission Standard:   Transmission Rate:   Bit Framing Pattern:

  UMC:                        MUX:         SIG:



  └─ Enter the site name ─┘
```

┌──────┐ ┌───────┐ ┌──────┐ ┌──────┐   ┌────────┐┌────────┐┌───────┐┌────────┐
│ HELP │ │CHOICES│ │   │ │ QUIT │   │RECNCILE││TOP MENU││ PRINT ││EXECUTE │
└──────┘ └───────┘ └──────┘ └──────┘   └────────┘└────────┘└───────┘└────────┘

Figure 7-6.   ESTABLISH DS0 CHANNEL Form

Procedure: Establishing a DS0 Channel

To establish a DS0 channel, follow these steps:

1. Obtain the ESTABLISH DS0 CHANNEL form.

2. Fill in the following fields:

   — **Site Name:** DACS00

   — **Action:** ACTIVATE

   — **Ckt ID:** CKT01

   — **FROM NPC ID:** NPC01

   — **CH:** 01

   — **TO NPC:** NPC02

   — **Transmission Standard:** X.50

➡ **NOTE:**
If you enter X.50 as the transmission standard the Transmission Rate field is not applicable.

If you enter X.57 as a transmission standard, enter the Transmission Rate.

— **Transmission Rate:** 2.4

— **Bit Framing Pattern:** F20 (valid only for X.50)

The following fields are optional:

➡ **NOTE:**
The following fields are optional: **UMC**, **MUX**, and **SIG**:

— **UMC:** FF (Unoccupied multiplexer channel)

— **MUX:** FF (Multiplexer out of synchronization code)

— **SIG:** F (Signalling bits)

3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** changes to ACTIVE. In addition, the command completed successfully message is displayed.

Field Descriptions

Field descriptions for the ESTABLISH DS0 CHANNEL form are described in Table 7-1.

Table 7-1.   ESTABLISH DS0 CHANNEL Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, -. All other characters are illegal. Blanks are not allowed within the name.
	Enter the name of the frame in which the channel 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 "Getting Started." The default is the first name.

Table 7-1.   ESTABLISH DS0 CHANNEL Field Descriptions (Contd)

Action	Mandatory. Enter the action to be performed with regard to the circuit.
	ACTIVATE — Enters the channel specified by **Ckt ID** in the I-2000 database (if it does not yet exist) and connect the DS0 channel to a DSPP platform. When this action is completed successfully, the **Ckt Status** changes from NULL to ACTIVE.
	DELETE — Removes the specified circuit from the I-2000 and frame databases, returning the **Ckt Status** to NULL.
	⟹ **NOTE:** Deletion of an ACTIVE circuit results in disconnection deactivation of the circuit in the frame before the record is deleted in the I-2000.
	MODIFY — Allows you to change the **Ckt ID** of the establishing DS0 channel.
	DEACTIVATE — As a result of this action, enters the specified circuit in the I-2000 database as DEACTIVATED and disconnects it in the frame.
	BROWSE — Gives you read-only access to the I-2000 database for retrieving and scrolling circuit records.
Ckt ID	Mandatory. must be unique. One through 41 characters from the printable ASCII character set, excluding *, \, ?, ",], ^, ", %, |. Blanks are allowed in the name, but leading and trailing blanks are ignored.
	This field associates the name entered in this field to a connection between a DS0 channel and a DSPP platform.

Table 7-1.   ESTABLISH DS0 CHANNEL Field Descriptions (Contd)

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 frame or I-2000 databases. To define the circuit, use the ACTIVATE **Action**.
	ACTIVE — The circuit is active in the I-2000 database and/or the frame.
	DEACTIVATED — The circuit is in the I-2000 database but is not cross-connected in the frame. The I-2000 record is marked DEACTIVATED. To cross-connect the circuit, use the ACTIVATE **Action**.
Ckt Class	Mandatory. Read only field that specifies the type of circuit for an established DS0 channel. The only class for this field is EST.
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.
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	The FROM channel number from 0-31 for CEPT or 1-24 for NAS.
	Virtual channel numbers can range from 1 to 500; however, one is automatically selected by the system during provisioning of virtual multipoint circuits.
TYPE	Mandatory. This field is populates automatically if a DSPP slot address has been selected.
	⚠ **DANGER:** The **TO** NP type is read only.

Table 7-1.   ESTABLISH DS0 CHANNEL Field Descriptions (Contd)

Transmission Standard	Mandatory. This field accepts the following transmission standards: X.50, and X.57. X.50 A 64 kbit/s circuit that carries a number of multiplexed circuits of lower data rates using the International Tele-communications Union (ITC) X.50 recommendation. X.57 An individual lower rate circuit (lower than 64 kbit/s) that is transmitted on a 64 kbit/s facility using the ITC X.57 recommendation.
Transmission Rate	Entry for this field is required only is the Transmission Standard field is X.57. Valid entries are: 2.4, 4.8, and 9.6.
Bit Framing Pattern	The I-2000 provides a blank default bit framing. Otherwise, the option F20 can be selected.
UMC	Optional. Unoccupied Multiplexer Channel. This field accepts two alphabetic characters.
MUX	Optional. If the multiplexer out of synchronization code is not specified. This field accepts two alphabetic characters.
SIG	Optional. If the signalling bits are not specified. This field accepts one alphabetic character.

DS0 Channel Examples

The examples below describe how to deactivate, delete, modify, and modify DS0 channels.

Example: Deactivating a DS0 Channel

This procedure deactivates the DS0 channel. To deactivate a DS0 channel, follow these steps:

1. At the PROVISIONING menu, select ESTABLISH DS0 CHANNEL and enter these data:

   — **Site Name:** DACS00

   — **Action:** DEACTIVATE

   — **Ckt ID:** CKT01

⟹ **NOTE:**
Once the Ckt ID of the established channel is entered, the rest of the data is populated on the screen.

2. Press ⌷EXECUTE⌷ and select IMMEDIATE. The result is that the I-2000 command completed message is displayed on the screen.

Example: Deleting a DS0 Channel

This procedure removes the DS0 channel from the specified NPC. To remove a DS0 channel, follow these steps:

1. At the PROVISIONING menu, select ESTABLISH DS0 CHANNEL and enter these data:

   — **Site Name:** DACS00

   — **Action:** DELETE

   — **Ckt ID:** CKT01

⟹ **NOTE:**
Once the Ckt ID of the established channel is entered, the rest of the data is populated on the screen.

2. Press ⌷EXECUTE⌷ and select IMMEDIATE. The result is that the

   — I-2000 command completed message is displayed on the screen.

   — **Ckt Status** changes to NULL.

Example: Modifying a DS0 Channel

This procedure allows you modify *only* the **Ckt ID**. To modify the **Ckt ID** for a DS0 channel, follow these steps:

1. At the PROVISIONING menu, select ESTABLISH DS0 CHANNEL and enter these data:

   — **Site Name:** DACS00

   — **Action:** MODIFY

   — **Ckt ID:** CKT09

2. Press ⌷EXECUTE⌷ and select IMMEDIATE. The result is that the I-2000 command completed message is displayed on the screen.

Example: Browsing a DS0 Channel

You can browse through the DS0 channels stored in the I-2000 database. In that case, you will use the ESTABLISH DS0 SEARCH CRITERIA form, which is displayed after you enter an **Action** of BROWSE and press EXECUTE . The CIRCUT PROVISIOING SEARCH CRITERIA form is displayed, as shown in Figure 7-7.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                   ESTABLISHED DS0 CHANNELS SEARCH CRITERIA
 Site Name: ISX
 Ckt Status:
 Ckt ID:



        Hier        Ext     NPC ID                            Ch  TYPE
 FROM:

 TO:


 Transmission Standard:            Transmission Rate:

 UMC:                              MUX:              SIG:



  Enter Status to be searched.
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 7-7.   ESTABLISHED DS0 CHANNES SEARCH CRITERIA Form

The BROWSE selection retrieves the provisioning and status information concerning each of a range of established DS0 channels.

To browse an established DS0 channel, follow these steps:

1. Select PROVISIONING from the MAIN MENU and ESTABLISHED DS0 CHANNEL from the PROVISIONING menu.

2. Navigate to **Action** and select BROWSE.

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.

4. Press EXECUTE .

   A search is conducted for the specified channel. Also, the data for the first established DS0 channel is displayed.

5. To obtain the next DS0 channel, press ⎍NEXT⎍.

6. To stop the BROWSE, press ⎍QUIT⎍.

Subrate Cross-Connect Provisioning

In order to provision subrate cross connections, you must first have created a subrate NPC and established one or more DS0 channels. Refer to the previous sections "Procedure: Creating an NPC as a Subrate Type" and "Procedure: Establishing a DS0 Channel.

SUBRATE CROSS CONNECT Form

To access the SUBRATE CROSS CONNECT form, follow these steps:

1. Select PROVISIONING from the MAIN MENU. The PROVISIONING menu is displayed, as shown in Figure 7-5.

2. Select SUBRATE CROSS CONNECT from the PROVISIONING menu. The SUBRATE CROSS CONNECT form is displayed, as shown in Figure 7-8.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ──── SUBRATE CROSS CONNECT────
 Site Name:
 Action:                                      Ckt Status:
 Ckt ID:                                      Ckt Class:
 FROM EST CHANNEL CKT ID:
 TO EST CHANNEL CKT ID:

      Hier      Ext         NPC ID                 Ch      CUST
 FROM:
 TO:

 Data Rate:

 Customer Name:                        Service Date:
 Loc A:                                Loc Z:
 Rmks:


 ── Enter the site name ──
```

| HELP | CHOICES | | QUIT | RECNCILE | TOP MENU | PRINT | EXECUTE |

Figure 7-8.   SUBRATE CROSS CONNECT Form

Procedure: Establishing Subrate Cross-Connection

To establish a subrate cross connection, follow these steps:

1. Obtain the SUBRATE CROSS CONNECT form.

2. Fill in the following fields:

   — **Site Name:** DACS00

   — **Action:** ACTIVATE

   — **Ckt ID:** CKT03

   — **FROM EST CHANNEL CKT ID:** ckt03

➡ **NOTE:**
The **FROM NPC** corresponding to the from channel will be automatically populated. However, if you enter the **FROM NPC** and **From Ch**, the **FROM EST CHANNEL ID** will be populated.

If you enter the **TO NPC** and the **TO Ch** of the **ESTABILSHED CHANNEL ID** the **TO ESTABLISHED Ckt ID** will be populated.

— **TO EST CHANNEL CKT ID:** ckt04

— **From CUST:** 1-1

— **To CUST:** 1-2

NOTE:
You must enter the number of the customer's subrate circuit for both the **FROM** and **TO EST CHANNEL CKT ID**.

— **Data Rate:** 4.8

3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** changes to ACTIVE. In addition, the command completed successfully message is displayed.

Field Descriptions

Field descriptions for the SUBRATE CROSS CONNECT form are described in Table 7-2.

Table 7-2.   SUBRATE CROSS CONNECT Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, -. All other characters are illegal. Blanks are not allowed within the name.
	Enter the name of the frame in which the channel 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 "Getting Started." The default is the first name.
Action	Mandatory. Enter the action to be performed with regard to the circuit.
	ACTIVATE Enters the channel specified by **Ckt ID** in the I-2000 database (if it does not yet exist) and allows you to connect subrate customer circuits in the frame, making it an existing, traffic-carrying circuit.
	When this action is completed successfully, the **Ckt Status** changes from NULL to ACTIVE.

Table 7-2.   SUBRATE CROSS CONNECT Field Descriptions (Contd)

Action	⟹ **NOTE:** `MODIFY` Retrieves the specified circuit from the I-2000 database for purposes of altering circuit attributes or **Ckt ID**. `MODIFY` does not change the **Ckt Status**.:
	`DELETE` Removes the specified circuit from the I-2000 and frame databases, returning the **Ckt Status** to `NULL`.
	⟹ **NOTE:** Deletion of an `ACTIVE` circuit results in deactivation of the circuit in the frame before the record is deleted in the I-2000. Deletion of an ALTROUTED circuit in the frame before the record is deleted in the I-2000.
	`DEACTIVATE` The specified circuit in the I-2000 database as `DEACTIVATED` and disconnects it in the frame.
	`BROWSE` Gives you read-only access to the I-2000 database for retrieving and scrolling circuit records.
	As soon as you press EXECUTE after entering an **Action** of `BROWSE`, the I-2000 displays the CIRCUIT PROVISIONING SEARCH CRITERIA form. Its fields are taken from the CIRCUIT PROVISIONING form. Entering a value in any defined field restricts the search. To initiate the search, press EXECUTE. To return to CIRCUIT PROVISIONING without executing, press QUIT.
	`MODIFY` Allows you to change the **Ckt ID** of the establishing DS0 channel.
Ckt ID	Mandatory. must be unique. One through 41 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %, |. Blanks are allowed in the name, but leading and trailing blanks are ignored.
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 frame or I-2000 databases. To define the circuit, use the `ACTIVATE` **Action**.
	`ACTIVE` The circuit is active.

Table 7-2.   SUBRATE CROSS CONNECT Field Descriptions (Contd)

Ckt Status (Continued)	`DEACTIVATED` The circuit is in the I-2000 database but is not cross-connected in the frame. The I-2000 record is marked `DEACTIVATED`. To cross-connect the circuit, use the `ACTIVATE` **Action**.
Ckt Class	Mandatory. This is a read-only field that specifies the type of circuit. The only option displayed is SUB for subrate.
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.
Ch	The FROM or TO channel number, `0-31` for CEPT or `1-24` for NAS.
FROM NPC	The FROM NPC of the cross connection.
FROM CH	The From channel of the cross connection.
FROM EST CHANNEL CKT ID	Optional. This field allows you to specify the FROM **Ckt ID** for an established DS0 channel. One through 41 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %, |. Blanks are allowed in the name, but leading and trailing blanks are ignored.
TO EST CHANNEL CKT ID	Optional. This field allows you to specify the TO **Ckt ID** for an established DS0 channel. One through 41 characters from the printable ASCII character set, excluding *, \, ?, [,], ^, ", %, |. Blanks are allowed in the name, but leading and trailing blanks are ignored.
TO NPC	The To NPC of the cross connection.
TO NPC	The To channel of the cross connection.

Table 7-2.   SUBRATE CROSS CONNECT Field Descriptions (Contd)

CUST	Mandatory. This field allows you to specify the customer number of a subrate circuit. This field accepts up to three characters. The formats for each of the following standards are: *X.50 Standard:* Allowed values are "a-B", where "a" and "b" are two digits, for example 1-1. The "a" can be within a range from 1 to 5 and the "b" can be in a range from 1-4. *X.57 Standard:* "1-1" is the *only* value for this standard.
Data Rate	Mandatory. This valid entries for this field are: 2.4, 4.8, and 19.2.
Customer Name	Optional. This field allows you to specify the customer name associated with a subrate circuit. This field accepts up to 12 characters.
Service Date	The I-2000 provides a default date as "todays" date. There are three fields associated with this field in the format DD MMM YY, where DD is the day, MMM is the first three letters of the month, and YY is the year.
Loc A and Loc Z	Optional. Up to 24 alphanumeric characters. Loc A is the location identifier for the FROM end of the circuit being provisioned and Loc Z is the TO end of the circuit being provisioned.
Rmks	Optional. This field allows you to specify up to 77 characters for remarks.

Subrate Cross Connect Examples

The examples below describe how to deactivate, delete, and modify subrate cross connections.

Example: Deactivating a Subrate Cross Connect

This procedure deactivates the subrate cross connection. To deactivate a subrate cross connection, follow these steps:

1. At the PROVISIONING menu, select SUBRATE CROSS CONNECT and enter these data:

   — **Site Name:** DACS00

   — **Action:** DEACTIVATE

   — **Ckt ID:** CKT01

   The rest of the data will automatically be populated.

2. Press EXECUTE and select IMMEDIATE. The result is that the:
   Ckt Status field changes to DEACTIVATED.

Example: Deleting a Subrate Cross Connect

This procedure removes the subrate cross connection from the specified NPC.

To remove a subrate cross connection, follow these steps:

1. At the PROVISIONING menu, select SUBRATE CROSS CONNECT and
   enter these data:

   — **Site Name:** DACS00

   — **Action:** DELETE

   — **Ckt ID:** ckt09

     The rest of the data will automatically be populated.

2. Press EXECUTE and select IMMEDIATE. The result is that the
   Ckt Status field changes to DELETED.

Example: Modifying a Subrate Cross Connect

This procedure allows you modify *only* the **Ckt ID**. To modify the **Ckt ID** for a
subrate cross connect, follow these steps:

1. At the PROVISIONING menu, select SUBRATE CROSS CONNECT and
   enter these data:

   — **Site Name:** DACS00

   — **Action:** MODIFY

   — **Ckt ID:** ckt09

2. Press EXECUTE and select IMMEDIATE. The result is that the:

   — **Service State** field changes to OOS

   — **Alarm State** changes to None

   — I-2000 command completed message is displayed on the screen.

Example: Browsing a Subrate Cross Connect

You can browse through the subrate cross connections stored in the I-2000
database. In that case, you will use the SUBRATE CROSS CONNECT SEARCH
CRITERIA form, which is displayed after you enter an **Action** of BROWSE and
press EXECUTE. The SUBRATE CROSS CONNECT SEARCH CRITERIA form
is displayed, as shown in Figure 7-9.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    SUBRATE CIRCUITS SEARCH CRITERIA
 Site Name:ISX
 Ckt Status:
 Ckt ID:


       Hier        Ext     NPC ID                          Ch  Cust
 FROM:

 / TO

 Data Rate:




 Enter the site name.
```

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

Figure 7-9.   SUBRATE CIRCUITS SEARCH CRITERIA Form

The BROWSE selection retrieves the provisioning and status information
concerning each of a range of subrate cross connections.

To browse a subrate cross connection, follow these steps:

1. Select PROVISIONING from the MAIN MENU and SUBRATE CROSS
   CONNECT from the PROVISIONING menu.

2. Navigate to **Action** and select BROWSE.

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.

4. Press EXECUTE .

   A search is conducted for the specified channel. Also, the data for the first
   established subrate cross connection is displayed.

5. To obtain the next subrate cross connection, press NEXT .

6. To stop the BROWSE, press QUIT .

Alternate Routing

8

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Alternate Routing

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Introduction

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 ALTROUTE **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 or DEROUTED **Ckt Status**. You can even create a new circuit in the ALTROUTED **Ckt Status**.

- You can only ALTROUTE 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, but any circuit that it preempted will be deactivated.

For high-rate circuits:

- When you ALTROUTE 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).

- Random circuits cannot be altrouted.

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.

For BCON circuits:

- BCON circuits cannot be altrouted.

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" ALTROUTE **Action**.

However, an ALTROUTE in which all channel ends are altrouted to themselves is called a "pseudo-"ALTROUTE. The pseudo-ALTROUTE allows you to put up a temporary circuit, in ALTROUTE **Ckt Status**, that becomes deactivated on normalization, without special action to deactivate it.

Procedure: Specifying a "real" Altroute

To specify a **real** altroute using the ALTROUTE screen, follow these steps:

1. Obtain the CIRCUIT PROVISIONING form, as shown in Figure 8-1.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                      ─── CIRCUIT PROVISIONING ───
 Site Name:DACS00                            Ckt Status:ACTIVE
 Action:ALTROUTE                              Ckt Class:FDX
 Ckt ID:circ1                                  Bandwidth Type:A

       Hier        Ext        NPC ID                Ch
  FROM:  01101      0001      firstnpc              001
    TO:  01102      0002      secondnpc             001

 Bandwidth:1          Options:


  TC:0011,0011              IW:TRB    SC:             Framing:
 Loc A:                      Loc Z:
 Customer Name:              Service Date:DD MMM YY  Ckt Priority:00
 Rmks:

   ── Enter the site name.──

   HELP          NEXTPAGE   QUIT        RECNCILE  TOP MENU   PRINT   EXECUTE
```

Figure 8-1.   CIRCUIT PROVISIONING Form

2. Enter the **Site Name**, an **Action** of ALTROUTE and the **Ckt ID**.

You must press Enter after entering the Ckt ID.

3. Press NEXTPAGE.

The ALTROUTE 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-ALTROUTE is entered on the CIRCUIT PROVISIONING form only.

The `ALTROUTE` screen is displayed, as shown in Figure 8-2.

```
06:15 01 Nov 1997 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:FDX
 Rmks:


 NORMAL      Hier   Ext              NPC ID              Ch
      FROM:  01101  0001   firstnpc                    007
        TO:  01101  0001   firstnpc                    008
 ALTROUTE
      FROM:
        TO:

 Preempted
 Ckt ID:                             Status:         CP:
  ─ Enter the FROM Side NPC Number (Hierarchical format) ─
```

┌────────┬────────┬──────────┬──────┬─────────┬──────────┬───────┬─────────┐
│ HELP │   │ NEXTPAGE │ QUIT │RECNCILE │ TOP MENU │ PRINT │ EXECUTE │
└────────┴────────┴──────────┴──────┴─────────┴──────────┴───────┴─────────┘

Figure 8-2.   ALTROUTE Screen

The ALTROUTE 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 ALTROUTE took effect.

- **NORMAL—**The fields under **NORMAL** display the primary channel assignment of the ALTROUTED circuit, carried over from the first page.

- **ALTROUTE—**The fields under **ALTROUTE** specify the channel assignment to which you are going to ALTROUTE the circuit.

- **Preempted—**The fields under **Preempted** identify information concerning circuits that are being preempted by this ALTROUTE.

The following constraints apply to the use of the ALTROUTE 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 ALTROUTE 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 ALTROUTE 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 ALTROUTE screen and their values. For full descriptions, refer to Chapter 6 "Circuit Provisioning."

Field Descriptions

Field descriptions for the ALTROUTE screen are described in Table 8-1.

Table 8-1.   ALTROUTE Field Descriptions

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, PREEMPTED, 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	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	0-31 CEPT or 0-24 NAS

Table 8-1.   ALTROUTE Field Descriptions (Contd)

Name	Field Size	Values
Preempted Ckt ID	41	All printable characters except *, ?, \, [,], ^, ", %, |
Ckt Status	11	`ACTIVE, PREEMPTED`
CP	2	`a-z, A-Z, 0-9`

Procedure: Completing a "real" Altroute

To complete a real Altroute, follow these steps:

1. Fill in the **FROM** line under `ALTROUTE`:

   — **NPC ID**: `facility01`

   — **Ch**: `001`

2. Fill in the **TO** line:

   — **NPC ID**: `facility01`

   — **Ch**: `002`

3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** changes according to your circuit setup; and an `ALTROUTED` is displayed.

   In addition, a completion message is displayed.

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 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 pre-empted channels on the circuit are normalized.

- You can place a PREEMPTED circuit in service on other channels with an ALTROUTE **Action**. This **Action** will remove it from the preemption list of its original preempting circuit. You can return it to its original path with a NORMALIZE **Action** when the original channels are available. If they are not, the normalization will leave the circuit in the DEACTIVATED status.

- 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.

For high-rate circuits:

- Random circuits can be preempted, although they cannot be altrouted.

For multipoint circuits:

- Any or all of the EFTs can be preempted. For DMB, the EFT of a leg 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.

For BCON circuits:

- BCON circuits cannot be preempted.

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 DEACTI-VATED **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.

Procedure: Normalizing an Altrouted Circuit

To normalize an Altrouted circuit, follow these steps:

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**.

2. Enter an **Action** of NORMALIZE.

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.

Procedure: Normalizing an Out of Service NPC

To normalize an NPC that was out of service, follow these steps:

1. Obtain the CIRCUIT PROVISIONING form.

2. Enter or select:

   — **Action**: MODIFY

   — **Options**: D

   This option selects OOS.

⇒ **NOTE:**
You must also select the options previously in effect.

3. Press EXECUTE and confirm.

4. NORMALIZE as described in the previous procedure.

Altrouting and Normalizing Examples

This section contains integrated examples of altrouting and normalizing. The model underlying these examples is described in Table 8-2.

In Figure 8-3, the following NPCs have been provisioned, as shown in Table 8-2:

Table 8-2.   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

Table 8-3 shows the circuits that have been provisioned:

Table 8-3.   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
MM06	HDX	1	-	dgrpF	05	dgrpG	09
MM07	HDX	1	-	dgrpG	08	dgrpF	04

Single Channel Circuits

Example: Configuring a "Real" Altroute

Figure 8-3 shows an example of how to configure an ALTROUTE 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.
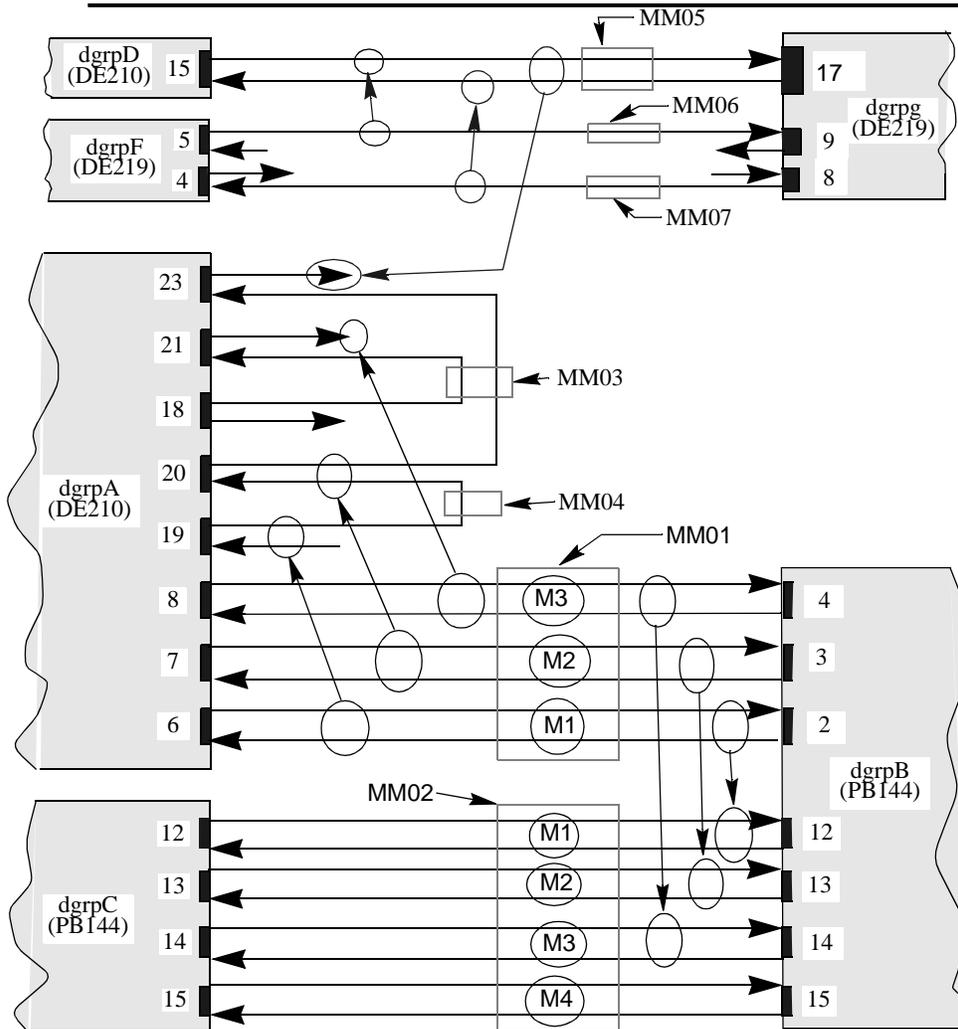
Figure 8-3.   Example of Altrouting

To configure a "real" Altroute, follow these steps:

1. Select CIRCUIT from the PROVISIONING menu.

2. Enter the following data, being sure to press Enter :

   — **Action**: ALTROUTE

   — **Ckt ID**: MM05

   The I-2000 confirms the existing circuit. The **Ckt Status** is ACTIVE.

3. Press NEXTPAGE .

4. Enter the following data under ALTROUTE:

— **TO NPC ID**: dgrpG

— **TO Ch**: 1

5. Press EXECUTE and select IMMEDIATE. The results are:

— 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 is displayed.

Example: Normalizing a "real" Altroute

To normalize the previous example, follow these steps:

1. After selecting CIRCUIT under PROVISIONING, enter:

— **Action**: NORMALIZE

— **Ckt ID**: MM05

The I-2000 confirms the existing circuit. The **Ckt Status** is ALTROUTED.

2. Press EXECUTE and select IMMEDIATE. The results are:

— 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 is displayed.

Example: Performing a Pseudo-Altroute

To perform a pseudo-ALTROUTE on the same original circuit, as in the previous example (on MM05), follow these steps:

1. Select CIRCUIT under PROVISIONING.

2. Enter the following data:

— **Action**: ALTROUTE

— **Ckt ID**: MM05

The I-2000 displays the information for the **Ckt ID**.

— **TO NPC ID**: dgrpG

— **TO Ch**: 017

3. Press EXECUTE and select IMMEDIATE. The **Ckt Status** field changes to ALTROUTED. In addition, a completion message is displayed.

Example: Normalizing a Pseudo-Altroute

To normalize the previous example, follow these steps:

1. After selecting CIRCUIT under PROVISIONING, enter:

   — **Action**: NORMALIZE

   — **Ckt ID**: MM05

   The I-2000 confirms an existing circuit. The **Ckt Status** is ALTROUTED.

2. Press EXECUTE, select IMMEDIATE. The **Ckt Status** field changes to DEACTIVATED. In addition, a completion message is displayed.

Example: Altrouting a Half-duplex Circuit to a Full-duplex Circuit

To perform a real ALTROUTE 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

To perform an Altroute of a half-duplex circuit to part of a full-duplex circuit, follow these steps:

1. Enter the following data under CIRCUIT PROVISIONING:

   — **Action**: ALTROUTE

   — **Ckt ID**: MM06

   The I-2000 confirms the existing circuit. The **Ckt Status** is ACTIVE.

2. Press NEXTPAGE, and then enter the following data under ALTROUTE:

   — **FROM NPC ID**: dgrpD

   — **FROM Ch**: 15

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.

4. Enter the following data:

   — **Ckt ID**: MM05

   The **Ckt Status** field now says PREEMPTED.

Example: Normalizing an ALTROUTE of a Half-duplex Circuit to Part of a Full-duplex Circuit

To normalize the previous example, follow these steps:

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.

2. Press ⬚EXECUTE and select IMMEDIATE; observe that the **Ckt Status** of MM06 changes to `ACTIVE`.

3. Enter the following data:

— **Ckt ID**: `MM05`

— The **Ckt Status** field now says `ACTIVATED`.

Example: Altrouting a Half-duplex Circuit to an Unused Pre-empted Full-duplex Circuit

To perform a real `ALTROUTE` 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.

To perform an Altroute of a half-duplex circuit to the unused part of a pre-empted full-duplex circuit, follow these steps:

1. Enter the following data within CIRCUIT PROVISIONING:

— **Action**: `ALTROUTE`

— **Ckt ID**: `MM07`

The I-2000 confirms the existing circuit. The **Ckt Status** is `ACTIVE`.

2. Enter the following data under ALTROUTE:

— **TO NPC ID**: `dgrpD`

— **TO Ch**: `15`

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`.

Example: Normalizing an ALTROUTE of a Half-duplex Circuit to a Full-duplex Circuit

To normalize the previous circuit, follow these steps:

1. Enter on the CIRCUIT PROVISIONING form:

— **Action**: `NORMALIZE`

— **Ckt ID**: `MM07`

The I-2000 confirms the existing circuit. The **Ckt Status** is `ALTROUTED`.

2. Press ⬚EXECUTE and select IMMEDIATE. Then observe that the completion message appears and that the **Ckt Status** field changes to `ACTIVE`.

3. Enter **Ckt ID**: `MM05`.

The **Ckt Status** field now says `ALTROUTED`.

High-rate Circuits

Example: Altrouting a Real, High-rate Circuit

To `ALTROUTE` 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.

To perform an Altroute of a real high-rate circuit, follow these steps:

1. After selecting CIRCUIT PROVISIONING, enter the following data, being sure to press Enter :

   — **Action**: `ALTROUTE`

   — **Ckt ID**: `MM01`

   The I-2000 confirms the existing circuit. The **Ckt Status** is `ACTIVE`.

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`

3. Press EXECUTE and select IMMEDIATE.

4. Answer YES when prompted if it is OK to preempt circuits MM02, MM03, and MM04.

5. The following actions occur:

   — The I-2000 sends a disconnect command for the MM01 circuit.

   — The DACS sends a `COMPLD` message.

   — The I-2000 sends a disconnect command for the MM02 circuit.

   — The DACS sends a `COMPLD` message.

   — The I-2000 sends two disconnect commands for the MM03 circuit.

   — The DACS sends a `COMPLD` message.

   — The I-2000 sends a disconnect command for the MM04 circuit:

   — The DACS sends a `COMPLD` message.

   — The I-2000 sends a connect command for the MM01 circuit on DGRPA/channel 19 and DGRPB/channel 12.

   — The DACS sends a `COMPLD` message.

   — The **Ckt Status** of MM01 circuit changes to `ALTROUTED`.

   — The I-2000 displays a completion message.

6. Enter the following data: **Ckt ID**: MM02

The **Ckt Status** field changes to PREEMPTED.

7. Enter the following data: **Ckt ID**: MM03

The **Ckt Status** field changes to PREEMPTED.

8. Enter the following data: **Ckt ID**: MM04

The **Ckt Status** field changes to PREEMPTED.

**Example: Normalizing an Altroute of a
Real, High-rate Circuit**

To normalize the previous circuit, follow these steps:

⇒ **NOTE:**
In this example, multiple circuits are restored.

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.

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 DACS sends a COMPLD message.

— The I-2000 sends a connect command for the MM01 circuit on dgrpA/channel 6 and dgrpB/channel 2.

— The DACS sends a COMPLD message.

— The I-2000 sends a connect command for the MM02 circuit.

— The DACS sends a COMPLD message.

— The I-2000 sends a connect command for the MM04 circuit:

— The DACS sends a COMPLD message.

— Finally, the **Ckt Status** of the MM01 circuit changes to ACTIVE.

3. Enter the following data: **Ckt ID**: MM02

The **Ckt Status** field changes to ACTIVE.

4. Enter the following: **Ckt ID:** MM03

The **Ckt Status** field changes to PREEMPTED.

5. Enter the following data: **Ckt ID**: MM04

The **Ckt Status** field changes to ACTIVE.

**Example: Altrouting a Single-channel Circuit to a
Pre-empted High-rate Circuit**

To 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.

To perform an Altroute of a single-channel circuit to the unused part of a pre-empted high-rate circuit, follow these steps:

1. Enter the following data under CIRCUIT PROVISIONING:

   — **Action**: `ALTROUTE`

   — **Ckt ID**: `MM05`

   The I-2000 confirms the existing circuit. The **Ckt Status** is `PREEMPTED`.

2. Enter the following data under ALTROUTE CHANNEL CONNECTION:

   — **FROM NPC ID**: `dgrpA`

   — **FROM Ch**: `23`

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`.

4. Generate and print an ALTROUTED CIRCUITS data report:

   c. Press TOP MENU, select REPORT OPERATIONS from the MAIN MENU, and select ALTROUTES/PREEMPTIONS from the REPORT OPERATIONS menu.

   d. Select ALTROUTED CIRCUITS.

   e. Press EXECUTE and confirm to get a listing of all ALTROUTED circuits.

   f. Wait for the report to be generated, select DISPLAY LAST GENERATED REPORT, and then select PRINTER.

5. Observe that the report lists circuits MM01, MM05, MM06, and MM07.

6. Now print a PREEMPTED CIRCUITS report:

   a. Proceed as in Step 4 except select PREEMPTED CIRCUITS instead of ALTROUTED CIRCUITS.

   b. Press EXECUTE and confirm to get a listing of all `ALTROUTED` circuits.

   c. Wait for the report to be generated, select DISPLAY LAST GENERATED REPORT, then select PRINTER.

The report lists circuits MM02, MM03, and MM04.

**Example: Normalizing an ALTROUTE of a
Single-channel Circuit to a Preempted
High-rate Circuit**

To normalize circuit MM05, follow these steps:

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.

2. Press EXECUTE and select IMMEDIATE. The results are:

— The I-2000 sends a disconnect command for the MM05 circuit on dgrpA/channel 23.

— The DACS sends a COMPLD message.

— The I-2000 sends a connect command for the MM05 circuit on dgrpD/channel 15.

— The DACS sends a COMPLD message.

— The I-2000 sends two connect commands for the MM03 circuit.

— The DACS sends a COMPLD message.

— The **Ckt Status** of the MM05 circuit changes to ACTIVE.

— The I-2000 sends a completion message.

3. Repeat the steps given earlier for printing an ALTROUTED CIRCUITS report. The report should NOT list circuits MM01, MM05, MM06, and MM07.

4. Then print a PREEMPTED CIRCUITS report. It should NOT list circuits MM02, MM03, and MM04.

Multipoint Circuits

Example: Altrouting a Leg in a Broadcast Circuit

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.

To perform an Altroute of a leg in a broadcast circuit, follow these steps:

1. On the CIRCUIT PROVISIONING form, enter:

— **Action**: ALTROUTE

— **Ckt ID**: MULTIN

The I-2000 confirms the existing circuit. The **Ckt Status** is ACTIVE.

2. Press $\boxed{\text{NEXTPAGE}}$, and then enter the following data under ALTROUTE:

   — **FROM NPC ID**: 33JJ09

   — **FROM Ch**: 001

3. Press $\boxed{\text{EXECUTE}}$ and select IMMEDIATE. The **Ckt Status** of circuit MULTIN changes to ALTROUTED.

   A completion message from the I-2000 is displayed.

4. Navigate to **FROM NPC ID** and use $\boxed{\text{NEXT}}$ to scroll through the BRDs. Their **Ckt Status**es remain ACTIVE.

   The leg can be returned to service as it was, and any other leg can be restored by normalization.

NPC ROLL

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 DE, TE, PB, PC, DA, PA, and TA. The following constraints apply:

■ The NPCs must be present on the DACS.

■ 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, PREEMPTED or DEROUTED **Ckt Status**.

■ No channel in the **Current NPC** may be assigned to any subrate circuit.

■ No channel in the Current NPC may be assigned to any BCON circuit.

■ The NPCs must not be under test.

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 Status**es. At the end of the roll, they are returned to their original **Ckt Status**es.

An NPC ROLL changes every reference to the NPC throughout the I-2000 system; for example, in all circuits referencing the NPC, regardless of status, in all RPs, ARPs and in stored data resulting from NPC PROVISIONING.

$\Rightarrow$ **NOTE:**
DACS II has an NPC Roll feature that works differently than the I-2000 feature. The I-2000 does not process the echoed response of an NPC Roll using the DACS II command. The DACS II command is SW-ROLL-T1.

NPC ROLL Form

To transfer circuit connections from one NPC to another, select NPC ROLL from the PROVISIONING menu.

The NPC ROLL form is displayed, as shown in Figure 8-4.

```
06:15 01 Nov 1997    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 8-4.   NPC ROLL Form

Field Descriptions

Field descriptions for the NPC Roll form are described in Table 8-4.

Table 8-4.   NPC ROLL Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name.
	Enter the name of the DACS 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 8-4.   NPC ROLL Field Descriptions (Contd)

Roll To Hier, Ext, NPC ID	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:
	— 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.

Example: Rolling NPC Circuits

Circuits are to be rolled from 55US23 to 43TZ86. Both are `IS` NPCs of **Type** `DE`.

To roll these NPC circuits, follow these steps:

1. Select PROVISIONING from the MAIN MENU and NPC ROLL from the PROVISIONING menu.

2. Enter the following data, or use the displayed defaults:

    — **Site Name**: `DACS00`

    — **Current NPC ID**: `55US23`

    — **Roll To NPC ID**: `43TZ86`

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.

    A completion message is displayed in the I-2000 **Status** line.

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 14, "Report Operations"). Only the results of the last NPC ROLL are available.

Reconfiguration Plans

9

Contents

Reconfiguration Plans

9

Introduction

A reconfiguration plan specifies a sequence of circuit-provisioning **Action**s to be executed automatically when you execute the plan. The number of **Action**s you can enter is virtually unlimited. These **Action**s reconfigure the **Ckt Status** of circuits already in the database.

If a circuit is not in the database, you may still provision it from RECONFIGURATION PLAN PROVISIONING. On you typing in a circuit ID the I-2000 cannot identify, it displays a pop-up menu asking: NEW CIRCUIT! PROVISION NOW? If you answer YES, you are placed in the CIRCUIT PROVISIONING form.

While in CIRCUIT PROVISIONING, you may utilize all of its capabilities: CREATE as many circuits as you wish, BROWSE any circuits, and so on. When you are ready for an automatic return to RECONFIGURATION PLAN PROVISIONING, press QUIT .

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 DACS 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 **Action**s 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

RECONFIGURATION PLAN PROVISIONING Form

To obtain the RECONFIGURATION PLAN PROVISIONING form, select RECONFIGURATION PLAN from the PROVISIONING menu. The RECONFIGURATION PLAN PROVISIONING form is displayed, as shown in Figure 9-1.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    ─── RECONFIGURATION PLAN PROVISIONING ───
 Site Name:DACS00                                    RP Status:
 RP Action:INSERT            RP ID:                   Sequence:
 Ckt ID:                                              Action:ALTROUTE
   Class:                    CP:00:                   Status:
   Bandwidth:1               Bandwidth Type:A

 NORMAL        Hier   Ext              NPC ID                 Ch

        FROM:
          TO:

 ALTROUTE

        FROM:
          TO:
 Preempted                                 Status:       CP:
 Ckt ID:

  ─ Enter the FROM Side NPC Number (Hierarchical format) ─
```

| HELP | | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 9-1. **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 **ALTROUTE** and **Preempted Ckt ID** fields appear only if the circuit **Action** is ALTROUTE.

Field Descriptions

Field descriptions for the Reconfiguration Plan Provisioning form are described in Table 9-1.

Table 9-1. **RECONFIGURATION PLAN PROVISIONING Field Descriptions**

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name.
	Enter the name of the DACS on which this circuit action (**Action**) is to be executed.

Table 9-1.   RECONFIGURATION PLAN PROVISIONING Field Descriptions (Contd)

RP Status	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. 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. You can update the screen at any time by entering the **RP ID**. The I-2000 retrieves the current **RP Status**.
RP Action	Mandatory. Reconfiguration plan action. CREATE Applies to plans only. Creates a reconfiguration plan, uniquely identified by an **RP ID**. 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. If the RP is listed in an ARP, the DESTROY is rejected. 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. BOOT then performs an EXECUTE on this plan in the Site-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 Action**s, which log both successes and failures, BOOT only logs the failures. INSERT Applies to items only. Inserts an item into the plan in the position indicated by the **Sequence**. 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.

Table 9-1.   RECONFIGURATION PLAN PROVISIONING Field Descriptions (Contd)

RP Action (Continued)		If the **Ckt ID** indicates the circuit does not exist, a pop-up window appears, allowing you to enter CIRCUIT PROVISIONING. When you have provisioned the circuit, you are returned to this form.
		A circuit can only be inserted in a plan once. However, the same circuit can be used in different plans.
	REMOVE	Applies to items only. Removes an item from the plan. The I-2000 automatically renumbers all subsequent entries in that plan.
	CHANGE	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.
		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.
	EXECUTE	Applies to plans only. Executes the plan specified by **RP ID**. Execution consists of first performing a CHECK, then executing the **Action**s of all items not internally marked null, in order of **Sequence**. Nullified items are logged anyway.
		EXECUTE does not affect circuits already in the desired circuit status.
		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.
		The results of only the most recent CHECK, EXECUTE, or IDLE are saved in the results log for an RP.
		If a circuit provisioning action was unsuccessful, you can modify the plan or correct the condition that prevented execution and then execute the plan an many times as it takes to bring about all the desired circuit statuses.

Table 9-1. **RECONFIGURATION PLAN PROVISIONING Field Descriptions (Contd)**

RP Action (Continued)	IDLE	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, DEACTI-VATED, or PENDING.
		Exception: a circuit that had been in the PENDING status before the plan was executed is placed into the DEACTIVATED status by IDLE.
		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.
	CHECK	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.
		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 14). Then correct the problems and perform CHECK again.
		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.
	CLEAN	Applies to plans only. Looks for every circuit referenced in the plan. If it does not find the circuit in the appropriate I-2000 frame database, CLEAN removes its reference from the plan.
	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.

Table 9-1.   RECONFIGURATION PLAN PROVISIONING Field Descriptions (Contd)

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 Action**s 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 **Action**s are:

	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.
	DEACTIVATE	Changes the specified circuit in the I-2000 database to DEACTIVATED and disconnects it in the DACS.
	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**. 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.

Table 9-1.   RECONFIGURATION PLAN PROVISIONING Field Descriptions (Contd)

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).
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**.
	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.

Table 9-1.   RECONFIGURATION PLAN PROVISIONING Field Descriptions (Contd)

Status (Continued)	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 "Circuit Provisioning."	
Bandwidth Type	A display-only field indicating how bandwidth is allocated in an NPC, as described in Chapter 6 "Circuit Provisioning."	
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. Refer to Chapter 8 "Alternate Routing."	
Preempted fields	The circuit identifiers for circuits that are preempted by this ALTROUTE, as they would appear on the ALTROUTE screen. Refer to Chapter 8 "Alternate Routing."	

Reconfiguration Plan Examples

The examples below describe how to create reconfiguration plans.

Example: Creating a Reconfiguration Plan

To create a Reconfiguration Plan, follow these steps:

1. Select RECONFIGURATION PLAN from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS00

   — **RP Action**: CREATE

   — **RP ID**: testplan

3. Press ‖EXECUTE‖ and confirm. The **RP Status** says IDLE. In addition, a completion message from the I-2000 is displayed.

4. If the plan already exists, you are notified:

```
The RP ID is already in use
```

Example: Inserting Activations and Deactivations

In this example, Ckt01 is in the I-2000 database with a **Ckt Status** of PENDING.

To insert activations and deactivations, follow these steps:

1. Enter the following 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.

2. Press ‖EXECUTE‖ and confirm. All but the default information disappears.

   The **Sequence** increases by one. In addition, a completion message from the I-2000 is displayed.

3. Insert as many more **Ckt ID**s as needed.

Example: Placing the Ckt ID in the Database

If ckt01 was not in the database, You can place it there and return automatically to the reconfiguration plan as follows:

1. Enter the following 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

A pop-up menu is displayed:

`NEW CKT! PROVISION NOW?`

2. Select `YES`.

   The CIRCUIT PROVISIONING form is displayed.

3. Enter the following data:

   — **Site Name**: DACS01

   — **Action**: PEND

   — **Ckt ID**: ckt01

4. Press EXECUTE and select IMMEDIATE. The **Ckt Status** field changes from `NULL` to `PENDING`. In addition, the `command completed successfully` message is displayed.

5. Press QUIT.

   You are returned to the RECONFIGURATION PLAN PROVISIONING form.

6. Enter these data: **Action**: ACTIVATE

   The appropriate fields appear on the form.

7. Press EXECUTE and confirm. All but the default information disappears and the **Sequence** increases by one.

   In addition, a completion message from the I-2000 is displayed.

Example: Removing an Item from Reconfiguration Plan

To remove an item from the reconfiguration plan, follow these steps:

1. Enter the following data:

   — **Site name**: DACS01

   — **RP Action**: REMOVE

   — **RP ID**: testplan

   — **Sequence**: 1

   The information for that item is displayed on the form.

2. Press EXECUTE and confirm. The information on the form reverts to the previous item, if any. In addition, a completion message from the I-2000 is displayed.

Example: Inserting Altrouting

To insert altrouting, follow these steps:

1. Enter the following data:

   — **Site name**: DACS01

   — **RP Action**: INSERT

   — **RP ID**: testplan

   — **Sequence**: 1

   — **Ckt ID**: Ckt01

   — **Action**: ALTROUTE

   — **ALTROUTE, FROM, NPC ID**: msc217

   — **ALTROUTE, FROM, Ch**: 010

   — **ALTROUTE, TO, NPC ID**: msc212

   — **ALTROUTE, TO, Ch**: 011

2. Press EXECUTE and confirm.

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?

4. Answer YES in each case, if you want to preempt a circuit. All but the default information disappears and the **Sequence** increases by one.

   In addition, a completion message is displayed.

Example: Generating a Report

This example displays a listing of an existing reconfiguration plan (testplan) for the DACS at **Site Name** DACS00.

To generate a report, follow these steps:

1. Select REPORT OPERATIONS from the MAIN MENU.

2. Select RECONFIGURATION PLAN RESULTS.

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.

4. On the RECONFIGURATION PLAN RESULTS SEARCH CRITERIA form.

5. Enter the following data:

   — **Site Name**: DACS00

   — **Reconfiguration ID**: testplan

6. Press ⬜EXECUTE⬜ and confirm.

> The following message to is displayed on the I-2000 Status line. In addition, the REPORT OPERATIONS menu to is displayed.

```
report generation is completed
```

7. 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.

Modification Plan Examples

The examples below describe how to check and change a plan.

Example: Checking the Plan

To check the reconfiguration plan, follow these steps:

1. Select RECONFIGURATION PLAN from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS01

   — **RP Action**: CHECK

   — **RP ID**: testplan

3. Press ⬜EXECUTE⬜ and confirm. You are notified that the plan will be exe-cuted in the background, and are required to confirm.

   A message is displayed in the I-2000 status line, stating the number of items attempted and the number successful.

4. Display RECONFIGURATION PLAN RESULTS report, following the steps given under "'Example: Generating a Report". The report should list all conflicts.

5. 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
```

Example: 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.

To change the reconfiguration plan, follow these steps:

1. In the CIRCUIT PROVISIONING form.

2. Enter the following data:
   — **Site Name**: DACS01
   — **Action**: DEACTIVATE
   — **Ckt ID**: MM07

3. Press ⬚EXECUTE⬚ and confirm.

4. Press ⬚QUIT⬚. Return to the PROVISIONING menu.

5. Select RECONFIGURATION PLAN.

6. Enter the following data:
   — **Site Name**: DACS01
   — **RP Action**: CHANGE
   — **RP ID**: testplan
   — **Sequence**: 3
   — **Ckt ID**: MM06
   — **Action**: ACTIVATE.

7. Press ⬚EXECUTE⬚ and confirm.

8. Enter the following data:
   — **RP Action**: INSERT
   — **Ckt ID**: MM05
   — **Action**: DEACTIVATE
   — **Sequence**: 5

9. Press ⬚EXECUTE⬚ and confirm.

Example: Rechecking the Plan

Repeat the steps under "Example: Generating a Report", and confirm that the report displays the changed plan data. Also repeat the steps under "Example: Checking the Plan", to do a check of the revised plan and display the results. See that there are now no execution conflicts.

Example: Executing Reconfiguration Plans

To execute a reconfiguration plan, follow these steps:

1. Select RECONFIGURATION PLAN from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS01

   — **RP Action**: EXECUTE

   — **RP ID**: testplan

3. Press EXECUTE and confirm. The entire plan is now executed and the I-2000 sends the appropriate commands to the specified DACS.

   In addition, a completion message appears.

4. Display a RECONFIGURATION PLAN RESULTS report to determine if there were any execution conflicts.

Example: Idling Reconfiguration Plans

To idle a reconfiguration plan, follow these steps:

1. Select RECONFIGURATION PLAN from the PROVISIONING menu.

2. Enter the following data:

   — **Site Name**: DACS01

   — **RP Action**: IDLE

   — **RP ID**: testplan

3. Press EXECUTE and confirm.

   — The entire plan is now idled. The appropriate commands are sent to the specified DACS

   — A completion message appears.

4. Display a RECONFIGURATION PLAN RESULTS report to determine if there were any execution conflicts.

Automatic Plans

AUTOMATIC RECONFIGURATION PROVISIONING Form

To obtain the AUTOMATIC RECONFIGURATION PLAN form, select AUTOMATIC RECONFIGURATIN PROVISIONING from the PROVISIONING menu.

The AUTOMATIC RECONFIGURATION PROVISIONING PLAN is displayed, as shown in Figure 9-2.

```
06:15 01 Nov 1997 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 9-2.   **AUTOMATIC RECONFIGURATION PLAN PROVISIONING Form**

Initially only the first line appears. The fields that appear subsequently depend on the **Action** and **List Type**.

Field Descriptions

Field descriptions for the AUTOMATIC RECONFIGURATION PLAN are described in Table 9-2.

Table 9-2.   AUTOMATIC RECONFIGURATIN PLAN Field Descriptions

Action	Mandatory. Valid actions are:
	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 Applies to ARP items only. Inserts an item into the ARP in the position indicated by the **Sequence**. 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.
	REMOVE Applies to items only. Removes an item from the ARP. The I-2000 automatically renumbers all subsequent entries in the ARP.
	CHANGE 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. 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.
	EXECUTE Applies to ARPs only. Sequentially executes the RPs in the plan specified by **ARP ID**. 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. Upon completion, EXECUTE reports the number of items for which it sent commands, and the number that succeeded. The results of the most recent CHECK, EXECUTE, or IDLE overwrite the previous results in the results log for an ARP.

Table 9-2. **AUTOMATIC RECONFIGURATIN PLAN Field Descriptions (Contd)**

Action (Continued)	IDLE	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. Upon completion, IDLE reports the number of items for which it sent commands and the number that succeeded. The results of the most recent CHECK, EXECUTE, or IDLE overwrite the previous results in the results log for an ARP.
	CHECK	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. 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 14). Then correct the problems and perform CHECK again. 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 **Action**s overwrites the data in the log from the previous use.
	CLEAN	Applies to items only. Looks for every RP referenced in the ARP. If it does not find the RP in the appropriate I-2000 frame database, CLEAN removes its reference from the ARP. 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.
	ABORT	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.
ARP ID		Mandatory. Up to 12 characters. Identifies the automatic reconfiguration plan that is to be affected by the **Action**.

Table 9-2.   AUTOMATIC RECONFIGURATIN PLAN Field Descriptions (Contd)

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, pro-vided 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 hier-archical format of the NPC whose alarm will trigger the ARP.
(Ext)	Appears only for a **List Type** of ALARM. The previous NPC num-ber, but in extended format.
NPC 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; for example, must have been created under NPC PROVISIONING.

Automatic Reconfiguration Plan
Examples

The examples below describe how to create an Automatic Reconfiguration Plan, and how to insert Reconfiguration Plans and Alarm List items.

**Example: Creating an Automatic
Reconfiguration Plan**

To create an Automatic Reconfiguration Plan, follow these steps:

1. Select AUTOMATIC RECONFIGURATION PLAN from the
   PROVISIONING menu.

2. Enter the following data:

   — **Action**: `CREATE`

   — **ARP ID**: `newplan`

   The I-2000 searches the database for a plan of that ID.

3. Press `EXECUTE` and select IMMEDIATE or YES. The **ARP Status**
   changes to `IDLE`. In addition, a completion message for the I-2000 is dis-
   played.

4. If the plan already exists, you are notified:

   ```
   New Automatic Reconfiguration Plan must have unique ID
   ```

5. You are required to acknowledge.

**Example: Inserting Reconfiguration Plans and
Alarm List Items**

To insert a Reconfiguration Plan and Alarm List Items, follow these steps:

1. Select AUTOMATIC RECONFIGURATION PLAN from the
   PROVISIONING menu.

2. Enter the following data:

   — **Action**: `INSERT`

   Additional fields are displayed on the screen.

3. Enter the following data:

   — **ARP ID**: `newplan`

   — **List Type**: `RP`

4. The next sequence number is automatically displayed.

5. Enter the following data:

   — **Site Name**: `DACS02`

   — **RP ID**: `testplan`

6. Press `EXECUTE` and select IMMEDIATE or YES.

   A completion message is displayed.

7. 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

8. Press EXECUTE and select IMMEDIATE or YES.

A completion message is displayed.

Reports are available for each ARP. The Reports list the RPs and NPCs whose alarms will trigger the ARP. Refer to Chapter 14 "Report Operations."

Database Administration

10

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Database Administration

10

Introduction

⇒ **NOTE:**
Database Administration is available *only* to the system administrator.

As a system administrator, you can perform the following database administration functions:

- Database Audit/Synchronization

- Backup/Restore

- Enter Outage Data

Database Administration Menu

Select DATABASE ADMINISTRATION from the MAIN MENU. The DATABASE ADMINISTRATION menu is displayed, as shown in Figure 10-1.

```
06:15 01 Nov 1997  I-2000 Controller for Release x.x for DACS-II
Status:
Alarms:
                         ┌─── DATABASE ADMINISTRATION ───
  ┌──────────────────────┘                                │
  │                    ┌─DATABASE AUDIT/SYNCHRONIZATION
  │                     BACKUP/RESTORE
  │                     ENTER OUTAGE DATA
  │
  │
  │
  │
  │
  │
  │
  │
  │
  └─ Press ENTER to Perform Database Audit/Synchronization ──
```

| HELP | | | QUIT | | TOP MENU | PRINT | |
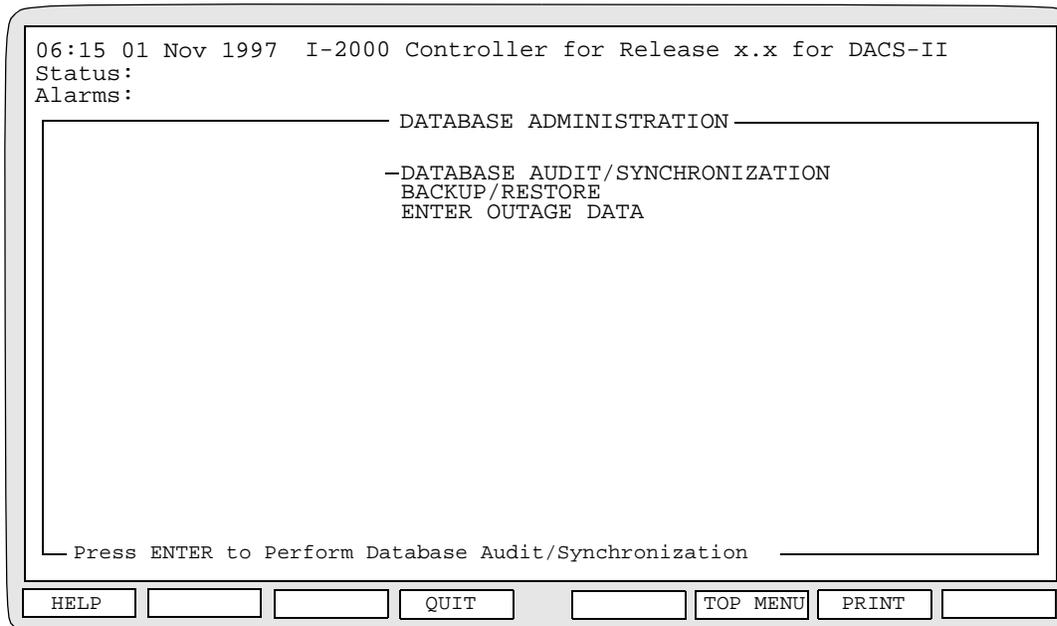
Figure 10-1.   DATABASE ADMINISTRATION Menu

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 Chapter 4 "NPC Provisioning" and Chapter 6 "Circuit Provisioning," 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 frame provisioning data into the I-2000 databases all at once. Some examples of a special need are as follows. The link to the DACS can be down for a time, allowing a gap between the I-2000 and DACS databases to develop. Also, a SNIDER link can be choked by a long transmission when the I-2000 is very busy, so that the I-2000 loses characters, rendering one or more messages incomprehensible. Once again, a gap between databases is opened.

Only one DATABASE AUDIT/SYNCHRONIZATION action per DACS can be run at one time. In addition, an ALARM QUERY cannot be executed while a DATABASE AUDIT/SYNCHRONIZATION is running.

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 10-1 lists the NPC database parameters audited.

Table 10-1.   NPC Parameters Audited

Type of NPC	DE/TE	PB/PC	DA/TA	PA	DC	Clear DE/TE	Clear DA/TA	Clear PA	SD
Service State	X	X	X	X	X	X	X	X	X
Type	X	X	X	X	X	X	X	X	X
NPC number	X	X	X	X	X	X	X	X	X
Alarm State*	X	X	X	X	X	X	X	X	X
IW	X	X	X	X	X				
TS0		X**		X					
TS0M		X**		X					
AIS Alarm Level	X	X	X	X		X	X	X	
NFS†				X					
Perfor-mance thresholds	X**	X**		X		X		X	

* Only synchronized when the DACS is the master.
**Applies only to DACS II.
† 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 six 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. A fifth records **NFS discrepancies**, and a sixth, **AIS Alarm Level**. Six 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.

If there is a Performance Thresholds discrepancy, the DACS value "10" will be represented by a "G" in the log.

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 10-2 lists the circuit parameters audited.

➡ **NOTE:**
DCC, INCL, and OOS are not audited.

Table 10-2.   Circuit Parameters Audited

Type of circuit	CEPT nxDS0	NAS nxDS0	Gateway nxDS0	DMB*	Clear DS1*	Clear E1*	Virtual multipoint*	Subrate	Estab. DS0
Ckt Status	X	X	X	X	X	X	X	X	X
Ckt Class	X	X	X	X	X	X	X	X	X
FROM NPC	X	X	X	X	X	X	X	X	X
FROM **Ch**	X	X	X	X			X	X	X
FROM CUST								X	
TO NPC	X	X	X	X	X	X	X	X	X
TO **Ch**	X	X	X	X			X	X	
TO CUST								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						
Transmission Rate								X	X†

Table 10-2.   Circuit Parameters Audited (Contd)

Type of circuit	CEPT nxDS0	NAS nxDS0	Gateway nxDS0	DMB*	Clear DS1*	Clear E1*	Virtual multipoint*	Subrate	Estab. DS0
UMC, **MUX**, **SIG**, Framing								X	
Transmission Standard									X

* DACS II ISX Release 1.0 does not support these circuit types.

** Only synchronized when the DACS is the master and one end for one-way or two ends for two-way are terminated or unterminated.

† For Transmission Standard X.50 only.

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 DACS 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 ID**s created by NPC synchronization are in the format: **NPC**xxxxx.

—　Frames provisioned with link hierarchical numbering are in the format: **NPC**yyyy.

For frames provisioned with link extended numbering,

where:

xxxxx   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.

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:

- ■ For circuit classes FDX, HDX, BBL, BRD, and DMB:

  SYN fromnpc-fromchan tonpc-tochan **BW/**bw class

- ■ For subrate circuits:

  SYN fromnpc-fromchan-fromcust tonpc-tochan-tocust rate **SUB BW/**bw class

- ■ For established DS0 circuits:

  SYN fromnpc-fromchan tonpc sectype **EST**

- ■ For new BCON BKB circuits:

  BYN fromnpc-fromchan tonpc-tochan BW/bw class

where:

fromnpc   is the FROM NPC number in hierarchical or extended format, depending on how the DACS was provisioned.

fromchan   is the FROM channel number, or DS1 or E1.

from-cust   is the FROM customer number.

tonpc   is the TO NPC number in hierarchical or extended format.

tochan   is the TO channel number, or DS1 or E1.

tocust   is the To customer number.

bw   is the bandwidth, which is either `1` or the number of contiguous channels of a high-rate circuit.

rate   is the subrate transmission rate.

class   is the **Ckt Class**: `FDX`, `HDX`, `BBL`, `BRD` or `DMB`.

sech-type   is the type of SRM 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:

   ■   If there are discrepancies of NPC **TYPE** that would require unequipping the NPC at the DACS, and there are circuits on these NPCs, the NPC sync will fail.

   ■   When auditing for a range of NPCs (ALL LOCAL NPCS or RANGE OF LOCAL NPCS), unequipped NPCs at the I-2000 are not processed. If the NPC is equipped at the DACS, the NPC will not be degrown (unequipped) at the DACS.

■   When the DACS is the master:

   ■   If there are discrepancies of equippage state that would require unequipping the NPCs at the I-2000, and there are circuits on these NPCs at the I-2000, then the NPC sync will fail. If the NPC is deleted on the I-2000, the action will be logged.

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 subrate cross-connection are not audited or synchronized. Their existence is logged.

■   The BKB of a BCON circuit must be in the range of the NPC synchronization request for that BKB to be synchronized. This means that if a leg is encountered in the range of the request, and the BKB is not in the range of the request, the LEG will not be individually synchronized. The report for the audit/synchronization results will, however, identify this and will identify the BKB. Note, however, that if the BKB is in the range of the sync request then ALL LEGS associated with the BKB will be synchronized.

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 frame 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, as shown in Figure 10-2.

    — 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.
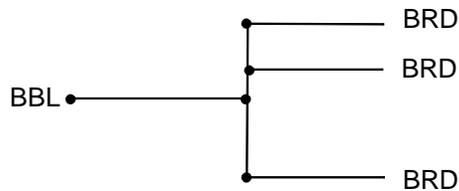
Figure 10-2.   Virtual Multipoint Circuit

➡️ **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 can 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 can be made to correspond to the DACS.

  —   If there is a discrepancy that cannot be corrected globally, over the entire circuit; for example, 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, channel, and subrate synchronizations are combined in the UPLOAD **Action**. An UPLOAD loads the NPC, channel, and C-Bit 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, as shown in Figure 10-3 and 10-4.

The UPLOAD Action checks every remote NPC and does an NPC SYNC with the DACS as the master.
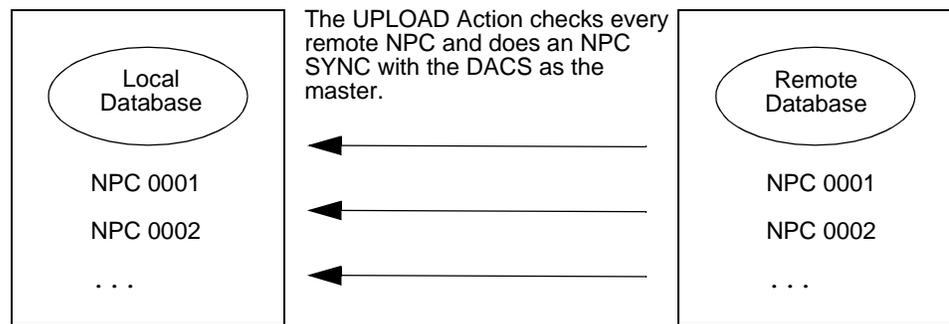
Figure 10-3.   Stage 1 of the UPLOAD Action: NPC SYNC

The result of the first stage, shown in Figure 10-4, 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`.

For every channel that is located in an equipped NPC of the new local database, the UPLOAD Action determines its connection status in the remote database and does a CHANNEL SYNC or C-BIT SYNC on it with DACS as the master.
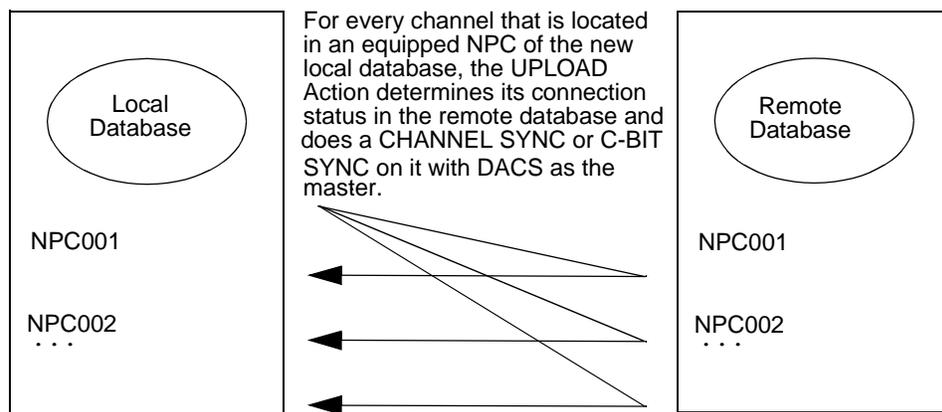
**Figure 10-4.   Stage 2 & 3 of the UPLOAD Action: CHANNEL SYNC/
SUBRATE SYNC**

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, and` or `CHANNEL SYNC, and SUBRATE SYNC.` You can execute an `UPLOAD` repeatedly to bring about a successively closer correspondence of the databases, without loss of data you may want 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.

Discrepancies in NPC, subrate , and channel data are tracked internally. Only failed synchronization attempts are logged, keeping the log size small and using less disk space.

Other Features and Constraints

Database audit/synchronization may take a long time—longer than four 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.

Some additional features of audit/synchronization are:

- Certain **Actions** are denied when others are in progress; such as, ALARM QUERY (REPORT OPERATIONS) is not allowed during an audit/synchronization.

- Audit synchronization applies to these DACS types only: DACS II Releases 4 and higher; and DACS II ISX Releases 1.0 and higher. A table of NPC types supported for each frame is shown in Table 10-3. In addition, Table 10-3 lists DSPP types supported for the X.50 and X.57 subrate provisioning.

Table 10-3.   DSPP Types supported for Subrate Provisioning

	PB	PC	PA	DC	DE	TE	DA	TA	MB	SR	MJ	Virtual	SD
DACS II before Release 6.0	X	X			X	X							
DACS II Release 6.0 and after	X	X	X		X	X	X	X					
DACS II ISX Releases 1.0 and higher			X*				X						X**

* DACS II ISX Releases 1, 1.1 do not support the clear DS1/E1 versions of Types PA and DA
** DACS II ISX Release 2.0 and higher

- Audit/synchronization cannot be performed when any user is in SNIDER passthrough mode, or doing a database restoral.

- Any user with the ADMIN user class 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 is performed:

■ The time schedule for the audit/synchronization is added, changed, or deleted.

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 frame, 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 an AUDIT/ SYNCHRONIZATION RESULTS report, refer to Chapter 14 "Report Operations."

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 NPCS` **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. A report of the audit/sync results which does not qualify the range of NPCs in the report may be quite large. Qualify the report by limiting the range of NPCs in the report.

DATABASE AUDIT/SYNCHRONIZATION Form

Select DATABASE AUDIT/SYNCHRONIZATION from the DATABASE ADMINISTRATION menu. The DATABASE AUDIT/SYNCHRONIZATION form is displayed, as shown in Figure 10-5.

This example shows every possible field that can appear on this form. However, the fields that you see vary according to the values in the **Action** and the **Mode** fields.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                   ┌──── DATABASE AUDIT/SYNCHRONIZATION ────┐
  Site Name:

    Action:            Mode:                    Master DB:

    NPC ID:                                     Channel:
    Hier:        Ext:

    Last NPC ID:
    Hier:        Ext:


              LOCAL INFO                       DACS INFO
         Fr:              To:            Fr:                To:
   NPC:
    Ch:
    IW:
  Term:
  Opts:
    SC:
    TC:
  └ Enter site name ┘
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 10-5.   DATABASE AUDIT/SYNCHRONIZATION Form

Field Descriptions

The field descriptions for the DATABASE AUDIT/SYNCHRONIZATION form are described in Table 10-4.

Table 10-4.   DATABASE AUDIT/SYNCHRONIZATION Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name. The name of the DACS 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 "System Administration."

Table 10-4.   DATABASE AUDIT/SYNCHRONIZATION Field Descriptions (Contd)

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.
	ALARM SYNC — Performs a synchronization of **Alarm State** only, on the same NPCs as would be specified by ALL LOCAL NPCS **Mode**. This **Action** is a manual version of automatic alarm synchronization described in the **NPC Alarm Sync** field under DACS administration in Chapter 3 "System Administration."
	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 synchronized by eliminating those differences according to restrictions. The range of channels to be synchronized is specified by **Mode** and channel selection fields.
	NPC AUDIT/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.
	UPLOAD — Initiates an NPC SYNC in ALL FACILITY NPCS **Mode** with DACS as **Master DB**, followed by a CHANNEL SYNC Action in ALL LOCAL NPCS **Mode**, again with **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.
	ABORT — Cancels the audit/synchronization currently executing in the background or on queue.

Table 10-4.   DATABASE AUDIT/SYNCHRONIZATION Field Descriptions (Contd)

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 DACS.
	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** field or its corresponding **Hier** or **Ext** fields and the **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.

Table 10-4.   DATABASE AUDIT/SYNCHRONIZATION Field Descriptions (Contd)

NPC ID	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. An identifier, or name, associated with the specified **Number**. The CREATE **Action** associates the name and number. 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. An identifier, or name, associated with the specified **Number**. The CREATE **Action** associates the name and number. 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.
Channel	Appears for AUDIT and SYNC **Action**s when the **Mode** is SINGLE CHANNEL.The channel number of the single channel to be audited or synchronized.
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.
Last NPC ID	Appears for AUDIT and SYNC **Action**s 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, as shown in Figure 10-6.
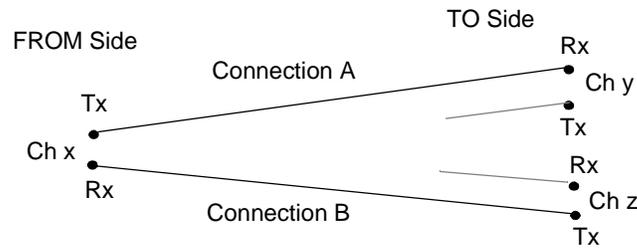
Figure 10-6.   Two Two-point, One-way Circuits

One channel has two directions. Figure 10-7 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.
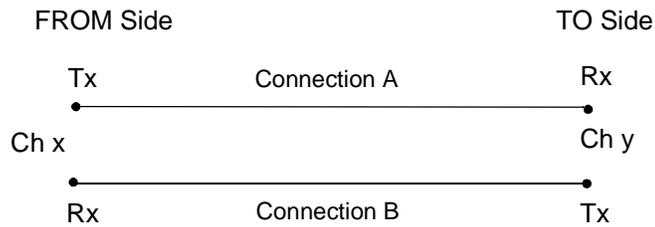
Figure 10-7.   A Two-point, Two-way Circuit

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;
for example, at the TO side. In the FDX case, it is the same as the Rx side of
Connection A.

Bottom Screen Field Descriptions

The field descriptions that appear at the bottom of the screen are described in the
following table.

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**.**
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.

Procedure: Scheduling an NPC Audit

This procedure schedules an NPC audit to run every day at 8:00 P.M.

To schedule an NPC Audit, follow these steps:

1. Select DATABASE ADMINISTRATION from the MAIN MENU and DATA-BASE AUDIT/SYNCHRONIZATION from the DATABASE ADMINISTRA-TION menu. The DATABASE AUDIT/SYNCHRONIZATION form is displayed, as shown in Figure 10-8.

```
06:15 01 Nov 1997   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 10-8.   DATABASE AUDIT/SYNCHRONIZATION Form

2. Enter these values in the following fields:

   – **Site Name:** DACS01

   — **Action**: NPC AUDIT

   — **Mode**: ALL FACILITY NPCS

3. Press EXECUTE and select SCHEDULE. Enter the following data:

   — **Date**: 01 Dec 97

— **Time**: 20 00

— **Number of Times**: 00

⇒ **NOTE:**
00 indicates continuous.

— **Interval**: 01

— **Scale**: DAYS

4. Press EXECUTE again. The Command Completed Successfully
message is displayed.

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.

Procedure: Printing an NPC Audit

To print the results of the NPC audit, return to the MAIN MENU and follow
these steps

1. Select REPORT OPERATIONS from the MAIN MENU and AUDIT/SYN-
CHRONIZATION RESULTS from the REPORT OPERATIONS menu. The
AUDIT/SYNCHRONIZATION SEARCH CRITERIA form is displayed, as
shown in Figure 10-9.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        AUDIT/SYNCHRONIZATION SEARCH CRITERIA
  Site Name:DACS01

    Action:NPC AUDIT        Report Type:DETAILED
    NPC ID:
    Hier:        Ext:

    Last NPC ID:
    Hier:        Ext:

    Date:        Time: : :




  Enter the Site name

  HELP     CHOICES             QUIT              TOP MENU   PRINT   EXECUTE
```

Figure 10-9.   AUDIT/SYNCRONIZATION SEARCH CRITERIA Form

2. Enter the **Site Name** and **Action** NPC AUDIT. 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 message is
    displayed:

    Report Generation is completed.

    The I-2000 **Status** message appears and the cursor moves to DISPLAY
    LAST GENERATED REPORT.

3. Press Enter to select DISPLAY LAST GENERATED REPORT.

4. Select SCREEN or PRINTER from the insert. The AUDIT/SYNCHRONIZA-
    TION RESULTS report is printed or displayed.

Procedure: Performing a Channel Audit

To perform a channel audit, follow these steps:

1. Select DATABASE ADMINISTRATION from the MAIN MENU and
    DATABASE AUDIT/SYNCHRONIZATION from the DATABASE
    ADMINISTRATION menu.

2. Enter the following data:

     — **Site Name**: DACS01

     — **Action**: CHANNEL AUDIT

     — **Mode**: RANGE OF LOCAL NPCS

The NPC range fields are displayed, as shown in Figure 10-10.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                      DATABASE AUDIT/SYNCHRONIZATION
  Site Name:DACS01

    Action:CHANNEL AUDIT    Mode:RANGE OF LOCAL NPCS
    NPC ID:
    Hier:        Ext:

    Last NPC ID:
    Hier:        Ext:




  Enter the NPC Identifier

 HELP              QUIT              TOP MENU   PRINT   EXECUTE
```
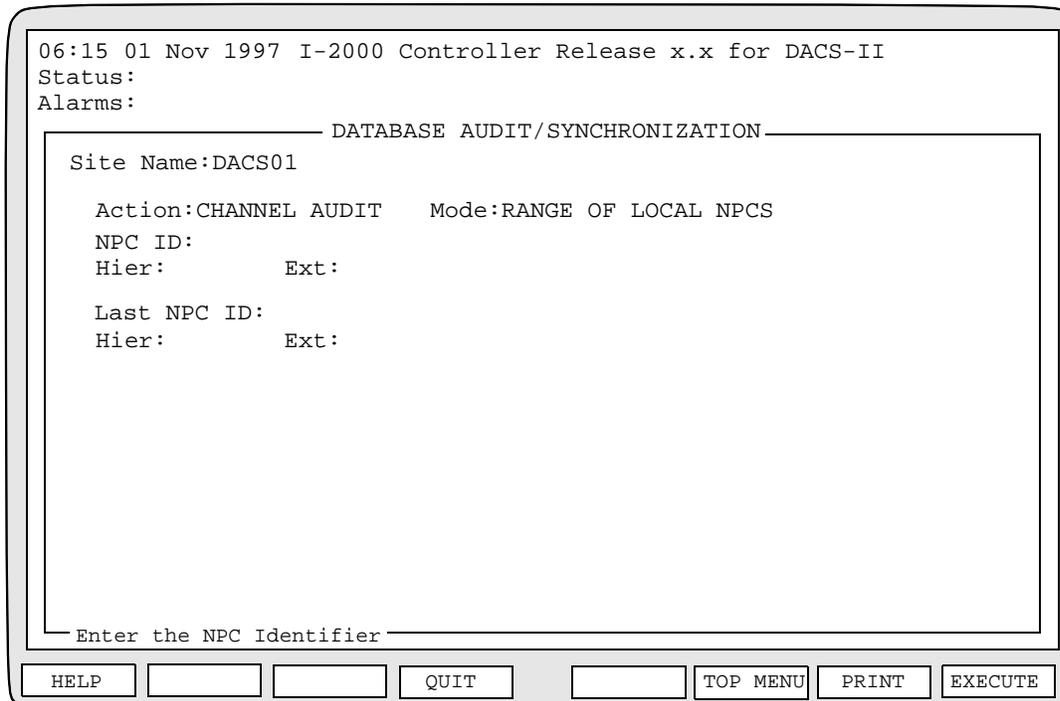
Figure 10-10. NPC Range Fields

3. Enter the following data:

     — **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.

4. Press EXECUTE and select IMMEDIATE. The following events take place:

     — 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`.

Procedure: Performing a Synchronization

This example illustrates how to schedule a one-time background synchronization at 6:00 A.M.

To perform a synchronization, follow these steps:

1. Obtain the DATABASE AUDIT/SYNCHRONIZATION form.

2. Enter the following data:

   — **Site Name**: `DACS01`

   — **Action**: `NPC SYNC`

   — The **Master DB** field appears.

3. Enter the following data:

   — **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.

4. Press EXECUTE and select `SCHEDULE`.

5. Enter these values:

   — **Date**: `01 Dec 97`

   — **Time**: `06 00`

   — **Number of Times**: `01`

6. Press EXECUTE. The `Command Completed Successfully` message is displayed. In addition, 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.

Procedure: Performing a Subrate Audit

To perform a subrate audit, follow these steps:

1. Select DATABASE ADMINISTRATION from the MAIN MENU and DATABASE AUDIT/SYNCHRONIZATION from the DATABASE ADMINISTRATION menu.

2. Enter the following data:

— **Site Name**: DACS01

— **Action**: SUBRATE AUDIT

— **Mode**: RANGE OF LOCAL NPCS

3. Enter the following data:

— **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.

4. Press EXECUTE and select IMMEDIATE. The following events take place:

— 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.

Procedure: Performing a Subrate Sync

To perform a subrate synchronization, follow these steps:

1. Obtain the DATABASE AUDIT/SYNCHRONIZATION form.

2. Enter the following data:

— **Site Name**: DACS01

— **Action**: SUBRATE SYNC

— The **Master DB** field appears.

3. Enter the following data:

— **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.

4. Press EXECUTE and select SCHEDULE.

5. Enter these values:

   — **Date**: `01 Dec 97`

   — **Time**: `04 00`

   — **Number of Times**: `01`

6. Press `EXECUTE`. The `Command Completed Successfully` message is displayed. In addition, 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.

Procedure: Uploading the I-2000 Database

This example illustrates how to upload the I-2000 database from a specified DACS.

To upload the database, follow these steps:

1. Obtain the DATABASE AUDIT/SYNCHRONIZATION form.

2. Enter the following data:

   — **Site Name**: `DACS01`

   — **Action**: `UPLOAD`

3. Press `EXECUTE` and select `SCHEDULE`.

4. Enter the follow data:

   — **Date**: `01 Dec 97`

   — **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 **Action**s of `NPC SYNC` and `CHANNEL SYNC` on the SEARCH CRITERIA forms.

Procedure: 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 DACS. If the task queued, it is just removed from the queue.

To initiate an ABORT action, follow these steps:

1. Obtain the DATABASE AUDIT/SYNCHRONIZATION form.

2. Enter the following data:

   — **Site Name**: `DACS01`

   — **Action**: `ABORT`

The **Mode** field disappears from the screen.

3. Press $\boxed{\text{EXECUTE}}$ and confirm. The `Command Completed Successfully` message is displayed.

Backing Up and Restoring I-2000 Databases

The I-2000 maintains the following data:

■   The I-2000 common database, named COMMON. It contains information common to all configured frames.

■   The I-2000 report formats, named REPORT FORMATS.

$\Longrightarrow$ **NOTE:**
The REPORT FORMATS are contained within the COMMON database. They are 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 Name**s. Each database contains data specific to one DACS.

■   Some I-2000 logs.

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.

$\Longrightarrow$ **NOTE:**
When selecting a FULL backup/restore, you can abort the backup/restore by pressing the $\boxed{\text{DELETE}}$ key twice. The action may not stop immediately, since the backup/restore may be working on a single database on the tape and cannot be interrupted. However, the command will stop the backup/restore process after the action on the current database is complete.

$\Longrightarrow$ **NOTE:**
All backup actions to tape or diskette will overwrite the current contents of the media.

BACKUP/RESTORE Menu

To obtain the BACKUP/RESTORE menu, select it from the DATABASE ADMINISTRATION menu. The BACKUP/RESTORE menu is displayed, as shown in Figure 10-11.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ───── BACKUP/RESTORE ─────

                       ─DATABASE BACKUP/RESTORE (TAPE)
                        DATABASE BACKUP/RESTORE (TAPE)
                        LOG BACKUP/RESTORE (DISKETTE)
                        REPORT FORMAT BACKUP/RESTORE (DISKETTE)
                        FORMAT DISKETTE




      ── Press ENTER to backup/restore a database to tape ──

   ┌────────┐ ┌────────┐ ┌────────┐ ┌────────┐   ┌────────┐ ┌──────────┐ ┌────────┐ ┌────────┐
   │  HELP  │ │        │ │        │ │  QUIT  │   │        │ │ TOP MENU │ │ PRINT  │ │        │
   └────────┘ └────────┘ └────────┘ └────────┘   └────────┘ └──────────┘ └────────┘ └────────┘
```
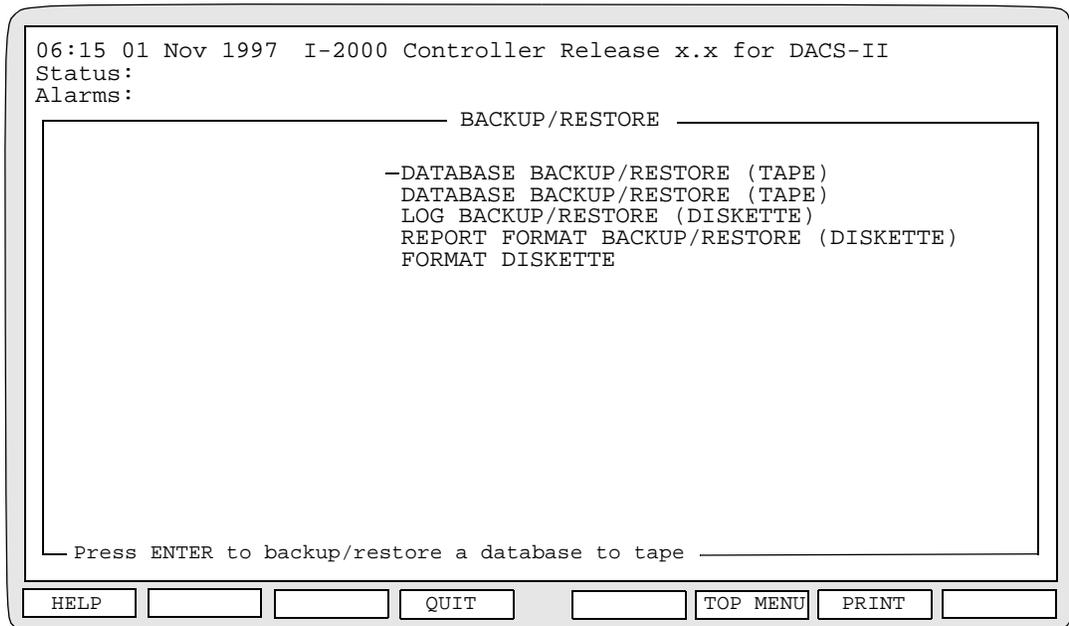
Figure 10-11. BACKUP/RESTORE Menu

Before restoring the COMMON database, REMOVE all frames from service (refer to "Frame Provisioning" in Chapter 3 "System Administration").

A backup or a database restore may fail if one of the following conditions exist:

- FRAME PROVISIONING request is in progress, for example, adding or deleting a DACS, or changing the name of a DACS.

- A message log recovery is in progress on the DACS that is to be backed up.

A database restore may also fail or be denied:

- If an audit/sync is running on the DACS that is to be backed up.

- The database on the tape was not created from the same DACS release that is currently running on the I-2000.

- The language on the database is not consistent with the language of the I-2000.

In general, it is not possible to restore a database or log from tape or diskette that was created from an older release of I-2000 into the current (or newer) release of I-2000.

Procedure: Backing Up Database to 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.

To backup a database to tape, follow these steps:

1. Select DATABASE BACKUP/RESTORE (TAPE) from the BACKUP/ RESTORE menu. The sample screens shown in Figure 10-12 display a FULL BACKUP and a FULL RESTORE for COMMON and 30 other databases.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS II
Status:
Alarms:
                    ─────DATABASE BACKUP/RESTORE (TAPE)─────
                                     ISX2
 Action: FULL BACKUP                 ISX3
                                     ISX4
 COMMON                              ISX5
 ISX                                 ISX6
 CEF                                 ISX7
 CEF2                                ISX8
 CEF3                                ISX9
 CEF4                                ISX10
 CEF5                                ISX11
 CEF6                                ISX12
 CEF7                                ISX13
 CEF8                                ISX14
 CEF9                                ISX15
 CEF10                               ISX16
 CEF11                               ISX17
 ISX1                                ISX18

 ── Enter desired action ──
  ┌───────┐ ┌─────────┐ ┌───────┐ ┌───────┐ ┌───────┐ ┌──────────┐ ┌───────┐ ┌─────────┐
  │ HELP  │ │ CHOICES │ │       │ │ QUIT  │ │       │ │ TOP MENU │ │ PRINT │ │ EXECUTE │
  └───────┘ └─────────┘ └───────┘ └───────┘ └───────┘ └──────────┘ └───────┘ └─────────┘
```

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS II
Status:
Alarms:
          ─────── DATABASE BACKUP/RESTORE (TAPE)   ───────
                                     ISX2
   Action: FULL RESTORE              ISX3
                                     ISX4
   COMMON                            ISX5
   ISX                              ISX6
   CEF                              ISX7
   CEF2                             ISX8
   CEF3                             ISX9
   CEF4                             ISX10
   CEF5                             ISX11
   CEF6                             ISX12
   CEF7                             ISX13
   CEF8                             ISX14
   CEF9                             ISX15
   CEF10                            ISX16
   CEF11                            ISX17
   ISX1                             ISX18
 ── Enter desired action ──
  ┌───────┐ ┌─────────┐ ┌───────┐ ┌───────┐ ┌───────┐ ┌──────────┐ ┌───────┐ ┌─────────┐
  │ HELP  │ │ CHOICES │ │       │ │ QUIT  │ │       │ │ TOP MENU │ │ PRINT │ │ EXECUTE │
  └───────┘ └─────────┘ └───────┘ └───────┘ └───────┘ └──────────┘ └───────┘ └─────────┘
```

Figure 10-12. DATABASE BACKUP/RESTORE (TAPE) Form

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.

3. Use the SELECT key to select as many databases as you want. Selected databases remain highlighted even though the cursor is not on them. When finished, press Enter. The selected databases are listed in the form.

4. Insert the tape cartridge into the drive.

5. Press EXECUTE and confirm.

   The following messages are displayed in this order:

   `Unloading name database into files...`

   `Copying name database files onto tape...`

   Messages similar to those above are repeated for as many databases as are selected.

6. When the I-2000 successfully completes the backup, the following message is displayed:

   `The Command Completed Successfully`

7. If the command fails, an insert appears stating the reason. To try again, reselect the databases.

Procedure: 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 I-2000 system restarts.

When selecting a FULL backup/restore, you can abort the backup/restore by pressing the DELETE key twice. The action may not stop immediately; however, the command will stop the backup/restore process after the action on the current database is complete.

⚠ **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.

⚠ **WARNING:**
Before doing a full restore, or any restore that involves the COMMON database, it is recommended that all DACSs be removed from service. It is also recommended that all users be logged off before doing a full restore.

⚠ **WARNING:**
It is recommended that you not perform a partial restore that includes the COMMON database unless you are certain that the FRAME PROVISIONING information on the existing COMMON database and the one on tape is the same.

⇒ **NOTE:**
A `SELECTIVE RESTORE` using a DACS database that does not already exist at the I-2000 will fail. To copy that database to the I-2000, first go to FRAME PROVISIONING and CREATE a DACS of the same name, then use `SELECTIVE RESTORE` to restore that database from tape into the newly created DACS.

The following procedure demonstrates how to restore selected databases.

To restore a database from tape, follow these steps:

1. Select DATABASE BACKUP/RESTORE (TAPE) from the BACKUP/ RESTORE menu. The DATABASE BACKUP/RESTORE (TAPE) form.

2. Insert the tape cartridge into the drive.

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 tape. This is a multiselect menu.

4. Use the SELECT key to select as many databases as you want.

5. When finished, press Enter. The databases selected along with the name of the I-2000 and time stamp on the tape are displayed. (See "Changing the I-2000 Name.")

6. Press EXECUTE and confirm. The following messages are displayed in the following order:

   ```
   Copying name database files from tape...
   Loading name database files...
   ```

   Messages similar to those above are repeated for as many databases as are selected.

7. When the I-2000 successfully completes the restore, the following message is displayed:

   ```
   The Command Completed Successfully
   ```

8. If the command fails, an insert appears stating the reason.

Procedure: Backing Up The Alarm Log to Tape

The tape backup feature offers capabilities to back up the alarm log for all (**Action** of FULL BACKUP) or selected databases (**Action** of SELECTIVE BACKUP). The following example demonstrates how to select databases.

To backup the alarm log to tape, follow these steps:

1. Select LOG BACKUP/RESTORE (TAPE) from the BACKUP/RESTORE menu. The LOG BACKUP/RESTORE (TAPE) form is displayed, as shown in Figure 10-13, with **Type** fixed at ALARM.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS II
Status:
Alarms:
                        LOG BACKUP/RESTORE (TAPE)

    Action:            Type:ALARM      Database Name:














  Enter desired action

  HELP      CHOICES             QUIT             TOP MENU   PRINT   EXECUTE
```

Figure 10-13. LOG BACKUP/RESTORE (TAPE) Form

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.

3. Use the SELECT key to select as many databases as you want. Selected databases remain highlighted even though the cursor is not on them. When finished, press Enter. The selected databases are listed in the form.

4. Insert the tape cartridge into the drive.

5. Press EXECUTE and confirm. The following messages are displayed in this order:

   Unloading name database into files.

   Copying name database files onto tape...

   Messages similar to those above are repeated for as many sites as are selected.

6. When the I-2000 successfully completes the backup, the following message is displayed:

```
The Command Completed Successfully
```

If the command fails, an insert appears stating the reason. To try again, reselect the sites.

Procedure: Restoring Alarm Log From Tape

The tape restore feature offers capabilities to restore:

- Alarm log for all databases (**Action** of FULL RESTORE)

- Alarm log for selected databases (**Action** of SELECTIVE RESTORE).

The following example demonstrates how to restore selected databases.

To restore an alarm log from tape, follow these steps:

1. Select LOG BACKUP/RESTORE (TAPE) from the BACKUP/RESTORE menu. The LOG BACKUP/RESTORE (TAPE) form is displayed, with **Type** set at ALARM.

2. Insert the tape cartridge into the drive.

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 tape. This is a multiselect menu.

4. Use the SELECT key to select as many databases as you want.

5. When finished, press Enter. The databases selected along with the time stamp on the tape are displayed.

6. Press EXECUTE and confirm. The following messages appear in this order:

```
Copying name database files from tape...
Loading name database files...
```

Messages similar to those above are repeated for as many sites as are selected.

7. When the I-2000 successfully completes the restore, the following message is displayed:

```
The Command Completed Successfully
```

8. If the command fails, an insert appears stating the reason.

Procedure: Backing Up An Alarm Log to Diskette

To back up an alarm log to a diskette, follow these steps:

1. Select LOG BACKUP/RESTORE (DISKETTE). The LOG BACKUP/ RESTORE (DISKETTE) form is displayed, as shown in Figure 10-14.

```
06:15 01 Nov 1997  I-2000 Controller Release-x.x for DACS II
Status:
Alarms:
                        LOG BACKUP/RESTORE (DISKETTE)

    Action:BACKUP     Type:ALARM      Database Name:








    Enter desired action

  HELP     CHOICES              QUIT                TOP MENU    PRINT    EXECUTE
```

Figure 10-14. LOG BACKUP/RESTORE (DISKETTE) Form

2. Enter BACKUP in the **Action** field.

3. Enter the name of the database in the **Database Name** field. The possibilities can be listed with CHOICES.

4. Press EXECUTE and confirm.

    The named database is unloaded to an ASCII temporary file. The LOG BACKUP/RESTORE (DISKETTE) screen is displayed, as shown in Figure 10-15.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    ── LOG BACKUP/RESTORE (DISKETTE) ──

     Action:BACKUP    Type:ALARM    Database Name:DACS00




     Insert formatted diskette #<nn>
     Press enter to continue or any other key to quit




   ── Enter desired action ──
```

HELP	CHOICES		QUIT			TOP MENU	PRINT	EXECUTE
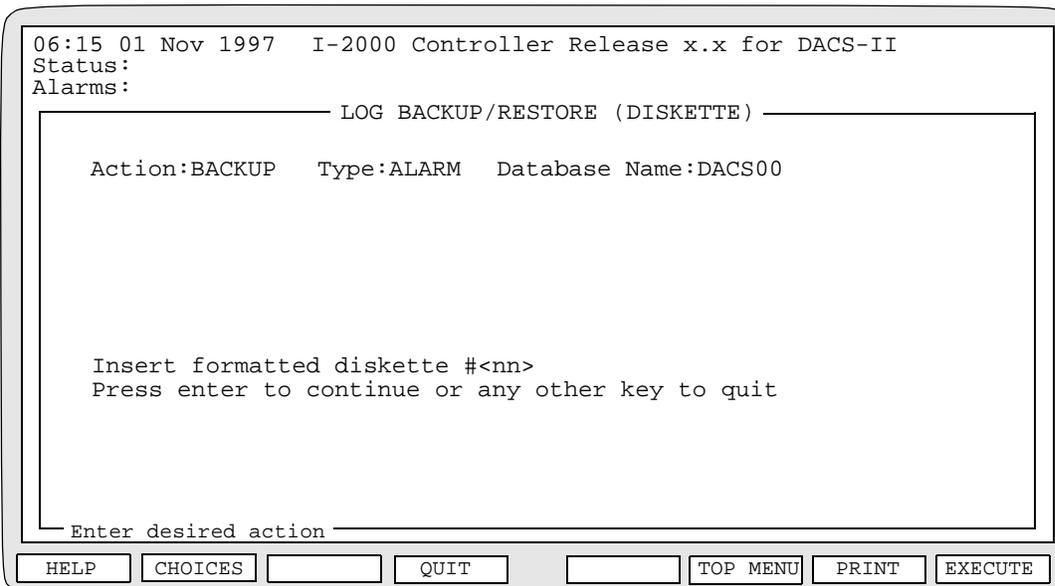
Figure 10-15. Insert Disk Prompt

   5. Insert a diskette and press Enter . The I-2000 writes the log to diskette.
      When the backup is complete, The Command Completed Success-
      fully message is displayed.

➡️ **NOTE:**
      After the log is backed up, be sure to label it with number sequence and
      contents.

Procedure: Restoring An Alarm Log from Diskette

   To restore an alarm log from diskette, follow these steps:

   1. From the BACKUP/RESTORE menu, select LOG BACKUP/RESTORE
      (DISKETTE) and enter an **Action** of RESTORE.

   2. Enter the name of the site in the **Database Name** field. Pressing
      CHOICES lists the names of the I-2000 sites.

   3. Press EXECUTE and confirm.

   4. You are prompted for the diskette. Insert the diskette into the drive. Press
      Enter .

Procedure: Backing Up or Restoring Report Formats

To backup or restore the report formats of an I-2000 to a diskette, follow these steps:

1. Select REPORT FORMAT BACKUP/RESTORE (DISKETTE) from the BACKUP/RESTORE menu.

2. Following the prompt, insert the diskette into the drive.

3. Choose BACKUP or RESTORE from the **Action** field.

4. Press EXECUTE .

Procedure: Formatting a Diskette

To format a diskette, follow these steps:

1. Select FORMAT DISKETTE from the BACKUP/RESTORE menu.

2. Following the prompt, insert the diskette into the drive. But first, make sure the write-protect notch is covered.

3. Press Enter . The diskette is formatted. The system will prompt you with the following message:

```
formatting
...
```

where the number of dots under the word formatting increases as the format progresses.

4. Press any key to continue. You return to the BACKUP/RESTORE menu.

5. Repeat the procedure for the remaining diskettes.

Entering and Retrieving Outage Data

The ENTER OUTAGE DATA selection allows you to keep electronic notebooks, or logs, on NPC and circuit outages that have occurred on a DACS. You collect the data to be placed in a log. An advantage to keeping the log is that you can generate a report to obtain a formatted, hard-copy log.

Two logs are available:

■ NPC outage log

■ 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 can store, change, or remove records for each log.

Procedure: Entering Outage Log Data

To obtain the OUTAGE LOG data, follow these steps:

1. Select DATABASE ADMINISTRATION from the MAIN MENU.

2. Select ENTER OUTAGE DATA from the DATABASE ADMINISTRATION menu. The OUTAGE LOG form is displayed, as shown in Figure 10-16.

```
06:15 01 Nov 1997  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 10-16. OUTAGE LOG Form

Field Descriptions

The field descriptions for the OUTAGE LOG form are described in Table 10-5.

Table 10-5. Outage Log Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name.
	The name of the DACS 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 "System Administration."

Table 10-5.   Outage Log Field Descriptions (Contd)

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.
Record No.	A sequence number, 1 through 9999, that is automatically assigned during an INSERT **Action**, and can be entered in other **Action**s. 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	Three fields stating the date on which the outage began, in the format: dd mmm yy If you do not enter a **Date Out** when inserting an outage record, the default is the current date. where dd can be one or two digits, mmm is the first three letters of the month in either upper or lower case, and yy is the last two digits of the current year. 90-38 are valid entries.
Time Out	Three fields stating the time on which the outage began, in the format: hh:mm:ss where hh is 0 through 24 hours (00:01 follows 24:00), mm is 0 through 59 minutes, and ss is 0 through 59 seconds. The default is the current time.
Date In	The date the outage was cleared. If you do not enter a **Date In** when inserting an outage record, the default is the current date.
Time In	The time the outage was cleared. The default is the current time.

**Procedure: Inserting a Record in the
NPC Outage Log**

To insert a record in the NPC outage log, follow these steps:

1. On the OUTAGE LOG form, enter the following data:

   — **Site Name**: `DACS01`

   — **Outage Type**: `NPC`

   — **Action**: `INSERT`

   — **Record No**: `0001`

   — **Outage ID**: `NPC01101`

   — **Date Out**: `01 Nov 97`

   — **Time Out**: `01:34:26`

   — **Date In**: `01 Dec 97`

   — **Time In**: `06 15 22`

2. Press ‾EXECUTE‾ and confirm. The I-2000 completion message
   is displayed.

⊨> **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`.

Procedure: Retrieving Outage Data

To obtain a report on the data from an OUTAGE DATA LOG, follow these steps:

1. Select REPORT OPERATIONS from the MAIN MENU.

2. Select OUTAGES from the REPORT OPERATIONS menu.

3. On the OUTAGE SEARCH CRITERIA form, only the **Site Name** and
   Outage Type are required. Enter them. **Outage Type** selects the log.

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 is described in Table 10-6.

Field Descriptions

Field descriptions for the record number are listed in Table 10-6.

Table 10-6.   Record Number Field Descriptions

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.

5. When you have entered the selection criteria, press $\boxed{\text{EXECUTE}}$ and confirm. The screen temporarily displays the following message:

       SENDING REPORT GENERATION REQUEST. WAITING FOR REPLY.
       COMMAND WILL BE EXECUTED IN BACKGROUND.

6. Press $\boxed{\text{Enter}}$ to acknowledge the command response.

7. The REPORT OPERATIONS screen is displayed with DISPLAY LAST GENERATION REPORT selected. Press $\boxed{\text{Enter}}$.

8. Select SCREEN or PRINTER. The report is printed or displayed.

Moving a Database from One I-2000 to Another

You can use DATABASE BACKUP/RESTORE to move a DACS to another I-2000. First, do a `SELECTIVE BACKUP` of the DACS' database on tape. Take the tape to the other I-2000, provision a DACS at this I-2000 with the same **Site Name** and do a `SELECTIVE RESTORE`. Finally, delete the DACS at the old site.

⚠ **WARNING:**
The same version of I-2000 software must be running at both sites.

Task Administration

11

Contents

Task Administration

11

Introduction

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 (refer to "Using the Execute Key" in Chapter 2 "Getting Started)". Once they have been deleted, you will have to reschedule to run them again.

TASK ADMINISTRATION Menu

To obtain the TASK ADMINISTRATION menu, select TASK ADMINISTRATION from the MAIN MENU. The TASK ADMINISTRATION menu is displayed, as shown in Figure 11-1.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    ──── TASK ADMINISTRATION ────

                    ─TASK MANAGEMENT
                     PRINTER QUEUE STATUS













  ─ Press ENTER to administer scheduled tasks ───

   HELP              QUIT            TOP MENU  PRINT
```
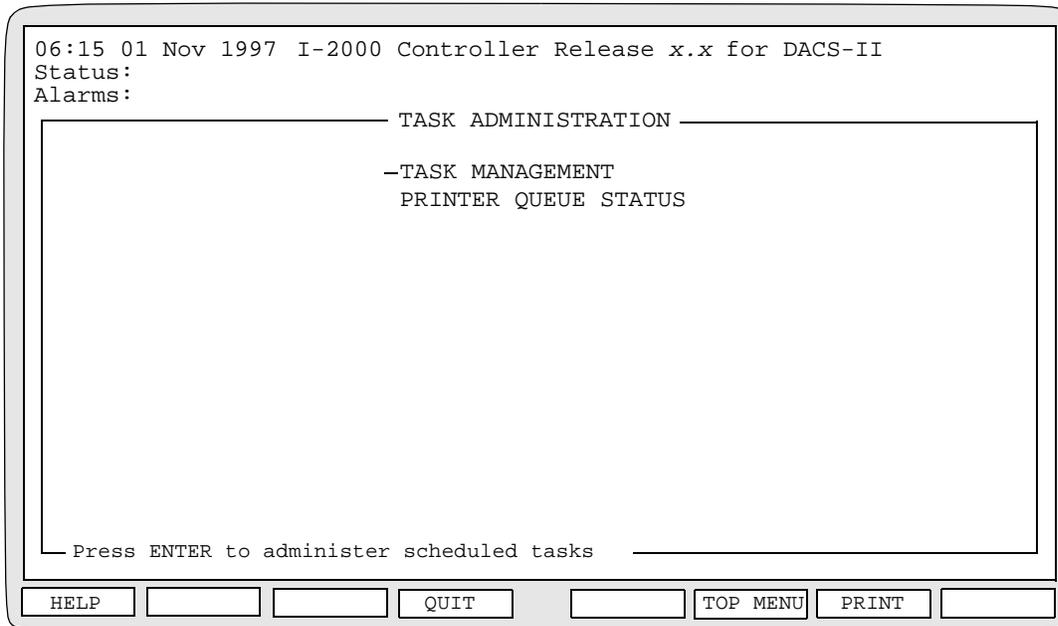
Figure 11-1.   TASK ADMINISTRATION Menu

TASK MANAGEMENT Form

To view the queue of tasks, or to delete a task, select TASK MANAGEMENT. The TASK ADMINISTRATION Form is displayed, as shown in Figure 11-2.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS II
Status:
Alarms:
                     ─ TASK ADMINISTRATION ─

  Action:                                        Type:
                                                 User ID:
  Site Name:




  ─ Enter desired action ─
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 11-2.   TASK ADMINISTRATION Form

Field Descriptions

The fields that appear on the screen depend on the value of **Type**. Field descriptions are described in Table 11-1.

Table 11-1.   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**. You can delete any of your own tasks. Only the system administrator can delete tasks scheduled by other users.

Table 11-1.   Task Administration Field Descriptions (Contd)

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.
Site Name	Enter the name of the DACS 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 **Type**s 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 by selecting the LIST from the **Action** field. A DELETE **Action** does not automatically list tasks.

Procedure: Listing Scheduled Tasks

To list scheduled tasks, follow these steps:

1. Select TASK ADMINISTRATION from the MAIN MENU and TASK MANAGEMENT from the TASK ADMINISTRATION menu.

    — Enter the following data.

    — **Action**: LIST

    — **Type**: SITE

    — **Site Name**: testsite

2. 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 in Figure 11-3.

```
06:15 01 Nov 1997  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:29Dec97 12:15:00   Last Run:         Interval:ONCE


    Desc:CREATE NPC 01101 PB144




  ── Enter desired action ──
```

| HELP | PREVIOUS | NEXT | QUIT | | TOP MENU | | EXECUTE |

Figure 11-3.   A Displayed Task

Field Descriptions

Table 11-2 describes the fields for a displayed task in the TASK ADMINISTRATION form.

Table 11-2.   TASK ADMINISTRATION Field Descriptions

User ID	The login ID of the user who created the task.
Site	The **Site Name** of the DACS on which the task is scheduled to be implemented.
Task	The name of the form on which the task was created.
Next Run	The time when next execution of the task is scheduled to begin.
Last Run	The time when last execution of the task is scheduled to begin, if this is a task that runs more than once.
Interval	The interval, in minutes, hours or days, at which the task is scheduled to run.
Desc	A brief description of the task to be implemented.

Procedure: Deleting a Task

To delete a task, follow these steps:

1. Press QUIT and navigate to **Action**.

2. Enter DELETE.

3. Move to the **Type** field and enter the type of task to delete, for example, ALL.

4. Press EXECUTE and confirm. The command completed successfully message is displayed.

PRINTER QUEUE STATUS Form

To display and delete print requests in the print queue, select PRINTER QUEUE STATUS. The PRINTER QUEUE STATUS Form is displayed, as shown in Figure 11-4.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        PRINTER QUEUE STATUS
   Action:                           Printer Name:CONSOLE PRINTER

   Printer Status:ENABLED
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 11-4.   PRINTER QUEUE STATUS Form

Field Descriptions

The field descriptions for the PRINTER QUEUE STATUS form are described in Table 11-3.

Table 11-3.   PRINTER QUEUE STATUS Descriptions

Action	Mandatory. Enter the action to be performed with regard to the printer job.
	LIST Select LIST to display the printer queue.
	CANCEL Select CANCEL to cancel any printer job already ENABLED.
Printer Name	Name of the printer. Press CHOICES for a list of valid printer names.
Printer Status	The printer status.

Procedure: Displaying Printer Queue Status

To display the printer queue status, follow these steps:

   1. Select PRINTER QUEUE STATUS. The PRINTER QUEUE STATUS form is displayed, as shown in Figure 11-5.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ─── PRINTER QUEUE STATUS ───

  Action:                           Printer Name:CONSOLE PRINTER

  Printer Status:ENABLED
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 11-5.   PRINTER QUEUE STATUS Form

2. Select an **Action** of CANCEL from the CHOICES menu.

3. Select a **Printer Name** from the CHOICES menu.

4. Press EXECUTE and confirm. The populated PRINTER QUEUE STATUS
   form is displayed, as shown in Figure 11-6.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                           ─── PRINTER QUEUE STATUS ───

 Action:LIST                         Printer Name:CONSOLE PRINTER



                           ─── Printer Queue ───

    Job no.      User      Size        Time
                                                      ─

    16           root      5           Nov 1 14:33 on printer
    17           rootadmn  6           Nov 1 14:33 on printer




                                   Page x of y    Display Page:n
  ─ Enter the page number ─
```

| HELP | NEXTPAGE | PREVPAGE | QUIT | | TOP MENU | PRINT | |

Figure 11-6.   Sample Print-job Status

NOTE:
The `Time` column does not appear for Sun systems.

Procedure: Removing a Printer Job From the Queue

To remove a job from the queue, follow these steps:

1. Obtain the PRINTER QUEUE STATUS form.

2. Select an **Action** of CANCEL from the CHOICES menu.

3. Select a **Printer Name** from the CHOICES menu.

4. Press EXECUTE . The jobs are listed as for the LIST **Action**. However, an additional field, **Cancel**, appears before **Job No.**

5. Using Enter , move the cursor to the beginning of the line for the job you want to cancel and type an x or X.

6. Press CANCEL .

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

User Administration

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User Administration

12

Introduction

The I-2000 supports a total of 64 logins: **dacsadm, cscan, ems,** and 61 others. The **dacsadm** login is a system administrator and cannot be deleted. The others can be system administrators or operators. After setup and configuration of ports and links, a system administrator adds logins and can ADD, CHANGE, or DELETE them thereafter. A CHANGE or DELETE on an active login is delayed until the login becomes inactive (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. For example, all of the SYSTEM ADMINISTRATION and DATABASE ADMINISTRATION selections are reserved for the administrator. An operator can change his own user information and login, but only a system administrator can change any login's information. User access is defined by the **User Class** field on the USER MANAGEMENT form.

The I-2000 supports up to 16 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.

Constraints

The following constraints apply to passwords and logins:

■ The login name must contain from two through eight alphanumeric charac-
ters with at least one lower case letter.

■ Passwords must contain at least six characters with at least two alphabetic
and at least one numeric or special character. Refer to the restrictions
stated under "CHANGE PASSWORD", in this chapter.

The term alphabetic refers to all uppercase and lowercase letters. UNIX will
disable upper/lower case password sensitivity whenever a login name is entered
with all uppercase letters.

USER ADMINISTRATION Menu

To obtain the USER ADMINISTRATION menu, select USER ADMINISTRATION
from the MAIN MENU. The USER ADMINISTRATION menu is displayed, as
shown in Figure 12-1.

```
06:15 01 Nov 1997 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  │ │        │
 └────────┘ └────────┘ └────────┘ └────────┘   └────────┘ └─────────┘ └────────┘ └────────┘
```
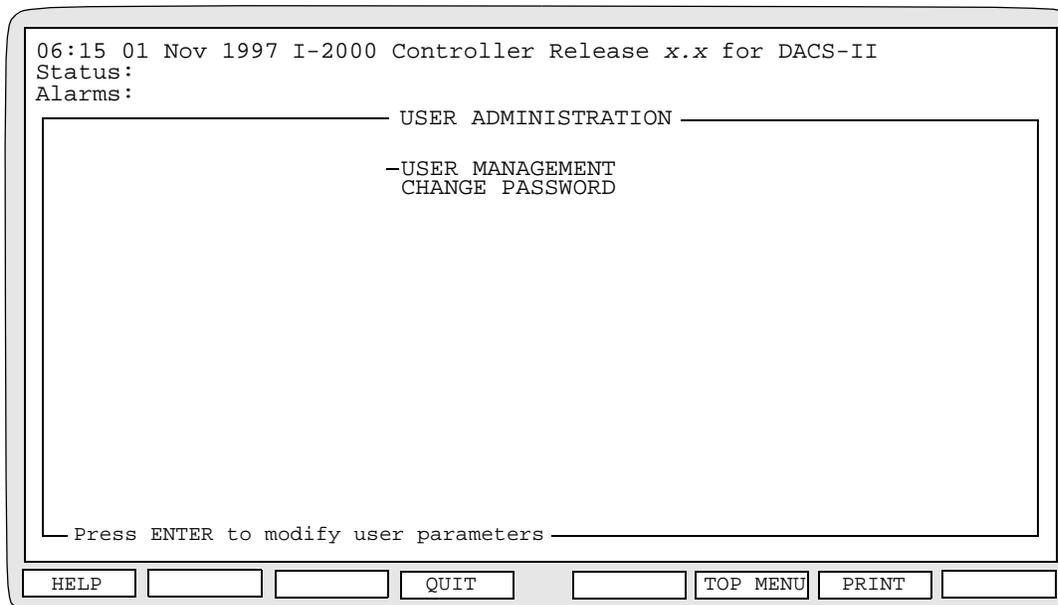
Figure 12-1.   USER ADMINISTRATION Menu

USER MANAGEMENT Form

To access the USER MANAGEMENT form, select USER MANAGEMENT from the USER ADMINISTRATION menu. The USER MANAGEMENT form is displayed, as shown in Figure 12-2.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        ──── USER MANAGEMENT ────

 Action:                          Login Name:

 User Class:                      Password:

 User Name:

 Phone:                           Printer Name:CONSOLE PRINTER

 Address:                         City:

 Alarms Audible:                  UI Idle Option:OFF




 ── Enter desired action ──

  HELP      CHOICES              QUIT              TOP MENU   PRINT    EXECUTE
```

Figure 12-2.   USER MANAGEMENT Form

Field Descriptions

Table 12-1 describes the fields used in the USER MANAGEMENT form.

Table 12-1.   USER MANAGEMENT Field Descriptions

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. The login name by which the user will be known to the I-2000, and which will be required on login. Two through eight alphanumeric characters from the printable ASCII character set. One lower-case letter is required. Login Name may only contain alphanumeric characters (0-9, A-Z, and a-z). It may not contain control characters, punctuation marks, or spaces.
User Class	The type of login: OPERATOR The login is for an operator. ADMIN The login is for an administrator. CONTROLLER Not available.
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 including numbers, letters, dash, open parenthesis, closed parenthesis, period, comma, and space. The name of the person owning the login specified in **Login Name**.
Phone	Up to 13 alphanumeric characters, including 0-9, -, (,), comma, and space. The telephone number of the person cited in **User Name**.
Printer Name	Mandatory. The name of the printer to be in effect for this login. Use the CHOICES menu to select the name. The default, CONSOLE PRINTER, appears in every CHOICES menu. Names of remote printers installed in the **printcap** file of Sun systems also will appear. For more information, refer to Remote Printer Administration in Chapter 2 "Getting Started." To reset the **Printer Name**, use a CHANGE **Action**.

Table 12-1.   USER MANAGEMENT Field Descriptions (Contd)

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 IDLE_THRESHOLD minutes of idle time. See the description of the userenv file in Chapter 2. OFF Remain logged on until the user logs off. The **UI IDLE Option** is accessible to the OPERATOR class. It is not accessible for the ADMIN and CONTROLLER user classes.

Procedure: Adding a User Login

To add a user login, follow these steps:

1. On the USER MANAGEMENT form, enter the following data:

   — **Action**: ADD

   — **Login Name**: NANCY

   — **User Class**: OPERATOR

   — **User Name**: Nancy Smith

   — **Phone**: (908)555-0000

   — **Address**: 101 Crawfords Corner Road

   — **City**: Holmdel, New Jersey

   — **Alarm Audible**: OFF

   — **UI Idle Option**: OFF

2. Navigate to the **Password** field and enter the password. The letters you type do not appear on the screen.

3. Press $\boxed{\text{Enter}}$. The PASSWORD VERIFY FORM appears with the following message:

```
Reenter the password
Reenter the password and type VERIFY key
```

The label of the F8 key becomes $\boxed{\text{VERIFY}}$.

4. Retype the password and press $\boxed{\text{VERIFY}}$. The cursor goes to **User name**. The password is never displayed.

5. Press $\boxed{\text{EXECUTE}}$ and confirm. The `command completed successfully` message is displayed.

CHANGE PASSWORD

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.

■ #, @, -, $\boxed{\text{Backspace}}$, $\boxed{\text{Delete}}$, and other functional keystrokes are excluded.

Procedure: Changing Password as an Operator

To change the password as an operator, follow these steps:

1. Select CHANGE PASSWORD from the USER ADMINISTRATION menu. The following message is displayed:

```
Changing password for login name
```

2. You are prompted to enter

```
Old password:
```

Enter the old password. What you type does not appear on the screen. If you decide to abort the procedure, simply press $\boxed{\text{Delete}}$ without typing a password. The message:

```
Sorry. Incorrect password.
```

is displayed, and you are returned to the USER ADMINISTRATION menu.

3. You are prompted to enter a new password:

```
New password:
```

Enter a new password and press $\boxed{\text{Enter}}$. If you decide to abort the procedure, press $\boxed{\text{Delete}}$ to return to the USER ADMINISTRATION menu.

4. You are prompted to reenter the password:

```
Reenter new password:
```

Reenter the new one and press $\boxed{\text{Enter}}$. It is accepted only if it matches the new password just entered letter for letter, including case. At the bottom of the screen the following message is displayed:

```
Password successfully changed.
```

**Procedure: Changing Password as a
System Administrator**

To change the password as a system administrator, follow these steps:

1. Select CHANGE PASSWORD from the USER ADMINISTRATION menu. The PASSWORD CHANGE FORM is displayed, as shown in Figure 12-3.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                        PASSWORD CHANGE FORM

   Login Name:                    New Password:
```

```
  Enter desired login name
```

| HELP | | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 12-3.   PASSWORD CHANGE Form

2. Enter the **Login Name** of the user whose password you want to change.

3. Enter the **New Password** and press $\boxed{\text{Enter}}$. The PASSWORD VERIFY FORM is displayed, with the prompt:

```
Re-enter the password
```

The message at the bottom of the screen is

```
Re-enter the password and press VERIFY key.
```
The 8th function key changes to $\boxed{\text{VERIFY}}$.

4. Re-enter the password and press $\boxed{\text{VERIFY}}$. The cursor returns to **Login Name**.

**Procedure: Entering the System
on Loss of Password**

If you forget the password, then you will have to rely on the **root** password. Use the following procedure to gain access with the **root** password.

> **NOTE:**
> This procedure can only be followed by the system administrator at the console. If you are at a remote site, call the console site.

To enter the system with out a password, follow these steps:

1. At the login prompt, enter the word **root**:

    ```
    login: root
    ```
    and press Enter.

2. Enter the **root** password that was established at software installation:

    ```
    Password:
    ```

> **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.

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**

4. The system asks for a new password. Enter it, and be sure not to forget it.

5. Re-enter the same new password on request.

6. At the # prompt, type **exit**:

    # **exit**

    and press Enter.

7. Log in under ems with the new password.

Passthrough

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Passthrough

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Introduction

The PASSTHROUGH selection of the MAIN MENU sets up direct communication with a DACS, bypassing the I-2000. This transparent mode is for DACS maintenance and administrative operations.

Two types of passthrough are supported:

- MULTIPLEXED PASSTHROUGH

- and PASSTHROUGH, also called *full passthrough*.

Prerequisites

Both types of passthrough are available for DACS II and DACS II ISX. Before you can establish either type of passthrough to a DACS, you must:

1. CREATE the DACS under FRAME ADMINISTRATION, described in Chapter 3, "System Administration."

2. For multiplexed passthrough, RESTORE the DACS. The DACS must be in service and communicating with the I-2000 for a multiplexed passthrough session to be established.

3. For full passthrough:

   On a SNIDER connection, RESTORE the DACS. The DACS must be in service and communicating with the I-2000.

   With an X.25 link, the DACS may be in service or out of service.

Passthrough

Passthrough through X.25

When you RESTORE a DACS with an X.25 link, a SVC connection is established from the I-2000 to the DACS. A successful RESTORE results in a **Site Status** of IS P.

For Multiplexed Passthrough, the passthrough session shares the same SVC used by the I-2000 for communicating to the DACS. The DACS must be in service and communicating with the I-2000. The Multiplexed Passthrough session may be used to observe messages being received from the DACS and processed by the I-2000.

For Full Passthrough, the passthrough session sets up a new SVC connection to the DACS, which is separate from that being used for I-2000 communications. If no more SVC connections are available, a request to open a full passthrough session to the DACS is denied.

The DACS may be in service or out of service when you start a full passthrough session.

Passthrough through SNIDER

Multiplexed Passthrough and Full Passthrough are also supported on a SNIDER-based connection.

For Multiplexed Passthrough, the DACS must be in service and communicating with the I-2000. The passthrough session and the I-2000 user share the same SNIDER connection to the DACS. The Multiplexed Passthrough session may be used to observe messages being received from the DACS and processed by the I-2000.

For a Full Passthrough session to be established through an asynchronous SNIDER connection, the DACS must be in service and communicating to the I-2000. The Full Passthrough session will take over the link to the DACS and no other commands from the I-2000 user interface will be allowed. However, echoed responses and alarms will continue to be processed.

Multiplexed Passthrough

This type of passthrough lets you communicate directly with the DACS in a multiplexed mode, sharing the link with others. It allows simultaneous access by all operators to a DACS 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 DACS 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 DACS

- Aborting a session.

The MULTIPLEXED PASSTHROUGH capability does not use an entire communication link with a DACS just for the passthrough functions. Moreover, as far as is possible, it provides the same kinds of functionality as does full PASSTHROUGH.

The following constraints apply to MULTIPLEXED PASSTHROUGH:

- 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.

- You cannot enter a multiplexed passthrough session if a full passthrough session is active.

NOTE:
The link to the DACS must be set for MML.

Procedure: Entering a Multiplexed Passthrough

To enter a multiplexed passthrough, follow these steps:

1. Select PASSTHROUGH from the MAIN MENU. The PASSTHROUGH Choices pop-up menu is displayed, as shown in Figure 13-1.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                              ┌─ MAIN MENU ─┐┌─ PASSTHROUGH Choices ─┐
                              │             ││                       │
                              │             ││                       │
                              │             ││-MULTIPLEXED PASSTHROUGH│
                              │             ││ PASSTHOUGH             │
                        PROVISIONING        ││ FRAME COMMAND SCRIPT   │
                        SYSTEM ADMINISTRA   ││                        │
                        DATABASE ADMINIST   ││                        │
                        TASK ADMINISTRATI   ││                        │
                        USER ADMINISTRATI   ││                        │
                        PASSTHROUGH         ││                        │
                        PASSTHROUGH ABORT   ││                        │
                        REPORT OPERATIONS   ││                        │
                        TEST ACCESS         │└─ Press ENTER to select ┘
                        LOGOFF

  ┌─ Press ENTER to Enter Passthrough sessions ─┐
```

```
HELP    PREVIOUS   NEXT    QUIT      FIRST    LAST   UNSELECT   SELECT
```

Figure 13-1.   PASSTHROUGH Choices Menu

2. Select MULTIPLEXED PASSTHROUGH. The WHICH DACS? pop-up menu
   is displayed.

3. Select the DACS. The Output Choices? menu appears. These selec-
   tions describe the types of output messages that are displayed on the
   PASSTHROUGH screen, as shown in Figure 13-2.

```
┌──────────────────────────────────────────────────────────────────────────┐
│ 06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II              │
│ Status:                                                                    │
│ Alarms:                                                                    │
│                              ┌─ MAIN MENU ──┌── Output Choices? ──┐        │
│                              │              │                     │        │
│                              │              │ ─ALL OUTPUT         │        │
│                              │              │  ALARMS and YOUR RESPONSES   │
│                              │              │  YOUR RESPONSES     │        │
│                              │ PROVISIONING │                     │        │
│                              │ SYSTEM ADMINISTRA                   │        │
│                              │ DATABASE ADMINIST                   │        │
│                              │ TASK ADMINISTRATI                   │        │
│                              │ USER ADMINISTRATI                   │        │
│                              │ PASSTHROUGH                         │        │
│                              │ PASSTHROUGH ABORT                   │        │
│                              │ REPORT OPERATIONS                   │        │
│                              │ TEST ACCESS     └─Press ENTER to select─┘   │
│                              │ LOGOFF                              │        │
│                              │                                     │        │
│                              │                                     │        │
│                              │                                     │        │
│                              │                                     │        │
│              └─ Press ENTER to Enter Passthrough Sessions ─┘               │
│   ┌──────┐ ┌────────┐ ┌──────┐ ┌──────┐   ┌───────┐ ┌──────┐ ┌────────┐ ┌──────┐ │
│   │ HELP │ │PREVIOUS│ │ NEXT │ │ QUIT │   │ FIRST │ │ LAST │ │UNSELECT│ │SELECT│ │
│   └──────┘ └────────┘ └──────┘ └──────┘   └───────┘ └──────┘ └────────┘ └──────┘ │
└──────────────────────────────────────────────────────────────────────────┘
```

Figure 13-2.   Output Choices Menu for MULTIPLEXED PASSTHROUGH

4. Select the desired choice of output. The MULTIPLEXED PASSTHROUGH form is displayed, as shown in Figure 13-3.

```
06:15 01 Nov 1997     I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                      MULTIPLEXED PASSTHROUGH
    Command:  _____

    Output:   _____











    Enter Command

 LINE UP   LINEDOWN   PAGE UP   PAGEDOWN       TOP     BOTTOM    EXIT    EXECUTE
```
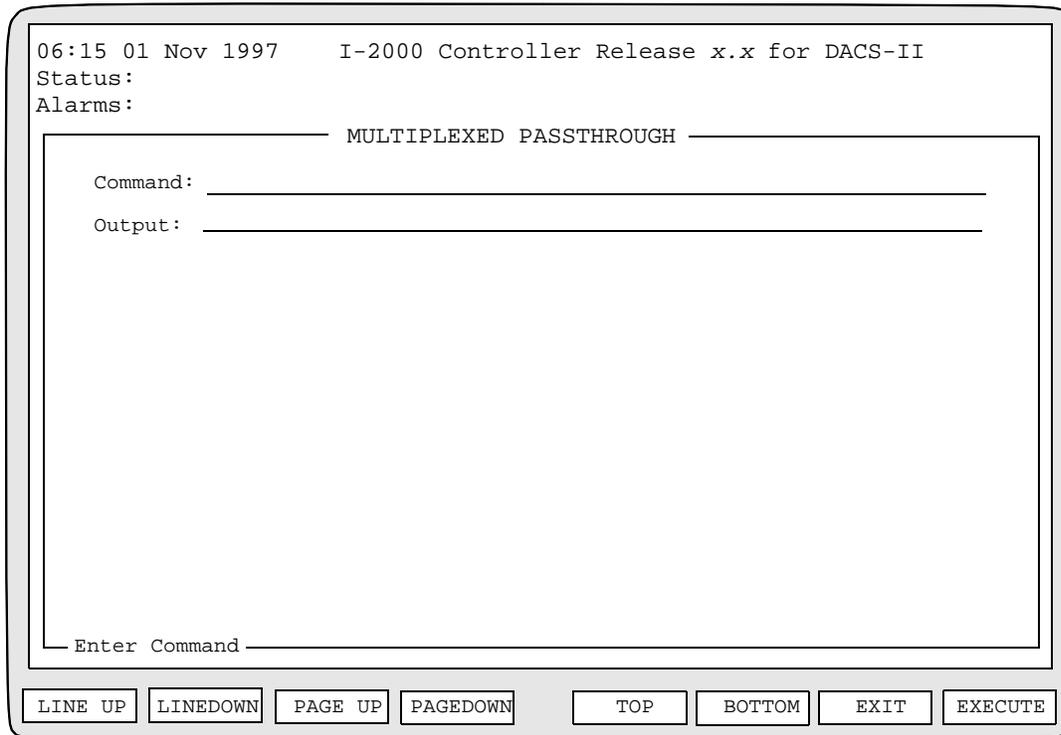
Figure 13-3.   MULTIPLEXED PASSTHROUGH Screen

5. 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 COMMAND_TIMEOUT seconds for the response to a command. COMMAND_TIMEOUT defaults to 60 seconds. The I-2000 ends the multiplexed passthrough session autonomously and returns you to the previous menu if the session remains idle for more than SESSION_TIMEOUT hours. SESSION_TIMEOUT defaults to eight hours. (See Chapter 2 for the procedure to update the COMMAND_TIMEOUT and SESSION_TIMEOUT environment variables.)

Full Passthrough

This type of passthrough lets you communicate directly with the DACS, but does not allow other users to share the link. Select this type when you must enter interactive commands to the DACS; for example, commands that require DACS login.

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

■ If a DACS is connected to the I-2000, whether the link protocol is SNIDER or X.25, you cannot start both a multiplexed passthrough session and a full passthrough session to the same DACS.

■ 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.

■ Full PASSTHROUGH sessions time out after 15 minutes of idle time.

■ 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, a maximum of six PASSTHROUGH sessions are supported. They require the availability of one Switched Virtual Circuit (SVC) per session.

■ If the **Protocol** is SNIDER, but you change the link in PASSTHROUGH to communicate in PDS, 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.

■ If during a SNIDER FULL PASSTHROUGH session, an alarm triggers an Automatic Reconfiguration Plan, the SNIDER FULL PASSTHROUGH session will be aborted and the automatic reconfiguration plan will be executed.

Procedure: Entering a Full Passthrough

To enter full passthrough, follow these steps:

1. Select PASSTHROUGH from the PASSTHROUGH Choices menu. The `WHICH DACS?` pop-up menu is displayed.

2. Select the DACS. The PASSTHROUGH screen is displayed, as shown in Figure 13-4.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:


    Connected to CEF


    95-02-10 10:52:20
    A 065.389 Rept EVTQPT
    /*[0.01321]*/
    "LINK-5:TN-X-FFFF,ERR"
    "STATUS:00,00,04"
    ;
```

| LINE UP | LINEDOWN | PAGE UP | PAGEDOWN | | TOP | BOTTOM | HOME | EXIT |
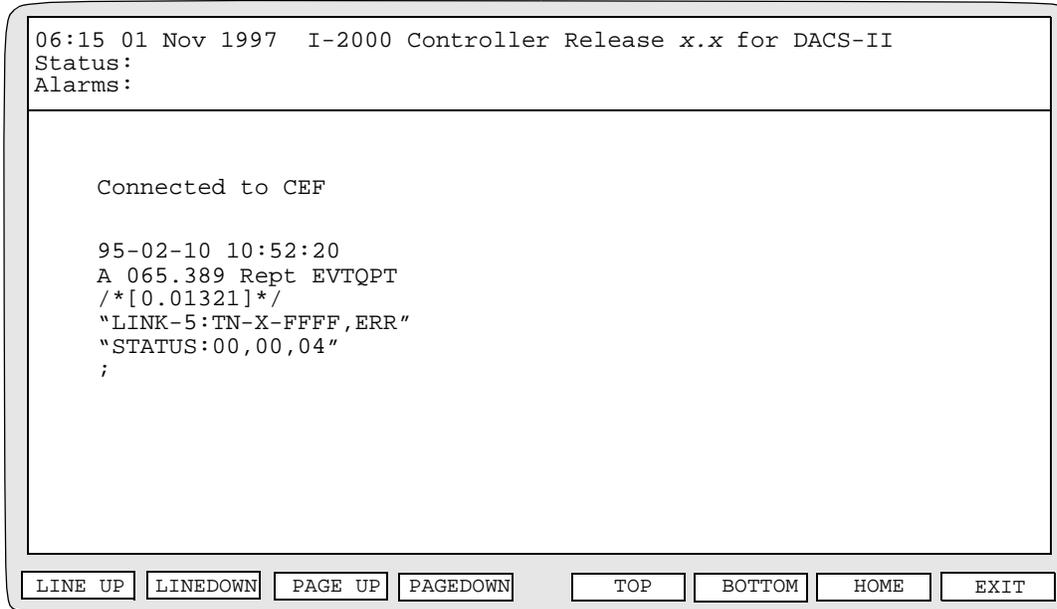
Figure 13-4.   Passthrough Screen

3. To leave full PASSTHROUGH, press ⎡EXIT⎤. You are immediately returned to the MAIN MENU.

⇒ **NOTE:**
The ⎡Del⎤ key also exits full PASSTHROUGH, and is quicker when alarm responses are scrolling.

Using 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 also. 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 function keys. However, a different set of function keys is valid for each type of passthrough.

Passthrough Control Keys

Table 13-1 describes the control keys used for full passthrough and Table 13-2 describes the control keys for multiplexed passthrough.

Table 13-1.   Full PASSTHROUGH Control Keys

F1 LINE UP Ctrl u	Scroll up (backward) one line.
F2 LINE DOWN Ctrl d	Scroll down (forward) one line.
F3 PAGE UP Ctrl b	Scroll up (backward) a full page.
F4 PAGE DOWN Ctrl f	Scroll down (forward) a full page.
F5 TOP Ctrl t	Go to top of first page.
F6 BOTTOM Ctrl l	Go to top of last page.
F7 HOME Ctrl l	Go back to last-displayed line.
F8 EXIT Ctrl e	Exit.

Table 13-2.   MULTIPLEXED PASSTHROUGH Control Keys

LINE UP	Scroll up (backward) one line.
LINE DOWN	Scroll down (forward) one line.
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 DACS.

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.

Procedure: Terminating Passthrough

To terminate the passthrough session of another user, you must be logged in as a system administrator.

To terminate a passthrough, follow these steps:

1. Select PASSTHROUGH ABORT from the MAIN MENU. A window is displayed, as shown in Figure 13-5, showing the names of the DACSs used in passthrough and the terminals using them.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                         ──── MAIN MENU ────



                          PROVISIONING
                        ─ SYSTEM ADMINISTRATION
                          DATABASE ADMINISTRATION
              ──────── PASSTHROUGH ABORT ────────

                   Terminal 00 (dacsadm): CEF






       ── Press SELECT to select. ──────

  MULTI-SELECT MENU. Use 'SELECT' key (F8) for individual selections.
  ── Press ENTER to Abort Passthrough Sessions. ──────

   HELP     PREVIOUS     NEXT     QUIT       FIRST     LAST    UNSELECT   SELECT
```

Figure 13-5.   Passthrough Form

> 2. Use ⌜SELECT⌝ to select the sessions to be terminated.
>
> 3. Press ⌜ENTER⌝. The selected passthrough sessions are cancelled.

Frame Command Script

The FRAME COMMAND SCRIPT Option allows you to create a script file of MML commands in the I-2000 COMMON database for the DACS. You may execute the script in the background, write it on DOS diskette, edit it, delete it, or read it from DOS diskette. The maximum number of script files per I-2000 is 100.

Database backup and restore include the script files with the other COMMON files. Manual execution of an RP and a script are mutually exclusive.

The last executed script log remains and can be viewed under REPORT OPERATIONS.

Some rules governing script content and allowed characters are as follows.

■ The script language must be MML.

■ Lines beginning with the # character are comment lines. They will not be sent to the DACS or logged in the log file.

■ Only printable characters, except "|" are allowed.

■ Command lines in the script may not contain the characters ? or !, or have any data following the command termination character ;

■ Empty lines are not allowed.

■ The maximum length of a script line is 120 characters; the maximum file size, 150 lines.

■ The login DAX command,

```
LGN-USER::::DAX
```

is the only multi-line command supported by the FRAME COMMAND SCRIPT option.

⟹ **NOTE:**
You must have changed the DAX user login to MML before executing the script containing the login DAX command.

FRAME COMMAND SCRIPT Form

To obtain the FRAME COMMAND SCRIPT option, select PASSTHROUGH from the MAIN MENU and then FRAME COMMAND SCRIPT from the PASSTHROUGH Choices insert. The FRAME COMMAND SCRIPT form is displayed, as shown in Figure 13-6.

.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    ——————— FRAME COMMAND SCRIPT ———————

  Action:           Script Name:          Site Name:
            DAX Login Password:

    Line:
```

| HELP | CHOICES | | QUIT | | TOP MENU | UNSELECT | SELECT |

Figure 13-6.   FRAME COMMAND SCRIPT Form

The specific fields that appear on the form depend on the **Action**. For an **Action** of EDIT, **Mode** replaces **Site Name**.

Field Descriptions

Table 13-3 describes the field values for the FRAME COMMAND SCRIPT form.

Table 13-3.   FRAME COMMAND SCRIPT Field Descriptions

Action	The FRAME COMMAND SCRIPT actions are:
	EDIT — Opens the file of the given **Script Name** and displays 13 screen lines. You may specify the type of edit with the **Mode** field, and the line to be edited with the **Line** field.
	DELETE — Displays the first 13 screen lines of the **Script Name** file. On your pressing EXECUTE , the I-2000 deletes the file.
	DOSREAD — Reads a DOS diskette on which you have previously stored script files in the root directory. The I-2000 has automatically supplied a suffix of SCR.
	DOSWRITE — Writes selected script files to DOS diskette.
	EXECUTE — Executes the specified script.
	ABORT — Terminates executing a script for a site.
Script Name	1-8 alphanumeric characters. The name of the script file to which the **Action** is to apply. The I-2000 converts lower to upper case.
Site Name	The name of the site where the script file is to be executed or aborted.
Mode	Appears for an **Action** of EDIT only.
	Insert — On EXECUTE of this EDIT, insert the **Line** into the **Script Name** file. You are presumed to have finished typing the line.
	Change — On EXECUTE of this EDIT, replace the **Line** with the one displayed. You are presumed to have finished changing it.
	To delete a line, simply Change its contents to no value.
DAX Login Password	Appears only after an **Action** of EXECUTE when the **Script Name** file contains the command:
	LGN-USER::::DAX
	The password necessary to gain admission to the DACS referenced by **Site Name**.

Table 13-3.   FRAME COMMAND SCRIPT Field Descriptions (Contd)

Line	Appears only for an **Action** of `EDIT`. The line number being referenced of the **Script Name** file.

Procedure: Creating a Script File

To create a script file, follow these steps:

1. Enter the following fields:

   — **Action**: `EDIT`

   Additional fields appear.

   — **Script Name**: `name`

   — **Mode**: `INSERT`

   — **Line**: `001`

   The cursor moves to a highlighted area, where the line is to be typed.

2. Type the line. Note that the entire space is reserved only for the line specified by **Line**. When you have finished, press ENTER twice. The line you have typed appear on the screen below. The cursor returns to **Action**. The **Line** is incremented by 1.

⟹ **NOTE:**
Instead of hitting ENTER twice, you may want to use Ctrl p to terminate a line and place the cursor at the **Line** field.

3. Move the cursor to the highlighted area for typing the next line, type the line, and press ENTER twice. Repeat this procedure for as many lines as you care to enter.

   Some line editing rules are as follows:

   — The space bar and any other character push the text to the right.

   — BACKSPACE moves the cursor to the left, erasing what was there.

   — ← moves the cursor to the left over the text that was there, leaving it intact.

   — There is room for two screen lines in the highlighted region. However, they are only one script line. One ENTER move the cursor to the start of the second screen line. The only way back to the first screen line is by backspacing.

   — To correct a line, change the **Mode** to `CHANGE` and specify the **Line** to be changed. The line is displayed and can be accessed in the highlighted area.

   — To delete a line, `CHANGE` it to all blanks.

— To insert a line, change **Mode** to INSERT and enter the **Line** that the new line will have when it will have been inserted. The current line of that number appears in the highlighted area. Blank it out first, and then retype. Blanking out in this case has no effect on the line. On your pressing ENTER twice, the typed line will be inserted at the specified location and subsequent lines, including the line formerly at **Line**, will be incremented by 1.

4. When you are ready to accept the file, press EXECUTE and confirm.

   The I-2000 adds the terminating ; character, and the minimum required number of : characters, where needed. The I-2000 overrides the control tag sequence number field:

   :ww

   in order to track the command line. The I-2000 adds the logout DAX command:

   ```
   LGT-USER::::DAX
   ```

   at the end of the script file, if the script would end with login DAX in effect.

   When the script has been stored in the I-2000's database, the message is displayed:

   ```
   — The command completed successfully
   ```

5. You can recall the script by entering and EDIT **Action** and the **Script Name**. To delete the script, use an **Action** of DELETE.

Procedure: Writing a File to DOS Diskette

To write a file on DOS diskette, follow these steps:

1. Insert the diskette into the disk drive.

2. Enter the following fields:

   — **Action**: DOSWRITE A screen similar to Figure 13-7 is displayed.

```
06:15 01 Nov 1997   I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    ━━━━━━━ FRAME COMMAND SCRIPT ━━━━━━━
   WHICH FILES? ( ... name appended '*' will overwrite existing file)

   UNIT2*      NASUNIT2*    COMMON*     MAXBI600*    SCRP1      TESTSCRP
   UNIT56*     NASUNIT3*    UNIT4*      NONCEF*      SCRP2      XXX
   NASUNIT1*   NASUNIT4*    TEST01*     NEWTEST2*    WORKING1   NEWSCRP









   ━ Press SELECT to select ...
```

| HELP | PREVIOUS | NEXT | QUIT | | SEL_ALL | UNSELECT | SELECT |
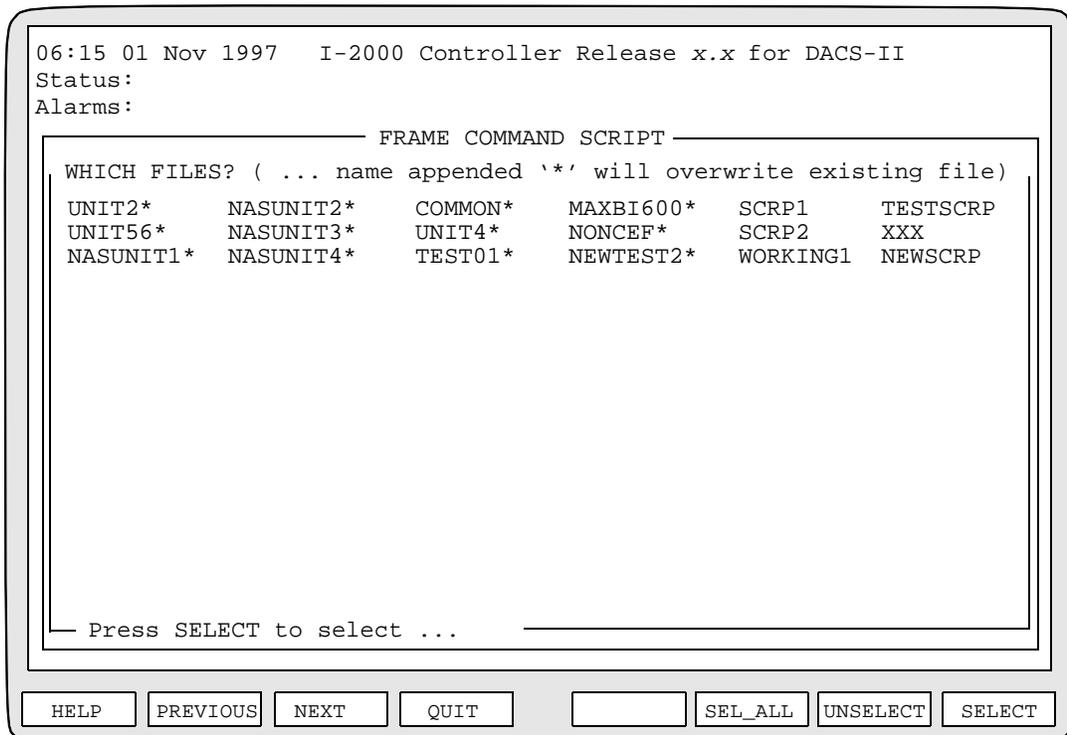
Figure 13-7.   FRAME COMMAND SCRIPT Screen

3. Using the arrow keys, position the cursor at the name you wish to select and press SELECT . Repeat this step as often as is necessary to select the files to be written on the DOS diskette. As you select each, a dash appears before it. Use UNSELECT to change your mind, and SEL_ALL to select all.

4. When you have finished, press ENTER. The cursor returns to the original FRAME COMMAND SCRIPT screen.

⟹ **NOTE:**
Press ENTER only once, and wait. The system may be a little slow, depending on the level of activity. If you continue to press ENTER, you will miss some screens.

5. When you are ready, press EXECUTE and confirm. The I-2000 displays a message, working on: name, while it writes the file, and The command is finished when all the files have been written.

> ⮕ **NOTE:**
> The file names displayed before you selected them were compiled from both the I-2000 and the DOS diskette. Names in both places are marked with a suffixed *. When you EXECUTE a write, if you have selected a *-name, the file on diskette is overwritten by the file on the I-2000.

Procedure: Reading a File From DOS Diskette

To read a file from DOS diskette follow, these steps:

1. Enter the following fields: **Action**: DOSREAD

   A screen similar to the one for a DOSWRITE appears.

2. Using the arrow keys, position the cursor at the name you wish to select and press SELECT. Repeat this step as often as is necessary to select the files to be read to the I-2000. As you select each, a dash appears before it. Use UNSELECT to change your mind, and SEL_ALL to select all.

3. When you have finished, press ENTER. The cursor returns to the original FRAME COMMAND SCRIPT screen.

> ⮕ **NOTE:**
> Press ENTER only once, and wait. The system may be a little slow, depending on the level of activity. If you continue to press ENTER, you will miss some screens.

4. When you are ready, press EXECUTE and confirm. The I-2000 displays a message, working on: name, while it reads the file, and The command is finished when all the files have been read.

> ⮕ **NOTE:**
> The file names displayed before you selected them were compiled from both the I-2000 and the DOS diskette. Names in both places are marked with a suffixed *. When you EXECUTE a read, if you have selected a *-name, the file in the I-2000 is overwritten by the file on the DOS diskette.

Procedure: Executing a File

To execute a file, follow these steps:

1. Enter the following fields:

   — **Action**: EXECUTE

   — **Script Name**: name

      The contents of name are displayed.

   — **Site Name**: the site where the script is to run.

2. Press $\boxed{\text{EXECUTE}}$ and confirm. A COMMAND RESPONSE window notifies you that `The command will be executed in background.`

3. Acknowledge the notification.

   The password for the login DAX command is interactive only. The execution of a script file with the login DAX command causes the **DAX Login Password** field to appear.

4. Fill in the password. If the login succeeds, the script goes on executing. If the login fails, the script aborts.

   When the I-2000 has finished running the script, it displays a **Status** message:

   ```
   Script name name is completed for site site.
   ```

Report Operations

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Introduction

The REPORT OPERATIONS MENU allows you to generate reports containing data from the I-2000 database. The reports can be displayed on screen, printed or written to a DOS diskette. The DOS diskette option presumes you will access the diskette from a DOS system. No provision is made for recovering the report from the diskette in the I-2000.

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.

You may also create and edit custom formats. 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 pre-defined 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. Several fixed formats are also supplied that cannot be customized, for example, it is not possible to modify or customize the AUDIT/ SYNCHRONIZATION RESULTS report.

It is also possible to backup the customized report formats to a diskette (see Chapter 8) and to restore customized reports from a diskette.

All reports can be displayed on the user-terminal screen, printed on the I-2000 printer, or written to a DOS diskette. Displayed reports are paged (divided into screen-sized segments).

You can move through the report using TOPPAGE , LASTPAGE , NEXTPAGE , and PREVPAGE , 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.

REPORT OPERATIONS Menu

Select REPORT OPERATIONS from the MAIN MENU. The REPORT
OPERATIONS MENU is displayed, as shown in Figure 14-1.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    REPORT OPERATIONS MENU
 -CIRCUITS                         TASK SCHEDULE LIST
  NPCS                             TASK SCHEDULE RESULTS
  CHANNELS                         LOST RESPONSE LOG
  ALTROUTES/PREEMPTIONS            HISTORY LOG
  OUTAGES                          SCRIPT LOG
  TEST PORT                        DISPLAY LAST GENERATED REPORT
  TEST ACCESS                      EDIT CUSTOM REPORT FORMAT
  FRAMES/LINKS                     ALARM QUERY
  USER ADMINISTRATION              DISPLAY ALARM QUERY
  NPC ALARMS                       RECONFIGURATION SUB-MENU
  CIRCUIT ALARMS                   ESTABLISHED DS0 CHANNELS
  ALARM LOG                        SUBRATE CIRCUITS
  AUDIT/SYNCHRONIZATION RESULTS    COMMON EQUIPMENT ALARMS
  NPC ROLL RESULTS                 24-HOUR PERFORMANCE
  ECHOED RESPONSE PROCESSING       24-HOUR PM LOG


 Press ENTER to specify report search criteria

 HELP              QUIT            TOP MENU   PRINT
```

Figure 14-1.   REPORT OPERATIONS MENU

Procedure: Generating Reports

To generate a report, follow these steps:

1. Select the data category on the REPORT OPERATIONS MENU.

2. If the selected category has more than one available format menu, a
   pop-up window is displayed listing the format names. Select the format.

3. For all categories except the HISTORY LOG, a SEARCH CRITERIA form
   appears displaying the fields for the selected category. Enter values into
   these fields to find the records that match. If you leave all fields blank, all
   records in the database are reported.

   For example, in a CHANNEL USAGE report (under CHANNELS) to limit for
   a single NPC, enter a specific **NPC ID**, or a hierarchical or extended
   number. 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. Refer to Figure 14-2.

NOTE:
Reports are identified and unique to a user login name. If there is more than on login session on the system with the same login name, one session may view the reports of the other session, and one session may overwrite the reports of the other login session.

```
06:15 01 Nov 1997  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
  TO NPC:




  Enter site name
```

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

Figure 14-2.   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.

In a time/date field these values translate to: before (<) or after (>) the time/date given.

➡️ **NOTE:**
Search criteria on date/time is taken separately. For example a date of:
> 01 June 1997
and a time of:
> 06:15
may provide unexpected results. Only matches for days after 01 Jun 1997 and times after 06:15 on each day. For example, 03 July 1997 at 01:15 will not match.

4. 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.

5. Press Enter to acknowledge the command response. 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. 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 several minutes.

Procedure: Displaying and Printing Reports

To display or print the most recently generated report, follow these steps:

1. Select DISPLAY LAST GENERATED REPORT or DISPLAY ALARM QUERY from the REPORT OPERATIONS MENU. A pop-up window appears listing the output medium choices. Select SCREEN or PRINTER.

2. If you select SCREEN, the last generated report appears on your terminal screen. Use NEXTPAGE, PREVPAGE, TOPPAGE, and LASTPAGE to page through the report or specify a page in the **Display Page** field.

Procedure: Transferring Reports To DOS Diskette

The ALLOWED CHOICES pop-up menu will list DOS DISKETTE as an option when you select the following choices from the REPORT OPERATIONS menu:

- HISTORY LOG

- DISPLAY LAST GENERATED REPORT

- DACS COMMAND SCRIPT LOG

- DISPLAY ALARM QUERY

You can then transfer the report, log or query results to DOS diskette by selecting the DOS DISKETTE option. The REPORT TO DOS DISKETTE form is displayed, as shown in Figure 14-3.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    ──── REPORT TO DOS DISKETTE ────


    File Name:
```

```
       ── Enter the DOS File name ──
```

| HELP | | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 14-3.   REPORT TO DOS DISKETTE Form

Field Descriptions

Field descriptions for the REPORT TO DOS DISKETTE form as describes in Table 14-1.

Table 14-1.   REPORT TO DOS DISKETTE Field Descriptions

File Name	User defined. Mandatory, 1-8 alphanumeric characters, capital letters only. The I-2000 will append the suffix, .Rxx, where xx is the diskette number, starting at 01 and incrementing if multiple diskettes are required to save the file.

Report Categories

This section describes the report categories that are available with the I-2000 system.

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, or placed in the database through ERP or by audit/ synchronization.

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.

The four default circuit reports are:

■ **CIRCUIT AVAILABILITY**—Concentrates on the availability of the circuits. The service date, circuit priority and status are listed for each Circuit ID, as well as the user informational location A and location Z.

■ **CIRCUIT INFORMATION**—Concentrates on the circuit characteristics for each Circuit ID. The report includes trunk conditioning and insertion word.

■ **CIRCUIT OPTIONS**—Concentrates on the circuit characteristics specified in options.

■ **CIRCUIT CONNECTIONS**—Identifies circuit and end points by Circuit ID. For each cross-connection, the NPC and channel number 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 circuit priority, status, class, bandwidth and bandwidth type.

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, or placed in the database through ERP or audit/synchronization.

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.

The two default NPC reports are:

■ **NPC NUMBERS**—Contains records that are sorted by hierarchical NPC number. Alarm and service state information is included. The entries are sorted by NPC ID.

■ **NPC IDS**—Contains a record of NPCs that are in the database. The NPC ID and various information, such as the type and status are included. The report lines are sorted by NPC ID

CHANNELS

CHANNELS provides reports on channel usage data. One default format is provided for channel usage.

■ **CHANNEL USAGE**—This format lists the use of each channel within each facility NPC that has been equipped.

The information in this report is taken from both NPC and circuit data. On the SEARCH CRITERIA form, you can select by NPC, circuit or connecting NPC.

⇒ **NOTE:**
Entering NULL in the **Status** field of the SELECTION CRITERIA form for this category selects channels which are not in use.

⇒ **NOTE:**
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.

OUTAGES

OUTAGES provides reports on outage data records. One default format is provided. The SEARCH CRITERIA form permits searching of log entries by type, record, number, NPC or circuit ID, and time or date in or out.

■ **OUTAGE INFORMATION**—This report is a printed version of the OUTAGE LOG.

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 ALTROUTE form (Chapter 7).

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 identifiers.

■ **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 and channel is listed along with the ALTROUTED hierarchical number 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 channel will not be different from the altrouted NPC and its channel if that point was not changed.

■ **PREEMPTED CIRCUITS**—Identifies the PREEMPTED circuits and the ALTROUTED end points that caused their preemption.

TEST PORT

TEST PORT reports on test port and test port group 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 15).

The SEARCH CRITERIA form permits search by test port or test circuit connection data and characteristics.

■ **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.

■ **TEST PORT PROVISIONING**—Provides identifying information on the test ports and lists conditioning information to be applied to the circuits under test.

TEST ACCESS

TEST ACCESS reports on test access status. One default format is provide that lists identifying information for circuits that are under test through either test ports or test groups. The fields that appear in the report contain information that was entered in the TEST ACCESS form.

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).

SEARCH CRITERIA form allows you to search by both frame and link characteristics.

- **FRAME CONTROL**—States the values of various control fields from the FRAME PROVISIONING form.

- **LINK CONNECTIVITY**—Lists information for primary and backup links that have been connected to a given DACS. If the backup line data is not present, the backup line has not been provisioned.

- **PROVISIONING**—Lists identifying information for the frames that have been provisioned.

USER ADMINISTRATION

USER ADMINISTRATION reports user login information. One format is provided for user logins that allows selection on every USER ADMINISTRATION form field. 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.

- **USER CONNECTIVITY**—Lists **Login name**, **User Name**, **Type**, and **User Class** for each login.

NPC ALARMS

This report states the values of various fields for NPC alarms. The fields appear mainly on the NPC PROVISIONING form. One format is provided for ALARMS that identifies the NPC and lists **Service State**, **Alarm State** and **Alarm Aging** information.

CIRCUIT ALARMS

This report states the values of various fields for circuits that have as an end point an NPC in alarm. The fields appear mainly on the CIRCUIT PROVISIONING form. One format is provided for alarms that identifies the NPC and channel information of the circuit in alarm.

ALARM LOG

This is a custom report. The ALARM LOG reports all alarms received by the I-2000. The selection criterion is by **Site Name**. For an example and explanation of the report, refer to Chapter 3 "System Administration.

> **NOTE:**
> Ctrl + a provides access from any screen to the Alarm Log and customized alarm reports.

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.

ECHOED RESPONSE PROCESSING

The ECHOED RESPONSE PROCESSING Report lists messages that are received by the I-2000, and were initiated by a DACS independently; for example, they report changes in provisioning that were not in response to user requests through the I-2000.

The SEARCH CRITERIA form allows you to search by type of message, date and time. The DACS is a mandatory entry.

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**.

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.

LOST RESPONSE LOG

Although listed as a REPORT OPERATIONS MENU option on every system, the lost response log only contains data if your I-2000 system interfaces to the Event Management System. The lost responses that get logged originate with the I-2000 in reply to network traffic. However, for some reason they cannot now be returned to the upstream network controller.

The Request field on the report represents the originator of the request, and can be `FRAME`, `NPC` or `CIRCUIT`. The `Reason` field is truncated to 31 characters, due to space considerations.

HISTORY LOG

The 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**.

In general, RTRV type messages that are the response to audit/sync operations are not logged in the HISTORY LOG. Exceptions are commands executed in MULTIPLEX PASSTHROUGH, FULL PASSTHROUGH, or those executed on a SNIDER link.

SCRIPT LOG

A frame command SCRIPT LOG lists the contents of one user script file of DACS commands.

RECONFIGURATION SUB-MENU

The RECONFIGURATION SUB-MENU provides access to reports for Reconfiguration plans and Altroute plans.

Choose RECONFIGURATION SUB-MENU from the REPORT OPERATION MENU. The RECONFIGURATION SUB-MENU is displayed, as shown in Figure 14-4.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                      REPORT OPERATIONS MENU          AVAILABLE FORMATS

                                                    RECONFIGURATION PLANS
       CIRCUITS                         NPC         RECONFIGURATION PLANS ALTROUTE
        NPCS                            ECHO        AUTO RECONFIGURATION PLAN
        CHANNELS                        TASK        RECONFIGURATION PLAN RESULTS
       ALTROUTES/PREEMPTIONS            TASK        AUTO RECONFIGURATION PLAN RESULTS
        OUTAGES                         LOST
        TEST PORT                       HIST
        TEST ACCESS                     SCRIPT LOG
        FRAMES/LINKS                    DISPLAY LAST GENERATED REPORT
        USER ADMINISTRATION             EDIT CUSTOM REPORT FORMAT
        NPC ALARMS                      ALARM QUERY
        CIRCUIT ALARMS                  RECONFIGURATION PLAN SUB-MENU
        ALARM LOG                       ESTABLISHED DS0 CHANNELS
        AUDIT/SYNCHRONIZATION RESULTS   SUBRATE CIRCUITS



     Press ENTER to specify report search criteria

   HELP                      QUIT                 TOP MENU   PRINT
```

Figure 14-4.   RECONFIGURATION SUB-MENU

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).

SEARCH CRITERIA form allows you to select by circuit state as well as by the fields listed on the report.

■ **PLAN CONTENTS**—Lists the circuits and actions for the items of a reconfiguration plan.

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).

The SEARCH CRITERIA form permits you to select by RP identifying data, or by ALTROUTED or PREEMPTED circuit identifiers.

■ **PLAN ALTROUTED CIRCUITS**—Lists the ALTROUTED circuit ID for ALTROUTE action items in a reconfiguration plan. One line is reported for each end point.

■ **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.

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).

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. The plan is available sorted by sequence number (Seq) or by reconfiguration plan ID (RP_ID).

AUTOMATIC RECONFIGURATION PLANS

AUTOMATIC RECONFIGURATION PLANS reports the contents of the two list types, RP LISTS and NPC LISTS. The fields that appear in the reports were entered in the AUTOMATIC RECONFIGURATION PROVISIONING form (Chapter 8).

The SEARCH CRITERIA form allows searching by site, plan, ARP Status, date and time.

■ **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

■ **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.

COMMON EQUIPMENT ALARMS

The COMMON EQUIPMENT ALARMS is the log of all equipment alarms received at the I-2000 from the DACS.

24-HOUR PERFORMANCE STATISTICS

This report allows you to display the 24-Hour Performance Statistics report for all NPCs or a set of NPCs.

24-HOUR PM Log

The 24-Hour PM LOG contains information on discrepancies encountered during the processing of the daily 24-Hour PM reports from the DACS II or DACS II ISX.

ESTABLISHED DS0 CHANNELS

This report allows you to search for established circuit records.

The SEARCH CRITERIA form allows searching by Circuit ID, Status, From NPC, To NPC, Channel, Type, Standard, Rate and Frame.

SUBRATE CIRCUITS

This report allows you to search for subrate circuit records.

The SEARCH CRITERIA form allows searching by Circuit ID, From NPC, From channel, From customer, To NPC, To channel, To customer, Rate and Status.

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 a report format category. The first several categories are shown in Figure 14-5. For a complete list of categories and fields, refer to Appendix A.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                    REPORT OPERATIONS MENU        REPORT FORMAT CATEGORIES

     CIRCUITS                         NPC   CIRCUITS
     NPCS                             ECHO  NPCS
     CHANNELS                         TASK  CHANNELS
     ALTROUTES/PREEMPTIONS            TASK  ALTROUTES/PREEMPTIONS
     OUTAGES                          LOST  RECONFIGURATION PLANS
     TEST PORT                        HIST  RECONFIGURATION PLAN ALTROUTE
     TEST ACCESS                      SCRI  AUTO RECONFIGURATION PLANS
     FRAMES/LINKS                     DISP  OUTAGES
     USER ADMINISTRATION              EDIT
     NPC ALARMS                       ALAR  Scroll ...
     CIRCUIT ALARMS                   RESCONFIGURATION SUB-MENU
     ALARM LOG                        ESTABLISHED DS0 CHANNELS
     AUDIT/SYNCHRONIZATION RESULTS    SUBRATE CIRCUITS
     NPC ROLL RESULTS


   Press ENTER to specify report search criteria

  HELP              QUIT               TOP MENU  PRINT
```

Figure 14-5.   Selection of Report Format Category

After you have chosen, the initial screen is the same in every case, except for the available fields and the title, as shown in Figure 14-6.

```
06:15 01 Nov 1997 I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

 Action:MODIFY          Report Name:CIRCUIT REMARKS

 ----------------------site name-------------------------CIRCUITS-----------
 Remarks                     Circuit_ID


                          COLUMN NAME      DATA WIDTH
 SELECT   ORDER   SORT     DEFAULT    OPTIONAL    DEF OPT COL
   X        1              Remarks                72  36  72   TOTAL
                          Ckt_Status             11      11   WIDTH
   X        2             Circuit_ID             41      36   78
                          Class                   3      5
                          Customer_Name          12      13
                          Location_A             24      24
                          Location_Z             24      24
                          F_NPC_Hier              5      5
 └Enter the desired action┘
```

| HELP | SCROLLDN | SCROLLUP | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 14-6.   Sample Edit Custom Report Format Form

To customize a new report, first CREATE it with a **Report Name**, then MODIFY the
report of that name. You will be adding or removing fields from the report. The
range of possible fields will be listed under COLUMN NAME. You have simply to
select the desired field with an X.

Field Descriptions

Table14-2 lists the Report Format field descriptions for creating a custom
report format.

Table 14-2.   Edit Custom Report Format Field Descriptions

Action	Mandatory. The valid actions are: 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 14-2. Edit Custom Report Format Field Descriptions (Contd)

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.
COL DATA WIDTH	Numeric. The width of the column to be displayed as defined by the user actions. If the data exceeds the width of a column, it will appear truncated on the report. The entire entry appears in the database.
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 display is 78 characters. If the data exceeds the total width, it will appear truncated on the report. The entire entry appears in the database.

Procedure: Creating a New Report Format

To create a new report format, follow these steps:

1. Select EDIT CUSTOM REPORT FORMAT from the REPORT OPERA-TIONS MENU. The pop-up menu REPORT FORMAT CATEGORIES is displayed.

2. Select the category for which you want to create a format. A new screen appears with mandatory fields **Action** and **Report Name** highlighted.

3. Enter CREATE in the **Action** field.

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.

5. Press EXECUTE and confirm. When the database has been updated, the
   following message is displayed:

   ```
   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.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

 Action:MODIFY          Report Name:CP1

 ──────── site name ───────────── CIRCUITS──────── CP1────────
 status   Circuit_ID                         Class Customer_Name


                          COLUMN NAME        DATA WIDTH
 SELECT   ORDER  SORT     DEFAULT    OPTIONAL   DEF OPTCOL
   x       1              Ckt_Status  Status     11           TOTAL
   x       2              Circuit_ID             41           WIDTH
   x       3              Class                   3           70
   x       4              Customer_Name          12
                          Location_A             24
                          Location_Z             24
                          F_NPC_Hier              5
                          F_NPC_Ext               4


  ─ Enter alphanumeric optional Column Name ─

  HELP    CHOICES   NEXT    QUIT              PREV   TOP MENU EXECUTE
```

Figure 14-7.   Sample Report Format

Procedure: Modifying a Report Format

To modify an existing report format, follow these steps:

1. Select EDIT CUSTOM REPORT FORMAT from the REPORT OPERATIONS MENU.

2. Select the category for which the format was created. A new screen appears with mandatory fields **Action** and **Report Name** highlighted.

3. Enter MODIFY in the **Action** field.

4. Enter the **Report Name**. The screen flashes in the upper right corner:

   SEARCHING

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.

6. Press EXECUTE and confirm. When the database has been updated, the following message appears:

   REPORT FORMAT HAS BEEN MODIFIED

Procedure: Renaming a Report Format

To rename a report format, follow these steps:

1. Select EDIT CUSTOM REPORT FORMAT from the REPORT OPERA-TIONS MENU.

2. Select the category for which the format was created. A new screen appears with mandatory fields **Action** and **Report Name** highlighted.

3. Enter RENAME in the **Action** field.

4. Enter the **Report Name**.

5. A new field appears, **New Name**. Enter the new report name.

6. Press EXECUTE and confirm. When the database has been updated, the following message appears:

   REPORT FORMAT HAS BEEN RENAMED

Procedure: Deleting a Report Format

To delete a report format, follow these steps:

1. Select EDIT CUSTOM REPORT FORMAT from the REPORT OPERATIONS MENU.

2. Select the category for which the format was created. A new screen appears with mandatory fields **Action** and **Report Name** highlighted.

3. Enter DELETE in the **Action** field.

4. Enter the **Report Name**.

5. Press EXECUTE and confirm. When the database has been updated, the following message is displayed:

```
REPORT FORMAT HAS BEEN DELETED
```

Alarm Query

This is a fixed-format report, but the format depends on the content. It provides you with an alarm profile for a given DACS. The report contains two classes of information:

■ Statistics: totals and subtotals of alarms by category.

■ Alarm information specific to objects within the DACS.

The categories of alarms are

■ Frame summary alarms, resulting from malfunction of some hardware object within the DACS.

■ 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 DACS are frame summary alarms. The hardware objects that cause frame summary alarms when they malfunction are:

■ **DACS II And DACS II ISX Entities**

Main Controller
Main Processor
Communications Interface
Secondary Service Controller
Disk
Tape
Administrative Links
Cross-connect Networks
Clock and Control Interfaces
Time and Date
Tape Backup
Power Converters
Synchronizers
Clock Reference Oscillator

Timing Link Interfaces
Time Slot Interchangers
Memory Cards
Timing References

- **FTU Equipment**

  Unit Controller
  FTU Module Interfaces
  Format Converters
  Cross-connect Buffers

- **DSPU Equipment**

  Unit Controller
  Cross-connect Buffers
  DSPU Interface

- **DS3 Equipment**

  Unit Controller
  Formatters
  Facility Line Interface
  Protection Facility Line Interface
  Multiplexers
  Protection Multiplexers
  Multiple Interface Units
  Protection Multiple Interface Unit

Procedure: Generating an Alarm Query Report

To generate an Alarm Query report, follow these steps:

1. Select it from the REPORT OPERATIONS MENU.

2. Enter the **Site Name** on the ALARM QUERY SEARCH CRITERIA form.

3. Press $\boxed{\text{EXECUTE}}$ and confirm. Wait for the completion message.

4. To access the report, select DISPLAY ALARM QUERY from the REPORT OPERATIONS MENU.

$\Longrightarrow$ **NOTE:**
   This is the only report not accessed via DISPLAY LAST GENERATED REPORT.

An instance of a ALARM QUERY REPORT follows:

```
pnfsts--------------------ALARM QUERY REPORT--------------------

Alarm Conditions Outstanding:
   pnfsts is alarming

Summary of alarm totals for pnfsts:
   pnfsts has 1 major alarm(s).
   pnfsts 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):
   1 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.
```

Test Access

15

Contents

Test Access

15

Introduction

Test Access provides a capability to connect a test object to an object under test. An object under test is a circuit or an unmapped channel.

Test access is of two types:

- **Test Port (TP)**—The object under test must be a circuit of bandwidth 1 or an unmapped channel. You must provision the test ports and the test port group through the TEST PORT PROVISIONING form, as is discussed in Chapter 5 "Test Port Provisioning."

- **Test Group (TG)**—The object under test is a circuit of bandwidth nxDS0, regardless of whether n is 1 or more than 1. You also may test unmapped channel(s) using a test group.

In either TP or TG access, you must have connected test equipment to one or more NPCs, which can then become either one or more test port groups or test group NPCs.

In TG access, you identify the NPCs to be used by the test group and supply the number of the first channel to be used in each NPC.

The I-2000 checks the bandwidth of the object under test, provisions the specified NPC(s) as a single test group, and connects the appropriate number of channels to the object under test. When you RELEASE the test group, the I-2000 deletes it.

The constraints on TG access are as follows:

- Deletion of the test group after use is automatic; however, if the access is interrupted by a failure, the TG might be left provisioned.

- The test group is created with bandwidth equal to the bandwidth of the object under test.

Typically you enter TEST ACCESS when a transmission problem is discovered in an existing circuit. The **Action** field on the TEST ACCESS form allows you to determine the type of test connection to the problem circuit.

Test access to the following circuits is **not** supported:

- Subrate.

- Clear DS1/E1

- A node in a real or virtual multipoint circuit. However, the EFTs can be tested.

Test Port access to the following circuit is **not** supported:

- BCON

A brief summary of the test connections supported is stated below. More complete descriptions are to be found in the DACS II manuals, such as the *DACS II Reference manual*.

The logical diagrams shown in this section apply to two-way circuits. You can derive the equivalent diagrams for one-way circuits by eliminating 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. An Rx from an external point of view; for example, a receiving point for line transmission, becomes the Tx for cross-connection within the DACS. This same convention is used consistently throughout this manual.

Figures 15-1 and 15-2 presume a bandwidth of 1. For their nxDS0 equivalents, imagine that each channel and its connection becomes n channels and connections.

Monitor Test Access

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 sides are communicated along their intended route, but are also received at the test object.
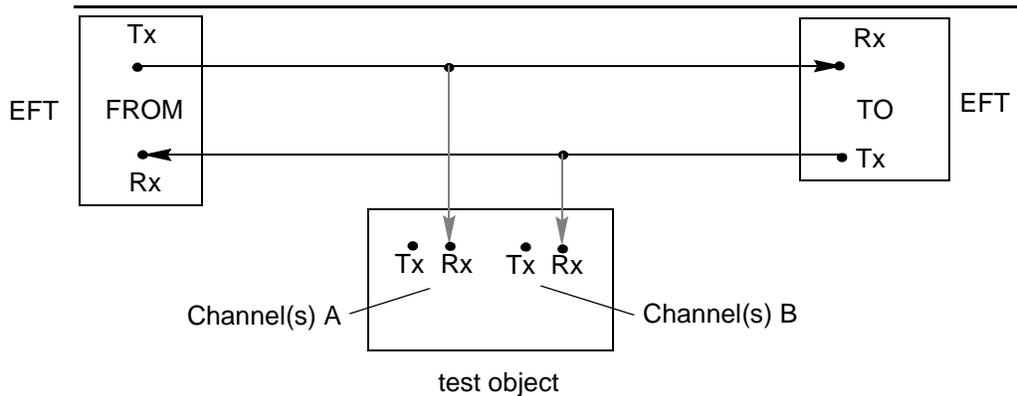
Figure 15-1.   Illustration Of Monitor Test Access

In Figure 15-1, 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 connection in MONITOR **Status** joins Channel(s) A and Channel(s) B Rx of the test object to the circuit connection. Normal transmission on the circuit is received at both the TO side Rx and a test object Rx, and at both the FROM side Rx and a test object Rx. If the circuit were half-duplex, only the TO side Rx and the test object Rx would receive.

If *Terminate and leave* is applied to the TO side, the TO Rx receives only the IW signal; for example, traffic is replaced by an insertion word on that side. However, the test object 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 DACS uses its own default; typically, the UMC. An **IW** entered in NPC provisioning takes precedence over the DACS default, and an **IW** entered in circuit provisioning takes precedence over either of those.
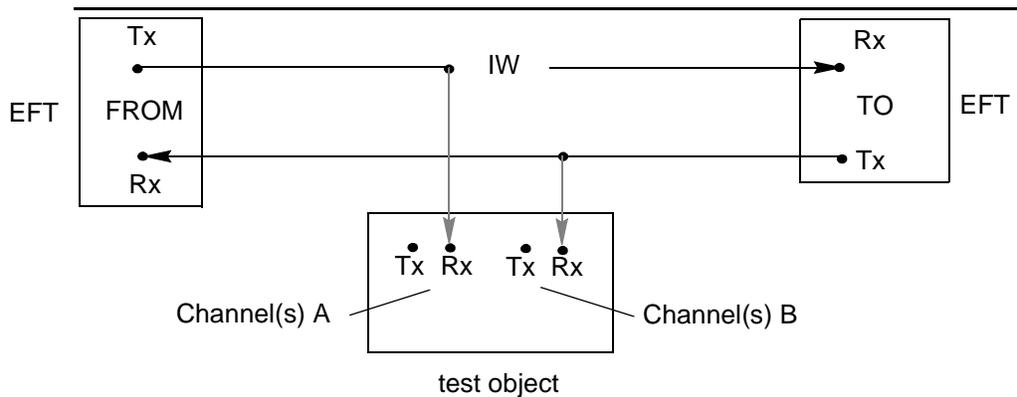
Figure 15-2.   Illustration Of Monitor Test Access, TLA Applied in T Direction

The same may be said of FROM side TLA.
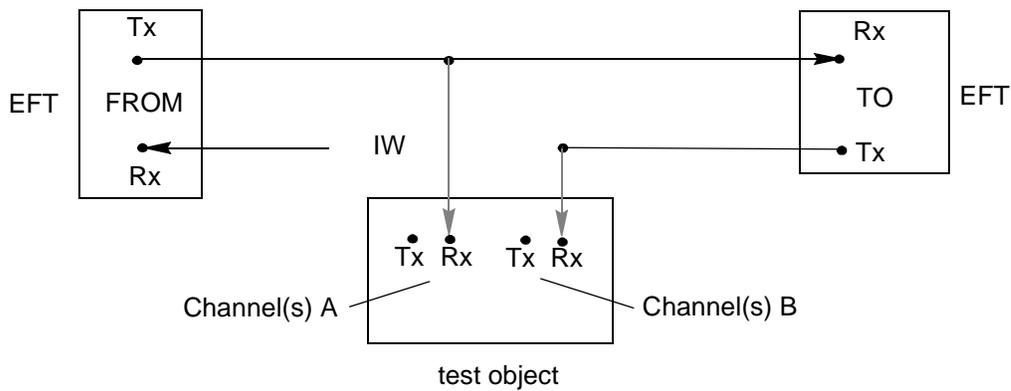
Figure 15-3.   Illustration Of Monitor Test Access, TLA Applied in F Direction

If TLA is applied to both sides, then no normal traffic is received over the circuit being tested, but the traffic is received at the test object.
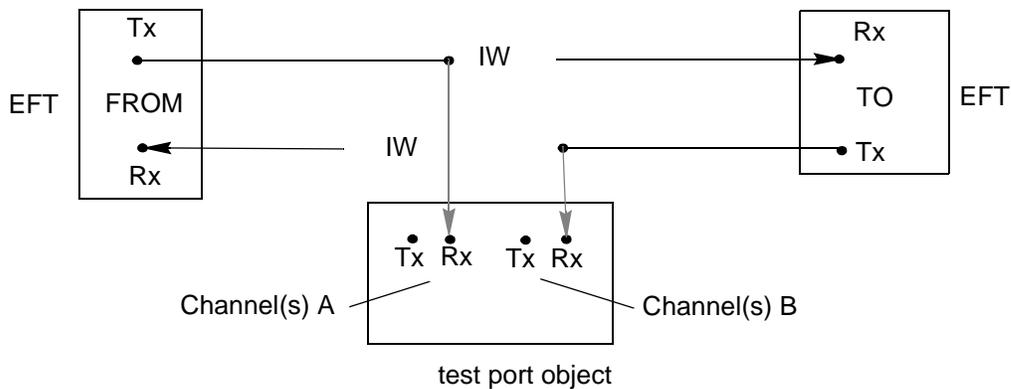
Figure 15-4.   Illustration Of Monitor Test Access, TLA Applied in B(oth) Directions

Monitor Test Access

In SPLIT access, transmission through the object under test is broken and the test signal is inserted at the break.
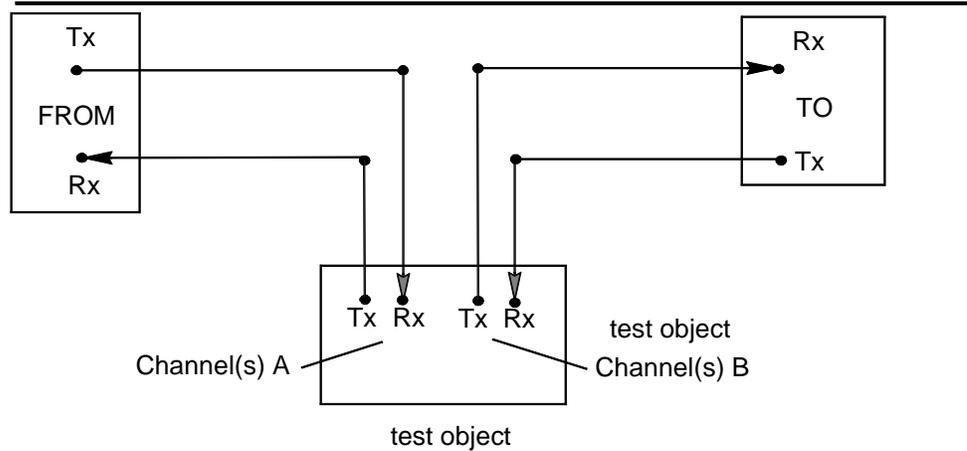
Figure 15-5.   Illustration Of Split Test Access

The connection is completed through Channel(s) A by connecting Channel(s) A Tx to the FROM side Rx, and through Channel(s) B by connecting Channel(s) B Tx to the TO side Rx. Moreover, transmission from FROM Tx to TO Rx and from TO Tx to FROM Rx are broken. Although the old circuit still nominally exists, the TO side and the FROM side are both connected to the test object. The TO and FROM sides can transmit to each other only if the test object passes on the transmission externally to the DACS.

The test object both sends and receives. User test equipment can send signals to both the FROM and the TO sides of the object under test simultaneously and independently, simulating the old circuit if such simulation is desired.

If TLA is applied to the TO side, the traffic from the channel(s) B Tx to the TO side Rx is replaced with the IW.
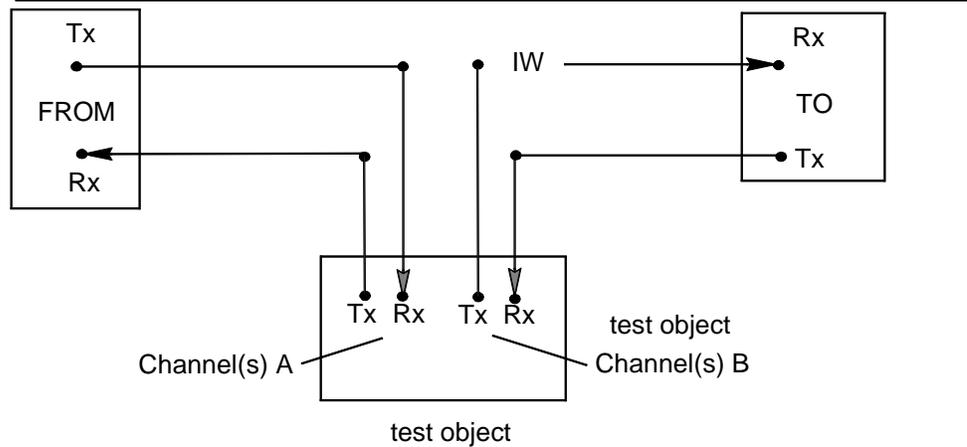
Figure 15-6.   Illustration Of Split Test Access, TLA Applied in T Direction

If TLA is applied to the FROM side of a circuit being tested in SPLIT **Status**, the return traffic from Channel(s) A Tx to the FROM side Rx is replaced by the IW.
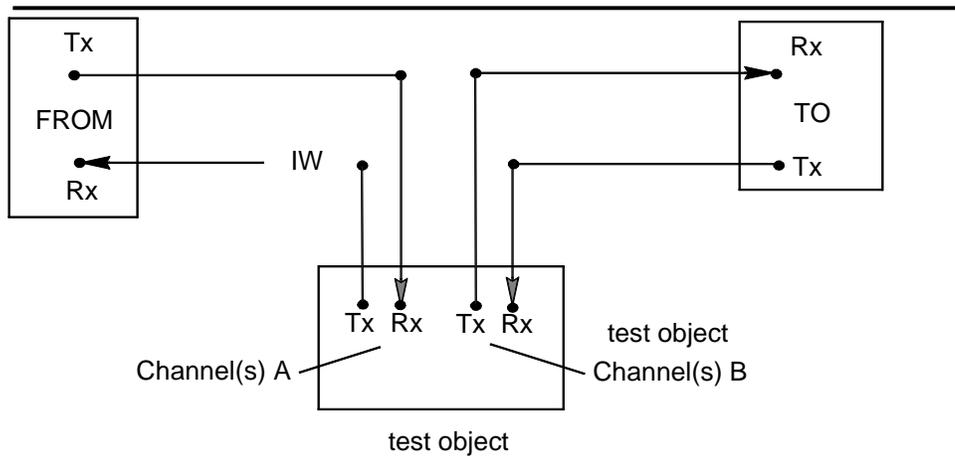
Figure 15-7.   Illustration Of Split Test Access, TLA Applied in F Direction

If TLA is applied to both sides, there is still traffic from the FROM side Tx to Channel(s) A and from the TO side Tx to Channel(s) B.
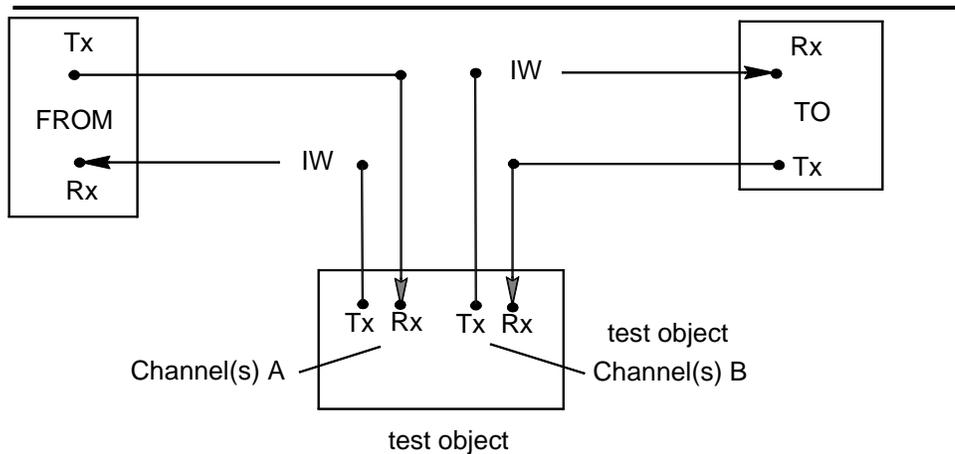
Figure 15-8.   Illustration of Split Test Access, TLA Applied in B(oth) Directions

A test object can connect to channels that are not mapped in a circuit. This use of the TEST ACCESS capability can test channels before they are placed in service on any circuit.

The HUB Action

The HUB **Action** provides a two-way cross-connection between some test object channels and other channels. With this capability, a remote test system in a hub office can have test access to a DACS located in other offices via the hub DACS. The HUB **Action** is, in fact, a way of displacing test objects to remote DACSs.
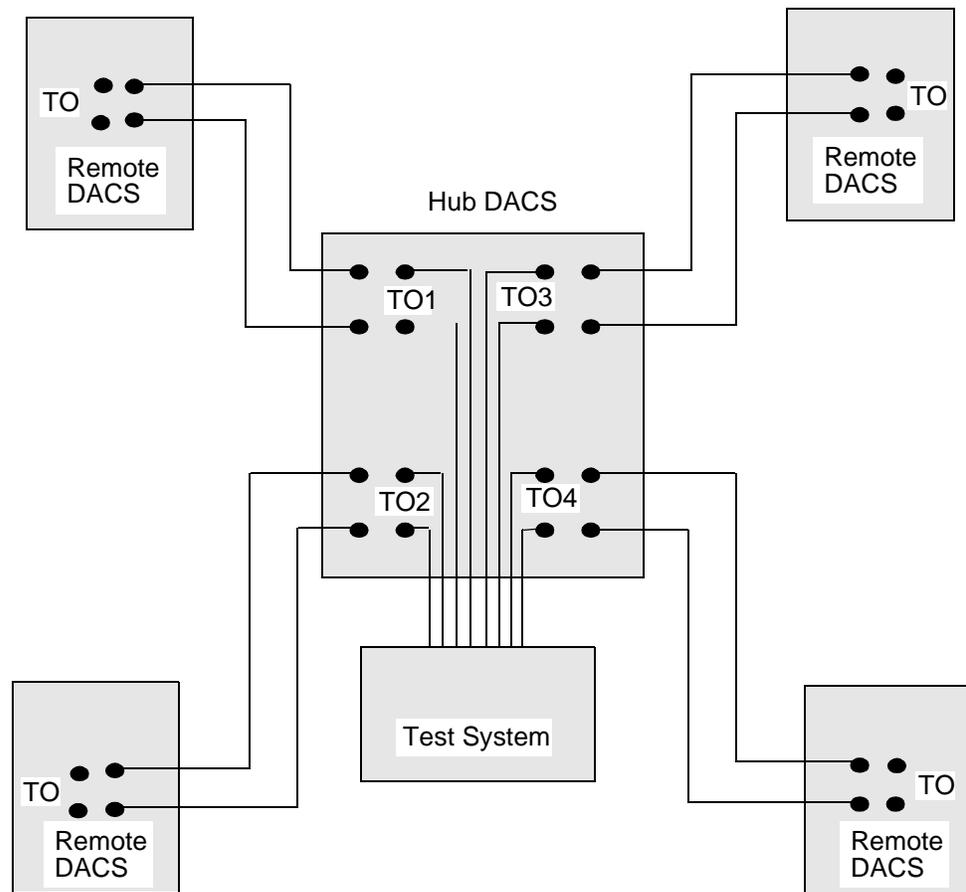
Figure 15-9.   Illustration Of Hub Test Access

In Figure 15-9, channels for Test Objects 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 objects and then have been cross-connected with a HUB **Action** to other EFTs, which lead to remote DACS.

At a remote DACS, the far ends have been provisioned as test objects and may now be cross-connected to objects under test with a MONITOR **Action**. The monitoring is displaced to the test equipment at the hub.

The LOOP Action

The LOOP **Action** cross-connects a test object to itself. The test system can monitor and test the health of the test object. The channels of the test object are looped to themselves. The NPC and channels are test objects only for the duration of the loop and the test object cannot be used for a MONITOR or SPLIT while in the LOOP state.

TEST ACCESS Form

Select TEST ACCESS from the MAIN MENU. The TEST ACESS form is displayed, as shown in Figure 15-10.

```
06:15 01 Nov 1997  I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                          ──── TEST ACCESS ────
 Site Name:
 Action:        Direction:      OOS:                       Test State:
 Test Object
   Object Type:     Number:    Bandwidth:   TC:     IW:     AtoMU:

           Hier    Ext                  NPC ID                  Ch
   FROM:
     TO:
 Object Under Test
    Ckt ID:                            Termination State:
 Channel Connection
          Hier    Ext              NPC ID                  Ch
 FROM:
   TO:

  ── Enter site name (at least 5 characters) ──

 ┌──────┐ ┌───────┐ ┌───────┐ ┌──────┐    ┌──────┐ ┌────────┐ ┌──────┐ ┌────────┐
 │ HELP │ │CHOICES│ │       │ │ QUIT │    │      │ │TOP MENU│ │ PRINT│ │EXECUTE │
 └──────┘ └───────┘ └───────┘ └──────┘    └──────┘ └────────┘ └──────┘ └────────┘
```

Figure 15-10. TEST ACCESS Form

The **Direction** field only appears for an **Action** of TERMINATE or UNTERMINATE.The **OOS** field only appears for an **Action** of RELEASE. For an **Action** of LOOP, the **Object Under Test** information does not appear.

Field Descriptions

The field descriptions for the TEST ACCESS form are described in Table 15-1.

Table 15-1. Test Access Field Descriptions

Site Name	Mandatory. 1 through 24 characters from the set A-Z, a-z, 0-9, /, _, and -. All other characters are illegal. Blanks are not allowed within a name. The name of the DACS 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 "System Administration."
Action	Mandatory. Specifies the TEST ACCESS operation. The valid actions are: MONITOR — Connects an object under test, and any ACTIVE or ALTROUTED circuit containing the object under test, to a test object. The test object will receive data from the object under test without disrupting traffic. The **Test State** 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 object. The FROM and TO sides can then be tested simultaneously and independently. HUB — Connects a circuit to a test object in such a way that the local DACS is used as a test access concentrator, with the local test object connected to a remote test object on another DACS. TERMINATE — For a test object testing a circuit in the MONITOR or SPLIT mode, replaces the normal signal with the IW signal. 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 object under test, in the FROM direction or in BOTH directions for a two-way circuit or on all branch LEGS toward facilities for a multi-point circuit. See also under the **Direction** field. 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.

Table 15-1. Test Access Field Descriptions (Contd)

Action (Continued)	RELEASE	Disconnects a test object from an object under test and makes the test object available for reuse. With the OOS option, the test object may be released even if it is out of service.
	LOOP	Loops channels of a test object so that they can be tested.
Direction	The circuit ends for which IW 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:	
	F Replace the signal to the FROM channel with IW.	
	T Replace the signal to the TO channel with IW.	
	B Replace the signals to the FROM and TO channels with IW.	
	L Replace the signals on all branch LEGS toward facilities for a multipoint circuit with IW.	
OOS	This field appears for the RELEASE **Action** only. The values are:	
	Y Requests DACS to allow the release request to succeed when the test group or test port group NPC or an NPC of the object under test is out of service.	
	N Default. Allows DACS to deny the release request if the NPC is out of service.	
Test State	A display-only field indicating the operating status of the test object connections, as follows:	
	RELEASED is displayed when the test object is not in use.	
	MONITOR is displayed when MONITOR access is in effect.	
	SPLIT is displayed when SPLIT access is in effect.	
	HUB is displayed when HUB access is in effect.	
	LOOP is displayed when LOOP access is in effect.	
	The **Test State** field reflects the last successful **Action**.	
Object Type	The type of test object. The valid types of objects are:	
	TP The object is a test port, and therefore user test port provisioning is required (Chapter 5 Test Port Provisioning).	
	TG The object is a test group, which will be automatically provisioned as required for test access.	

Table 15-1. Test Access Field Descriptions (Contd)

Number	The number of the test object to be used for performing tests. If **Object Type** is TP, enter the test port number. If **Object Type** is TG, the I-2000 selects the number by default; however, you may enter a test group number. If the test group was provisioned, the fields corresponding to this number test group are filled in.
	Test Port — The range is 1 through 48 with DACS II generics prior to 6.0 and 1 through 96 with DACS II Generic 6.0 and later and DACS II ISX.
	Test Group — DACS II generics prior to 6.0 and DACS II ISX prior to 1.1 do not support this feature. The range is 1 through 400 with DACS II Generic 6.0 and later, and 1 through 100 for DACS II ISX.
Bandwidth	The bandwith of the test object. Values are as follows.
	Test Port — Only a value of 1 is allowed. The default is 1.
	Test Group — If the object under test is a mapped circuit, enter nothing. Regardless of what you enter, the bandwidth will be taken from the object under test. If the object under test is an unmapped circuit, enter the desired bandwidth. For valid bandwidths, refer to the **Bandwidth** field description under CIRCUIT PROVISIONING.
TC	This field appears for the LOOP, MONITOR, SPLIT and HUB **Action**s only. Enter the Trunk Conditioning Code that is to apply to the test connection. For valid TC codes, refer to the **TC** field description under CIRCUIT PROVISIONING.
IW	This field complements **TC**. For valid IW codes, refer to the **IW** field description under CIRCUIT PROVISIONING.
AtoMU	This field appears for the MONITOR, SPLIT and HUB **Action**s only. The values are:
	Y — Specifies A-law to Mu-law (also called x-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 object under test or from the test object itself.
	N — Default. Disables the A-law to Mu-law conversion.

Table 15-1. Test Access Field Descriptions (Contd)

Test Object FROM Hier	This and the following three fields are the identifying information of the test object. Their values depend on the test object. `Test Port` Filled in automatically. A blank value means you have not provisioned the test port (Chapter 5 Test Port Provisioning). `Test Group` The hierarchical NPC number of the NPC to be used as the FROM side of the test object. Alternatively, you may enter the extended number or the **NPC ID**. Whichever you enter, the other two fields are filled in. The NPCs must be in service.
Test Object FROM Ext	The value depends on the test object type. `Test Port` Filled in automatically. `Test Group` The extended NPC number of the NPC to be used as the FROM side of the test object.
Test Object FROM NPC ID	The value depends on the test object type. `Test Port` Filled in automatically. `Test Group` The ID of the NPC to be used as the FROM side of the test object.
Test Object FROM Ch	The value depends on the test object type. `Test Port` Filled in automatically. `Test Group` The first channel to be used as the FROM side of the test object. The allocation of channels depends on the **Bandwidth** and the **Bandwidth Type** of the object under test. You must insure that the test group has sufficient available channels.
Test Object TO Hier, Ext, NPC ID, Ch	The same information as for the Test Object FROM side, but referring to the TO side. FROM and TO NPCs may be the same, if the test connection calls for only one; for example, if FROM and TO are only different channels in the same NPC.
Object Under Test Ckt ID	The **Ckt ID** of the circuit to be made an object under test, if you are going to test a circuit. For unmapped channels, leave blank.
Termina-tion State	Information concerning the termination of the object under test. `F` Terminated in FROM direction. `T` Terminated in TO direction. `B` Terminated in both directions. `blanks` Unterminated in both directions.

Table 15-1. Test Access Field Descriptions (Contd)

Channel Connection fields	Identify the object under test. Their values depend on the **Object Type** and the **Action**. For the LOOP **Action**, in which there is no object under test, the fields do not appear. If the object to be tested has been mapped, you can identify it by filling in either the **Ckt ID** or the lowest numbered FROM or TO channel along with its NPC. The remaining information is automatically filled in. If the object to be tested is an unmapped channel, you must specify the lowest-numbered channel to be tested.

With the exception of TERMINATE and UNTERMINATE, a TEST ACCESS **Action** requests a change in the **Test State**. **Test State** values can succeed each other only in a certain order; for example, certain **Action**s succeed only when requested from certain **Test State**s. The **Test State** sequences are shown in Table 15-2.

Procedure: Reading the Test State Sequences

To read the Test State Sequences table, follow these steps:

1. Look up the row of the current **Test State** down the left-hand column of the table.

2. Look up the column of the desired **Test State** across the top of the table.

3. Read the **Action** at the intersection of the row and column. A dash means that the **Action** is not allowed. **X** means the **Action** is allowed.

Table 15-2. Allowed Test State Sequences

	Desired Test State				
Current Test State	MONITOR	SPLIT	HUB	LOOP	RELEASED
MONITOR	-	X	-	-	X
SPLIT	X	-	-	-	X
HUB	-	-	-	-	X
LOOP	-	-	-	-	X
RELEASED	X	-	X	X	-

An attempt to enter an **Action** that is not allowed for the **Test State** results in the appropriate denial message.

Test Access Examples

Examples of Test Access are given in the following sections. Assume that communication between the I-2000 and the DACS has been established, and the following facility NPCs have been created and restored.

Example: Placing a Circuit in MONITOR State

To place a circuit in MONITOR state, follow these steps:

1. Select TEST ACCESS from the MAIN MENU.

2. Enter the following data:

   — **Site Name**: DACS00

   — **Action**: MONITOR

   — **Object Type**: TG

   — **TC**:

   — **IW**:

   — **Test Object FROM NPC ID**: NPC0001

   Observe that the test object identification fields are filled in.

   — **Test Object FROM Ch**: 001

   — **Test Object TO NPC**: NPC0001

   — **Test Object TO Ch**: 002

   — **Ckt ID**: NPC0005

   Observe that the object under test identification fields are filled in.

3. Press EXECUTE and confirm. The I-2000 prints a completion message at the bottom of the screen and updates fields in the form.

Example: MONITOR of Unmapped Channels

To MONITOR unmapped channels, follow these steps:

1. Select TEST ACCESS from the MAIN MENU.

2. Enter the following data:

   — **Site Name**: DACS00

   — **Action**: MONITOR

   — **Object Type**: TG

   — **TC**: 0011,0011

   — **IW**: FF

   — **Test Object FROM NPC ID**: NPC0001

Observe that the test object identification fields are filled in.

— **Test Object FROM Ch**: 001

— **Test Object TO NPC**:NPC0001

— **Test Object TO Ch**: 002

— **Object Under Test TO NPC**: NPC0001

— **Object Under Test TO Ch**: 004

3. Press EXECUTE and confirm. The I-2000 prints a completion message at the bottom of the screen and updates fields in the form.

Example: Terminating a Circuit

To apply TLA in the **T** direction, follow these steps:

1. Enter the following data:

— **Action**: TERMINATE

— **Direction**: T

2. Press EXECUTE and confirm. The I-2000 prints a completion message at the bottom of the screen.

Example: Modifying the Status to a SPLIT State

To modify a status to a SPLIT state, follow these steps:

1. Enter **Action**: SPLIT

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.

Example: Unterminating a Circuit

To remove TLA in the **T** direction, follow these steps:

1. Enter the following data:

— **Action**: UNTERMINATE

— **Direction**: T

2. Press EXECUTE and confirm. The I-2000 prints a completion message at the bottom of the screen.

Example: Placing a Test Object into a LOOP State

To place a test object in a LOOP state, follow these steps:

1. Select TEST ACCESS and enter the following data:

— **Site Name**: DACS00

- — **Action**: LOOP
- — **Bandwidth**: 03
- — **TO NPC ID**: NPC0006
- — **TO Ch**: 05
- — **FROM NPC ID**: NPC0006
- — **FROM Ch**: 05

2. Press EXECUTE and confirm. The I-2000 prints a completion message and updates the fields in the form.

➡ **NOTE:**
Do not enter an Object Type (TG) or a TG Number. Only identify the NPC and channels.

Fault Management

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Fault Management

16

Introduction

This chapter describes the Alarm notification feature of the I-2000. This feature allows you to monitor the alarm status of the DACSs being controlled by the I-2000 on a real time basis. In addition to notification, the feature also provides a mechanism to view the contents of the DACS Alarm Log. Details of the various field values in the Alarm Log reports are also provided in this chapter.

⇒ **NOTE:**
When an alarm set message is received by the I-2000, the alarm set message is stored in the I-2000 database and logged to the Alarm Log *if* the alarm *is not* already active in the I-2000 database.

In addition, when an alarm clear message is received by the I-2000, the alarm clear message is stored in the I-2000 database and logged to the Alarm Log *if* the alarm *is* currently active in the I-2000 database.

Therefore, an alarm set is logged to the Alarm Log *only if* that alarm does not currently exist in the I-2000 database. Likewise, an alarm clear is logged to the Alarm Log *only if* that alarm currently does exist in the I-2000 database.

Alarm Notification Feature

The I-2000 alarm status line, labeled `Alarms`, displays equipment alarms. When this line is clear, no unacknowledged alarms are pending.

■ **DACS Alarms** are indicated when the appropriate site name appears on the alarm status line. Equipment alarms are displayed from as many DACSs as will fit on the line.

Frame names where critical alarms arise are displayed in red (color termi-nal), in reverse video (monochrome terminal), or blinking (VT100 only, not the SUN console). Frame names where Minor or major alarms arise are displayed in red (color terminal) or in reverse video (monochrome termi-nal). Frame names where information alarms arise are not displayed.

When a critical alarm occurs, the site name will flash until you acknowledge by pressing Ctrl + a.

Retrieving Alarms

To retrieve and acknowledge an alarm, perform these steps:

1. Press Ctrl + a. A pop-up window will display the available alarm reports including EQUIPMENT alarms and any customized alarm reports that have been created.

2. Select the type of alarm. Then, you are prompted for WHICH DACS? and a list of **Site Name**s is displayed.

3. Select the site name that is in the alarm state. The I-2000 displays a report listing the alarms in the alarm log, one page at a time. The acknowledged site name indicator disappears from the status line until a new alarm is received.

4. Page through the report using the function keys that are noted at the bot-tom of the screen, as shown in the sample alarm report.

Exiting an alarm report returns you to the previous screen.

⇒ **NOTE:**
While you are reviewing the report, new alarms can be added to the log, and new alarm notifications are displayed, but no new alarms are added to the report being displayed.

You also can obtain this report by selecting REPORT OPERATIONS from the MAIN MENU and EQUIPMENT ALARMS from the REPORT OPERATIONS menu. However, obtaining a report in this way does not serve to acknowledge the alarm.

Alarm Log

Figure 16-1 shows an example of an Alarm Log report.

```
11:42 25 Nov 1997          I-2000 Controller Release x.x for DACS-II
Status:report generation is completed
Alarms:

  --------CEF---------------ALARM LOG---------------ALARMS-----------

 Date  Time      Sev Summary    NPC    Type   Threshold Un S Sub Fld1 Fld2
 25Nov 11:07:14 MAJ OOS:  FC                            02 0 2
 25Nov 11:06:26 MIN OOS:  TLI                           04 0
 25Nov 11:06:26 MIN OOS:  TLI                           01 0
 24Nov 15:00:36 MAJ LINK DOWN
 24Nov 14:54:32 CLR THRES IDLE 02207       15MIN
 24Nov 14:45:48 CLR LINK UP




                                   Page 1 of 1   Display Page:1
 25 Nov 97
```

```
 HELP    NEXTPAGE  PREVPAGE   QUIT      TOPPAGE  TOP MENU   PRINT   LASTPAGE
```

Figure 16-1.   Sample Alarm Report

Tables 16-1 through 16-8 describe DACS II alarm message elements. These field values help you identify the type of alarm. Explanations of each message element follow each table.The column headings in the report and their values are explained in Table 16-1.

Table 16-1.   Explanation of DACS II and 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), MAJ (major), MIN (minor), CLR (clear) for Idle, and INF (information).

Table 16-1.   Explanation of DACS II and DACS II ISX Alarm Message Elements (Contd)

Summary	The type of alarm message.

`BMTR ALARM`	Backup memory transfer alarm.
`BMTR IDLE`	Backup memory transfer alarm retired.
`BOOT FAILED`	Reports that a system boot has failed during a `RST::MC` or `RST::MC,TAPE` command.
`CCB ALARM`	Cross-connect buffer alarm.
`CCB IDLE`	Cross-connect buffer alarm retired.
`CCI ALARM`	Clock and control interface alarm.
`CCI IDLE`	Clock and control interface alarm retired.
`CCNI ALARM`	Cross-connect network interface alarm.
`CCNI IDLE`	Cross-connect network interface alarm retired.
`CGA`	Carrier group alarm for NAS NPCs. This message reports facility alarms.

The type of facility alarm is reported in the F column.

`CCN IDLE`	Cross-connect network alarm retired.
`CGA IDLE`	The message is informationally the same as for CGA. It means that the CGA has been retired.
`CI RESET`	Communications interface reset. A DACS II outputs this type of message immediately after a hardware reset. The `MAJ` severity notifies remote systems of the reset.
`DATE RESET`	Reports that a DACS II's date and/or time have been reset.
`DSG`	Jitter suppressor.
`DSPI ALARM`	Digital signal processing interface alarm.
`DSPI IDLE`	Digital signal processing interface alarm retired.
`DSPU ALARM`	Error recovery for the DSPU NPC.
`ECCN IDLE`	Expanded cross-connect network side (ECCN) alarm retired.
`ETSI ALARM`	Expanded time slot interchanger alarm.
`ETSI IDLE`	Expanded time slot interchanger alarm retired.
`EER`	Excessive Error Rate
`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.
`ERR:TREF`	Synchronization timing reference error.
`FC ALARM`	Format converter alarm.
`FC IDLE`	Format converter alarm retired.
`FMT ALARM`	Formatter alarm.
`FMT IDLE`	Formatter alarm retired.
`FTMI ALARM`	Facility terminating module interface alarm.
`FTMI IDLE`	Facility terminating module interface alarm retired.

Table 16-1.   Explanation of DACS II and DACS II ISX Alarm Message Elements (Contd)

Summary Continued	FTU ALARM	Error recovery for the FTU NPC. Refers to error condition code.
	IDLE:SXC	The SXC has returned to in-service state.
	LES	Loss of External Synchronization
	LES + AIS	Loss of External Synchronization and Alarm Indication Signal.
	LES + EER	Loss of External Synchronization and Excessive Error Rate.
	LES + LOFA/LOS	Loss of External Synchronization and Loss of Frame Alignment or Loss of Signal.
	LOFA/LOS	Loss of Frame Alignment or Loss of Signal.
	LOS	Loss of signal (LOS) alarm on a DA type NPC.
	LOS IDLE	LOS alarm retired.
	MC ALARM	Main controller alarm.
	MC IDLE	Main controller alarm retired.
	MC IN MCOND	Maintenance condition (MCOND) in main controller. Reports that the MC has been restored to service in the maintenance condition.
	MC REMOVED	Main controller removed. Reports that the MC was removed from service.
	OOS:CCB	Cross-connect buffer out of service.
	OOS:CCI	Clock and control interface (CCI) out of service.
	OOS:CCN	CCN out of service.
	OOS:CCNI	Cross-connect network interface (CCNI) out of service.
	OOS:DSPI	Digital signal processor interface (DSPI) out of service.
	OOS:ECCN	Expanded cross-connect network side (ECCN) out of service.
	OOS:ETSI	Expanded time slot interchanger (ETSI) out of service.
	OOS:FC	Format converter of a facility terminating unit (FTU) out of service.
	OOS:FLI	Facility line interface out of service .
	OOS:FMT	Formatter in a DS3 unit is out of service.
	OOS:FTMI	Facility terminating module interface out of service.
	OOS:LINK	Link out of service.
	OOS:MMFG	Multiplexer-multiplexer interface unit functional group (MMFG) of a DS3 unit out of service.
	OOS:MEMA	Memory card A out of service.
	OOS:MEMB	Memory card B out of service.
	OOS:PMEM	Primary memory card out of service.
	OOS:SMEM	Secondary memory card out of service.
	OOS:NPC	NPC out of service.
	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.

Table 16-1.   Explanation of DACS II and DACS II ISX Alarm Message Elements (Contd)

Summary Continued...	`OOS:SYNC-TB`	Synchronizer time base out of service. Reports that the synchronizer time base has been removed as a clock reference oscillator (CRO).
	`OOS:SYNC-TLI`	Synchronizer time link interface out of service.
	`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.
	`OOS:TSI`	Time slot interchange out of service.
	`OOS:TREF`	Synchronization timing reference out of service.
	`OOS:UC`	Unit controller out of service.
	`PBA`	Primary block alarm (PBA) for CEPT NPCs.
	`PBA IDLE`	The PBA has been retired.
	`POWER ALARM`	Power supply alarm.
	`POWER FAIL`	Reports that error recovery was instigated by a DACS II because of a frame power failure.
	The `Fld1` and `Fld2` columns of the report contain field1 and field2 reported in the DACS II error status register. Refer to the description immediately following this table.	
	`POWER IDLE`	Power supply alarm retired.
	`SSP ALARM`	Synchronizer sync port alarm.
	`SSP IDLE`	Synchronizer sync port alarm retired.
	`SYNC ALARM`	Synchronizer alarm.
	`SYNC IDLE`	Synchronizer alarm 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 `Threshold`.
	`THRESH IDLE`	This threshold alarm has been retired.
	`TS0 BOVF`	TS0 monitor buffer overflow.
	`TS0 IDLE`	TS0 monitor buffer clear.
	`TSI ALARM`	Time slot interchanger alarm.
	`TSI ALARM`	Time slot interchanger alarm.
	`TSI IDLE`	Time slot interchanger alarm retired.
	`UC ALARM`	Unit controller alarm.
	`UC IDLE`	Unit controller alarm retired.

Table 16-1.   Explanation of DACS II and DACS II ISX Alarm Message Elements (Contd)

Type	Facility Alarm Type. For CEPT NPCs; for example, the `Summary` is `PBA`: A Primary AIS; for example, Alarm indication signal received in all 32 time slots. B BER: bit error rate detected in received signal. C LCMA: Loss of CRC4 multiframe alignment in TS0. E RBER: remote bit error rate detected in Bit 4 of TS0. F LOF PBF: Loss of frame primary block failure. G FLCMA; I RAIS: remote AIS detected in Bit 4 of TS0. L LMA: Loss of multiframe alignment in CAS Time Slot 16. M R16: RAI received in Bit 6 of Frame 0 of TS16. P PFOOF: R LOS PBF: Loss of signal type primary block failure, or primary block alarm (PBA). S SFI: synchronization failure indication in Bit 5 of TS0. V A16: AIS received in CAS time slot 16. X EER: excessive error rate. Y RAI: Remote alarm indication received in Bit 3 of NFW of TS0.
NPC	The NPC Number of the NPC that is the subject of the message. The NPC number is displayed in hierarchical format if the DACS is provisioned for hierarchical and displayed as 4-digit extended if provisioned for extended 3 or extended 4. (NPCs on a DACS II ISX are always displayed as 4-digit extended.) See Chapter 2, "Frame Administration."
Threshold	See Table 16-2.
Unit	The unit number of the alarming facility.
Side	The side number of the alarming facility.
Sub	The subunit number of the alarming facility.
FLD1,FLD2	See Table 16-3 and Table 16-4.

Table 16-2.   Alarm Thresholds

Threshold	Description
BER	Bit error rate.
COFA	Change of frame alignment error.
CRC15MIN	15-minute CRC block errors.
CRCDAILY	Daily CRC block errors.
CSS15MIN	15-minute controlled slip seconds.
CSSDAILY	Daily controlled slip seconds.
CV15MIN	15-minute coding violations.
CVDAILY	Daily coding violations.
DM1H	Degraded minutes after 1 hour.
DM24H	Degraded minutes after 24 hours.
ERS15M	Errored seconds after 15 minutes.
ERS24H	Errored seconds after 24 hours.
ES15MIN	15-minute errored seconds.
ESDAILY	Daily errored seconds
FEBE15MIN	15-minute far -end block errors.
FEBEDAILY	Daily far-end block errors
FES15MIN	15-minute far-end seconds.
FESDAILY	Daily far-end errored seconds.
FRER15MIN	15-minute framing errors.
FRERDAILY	Daily frame errors.
FSESDAILY	Daily far-end severely errored seconds.
FUAS15MIN	15-minute far-end unavailable seconds.
FUASDAILY	Daily far-end unavailable seconds.
IDLE SIG	Idle signal.
LOS	Loss of signal.
MER15MIN	15-minute multiframe errors.
MERDAILY	Daily multiframe errors.
OFS15MIN	15-minute out of frame seconds.
OFSDAILY	Daily out of frame seconds.
OOF	Out of frame.
SAFE	Shelf alarm far end.
SANE	Shelf alarm near end.
SERS15M	Severe errored seconds after 15 minutes.
SERS24H	Severe errored seconds after 24 hours.
SES15MIN	15-minute severely errored seconds.
SESDAILY	Daily severe errored seconds.
SLIP	Slip count.
SLIPS15M	Slip count after 15 minutes.
SLIPS24H	Slip count after 24 hours.
UAS15MIN	15-minute unavailable seconds.
UASDAILY	Daily unavailable seconds.
UATC15MIN	15-minute unavailable time count.
UATCDAILY	Daily unavailable time count.
US15M	Unavailable seconds after 15 minutes.
US24H	Unavailable seconds after 24 hours.

Power Fail Messages

For a `POWER FAIL` message, `Fld1` and `Fld2` contain field1 and field2 reported in the error status register. These fields are described in the *DACS II Command and Message Manual* of the appropriate release, for message number 0.01301.

Each field consists of four 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 16-3.   Error Status Register *field1* Bit Mask

Bit	Failed Power Supply	Bit	Failed Power Supply
15-08	Not used	03	CCN/ECCN 1 PWR failure
07	MC 1, 484GA	02	CCN/ECCN 0 PWR failure
06	MC 0, SM565	01	SYNC 1 PWR failure
05	MC 1, 484GA power converter in MC	00	SYNC 0 PWR failure
04	MC 0, SM565 power converter in MC		

For field2:

Table 16-4.   Error Status Register *field2* Bit Mask

Bit	Failed Power Supply	Bit	Failed Power Supply
15	Unit 16	07	Unit 8
14	Unit 15	06	Unit 7
13	Unit 14	05	Unit 6
12	Unit 13	04	Unit 5
11	Unit 12	03	Unit 4
10	Unit 11	02	Unit 3
09	Unit 10	01	Unit 2
08	Unit 9	00	Unit 1

For an `ISX_PWR FAIL` message, `Fld1` and `Fld2` contain field1 and field2 reported in the error status register. Each field consists of two hexadecimal digits. Expand the two hex digits to 8 bits before comparing to the table below.

A bit set to 1 indicates a power error or a unit not installed. For example, if field1 contains C0, then the 8-bit expansion is 11000000, indicating that main shelf PU3 and PU2 are not installed.

The maps of bit position into units are as follows.

For field1:

Table 16-5.   Error Status Register *field1* Bit Mask

Bit	Unit
07-03	Reserved.
02	Main shelf PU3 not installed.
01	Main shelf PU2 not installed.
00	Main shelf PU1 not installed.

For field2:

Table 16-6.   Error Status Register *field2* Bit Mask

Bit	Unit
07	Expansion shelf PU4 not installed.
06	Expansion shelf PU5 not installed.
05	Main shelf feeder A or fuse failure to PU1, PU2 or PU3.
04	Main shelf feeder B or fuse failure to PU1, PU2 or PU3.
03	Main shelf +5 V output failure on PU1, PU2 or PU3.
02	Expansion shelf feeder A or fuse failure to PU4 or PU5.
01	Expansion shelf feeder B or fuse failure to PU4 or PU5.
00	Expansion shelf +5 V output failure on PU4 or PU5.

24-Hour Performance Monitoring

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24-Hour Performance Monitoring

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Introduction

The I-2000 provides you with the ability to control and report performance monitoring parameters for CEPT type NPCs.

> **NOTE:**
> In order to use the 24-hour performance monitoring feature, set the environment variable PM24HR_NONFT to **YES** in *userenv*.

The performance monitoring parameters are those reported in the daily 24-hour performance data reports sent by the DACS II. TheI-2000 database is updated based on the output of the daily report.

There are three daily counters also maintained by the I-2000 for each NPC:

- **Days Data Collected**—The number of days for which performance data has been successfully collected.

- **Errored Days**—The number of days for which the performance data has not been successfully collected.

- **Days Since Reset**—The number of days since the performance data has been reset.

> **NOTE:**
> **Days Since Reset** = **Days Data Collected** + **Errored Days**

Performance Parameters

Performance parameters for PA type NPCs and PB/PC type NPCs are listed below. The following data is kept for each performance parameter:

- The performance data for the last 24 hours
- The average for the performance data based on the number of days data was collected successfully.

Performance Parameters for PB/PC type NPCs

- Loss of Frame Alignment
- Slips
- Cyclic Redundancy Check
- Degraded Minutes
- Unavailable Seconds
- Errored Seconds
- Severely Errored Seconds
- Multiframe Errors
- Framing Errors

Performance Parameters for PA type NPCs

- CRC Block Errors
- Errored Seconds
- Severely Errored Seconds
- Unavailable Seconds
- Framing Errors
- Out-of-Frame Seconds
- Controlled Slip Seconds
- Coding Violations
- Unavailable Time Count
- Multiframe Errors
- Far-end Block Errors
- Far-end Errored Seconds
- Far-end Severely Errored Seconds
- Far-end Unavailable Seconds

Not all PA performance parameters apply to all PA type NPCs. The following tables highlight the inapplicable parameters based on the *x* and *y* values in the PA*xyz* NPC type.

Table 17-1.   Invalid PA Parameters (Based on *x* value in PA*xyz* NPC Type)

x value parameter	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CRC											X	X		X	X	X
MER																
FRER																
OFS																
ES																
SES																
CSS																
CV																
UAS																
UATC																
FEBE	X		X		X		X				X	X			X	X
FES	X		X		X		X				X	X			X	X
FSES	X		X		X		X				X	X			X	X
FUAS	X		X		X		X				X	X			X	X

Table 17-2.   Invalid PA Parameters (Based on *y* value in PA*xyz* NPC Type)

y value parameter	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
CRC														X		
MER									X	X			X	X		
FRER														X		
OFS														X		
ES														X		
SES														X		
CSS																
CV																
UAS														X		
UATC														X		
FEBE														X		
FES														X		
FSES														X		
FUAS														X		

Scheduling Performance Monitoring Reports

The 24-hour performance monitoring statistics processing feature requires that you schedule reports on each DACS II ISX and DACS II that the I-2000 manages. The following sections describe how to schedule the 24-hour PM Statistics Report on the DACS II ISX and DACS II.

⇒ **NOTE:**
   Do not schedule performance monitoring reports to be executed at midnight.

Scheduling Performance Monitoring Reports for DACS II ISX

To schedule the 24-Hour Performance Monitoring Statistics Report for DACS II ISX, enter the following two commands on each DACS II ISX:

```
SCHED-PMREPT-ALL:::,PRIM-X-FBFF
SCHED-PMREPT-ALL::::HH-MM-SS,MONDAT
```

The report should be scheduled on a 15-minute boundary, such as 10:00, 10:15, 10:30, or 10:45.

Scheduling Performance Monitoring Reports for DACS II

To schedule the 24-Hour Performance Monitoring Statistics Report for DACS II, you enter two commands on each DACS II. The first command schedules the report time for PB type NPCS. The second command schedules the report time for PA type NPCs. Both of the scheduled times should be the same. The second report will be expected from the DACS II within 3 minutes of the completion of the first one. If the second report does not start within 3 minutes after the first one, the day will be treated as a day for which no PM reports were received.

The report should be scheduled on a 15-minute boundary, such as 10:00, 10:15, 10:30, or 10:45.

For a gateway DACS II, enter these two commands:

```
SCHED-PMREPT-ALL:::::HH-MM-SS,FAC-X-0002b5,,PRIM-x-FBFF
SCHED-PMREPT-ALL::::HH-MM-SS,MONDAT
```

For a non-gateway CEPT DACS II, enter these two commands:

```
SCHED-PMREPT-ALL::::HH-MM-SS,PRIM-X-FBFF
SCHED-PMREPT-ALL::::HH-MM-SS,MONDAT
```

When Performance Monitoring Reports are Expected

After you create the DACS on the I-2000 and schedule performance monitoring reports on the DACS, the I-2000 will expect the first report from the DACS in the period starting 12:00 midnight and ending 24 hours later. If you scheduled the report to run before 12:00 midnight, any data received before the first midnight will be discarded. This will also be true following an I-2000 restart for DACS that already exist in the I-2000 database and following DACS removals or restorations. The following figure illustrates when the I-2000 expects reports from the DACS.
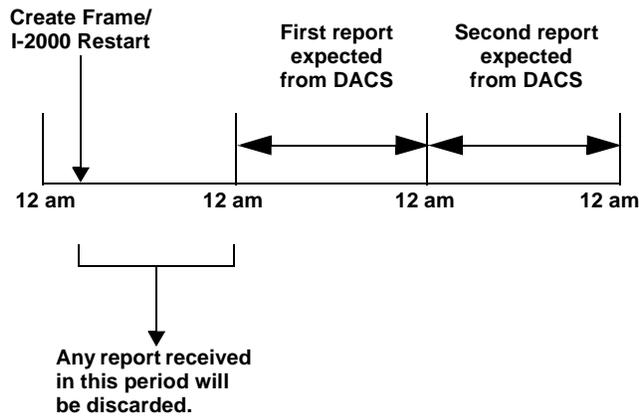
Figure 17-1.   Intervals when Performance Monitoring Reports are Expected

24-Hour Performance Form

Select 24-HOUR PERFORMANCE from the PROVISIONING menu. The PROVISIONING menu is shown in Figure 17-2. The 24-HOUR PERFORMANCE form is displayed, as shown in Figure 17-3.

```
13:37 24 Nov 1997         I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
┌─────────────────────────── PROVISIONING ────────────────────────────┐
│                                                                      │
│                                                                      │
│                         CIRCUIT                                      │
│                         TEST PORT                                    │
│                         NPC                                          │
│                         RECONFIGURATION PLAN                         │
│                         AUTOMATIC RECONFIGURATION PLAN               │
│                         NPC ROLL                                     │
│                         ESTABLISH DS0 CHANNEL                        │
│                         SUBRATE CROSS CONNECT                        │
│                       ─ 24-HOUR PERFORMANCE *                        │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
└─ Press ENTER to 24-HOUR Performance. ───────────────────────────────┘
```

| HELP | | | QUIT | | TOP MENU | PRINT | |

Figure 17-2.   PROVISIONING Menu

```
13:38 24 Nov 1997         I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
┌──────────────────── 24-HOUR PERFORMANCE ────────────────────────────┐
│ Site Name:ISX                              Service State:            │
│                                                                      │
│ Action:                      NPC ID:                                 │
│                                                                      │
│ Type:              Number (Hier):          (Ext):                    │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│ ─ Enter the desired action. ─────────────                           │
└──────────────────────────────────────────────────────────────────────┘
```

| HELP | CHOICES | | QUIT | | TOP MENU | PRINT | EXECUTE |

Figure 17-3.   24-HOUR PERFORMANCE Form

* To display the 24-HOUR PERFORMANCE option on the PROVISIONING
menu, set the environment variable PM24HR_NONFT to **YES**.

There are two actions available on the 24-Hour Performance form:

■ **RESET**—Allows you to reset the performance statistics for a single NPC or all NPCS on the I-2000.

■ **BROWSE**—Allows you to browse performance statistics for the I-2000 based on the specified search criteria.

Field Descriptions

Table 17-3 describes the fields used on the 24-Hour Performance form.

Table 17-3.   24-HOUR PERFORMANCE Field Descriptions

Site Name	Mandatory. The name of the frame where the requested **Action** will take place. Pressing CHOICES displays WHICH DACS? with a list of the frame names. These names were established during DACS administration, described in Chapter 3 "System Administration." The default length of the Site Name field is 17 characters. The length of the Site Name field can be set between 17 to 24 characters in length, if specified by the SITENAME_SIZE environment variable. All alphanumeric characters are valid entries in this field. In addition, the following characters are allowed: _ underscore - dash / slash All other characters are not allowed.
Service State	The status of the NPC. This field cannot be changed by the user except as the result of an **Action**. Possible values are: UEQD Unequipped. The NPC referenced by the **NPC ID** is not currently recorded in the I-2000 and/or DACS databases (equipped). OOS Out of service. The NPC is currently equipped, but is not operable. IS In service. The NPC is equipped and operable.

Table 17-3. 24-HOUR PERFORMANCE Field Descriptions (Contd)

Action	The provisioning actions are:
	
	RESET The RESET command resets the average performance statistics in the I-2000 database for one NPC or all NPCs. The following daily counters will also be reset to zero:
	
	    Days Data Collected
	    Days Since Reset
	    Errored Days
	
	This command does not erase the last daily 24-hour performance counts.
	
	BROWSE The BROWSE command allows you read-only access to the performance statistics database.

NPC ID	Mandatory. The NPC ID is a user-defined string of characters that uniquely identify an NPC on a frame. An NPC ID can be from 1 to 41 characters in length. Most printable characters are allowed. To reset the average performance statistics in the I-2000 database for all NPCs, enter a * in this field and choose the RESET action.
Type	The type of NPC. The format is ABxyz where AB identifies the type of hardware and xyz sets certain provisioning parameters such as frame and signaling format.
Number (Hier)	The number of the NPC in hierarchical (hier) numbering.
Ext	The number of the NPC in extended numbering.

24-Hour Performance Monitoring Examples

Example: Browsing 24-Hour Performance Data

The BROWSE selection retrieves 24-hour performance statistics for each NPC in a specified range.

To browse the 24-hour performance statistics, follow these steps:

1. Select PROVISIONING from the MAIN MENU and 24-HOUR PERFORMANCE from the PROVISIONING menu.

2. Navigate to **Action** and select BROWSE.

3. Fill out the desired search criteria.

4. Press EXECUTE.

   A search is conducted for the specified NPCs. Also, the data for the first NPC is displayed.

5. To display the data for the next NPC, press NEXT.

6. To stop the BROWSE, press RETURN.

7. To exit the form, press QUIT.

Figure 17-4 shows a sample BROWSE through the 24-Hour Performance.

```
13:17 24 Nov 1997         I-2000 Controller Release x.x for DACS-II
Status:
Alarms:

                        24-HOUR PERFORMANCE
  Site Name:ISX                                    Service State:IS

  Action:BROWSE        NPC ID:rlm1

  Type:PA100           Number (Hier):01101              (Ext):0001

                NEAR END- LAST 24Hr  AVERAGE  FAR END - LAST 24 Hr AVERAGE
 CRC Block Errors              600     450.2                104      36.3
 Errored Seconds
 Sev Errored Seconds
 Unavailable Seconds
 Framing Errors
 Out-of-Frame Seconds
 Controlled Slip Seconds
 Coding Violations
 Unavailable Time Count
 Multiframe Errors
 No of Days Collected: 10 No of Days Since Reset: 12 No of Errored Days: 2

 Item 1 of 3. Use NEXT/PREVIOUS keys to scroll.
     Enter the NPC Identifier.

  HELP      NEXT    PREVIOUS    QUIT              TOP MENU    PRINT    EXECUTE
```

Figure 17-4.   24-HOUR PERFORMANCE Browse Screen

Example: Resetting 24-Hour Performance Data

The RESET selection resets the average performance statistics for an NPC or NPCs associated with a selected DACS.

To reset the 24-hour performance statistics, follow these steps:

1. Select PROVISIONING from the MAIN MENU and 24-HOUR PERFOR-MANCE from the PROVISIONING menu.

2. Navigate to **Action** and select RESET.

3. Select the NPC using one of the following fields:

    — **NPC ID**

    — **Number (Hier)**: If you fill this in, **(Ext)** is automatically supplied.

    — **Number (Ext)**: If you fill this in, **(Hier)** is automatically supplied.

4. Press EXECUTE .

Figure 17-5 shows a sample Reset screen.

```
13:17 24 Nov 1997        I-2000 Controller Release x.x for DACS-II
Status:
Alarms:
                     ─ 24-HOUR PERFORMANCE ─
 Site Name:ISX                                    Service State:IS

 Action:RESET          NPC ID:rlm1

 Type:PA100            Number (Hier):01101              (Ext):0002

             NEAR END- LAST 24Hr AVERAGE    FAR END - LAST 24 Hr AVERAGE
CRC Block Errors              600                           104
Errored Seconds
Sev Errored Seconds
Unavailable Seconds
Framing Errors
Out-of-Frame Seconds
Controlled Slip Seconds
Coding Violations
Unavailable Time Count
Multiframe Errors
 No of Days Collected:000 No of Days Since Reset:000 No of Errored Days:000


    ── Enter the site name.
 HELP     CHOICES            QUIT            TOP MENU  PRINT    EXECUTE
```

Figure 17-5.   24-HOUR PERFORMANCE Reset Screen

Summary of Fields for Customized Reports

A

Contents

Summary of Fields for
Customized Reports

A

Introduction

The EDIT CUSTOM REPORT FORMAT feature allows you to design a report in one of a number of categories, which are based on type of information. Each category makes available a range of fields, from which you may select for inclusion on your report.

To find out how to create and maintain reports, refer to "Custom Report Formats" in Chapter 14 "Report Operations." This appendix states the full range of fields available, by category, and gives a brief description of each, with its report default size in characters, and its form of origination. In some instances, there is no form of origination, but the data was generated by the system. In that case, the field is the only way to access that data. All data comes from the database.

CIRCUITS Reports

Table A-1.   CIRCUITS Reports Fields

Name	Form of Origination	Description
Remarks	**Rmks** field, CIRCUIT PROVISIONING	User-defined information concerning the circuit.
Ckt_Status	**Ckt Status** field, CIRCUIT PROVISIONING	The operating status of the circuit.
Circuit_ID	**Ckt ID** field, CIRCUIT PROVISIONING	User-assigned circuit name.
Class	**Ckt Class** field, CIRCUIT PROVISIONING	The type of circuit: FDX, HDX, BBL, BRD, DMB.
Customer_Name	**Customer Name field**, CIRCUIT PROVISIONING	User-defined name of the customer owning the circuit.
Location_A	**Loc A** field, CIRCUIT PROVISIONING	User-defined station ID of the FROM side of the circuit.
Location_Z	**Loc Z** field, CIRCUIT PROVISIONING	User-defined station ID of the TO side of the circuit.
F_NPC_Hier	**FROM Hier** field, CIRCUIT PROVISIONING	Hierarchical number of the circuit's FROM side NPC.
T_NPC_Hier	**TO Hier** field, CIRCUIT PROVISIONING	Hierarchical number of the circuit's TO side NPC.
F_NPC_Ext	**FROM Ext** field, CIRCUIT PROVISIONING	Extended number of the circuit's FROM side NPC.
T_NPC_Ext	**TO Ext** field, CIRCUIT PROVISIONING	Extended number of the circuit's TO side NPC.
F_NPC_ID	**FROM NPC ID** field, CIRCUIT PROVISIONING	NPC ID of the circuit's FROM side NPC.
T_NPC_ID	**TO NPC ID** field, CIRCUIT PROVISIONING	NPC ID of the circuit's TO side NPC.
F_Ch	**FROM Ch** field, CIRCUIT PROVISIONING	The circuit's FROM side channel number.
T_Ch	**TO Ch** field, CIRCUIT PROVISIONING	The circuit's TO side channel number.
F_Mode	**FROM Mode** field, CIRCUIT PROVISIONING	The use of the FROM channel in a DMB circuit: SYM, BRD, BBL, LEG.
T_Mode	**TO Mode** field, CIRCUIT PROVISIONING	The use of the TO channel in a DMB circuit: SYM, BRD, BBL, LEG

Table A-1.   CIRCUITS Reports Fields (Contd)

Name	Form of Origination	Description
TC	**TC** field, CIRCUIT PROVISIONING	Trunk conditioning. Specifies whether A/B-robbed-bit signaling will signal circuit failure.
IW	**IW** field, CIRCUIT PROVISIONING	Insertion word. Specifies the OOS signal of mapped channels.
SC	**SC** field, CIRCUIT PROVISIONING	Signaling conversion. Specifies the CAS channel values for CEPT and GATEWAY.
Bandwidth	**Bandwidth** field, CIRCUIT PROVISIONING	The number of channels in a high-rate circuit.
Bandwidth_Type	**Bandwidth Type** field, CIRCUIT PROVISIONING	The placement of channels in a high-rate circuit: contiguous (C), alternating (A), random (R).
Service_Date	**Service Date** field, CIRCUIT PROVISIONING	User-defined date when the circuit was first placed in service.
Options_NAM	**Options** field value, CIRCUIT PROVISIONING	The value NAM, for no a-to-mu law conversion, if **Options** is set to A; otherwise, blanks.
Options_AIS	**Options** field value, CIRCUIT PROVISIONING	The value AIS, for transmit Alarm Indication Signal, if **Options** is set to B.
Options_RDLD	**Options** field value, CIRCUIT PROVISIONING	The value RDLD, for disconnect red-lined circuits, if **Options** is set to C.
Options_OOS	**Options** field value, CIRCUIT PROVISIONING	The value OOS, for disconnect on channel going OOS, if **Options** is set to D.
Options_INCL	**Options** field value, CIRCUIT PROVISIONING	The value INCL, for authorize disconnect of red-lined circuits, if **Options** is set to E.
Options_DCC	**Options** field value, CIRCUIT PROVISIONING	The value DCC, for assert IW as disconnect code, if **Options** is set to F.
Termination_State	**Options** field value, CIRCUIT PROVISIONING	The value TLA, for terminate normal traffic, if **Options** is set to G.
NTR	**NTR** field value, CIRCUIT PROVISIONING	No transmit. Specifies that a direction of a DMB leg will not carry traffic: T or F.
CP	**Ckt Priority** field value, CIRCUIT PROVISIONING	Determines the importance of a circuit for restoral actions.
Framing	**Framing** field value, CIRCUIT PROVISIONING	The value of the framing bits in CEPT Channel 0 cross-connection.

NPCS Reports

Table A-2.   NPCS Reports Fields

Name	Form of Origination	Description
NPC_Hier	**Number (Hier)** field, NPC PROVISIONING	The hierarchical number of the NPC.
NPC_Ext	**(Ext)** field, NPC PROVISIONING	The extended number of the NPC.
NPC_ID	**NPC ID** field, NPC PROVISIONING	User-assigned NPC name.
Type	**Type** field, NPC PROVISIONING	The I-2000 type of NPC, which is based on the hardware module providing it.
FE_Site	**FE Site** field, NPC PROVISIONING	User-defined name of the DACS at the other end of the DS1 line terminating at the NPC.
Service_State	**Service State** field, NPC PROVISIONING	The operating status of the NPC.
Alarm_State	**Alarm State** field, NPC PROVISIONING	The status of an alarm currently being received or asserted by this NPC.
Alarm_Aging	**Alarm Aging** field, NPC PROVISIONING	The number of seconds after an alarm is received before the I-2000 takes action.
Insertion_Word	**IW** field, NPC PROVISIONING	The value transmitted by an IS NPC on unassigned channels.
AIS	**AIS** field, Alarm Indication Signal.	Specifies AIS alarm level for this NPC. Values are MJ (Major), MN (Minor), MI (Informational).
NFS	**NFS** field, NPC PROVISIONING	Non-frame word setting. Specifies how the spare bits of time slot 0 are to be handled.
TS0	**TS0** field, NPC PROVISIONING	Describes how to process bits for transmission in a CEPT time slot 0.
TS0M	**TS0M** field, NPC PROVISIONING	Describes what CEPT time slot 0 bits are to be monitored by the frame.
Min_Slips	**Minor Alarm Option/ Slips** field, NPC PROVISIONING	Specifies the threshold of a minor alarm on a slips error in an NAS NPC.
Min_BER	**Minor Alarm Option/ Bit Error Rate** field, NPC PROVISIONING	Specifies the threshold of a minor alarm on a bit error rate in an NAS NPC.
Min_Frame_Align	**Minor Alarm Option/ Frame Alignment** field, NPC PROVISIONING	Specifies the threshold of a minor alarm on a frame alignment error in an NAS NPC.

Table A-2.   NPCS Reports Fields (Contd)

Name	Form of Origination	Description
Maj_Slips	**Major Alarm Option/ Slips** field, NPC PROVISIONING	Specifies the threshold of a major alarm on a slips error in an NAS NPC.
Maj_BER	**Major Alarm Option Bit Error Rate** field, NPC PROVISIONING	Specifies the threshold of a major alarm on a bit error rate in an NAS NPC.
Maj_Frame_Align	**Major Alarm Option Frame Alignment** field, NPC PROVISIONING	Specifies the threshold of a major alarm on a frame alignment error in an NAS NPC.
Maj_Err_Sec	**Major Alarm Option Errored Seconds** field, NPC PROVISIONING	Specifies the threshold of a major alarm on errored seconds in an NAS NPC.
Maj_Sev_Err_Sec	**Major Alarm Option Severe Errored Seconds** NPC PROVISIONING	Specifies the threshold of a major alarm on severe errored seconds in an NAS NPC.
Short_Slips	**Short Interval Options Slips** field, NPC PROVISIONING	Specifies the short-interval threshold of a slips alarm in a CEPT non-PA NPC.
Short_Degraded_Min	**Short Interval Options Degraded Minutes** field, NPC PROVISIONING	Specifies the short-interval threshold of a degraded minutes alarm in a CEPT non-PA NPC.
Short_Unavail_Sec	**Short Interval Options Unavailable Seconds** NPC PROVISIONING	Specifies the short-interval threshold of an unavailable seconds alarm in a CEPT non-PA NPC.
Short_Err_Sec	**Short Interval Options Errored Seconds** field NPC PROVISIONING	Specifies the short-interval threshold of an errored seconds alarm in a CEPT non-PA NPC.
Short_Sev_Err_Sec	**Short Interval Options Severe Errored Seconds** NPC PROVISIONING	Specifies the short-interval threshold of a severe errored seconds alarm in a CEPT non-PA NPC.
Long_Slips	**Long Interval Options** Slips field value, NPC PROVISIONING	Specifies the long-interval threshold of a slips alarm in a CEPT non-PA NPC.
Long_Degraded_Min	**Long Interval Options Degraded Minutes**, NPC PROVISIONING	Specifies the long-interval threshold of a degraded minutes alarm in a CEPT non-PA NPC.
Long_Unavail_Sec	**Long Interval Options Unavailable Seconds**, NPC PROVISIONING	Specifies the long-interval threshold of an unavailable errors alarm in a CEPT non-PA NPC.

Table A-2.   NPCS Reports Fields (Contd)

Name	Form of Origination	Description
Long_Err_Sec	**Long Interval Options Errored Seconds**, NPC PROVISIONING	Specifies the long-interval threshold of an errored seconds alarm in a CEPT non-PA NPC.
Long_Sev_Err_Sec	**Long Interval Options** Severe Errored Seconds, NPC PROVISIONING	Specifies the long-interval threshold of a severe errored seconds alarm in a CEPT non-PA NPC.
NE_Daily_CRC_Err	**Daily NE CRC Block Errors** field, NPC PROVISIONING	Specifies the daily near end CRC block errors for a CEPT PA NPC.
NE_Daily_Err_Sec	**Daily NE Errored Seconds** field, NPC PROVISIONING	Specifies the daily near end errored seconds for a CEPT PA NPC.
NE_Daily_S_Err_Sec	**Daily NE Severe Errored Seconds** NPC PROVISIONING	Specifies the daily near end severe errored seconds for a CEPT PA NPC.
NE_Daily_Unavl_Sec	**Daily NE Unavailable Seconds** NPC PROVISIONING	Specifies the daily near end unavailable seconds for a CEPT PA NPC.
NE_Daily_Frame_Err	**Daily NE Framing Errors** NPC PROVISIONING	Specifies the daily near end framing errors for a CEPT PA NPC.
NE_Daily_OOF_Sec	**Daily NE Out-of-Frame Seconds** NPC PROVISIONING	Specifies the daily near end out-of-frame seconds for a CEPT PA NPC.
NE_Daily_Slip_Sec	**Daily NE Controlled Slip Seconds** NPC PROVISIONING	Specifies the daily near end controlled slip seconds for a CEPT PA NPC.
NE_Daily_Code_Vltn	**Daily NE Coding Violations** NPC PROVISIONING	Specifies the daily near end coding violations for a CEPT PA NPC.
NE_Daily_Unavl_Cnt	**Daily NE Unavailable Time Count** NPC PROVISIONING	Specifies the daily near end unavailable time count for a CEPT PA NPC.
NE_Daily_Mfram_Err	**Daily NE Multiframe Errors** NPC PROVISIONING	Specifies the daily near end multiframe errors for a CEPT PA NPC.
FE_Daily_CRC_Err	**Daily FE CRC Block Errors** NPC PROVISIONING	Specifies the daily far end CRC block errors for a CEPT PA NPC.

Table A-2.   NPCS Reports Fields (Contd)

Name	Form of Origination	Description
FE_Daily_Err_Sec	**Daily FE Errored Seconds** NPC PROVISIONING	Specifies the daily far end errored seconds for a CEPT PA NPC.
FE_Daily_S_Err_Sec	**Daily FE Severe Errored Seconds** NPC PROVISIONING	Specifies the daily far end severe errored seconds for a CEPT PA NPC.
FE_Daily_Unavl_Sec	**Daily FE Unavailable Seconds** NPC PROVISIONING	Specifies the daily far end unavailable seconds for a CEPT PA NPC.
NE_15M_CRC_Err	**15-Min NE CRC Block Errors** NPC PROVISIONING	Specifies the 15-minute near end CRC block errors for a CEPT PA NPC.
NE_15M_Err_Sec	**15-Min NE Errored Seconds** NPC PROVISIONING	Specifies the 15-minute near end errored seconds for a CEPT PA NPC.
NE_15M_S_Err_Sec	**15-Min NE Severe Errored Seconds** NPC PROVISIONING	Specifies the 15-minute near end severe errored seconds for a CEPT PA NPC.
NE_15M_Unavl_Sec	**15-Min NE Unavailable Seconds** NPC PROVISIONING	Specifies the 15-minute near end unavailable seconds for a CEPT PA NPC.
NE_15M_Frame_Err	**15-Min NE Framing Errors** NPC PROVISIONING	Specifies the 15-minute near end framing errors for a CEPT PA NPC.
NE_15M_OOF_Sec	**15-Min NE Out-of-Frame Seconds** NPC PROVISIONING	Specifies the 15-minute near end out-of frame seconds for a CEPT PA NPC.
NE_15M_Slip_Sec	**15-Min NE Controlled Slip Seconds** NPC PROVISIONING	Specifies the 15-minute near end controlled slip seconds for a CEPT PA NPC.
NE_15M_Code_Vltn	**15-Min NE Coding Violations** NPC PROVISIONING	Specifies the 15-minute near end coding violations for a CEPT PA NPC.
NE_15M_Unavl_Cnt	**15-Min NE Unavailable Time Count** NPC PROVISIONING	Specifies the 15-minute near end unavailable time count for a CEPT PA NPC.
NE_15M_Mfram_Err	**15-Min NE Multiframe Errors** NPC PROVISIONING	Specifies the 15-minute near end multiframe errors for a CEPT PA NPC.

Table A-2.   NPCS Reports Fields (Contd)

Name	Form of Origination	Description
FE_15M_CRC_Err	**15-Min FE** **CRC Block Errors** NPC PROVISIONING	Specifies the 15-minute far end CRC block errors for a CEPT PA NPC.
FE_15M_Err_Sec	**15-Min FE** **Errored Seconds** NPC PROVISIONING	Specifies the 15-minute far end errored seconds for a CEPT PA NPC.
FE_15M_S_Err_Sec	**15-Min FE** **Severe Errored Seconds** NPC PROVISIONING	Specifies the 15-minute far end severe errored seconds for a CEPT PA NPC.
FE_15M_Unavl_Sec	**15-Min FE** **Unavailable Seconds** NPC PROVISIONING	Specifies the 15-minute far end unavailable seconds for a CEPT PA NPC.
Trans	**Lpbk Trans** field, NPC PROVISIONING	The transmission parameter of a loopback state. Values are: A – loop the signal, send AIS, turn off PM and alarms B – loop the signal, send AIS, perform PM and alarm processing C – Loop the signal, turn off PM, freeze alarms T – Loop the signal, perform PM and process alarms N – No loopback is up
Dir	**Dir** field, NPC PROVISIONING	The Direction parameter of a loopback state. Values are: F – Facility, back to the facility E – Equipment, back to the DACS II N – No loopback

CHANNELS Reports

Table A-3.   CHANNELS Reports Fields

Name	Form of Origination	Description
NPC_Hier	**FROM Hier** field, CIRCUIT PROVISIONING	The hierarchical number of the NPC. This NPC is to be understood as the FROM NPC.
NPC_Ext	**FROM Ext** field, CIRCUIT PROVISIONING	The extended number of the NPC.
NPC_ID	**FROM NPC ID** field, CIRCUIT PROVISIONING	User-assigned NPC name.
Ch	**FROM Ch** field, CIRCUIT PROVISIONING	The number of the channel under consideration, within the specified NPC.
Status	**Ckt Status** field, CIRCUIT PROVISIONING	The status of the circuit in which the channel appears.
Circuit_ID	**Ckt ID** field, CIRCUIT PROVISIONING	The ID of the circuit in which the channel appears.
Class	**Ckt Class** field, CIRCUIT PROVISIONING	The type of circuit: FDX, HDX, BBL, BRD, DMB, BKB, LEG.
TC	**TC** field, CIRCUIT PROVISIONING	Trunk conditioning. Specifies whether A/B-robbed-bit signaling will signal circuit failure.
IW	**IW** field, CIRCUIT PROVISIONING	Insertion word. Specifies the OOS signal of mapped channels.
To_NPC_Hier	**TO Hier** field, CIRCUIT PROVISIONING	The hierarchical number of the TO NPC.
To_NPC_Ext	**TO Ext** field, CIRCUIT PROVISIONING	The extended number of the TO NPC.
To_NPC_ID	**TO NPC ID** field, CIRCUIT PROVISIONING	User-assigned TO NPC name.
To_Ch	**TO Ch** field, CIRCUIT PROVISIONING	Specifies the TO channel.
TS	None. This information is reported only in this report field.	Reports the termination state of the EFT represented by the channel, as it was when the report was generated. Values are TLA, TLR, or blanks.

ALTROUTES/PREEMPTIONS

Table A-4.   ALTROUTES/PREEMPTIONS Reports Fields

Name	Form of Origination	Description
Circuit_ID	**Ckt ID** field, CIRCUIT PROVISIONING	The circuit ID of the altrouted circuit.
CP	**Ckt Priority field**, CIRCUIT PROVISIONING	The circuit priority of the altrouted circuit. The CP partly determines its order of normalization.
TC	**TC** field, CIRCUIT PROVISIONING	Trunk conditioning of the altrouted circuit.
IW	**IW** field, CIRCUIT PROVISIONING	Insertion word of the altrouted circuit.
Alt_Date	**Altroute Date & Time**, CIRCUIT PROVISIONING	The date the circuit was altrouted.
Alt_Time	**Altroute Date & Time**, CIRCUIT PROVISIONING	The time the circuit was altrouted.
NPC_Hier	**NORMAL Hier**, CIRCUIT PROVISIONING	The hierarchical NPC number of the EFT that was changed in altrouting.
NPC_Ext	**NORMAL Ext** field, CIRCUIT PROVISIONING	The extended NPC number of the EFT that was changed in altrouting.
NPC_ID	**NORMAL NPC ID** field, CIRCUIT PROVISIONING	The NPC ID of the EFT that was changed in altrouting.
Ch	**NORMAL Ch** field, CIRCUIT PROVISIONING	The channel that was changed in altrouting.
Alt_NPC_Hier	**ALTROUTE Hier** field, CIRCUIT PROVISIONING	The hierarchical number of the NPC to which the NORMAL NPC was changed.
Alt_NPC_Ext	**ALTROUTE Ext** field, CIRCUIT PROVISIONING	The extended number of the NPC to which the NORMAL NPC was changed.
Alt_NPC_ID	**ALTROUTE NPC ID** field, CIRCUIT PROVISIONING	The NPC number to which the NORMAL NPC was changed.
Alt_Ch	**ALTROUTE Ch** field, CIRCUIT PROVISIONING	The channel to which the NORMAL channel was changed.
Preemp_Ckt_ID	**Preempted Ckt ID** field, CIRCUIT PROVISIONING	The NPC ID of the first circuit that was preempted by this altroute, if any.
Preemp_CP	**Preempted CP** field, CIRCUIT PROVISIONING	The circuit priority of the preempted circuit, if any.

RECONFIGURATION PLANS Reports

Table A-5.   RECONFIGURATION PLANS Reports Fields

Name	Form of Origination	Description
Reconfiguration_ID	**RP ID** field, RECONFIGU-RATION PLAN PROVI-SIONING	The user-defined name of this plan.
Circuit_ID	**Ckt ID** field, RECONFIG-URATION PLAN PROVI-SIONING	The circuit ID of the circuit on which this item of the plan operates.
Status	**Status** field, RECONFIG-URATION PLAN PROVI-SIONING	The current operating status of the circuit on which this item of the plan operates.
Circuit_Action	**Action** field, RECONFIG-URATION PLAN PROVI-SIONING	The **Action** to be performed on the circuit of this item.
Sequence	**Sequence** field, RECON-FIGURATION PLAN PRO-VISIONING	The sequence number of this item in the plan.

RECONFIGURATION PLAN ALTROUTE Reports

Table A-6.   RECONFIGURATION PLAN ALTROUTE Reports Fields

Name	Form of Origination	Description
Reconfiguration_ID	**RP ID** field, RECONFIGU-RATION PLAN PROVI-SIONING	The user-defined name of this plan.
Sequence	**Sequence** field, RECON-FIGURATION PLAN PRO-VISIONING	The sequence number of this item in the plan.
Side	**SIDE** field, NPC PROVISIONING	Specifies the side for an altroute of types MR, MJ and SR.
Circuit_ID	**Ckt ID** field, RECONFIG-URATION PLAN PROVI-SIONING	The circuit ID of the circuit on which this item of the plan operates.
CP	**Ckt Priority** field, CIRCUIT PROVISIONING	The circuit priority of the altrouted circuit. The CP partly determines its order of normaliza-tion.

Table A-6.   RECONFIGURATION PLAN ALTROUTE Reports Fields (Contd)

Name	Form of Origination	Description
NPC_Hier	**FROM Hier** field, CIRCUIT PROVISIONING	The hierarchical number of the NPC. This NPC is to be understood as the FROM NPC.
NPC_Ext	**FROM Ext** field, CIRCUIT PROVISIONING	The extended number of the NPC.
NPC_ID	**FROM NPC ID** field, CIRCUIT PROVISIONING	User-assigned NPC name.
Ch	**FROM Ch** field, CIRCUIT PROVISIONING	The number of the channel under consideration, within the specified NPC.
Alt_NPC_Hier	**ALTROUTE Hier** field, CIRCUIT PROVISIONING	The hierarchical number of the NPC to which the NORMAL NPC was changed.
Alt_NPC_Ext	**ALTROUTE Ext** field, CIRCUIT PROVISIONING	The extended number of the NPC to which the NORMAL NPC was changed.
Alt_NPC_ID	**ALTROUTE NPC ID** field, CIRCUIT PROVISIONING	The NPC number to which the NORMAL NPC was changed.
Alt_Ch	**ALTROUTE Ch** field, CIRCUIT PROVISIONING	The channel to which the NORMAL channel was changed.
F_Preemp_Ckt_ID	**Preempted Ckt ID** field, CIRCUIT PROVISIONING	A circuit preempted by the FROM side of an altrouted circuit, if any.
F_Preemp_CP	**Preempted CP** field, CIRCUIT PROVISIONING	The circuit priority of the circuit preempted by the FROM side of the altrouted circuit.
T_Preemp_Ckt_ID	**Preempted Ckt ID** field, CIRCUIT PROVISIONING	A circuit preempted by the TO side of an altrouted circuit, if any.
T_Preemp_CP	**Preempted CP** field, CIRCUIT PROVISIONING	The circuit priority of the circuit preempted by the TO side of the altrouted circuit.

AUTO RECONFIGURATION PLANS
Reports

Table A-7.   AUTO RECONFIGURATION PLAN Reports Fields

Name	Form of Origination	Description
ARP_ID	**ARP ID** field, AUTOMATIC RECONFIGURATION PLAN PROVISIONING	The user-defined name of this ARP.
ARP_Status	**ARP Status** field, AUTO-MATIC RECONFIGURA-TION PLAN PROVISIONING	The execution status of the ARP.
RP_Sequence	**Sequence** field, AUTO-MATIC RECONFIGURA-TION PLAN PROVISIONING	The sequence number of the RP listed in the ARP.
RP_Status	**RP Status** field, RECON-FIGURATION PLAN PRO-VISIONING	The execution status of an RP on the ARP.
RP_Site	**Site Name** field, RP and ARP forms.	The name of the site where the RP was or is to be executed.
RP_ID	**RP ID** field, RP and ARP forms.	The ID of the RP that was or is to be executed.
RP_Date	None.	The date when the RP was executed.
RP_Time	None	The time when the RP was executed.
NPC_Sequence	**Sequence** field, AUTO-MATIC RECONFIGURA-TION PLAN PROVISIONING	The sequence number of an item placing an NPC on the alarm list.
NPC_Site	**Site Name** field, AUTO-MATIC RECONFIGURA-TION PLAN PROVISIONING	The site of the NPC being placed on the alarm list.
NPC_Hier	**Number (Hier)** field, AUTOMATIC RECONFIG-URATION PLAN PROVI-SIONING	The hierarchical number of the NPC being placed on the alarm list.
NPC_Ext	**(Ext)** field, AUTOMATIC RECONFUGURATION PLAN PROVISIONING	The extended number of the NPC being placed on the alarm list.
NPC_Date	None.	The date on which the NPC issued an alarm, triggering the RP.

Table A-7.   AUTO RECONFIGURATION PLAN Reports Fields (Contd)

Name	Form of Origination	Description
NPC_Time	None.	The time at which the NPC issued an alarm.

OUTAGES Reports

Table A-8.   OUTAGES Reports Fields

Name	Form of Origination	Description
Outage_Type	**Outage Type** field, OUTAGE LOG	The type of log: NPC or CIRCUIT.
Record_Number	**Record No.** field, OUTAGE LOG	The sequence number of the record in the log.
Outage_ID	**Outage ID** field, OUTAGE LOG	The ID of this outage record. It is in fact an NPC ID or a circuit ID.
CP	**Ckt Priority** field, CIRCUIT PROVISIONING	The priority of the circuit referenced by the **Outage ID**.
Date_Out	**Date Out** field, OUTAGE LOG	Three fields stating the date on which the outage began.
Time_Out	**Time Out** field, OUTAGE LOG	Three fields stating the time on which the outage began.
Date_In	**Date In** field, OUTAGE LOG	The date when the outage was cleared.
Time_In	**Time In** field, OUTAGE LOG	The time the outage was cleared.

ALARM LOG Reports

Table A-9.   ALARM LOG Report Fields

Name	Form of Origination	Description
Alm_Date	None.	The date on which the NPC issued the alarm.
Alm_Time	None.	The time at which the NPC issued the alarm.
NPC_Hier	**Number (Hier) field**, NPC PROVISIONING	The hierarchical number of the NPC in alarm.
NPC_Ext	**(Ext)** field, NPC PROVISIONING	The extended number of the NPC in alarm.
NPC_ID	**NPC ID** field, NPC PROVISIONING	The NPC ID of the NPC in alarm.
FE_Site	**FE Site** field, NPC PROVISIONING	User-defined name of the DACS at the other end of the DS1 line terminating at the NPC in alarm.
Severity	None.	The severity of the alarm: Cr, Maj, Min, Clr.

Table A-9.   ALARM LOG Report Fields (Contd)

Name	Form of Origination	Description
Alm_Summary	None.	The reason for the alarm.
Threshold	None.	The name of the threshold stored in the frame.
Fac_A_Type	None.	The type of facility alarm in a message **Summary** of CGA.
Side	None	The side number of the alarming facility.
Unit	None.	The unit number of the alarming facility.
S_Unit	None.	The subunit of the alarming facility.
Field1	None.	Field1 of the Error Status Register, for a power fail message.
Field2	None	Field2 of the Error Status Register, for a power fail message.
NPC_Num	**NPC (Hier)** or (**Ext**) field, FRAME Provisioning	The format of the NPC number, either hierarchical or extended.

TEST PORT Reports

Table A-10.   TEST PORT Reports Fields

Name	Form of Origination	Description
Test_Port	**Test Port No.** field, TP PROVISIONING	The test port number.
Test_Port_Group	**Test Port Group** field, TP PROVISIONING	The test port group.
Test_Port_State	Test State field, TEST ACCESS	The operating status of the test port.
TP_NPC_Hier	**NPC Number (Hier)** field, TP PROVISIONING	The hierarchical number of the NPC being used for this test port group.
TP_NPC_Ext	**(Ext)** field, TP PROVISIONING	The extended number of the NPC being used for this test port group.
TP_NPC_ID	**NPC ID** field, TP PROVISIONING	The NPC ID of the NPC being used for this test port group.
Static_TC	**TC** field, TP PROVISIONING	The test port trunk conditioning, if the TC is static for this port.
Static_IW	**IW** field, TP PROVISIONING	The test port insertion word, if the IW is static for this port.
F_NPC_Hier	**FROM Hier** field, TEST ACCESS form	The hierarchical number of the FROM NPC of the object under test.
F_NPC_Ext	**FROM Ext** field, TEST ACCESS form	The extended number of the FROM NPC of the circuit under test.
F_NPC_ID	**FROM NPC ID** field, TEST ACCESS form	The ID of the FROM NPC of the circuit under test.
F_Ch	**FROM Ch** field, TEST ACCESS form	The FROM channel number of the circuit under test.
T_NPC_Hier	**TO Hier** field, TEST ACCESS form	The hierarchical number of the TO NPC of the circuit under test.
T_NPC_Ext	**TO Ext** field, TEST ACCESS form	The extended number of the TO NPC of the circuit under test.
T_NPC_ID	**TO NPC ID** field, TEST ACCESS form	The ID of the TO NPC of the circuit under test.
T_Ch	**TO Ch** field, TEST ACCESS form	The TO channel number of the circuit under test.
Circuit_ID	**Ckt ID**, TEST ACCESS form	The circuit ID of the object under test.

Table A-10. TEST PORT Reports Fields (Contd)

Name	Form of Origination	Description
Term_State	**Termination State** field TEST ACCESS form.	The actual termination state of the object under test.
Ckt_Status	**Ckt Status** field, CIRCUIT PROVISIONING	The operational status of the circuit under test.

TEST ACCESS Reports

Table A-11. TEST ACCESS Reports Fields

Name	Form of Origination	Description
Test_Object_Number	**Test Object Number** field, TEST ACCESS	The test object number.
IW	**IW** field, TEST ACCESS	The IW of the test object.
F_Test_Obj_NPC_ID	**Test Object F NPC ID**, TEST ACCESS	The FROM NPC ID of the test object.
T_Test_Obj_NPC_ID	**Test Object T NPC ID**, TEST ACCESS	The TO NPC ID of the test object.
FIRST_F_Test_Ch	**Test Object FROM Ch** TEST ACCESS	The channel number of the first channel of the band, of the FROM side of the test object.
Test_Object_Type	**Object Type** field, TEST ACCESS	The type of test object, TP or TG.
TC	**TC** field, TEST ACCESS	The trunk conditioning of the object under test, if the TC is static for this port.
F_Test_Obj_NPC_Ext	**Test Object FROM Ext**, TEST ACCESS	The extended number of the test object FROM NPC.
T_Test_Obj_NPC_Ext	**Test Object TO Ext**, TEST ACCESS	The extended number of the test object TO NPC.
FIRST_T_Test_Ch	**Test Object TO Ch**, TEST ACCESS	The channel number of the first channel of the band, of the TO side of the test object.
Test State	**Test State** field, TEST ACCESS	The operating status of the test access connections: RELEASED, MONITOR, etc.
AtoMU	**AtoMU** field, TEST ACCESS	A-law to Mu-law conversion in effect, Y or N.
F_Test_Obj_NPC_Hier	T**est Object F Hier**, TEST ACCESS	The hierarchical number of the of the test object FROM NPC.

Table A-11. TEST ACCESS Reports Fields (Contd)

Name	Form of Origination	Description
T_Test_Obj_NPC_Hier	**Test Object T Hier**, TEST ACCESS	The hierarchical number of the test object TO NPC.
BW	**Bandwidth** field, TEST ACCESS	The bandwidth of the test object.
Circuit_ID	**Object Under Test Ckt ID**, TEST ACCESS	The circuit ID of the circuit being tested.
F_NPC_ID	**Obj. Under Test F NPC ID**, TEST ACCESS	The FROM NPC ID of the circuit under test.
T_NPC_ID	**Obj. Under Test T NPC ID**, TEST ACCESS	The TO NPC ID of the circuit under test.
F_Ch	**Obj. Under Test F Ch**, TEST ACCESS	The first FROM channel of the object under test.
Ckt_Status	**Ckt Status** field, CIRCUIT PROVISIONING	The circuit status of the circuit under test.
F_NPC_Ext	**Obj. Under Test F Ext**, TEST ACCESS	The extended number of the FROM NPC in the circuit under test.
T_NPC_Ext	**Obj. Under Test T Ext**, TEST ACCESS	The extended number of the TO NPC in the circuit under test.
T_Ch	**Obj. Under Test T Ch**, TEST ACCESS	The first TO channel of the object under test.
F_NPC_Hier	**Obj. Under Test F Hier**, TEST ACCESS	The hierarchical number of the FROM NPC in the circuit under test.
T_NPC_Hier	**Obj. Under Test T Hier**, TEST ACCESS	The hierarchical number of the TO NPC in the circuit under test.
Termination_State	**Termination State** field, TEST ACCESS	The termination state of the circuit under test.

FRAMES/LINKS Reports

Table A-12. FRAMES/LINKS Reports Fields

Name	Form of Origination	Description
Site_Name	**Site Name** field, FRAME ADMINISTRATION	The user-assigned name of the frame being provisioned.
Site_Status	**Site Status** field, FRAME ADMINISTRATION	The status of the frame.
Protocol	**Protocol** field, FRAME ADMINISTRATION	The protocol in effect over the path between the I-2000 and the frame: SNIDER or X.25.
Location	**Location** field, FRAME ADMINISTRTATION	User-defined value stating the physical location of the frame.
Generic	**Generic** field, FRAME ADMINISTRATION	States the software release of the frame software.
NPC_Addressing	**NPC Addr** field, FRAME ADMINISTRATION	The type of NPC addressing used in frame commands generated by the I-2000: HIER, EXT3, EXT4.
Language	**Language** field, FRAME ADMINISTRATION	The command language used for frame commands generated by the I-2000: MML, PDS.
Frame_Type	**Type** field, FRAME ADMINISTRATION	The type of frame: DACS II, D II ISX.
Alarm_Sync	**NPC Alarm Sync**, FRAME ADMINISTRATION	The selection or non-selection of NPC alarm synchronization for this frame.
Speed	**Speed** field, FRAME ADMINISTRATION	The baud rate for the SNIDER port.
Primary_Line	**Primary Line**, FRAME ADMINISTRATION	The number of the line between the I-2000 and the network or the frame.
Primary_Conn_Type	**Connection Type**, X.25 LINK ADMINISTRATION	The connection type of the primary line: PDN or DIRECT.
Primary_Netwk_Addr	**Network Address**, FRAME ADMINISTRATION	The network address of the primary line.
Primary_Link_Stat	**Status** field, FRAME ADMINISTRATION	The operational status of the primary line.
Backup_Line	**Backup Line**, FRAME ADMINISTRATION	The number of the backup line.
Backup_Conn_Type	**Connection Type**, X.25 LINK ADMINISTRATION	The connection type of the backup line: PDN or DIRECT.

Table A-12. FRAMES/LINKS Reports Fields (Contd)

Name	Form of Origination	Description
Backup_Netwk_Addr	**Network Address**, FRAME ADMINISTRA-TION	The network address of the backup line.
Backup_Link_Stat	**Status** field, FRAME ADMINISTRATION	The operational status of the backup line.
ERP_Control	**ERP Control**, FRAME ADMINISTRATION	The selection or non-selection of conditional echoed response processing for this frame.
Comm_Status	None.	Whether or not the I-2000 received a response after it sent out a command to the frame. A * means communication occurred.

USER ADMINISTRATION Reports

Table A-13. USER ADMINISTRATION Reports Fields

Name	Form of Origination	Description
Login	**Login Name** field, USER MANAGEMENT	The login name by which the user is known to the I-2000 system.
Class	**User Class** field, USER MANAGEMENT	The type of login: OPERATOR, ADMIN, CONTROLLER.
User_Name	**User Name** field, USER MANAGEMENT	The name of the person owning the login.
Phone	**Phone** field, USER MANAGEMENT	User-defined value stating the user's telephone number.
Address	**Address** field, USER MANAGEMENT	User-defined value stating the user's address.
City	**City** field, USER MANAGEMENT	User-defined value stating the user's city.
Alarm	**Alarms Audible** field, USER MANAGEMENT	Whether or not an audible alarm should sound at the user terminal when a frame alarm occurs: ON or OFF.
Idle	**UI Idle Option** field USER MANAGEMENT	The logoff threshold in seconds of terminal idle time.
Printer_Name	**Printer Name** field, USER MANAGEMENT	Printer Name
Type	**Type** field, USER MANAGEMENT	ASYNC, X25, LOCAL

NPC ALARMS Reports

Table A-14. NPC ALARMS Reports Fields

Name	Form of Origination	Description
NPC_Hier	**Number (Hier) field**, NPC PROVISIONING	The hierarchical number of the NPC in alarm.
NPC_Ext	**(Ext)** field, NPC PROVISIONING	The extended number of the NPC in alarm.
NPC_ID	**NPC ID** field, NPC PROVISIONING	The NPC ID of the NPC in alarm.
Service_State	**Service State** field, NPC PROVISIONING	The operational status of the NPC in alarm.

Table A-14. NPC ALARMS Reports Fields (Contd)

Name	Form of Origination	Description
Alarm_State	**Alarm State** field, NPC PROVISIONING	The status of the alarm.
Alarm_Aging	**Alarm Aging** field, NPC PROVISIONING	The threshold in seconds before the I-2000 takes action on the alarm.
Severity	`Sev` field, Alarm Report	The severity of the alarm.
Type	**Type** field, NPC PROVISIONING	The type of the NPC in alarm.
FE_Site	**FE Site** field, NPC PROVISIONING	The user-defined name of the DACS at the far end of the line terminating at the alarming NPC.
Insertion_Word	**IW** field, NPC PROVISIONING	The insertion word of the NPC in alarm.
NFS	**NFS** field, NPC PROVISIONING	The treatment of the non-framing bits in Channel 0 to non-Channel 0 connections.

CIRCUIT ALARMS Reports

Table A-15. CIRCUIT ALARMS Reports Fields

Name	Form of Origination	Description
NPC_Hier	**Number (Hier) field**, NPC PROVISIONING	The hierarchical number of the NPC in alarm.
NPC_Ext	**(Ext)** field, NPC PROVISIONING	The extended number of the NPC in alarm.
NPC_ID	**NPC ID** field, NPC PROVISIONING	The NPC ID of the NPC in alarm.
Service_State	**Service State** field, NPC PROVISIONING	The operational status of the NPC in alarm.
Ch	**Ch** field, NPC PROVISIONING	The channel, of the NPC in alarm, that is connected in the circuit.
Alarm_State	**Alarm State** field, NPC PROVISIONING	The status of the alarm.
Term_State	None.	The actual termination state of the EFT in the alarming NPC. The EFT can acquire this state by a variety of methods.
Circuit_ID	**Ckt ID** field, CIRCUIT PROVISIONING	The circuit ID of the circuit containing the NPC in alarm.
Ckt_Status	**Ckt Status** field, CIRCUIT PROVISIONING	The operating status of the circuit containing the EFT of the NPC in alarm.
Class	**Ckt Class** field, CIRCUIT PROVISIONING	The class of the circuit containing the EFT of the NPC in alarm: FDX, HDX, etc.
Customer_Name	**Customer Name** field, CIRCUIT PROVISIONING	The user-defined name of the customer owning the circuit containing the alarming NPC.
TC	**TC** field, CIRCUIT PROVISIONING	Trunk conditioning of the circuit containing the NPC in alarm.
IW	**IW** field, CIRCUIT PROVISIONING	Insertion word of the circuit containing the NPC in alarm.
T_NPC_Hier	**TO Hier** field, CIRCUIT PROVISIONING	The hierarchical number of the NPC at the other side of the circuit containing the alarming NPC.
T_NPC_Ext	**TO Ext** field, CIRCUIT PROVISIONING	The extended number of the NPC at the other side of the circuit containing the alarming NPC.
T_NPC_ID	**TO NPC ID** field, CIRCUIT PROVISIONING	The ID of the NPC at the other side of the circuit containing the alarming NPC.

Table A-15. CIRCUIT ALARMS Reports Fields (Contd)

Name	Form of Origination	Description
T_Service_State	**Service State** field, NPC PROVISIONING	The service status of the NPC at the other side of the circuit containing the alarming NPC.
T_Ch	**TO Ch** field, CIRCUIT PROVISIONING	The EFT at the other side of the circuit containing the alarming NPC.
T_Alarm_State	**Alarm State** field, CIRCUIT PROVISIONING	The alarm status of the NPC at the other side of the circuit containing the alarming NPC.
T_Term_State	None.	The actual termination state of the NPC at the other side of the circuit containing the alarming NPC. The EFT can acquire this state by a variety of methods.
Ckt_Priority	**Ckt Priority** field, CIRCUIT PROVISIONING	The priority of the circuit containing the alarming NPC.
Bandwidth	**Bandwidth** field, CIRCUIT PROVISIONING	The bandwidth of the circuit containing the alarming NPC.
SC	**SC** field, CIRCUIT PROVISIONING	The signalling conversion specification of the circuit containing the alarming NPC.
Framing	**Framing** field, CIRCUIT PROVISIONING	The new values of the framing bits in Channel 0 to non-Channel 0 connections in a circuit containing the alarming NPC.
Options_AIS	**Options** field value, CIRCUIT PROVISIONING	The value AIS, for transmit Alarm Indication Signal, if **Options** is set to B for the circuit in which the alarming NPC appear.
Location_A	**Loc A** field, CIRCUIT PROVISIONING	A user-defined field stating the station ID of the FROM side of the circuit containing the alarming NPC.
Location_Z	**Loc Z** field, CIRCUIT PROVISIONING	A user-defined field stating the station ID of the TO side of the circuit containing the alarming NPC.

LOST RESPONSE LOG Reports

Table A-16. LOST RESPONSE LOG Report Fields

Name	Form of Origination	Description
L_Date	None.	The date on which the I-2000 issued the response.
L_Time	None.	The time at which the I-2000 issued the response.
Request_Type	None	FRAME, NPC or CIRCUIT.
Status	None	S (Success) or F (Failure).
Message_No	None	The message number.
Denial_Message		The reason for denial.

24-HOUR PERFORMANCE MONITORING STATISTICS Reports

Table A-17. 24-HOUR PERFORMANCE MONITORING Report Fields

Name	Form of Origination	Description
NPC_ID	**NPC ID** field, NPC PROVISIONING.	The NPC ID.
NPC_Type	**NPC Type** field, NPC PROVISIONING.	The NPC Type.
NPC_Hier	**Number (Hier)** field, NPC PROVISIONING	The hierarchical number of the NPC.
NPC_Ext	**Number (EXT)** field, NPC PROVISIONING	The extended number of the NPC.
CRC_Avg	**CRC_AVG** field, 24-HOUR PERFORMANCE	Average Cyclic Redundancy Check counts.
ES_Avg	**ES_AVG** field, 24-HOUR PERFORMANCE	Average Errored Seconds counts.
SES_Avg	**SES_AVG** field, 24-HOUR PERFORMANCE	Average Errored Severely Seconds counts.
UAS_Avg	**UAS_AVG** field, 24-HOUR PERFORMANCE	Average Unavailable Seconds counts.
FRER_Avg	**FRER_AVG** field, 24-HOUR PERFORMANCE	Average Framing Errors counts.

Table A-17.   24-HOUR PERFORMANCE MONITORING Report Fields (Contd)

Name	Form of Origination	Description
OFS_Avg	**OFS_AVG** field, 24-HOUR PERFORMANCE	Average Out of Frame Seconds counts.
CSS_Avg	**CSS_AVG** field, 24-HOUR PERFORMANCE	Average Control Slips Seconds counts.
CV_Avg	**CV_AVG** field, 24-HOUR PERFORMANCE	Average Coding Violations counts.
UATC_Avg	**UATC_AVG** field, 24-HOUR PERFORMANCE	Average Unavailable Time Count counts.
MER_Avg	**MER_AVG** field, 24-HOUR PERFORMANCE	Average Multiframe Error counts.
FEBE_Avg	**FEBE_AVG** field, 24-HOUR PERFORMANCE	Average Far End Bit Error counts.
FSES_Avg	**FSES_AVG** field, 24-HOUR PERFORMANCE	Average Far End Severely Errored Seconds counts.
FES_Avg	**FES_AVG** field, 24-HOUR PERFORMANCE	Average Far End Errored Seconds counts.
FUAS_Avg	**FUAS_AVG** field, 24-HOUR PERFORMANCE	Average Far End Unavailable Second counts.
LOFA_Avg	**LOFA_AVG** field, 24-HOUR PERFORMANCE	Average Loss of Frame Alignment counts.
ERS_Avg	**ERS_AVG** field, 24-HOUR PERFORMANCE	Average Errored Seconds counts.
SLIP_Avg	**SLIP_AVG** field, 24-HOUR PERFORMANCE	Average SLIP counts.
US_Avg	**US_AVG** field, 24-HOUR PERFORMANCE	Average Unavailable Second counts.
DM_Avg	**DM_AVG** field, 24-HOUR PERFORMANCE	Average Degraded Minutes counts.
SERS_Avg	**SERS_AVG** field, 24-HOUR PERFORMANCE	Average Severely Errrored Seconds counts.
Collected	**No. of Days Collected** field, 24-HOUR PERFORMANCE	Number of days collected.
Reset	**Reset** field, 24-HOUR PERFORMANCE	Number of days since data was reset.
Error	**Error** field, 24-HOUR PERFORMANCE	Number of days data not collected.

Table A-17.   24-HOUR PERFORMANCE MONITORING Report Fields (Contd)

Name	Form of Origination	Description
CRC_24hr	**CRC_24hr** field, 24-HOUR PERFORMANCE	Cyclic Redundancy Check counts.
ES_24hr	**ES_24hr** field, 24-HOUR PERFORMANCE	Errored Seconds counts.
SES_24hr	**SES_24hr** field, 24-HOUR PERFORMANCE	Errored Severely Seconds counts.
UAS_24hr	**UAS_24hr** field, 24-HOUR PERFORMANCE	Unavailable Seconds counts.
FRER_24hr	**FRER_24hr** field, 24-HOUR PERFORMANCE	Framing Errors counts.
OFS_24hr	**OFS_24hr** field, 24-HOUR PERFORMANCE	Out of Frame Seconds counts.
CSS_24hr	**CSS_24hr** field, 24-HOUR PERFORMANCE	Control Slips Seconds counts.
CV_24hr	**CV_24hr** field, 24-HOUR PERFORMANCE	Coding Violations counts.
UATC_24hr	**UATC_24hr** field, 24-HOUR PERFORMANCE	Unavailable Time Count counts.
MER_24hr	**MER_24hr** field, 24-HOUR PERFORMANCE	Multiframe Error counts.
FEBE_24hr	**FEBE_24hr** field, 24-HOUR PERFORMANCE	Far End Bit Error counts.
FSES_24hr	**FSES_24hr** field, 24-HOUR PERFORMANCE	Far End Severely Errored Seconds counts.
FES_24hr	**FES_24hr** field, 24-HOUR PERFORMANCE	Far End Errored Seconds counts.
FUAS_24hr	**FUAS_24hr** field, 24-HOUR PERFORMANCE	Far End Unavailable Second counts.
LOFA_24hr	**LOFA_24hr** field, 24-HOUR PERFORMANCE	Loss of Frame Alignment counts.
ERS_24hr	**ERS_24hr** field, 24-HOUR PERFORMANCE	Errored Seconds counts.
SLIP_24hr	**SLIP_24hr** field, 24-HOUR PERFORMANCE	SLIP counts.
US_24hr	**US_24hr** field, 24-HOUR PERFORMANCE	Unavailable Second counts.

Table A-17.   24-HOUR PERFORMANCE MONITORING Report Fields (Contd)

Name	Form of Origination	Description
DM_24hr	**DM_24hr** field, 24-HOUR PERFORMANCE	Degraded Minutes counts.
SERS_24hr	**SERS_24hr** field, 24-HOUR PERFORMANCE	Severely Errored Seconds counts.
Alarm_State	**Alarm_State** field, 24-HOUR PERFORMANCE	Current alarm state on the NPC.

COMMON EQUIPMENT ALARM
Reports

Table A-18.   COMMON EQUIPMENT ALARM Report Fields

Name	Form of Origination	Description
EqpDate	None.	The date on which the I-2000 received the alarm.
EqpTime	None.	The time at which the I-2000 received the alarm.
Status	None.	The severity of the alarm.
Device	None.	The device name under alarm.
Sub_Device	None.	The sub-device name under alarm.
Side	None.	The side under alarm.
Unit	None.	The unit under alarm.
Sub_Unit	None.	The subunit under alarm.

Error Messages

B

Contents

Error Messages

B

Introduction

A number of messages may be displayed on the I-2000 status line. Most of these are self explanatory except for those messages that indicate unusual internal conditions. When the I-2000 software detects an unusual or invalid condition, it signal this through a STATUS message and also supplies trace information in an internal INFORMIX table setup specifically to record error messages.

Status Error Messages

Table B-1.   STATUS Error Messages

Error Code	Number	Error Message	Description
ABORT_SYNC	4539	"Audit/synchronization autonomously aborted."	An audit sync that is in progress has stopped itself due to an internal verification error (software error).
ALLOC_ERR	1021	"Memory allocation failed."	A process was unable to allocate memory from the system memory pool, typically because it is exhausted.
ALT_CKTID	4505	"Too many ERP created circuits for the same points. Cleanup database now!!."	The system is running out of internally generated circuit names for these end points in response to echoed responses from the DACS. The circuits created through echoed response should be modified and given proper names. This error will occur for the creation of multi-point circuits only.

Table B-1.   STATUS Error Messages (Contd)

Error Code	Number	Error Message	Description
B_T_X25_OUTSVC_L	5079	"No more SVC available locally"	Currently for the FT feature, the selected link is established directly by the X.25 software, if no more SVCs on any link can be found locally, then this message is output.
BAD_ACTION_ST	1044	"The circuit action is invalid"	A circuit has an invalid status and cannot be normalized (un-altroute).
BAD_BW	1045	"The circuit bandwidth is invalid."	An invalid bandwidth was received by circuit provisioning, it was less than 1 or greater than 32 channels in width. Typically accompanied by a circuit provisioning failure.
BAD_BWTYPE	1046	"The circuit bandwidth type is invalid."	Internal circuit provisioning checking has received a bad bandwidth type.
BAD_MSG	1051	"The message type is invalid."	A message was received a software process, but one or more of its internal contents fail consistency checking or some other validation of the parameters. This error message implies an internal software error and should be reported to Technical Support.
BAD_OPERATION	1052	"The circuit class is invalid."	Typically accompanied by a circuit provisioning failure, this indicates that the software has received an invalid circuit class (e.g. FDX, HDX....LEG). The circuit class received is not a member of the known circuit classes. This can possibly happen due to database corruption, a software error or an improperly parsed DACS message, all of which imply software defect and should be reported to technical support.
BAD_PPR_LST	1503	"The reconfiguration LIST is invalid."	An error was found in a pre-planned routing list, the list appears to be out of order, the sequence of the list can be altered with the CHECK action.
BAD_SENDER	1517	"The calling function is invalid."	A message was received by a process, but from an unknown sender.
BAD_VEFT	1056	"The virtual NPC/ channel is invalid."	The virtual (site only) provisioning command could not be executed because the circuit was not found in the database and no virtual NPC was specified.

Table B-1. **STATUS Error Messages (Contd)**

Error Code	Number	Error Message	Description
BBL_NOT_LAST	1058	"The backbone leg must be the last leg."	When setting up a multipoint circuit (virtual, dmb), the backbone leg must be the last to be deleted. This typically accompanies a circuit provisioning denial.
CH_SZERR	1063	"The circuit channel is invalid."	A request was made to operate on a channel that failed validation (e.g. greater than 32), for example an echoed response was received from the DACS that was incorrect.
DACS_FORK_FAILED	1009	"UNIX system error (cannot fork)."	An attempt to spawn another process has failed, possibly because of system resources, possibly because the executable for the process cannot be found.
DACS_PORT_ERROR	1001	"A site port error occurred."	A serial SNIDER port was unable to be opened or configured for unknown reasons, possibly because it is being it is not free for use.
DACSNAME_ERR	4517	"Unable to get site name for system."	Verification of the DACS "name" has failed, the process has received a message but the associated DACS information is incorrect and is not present in the common database.
DACSNAME_SZERR	4529	"Size error: site name."	Similar to DACSNAME_ERR, except the size of the DACS name, as received, fails verification.
DB_ERR	1023,	"A database error prevented command completion"	An error was detected reading, writing, opening or closing a database table. In some cases this may be a logical error (i.e. an expected/unexpected record was not found/found) or it may be a physical error (e.g. the table does not exist).
DB_ERROR	1096	"A database error occurred."	Redundant with DB_ERR
DBA_DIE	1106	"The DBA process died"	The lock monitor process controls single user access to the database. The lock monitor process has been restarted and the application processes have been notified, all in progress actions are aborted. The lock monitor process will exit if it has encountered an internal software defect, or more likely it is unable to allocation more memory to maintain its lock request queues.

Table B-1. **STATUS Error Messages (Contd)**

Error Code	Number	Error Message	Description
DBNAME_SZERR	4513	"Size error: input database name."	Similar to DACSNAME_ERR, except the associated database to the DACS has failed verification.
DUPL_PPRID	1507	"The new reconfiguration plan must have a unique ID."	Typically accompanies deny of an ARP request to CREATE a pre-planned route, the ID has already been used.
ERPIDLINE_SZERR	4514	"Size error: echo response ID line."	The construction of a line in the ERP log has created a string greater than the maximum size that can be stored in the log. The string has been truncated prior to insertion in the log.
HISTORY_FILE_ERROR	1006	"A history file error occurred."	The process which maintains the DACS message log (history file) was unable to open, close or otherwise set the history file.
INCONSISTENT_NPC	1070	"The NPC specification is inconsistent."	Circuit provisioning detected and internal problem with the NPC number in the provisioning request.
INV_PARM_ERR	1031	"An invalid parameters error occurred."	Typically the default of a c language switch statement, and this indicates that an unexpected condition/definition was passed to a software routine. SImilar to SOFT_ERR.
IPC_FAILURE	1005	"A message failure occurred"	This is an error in using the Iterprocessor communication facility of UNIX. A variety of failures may account for this, most commonly it is because the receiving process does not exist. This can commonly happen (i.e. normal operations) when a DACS link failure occurs. That is, a message was being sent to the process which handles DACS communications, and the DACS link went down. This was very common in R4.0 and earlier releases. In R4.1.2 and later releases, this is no longer treated as an "error."
LP_PIPE_ERROR	1008	"A printer error occurred."	As part of printer operations, when printer logging is enabled, the process (e.g. history process to log dacs commands) was unable to open a UNIX communication pipe to the UNIX line printer software.

Table B-1. STATUS Error Messages (Contd)

Error Code	Number	Error Message	Description
MISMATCH_CKT_SQN	1508	"Reconfiguration sequence mis-match."	May accompany an Automatic Replan request, when deleting a circuit from the plan, there is a mismatch in the sequencing of the circuit plan.
MISMATCH_PPR	1509	"Reconfiguration ID mismatch."	The reconfiguration plan ID does not match the ID of the database.
MISMATCH_VCKT	1075	"The virtual circuit specification is inconsistent."	There is a mismatch between internal virtual circuit number and the internal circuit number.
MSG_ERR	1012	"A message processing error occurred."	A process has received an unexpected message. Each message is keyed with a message type, the processed received a message type it is not coded to handle.
MSG_SEQ_ERR	5099	"Message log sequencing error. Details in error log"	During a message log recovery, the DACS, when a link is restored, the message log sequencing is examined, if an out of sequence message is detected, a message is output.
NO_CKT	4533	"The circuit does not exist."	An operation was attempted on a circuit, but that circuit did not exist, i.e. an echoed response was received from a DACS, which operated on a circuit that the I-2000 has no record of, or a pre-planned route operation was requested on a circuit which does not exist.
NO_PPRCKT	1511	"No such reconfiguration circuit."	May accompany an Automatic Replan request. There are no records associated with the requested routing plan.
OAM_BAD_PROC_ID	3075	"Bad process ID."	A reference was made to a process which is not identified in the I-2000 system.
OAM_EXEC_FAILED	3082	"UNIX system error (cannot exec process)."	Similar to OAM_FORK_FAILED.
OAM_FORK_FAILED	3083	"UNIX system error (cannot fork process)."	Similar to DACS_FORK_FAILED but applied to the OAM process which is the parent process for all I-2000 processes. OAM was not able to start or restart a process, possibly due to system resources, or due to the fact that the executable does not exist (i.e. program installation error).

Table B-1.   STATUS Error Messages (Contd)

Error Code	Number	Error Message	Description
OAM_MSGQ_GONE	3085	"UNIX system error (message queues are gone)."	A process' message queue has inexplicably been removed from global shared memory.
OAM_NO_USER	3098	"No users."	An error has occurred in trying to read the password file for a user, the user does not exist.
OPEN_FILE_ERR	1022	"Failed to open a file."	Many processes open and write to files for many different reasons.This signifies that an open, close, read or write of an ordinary UNIX file failed.
OVER_MAX_LEG	1078	"There are no more spare legs."	The BCON circuit already has the maximum of 99 legs, or the virtual circuit has the maximum of 20 legs.
PASSTHRU_FAIL	2000	"Passthrough request failed."	An error was detected when the user attempted to exit a passthrough session, may be accompanied by other system error output. Typically this was in inability to release resources.
PIPE_FAIL	2001	"Passthrough pipe failed."	Similar LP_PIPE_ERROR, but applied to other operations that require UNIX pipes, such as passthrough and other printer actions.
RECEIVE_ERROR	1010	"A receive message error occurred."	Interchangeable with IPC_FAILURE when receiving messages.
SEND_ERR	1011	"A send message error occurred."	Interchangeable with IPC_FAILURE when sending messages.
SHMAT_ERR	1020	"I-2000 failed to attach to shared memory segment."	Shared memory is used to store global information between process. An attempt to attach to the shared memory has failed.
SOFT_ERR	1030	"A software error occurred"	A piece of software has encountered a condition it is not prepared to handle. Typically this are indicative of software deficiencies, or unexpected error handling has not been coded.
STRING_TOO_LONG	1000	"The message length is bad"	The maximum length string that can be passed through a "passthrough" session, or through a "passthrough script" is 140 characters, this has been exceeded.
TMP_HIST_FILE_ERROR	1007	"A temporary history file error occurred."	Similar to HISTORY_FILE_ERROR

Table B-1. STATUS Error Messages (Contd)

Error Code	Number	Error Message	Description
UI_FORK_FAIL	2002	"Passthrough fork failed."	Similar to OAM_FORK_FAILED, except applied to the User Interface process when attempting to start a Passthrough session.
UNEXP_RSP	1084	"An unexpected response was received."	While waiting for a response to a command sent to the DACS, an unexpected response was received (e.g. not a time-out, or a reply). Typically, indicative of a software defect. The command in progress has been aborted.
UNEXPECTED_SIGNAL	1004	"An unexpected signal was received."	Processes set themselves up to receive and do certain processes upon receiving certain UNIX signals (e.g. alarm clock signal). A process has received a signal it did not expect or set itself up to handle.
X25_OUTSVC_L_B	5021	"No more SVC available locally on Backup link"	Similar to X25_OUTSVC_L_P, except for the backup link.
X25_OUTSVC_L_P	5020	"No more SVC available locally on Primary link"	Similar to B_T_X25_OUTSVC_L, except that for non-FT customers, the link is specified at frame provisioning time. The SVCs on the primary link are exhausted.
X25_OUTSVC_R_B	5023	"No more SVC available remotely on Backup link"	Similar to X25_OUTSVC_R_P except this occurs on the backup link.
X25_OUTSVC_R_P	5022	"No more SVC available remotely on Primary link"	Similar to X25_OUTSVC_L_P, except the problem is on the remote side of the connection.
X25_PROTOCOL_ERROR	5001	None.	No longer used.

Troubleshooting

There are only two classifications of error, those that indicate system problems and those that indicate an internal software problem (bug).

System problems are listed below and are typically resource issues. Hardware problems usually manifest in more severe ways, such as CPU panic messages, erratic screen or keyboard behavior, or UNIX messages that appear on the system console. Resource problems may also be evident on the system console as well.

Resource Problems

The following errors may indicate resource problems on the I-2000:

- ALLOC_ERR
- B_T_X25_OUTSVC_L
- DACS_FORK_FAILES
- DACS_PORT_ERROR
- DB_ERR
- DB_ERROR
- DBA_DIE
- HISTORY_FILE_ERROR
- IPC_FAILURE
- LP_PIPE_ERROR
- OAM_FORK_FAILED
- OAM_EXEC_FAILED
- OPEN_FILE_ERR
- PIPE_FAIL
- RECEIVE_ERROR
- SEND_ERR
- SHMAT_ERR
- SOFT_ERR
- TMP_HIST_FILE_ERROR
- UI_FORK_FAIL
- X25_OUTSVC_L_P
- X25_OUTSVC_L_B
- X25_OUTSVC_R_P
- X25_OUTSVC_R_B

When one of the errors listed above occurs, take the following actions:

1. Installation problems may cause some of the abnormal behaviors. The user should insure that:

    ■ Proper amount of RAM has been installed

    ■ X.25 package has been installed

    ■ X.25 network is operating properly

    ■ There are no other software applications using memory, disk and TTY resources.

2. If installation error are not suspect, then typically resource problems occur because of DACS activities. Significant activity on a single DACS or on multiple DACS may exceed the capacity of the workstation. Wait for the activity to diminish.

3. Isolate the offending DACS by observing DACS activity in MUX PASS-THROUGH for each DACS to identify busy DACS and then modify the DACS behavior.

4. If improper behavior is still apparent, the administrator can remove the DACS from service.

5. If this fails, SHUTDOWN the I-2000 and reboot the workstation.

Software Failure

All of the above errors that do not appear to be resource problems based on the descriptions above, may indicate a software failure. Typically these occur during some command activity or some autonomous activity as a result of a message from the DACS. Then these occur and cause a command or action to not successfully complete, take the following actions:

1. Write down the STATUS message that appears on the STATUS line.

2. Identify and note the command or action that cause the abnormal STATUS message.

3. Write down the state of the system at the time of the error, including the following information:

    ■ Which form was being filled out

    ■ What fields were filled in

4. If the error is associated with some DACS messages (for example, circuit provisioning action, NPC provisioning, or ERP) use REPORTS to display the HISTORY LOG for that DACS and print the last 3 or 4 pages in the log.

5. Perform a backup of the COMMON database to tape.

6. If it is clear that the error was associated with a particular DACS, also backup that particular DACS to another tape.

7. Send all of the above information to your next level of support, identifying this as a possible software problem.

Error Log

The error messages described in Table C-1 also cause an entry in a COMMON database table, called the Error Log. Internally, this is know as the LGSER table and is part of the EMS database. It is possible for field support personnel to obtain this information and insert this information into a CAROD or MR report.

Use the following procedure to obtain the error log and write it to a floppy disk:

1. Log in as **dacsadm**.

2. To obtain the LSGER table entries inserted into the database "today", type the following command:

```
echo "unload to lgser_log select * from lgser
where erdate=today;" | isql ems
```

3. To obtain all LSGER table entries type the following command:

```
echo "unload to lgser_log select * from lgser" | isql ems
```

4. Write the file to a floppy disk:

```
tar cf /dev/rfd0 lgser_log; eject
```

Write this command on the floppy disk to facilitate retrieval.

Glossary

A

Action
An operation specified to the I-2000 by entry of a predefined 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 command verbs to the DACS, 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 Indication Signal (AIS)
See Blue Alarm.

Alarm Monitor 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. This port was formerly called the alarm broadcast port.

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 frame 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 DACS 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.

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 Expansion 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.

Channel
A continuous stream of coded output signals. The channel may be carried by a variety of media, and may be broken into segments for discontinuous transmission. In the I-2000, a channel is a DS0 signal provided by an NPC.

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. 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 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 DACS.

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 DACS and an NPC.

Cross-connect -ion -ing

A circuit between two or more channels. The DACS 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 Frame

Same as Distribution Frame.

Cross-connect Module (CCM)

A DACS I hardware unit contained within a CCU and containing up to eight NPCs.

Cross-connect Network (CCN)

A hardware module that is used to implement cross-connection. It contains Time Slot Interchangers (TSIs).

Cross-connect Unit (CCU)
    A DACS I hardware unit containing a maximum of four CCMs.

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

DACS
    Used without further qualification, DACS means any supported, configured cross-connect frame.

DACS Database
    The I-2000 database that is named with a frame Site Name and stores I-2000 information concerning that frame. This database is distinct from the frame's own database, here termed the *remote* or *facility* database, which is installed on the frame itself.

DACS I, DACS II
    A Lucent Technologies product that terminates DS3- or 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 DACS 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 DACS and an NPC.

De-grow

A DACS II term meaning to delete from the frame database perhaps with a DGRTH (de-growth) command in MML. 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 multi-point 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.

Direct Configuration.

See Point-to-point.

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.

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.

DS3 Unit

A DACS II hardware module containing a maximum of six DS3 terminations.

Dual Digroup Card (DDC)
 A DACS II card containing two NPCs for NAS transmission.

Dual Primary Circuit (DPC)
 A DACS II 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 DACS 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 DACS 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.

Environmental Variable
 A shell variable, which can be set by a variety of methods. The I-2000 uses an environmental variable file, .dncrc, which stores the default values.

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 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 DACS 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 DACS II DDC or DPC, or in a DACS I NPC. 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 DACS 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 DACS II hardware module contained in an FTU. The FTM contains up to 20 NPC Cards, supporting 40 digroups, or NPCs.

Facility Terminating Unit (FTU)

A DACS II 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 frame, because it generates frame 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 frame database with 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 PROVI-SIONING 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 DACS with the single bay DACS. 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 DACSs 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.

Link Protection
　The presence of an additional link for every link from the I-2000 to the PDN or from the PDN to the DACS. If the primary link is disconnected, the backup link becomes functional. You can acquire link protection by backing up the port or by merely backing up the link within the port.

Local Database
　The I-2000 database, named after a DACS Site Name, that stores information concerning the DACS.

Local-only Mode
　A mode of the EXECUTE function, selected from the WHICH DATABASE? menu. Local-only specifies that the Action implemented by the EXECUTE is to apply to the I-2000 database only.

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 DACS.

Master
In database audit/synchronization, the database designated as the standard to which other data-bases 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 Compander, 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 DACS 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 DACS. This link must already be operable. The "address" is in the form of the link's telephone number.

Network Processing Circuit (NPC)

As used in this manual, an NPC is any IC that provides terminations for cross-connection. FTU NPCs in the DACS II and CCU NPCs in the DACS I provide 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 DACSs 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 Enter, 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, X.25.

Passthrough
   A special mode of the I-2000, which allows an operator at an I-2000 terminal to communicate directly to a DACS as though the terminal were a DACS 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 DACS, 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.

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 communications 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 frame 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 $\boxed{\text{RECNCILE}}$ 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 RDLD **Option** for purposes of not being allowed to be disconnected without additional authorization.

Released

    See Terminate and Leave Activated, Released.

Remote Database

    The frame-installed database utilized by the DACS to record provisioning information. The DACS contains 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 DACS 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 DACS 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 (MAJ), Minor (MIN) 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 DACS 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 pre-defined 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 DACS. Synchronization is also an I-2000 **Action** under DATABASE ADMINISTRATION by which differences between the I-2000 database and the frame database for a given DACS are reconciled, subject to certain restrictions. This is termed "scheduled" 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 $\boxed{\text{EXECUTE}}$ 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 in the DACS II.

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 parameters.

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.

Timeout

A time to wait after the onset of some condition before the software takes action concerning it.

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.

Time Zone (TZ)

A region whose conventional clocks are set at the same displacement from Greenwich Mean Time (GMT). UNIX treats daylight savings time as an alternate time zone (ATZ). It has a different displacement from GMT, even though its displacement applies to the same region as does the TZ. UNIX is programmed to change between the TZ and the ATZ twice a year. Since the day of one change varies from year to year, the UNIX administrator must set the days of change once a year in the TZ command. The I-2000 provides an interface to enter a TZ command.

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 DACScan-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 DACS 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 DACS.

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 DACS 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.

W

White Space
Characters, such as blanks, that have no meaning to the system and are treated as blanks.

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.

Window
A delineated work region on the screen. In the Sun systems, more than one window can be in use. The background is termed the root window. In other systems, you get only the root window. There is no continuity between windows.

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 received, and both sending and transmitting frames will signal red alarm. See also Alarm.

Abbreviations and Acronyms

A

4GL
Fourth-generation language

A
Alarm indication signal

ac
Alternating current

Ac
Alternating current

adm
Administrat-or, -ive

admn
Administrat-or, -ive

AIS
Alarm Insertion Signal

Alm
Alarm

ALM
Alarm

ALMS
Alarms

alt
Altroute

ATZ
Alternate Time Zone

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

BMTR
Backup Memory Transfer Alarm

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 Internationel Telegraphique et Telephonique

CCM
Cross-connect Module

CCN
Cross-connect Network

CCNI
CCN interface

CCU
Cross-connect Unit

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

ckts
Circuits

CLR
Clear

cmd
Command

CNC
Customer Network Controller

COFA
Change of Frame Alignment Error

COMCODE
Component Code

cond
Condition

CP
Circuit Pack

CPU
Central Processing Unit

CR
Critical

CRC
Cyclic Redundancy Check

CRIT
Critical

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

dacsadm
DACS administrator

DB
Database

dc
Direct current

DCC
Disconnect-channel code

DCD
Data Carrier Detect

DCE
Data Circuit-terminating Equipment

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

DEV
Device

DEX
Digital Electronic Cross-connect System

DGRTH
De-growth

DISC
Disconnect

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

DSPI
Digital Signal Processing Interface

DTE
Data Terminal Equipment

DTR
Data Terminal Ready

E

E
Extended

ECCN
Extended or Expanded 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

eq
Equipment

EQD
Equipped

EQL
Embedded Query Language

EQPT

Equipment

ERM
Echoed Response Message(s)

ERM
Errored Minutes

ERP
Echoed Response Processing

ERS
Errored Seconds

ES
Errored seconds

Esc
Escape

ESD
Electrostatic discharge

ESDI
Enhanced Small Device Interface

ESQL
Embedded Structured Query Language

EST
Eastern Standard Time

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

FLI
Facility Line Interface

FMLI
Form and Menu Language Interpreter

FMT
Format

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

GMT
Greenwich Mean Time

GPSC
General Purpose Synchronous Controller

GRP
Group

GRTH
Growth

H

H
Hierarchical

HDU
Hard Disk Unit

HDX
Half duplex

I

IC
Integrated Circuit

ID
Identifier or identification

IDLD
Idled

IF
Interface

IMX
Informix

INCL
Inclusive

INFO
Informational

ipc
Interprocess communications

IP
Internet Protocol

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

LP
Logging Printer

M

M
Male

M
Remote multiframe alarm

M
Mega or x 1,000,000

Maj
Major

MAJ
Major

MAX
Maximum

Mb
Megabits

MB
Megabytes

MB
Multipoint Bridge

Mbps
Megabits per second

MC
Main Controller

MCOND
Maintenance Condition

MEM
Memory

MER
Multiframe errors

MI
Minor

MI
Maintenance information

MIN
Minor

Mj
Major alarm

MJ
Major alarm

MJ
Multipoint Junction Unit

MJU
Multipoint Junction Unit

MMFG
Multiplexer-Multiplexer Interface Unit Functional Group

mml
Man Machine Language

MML
Man Machine Language

mmm
Month (3 chars.)

MMM
Month (3 chars.)

MN
Minor Alarm

MP
Multipoint

msg
Message

mux
Multiplex, -ed, -ing, -or

MUX
Multiplex, -ed, -ing, -or

M1*X*
DS1 to DS*X* Multiplexer

N

NAM
No a-to-mu-law conversion

NAS
North American Standard

NAU
Network-access unit

NE

Near end

net
Network

NFS

Non-framing Word Setting

NFW

Non-framing Word

NI
Network Interface

NMS
Network Management System

NPC
Network Processing Circuit

NPCTP
NPC Test Port

NTR
No Transmit

Num
Number

O

OCON
One-way cross-connect

OFS
Out-of-frame seconds

OOF
Out of Frame

OOS
Out of service

O&M
Operation and Maintenance

openwin
OpenWindows

P

PAM
Pulse Amplitude Modulation

PARAM
Parameter

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

PU
Power Unit

PVC
Permanent Virtual Circuit

PWR
Power

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

rlogin
Remote login.

RMA
Remote Multiframe Alarm

Rmks
Remarks

RMV
Remove

RP
Restoration or restoral priority

RP
Reconfiguration Plan

RST
Restore

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, 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

SSP
Synchronizer Sync Port

Str
String

stty
Set tty

Sub
Subunit

SV
System V

SVC
Switched Virtual Circuit

SW
Software; switch

SXC
Synchronizer cross-connect

SYNC
Synchronizer, Synchronization

T

TB
Time Base

TC
Trunk conditioning

TCP
Transport Control Protocol

TCS
T-Carrier Cross-Connect System

TDM
Time Division Multiplexing

TE
Timing Extractor

Telco
Telephone Company

terminfo
Terminal information

tid
Terminal ID

TID
Terminal ID

TLA
Terminate and Leave Activated

TLI
Time link interface

TLR
Terminate and Leave Released

TP
Test port

TPG
Test Port Group

TRB
Trouble word

TREF
Timing reference

TRSP
Transparent signaling

TSI
Time Slot Interchanger

TS0
Time slot zero

TS0M
Time Slot 0 Monitor

tty
Teletype

Tx
Transmit

TZ
Time Zone

U

UAS
Unavailable seconds

UATC
Unavailable time count

UC
Unit Controller

UCR
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.)

Index

B

C

D

E

G

H

I

K

L

M

N

O

S

T

U