EXPLORER™ SYSTEM SOFTWARE INSTALLATION

MANUAL REVISION HISTORY

Explorer™ System Software Installation (2243205-0001)

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Revision B	June 1986
Revision C	June 1987
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Revision E	December 1987
Revision F	June 1988

The menus and prompts shown in this manual reflect the software as this manual goes into production. Later changes in the software may cause the menus and prompts on your system to be different from those in the manual.

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READ THIS DOCUMENT BEFORE ATTEMPTING TO INSTALL EXPLORER SYSTEM SOFTWARE. IT DESCRIBES THE SOFTWARE INSTALLATION MEDIA AND PROCEDURES FOR INSTALLING THE SOFTWARE CONTAINED ON THAT MEDIA.

THE PART NUMBERS FOR THE MAGNETIC TAPES REFERRED TO IN THIS DOCUMENT ARE AS FOLLOWS:

EXPLORER BOOTABLE-FORMAT TAPE	—	2537110-0001
DIAGNOSTICS BOOTABLE TAPE	—	2537111-0001
EXPLORER SYSTEM SOURCE TAPE	—	2537110-0002
VISIDOC MANUALS FILES TAPE	—	2549303-0001

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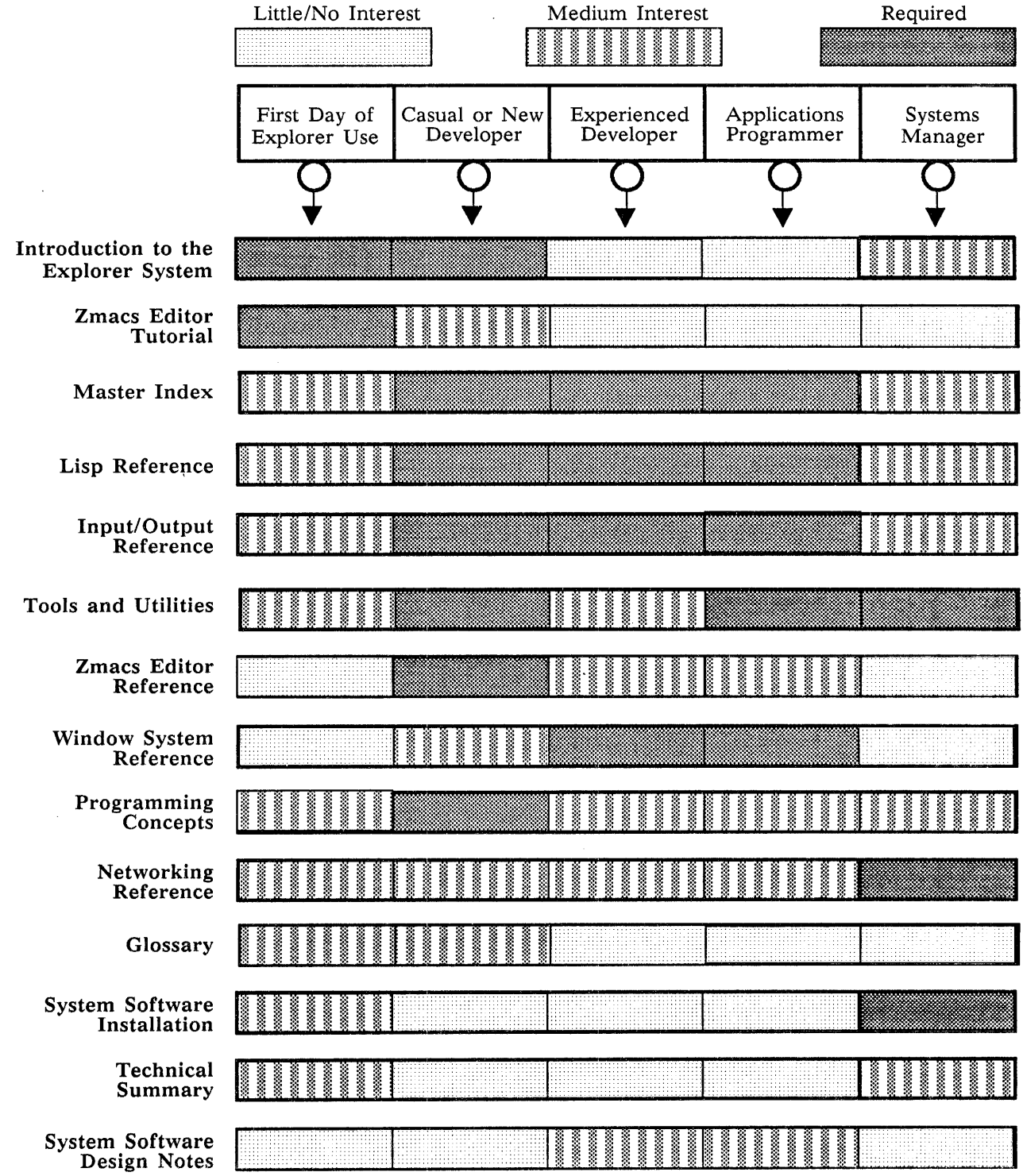
THE EXPLORER™ SYSTEM SOFTWARE MANUALS



THE EXPLORER™ SYSTEM SOFTWARE MANUALS

Mastering the Explorer Environment	Explorer Technical Summary	2243189-0001
	Introduction to the Explorer System	2243190-0001
	Explorer Zmacs Editor Tutorial	2243191-0001
	Explorer Glossary	2243134-0001
	Explorer Networking Reference	2243206-0001
	Explorer Diagnostics	2533554-0001
	Explorer Master Index to Software Manuals	2243198-0001
	Explorer System Software Installation Guide	2243205-0001
Programming With the Explorer	Explorer Programming Concepts	2549830-0001
	Explorer Lisp Reference	2243201-0001
	Explorer Input/Output Reference	2549281-0001
	Explorer Zmacs Editor Reference	2243192-0001
	Explorer Tools and Utilities	2549831-0001
	Explorer Window System Reference	2243200-0001
Explorer Options	Explorer Natural Language Menu System User's Guide	2243202-0001
	Explorer Relational Table Management System User's Guide	2243203-0001
	Explorer Grasper User's Guide	2243135-0001
	Explorer TI Prolog User's Guide	2537248-0001
	Programming in Prolog, by Clocksin and Mellish	2249985-0001
	Explorer Color Graphics User's Guide	2537157-0001
	Explorer TCP/IP User's Guide	2537150-0001
	Explorer LX™ User's Guide	2537225-0001
	Explorer LX System Installation	2537227-0001
	Explorer NFS™ User's Guide	2546890-0001
	Explorer DECnet™ User's Guide	2537223-0001
	Personal Consultant™ Plus Explorer	2537259-0001
System Software Internals	Explorer System Software Design Notes	2243208-0001
	Release Information, Explorer System Software	2549844-0001

THE EXPLORER SYSTEM HARDWARE MANUALS

System Level Publications

Explorer 7-Slot System Installation 2243140-0001
Explorer System Field Maintenance 2243141-0001
Explorer System Field Maintenance Documentation Kit 2243222-0001
Explorer System Field Maintenance Supplement 2537183-0001
Explorer System Field Maintenance Supplement Documentation Kit 2549278-0001
Explorer NuBus™ System Architecture General Description 2537171-0001

System Enclosure Equipment Publications

Explorer 7-Slot System Enclosure General Description 2243143-0001
Explorer Memory General Description (8-megabytes) 2533592-0001
Explorer 32-Megabyte Memory General Description 2537185-0001
Explorer Processor General Description 2243144-0001
68020-Based Processor General Description 2537240-0001
Explorer II™ Processor and Auxiliary Processor Options General Description 2537187-0001
Explorer System Interface General Description 2243145-0001
Explorer Color System Interface Board General Description 2537189-0001
Explorer NuBus Peripheral Interface General Description (NUPI board) 2243146-0001

Display Terminal Publications

Explorer Display Unit General Description 2243151-0001
CRT Data Display Service Manual, Panasonic code number FTD85055057C 2537139-0001
Explorer Color Console General Description 2537195-0001
TRINITRON® Graphic Display Monitor GDM-1603 Service Manual, Sony® part number 0-558-986-01 2551107-0001
Model 924 Video Display Terminal User's Guide 2544365-0001

143-Megabyte Disk/Tape Enclosure Publications

Explorer Mass Storage Enclosure General Description 2243148-0001
Explorer Winchester Disk Formatter (ADAPTEC) Supplement to Explorer Mass Storage Enclosure General Description 2243149-0001
Explorer Winchester Disk Drive (Maxtor) Supplement to Explorer Mass Storage Enclosure General Description 2243150-0001
Explorer Cartridge Tape Drive (Cipher) Supplement to Explorer Mass Storage Enclosure General Description 2243166-0001
Explorer Cable Interconnect Board (2236120-0001) Supplement to Explorer Mass Storage Enclosure General Description 2243177-0001

143-Megabyte Disk Drive Vendor Publications	XT-1000 Service Manual, 5 1/4-inch Fixed Disk Drive, Maxtor Corporation, part number 20005 (5 1/4-inch Winchester disk drive, 112 megabytes)	2249999-0001
	ACB-5500 Winchester Disk Controller User's Manual, Adaptec, Inc., (formatter for the 5 1/4-inch Winchester disk drive)	2249933-0001
1/4-Inch Tape Drive Vendor Publications	Series 540 Cartridge Tape Drive Product Description, Cipher Data Products, Inc., Bulletin Number 01-311-0284-1K (1/4-inch tape drive)	2249997-0001
	MT01 Tape Controller Technical Manual, Emulex Corporation, part number MT0151001 (formatter for the 1/4-inch tape drive)	2243182-0001
	Viper™ Half-High Intelligent 4 1/4-Inch Streaming Cartridge Tape Drive SCSI Models 2060S and 2125S, Archive Corporation, part number 21136-001	2551106-0001
182-Megabyte Disk/Tape Enclosure MSU II Publications	Mass Storage Unit (MSU II) General Description	2537197-0001
182-Megabyte Disk Drive Vendor Publications	Control Data® WREN™ III Disk Drive OEM Manual, part number 77738216, Magnetic Peripherals, Inc., a Control Data Company	2546867-0001
515-Megabyte Mass Storage Subsystem Publications	SMD/515-Megabyte Mass Storage Subsystem General Description (includes SMD/SCSI controller and 515-megabyte disk drive enclosure)	2537244-0001
515-Megabyte Disk Drive Vendor Publications	515-Megabyte Disk Drive Documentation Master Kit (Volumes 1, 2, and 3), Control Data Corporation	2246129-0002
	Volume 1, General Description, Operation, Installation and Checkout, and Part Data	2246125-0004
	Volume 2, Theory, General Maintenance, Trouble Analysis, Electrical Checks, and Repair Information	2246125-0005
	Volume 3, Diagrams	2246125-0006
1/2-Inch Tape Drive Publications	MT3201 1/2-Inch Tape Drive General Description	2537246-0001

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1/2-Inch Tape Drive Vendor Publications	Cipher CacheTape® Documentation Manual Kit (Volumes 1 and 2 With SCSI Addendum and Logic Diagram), Cipher Data products	2246130-0001
	1/2-Inch Tape Drive Operation and Maintenance (Volume 1), Cipher Data Products	2246126-0001
	1/2-Inch Tape Drive Theory of Operation (Volume 2), Cipher Data Products	2246126-0002
	SCSI Addendum With Logic Diagram, Cipher Data Products	2246126-0003
Printer Publications	Model 810 Printer Installation and Operation Manual	2311356-9701
	Omni 800™ Electronic Data Terminals Maintenance Manual for Model 810 Printers	0994386-9701
	Model 850 RO Printer User's Manual	2219890-0001
	Model 850 RO Printer Maintenance Manual	2219896-0001
	Model 850 XL Printer User's Manual	2243250-0001
	Model 850 XL Printer Quick Reference Guide	2243249-0001
	Model 855 Printer Operator's Manual	2225911-0001
	Model 855 Printer Technical Reference Manual	2232822-0001
	Model 855 Printer Maintenance Manual	2225914-0001
	Model 860 XL Printer User's Manual	2239401-0001
	Model 860 XL Printer Maintenance Manual	2239427-0001
	Model 860 Xl Printer Quick Reference Guide	2239402-0001
	Model 860/859 Printer Technical Reference Manual	2239407-0001
	Model 865 Printer Operator's Manual	2239405-0001
	Model 865 Printer Maintenance Manual	2239428-0001
	Model 880 Printer User's Manual	2222627-0001
	Model 880 Printer Maintenance Manual	2222628-0001
	OmniLaser™ 2015 Page Printer Operator's Manual	2539178-0001
	OmniLaser 2015 Page Printer Technical Reference	2539179-0001
	OmniLaser 2015 Page Printer Maintenance Manual	2539180-0001
	OmniLaser 2108 Page Printer Operator's Manual	2546348-0001
	OmniLaser 2108 Page Printer Technical Reference	2546349-0001
	OmniLaser 2108 Page Printer Maintenance Manual	2546350-0001
	OmniLaser 2115 Page Printer Operator's Manual	2546344-0001
	OmniLaser 2115 Page Printer Technical Reference	2546345-0001
	OmniLaser 2115 Page Printer Maintenance Manual	2546346-0001
Communications Publications	990 Family Communications Systems Field Reference	2276579-9701
	EI990 Ethernet® Interface Installation and Operation	2234392-9701
	Explorer NuBus Ethernet Controller General Description	2243161-0001
	Communications Carrier Board and Options General Description	2537242-0001

CONTENTS

ABOUT THIS MANUAL

Introduction

The Texas Instruments Explorer system is an advanced, single-user workstation that provides extensive support for development of large-scale, complex programs and for research in new technologies, including artificial intelligence. The Explorer is also an affordable delivery vehicle for applications requiring symbolic processing, high-quality graphics, and special-purpose processors. The programming environment of the Explorer system includes the following:

- High-resolution, interactive display
- High-speed symbolic processing using the Lisp language
- Integrated programming tools
- Extensive software
- Large memory capacity and sophisticated memory management
- Networking facilities

Assumptions

This manual assumes that you have access to an installed Explorer system. If you have a new Explorer system that has not been unpacked and installed, refer to the *Explorer 7-Slot System Installation* manual for instructions.

NOTE: If your Explorer system is new, Explorer Release 4.1 is already installed, so skip Sections 1 and 2. In this document, you only need Section 3.

Contents of This Manual

The following paragraphs briefly describe the contents of this manual.

Section 1: Contents of Release 4.1 Software Media — Describes the media used for shipping Explorer system software, both on disk and on tape.

Section 2: Updating to Explorer Release 4.1 Software — Describes how to install the Explorer Release 4.1 software on one or more Explorer systems that have been running earlier releases.

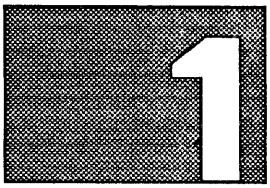
Section 3: Getting Started on a New Explorer — Describes how to power up your new Explorer system and boot the Lisp system.

Appendix A: The Boot Process — Describes the events that occur whenever you boot your Explorer system.

Appendix B: Creating a Lisp-Bootable Environment on a Replacement Disk — Describes the procedures necessary to restore your software onto a replacement disk, particularly a disk that has no working, bootable Lisp system.

Appendix C: Upgrading an Original Explorer to an Explorer II — Describes the software involved when you upgrade an Explorer system from an original Explorer processor board to an Explorer II processor board.

CONTENTS OF RELEASE 4.1 SOFTWARE MEDIA



Introduction

1.1 This section describes the contents of the media used to distribute the Explorer system software.

Explorer software is shipped both on disk and on magnetic tape. The Explorer system disk is shipped with the system software installed. Magnetic tape is the medium for shipping another copy of the system software, updates, and system source code. Additionally, magnetic tape is the most convenient medium from which to restore your system if it is damaged from hardware or software errors.

The following paragraphs describe the contents of each type of medium associated with the Explorer system.

NOTE: Unless specified otherwise, Explorer refers to both the initial Explorer hardware (called the original Explorer in this manual) and the Explorer II hardware.

Explorer System Software Already on Disk

1.2 A new system disk contains executable Explorer system software; however, the exact contents of that software depend on whether your system configuration has one or two disks.

One disk on either system configuration may contain additional partitions named FDOS, FACT, FXPT, and FXP2. These partitions contain factory versions of the diagnostic partitions. You can delete these partitions and reclaim their disk blocks for other use by calling the function **sys:edit-disk-label**. (Refer to the *Explorer Input/Output Reference* manual for instructions on how to edit the disk label from the Lisp system.) Putting this disk allocation in the PAGE band increases virtual memory and can improve the performance of the Lisp system.

Figure 1-1 shows a typical disk label for a one-disk system; Figure 1-2 shows a typical disk label for a two-disk system. Table 1-1 describes the partitions included in these two figures.

Figure 1-1 Typical Disk Label for a One-Disk System

```
   Name  Partition type       Length  CPU/OS Type
*  LABL  (Volume Label)            2  (Generic)
*  PTBL  (Partition table)         3  (Generic)
   SAVE  (System Save Area)        3  (Generic)
   FMT   (Format Parameters)       9  (Generic)
   TZON  (Test Zone)             122  (Generic)
   BOOT  (Microcode)              64  (Explorer)
*  BOOT  (Microcode)              64  (Explorer II)
*  PRIM  (Microcode)              64  (Explorer)
   GDOS  (Microcode)             300  (Explorer)
   GDOS  (Microcode)             300  (Explorer II)
   DIAG  (File Band)            2048  (System 5)
   EXPT  (Microcode)             150  (Explorer)
   EXP2  (Microcode)             150  (Explorer II)
   LOG   (System Log)             25  (Explorer)
*  CFG1  (Configuration band)     17  (Generic)
   CFG2  (Configuration band)     17  (Generic)
   MCRA  (Microcode)             300  (Explorer)
   MCRB  (Microcode)             300  (Explorer II)
*  LOD1  (Load Band)           30000  (Explorer)
*  FILE  (File Band)           20000  (Explorer)
   PAGE  (Page Band)           56689  (Explorer)
   END   (Empty)                   0  (Explorer)
```

Table 1-1 Disk Label Partition Descriptions

Name	Description
FMT	Format information for this disk.
TZON	Test zone for use by diagnostics.
BOOT	The menu-boot microload partitions. One is supplied for the original Explorer hardware; one is supplied for Explorer II hardware. The partition for your type of hardware is required on any disk from which you must boot.
PRIM	The System Test Boot Master (STBM) primitive that controls the default boot process. This partition is not present on Explorer II systems.
GDOS, DIAG, EXPT, EXP2	Partitions used for running diagnostic programs. (GDOS stands for General Diagnostics Operating System.)
LOG	System log area where shutdown information is written during the boot procedure. Disk errors, keyboard errors, and equipment overheated (overtemp) warnings are also recorded in the system log.
CFG1	Configuration information that specifies which system partitions should be loaded during the boot process.
CFG2	Spare configuration allocation.

Table 1-1 Disk Label Partition Descriptions (Continued)

Name	Description
MCRA	The current version of the microcode for an original Explorer system.
MCRB	The current version of the microcode for an Explorer II system.
LOD1	A load partition with the basic system software.
LOD2	Space allocated for an additional Explorer load partition.
FILE	A file system partition containing the system source code that ships with the system software.
PAGE	The partition(s) used for paging virtual memory. The total of all PAGE partitions should be approximately twice the size of the load partition for efficient operation. For Explorer I, the first 131,072 blocks of the PAGE partition are used as virtual memory; this is equivalent to 128MB of virtual memory. If the total size of the PAGE partition exceeds that number, the size of the partition can be reduced and those blocks reallocated for other purposes. For Explorer II, any allocated page space is used.
NPI1, MSC1	(Optional) Partitions containing firmware updates for downloadable boards that may be present in the Explorer chassis. None, one, or both of these may appear.

Figure 1-2 **Typical Disk Labels for a Two-Disk System**

First Disk

	Name	Partition type	Length	CPU/OS Type
*	LABL	(Volume Label)	2	(Generic)
*	PTBL	(Partition table)	3	(Generic)
	SAVE	(System Save Area)	3	(Generic)
	FMT	(Format Parameters)	9	(Generic)
	TZON	(Test Zone)	122	(Generic)
	BOOT	(Microcode)	64	(Explorer)
*	BOOT	(Microcode)	64	(Explorer II)
*	PRIM	(Microcode)	64	(Explorer)
	GDOS	(Microcode)	300	(Explorer)
	GDOS	(Microcode)	300	(Explorer II)
	DIAG	(File Band)	2048	(System 5)
	EXPT	(Microcode)	150	(Explorer)
	EXP2	(Microcode)	150	(Explorer II)
	LOG	(System Log)	25	(Explorer)
*	CFG1	(Configuration band)	17	(Generic)
	CFG2	(Configuration band)	17	(Generic)
	MCRA	(Microcode)	300	(Explorer)
	MCRB	(Microcode)	300	(Explorer II)
*	LOD1	(Load Band)	30000	(Explorer)
	LOD2	(Load Band)	35000	(Explorer)
	PAGE	(Page Band)	46689	(Explorer)
	END	(Empty)	0	(Explorer)

Second Disk

	Name	Partition type	Length	CPU/OS Type
*	LABL	(Volume Label)	2	(Generic)
*	PTBL	(Partition table)	3	(Generic)
	SAVE	(System Save Area)	3	(Generic)
	FMT	(Format Parameters)	9	(Generic)
	TZON	(Test Zone)	122	(Generic)
	BOOT	(Microcode)	64	(Explorer)
*	BOOT	(Microcode)	64	(Explorer II)
	GDOS	(Microcode)	300	(Explorer)
	GDOS	(Microcode)	300	(Explorer II)
	DIAG	(File Band)	2048	(System 5)
	EXPT	(Microcode)	150	(Explorer)
	EXP2	(Microcode)	150	(Explorer II)
*	FILE	(File Band)	30000	(Explorer)
	PAGE	(Page Band)	67099	(Explorer)
	END	(Empty)	0	(Explorer)

Explorer System Software on Tape

1.3 You receive the following kinds of tapes with your Explorer system:

- Bootable-format tape (TI part number 2537110-0001)
- Diagnostics bootable tape (TI part number 2537111-0001)
- System source tape (TI part number 2537110-0002)
- Distribution tapes (for distributing optional toolkits)
- Visidoc Manuals Files tape (TI part number 2549303-0001)

Explorer System Software on Bootable-Format Tape

1.3.1 The Explorer system bootable-format tape contains software in a disk-image format that can be copied by the utilities on the Diagnostics Bootable Tape. A bootable-format tape containing Explorer system software (standard load and microload partitions) is intended to be transferred to disk; it cannot be run from tape because of the time required for the tape to rewind during paging. The Explorer system software found in a bootable-format tape includes the following:

- BOOT (original Explorer) — The microload that provides the Menuboot capability. This partition is 64 blocks long.
- BOOT (Explorer II) — The microload that provides the Menuboot capability. This partition is 64 blocks long.
- PRIM — The microload that initiates firmware downloads and boots the Explorer. This partition is 64 blocks long.
- CFG1 — The default configuration information for an Explorer system. This partition is 17 blocks long.
- MCRA — The current version of the microcode for an original Explorer. This partition is 300 blocks long.
- MCRB — The current version of the microcode for Explorer II. This partition is 300 blocks long.
- LOD1 — A minimum product load partition with the basic system software as it is installed on the disk. This partition is approximately 26,000 blocks long.

Diagnostics Bootable Tape

1.3.2 The Diagnostics Bootable Tape contains the General Diagnostic Operating System (GDOS), a program that allows you to run tests on the Explorer system. The diagnostics tape also provides you with the ability to format an Explorer disk if software or hardware damage compromises the integrity of the disk. Additionally, GDOS allows you to restore a partition from a bootable-format tape to an Explorer system disk that has no Lisp system available.

System Source Tape

1.3.3 The Explorer System Source Tape contains system source code. For Release 4.1, this is a set of directories that contain source files and font files. Material on a system source tape is added via the Backup System window (invoked by pressing the SYSTEM and the B keys) with a restore file and the execution of a program within that file.

Distribution Tapes

1.3.4 Distribution tapes contain Explorer software options to be added to your Explorer system. Material on a distribution tape is usually added via the Backup System window (invoked by pressing SYSTEM B) with the Load Distribution Tape command; however, each distribution tape comes with its own installation procedures. Distribution tapes are not bootable.

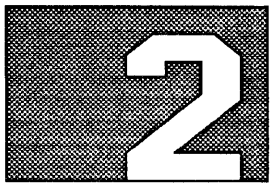
NOTE: Before loading distribution tapes for Release 4.1, you must first restore the new load distribution tape files from the System Source tape. All the necessary procedures are discussed in Section 2 of this manual.

Visidoc Manuals Files Tape

1.3.5 The Visidoc Manuals Files tape contains the software and data for an online documentation feature that retrieves online reference material and places it in a buffer where the text and graphics information can be viewed. Visidoc (Visual Interactive Documentation) is accessed through the System menu or through Zmacs by pressing META-CTRL-SHIFT-D or by typing META-X Visidoc. (Refer to the *Explorer Tools and Utilities* manual for a list of Visidoc features.) However, before you can use Visidoc, your system administrator needs to set up a Visidoc server as described later in this section.

A copy of the *Explorer System Release 4.1 Software Release Information* (TI part number 2549844-0001) is also included with the release.

UPDATING TO EXPLORER RELEASE 4.1 SOFTWARE



Introduction

2.1 This section describes how to update your Explorer Lisp System software to the new Release 4.1. This update includes both system image and source files. Several Explorer hardware and software configurations are now possible. Therefore, see the following bulleted items to see which sections of this manual contain the correct upgrade procedures for your configuration.

- If your Explorer system is running Release 3 software, complete the procedures described in this section.
- If you have just received a new Explorer system from Texas Instruments, complete the procedures described in Section 3, Getting Started on a New Explorer.
- If you have a disk that must be built from scratch, complete the procedure described in Appendix B, Creating a Lisp-Bootable Environment on a Replacement Disk. Examples of disks that must be built from scratch include a replacement disk from field spares and the disks of an Explorer system that does not contain a working, bootable Lisp system.

NOTE: If you are upgrading from Explorer I hardware to an Explorer II system, install the Release 4.1 software before you upgrade the hardware. After the software has been upgraded, see Appendix C, entitled Upgrading an Original Explorer to an Explorer II.

In general, installing Explorer system software requires the following main procedures:

- Restoring the LOD band and MCR band from tape.
- Booting on the new LOD and MCR bands.
- Restoring the Release 4.1 files from tape.
- Optionally, installing GDOS on your disk.

These procedures are described in detail in the following pages.

Restoring the Bands From Tape

2.2 The first step in installing the Explorer Release 4.1 system software on an existing system is to restore the Release 4.1 bands from the system bootable tape.

1. If needed, power up the Explorer and boot the latest version of the Release 3 system software. If necessary, refer to Section 3, Getting Started on a New Explorer.

2. Locate available LOD and MCR bands that can be overwritten during the restore operation.

NOTE: You cannot overwrite the LOD and MCR bands that are currently booted. Thus, you must have a LOD and a MCR band available in addition to the bands you are currently running. The remainder of this section assumes that you have a MCR band available, but that you may or may not have a LOD band available.

---

   a. For each disk on your system, execute the **print-disk-label** function.

   b. Make a note of the name and unit number of any available LOD or MCR bands that you are willing to overwrite.

      - If you have a LOD band you are willing to overwrite, proceed to paragraph 2.2.3, Restoring Over an Existing LOD and MCR Partition.

      - If no existing LOD band is available but there is sufficient unused room to create one, use the procedure in paragraph 2.2.2, Creating a LOD Partition, then proceed to paragraph 2.2.3, Restoring Over an Existing LOD and MCR Partition. Similarly, if you have more than 60K total blocks allocated as PAGE bands, you can reduce the size of your PAGE band(s) to create room for a second LOD band.

      - If you have only one LOD band but *do not* have room to create another, you will have to juggle your FILE bands with a new LOD band. Use the procedure in paragraph 2.2.1, Reassigning the Contents of a FILE Partition.

Reassigning the Contents of a FILE Partition

2.2.1 If you do not have a LOD partition available that you are willing to overwrite, you can use the following method to juggle your FILE partition and make a load partition available. This method uses the Lisp system.

The following procedure describes how to juggle a partition like the FILE partition temporarily until the new load partition has been restored from tape:

1. Press SYSTEM B to invoke the Backup System window.

2. From the Backup System window, copy the FILE partition to tape using Backup Partition.

3. Make a note of the exact length of the FILE partition. You should use this length to create a FILE partition of the same length or larger when you restore the FILE partition later.

4. Rewind the tape and verify the backup using Verify Partition.

5. Remove and write protect the tape.

6. Call the function **sys:edit-disk-label** to change the name and attributes of the FILE partition to be a load partition. (Refer to the *Explorer Input/Output Reference* manual for instructions on how to edit the disk label from the Lisp system.)

CAUTION: Be very careful when you are editing the disk label. If you write an incorrect disk label over the current disk label, you may not be able to access the contents of the disk again. You should consult the *Explorer Input/Output Reference* manual for instructions before you attempt to edit a disk label the first time.

Now, you are ready to restore the load partition to the new partition on disk. Proceed to paragraph 2.2.3, Restoring Over an Existing LOD and MCR Partition. You will restore your FILE partition later in the installation procedure. (See paragraph 2.3, Booting the New Band.)

Creating a LOD Partition

2.2.2 If no LOD bands are available to be overwritten with the new release software but there is room on your disk to create an additional LOD band, use the following procedure.

1. Call the function **sys:edit-disk-label** to add a new LOD band with the proper attributes (Load band, Explorer CPU type) and size (at least 30,000 blocks). Refer to the *Explorer Input/Output Reference* manual for instructions on how to edit the disk label from the Lisp system.

CAUTION: Be very careful when editing the disk label. If you write an incorrect disk label over the current disk label, you may not be able to access the contents of the disk again. You should consult the *Explorer Input/Output Reference* manual for instructions before you attempt to edit a disk label the first time.

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2. If you had to decrease the size of the PAGE band to add the LOD band, reboot before continuing.

3. Make a note of the name and unit number of the new LOD band.

Now, restore the LOD and MCR bands by following the procedure in paragraph 2.2.3, Restoring Over an Existing LOD and MCR Partition.

Restoring Over an Existing LOD and MCR Partition

2.2.3 The following procedure requires an Explorer system that has an available LOD partition and an available MCR partition.

1. If your Explorer system is not already booted on the load partition that is *not* the destination for the new load band, boot that load partition.
2. Press SYSTEM B to invoke the Backup System window.
3. Insert the Explorer System Bootable Tape.
4. Execute Prepare Tape in the Backup System window, and select `1/4 streaming`.
5. Click on Restore Bootable Tape. A pop-up window appears.
   a. If your Explorer system is an original (an Explorer I), select MCRA from the pop-up window, then enter the destination disk unit and the destination MCR partition name.
   b. If your Explorer system is an Explorer II, select MCRB from the pop-up window, then enter the destination disk unit and the destination MCR partition name.
6. Use Restore Bootable Tape to copy the LOD1 partition to the destination LOD band. Enter the name and disk unit of the destination partition.
7. Verify the MCR and the LOD partitions using Verify Bootable Tape.

NOTE: If the size of the MCR partition on the disk is greater than the size of the partition on the tape (300 blocks), the Verify Bootable Tape fails even if the data is correct.

Continue with paragraph 2.3, Booting the New Band.

Booting the New Band

2.3 After restoring is complete (regardless of which method you used), boot the new load and microcode partitions using Menuboot. (If necessary, refer to paragraph 3.3, Booting the Lisp System.)

If the system fails to boot successfully, reinstall the system software as described in paragraph 2.2, Restoring the Bands From Tape. Be certain to verify the partitions after installing them. If you are unable to boot the system a second time using Menuboot, contact your customer representative or TICARE Support Service for assistance.

If the new load and microcode partitions boot successfully and are working well, you can proceed to paragraph 2.4, Restoring the New Files From Tape, *unless* you had to reassign the contents of your FILE partition to create a LOD partition. If you had to reassign the contents of your FILE partition, perform the following steps:

1. Call the function **sys:edit-disk-label** to delete the LOD partition for the previous release, and create a FILE partition in its place. (Refer to the *Explorer Input/Output Reference* manual for instructions on how to edit the disk label from the Lisp system.)

CAUTION: Be very careful when editing the disk label. If you write an incorrect disk label over the current disk label, you may not be able to access the contents of the disk again. You should consult the *Explorer Input/Output Reference* manual for instructions before you first attempt to edit a disk label.

NOTE: The length of the FILE partition *must be* the same or larger than it was before the backup was made.

---

2. Restore the old FILE partition using the Backup Window command Restore Partition.

3. Call the function **fs:boot-file-system** to make the FILE partition accessible.

Continue with paragraph 2.4, Restoring the New Files From Tape.

Restoring the New Files From Tape

2.4 After you restore the LOD and MCR bands for Release 4.1 on your Explorer system, you next restore the system source files from tape to your system host. The Explorer System Source Tape includes system source files and font files.

Before you restore the new files from tape, you must first decide which machine will be your system host, and whether to keep the source files from Release 3. These decisions are interdependent.

Deciding About the System Host

2.4.1 The *system host* is the machine that is designated as having the system source files. On some networks, each Explorer is designated as its own system host; on other networks the host may be another Explorer system or even another type of machine, such as a Symbolics™ or a VAX™. A standalone machine is usually its own system host.

However, if you are on a network with other Explorer systems and you decide to keep the source files from Release 3, you must select one host as the system host for the Release 4.1 system and a different host as the system host for Release 3.

Deciding About Keeping Source Files From Release 3

2.4.2 Before restoring the new source files, you need to decide what you want to do with your files from Release 3—whether you want to retain them for future use or delete them. The major factors in this decision are:

- Whether you will be switching between this release and Release 3
- Whether your site will use Release 3 as well as Release 4.1
- Whether you ever use the system source files in your operations

If you use the Explorer system only to run an application program (such as an expert system), you may not need to retain the source files from Release 3.

CAUTION: If you have made changes to system source code in the source files, you will lose the changes if you install Release 4.1.

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VAX is a trademark of Digital Equipment Corporation.

What To Do Based on Your Decisions

2.4.3 Depending on whether you have a standalone Explorer system or one on a network, and depending on your decision about whether to keep the files from a previous release, you should follow one of the following procedures:

Possible Choice	Summary of Procedure	Where To Start
Delete the source files from the previous release.	1. Delete the source files from the previous release. 2. Restore the Release 4.1 files from tape.	Paragraph 2.4.4, Deleting Release 3 Source Files
Keep the source files from the previous release when your Explorer is on a network with other Explorer systems.	1. Delete the source files from the previous release from the machine acting as the Release 4.1 system host. 2. Restore the Release 4.1 files from tape. 3. Create a new logical host for the previous release.	Paragraph 2.4.4, Deleting Release 3 Source Files
Keep the source files from the previous release when your Explorer is a standalone system (two separate file bands).	1. Create a separate file band to hold the Release 4.1 source files. 2. Restore the Release 4.1 files from tape.	Paragraph 2.4.5, Creating a New File Band
Keep the source files from the previous release on the same FILE band as the new release.	1. Create a separate subdirectory for the Release 4.1 source, and then create a translations file with translations for the new release's source files. 2. Restore the Release 4.1 files from tape.	Paragraph 2.4.6, Using a Single File Band With Two Sets of Source Files

Go to the indicated paragraph and perform the procedure described there. Instructions follow each procedure indicating what steps you should perform next (depending on the possible choices).

Deleting Release 3 Source Files

2.4.4 To delete the source files from a system, you must completely delete some directories that have become obsolete or that have been renamed. You also delete the contents of other directories to make room for new source files. Remember that if you have made changes to the source files, these changes will be lost when you delete the files.

If you are deleting all Release 3 source files, complete the following procedures for each Explorer system at your site. If you want to keep the Release 3 source files available on the network, follow this procedure only on the Explorer system that will serve as the Release 4.1 system host.

If the Release 4.1 system host is *not* an Explorer system, you may prefer to delete the directories using utilities from that system host.

1. Execute the following function call while running Release 4.1:

   `(delete-directory "<system-host>:<dir-name>;")`

   to delete the following directories:

GLOSSARY	IP	TEST
HELP	MAIL	UNSUPPORTED
IO	PUBLIC	

2. Delete the contents of the following directories so space is available for the new files.

CHAOSNET	MAIL-DAEMON	PROFILE
COMPILER	MAIL-READER	SERIAL
DEBUG-TOOLS	MAILER	STREAMER-TAPE
DEMO	MAKE-SYSTEM	SUGGESTIONS
EH	MEMORY-MANAGEMENT	SYSLOG
ETHERNET	METER	TELNET
FILE	NAMESPACE	TI-EXAMPLES
FONT-EDITOR	NAMESPACE-EDITOR	TREE-EDITOR
FONTS (except for user-defined fonts)	NETWORK SUPPORT	UBIN
FRED	NVRAM	UCL
GED	PATCH	UCODE
GWIN	PATHNAME	VISIDOC
IMAGEN	PRINTER	VT100
INPUT-EDITOR		WINDOW
KERNEL		ZMACS

You can empty a directory (that is, delete all its files and subdirectories) in several ways:

- You can use Dired in Zmacs to mark files for deletion and then expunge the directory. This method is a good choice for the FONTS directory where you may have several files that you *do not* want to delete.
- An easier alternative to deleting all the files in a directory is to use the following Lisp function:

```
(delete-directory "<system-host>:<dir-name>;" :delete-self nil)
```

Proceed to paragraph 2.4.7, Restoring the Release 4.1 Source Files.

Creating a New File Band

2.4.5 If you are running on a standalone Explorer system and you want to run both Release 4.1 code *and* code from a previous release, you can create a separate file system for the code from each release.

The following procedure describes how to create a second file partition named FIL4 that contains the Release 4.1 system code.

1. Use the **sys:edit-disk-label** function to create another file partition with the following attributes:

Name	Partition Type	Length	CPU/OS Type
FIL4	File band	40,000	Explorer

CAUTION: Be very careful when editing the disk label. If you write an incorrect disk label over the current disk label, you may not be able to access the contents of the disk again. You should consult the *Explorer Input/Output Reference* manual before you attempt to edit a disk label the first time. Also, if you modify a PAGE band, be sure to reboot before you continue your session.

2. Using the Backup System window, copy any files you want to access while booted under Release 4.1.
3. Verify your backups.
4. Execute the following function to initialize the file band:

```
(fs:initialize-file-system <unit> "FIL4")
```

where *<unit>* is the number of the disk that contains the file band.

5. Execute the following function to activate the file band:

```
(fs:boot-file-system <unit> "FIL4")
```

where *<unit>* is the number of the disk that contains the file band.

6. Using the Backup System window, restore the files from tape. Because you booted the file system in the previous step, these files are automatically stored in the FIL4 file system.

When you want to use code from the previous release's file system, use the **fs:boot-file-system** function and specify `"FILE"` as the file system name.

To designate which file band is booted when your Explorer system boots, use the procedure described in the paragraph entitled Determining the Default File Partition in the *Explorer Input/Output Reference* manual.

You are now ready to restore the Release 4.1 source files. Continue with the procedure in paragraph 2.4.7, Restoring the Release 4.1 Source Files.

Using a Single File Band With Two Sets of Source Files

2.4.6 If you are running on a standalone Explorer system and you want to run both Release 4.1 code *and* code from a previous release, you can create a separate subdirectory for the Release 4.1 source code, and then establish connections to that source code through the SITE;SYS.TRANSLATIONS file.

NOTE: The Release 4.1 source files require an additional 40M bytes in your FILE band. Be sure that your FILE band has that amount of free space before attempting the procedures described in this paragraph.

The following steps outline the procedures required before you you can use a single file band with two sets of source files:

1. Create a directory called REL4 at the root level. You can do so by using the **fs:create-directory** function or the META-X Create Directory Zmacs command. (For information about this function, see the *Explorer Input/Output Reference* manual. For information about the Zmacs command, see the *Explorer Zmacs Editor Reference* manual.)

2. Create a SITE;SYS.TRANSLATIONS file and include the Lisp forms found in Table 2-1 on the following page. If you already have such a file, modify it so that it includes the code in Table 2-1 .

3. After you have saved the SITE;SYS.TRANSLATIONS file, execute the following form:

   ```
   (sys:set-sys-host 'lm)
   ```

   When the form completes its execution, the new file translations will be in effect. Proceed to paragraph 2.4.7, Restoring the Release 4.1 Source Files.

Table 2-1 **Forms for Inclusion in the Translations File (Multiple Source File/Single FILE Band)**

```
(if
   (= 4. (sys:get-system-version))
   (fs:add-logical-pathname-host
     "SYS"
     "<physical host name>"
     '(
       ("band-tools" "rel4.band-tools;")
       ("basic-file" "rel4.basic-file;")
       ("chaosnet" "rel4.chaosnet;")
       ("color-map-editor" "rel4.color-map-editor;")
       ("compiler" "rel4.compiler;")
       ("datalink" "rel4.datalink;")
       ("debug-tools" "rel4.debug-tools;")
       ("disk-io" "rel4.disk-io;")
       ("documenter" "rel4.documenter;")
       ("demo" "rel4.demo;")
       ("eh" "rel4.eh;")
       ("font-editor" "rel4.font-editor;")
       ("fonts" "rel4.fonts;")
       ("fred" "rel4.fred;")
       ("ged" "rel4.ged;")
       ("gwin" "rel4.gwin;")
       ("help" "rel4.help;")
       ("imagen" "rel4.imagen;")
       ("input-editor" "rel4.input-editor;")
       ("kernel" "rel4.kernel;")
       ("local-file" "rel4.local-file;")
       ("make-system" "rel4.make-system;")
       ("mail-daemon" "rel4.mail-daemon;")
       ("mail-reader" "rel4.mail-reader;")
       ("memory-management" "rel4.memory-management;")
       ("meter" "rel4.meter;")
       ("micronet" "rel4.micronet;")
       ("namespace-editor" "rel4.namespace-editor;")
       ("namespace" "rel4.namespace;")
       ("network-support" "rel4.network-support;")
       ("network-service" "rel4.network-service;")
       ("nvram" "rel4.nvram;")
       ("patch" "rel4.patch;")
       ("pathname" "rel4.pathname;")
       ("printer"   "rel4.printer;")
       ("printer-types" "rel4.printer-types;")
       ("profile" "rel4.profile;")
       ("public" "rel4.public;")
       ("rpc" "rel4.rpc;")
       ("serial" "rel4.serial;")
       ("streamer-tape" "rel4.streamer-tape;")
       ("suggestions" "rel4.suggestions;")
       ("syslog" "rel4.syslog;")
       ("telnet" "rel4.telnet;")
       ("test" "rel4.test;")
       ("tree-editor" "rel4.tree-editor;")
       ("tree-editor-starter-kit" "rel4.tree-editor.starter-kit;")
       ("ubin" "rel4.ubin;")
       ("ucl" "rel4.ucl;")
       ("ucode" "rel4.ucode;")
       ("visidoc" "rel4.visidoc;")
       ("vt100" "rel4.vt100;")
       ("window" "rel4.window;")
       ("zmacs" "rel4.zmacs;")
      )
   NIL)
    )
```

Restoring the Release 4.1 Source Files

2.4.7 You are now ready to restore the Release 4.1 source files from tape.

If you are on a standalone Explorer system and you plan to keep the Release 3 source files on a separate file system, be sure you have the FIL4 file system booted before restoring the Release 4.1 source files.

If your Explorer system is on a network and you plan to keep the Release 3 source files, be sure that the Explorer system onto which you restore the Release 4.1 files *does not* contain Release 3 source files.

Perform the following steps to restore the Release 4.1 source files from tape:

NOTE: The Release 4.1 system source files occupy about 40,000 blocks of your file system. If this exceeds the capacity of your disk, you can either not restore the PUBLIC directory or you can delete some auxiliary files in the HELP, TEST, and PUBLIC directories. Before you delete any files, however, you should examine such files and make a back up of them.

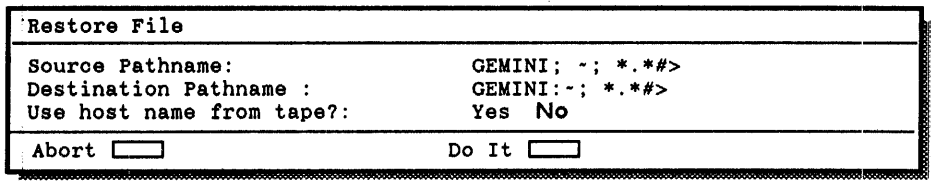
---

1. If you are not already logged in, use the **login** function to log in to the system. (If necessary, see the *Introduction to the Explorer System* manual for information about logging in.)
2. Disable mail during the restore operation by executing the following form:

   ```
   (mail:reset-mail-daemon nil)
   ```

3. Press SYSTEM B to get to the Backup System window.
4. Insert the Explorer System Source Tape.
5. Execute Prepare Tape in the Backup System window, and select `1/4 inch Cartridge Tape`.
6. Click on the Restore File item in the Backup Command menu.

   The Restore File command displays a menu similar to the following:



7. Specify the system host in the destination pathname, and press RETURN. This host name should be either the physical name or logical name of the machine that will serve as the system host at your site (for example, `SYS:~; *.**` or `LM: ~; *.**` — the `**` allows you to keep the same version number as found on the tape.
8. Either press END or click on the Do It box to execute the Restore File command. This action will restore a single file called INSTALL.LISP to your SITE directory.

9. Press SYSTEM L to return to the Lisp Listener.

10. Turn off MORE processing by pressing TERM 0 M.

11. Load the INSTALL.LISP file by executing the following form:

```
(load "sys:site;install.lisp")
```

12. Without removing or rewinding the tape, execute the following form:

```
(install-system-source)
```

A series of prompts (similar to the following) now appears asking which directories you want to restore:

```
Install microcode files on sys-host <physical-host> (Y or N) Yes
Install system source and patch files on sys-host <physical-host> (Y or N) Yes
Install DECnet patch files on DECnet host <physical-host> (Y or N) Yes
Install NLMENU patch files on NLMENU host <physical-host> (Y or N) Yes
Install TI-PROLOG patch files on TI-PROLOG host <physical-host> (Y or N) Yes
Install BUSNET patch files on BUSNET host <physical-host> (Y or N) Yes
Install NFS patch files on NFS host <physical-host> (Y or N) Yes
Install public files on sys-host <physical-host> (Y or N) Yes
```

13. Answer Yes for the files you want to restore. The microcode files should be restored to your system host in order for you to report crash records. The new load distribution tape files should be restored to your system host in order for you to load a distribution tape. The system source and patch files permit you to view the changes made to the system. Select only those toolkit patches (DECnet, NLMENU, and so on) for toolkits that you have on your system. The public files are optional. Restoring source files takes approximately 3.5 hours and, once started, can run unattended.

14. Rewind the tape and remove it from the drive.

15. Enable mail by executing the following form:

```
(mail:reset-mail-daemon t)
```

If your Explorer is on a network and you plan to keep the Release 3 source files, you must now create a logical host for your Release 4.1 source files. Continue with the procedure in paragraph 2.4.8, Creating a New Logical Host.

Creating a New Logical Host

2.4.8 If you are on a network and you want to keep the Release 3 source files, you must create a logical host for your new Release 4.1 source files. Perform the following steps:

1. While running Release 4.1 on a Release 4.1 host, execute the following form to create a new logical host:

```
(net:set-logical-pathname-host "SYS4"
    :physical-host "<physical-host-name>"
    :local-only nil)
```

   Other options to the **net:set-logical-pathname-host** are listed in the *Explorer Networking Reference* manual and can, if you prefer, be listed in this form.

2. Enter the namespace editor. (The namespace editor is described in detail in the *Explorer Tools and Utilities* manual.)

3. Show the SITE object.

4. Change the sys-host attribute to read SYS4.

5. Write the attribute globally.

6. Invoke the Lisp Listener by pressing SYSTEM L.

   Hosts running Release 4.1 will not see the change until they reboot or until they execute the form:

```
(sys:set-sys-host "sys4")
```

Making a Host a Visidoc Server

2.4.9 Follow these steps to designate a host as a Visidoc server. (Note you can do this later rather than during installation.)

1. Make sure your file system has 9.5 megabytes of free space for the index information and for the basic set of manual data files.

2. Create a top-level directory called NAME-SERVICE if the host does not already have one. Use the META-X Create Directory command in Zmacs to do this. (Refer to the *Explorer Zmacs Editor Reference* manual if you need information on creating directories).

3. Prepare the Visidoc Manuals Files tape for installation, as follows:

   a. Ensure that the tape is write-protected.

   b. Put the tape into your tape drive and select the Backup System window by pressing SYSTEM B.

   c. Click on the Prepare Tape command, and then select `1/4 inch Cartridge Tape`.

d. After the Prepare Tape command completes, click on the Load Tape command. The tape is now positioned at the start of the VISIDOC-SERVER-REL-4-1.XLD file.

e. Turn off MORE processing by pressing TERM 0 M.

4. Restore the file VISIDOC-SERVER-REL-4-1.XLD to the NAME-SERVICE directory by using the Restore File command. Answer the prompts as follows:

NOTE: Do not change the name of the VISIDOC-SERVER-REL-4-1.XLD file. This file contains the namespace index information that the server needs to locate names, files, and other information when a client asks for Visidoc information.

Prompt	Value
Source pathname	LM: NAME-SERVICE; VISIDOC-SERVER-REL-4-1.XLD
Destination pathname	LM: NAME-SERVICE; VISIDOC-SERVER-REL-4-1.XLD
Use host name from tape?	No

This step takes about 2 to 5 minutes.

5. If you have restored the Release 3.2 Visidoc manual files, skip to step 6; otherwise, restore the MANUALS directory from the tape. These are the data files that the Visidoc viewer will access to display. You can restore these manual data files to some directory other than the one specified. Select the Restore Directory command and answer the prompts as follows:

Prompt	Value
Source pathname	LM:MANUALS;*.*
Destination pathname	LM:MANUALS;*.*
Use host name from tape?	No
Query?	No
Create directories automatically?	Yes

This step takes about 30 minutes.

6. Rewind the tape.

7. Use the Verify File command to verify the VISIDOC-SERVER-REL-4-1.XLD file, which you restored from tape. Answer the prompts as follows:

Prompt	Value
Source pathname	LM: NAME-SERVICE; VISIDOC-SERVER-REL-4-1.XLD
Destination pathname	LM: NAME-SERVICE; VISIDOC-SERVER-REL-4-1.XLD
Use host name from tape?	No

   This step takes about 2 to 5 minutes.

8. If you did *not* restore the MANUALS directory (see step 5), skip to step 9; otherwise, use the Verify Directory command to verify the MANUALS directory, which you restored from tape. Answer the prompts as follows:

Prompt	Value
Source pathname	LM:MANUALS;*.*
Destination pathname	LM:MANUALS;*.*
Use host name from tape?	No

   This step takes about 20 to 25 minutes.

9. Rewind the tape.

10. Make a system on the Visidoc server as follows:

```
(make-system 'visidoc-server :noconfirm)
```

    If you need more information on **make-system**, refer to the *Explorer Lisp Reference* manual.

    This step takes about 30 seconds.

11. Enter the following form to initialize the Visidoc server:

```
(dox:initialize-visidoc-server)
```

    The VISIDOC-SERVER namespace file is loaded at this time. This large file takes about 8 minutes to load.

12. After the namespace file is loaded, you are prompted for the directories that contain the manual data files. You can use the defaults only if you restored the MANUALS directory and subdirectories from tape to the same directory names on the host. Otherwise, provide the names of any new directories.

    If you change the names of the directories, the Visidoc server namespace with the new information is saved to disk. This save occurs in the background and takes about eight minutes. The save also requires an additional 1,250K bytes of space on your file system. You may then

delete and expunge the old version of the file. If you did not change the names of the directories, the namespace is not saved.

NOTE: It is strongly recommended that the Visidoc server host also be the file server host for the manual data files. This decreases network activity and namespace access delays required to contact multiple hosts. However, you may specify the logical pathname of any known host when you are prompted for the directory names that contain the manual data files. (Be sure that the manual data files from the directories on tape reside on the specified host and directories.)

---

13. After the initialization process is complete and the new set of Visidoc server index information has been saved, save the environment to disk by entering the form `(disk-save "LODn")`. In this example, `LODn` represents the name of the load partition to which you are saving. If you do not perform a **disk-save**, you will need to perform the **make-system** of the Visidoc server and execute the **dox:boot-visidoc-server** function after every cold boot.

In most cases, you do not need to do anything to the Visidoc server's namespace of index information. However, should you need to make changes subsequent to installation, refer to the Visidoc section in the *Explorer Tools and Utilities* manual.

Installing GDOS

2.5 Installing GDOS onto disk is an optional step. Installing the diagnostics partitions GDOS, DIAG, and EXPT uses about 2500 disk blocks or approximately 2.5 megabytes. If a tape drive is available, you can always load and run diagnostics directly from tape. However, a disk-resident version loads and runs faster.

1. Create the GDOS, DIAG, and EXPT partitions by editing the disk label. (Refer to the *Explorer Input/Output Reference* manual for instructions on how to edit the disk label from the Lisp system.)

   The following table lists the required lengths, attributes, and properties for these partitions.

Name	Length	Partition Type	Property	CPU/OS Type
GDOS	300	Microcode	Diagnostic	Explorer
DIAG	2048	File band	Diagnostic	Generic
EXPT	150	Microcode	Diagnostic	Explorer

CAUTION: If you use disk area from the PAGE partition, reboot before proceeding.

---

2. Press SYSTEM B to invoke the Backup System window.

3. Insert the Explorer Diagnostics Bootable Tape.

4. Execute Prepare Tape in the Backup System window, and select `1/4 inch Cartridge Tape`.

5. Click on Restore Bootable Tape.

   A menu listing the BOOT, GDOS, DIAG, and EXPT partitions appears.

6. Select GDOS.

   Another menu appears asking for the destination disk unit and the destination partition name.

7. Enter the destination disk unit and the destination partition name for the GDOS partition.

   The system restores GDOS from tape to disk. This process requires less than five minutes. After GDOS is restored, the menu listing the BOOT, GDOS, DIAG, and EXPT partitions reappears.

8. Select DIAG.

   A menu appears asking for the destination disk unit and the destination partition name.

9. Enter the destination disk unit and the destination partition name for the DIAG partition.

   The system restores DIAG from tape to disk. This process requires less than five minutes. After DIAG is restored, the menu listing the BOOT, GDOS, DIAG, and EXPT partitions reappears.

10. Select EXPT.

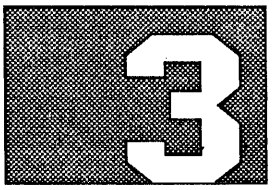
    A menu appears asking for the destination disk unit and the destination partition name.

11. Enter the destination disk unit and the destination partition name for the EXPT partition.

    The system restores EXPT from tape to disk. This process requires less than five minutes.

12. Verify the partitions using Verify Bootable Tape.

GETTING STARTED ON A NEW EXPLORER



Introduction

3.1 If you have a new Explorer, first unpack and install the system as described in the *Explorer 7-Slot System Installation* manual. Next, power up and boot the system as described in the following paragraphs.

Powering Up the Explorer

3.2 Once the Explorer system hardware has been installed, perform the following steps to apply power to the system:

1. Press the on/off button on the back of each mass storage enclosure to the on position.
2. Press the on/off button on the front of the monitor to the on position.
3. Press the on/off button on the front of the system enclosure to the on position.
4. Turn on any additional equipment such as printers.

When you power up the Explorer system, the system is reset and the booting process begins.

The power-on procedure begins the booting process by running a series of self-tests to verify that the system hardware is working properly. If any slots indicate a failure, check for a hardware problem.

When the self-tests complete, the Explorer system prompts you to select one of several possible booting methods. The following prompt appears:

```
D=Default load, M=Menu load, R=Retest, E=Extended tests:
```

If you do not press a key within 15 seconds, the Explorer attempts to boot the default load. The default load band has been correctly set at the factory; therefore, you can wait for it to be loaded, or you can use the menu boot procedure described in paragraph 3.3, Booting the Lisp System.

Booting the Lisp System

3.3 The following procedure describes how to use the menu boot utility to select the disk and the new Lisp load and microcode partitions for booting.

1. Boot the system by simultaneously pressing the following five keys: META-CTRL-META-CTRL-ABORT.

2. Press M when the following prompt appears:

```
D=Default load, M=Menu load, R=Retest, E=Extended tests:
```

   If you do not press a key within 15 seconds, the Explorer attempts to boot the default load.

3. Select the disk that contains the Lisp system by pressing the letter corresponding to the desired command.

   Then, the following prompt appears:

```
L=Lisp Load, M=Multi-unit Load, D=Diagnostic Load, P=Print Device
Label, C = Configuration Boot:
```

4. Press L.

   At this point, another series of prompts appears that ask you to select specific LOD and MCR partitions.

5. Select the current release LOD partition, and then select its associated MCR partition.

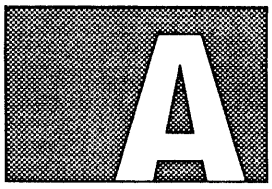
   As soon as you specify the partitions to be booted, the Explorer system continues the booting process. Two events signal when the process is complete:

   - The system displays the initial screen, which contains the name of your system, various software available on the system, and other relevant information.

   - The word Keyboard appears at the bottom center of your screen in the status line.

Refer to the *Introduction to the Explorer System* manual for general information about your Explorer system.

THE BOOT PROCESS



The events that occur when the Explorer boots under Release 3 and later software have changed slightly from previous releases. Knowing the sequence of boot events is helpful when you are installing the Release 4.1 software on your Explorer and updating the network configuration. The sequence of events in the initial default boot is as follows.

When you first power up or cold boot the Explorer, a program called the System Test Boot Master (STBM) runs a series of self-tests on the hardware. When the self-tests complete successfully, you are prompted to specify what kind of boot sequence to perform. If no response is entered in 15 seconds or if you enter a D (for Default), the system performs a default boot.

The STBM next looks in nonvolatile-RAM for the unit number of the default load device. When the default load device is known, the system then looks for a default microcode partition on that device and loads it into the processor memory. On Release 3 and later systems, the boot primitive (called PRIM on original Explorer systems and BOOT on Explorer II systems) is marked as the default microcode partition, and it is loaded into the processor memory to control the remainder of the boot process.

In the next stage of the boot process, the boot primitive looks for a configuration band on the default disk for the information that is used in the boot process. The configuration band may contain information about how to boot certain boards or peripheral devices called bootable slave devices. (If your system contains a bootable slave device, refer to the *Explorer Slave Device Boot Software Release Information,* TI part number 2546910-0001, for more details.) The configuration band also contains the information about how to boot up a single processor or multiple processors in the same chassis (for example, the Explorer LX processor). On Release 3 and later systems, the configuration band contains the information about which MCR and LOD band should be loaded during a default load.

The boot primitive performs the operations dictated by the configuration band, such as downloading devices and booting the default MCR and LOD bands. A message appears on the screen telling you which configuration band is being accessed during the boot process. A typical message appears as follows:

```
-> Loading Configuration Partition from Slot 2 Unit 00 Partition CFG1
```

After loading the system microcode and load bands, the TI logo is displayed. As part of the system initializations, the file band is booted and the system looks for any namespace configurations to load by looking to a particular file on the local file system. A new Explorer does not have any namespaces to load, nor do installed Explorers running Release 2 or earlier of the system software (unless you have copied a namespace explicitly to that system).

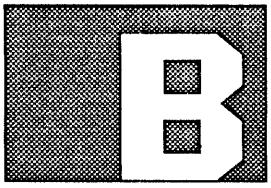
Regardless of whether any namespaces were loaded or not, the system tries to broadcast a who-am-i message to the network. The who-am-i message contains the host's name (from the disk-pack you booted) and the host's address.

The rest of the initial boot process depends upon whether any namespaces exist that recognize your machine as follows:

- On an installed system, with a designated namespace server on the network, a connection is made to the server; the boot process continues with the rest of the system initializations.
- On a system that is not recognized by a namespace server and that does not include a namespace of its own, the system displays the network initialization menu that prompts the user for more information.

Finally, the initial boot process is complete and the herald is displayed.

CREATING A LISP-BOOTABLE ENVIRONMENT ON A REPLACEMENT DISK



Introduction

B.1 In most cases, adding a new disk is simply a matter of installing the additional disk on your system. However, in some cases, you must restore all your software onto the disk. For example, you would need to restore software on replacement disks or on the disks of an Explorer system that does not contain a working, bootable Lisp system.

General Diagnostics Operating System (GDOS) is a non-Lisp system that supports diagnostics and various disk utility functions. GDOS includes the unique abilities of formatting (initializing) a disk and building a disk from scratch so that it contains a label and software that can support the Lisp system. GDOS can be booted from tape, whereas the Lisp system cannot. The Lisp System Bootable Tape is in a bootable format, but the Lisp system cannot be booted from tape.

If you already have a bootable Lisp system, you should use the procedure in Section 2, Updating to Explorer Release 4.1 Software.

NOTE: For more information on GDOS, refer to *Explorer Diagnostics Release and Installation Information*, part number 2249986-9901.

The following provides a brief overview of the procedures you will use to build with GDOS:

1. Examining your disk(s).
2. Booting GDOS.
3. Initializing your disk(s) if needed.
4. Installing the Lisp system load, microcode, and boot partitions using GDOS.

Examining Your Disk(s)

B.2 Before booting GDOS, determine the unit number(s) of your disk(s) and see if your disk(s) need to be initialized. Generally, an initialized disk will have either the Menuboot or the GDOS partition on it. Attempt to load Menuboot or GDOS from each disk as described in the following procedure. If the attempt succeeds, you should *not* initialize your disk; it if fails, your disk should be initialized.

1. Boot the system by simultaneously pressing the following five keys: META-CTRL-META-CTRL-ABORT.

2. Either press M (for Menuboot), or press G (for GDOS; G is a hidden prompt).

   A list of devices appears under the title AVAILABLE LOAD DEVICES.

3. Note the number in the right column. This is the device's logical unit number.

4. Select each disk in turn by pressing the corresponding letter in the left column.

   - If the disk displays a menu, it is already initialized. Proceed to paragraph B.5, Restoring Partitions Using GDOS.

   - If the message `Waiting ...` appears, the device does not contain these partitions and is probably not initialized. Continue with the procedures in paragraph B.3, Booting GDOS, and paragraph B.4, Initializing Your Disk(s).

Booting GDOS

B.3 In the following procedure, you will use Menuboot to boot GDOS from the new release tape labeled Explorer Diagnostics Bootable Tape.

1. Insert the tape into a tape drive on the system.

2. Reboot the system by simultaneously pressing the following five keys: META-CTRL-META-CTRL-ABORT.

   The following prompt appears:

   ```
   D=Default load, M=Menu load, R=Retest, E=Extended test
   ```

3. Press G to boot GDOS. (G is a hidden prompt.)

   A list of bootable devices is displayed.

4. Select the tape drive as the load device.

   The system restores GDOS from tape. This step takes about 10 minutes.

In the future, if the new release of GDOS has been restored to disk, boot GDOS from disk to speed its loading. See paragraph 2.5, Installing GDOS, for instructions on how to install GDOS on your disk.

Initializing Your Disk(s)

B.4 If your disk is a new replacement and has no label on it, you need to initialize it. This is the *only* condition that requires initialization, unless you are advised otherwise by your customer representative. To initialize your disk(s), perform the following procedure:

CAUTION: This procedure will destroy all partitions and files on the disk. If any important partitions or files exist, back them up before proceeding.

After GDOS is booted, a menu appears on the screen. From that menu, perform these steps:

1. Use the arrow keys to position the cursor on the entry titled `Enter Menu for Extended-Interactive Diagnostic Mode`, then press RETURN.

2. Use the arrow keys to position the cursor on the entry titled `Load Diagnostic By Menu or Name and Show Its Main Menu`, and press RETURN.

   Another menu appears.

3. Position the cursor on the entry titled `Disk Surface Analysis, Format/Verify Utility`, and press RETURN.

   This utility takes a few minutes to load. When it is loaded, the Disk Media Utilities Main menu appears with the cursor on the entry titled `Enter Format/Verify Utility`.

4. Press RETURN to expand the entry.

   Lines appear showing the slot number of either the NUPI controller or the mass storage controller (MSC), and the logical unit number of the default disk to be reformatted.

5. Move the cursor down one line, and enter the slot number of either the NUPI controller or the MSC. (It is usually 2 in a standard Explorer, which is the default value.)

6. Move the cursor down one line, and enter the disk logical unit number (which you noted while examining the disks), and press RETURN.

   A menu titled `Select Disk Controller Type With Arrow and TAB Keys` appears on the screen.

7. Identify which type of disk you have by selecting a value for the entry titled `Select SCSI Formatter Type and Press RETURN`.

   The TAB key toggles the values on the line titled `Select SCSI Formatter Type and Press RETURN`. Toggle to the value representing your disk (either Max-0140 for an Adaptec disk, or CDC-0182 for a TI-ESDI disk).

8. If a prompt appears asking `Do you want to display format parameters menu? (Default=n)`, enter `n` and press RETURN.

   The Format/Verify Utility expanded menu appears, as does a bad track map.

9. Position the cursor on the subentry titled `Format and Verify the Disk`, and press RETURN.

   The following prompt appears:

   ```
   Do you really want to format this disk? (Press y or n and RETURN.)
   ```

10. Enter `y` and press RETURN.

    The format utility begins to reformat your disk. Several messages appear on the screen during the reformatting process.

11. When the process is complete, the highlight reappears on the subentry titled `Format and Verify the Disk`. At that point, press F2 to return to the Disk Media Utilities Main menu.

12. When that menu appears, position the cursor on the entry titled `Return to GDOS`, and press RETURN.

    This action returns you to the GDOS Extended-Interactive Diagnostic Mode.

You are now ready to begin restoring partitions, as explained in the next paragraph.

Restoring Partitions Using GDOS

B.5 The following procedure describes how to restore partitions from a bootable tape.

1. If you just completed the procedure in paragraph B.4, Initializing Your Disk(s), GDOS is booted. Skip to step 3.

2. If you just completed the procedure in paragraph B.2, Examining Your Disk(s), you booted either under Menuboot or under GDOS.

   - If you booted under GDOS, skip to step 3.
   - If you booted under Menuboot, perform the procedure in paragraph B.3, Booting GDOS, and then continue with step 3.

3. After GDOS is booted (booting from tape takes about 2 or 3 minutes), a menu appears on the screen. Use the arrow keys to position the cursor on the entry titled `Enter Menu for Extended-Interactive Diagnostic Mode`, then press the ENTER key.

4. If you do not know which slot contains the NUPI or the mass storage controller (MSC) board, position the cursor on Display System Information, and press the ENTER key.

5. Write down the slot number of the board labeled either NPI or MSC. (The label SLOT NUMBER precedes the label BOARD TYPE.)

5. Write down the slot number of the board labeled either NPI or MSC. (The label SLOT NUMBER precedes the label BOARD TYPE.)

6. Use the arrow keys to position the cursor on the entry titled `Enter Backup/Restore and Edit Label Utility Menu`, and press the ENTER key.

   The menu for that utility appears.

7. Position the cursor on the entry titled `Restore Bootable (Labelled) Tape`, then press RETURN.

   The entry expands, displaying several subentries.

8. Position the cursor on the field next to `Tape Slot Number`, then enter the slot number. (It is usually 2 for a 7-slot Explorer system enclosure.)

9. Move the cursor down one line, and enter the tape slot logical unit number.

10. Move the cursor down one line, and enter the disk slot number unit number.

11. Move the cursor down one line, and enter the disk logical unit number.

12. If you want to selectively restore partitions (that is, you want to restore only some of the partitions on the tape), press RETURN and continue with the next step.

    If you want to restore all the partitions on the disk without confirming each restore operation, move the cursor to the last line and toggle to `No`, then press RETURN. Continue with the next step.

13. Insert the bootable tape you wish to restore. In this case, use the Explorer System Bootable Tape.

    A GDOS utility message appears.

14. Press the space bar after the tape is ready.

15. Position the cursor on `Restore Tape to Disk Partition`, and press ENTER to restore the tape contents to disk partitions.

    If you elected to restore all the partitions without confirming, GDOS restores all the partitions automatically. If you elected to confirm each restore operation, GDOS prompts you to confirm each restore operation.

    When all the selected partitions have been restored to the disk, the following message appears:

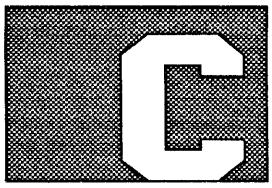
    ```
    Tape and disk utility successfully completed.
    ```

16. Use the GDOS edit label facility to specify the default microcode:

    - For an original Explorer, specify the PRIM partition.
    - For Explorer II, specify the BOOT partition.

Now, if you want the system source files on this disk, follow the procedure in Section 2, Updating to Explorer Release 4.1 Software.

UPGRADING AN ORIGINAL EXPLORER TO AN EXPLORER II



Requirements

C.1 Before you can upgrade an original Explorer system to include an Explorer II processor:

- The Explorer system must have Release 3.1 or later system software installed on the system.
- You must have the Explorer II processor board, which you will install.
- You must have the *Explorer II Processor and Auxiliary Processor Options General Description* manual, which describes how to install the processor board.

Upgrading the System

C.2 After you have gathered the necessary materials and Release 3.1 (or later) is installed on the machine, you are ready to upgrade your system to an Explorer II system.

In general, to upgrade a system, you first create partitions on the system default disk (if the partitions are not already there) and then install the boot and microcode partitions. Next, you install, test, and boot the Explorer II processor board. Finally, you set the defaults as needed for your system.

Each of these steps is described in detail in the following paragraphs.

Creating Needed Partitions

C.2.1 Before you install the Explorer II processor board, you should verify that the correct partitions are available for the board to access. Perform the following steps.

1. If needed, power up the Explorer and boot Release 3.1 (or later).
2. Execute the following function:

   ```
   (print-disk-label)
   ```

   This function displays the disk label for the default disk.
3. Examine the display for the partitions listed.

Name	Partition Type	Length	CPU/User Type
* BOOT	Microcode	64	Explorer II
MCRB	Microcode	300	Explorer II
* CFG1	Configuration	17	Generic

- If the disk label shows all of these partitions, each with its attributes correct, skip to paragraph C.2.2, Restoring Partitions.
- If the disk label does *not* show all of the above partitions, or if some of the attributes are incorrect, continue with the following steps.

4. If the MCRB and BOOT partitions for Explorer II do not exist, use the **sys:edit-disk-label** function to create room for them. The following steps outline this procedure, but you should refer to the *Explorer Input/Output Reference* manual for general instructions on how to edit the disk label from the Lisp system.

CAUTION: Be very careful when editing the disk label. If you write an incorrect disk label over the current disk label, you may not be able to access the contents of the disk again. You should consult the *Explorer Input/Output Reference* manual for instructions before you attempt to edit a disk label the first time.

---

5. Use the following keystrokes to assign the correct attributes to the partitions.

Action	Steps to Follow
To change the CPU/OS Type	a. Press CTRL-C. b. Type the number by the desired attribute and press RETURN.
To set the partition type	a. Press CTRL-A. b. Type the number by the desired partition type and press RETURN.
To mark BOOT and CFG1 as label defaults (having an asterisk the partition name)	a. Press CTRL-M. b. Type 6 and press RETURN.

NOTE:

Do not mark MCRB as the disk label default. You will mark this partition as the system load default after you have installed the Explorer II processor.

---

6. When the partitions have the same size and attributes as shown in the table in step 3, press CTRL-W to write the changed disk label to disk.

   The system asks whether you want to write this label to disk.

7. Type `Yes` and press RETURN.

   The system may ask `Do you want to update the configuration band?`

8. Type `N` for No because you are not changing the system load default at this time.

Restoring Partitions

C.2.2 If you created any partitions in paragraph C.2.1, you should now restore the contents of the partitions from the system bootable-format tape to the partitions.

NOTE: If you are unsure whether the contents of the BOOT and MCRB partitions are identical to the partitions of the same name on the system bootable-format tape, restore those partitions from tape. If you are unsure of the contents of the CFG1 partition (that is, if you did *not* create it in paragraph C.2.1), *do not* restore the contents of the tape over the existing CFG1 partition.

1. Press SYSTEM B to invoke the Backup System window.
2. Insert the Explorer System Bootable Tape.
3. Execute the Prepare Tape command in the Backup System window, and select `1/4 cartridge tape`.
4. Click on the Restore Bootable Tape command, select the Explorer II partition named BOOT from the next pop-up window, then enter the destination disk unit and the destination partition name.
5. Verify the partition using the Verify Bootable Tape command.
6. Click on the Restore Bootable Tape command, select the partition named MCRB from the next pop-up window, then enter the destination disk unit and the destination partition name.
7. Verify the partition using the Verify Bootable Tape command.

Installing the Processor Board

C.2.3 After you have created the necessary partitions, you are ready to install the processor board.

1. Execute the following function:

   ```
   (sys:shutdown)
   ```

   This function shuts down the file system and severs network connections so that other systems on the network are not left connected to a non-functioning system.

2. Refer to the *Explorer II Processor and Auxiliary Processor Options General Description* manual and follow its instructions for installing the processor board.

3. When you boot the Lisp system to test the installation, be sure to select a Release 4.1 load band and the Explorer II microcode partition you installed.

Setting Defaults

C.2.4 After you have successfully booted the new processor, you should set the default microcode and load partitions used for booting the system.

1. Execute the following forms:

```
(sys:set-current-microload "MCRm")
(sys:set-current-band "LODn")
```

These functions set the default microcode and load partitions for booting to be MCR*m* and LOD*n*, your Explorer II microcode and load partitions. Using these functions lets you change the defaults in your configuration partition (CFG1) to enable default booting.

2. If you have bootable slave devices such as the MSC controller, verify that these devices are in your current configuration and that they are booting properly. Refer to the *Explorer Slave Device Bootable Software Installation and Release* manual (part number 2546910-0001) for details.

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