DNOS Object Installation

Part No. 2270514-9701 *D
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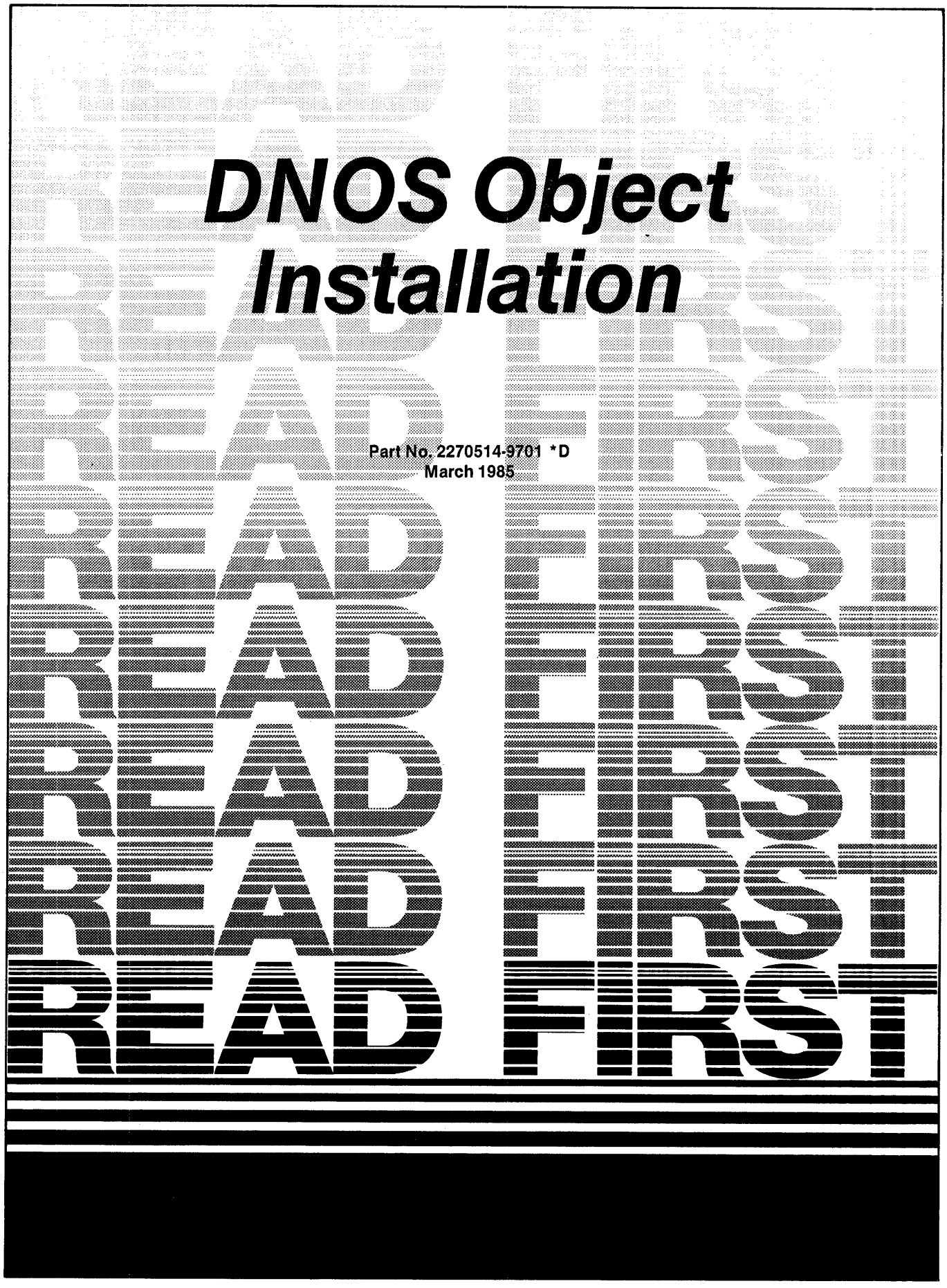

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READ THIS DOCUMENT BEFORE ATTEMPTING TO USE THIS OBJECT KIT. IT DESCRIBES THE DNOS OPERATING SYSTEM OBJECT INSTALLATION MEDIA. THE DISK MEDIUM IS PART NUMBER 2276403-1601. TAPE MEDIA INCLUDES PART NUMBERS 2276403-1301 THROUGH 2276403-1304 FOR MT1600 TAPES AND CARTRIDGE TAPES. THE DISKETTE MEDIA INCLUDES PART NUMBERS 2276403-1606 AND 2276403-1624 THROUGH 2276403-1632. YOU SHOULD ALSO READ THE PRODUCT RELEASE INFORMATION, PART NUMBER 2234366-9901, PRIOR TO INSTALLATION.

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Section 1

Introduction

1.1 GENERAL INFORMATION

This document contains instructions for installing the object of the DNOS operating system. As a precaution, make a copy of the object media before proceeding with the installation. For copy procedures, refer to the DNOS Operations Guide, TI part number 2270502-9701.

DNOS is a general-purpose, multitasking operating system designed to operate with the Model 990/10, 990/10A or 990/12 computers and the Business System 300, 600, and 800 series of computers. DNOS includes a sophisticated file management package that provides support for key-indexed, relative record, and sequential files. DNOS is a multiterminal system that allows several users to appear to have exclusive control of the system. Job-level and task-level operations enable comprehensive and efficient use of the system resources.

DNOS is an international operating system designed to meet the commercial requirements of the United States, most European countries, South America, and Japan. DNOS supports a wide range of international data terminals that permit users to enter, view, and process data in their own languages. This object kit includes system message files and command procedure batch streams that you can edit into a language other than English.

For further details about the operating system, refer to the DNOS Concepts and Facilities Manual, TI part number 2270501-9701.

For a list of current known problems, refer to the DNOS 1.3 Release and Update Information, TI part number 2234366-9901.

Execute the System Command Interpreter (SCI) commands in this document by entering the commands exactly as they are shown. If there is no initial value displayed on the screen or specified in this manual for a prompt, press Return to use the default value. For a discussion of the SCI commands and their responses, refer to the DNOS System Command Interpreter (SCI) Reference Manual, TI part number 2270503-9701.

The prompts displayed at your terminal during execution of the Disk Build and Tape Build utilities may be lined up in TTY (Teletypewriter equipment) mode at the left margin of your terminal, rather than indented in VDT (Video Display Terminal) mode as they are in this manual. The manual format was chosen for readability; the software format was chosen for coding efficiency.

Throughout this guide, references to keys on terminal keyboards are made by generic key name. A table of generic key names and their terminal equivalents is found in each of the DNOS user manuals. Consult Appendix A of any of those manuals for which key to use in cases where the generic name is not sufficient.

1.2 MEDIA DEFINITION

Product shipments are made in three formats:

* Disk -- A DS50, DS80, DS200, DS300, or CD1400 disk pack
* Diskette -- A set of 10 double-sided, double-density diskettes containing the object kit
* Tape -- Four 1600 bit-per-inch (bpi) magnetic tapes or cartridge tapes (CT) containing the object kit

1.3 INSTALLATION PROCEDURE

The DNOS object kit contains all files necessary to form a DNOS system that is ready for initial program load (IPL). The object kit includes the following major components, along with several other files and directories:

* .S$SHIP -- System kernel program file
* .S$UTIL -- Utility program file
* .S$CMDS -- SCI command procedure library
* .S$USER -- User ID library
* .S$LANG -- Assembler and Link Editor program file
* .S$SECURE -- File security tasks
* .S$MSG -- Basic error message library
* .S$EXPMSG -- Expanded error message library

The first IPL creates the user ID library and defines SYSTEM and SYSMGR as available user IDs for the first log-on procedure. If you are going to use the file security option on your system, read the DNOS Security Manager's Guide, TI part number 2308954-9701, before building your system disk. If you plan to use security, you need to plan your system disk security before the first users log on to the new system.

The object kit also contains the object libraries needed for custom system generations. If the object kit is shipped on magnetic tapes or double-sided, double-density diskettes, it includes a program that allows you to build a DNOS system onto your system disk.

1.4 HARDWARE CONFIGURATION

The DNOS object kit supports the following base hardware configuration in the .S$SHIP system:

TYPE(number)	ADDRESS	INTERRUPT	
Disk (3)	TILINE >F800	13	
Tape (1)	TILINE >F880	9	
911 VDT	CRU >0100	10	
931 or 940 VDT	CRU >1700 (S300, CI402, or /10A)	8	9600 Baud
931 or 940 VDT (channel 0)	TILINE >F980 (CI403 or CI404)	11	9600 Baud

The object kit supports three disk drives, as noted in the table. Any additional devices you need to support can be added by a system generation or a dynamic system configuration session. Refer to the DNOS System Generation Reference Manual, TI part number 2270511-9701, for details.

The base system needed to build your system disk varies, depending on how your object kit is shipped to you. Section 2 describes the configuration required for the object installation when you use disk, tapes, or diskettes. If your hardware configuration does not meet the configuration required for installation, you must reconfigure it before installing DNOS.

If you are building your system onto an S300 system, that system must have at least 512K bytes (where K equals 1024) of memory and a system disk of at least 16 megabytes in capacity.

NOTE

A right angle bracket (>) before a number indicates a hexadecimal value.

Section 2

Installing the Object

2.1 INTRODUCTION

The following paragraphs describe the DNOS object installation procedures for disk, tape, and diskette formats. Initial program load (IPL) instructions are included for each different type of system chassis, since IPL procedures differ for the Business System computers and the 990/10, 990/10A, and 990/12 systems.

2.2 DISK FORMAT

If you are installing DNOS from an object kit shipped on disk, your hardware must contain the standard ROM loader, have two disks, and at least one of the VDTs in this configuration:

TYPE(number)	ADDRESS	INTERRUPT	
Disk (3)	TILINE >F800	13	
Tape (1)	TILINE >F880	9	
911 VDT	CRU >0100	10	
931 or 940 VDT	CRU >1700 (S300, CI402, or /10A)	8	9600 Baud
931 or 940 VDT (channel 0)	TILINE >F980 (CI403 or CI404)	11	9600 Baud

No other devices that can issue interrupts should be attached to the system during the build process.

The terminal listed as a 931 or 940 is generated as a 931; if you are using a 940, you need to modify your configuration after building your system disk to make appropriate use of the 940 VDT. You can modify the configuration with either the system generation utility, using the XSGU (Execute System Generation Utility) command, or the system configuration utility, using the XSCU (Execute System Configuration Utility) command. Refer to the DNOS System Generation Reference Manual for details about using these commands.

Perform these steps to install the DNOS object:

1. Insert the shipped system disk in unit 0 of the system disk drive and prepare it for use.

2. Perform the IPL procedure that applies to your hardware.

   * If you have a 990/10 or 990/12 system, perform the following steps:

     a. Press HALT/SIE.
     b. Press RESET.
     c. Press LOAD.

   * If you have a 990/10A computer or a Business System 600 or 800, perform the following steps:

     a. Press HALT.
     b. Press LOAD.

   * If you have an S300 system, perform this sequence:

     a. Write protect all disks except the DNOS object disk.
     b. Turn off the power to the computer.
     c. Turn on the power to the computer.

   Wait for all system activity to cease. If you are using a 990/10 or 990/12, wait until all the data lights on the programmer panel are off. If you are using a 990/10A or a Business System 600 or 800, wait until the display shows 0000 on the front panel. This may take some time because the first IPL of the system must create several structures. These structures include a user ID defined for the first log-on, system swap files, and a number of interprocess communication (IPC) channels.

   During the first IPL, DNOS checks to see that your crash file is large enough to hold the entire system image in the case of a system crash. If the file is not large enough, DNOS makes it larger and then forces a crash to happen so that the new crash file is ready for use. The crash code in this case is >163. If the >163 crash occurs, go through the IPL sequence again; the crash file is now usable.

3. Log on at a terminal by pressing the Attention key and then the exclamation point (!).

4. If no one else has logged on, the screen displays the following message and prompts:

```
INITIALIZE DATE AND TIME
YEAR:   <year>
MONTH:  <month>
DAY:    <day>
HOUR:   <hour>
MINUTE: <minute>
```

   where:

   <year> is a two- or four-digit integer representing the current year.

   <month> is a one- or two-digit integer representing the current month.

   <day> is a one- or two-digit integer representing the current day.

   <hour> is a one- or two-digit integer representing the current hour according to the 24-hour clock.

   <minute> is a one- or two-digit integer representing the current minute.

5. The system identifier appears next. DNOS x.x.xx will appear, where x.x.xx is the current release version of DNOS.

6. The JOB NAME prompt appears next. Enter a one- to eight-character alphanumeric string (for example, your name).

SCI is now active and the SCI prompt (]) appears in the lower left corner. Proceed to Section 3 to back up your new system disk.

2.3 TAPE FORMAT

You received four tapes containing the DNOS object. These tapes are labeled DNOS OPERATING SYSTEM BUILD TAPE, DNOS OPERATING SYSTEM BACKUP TAPE VOLUME 1, DNOS OPERATING SYSTEM BACKUP TAPE VOLUME 2, and DNOS OPERATING SYSTEM BACKUP TAPE VOLUME 3. The instructions refer to them by shorter names. The first tape is referred to as Build Tape. The others are referred to as Backup Tape -- Volume 1, 2, or 3.

Use the Build Tape and the Backup Tape-Volume 1 to build the DNOS system disk. If you plan to use the system generation utility to generate a system after you build the system disk, you must restore the linkable system generation parts from Backup Tape-Volume 2. If you plan to use the system configuration utility to modify the shipped system, you must restore Backup Tape-Volume 2 and preserve at least the device service routines (DSRs) on a system or data disk. Use Backup Tape-Volume 3 to restore expanded messages and special files that you need to internationalize the DNOS messages and command procedures.

For you to build a DNOS system disk from tape, your disk must be at least 16 megabytes in capacity (for example, a CD1400).

Your system must be a standard configuration. It may be a Business System 300 as shipped. It may be a 990/10, 990/10A, 990/12, or a Business System 600 or 800 with a standard ROM loader, at least one disk drive, at least one magnetic tape drive, and at least one VDT from the following configuration:

TYPE(number)	ADDRESS	INTERRUPT	
Disk(1)	TILINE >F800	13	
Magnetic tape(1)	TILINE >F880	9	
911 VDT	CRU >0100	10	
931 or 940 VDT	CRU >1700 (S300, CI402, or /10A)	8	9600 Baud
931 or 940 VDT (channel 0)	TILINE >F980 (CI403 or CI404)	11	9600 Baud

Your hardware may contain more than one magnetic tape drive at the specified location, but you must build from unit 0.

Note that the terminal shown as a 931 or 940 is generated as a 931. If you are using a 940, you need to modify your configuration after building your system disk to make appropriate use of the 940 VDT. You can modify the configuration with either the system generation utility, using the XSGU command, or the system configuration utility, using the XSCU command. Refer to the DNOS System Generation Reference Manual for details. You can do this modification with XSGU only after you have restored the system generation parts from Backup Tape--Volume 2.

Perform these steps to build the DNOS system disk from tape:

1. Mount the Build Tape on the tape drive with the write protection enabled. Prepare the drive for use.

2. Insert a disk in the system disk drive and prepare it for use with the write protection enabled. (This disk will be referred to as the target disk.)

3. To start the Tape Build process, perform the steps that apply to your hardware. For all but the S300 system, the fault light will come on for several seconds after this sequence, with a code of >0100 showing on the front panel.

   * If you have a 990/10 or 990/12 system, perform these steps on the programmer panel:

     a. Press HALT/SIE.
     b. Press CLR.
     c. Enter >0082 on the programmer panel.
     d. Press ENTER MA.
     e. Press CLR.
     f. Enter >F880 on the programmer panel.
     g. Press MDE.
     h. Press MAI.
     i. Press CLR.
     j. Enter >8000 on the programmer panel.
     k. Press MDE.
     l. Press LOAD.

   * If you have a 990/10A or a Business System 600 or 800, perform these steps on the front panel:

     a. Press HALT.
     b. Press ALTERNATE LOAD.

   * If you have an S300 system:

     a. Turn off the power to the computer.
     b. Turn on the power to the computer.

4. The disk to which you are building will be initialized during the build process. The effect will be the same as if you had issued an Initialize New Volume (INV) command with the FORCED CLEARING OF DISK response of NO. As the build is done, a Tape Build program is read from the tape and sent to memory. This program uses a DX10 operating system to do the build process. Depending on the type of terminal you use, you may see a DX10 system banner on the screen as the build starts.

   When the Tape Build program begins execution, a message and prompt are displayed on one or all of the terminals. If you are away from the terminal and do not respond within five minutes, the system will crash with a code of >144. If this happens, restart the build process. The message and prompt are as follows:

```
***DISK BUILD UTILITY***
DO YOU WANT TO CHANGE ANY DEFAULT VALUES? (Y/N):
```

   At this point, remove the write protection from the target drive. Answer N to this question if you do not want to make changes. If you respond N, accepting the default values, the Tape Build program uses its own values for the following items:

   * The volume name of the disk being built. The program assigns the current volume name of the disk if it has one. The name SYSTEM is assigned if the volume currently has no name.

   * The standard Initialize Disk Surface (IDS) command default for medium testing level.

   * The standard INV defaults for the physical record size, the number of VCATALOG (volume directory) entries, and the hardware interleaving factor. The program uses these defaults while initializing the disk being built. These defaults are based on the type of disk being initialized.

   * A bad track map, not allowing you to enter any as the disk is initialized.

   Answer Y to the question DO YOU WANT TO CHANGE ANY DEFAULT VALUES? if you want to make any changes to the items in the preceding list as the build proceeds. If you answer Y, the build utility assumes that you know exactly what responses to give for the questions that follow; there are few chances to alter answers to questions.

Whether you enter Y or N, the terminal you are using remains active. All other terminal screens that displayed the introductory message are cleared. A digital clock display appears in the bottom right corner of your screen and monitors the execution time of the Tape Build utility. It is updated at intervals that vary depending on the type of disk you are building; the intervals may be several seconds to several minutes long.

After you respond Y to the question, a message appears on the screen. This message varies with each system, depending on what drives are configured with the particular system. The following message is a typical example:

```
        SYSTEM WILL BE BUILT ON ONE OF THE FOLLOWING DISKS:
ID    ADDRESS    UNIT    INTERRUPT      TYPE
 1      F800      00        13         WD800  -- 43MB
 2      F800      01        13         WD500A -- 20MB
 3      F800      02        13         WD500A -- 20MB
 4      F800      03        13         UNKNOWN DISK
        INPUT ID NUMBER OF DESIRED DISK UNIT:
```

The table of the disk drives listed in the message represent disks that may be specified to build the initial system. Choose the disk that is online to your system, and enter the corresponding ID number from the left-hand column of the table.

Tape Build now inspects the target disk and evaluates its condition. It will find the disk to be in one of two states: it either needs a surface analysis or needs an initialization of the volume. Your actions are outlined as Case 1 and Case 2 below. Follow the set of instructions for the case that begins with the message you see next. If you see the message DISK REQUIRES SURFACE ANALYSIS, go to Case 1. If you see the message DISK REQUIRES INITIALIZATION, go to Case 2.

a. CASE 1. If Tape Build does not find a bad track map on the target disk, the disk must have its surface analyzed for defects. The following message appears:

```
DISK REQUIRES SURFACE ANALYSIS
```

   * If you answered N to the prompt to change defaults, the following message now appears as Tape Build begins the work of analyzing and formatting the disk.

```
BEGIN STEP 1.
```

Tape Build automatically issues an IDS command, which analyzes the targe disk for physical flaws and lists the location of any flaw on a bad track map.

When the IDS is complete, Tape Build performs an INV command, which creates VCATALOG, assigns a volume name, and installs the volume on the target disk. In this case Tape Build uses default values for the INV parameters. For details about the prompts shown for initializing the disk, see the descriptions of the IDS and INV commands in the DNOS System Command Interpreter (SCI) Reference Manual.

Proceed to step 5.

* If you answered Y to the prompt to change defaults, the following prompts appear.

```
                    VOLUME NAME: SYSTEM
    NUMBER OF VCATALOG ENTRIES:
  DEFAULT PHYSICAL RECORD SIZE: <initial value>
           INTERLEAVING FACTOR:
       RESTORE BAD TRACK LIST?:
```

When you have answered this set of prompts, the following messages appear:

```
BEGIN STEP 1.

ENTER HEAD AND CYLINDER ADDRESSES OF KNOWN BAD TRACKS.
ENTER THE ADDRESSES ONE PER LINE.
END THE LIST BY ENTERING RETURN ONLY FOR THE NEXT HEAD.
 HEAD #
```

Enter the addresses of any known bad tracks on this volume. Enter the decimal number for the head on the line prompting HEAD #. Then press the Return key. Do not use any special characters, such as commas or semicolons. Tape Build then prompts with CYLINDER #. Enter the decimal value of the cylinder number immediately after this prompt. Then press the Return key. Do not use any special characters, such as commas or semicolons. Tape Build then prompts you for the next head and cylinder number in the same manner. When the list of head and cylinder pairs is complete, press only the Return key in response to the HEAD # prompt to terminate your input.

Proceed to step 5.

b. CASE 2. If Tape Build determines that no surface analysis is needed, only the INV process is required. The following message appears:

DISK REQUIRES INITIALIZATION

* If you answered N to the prompt to change defaults, the following message appears as the INV is started:

BEGIN STEP 1.

Proceed to step 5.

* If you answered Y to the prompt to change defaults, the following message appears:

PERFORM INV?

If you want to reformat the disk (the equivalent of the INV command with FORCED CLEARING OF DISK set to YES), answer Y to this prompt. Otherwise, answer N. If you answer N, the INV will be done with the equivalent of FORCED CLEARING OF DISK set to NO. If you answer Y, you are given the option to force surface analysis of the disk. The following prompt appears:

PERFORM IDS?

If you want to have the surface analyzed, answer Y. Otherwise, answer N. The following prompts appear next. (The RESTORE BAD TRACK LIST prompt appears only if you responded Y to PERFORM IDS.)

```
                VOLUME NAME: SYSTEM
  NUMBER OF VCATALOG ENTRIES:
DEFAULT PHYSICAL RECORD SIZE:
          INTERLEAVING FACTOR:
      RESTORE BAD TRACK LIST?:
```

When you have answered this set of prompts, the following messages appears:

```
BEGIN STEP 1.

ENTER HEAD AND CYLINDER ADDRESS OF KNOWN BAD TRACKS.
ENTER THE ADDRESSES ONE PER LINE.
END THE LIST BY ENTERING RETURN ONLY FOR THE NEXT HEAD.
 HEAD #
```

Enter the addresses of any known bad tracks on this volume. Enter the decimal number for the head on the line prompting HEAD #. Then press the Return key. Do not use any special characters, such as commas or semicolons. Tape Build then prompts with CYLINDER #. Enter the decimal value of the cylinder number immediately after this prompt. Then press the Return key. Do not use any special characters, such as commas or semicolons. Tape Build then prompts you for the next head and cylinder number in the same manner. When the list of head and cylinder pairs is complete, press only the Return key in response to the HEAD # prompt to terminate your input.

5. If Tape Build is performing the IDS command, a graph may be displayed showing IDS progress. If you answered YES to PERFORM INV?, the display shows the tracks being formatted. If the disk contains bad tracks, a bad track list will be displayed upon completion of the disk initialization.

6. When the target disk is logically installed, the Tape Build program copies the remainder of the Tape Build operating system software from the tape to the target disk. During this process, the following message appears on the terminal:

```
BEGIN STEP 2.
```

The system files are being recreated for the system that builds DNOS. As directories and files are created, their names appear on the screen:

```
** VCATALOG **
** S$DIAG   **  (except WD900 425 megabytes)
** S$ROLLA  **
** B$LOADER **
** B$PROC   **
** B$OVLYA  **
** S$IMAGES **
** B$PROGA  **
** B$PASS   **
```

7. Tape Build automatically loads the system using the newly created files on the target disk. The following message appears:

   ```
   REMOVE INITIAL BUILD MEDIA.
   THEN TYPE Y TO CONTINUE:
   ```

   Unload and remove the tape. With the tape removed from the drive, respond Y and press the Return key. The following message appears:

   ```
   SYSTEM LOAD INITIATED - WAIT ONE MINUTE.
   IF NO MESSAGES APPEAR, START OVER AT STEP 1.
   ```

   If the tape remains mounted, the system may not load from the disk. In this case, to load the system you need to remove the tape and perform the standard initial program load sequence.

   * If the load is successful, the following message appears on the terminal:

     ```
     MOUNT BACKUP DATA VOLUME 1
     THEN TYPE Y TO CONTINUE:
     ```

     BACKUP DATA VOLUME 1 refers to Backup Tape-Volume 1.

   * If a message does not appear on the screen after one minute, the load process was not successful and the data lights on the front panel will display a crash code. Refer to the DNOS Messages and Codes Reference Manual, TI part number 2270506-9701, for an explanation of the crash code. Correct the cause of the crash and repeat the Tape Build procedure from the beginning.

8. Mount Backup Tape--Volume 1, on the tape drive. When the tape is ready, type Y and press the Return key to continue the build process. A response other than Y causes the message THEN TYPE Y TO CONTINUE: to reappear. (Typing the dollar sign ($) aborts the Tape Build process.)

9. Tape Build issues a Restore Directory (RD) command to copy the DNOS operating system from tape to the target disk. The following message appears on your screen:

   ```
   BEGIN STEP 3.
   ```

During STEP 3, Tape Build deletes the .S$USER directory and the following files, since they could cause a conflict with the new system:

.S$UTIL
.S$SHIP
.S$LANG
.S$SHARED
.S$CLF
.S$SCA
.S$SDTQUE (file or directory)

10. After Tape Build copies Backup Tape-Volume 1 of the object kit to the target disk, the following message appears:

```
BUILD PROCESS COMPLETED
REMOVE BACKUP MEDIA.
THEN TYPE Y TO CONTINUE:
```

11. Unload and remove the tape. With the tape removed from the drive, respond Y and press the Return key. The following message appears:

```
SYSTEM LOAD INITIATED - WAIT 1 MINUTE.
THEN LOG ON.
```

12. After four seconds, the system executes an IPL. The terminal screen is cleared. When the IPL is complete, the following banner is displayed to 911 terminals:

```
* TEXAS INSTRUMENTS * DNOS "S$SHIP" SYSTEM IPL * STxy *
```

where:

STxy is the station number of your terminal.

Wait for all system activity to cease. If you are using a 990/10 or 990/12, wait until all the data lights on the front panel are off. If you are using a 990/10A or a Business System computer, wait until all the lights show 0000 on the front panel. This may take some time, because the first IPL of the system must create several structures. These structures include a user ID defined for the first log-on, system swap files, and a number of interprocess communication (IPC) channels.

During the first IPL, DNOS checks to see that your crash file is large enough to hold the entire system image in the case of a system crash. If the file is not large enough, DNOS makes it larger and then forces a crash to happen so that the new crash file is ready for use. The crash code in this case is >163. If the >163 crash occurs, go through the IPL sequence again; the crash file is now usable.

13. Log on at a terminal by pressing the Attention key and then the exclamation point (!).

14. If no one else has logged on, the screen displays the following message and prompts:

```
INITIALIZE DATE AND TIME
YEAR:   <year>
MONTH:  <month>
DAY:    <day>
HOUR:   <hour>
MINUTE: <minute>
```

where:

<year> is a two- or four-digit integer representing the current year.

<month> is a one- or two-digit integer representing the current month.

<day> is a one- or two-digit integer representing the current day.

<hour> is a one- or two-digit integer representing the current hour according to the 24-hour clock.

<minute> is a one- or two-digit integer representing the current minute.

15. The JOB NAME prompt appears next. Enter a one- to eight-character alphanumeric string (for example, your name).

SCI is now active and the SCI prompt ([]) appears in the lower left corner.

16. To change your terminal from TTY mode to VDT mode for easier use, issue the following commands.

    a. Issue the Show Terminal Information (STI) command to determine your station number. It will appear as STxy, where x and y are single decimal digits.

    b. Execute the Modify Terminal Status (MTS) command with the following responses:

```
[] MTS
MODIFY TERMINAL STATUS
                    TERMINAL NAME: STxy
              NEW STATUS (ON/OFF): ON
               NEW MODE (TTY/VDT): VDT
           DEFAULT MODE (TTY/VDT): VDT
                 ASK FOR USER ID?: YES
               ASK FOR JOB NAME?: YES
             ASK FOR ACCOUNT ID?: NO
  ASK FOR NAME MANAGER FILES?: NO
              RECONNECT ENABLED?: NO
    SUPPLY ACCOUNT ID
              DEFAULT ACCOUNT ID:
```

    where:

    STxy indicates your station number.

    c. Enter the Quit SCI (Q) command to log off.

    d. Log on again by pressing the Attention key and then the exclamation point (!).

    e. This message and these prompts appear:

```
DNOS x.x.xx

     USER ID: SYSTEM
    PASSWORD:
    JOB NAME: <job name>
```

    where:

    x.x.xx indicates the released version of DNOS.

    <job name> is a one- to eight-character alphanumeric string (for example, your name).

    SCI is now active and your terminal is in VDT mode.

17. The following file and directory names are reserved. They are created during the Tape Build process and deleted during an IPL of DNOS. Do not use these names for your own files.

    . B$PROGA
    . B$LOADER
    . B$PASS
    . B$OVLYA
    . S$BGTCA
    . S$FGTCA
    . S$ROLLA
    . S$SLG1
    . S$SLG2
    . S$TCALIB

    The file .B$LISTRD is a Restore Directory (RD) listing of the system just built. Examine it if you wish; you can delete it with the Delete File (DF) command. There is also a directory created for the build process named .S$PROC. Delete it by issuing the Delete Directory (DD) command.

18. Backup Tape--Volume 2 contains the linkable parts needed to do a system generation or system configuration session. You can restore Backup Tape--Volume 2 to your new system disk if it is a 16 megabyte CD1400 or larger disk. Otherwise, use another disk of at least 5 megabyte capacity for Backup Tape--Volume 2. Insert the disk in a drive and prepare it for use.

19. Mount Backup Tape--Volume 2 on an available tape drive and prepare it for use.

20. Enter the Restore Directory (RD) command with the following responses:

```
RESTORE DIRECTORY
   SEQUENTIAL ACCESS NAME: MTxy
       DIRECTORY PATHNAME: <volume name>
      CONTROL ACCESS NAME:
      LISTING ACCESS NAME:
                  OPTIONS: REPLACE,NOREWIND
      EXECUTION MODE(F,B): FOREGROUND
```

where:

MTxy indicates the tape drive you are using.

<volume name> is the name of the volume that receives the restored directory.

Backup Tape-Volume 3 contains the expanded error message files in the .S$EXPMSG directory. You need these files if you plan to use the Show Expanded Message (SEM) command or the question mark (?) to display explanations of messages appearing at your terminal. Backup Tape-Volume 3 also contains the text-editable versions of the DNOS messages and SCI command procedures. (Refer to the DNOS System Programmer's Guide, TI part number 2270510-9701, for details about using the messages and SCI command procedures.)

If you want to use the DNOS expanded messages or if you want to modify DNOS for international purposes, you need to restore Backup Tape--Volume 3, to a disk. If you are not providing versions of DNOS in languages other than English, you can delete the .BATCH and .MESSAGES directories after you restore the tape.

21. To restore Backup Tape--Volume 3, to a disk, perform the following steps. You can restore Backup Tape--Volume 3, to your new system disk if it is a 16 megabyte CD1400 or larger disk. Otherwise, use another disk of at least 5 megabyte capacity for Backup Tape--Volume 3. Insert the disk in a drive and prepare it for use.

22. Mount Backup Tape--Volume 3, on an available tape drive and prepare it for use.

23. Enter the RD command with the following responses:

```
RESTORE DIRECTORY
   SEQUENTIAL ACCESS NAME: MTxy
       DIRECTORY PATHNAME: <volume name>
     CONTROL ACCESS NAME:
     LISTING ACCESS NAME:
                 OPTIONS: REPLACE,NOREWIND
     EXECUTION MODE(F,B): FOREGROUND
```

where:

MTxy indicates the tape drive you are using.

<volume name> is the name of the volume that receives the restored directory.

Proceed to Section 3 to back up your system disk.

2.4 DISKETTE FORMAT

The object kit on diskette contains the following components:

* One diskette labeled DNOS13DB -- The build diskette for restoring the bootable system
* Four diskettes labeled DX, Volumes 1, 2, 3, and 4 -- The bootable system to be restored by Disk Build
* Four diskettes labeled DNLINK13, Volumes 1, 2, 3, and 4 -- The linkable parts for system generation
* One diskette labeled DNEXPM13 -- The .S$EXPMSG directory of message explanations and user actions
* One diskette labeled DNINTL13 -- The text files for messages and procedure batch streams, to allow for editing into international versions

For you to build a DNOS system disk from diskette, your disk must be at least 16 megabytes in capacity (for example, a CD1400).

Your system must contain the standard ROM loader. The system must include a disk drive, a diskette drive, and at least one VDT in the following configuration:

TYPE(number)	ADDRESS	INTERRUPT	
Disk or Diskette(4)	TILINE >F800	13	
Disk or Diskette(4)	TILINE >F820	9	
911 VDT	CRU >0100	10	
931 or 940 VDT	CRU >1700 S300, CI402 or /10A	8	9600 Baud
931 or 940 VDT (channel 0)	TILINE >F980 CI403 or CI404	11	9600 Baud

If you are using a 940 or 931 VDT, the shipped configuration supports it directly connected at 9600 baud. Note that the configuration is generated with the VDT as a 931; if you are using a 940, you need to modify your configuration after building your system disk to make appropriate use of the 940 VDT. You can modify the configuration with either the system generation utility, using the XSGU command, or the system configuration utility, using the XSCU command. Refer to the DNOS System Generation Reference Manual for details.

Use this build procedure to restore the shipped DNOS system from diskette to disk. You can also use this build procedure to restore any system that you save to diskettes. You need to ensure that the configuration on the system you save has both disk and diskette drives. To restore your own saved system, use the initial build diskette (DNOS13DB) and your set of backup diskettes that contain the operating system and files. You can build the backup diskettes using the Backup Directory (BD) command. More information on this system backup and restore procedure can be found in the DNOS Operations Guide, TI part number 02770502-9701.

The build procedure initiates and executes the Disk Build utility. If you need to terminate Disk Build prematurely, enter a dollar sign ($) in response to any of the prompts.

Perform the following steps to build the DNOS system disk from diskette:

1. Insert the DNOS13DB diskette in the primary diskette drive. Do not write protect the diskette.

2. Insert a disk that can contain at least 16 megabytes (for example, a CD1400) into an available drive with the write protection enabled. (This disk will be referred to as the target disk.)

3. To load the Disk Build utility from the diskette to system memory, perform the steps that apply to your hardware.

   * If you have a 990/10 or 990/12 system, perform the following steps on the programmer panel:

     a. Press HALT/SIE.
     b. Press CLR.
     c. Enter >0082 on the programmer panel.
     d. Press ENTER MA.
     e. Press MDD.
     f. Enter >F820 on the programmer panel.
     g. Press MDE.
     h. Press LOAD.

   * If you have a 990/10A or a Business System 600 or 800 computer, perform the following steps on the front panel:

     a. Press HALT/SIE.
     b. Press ALTERNATE LOAD.

   * If you have an S300 system, perform this sequence:
     a. Write protect all disk drives except the one that has the DNOS build diskette.
     b. Turn off the power to the computer.
     c. Turn on the power to the computer.

4. The Disk Build utility is read from the diskette and sent to memory. This utility uses a DX10 system to do the build. Depending on the type of terminal you are using, you may see a DX10 banner on your screen for a short time when the build begins.

   When Disk Build begins execution, a message and prompt are displayed on the terminals in the base configuration. If you are away from the terminal and do not respond within five minutes, the system will crash with a code of >144. If this happens, restart the build process. The message and prompt are as follows:

```
***DISK BUILD UTILITY***
DO YOU WANT TO CHANGE ANY DEFAULT VALUES? (Y/N):
```

If you answer Y, you will have three opportunities to change default values during the execution of Disk Build:

* Before Disk Build is copied from the initial build diskette to the target disk, you can change the default volume characteristics of the target disk.

* When Disk Build is being loaded, you can specify the location of the target disk.

* Before Disk Build restores the first backup diskette to the target disk, you can name your backup file.

At this point, turn off the write protection on the target disk drive. If you need to change any of the default values, enter Y in response to the prompt. Otherwise, enter N.

After your response to the prompt, only your terminal remains active; other terminals displaying the message are cleared. A digital clock display appears in the lower right corner of your screen and monitors the execution time of the Disk Build utility. It is updated at intervals that vary depending on the type of disk you are building; the intervals may be several seconds to several minutes long.

5. If you answered N to change the default values, skip this step. If you answered Y to change the default values, the following message and prompt will appear on the screen. The contents of this message vary with each system, depending on the drives that are configured and online. The following is an example of a typical message and prompt:

```
    SYSTEM WILL BE BUILT ON ONE OF THE FOLLOWING DISKS:
ID   ADDRESS    UNIT     INTERRUPT   TYPE
 1     F800      01          13     DS50   - 50M
 2     F800      00          13     DS50   - 50M
 3     F820      00           9     FD1000 -  1M
       INPUT ID NUMBER OF DESIRED DISK UNIT:
```

The table in your message shows all the disks that are online in your computer system. This list includes the disk from which Disk Build is running; you cannot specify this disk as your new system disk. Choose the disk unit that you want to be the system disk and inspect the leftmost column to determine the ID number of that disk unit. Enter the ID number in response to the prompt. For example, if you choose unit 01 located at >F800 for your target disk, its associated ID number is 1. Therefore, you enter 1 in response to the INPUT ID NUMBER OF DESIRED DISK UNIT prompt.

Note that the system built to the disk you specify will support only those devices generated in the system being restored. If the system being built is the system shipped from Texas Instruments, it supports only the base S$SHIP configuration.

6. Disk Build now inspects the target disk and evaluates its condition. It will find the disk to be in one of three states. Your actions are outlined as Case 1, Case 2, and Case 3 below. Follow the set of instructions for the case that begins with the message you see next. For details about the prompts shown for initializing the disk, see the descriptions of the Initialize Disk Surface (IDS) command and the Initialize New Volume (INV) command in the DNOS System Command Interpreter (SCI) Reference Manual. If you see the message DISK REQUIRES SURFACE ANALYSIS, go to Case 1. If you see the message DISK REQUIRES INITIALIZATION, go to Case 2. If you see the message starting VOLUME NAME, go to case 3.

   a. CASE 1. If Disk Build does not find a bad track map on the target disk, the disk must have its surface analyzed for defects. The following message appears:

      DISK REQUIRES SURFACE ANALYSIS

      * If you answered N to the prompt to change defaults, the following message now appears as Disk Build begins the work of analyzing and formatting the disk:

        BEGIN STEP 1.

        Disk Build automatically issues an IDS command, which analyzes the target disk for physical flaws and lists the locations of any flaws on a bad track map.

When the IDS is complete, Disk Build performs an INV command, which creates VCATALOG, assigns a volume name, and installs the volume on the target disk. In this case Disk Build uses default values for the INV parameters.

Proceed to step 7.

* If you answered Y to the prompt to change defaults, the following prompts appear:

```
                VOLUME NAME: SYSTEM
  NUMBER OF VCATALOG ENTRIES:
DEFAULT PHYSICAL RECORD SIZE:
          INTERLEAVING FACTOR:
      RESTORE BAD TRACK LIST?
```

When you have answered this set of prompts, the following messages appear:

```
BEGIN STEP 1.

ENTER BAD TRACKS IN THE FORMAT:
HEAD, CYLINDER;
      OR
HEAD, CYLINDER; HEAD, CYLINDER; ETC.
TO END LIST, ENTER AN EMPTY LINE
<
```

Enter the list of known bad tracks in the requested format using decimal numbers for the values (for example, 2, 235; 0,15;). All entries, including the last, must end with a semicolon. Improper positioning or absence of the punctuation marks causes an error to be returned.

Proceed to step 7.

b. CASE 2. If Disk Build determines that no surface analysis is needed, only the INV process is required. The following message appears:

```
DISK REQUIRES INITIALIZATION
```

* If you answered N to the prompt to change defaults, the following message appears as the INV begins:

```
BEGIN STEP 1.
```

Proceed to step 7.

* If you answered Y to the prompt to change defaults, the following message appears:

```
PERFORM INV?
```

If you want to reformat the disk (the equivalent of the INV command with FORCED CLEARING OF DISK set to YES), answer Y to this prompt. Otherwise, answer N. An answer of N causes the equivalent of an INV command with FORCED CLEARING OF DISK set to NO.

If you answer Y, you are given the option to force surface analysis of the disk. The following prompt appears:

```
PERFORM IDS?
```

If you want to have the surface analyzed, answer Y; Disk Build will do a medium level surface analysis. Otherwise, answer N. The following prompts appear next:

```
                    VOLUME NAME: SYSTEM
  NUMBER OF VCATALOG ENTRIES:
DEFAULT PHYSICAL RECORD SIZE:
          INTERLEAVING FACTOR:
```

If you answered Y to PERFORM IDS, this prompt also appears:

```
RESTORE BAD TRACK LIST?
```

When you have answered this prompt, the following message appears:

```
BEGIN STEP 1.

ENTER BAD TRACKS IN THE FORMAT:
HEAD, CYLINDER;
      OR
HEAD, CYLINDER; HEAD, CYLINDER; ETC.
TO END LIST, ENTER AN EMPTY LINE
<
```

Enter the list of known bad tracks in the requested format using decimal numbers for the values (for example, 2, 235; 0,15;). All entries, including the last, must end with a semicolon. Improper positioning or absence of the punctuation marks causes an error to be returned.

Proceed to step 7.

c. CASE 3. If Disk Build determines that the disk does not have to be initialized and that VCATALOG exists on the target disk, the following message and prompt appear:

```
VOLUME NAME: <your volume name>
THE SPECIFIED DISK COULD CONTAIN SOME INFORMATION
ABOUT YOUR BUSINESS. IF N IS ENTERED, THE DISK
WILL BE ERASED.  IF Y IS ENTERED, ONLY SYSTEM INFORMATION
WILL BE ERASED.  IF THERE IS INFORMATION THAT MUST
BE SAVED, ENTER Y.  IF THE INFORMATION CAN BE
REPLACED, ENTER N.

SHOULD THE USER INFORMATION ON THE
SYSTEM DISK BE SAVED? (Y/N):
```

The preceding message indicates that software or data may exist on the target disk. If you want to keep this information, enter Y. Disk Build will issue the Install Volume (IV) command. If you do not want to keep this information, enter N and Disk Build will issue the INV command with FORCED CLEARING set to NO.

Enter a Y or N. If you enter Y, go to step 7.

* If you enter an N and you previously responded Y to change the default values, the following prompt appears:

```
PERFORM INV?
```

If you want to reformat the disk (the equivalent of the INV command with FORCED CLEARING OF DISK set to YES), answer Y to this prompt. Otherwise, answer N. If you answer Y, you are given the option to force surface analysis of the disk. An answer of N causes an INV with FORCED CLEARING OF DISK set to NO. The following prompt appears:

```
PERFORM IDS?
```

If you want to have the surface analyzed, answer Y. Otherwise, answer N. The following prompts appear next:

```
                    VOLUME NAME: <volume name>
      NUMBER OF VCATALOG ENTRIES:
DEFAULT PHYSICAL RECORD SIZE:
          INTERLEAVING FACTOR:
```

where:

<volume name> is the current name of the target disk.

If you answered N to PERFORM IDS, this message appears next:

```
BEGIN STEP 1.
```

If you answered Y to PERFORM IDS, this prompt appears:

```
RESTORE BAD TRACK LIST?
```

When you have answered this prompt, the following message appears:

```
BEGIN STEP 1.

ENTER BAD TRACKS IN THE FORMAT:
HEAD, CYLINDER;
      OR
HEAD, CYLINDER; HEAD, CYLINDER; ETC.
TO END LIST, ENTER AN EMPTY LINE
<
```

Enter the list of known bad tracks in the requested format using decimal numbers for the values (for example, 2, 235; 0,15;). All entries, including the last, must end with a semicolon. Improper positioning or absence of the punctuation marks causes an error to be returned.

7. When the target disk is logically installed, the Disk Build utility copies the remainder of the Disk Build operating system software from DNOS13DB to the target disk. During this process, the following message appears on the terminal:

```
BEGIN STEP 2.
```

While the copy is made, Disk Build creates a listing file named .B$LISTCD on the target disk. It also creates the Disk Build system files that are used to build DNOS. When the copy finishes, the following message appears on the terminal:

```
REMOVE INITIAL BUILD MEDIA.
THEN TYPE Y TO CONTINUE:
```

8. Remove DNOS13DB from the diskette drive. Type Y and then press the Return key.

9. Disk Build automatically loads the system from the newly created files on the target disk. The following message appears:

```
SYSTEM LOAD INITIATED - WAIT ONE MINUTE.
IF NO MESSAGES APPEAR, START OVER AT STEP 1.
```

   * If the load is successful, this message appears on the screen:

```
MOUNT BACKUP DATA VOLUME 1
THEN TYPE Y TO CONTINUE:
```

   * If a message does not appear on the screen after one minute, the load process was not successful and the data lights on the front panel will display a crash code. Refer to the DNOS Messages and Codes Reference Manual, TI part number 2270506-9701, for an explanation of the crash code. Correct the cause of the crash, and repeat the Disk Build procedure from the beginning.

If you are preserving data on your target disk, you may receive a >120 crash code as a result of temporary files that needed to be deleted. Start over from the beginning; the build process should work the second time.

10. Insert the DNOS parts diskette labeled DX--Volume 1, in the diskette drive. This diskette contains backup data for the DNOS operating system. Type Y and press the Return key to continue the build process. A response other than Y causes the message THEN TYPE Y TO CONTINUE to reappear. (Typing the dollar sign ($) aborts the Disk Build process.)

11. Disk Build is now ready to restore the backup data from the diskettes to the target disk. If you answered Y to change the default values, the following message appears on the screen:

    ENTER THE PATHNAME OF SEQUENTIAL
    BACKUP FILE: DX.SYSTEM

    Press the Return key.

12. Disk Build copies the DNOS operating system from the diskette to the target disk. The following message appears on your screen:

    BEGIN STEP 3.

    During STEP 3, Disk Build deletes the .S$USER directory and the following files, since they could cause a conflict with the new system if left on the disk:

    .S$UTIL
    .S$SHIP
    .S$SHARED
    .S$LANG
    .S$CLF
    .S$SCA
    .S$SDTQUE (file or directory)

    You will be prompted by Disk Build at the appropriate times to insert the remaining diskettes. The following message will appear:

    END OF MEDIA MOUNT VOLUME <x>; TYPE $ TO QUIT, Y TO CONTINUE

    where:

    <x> is the number of the next volume that you need to install.

    Remove the current diskette and mount volume <x> as requested.

13. After Disk Build copies all of the bootable operating system to the target disk from the diskettes labeled DX, Volume 1 through Volume 4, the following message appears on the screen:

    ```
    BUILD PROCESS COMPLETED.
    REMOVE BACKUP MEDIA.
    THEN TYPE Y TO CONTINUE:
    ```

14. Remove the diskette. Then type Y and press the Return key. The following message appears:

    ```
    SYSTEM LOAD INITIATED - WAIT 1 MINUTE.
    THEN LOG ON.
    ```

15. After four seconds, the system executes an IPL and the screen becomes blank. When the IPL is complete, the following message is displayed to 911 screens:

    ```
    * TEXAS INSTRUMENTS * DNOS "S$SHIP" SYSTEM IPL * STxy *
    ```

    where:

    STxy is the station number of your terminal.

    Wait for all system activity to cease; that is, wait until all of the data lights on the programmer panel are off. If you are using a Business System computer, wait until the lights show >0000 on the front panel. This may take some time, because the first IPL of the system must create several structures. These structures include a user ID defined for the first log-on, system swap files, and a number of interprocess communication (IPC) channels.

    During the first IPL, DNOS checks to see that your crash file is large enough to hold the entire system image in the case of a system crash. If the file is not large enough, DNOS makes it larger and then forces a crash to happen so that the new crash file is ready for use. The crash code in this case is >163. If the >163 crash occurs, go through the IPL sequence again; the crash file is now usable.

16. Log on at a terminal by pressing the Attention key and then the exclamation point (!).

17. If no one else has logged on, the following message and prompts are displayed:

```
INITIALIZE DATE AND TIME
YEAR:   <year>
MONTH:  <month>
DAY:    <day>
HOUR:   <hour>
MINUTE: <minute>
```

where:

<year> is a two- or four-digitinteger representing the current year.

<month> is a one- or two-digit integer representing the current month.

<day> is a one- or two-digit integer representing the current day.

<hour> is a one- or two-digit integer representing the current hour according to the 24-hour clock.

<minute> is a one- or two-digit integer representing the current minute.

18. The system identifier appears next. DNOS x.x.xx will appear, where x.x.xx is the current release version of DNOS.

19. Respond to the JOB NAME prompt. Enter a one- to eight-character alphanumeric string (for example, your name).

    SCI is now active and the SCI prompt ([]) appears in the lower left corner.

20. To change your terminal so that prompts for user ID and passcode appear, issue the following commands.

a. Execute the Modify Terminal Status (MTS) command with the following responses:

```
[] MTS
MODIFY TERMINAL STATUS
                    TERMINAL NAME: STxy  (use what appears)
              NEW STATUS (ON/OFF): ON
               NEW MODE (TTY/VDT): VDT
           DEFAULT MODE (TTY/VDT): VDT
                 ASK FOR USER ID?: YES
                ASK FOR JOB NAME?: YES
              ASK FOR ACCOUNT ID?: NO
    ASK FOR NAME MANAGER FILES?: NO
              RECONNECT ENABLED?: NO
      SUPPLY ACCOUNT ID
              DEFAULT ACCOUNT ID:
```

where:

STxy indicates your station number.

b. Enter the Quit SCI (Q) command to log off.

c. Log on again by pressing the Attention key and then the exclamation point (!).

d. This message and these prompts appear:

```
DNOS x.x.xx

     USER ID: SYSTEM
    PASSWORD:
    JOB NAME: <job name>
```

where:

x.x.xx indicates the released version of DNOS.

<job name> is a one- to eight-character alphanumeric string (for example, your name).

SCI is now active and your terminal is in VDT mode.

21. The following filenames were created during the Disk Build process. Most are deleted during IPL; therefore, you should not use these filenames for your own files.

.B$CONFIG
.B$CONTRL
.B$LISTCD
.B$LOADER
.B$OVLYA
.B$PASS
.B$PROGA
.S$BGTCA
.S$FGTCA
.S$PRINT
.S$ROLLA
.S$SLG1
.S$SLG2
.S$TCALIB

The file .B$LISTRD is a Restore Directory (RD) listing of the system just built. Examine it if you wish; you can delete it with the Delete File (DF) command.

22. You need to copy the remaining diskettes with your S$SHIP system, which is now running. If your diskette drive is at address >F800, proceed to the next step. If your diskette drive is at address >F820, you need to perform the following to add a diskette to the S$SHIP configuration:

    a. Begin a configuration session by issuing the Execute System Configuration Utility (XSCU) command with the following responses.

```
EXECUTE SYSTEM CONFIGURATION UTILITY
       SYSTEM VOLUME: DSxy
         SYSTEM NAME: S$SHIP
```

    where:

    DSxy indicates the disk drive containing the system disk.

    b. The configuration utility displays the current device configuration. Press the Command key.

c. Enter the Modify Device Configuration (MDC) command with the following responses to remove the tape drive in the .S$SHIP configuration.

```
MODIFY DEVICE CONFIGURATION
      DATA DISK/VOLUME: <Return>

MODIFY DEVICE CONFIGURATION
 COMMAND(CHANGE,ADD,DELETE):D

DELETE DEVICE
     DEVICE NAME: MT01
```

d. Continue with the MDC command, using these responses to add another disk to the .S$SHIP configuration.

```
MODIFY DEVICE CONFIGURATION
 COMMAND(CHANGE,ADD,DELETE):A

ADD DEVICE
     DEVICE TYPE: DS

ADD DISK
        TILINE ADDRESS: 0F820
               DRIVES: 1
  DEFAULT RECORD SIZE: 864
            INTERRUPT: 9
    EXPANSION CHASSIS: <Return>
   EXPANSION POSITION: <Return>
```

e. Press the Command key to finish the MDC command.

f. Enter the Quit Configuration Utility Session (QSCU) command as follows:

```
QUIT CONFIGURATION UTILITY SESSION
              ABORT?: NO
```

g. The diskette drive has now been added to your S$SHIP configuration. Go through an IPL sequence and log on to the system again as described in the previous steps.

23. If you plan to do a system generation in the future, you now need to restore the linkable parts from the four diskettes labeled DNLINK13. First install the first volume using the IV command. Then issue the Restore Directory (RD) command as follows:

```
RESTORE DIRECTORY
   SEQUENTIAL ACCESS NAME: <drive name>
       DIRECTORY PATHNAME: <volume name>
      CONTROL ACCESS NAME:
      LISTING ACCESS NAME:
                  OPTIONS: REPLACE
   EXECUTION MODE(F,B): FOREGROUND

   PATHNAME OF BACKUP FILE
                PATHNAME: DNLINK13.S$OSLINK
```

where:

<drive name> is the name of the diskette drive that contains DNLINK13.

<volume name> is the name of the volume that receives the restored directory.

After the first diskette is restored, you will be prompted to insert the remaining diskettes from this set in sequence. The following message will appear:

END OF MEDIA MOUNT VOLUME <x>; TYPE $ TO QUIT, Y TO CONTINUE

where:

<x> is the number of the next volume that you need to install.

Remove the current diskette and mount volume <x> as requested.

24. If you wish to have expanded messages on line with your system, you need to restore the messages on the diskette labeled DNEXPM13. Install the DNEXPM13 diskette using the IV command. Then issue the following RD command to restore messages:

```
RESTORE DIRECTORY
   SEQUENTIAL ACCESS NAME: <drive name>
       DIRECTORY PATHNAME: <volume name>
      CONTROL ACCESS NAME:
      LISTING ACCESS NAME:
                 OPTIONS: REPLACE
   EXECUTION MODE(F,B): FOREGROUND

   PATHNAME OF BACKUP FILE
                PATHNAME: DNEXPM13.S$EXPMSG
```

where:

<drive name> is the name of the diskette drive that contains DNEXPM13.

<volume name> is the name of the volume that receives the directory.

25. If you need to translate the supplied message files or command procedures to a language other than English, restore the DINITL13 diskette. Issue the following RD command:

```
RESTORE DIRECTORY
   SEQUENTIAL ACCESS NAME: <drive name>
       DIRECTORY PATHNAME: <volume name>
      CONTROL ACCESS NAME:
      LISTING ACCESS NAME:
                 OPTIONS: REPLACE
   EXECUTION MODE(F,B): FOREGROUND

   PATHNAME OF BACKUP FILE
                PATHNAME: DNINTL13.INTL
```

where:

<drive name> is the name of the diskette drive that contains DNLINK13.

<volume name> is the name of the volume that receives the directory.

Proceed to Section 3 to back up your new system disk.

Section 3

Backing Up the System Disk

Be sure to back up the system disk that you have created. You can back up your system disk to magnetic tape or disk by using one of the following commands:

* Copy Directory (CD)
* Backup Directory (BD)
* Backup Directory to Device (BDD)
* Disk Copy/Restore (DCOPY)
* Copy and Verify Disk (CVD)
* Copy Volume (CV)

If you use the BD or BDD command, you must use the Restore Directory (RD) command to restore the contents.

Refer to the DNOS Operations Guide, TI part number 2270502-9701, for further details about system disk backup procedures and procedures for restoring a backed-up system.

Before you back up the disk, you may want to move some files from the system disk to another location, or you may want to delete certain files. For instance, the build process may have left traces of the build system in your volume information. Use the Modify Volume Information (MVI) command to examine the volume information. If an entry is present for the OVERLAY FILE, you can delete it. This entry will cause no harm to the DNOS system, but it may be misleading to people examining the disk with MVI. Consult the DNOS System Command Interpreter (SCI) Reference Manual for details on how to use MVI. Also, some of the files and directories shipped with the DNOS object kit can be removed to conserve space. The following table shows the approximate amount of space used by these files, as well as the implications of removing them.

File Name or Directory Name	Comments
.S$CLF	Required (expands with new IDs)
.S$CMDS	Required
.S$CRASH	Required (varies with system size)
.S$DIAG	Required
.S$IPL	Required
.S$ISBTCH	Required (user can expand)
.S$ISLIST	Required (created in first IPL)
.S$LOG1	Required (created in first IPL)
.S$LOG2	Required (created in first IPL)
.S$MVI	Required
.S$ROLLD	Required (grows with use)
.S$SCA	Required (grows with use)
.S$SDTQUE	Required (grows with use)
.SSGU	Required (changes with sysgen)
.S$SHARED	Required (user can expand)
.S$SYSLIB	Required
.S$SYSTEM	Required
.S$UTIL	Required
.S$USER	Required (expands with new IDs)
.AAAMAP	Optional
.BATCH	Optional
.MESSAGES	Optional
.MFG$$$	Optional
.S$ACT1	Optional (used for accounting)
.S$ACT2	Optional (used for accounting)
.S$EXPMSG	Optional
.S$LANG	Optional
.S$MSG	Optional
.S$OSLINK	Optional
.S$SECURE	Optional
.S$SHIP	Required for first IPL
.SCI990	Optional

The files and directories labeled as optional can be removed from the system disk. They serve the purposes described below.

.AAAMAP
This directory includes a disk map of the object kit. It can be deleted.

.BATCH
This directory contains the source files for the batch streams that build the .S$CMDS directory. Unless you plan to internationalize the commands to a language other than English, this directory can be deleted.

.MESSAGES
This directory contains the source files for the message files for the .S$MSG and .S$EXPMSG directories. Unless you plan to internationalize the messages to a language other

than English, this directory can be deleted.

.MFG$$$
This file contains manufacturing information from Texas Instruments. It can be deleted.

.S$ACT1 and .S$ACT2
These files are used if the accounting feature is enabled during system generation. If the accounting feature is not enabled, these files are not needed on the disk.

.S$EXPMSG
This directory contains the explanations and recommended user actions for error and status messages. If the directory is removed, the Show Expanded Message (SEM) command and the question mark feature cannot gather explanations of error messages. It is recommended that you keep this directory on your system disk.

.S$LANG
This program file contains the Assembler and Link Editor when DNOS is installed. If COBOL is installed, COBOL also resides in .S$LANG. If your system disk is to be used only in a production environment that makes no use of these facilities, .S$LANG can be deleted. Note that this file is required for patching DNOS, since the Assembler is often called from DNOS patch files.

.S$MSG
This directory contains the basic messages for DNOS and utilities. If the directory is removed, the error and status messages will appear in an abbreviated form, showing only the internal message ID and variable text. It is recommended that you keep this directory on your system disk.

.S$OSLINK
This directory contains the linkable parts needed for a system generation. The directory does not need to be on the system disk, but can be used from any other disk during a system generation.

.S$SECURE
This program file includes software to handle file access security. If you do not use this feature of DNOS, you can delete this program file.

.S$SHIP

This program file is the initial system shipped with the object kit. If you generate your own system, you can delete this system. If you delete this file, you can also delete the directory .SSGU.S$SHIP on your system disk.

.SCI990

This set of run-time routines is needed if you are linking them with your own programs.

Section 4

Configuring the System

4.1 INTRODUCTION

The initial program load (IPL) performs all initialization necessary for the system to operate (for example, system log and accounting initialization). However, once you install and back up the system disk, you may want to perform additional system initialization before allowing other users to log on.

If you plan to use DNOS file security, be sure to carefully study the DNOS Security Manager's Guide, TI part number 2308954-9701, before allowing anyone to log on to the system.

The following paragraphs describe how to modify terminal status, assign user IDs, and configure additional devices.

4.2 MODIFYING TERMINAL STATUS

The default terminal mode is VDT. To change your terminal so that prompts for user ID and passcode appear, execute the following command:

```
[] MTS
MODIFY TERMINAL STATUS
                    TERMINAL NAME: STxy
              NEW STATUS (ON/OFF): ON
               NEW MODE (TTY/VDT): VDT
          DEFAULT MODE (TTY/VDT): VDT
                 ASK FOR USER ID?: YES
                ASK FOR JOB NAME?: YES
              ASK FOR ACCOUNT ID?: NO
  ASK FOR NAME MANAGER FILES?: NO
              RECONNECT ENABLED?: NO
    SUPPLY ACCOUNT ID
              DEFAULT ACCOUNT ID:
```

where:

STxy indicates your station number.

1. Enter the Quit SCI (Q) command to log off.

2. Log on again by pressing the Attention key and then the exclamation point (!).

3. This message and these prompts appear:

```
DNOS x.x.xx

     USER ID: SYSTEM
    PASSWORD:
    JOB NAME: <job name>
```

where:

x.x.xx indicates the released version of DNOS.

<job name> is a one- to eight-character alphanumeric string (for example, your name).

SYSTEM and SYSMGR are the only valid responses to the USER ID prompt after the first IPL. After you log on the system, your terminal is in VDT mode.

You can now use the MTS command, if you wish, to cause other terminals to prompt for job name and user ID. To determine which terminals were configured during the IPL, issue the List Device Configuration (LDC) command.

4.3 ASSIGNING USER IDS

Before other users can log on the system, you need to assign user IDs for them. User IDs allow them to maintain their own synonyms and logical names. You will also be able to define the privilege level for each user. If your system is going to use the file security option, skip this section and follow the procedures outlined in the DNOS Security Manager's Guide.

To assign a user ID, issue the Assign User ID (AUI) command with the following responses:

```
[] AUI
ASSIGN USER ID
            USER DESCRIPTION: <description>
                 NEW USER ID: <user ID>
              NEW PASSCODE: <passcode>
  USER PRIVILEGE CODE (0..7): <privilege code>
```

where:

<description> is a string of 1 to 20 characters. Use this to identify the user.

<user ID> is a string of one to eight alphanumeric characters.

<passcode> is a string of one to eight alphanumeric characters that comprise a passcode to be associated with the user ID assigned in response to the NEW USER ID prompt. If no passcode is given, the default is eight blanks. Special characters are legal passcode components.

<privilege code> is a number in the range of zero through seven. Seven denotes the highest privilege level.

4.4 CONFIGURING DEVICES

Use the System Configuration Utility (SCU) to add devices to or delete devices from a DNOS system by modifying the disk image of a generated DNOS system. You can also use SCU to change the system table sizes. You cannot use SCU to add nonstandard devices or communication devices to the system.

To configure additional devices, perform the following steps:

1. To use SCU to modify your system, you should copy the kernel program file (the file named with your system name) to another program file and then modify that copy. Issue the Copy Directory (CD) command to copy the current system kernel program file to a new program file:

```
COPY DIRECTORY
          INPUT PATHNAME: .S$SHIP
         OUTPUT PATHNAME: .TEMPDIR
   CONTROL ACCESS NAME:
   LISTING ACCESS NAME:
                 OPTIONS: ADD
   EXECUTION MODE(F,B): FOREGROUND
```

2. Modify the filename by entering the Modify File Name (MFN) command with the following responses:

```
MODIFY FILE NAME
             OLD PATHNAME: .TEMPDIR.S$SHIP
             NEW PATHNAME: .TEMPDIR.S$NEWSYS
                 REPLACE?: YES
```

3. Move the copy from the .TEMPDIR directory to the main directory with the CD command, using the following responses:

```
COPY DIRECTORY
          INPUT PATHNAME: .TEMPDIR.S$NEWSYS
         OUTPUT PATHNAME:
   CONTROL ACCESS NAME:
   LISTING ACCESS NAME:
                 OPTIONS: ADD
   EXECUTION MODE(F,B): FOREGROUND
```

4. Issue the Delete Directory (DD) command with the following responses:

```
DELETE DIRECTORY
                PATHNAME: .TEMPDIR
   LISTING ACCESS NAME:
          ARE YOU SURE: YES
```

5. To start a configuration session, enter the Execute System Configuration Utility (XSCU) command with the following responses:

```
EXECUTE SYSTEM CONFIGURATION UTILITY
        SYSTEM VOLUME: DSxy
          SYSTEM NAME: S$NEWSYS
```

where:

DSxy indicates the disk drive containing the system disk.

SCU displays the current device configuration. After reviewing the list, press the CMD key.

6. Enter the Modify Device Configuration (MDC) command. This command allows you to add new devices and change or delete existing devices. Refer to the DNOS System Generation Reference Manual, TI part number 2270511-9701, or the DNOS System Command Interpreter (SCI) Reference Manual, TI part number 2270503-9701, for instructions on how to use the MDC command.

7. After modifying the device configuration, issue the Quit Configuration Utility Session (QSCU) command with the following response:

```
QUIT CONFIGURATION UTILITY SESSION
                ABORT?: NO
```

The changes have now been made to the disk image of the copied system.

8. To test the new system, enter the Test Generated System (TGS) command with the following responses:

```
TEST GENERATED SYSTEM
 TARGET DISK/VOLUME: DSxy
        SYSTEM NAME: S$NEWSYS
```

where:

DSxy indicates your system disk drive.

9. Perform the IPL to initialize the test system.

10. Log on to the system.

11. Test the newly configured devices to be sure that they were added correctly. If any devices are incorrectly defined, use SCU to modify those devices. Reissue the TGS command and initialize the test system again.

12. When you are satisfied with the system, use the Install Generated System (IGS) command to make the system permanent:

```
INSTALL GENERATED SYSTEM
     TARGET DISK/VOLUME: DSxy
            SYSTEM NAME: S$NEWSYS
```

where:

DSxy indicates your system disk drive.

4.5 CAPABILITIES OF THE NEW DNOS SYSTEM

Your DNOS system includes the following optional capabilities:

* Full range of file types, including key indexed files
* Optional SVC (Supervisor Call Instruction) groups for accounting, encryption, and intertask communication
* System log and account information gathering
* All the utilities described in the DNOS System Command Interpreter (SCI) Reference Manual

4.6 GENERATING A NEW SYSTEM

Use the System Generation utility to generate a new system with additional capabilities or devices that cannot be defined using SCU. Refer to the DNOS System Generation Reference Manual for details about this utility and system generation.