



**Model 990 Computer**

**DNOS DNCS Nucleus  
Object Installation**

Part No. 2302660-9701 \*\*  
1 May 1982

**READ FIRST**

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READ THIS DOCUMENT BEFORE ATTEMPTING TO USE THE OBJECT KIT.  
 THIS DOCUMENT DESCRIBES RELEASE 1.0 OF THE DNCS NUCLEUS OBJECT  
 INSTALLATION MEDIA, PART NUMBER 2276803-1601 (DISK OR TAPE),  
 2276803-1602 (DISKETTE), AND 2276803-1603 (DISKETTE). REFER TO  
 THE RELEASE INFORMATION, PART NUMBER 2276805-9901, FOR  
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## Section 1

### Introduction

#### 1.1 GENERAL INFORMATION

This document describes the installation of the DNCS Nucleus object package under the DNOS operating system. The media must be restored to disk (if supplied on magnetic tape), copied to disk (if supplied on diskette), or used directly (if supplied on disk).

Be sure to copy and/or write protect the installation media. For copy procedures, refer to the Model 990 Computer DNOS Operations Guide, part number 2270502-9701.

Consult the Release Information for additional information concerning the current release.

This document presents all System Command Interpreter (SCI) commands in batch format. You can execute them by entering the command exactly as is or by using the interactive prompting from SCI. For a discussion of the batch command format, refer to the Model 990 Computer DNOS System Command Interpreter (SCI) Reference Manual, part number 2270503-9701.

#### 1.2 MEDIA DEFINITION

Product shipments are made in the following formats:

- \* Disk -- A DS10, DS50, DS200, or CD1400 disk containing the object
- \* Diskette -- Three double-sided, double-density (DSDD) diskettes containing the object
- \* Magnetic Tape -- An 800 or 1600 bits-per-inch (bpi) magnetic tape containing the object
- \* Add-On -- A disk containing the object and one or more other products

### 1.3 INSTALLATION OVERVIEW

The installation process described in this document provides the steps required to install the DNCS Nucleus object and generate a DNOS system that includes DNCS communications and DNCS Nucleus task support. These procedures are outlined as follows:

- \* Install the DNCS communications support.
- \* Install the communications device service routine (DSR) commands.
- \* Generate the DNOS system.
- \* Generate the communications DSRs.
- \* Assemble and link the DNOS system.
- \* Patch the communications DSRs.
- \* Patch the DNOS system.
- \* Install the FCCC download utilities.
- \* Generate the DNCS Nucleus tasks.
- \* Assemble and link the DNCS Nucleus tasks.
- \* Install the DNCS Nucleus tasks.
- \* Patch the DNCS Nucleus tasks.

### 1.4 SYSTEM REQUIREMENTS

To perform this installation procedure successfully, you must have a DNOS operating system (Release 1.0.0 or later) running on a Model 990/10 or 990/12 Computer with at least 512K bytes of memory.

## Section 2

### Preparing for Installation

#### 2.1 GENERAL

The DNCS Nucleus object is shipped on various media and must be prepared prior to installation. This section describes how to prepare each type of media.

#### 2.2 DOUBLE-SIDED, DOUBLE-DENSITY (DSDD) DISKETTE FORMAT

When you receive the object on DSDD diskette, it must be copied to a disk. The following steps outline this procedure:

1. Create the DNCS Nucleus object directory on an available disk by using the Create Directory File (CFDIR) command as follows:

```
CFDIR P=<dncsvolume>.DCFOW, M=50
```

where:

<dncsvolume> is the name of the disk where you create the directory.

2. Assign the synonym DCFWO to the DNCS Nucleus object directory by using the Assign Synonym (AS) command as follows:

```
AS S=DCFOW, V=<dncsvolume>.DCFOW
```

where:

<dncsvolume> is the name of the disk that contains the DNCS Nucleus object directory.

3. Load the DNCS Nucleus object diskette DCFWOF1 in an available drive and make it ready. Enable the diskette write protection.

4. Install the diskette volume by using the Install Volume (IV) command as follows:

```
IV U=<dsxx>, V=DCFWOFl
```

where:

<dsxx> is the name of the drive where the diskette is loaded.

5. Copy the contents of the diskette to the DNCS Nucleus object directory by using the Copy Directory (CD) command as follows:

```
CD I=DCFWOFl, O=DCFWO, L=.LISTING
```

The file .LISTING contains a listing of the directory copied from diskette. Check this file for errors by using a Show File (SF) or Print File (PF) command.

6. Unload the diskette volume by using the Unload Volume (UV) command as follows:

```
UV V=DCFWOFl
```

7. Load the DNCS Nucleus object diskette DCFWO2 in an available drive and make it ready. Enable the diskette write protection.

8. Install the diskette volume by using the IV command as follows:

```
IV U=<dsxx>, V=DCFWO2
```

where:

<dsxx> is the name of the drive where the diskette is loaded.

9. Copy the contents of the diskette to the DNCS Nucleus object directory by using the CD command as follows:

```
CD I=DCFWO2, O=DCFWO, L=.LISTING
```

The file .LISTING contains a listing of the directory copied from diskette. Check this file for errors by using an SF or PF command.

10. Unload the diskette volume by using the UV command as follows:

```
UV V=DCFWO2
```

11. Load the DNOS Common Communications DSR object diskette DNCMO in an available drive and make it ready. Enable the diskette write protection.
12. Install the diskette volume by using the IV command as follows:

```
IV U=<dsxx>, V=DNCMO
```

where:

<dsxx> is the name of the drive where the diskette is loaded.

13. Copy the contents of the diskette to the DNCS Nucleus object directory by using the CD command as follows:

```
CD I=DNCMO, O=DCFWO.S$OSLINK.DNCMO, L=.LISTING
```

The file .LISTING contains a listing of the directory copied from diskette. Check this file for errors by using an SF or PF command.

14. Unload the diskette volume by using the UV command as follows:

```
UV V=DNCMO
```

15. Proceed to paragraph 3.1 to continue the installation.

### 2.3 DISK FORMAT

When you receive the object on disk, perform the following steps:

1. Load the DNCS Nucleus object disk DCFWO in an available drive and make it ready. Disable the disk write protection.



2. Install the disk volume by using the IV command as follows:

```
IV U=<dsxx>, V=DCFOW
```

where:

<dsxx> is the name of the drive where the disk is loaded.

3. Proceed to paragraph 3.1 to continue the installation.

#### 2.4 MAGNETIC TAPE FORMAT

When you receive the object on magnetic tape, copy it to a disk as follows:

1. Create the DNCS Nucleus object directory on an available disk by using the CFDIR command as follows:

```
CFDIR P=<dncsvolume>.DCFOW, M=50
```

where:

<dncsvolume> is the name of the disk where the directory is to be created.

2. Assign the synonym DCFOW to the DNCS Nucleus object directory by using the AS command as follows:

```
AS S=DCFOW, V=<dncsvolume>.DCFOW
```

where:

<dncsvolume> is the name of the disk that contains the DNCS Nucleus object directory.

3. Mount the magnetic tape on an available tape drive and make it ready. Enable the tape write protection.
4. Copy the contents of the tape to the DNCS Nucleus object directory by using the Restore Directory (RD) command as follows:

```
RD S=<mtxx>, D=DCFOW, L=.LISTING
```

where:

<mtxx> is the name of the drive where the tape is mounted.

The file .LISTING contains a listing of the directory restored from magnetic tape. Check this file for errors by using a SF or PF command.

5. Unload the tape.
6. Proceed to paragraph 3.1 to continue the installation.

## 2.5 ADD-ON FORMAT

When the object is received as an add-on, perform the following steps:

1. If the DNCS Nucleus object add-on is received on the DNOS system disk and the system is running under that disk, then assign the synonym DCFWO to the DNCS Nucleus object directory by using the Assign Synonym (AS) command as follows:

```
AS S=DCFWO, V=.DCFWO
```

Proceed to paragraph 3.1 to continue the installation.

2. If the DNCS Nucleus object add-on is received on a secondary disk, then load the disk on which the add-on was received in an available drive and make it ready. Disable the disk write protection.
3. Install the disk volume by using the Install Volume (IV) command as follows:

```
IV U=<dsxx>, V=<dncsvolume>
```

where:

<dsxx> is the name of the drive where the disk is loaded.

<dncsvolume> is the volume name of the add-on disk.

4. Assign the synonym DCFWO to the DNCS Nucleus object directory by using the Assign Synonym (AS) command as follows:

```
AS S=DCFWO, V=<dnsvolume>.DCFWO
```

where:

<dnsvolume> is the name of the disk that contains the DNCS Nucleus object directory.

5. Proceed to paragraph 3.1 to continue the installation.

## Section 3

## Installing the DNCS Communications Support

## 3.1 GENERAL

The procedures in this section describe how to install the DNCS communications support.

## 3.2 INSTALLING THE DNCS COMMUNICATIONS INSTALLATION PROCEDURES

The directories S\$OSLINK.DNCMO and DNCMO are contained in the DNCS Nucleus object directory (DCFWO). These directories contain the DNOS Common Communications DSR linkable parts and the required DNCS communications DSR linkable parts.

Perform the following steps to install the DNCS Communications installation procedures:

1. Enter the following command to access the DNCS Communications DSR installation SCI procedures:

```
.USE DCFWO.DNCMO.DCMNS,.S$CMDS
```

2. Install the DNCS communications DSR installation procedures by using the Install Communications Commands (ICC) command as follows:

```
[]ICC
```

```
INSTALL COMMUNICATIONS COMMANDS  
DNCS NUCLEUS DIRECTORY: DCFWO  
SYSGEN DATA VOLUME:
```

```
DNCS NUCLEUS DIRECTORY
```

```
Enter the directory pathname of the DNCS Nucleus  
object directory. The proper response is DCFWO.
```

```
SYSGEN DATA VOLUME
```

```
Enter the access name of the volume or directory  
containing the DNOS system generation parts  
directory (.S$OSLINK). The response to this  
prompt must be the same volume name that will be  
entered in response to the DATA DISK/VOLUME prompt  
in the XSGU command. The response cannot be a  
device name, such as DSxx.
```

3. When ICC completes, the following message is displayed at the station:

BATCH SCI HAS COMPLETED

Press the RETURN key to receive the following additional message:

x ERRORS IN PATCH STREAM <DCFWO>.BL.DNPPCMNS:

where:

<DCFWO> is the value of the synonym DCFWO.

If the number of errors reported is nonzero, examine the file <DCFWO>.BL.DNPPCMNS by using a Show File (SF) command to determine the cause of the error(s). Correct the error(s) and repeat steps 1 and 2, above.

4. If the system you are building is to include multiple communications products such as 3780/2780 and DNCS communications, the installation procedures (ICC) for each product must be completed before the DNOS system generation. At this time, execute the installation procedures for each additional communications product.
5. Proceed to paragraph 4.1 to continue the installation.

## Section 4

### Generating a DNOS System with DNCS Communications Support

#### 4.1 GENERAL

The procedures in this section describe how to generate a DNOS system with DNCS communications support. If a DNOS system already exists with the proper support, proceed to paragraph 5.1 to continue the installation.

#### 4.2 GENERATING THE DNOS SYSTEM

Generate the DNOS operating system by using the Execute System Generation Utility (XSGU) command. The DNOS System Generation Reference Manual, part number 2270511-9701, documents this process. Paragraphs 4.2.1 through 4.2.4 define the DNCS-specific information that must be included in the generation of DNOS. Before you generate the DNOS system, refer to the DNCS Operations Guide, part number 2302662-9701, for an overview of the relationship between the DNOS and DNCS system generation processes.

#### CAUTION

Do not assemble, link, or patch the system until after the communications DSRs are generated as described in paragraph 4.3.

##### 4.2.1 DNCS IPC Support Definition

The DNCS Nucleus requires the DNCS interprocess communication (DNCS IPC) facility for communications with DNCS/SNA Emulators. This support is included in DNOS during the system generation process.

DNCS IPC is defined as a communication device as follows:

```
ENTITY?   DVC
DEVICE TYPE?  COM
COM DEVICE ADDRESS?  <address>
NUMBER OF CHANNELS?  2
CHANNEL NUMBER 00 PROTOCOL?  CMNS
CHANNEL NUMBER 01 PROTOCOL?  CMNS
INTERRUPT?  <interrupt>
```

where:

<address> is a CRU address not occupied in the 990 chassis.

<interrupt> is an interrupt level not used by any other device.

When multiple DNCS IPCs are defined, the <address> and <interrupt> responses for each subsequent IPC definition can be the same. In this case, the DNOS system generation utility displays the following error message, which may be ignored.

**WARNING: THAT ADDRESS HAS BEEN PREVIOUSLY DEFINED**

Further definition of DNCS IPC occurs during the Communications DSR generation process described in paragraph 4.3.

#### 4.2.2 DNCS Communications Device Support Definition

The DNCS Nucleus requires the DNOS Common Communications DSRs to support the communication devices. This support is included in DNOS during the system generation process. The system generation responses for including a four-channel communication controller (FCCC) board with all four channels used for DNCS Communications are as follows:

```
ENTITY?   DVC
DEVICE TYPE?  COM
COM DEVICE ADDRESS?  <address>
NUMBER OF CHANNELS?  4
CHANNEL NUMBER 00 PROTOCOL?  COMA
CHANNEL NUMBER 01 PROTOCOL?  COMA
CHANNEL NUMBER 02 PROTOCOL?  COMA
CHANNEL NUMBER 03 PROTOCOL?  COMA
INTERRUPT?  <interrupt>
```

where:

<address> is the TILINE address of the FCCC.

<interrupt> is the interrupt level of the board.

#### 4.2.3 DNCS Communications I/O SVC Support Definition

The DNCS Nucleus requires an SVC processor for DNCS communications. This support is included in DNOS during the system generation process as follows:

```
ENTITY? SVC
SVC GROUP NAME? COMM I/O SVC
```

#### 4.2.4 DNCS Intertask Communications Support Definition

The DNCS/SNA Emulator PTR1 requires the intertask communication SVC processor. This support is included in DNOS during the system generation process as follows:

```
ENTITY? SVC
SVC GROUP NAME? INTERTASK COMMUNICATION
```

### 4.3 GENERATING THE COMMUNICATIONS DSRs

After the definition of the DNOS operating system is complete and prior to assembling and linking the generated system, the communications DSRs must be built. The building of the DSRs requires that the DNOS generation configuration file be present.

#### 4.3.1 Installing the DNOS Common Communications DSR Commands

The following steps install the DNOS Common Communications DSR commands in the DSR parts directory:

1. Enter the following command to access the DNOS Common Communications DSR commands installation SCI procedures:

```
.USE <sysgen volume>.$OSLINK.DNCMO,.$CMDS
```

where:

<sysgen volume> is the access name of the volume or directory containing the DNOS system generation parts directory (.OSLINK).



2. Install the DNOS Common Communications DSR commands by using the Install Communications DSR Commands (IDC) command as follows:

```
[ ]IDC
```

```
INSTALL COMMUNICATIONS DSR COMMANDS
  SYSGEN DATA DISK/VOLUME:
  LISTING DIRECTORY NAME:
```

**SYSGEN DATA DISK/VOLUME**

Enter the access name of the volume or directory containing the DNOS system generation parts directory (.S\$OSLINK). The response to the prompt must match the response to the DATA DISK/VOLUME prompt in the XSGU command.

**LISTING DIRECTORY NAME**

Enter the directory pathname to be used for listings and program files by the Communications DSR generation procedure. IDC creates this directory with a maximum entry size of 10 and further creates the batch listing subdirectory .BL. The recommended pathname is DCFWO.

IDC executes a batch stream that updates the communications DSR installation commands.

3. When IDC completes, the following message is displayed at the station:

```
BATCH SCI HAS COMPLETED
```

Press the RETURN key to receive the following additional message:

```
x ERRORS IN PATCH STREAM <directory>.BL.DNPPCOMM:
```

where:

<directory> is the pathname entered in response to the LISTING DIRECTORY NAME prompt of the IDC command.

If the number of errors reported is nonzero, examine the file <directory>.BL.DNPPCOMM by using a Show File (SF) command to determine the cause of the error(s). Correct the error(s) and repeat steps 1 and 2, above.

### 4.3.2 Building Communications DSRs

Build the communications DSRs by using the Build Communications DSRs (BCD) command as follows:

```
[ ]BCD
```

```
BUILD COMMUNICATIONS DSRs
  SYSGEN DATA DISK/VOLUME:
    TARGET DISK/VOLUME:
      SYSTEM NAME:
```

#### SYSGEN DATA DISK/VOLUME

Enter the access name of the volume or directory containing the DNOS system generation parts directory (.S\$OSLINK). The response to this prompt must match the response to the DATA DISK/VOLUME prompt in the XSGU command.

#### TARGET DISK/VOLUME

Enter the access name of the volume or directory containing the DNOS system configuration directory (.S\$SGU\$). The response to this prompt must match the response to the TARGET DISK/VOLUME prompt in the XSGU command.

#### SYSTEM NAME

Enter the name given in response to the OUTPUT CONFIGURATION prompt in the XSGU command.

A batch stream links and installs a task, CONFIG, onto the program file <directory>.S\$COMGEN, where <directory> is the pathname entered in response to the LISTING DIRECTORY NAME prompt of the IDC command. This task reads the configuration file generated during execution of the XSGU command. The task also accumulates the parameters entered when a communication device is defined. The task is reentered until all communication devices are defined or an end-of-file (EOF) is reached.

If the initial phase of this task executes without error, the prompt set defined in paragraph 4.3.3.1 is displayed. Proceed to paragraph 4.3.3 to define the DSR components.

If an error occurs during the initial phase of execution of this task, the build process terminates and error messages are queued for display. The first message to appear is as follows:

```
DSR GENERATION FAILED. CHECK FOLLOWING ERROR MESSAGE
```

Press RETURN to display the next message, which is one of the following:

ABNORMAL TERMINATION ERROR >xxxx

Explanation:

The CONFIG task terminated with an error code of >xxxx.

User Action:

The DNOS Messages and Codes Reference Manual, part number 2270506-9701, contains an explanation of the SVC internal code >xxxx. Read the explanation and use the specified recovery procedure. To restart the communications DSR generation, reenter the BCD command.

ABNORMAL TERMINATION-ILLEGAL FORMAT OF SYSTEM CONFIGURATION FILE

Explanation:

An illegal format was found in the configuration file. This message appears if one of the following conditions occurs:

- \* The task finds no communications devices in the configuration file.
- \* The task encounters an EOF before all parameters are accumulated.
- \* The task reads unexpected data, when accumulating information on a communications device.

User Action:

Correct the problem and reenter the BCD command.

#### 4.3.3 DSR Component Definition

The following paragraphs describe the definition of the Communications DSR components.

4.3.3.1 Board Type Definition. When all the information describing the first communication device (defined during execution of the XSGU command) is gathered, the following prompt set appears:

```
DEFINE COMMUNICATIONS BOARD TYPE AT DEVICE ADDRESS >xxxx  
BOARD TYPE: <type>
```

where:

>xxxx is a four-digit hexadecimal CRU/TILINE address.

<type> is the type of communications controller installed at the CRU/TILINE address. The default is COMIF. Enter FCCC in response to the prompt.

This prompt set appears for each communications device defined.

4.3.3.2 Automatic Calling Unit (ACU) Definition. When the BOARD TYPE response is entered and RETURN pressed, the following display appears:

```
DEFINE AUTO CALL UNIT CRU ADDRESS FOR DEVICE CMxx  
ACU CRU(FOUR HEX DIGITS): FFFF
```

where:

CMxx is the name of the communications device.

DNCS does not support an ACU for the FCCC device. Accept the initial value FFFF by pressing RETURN. This prompt set appears for each channel defined on the board.

4.3.3.3 DNCS IPC Definition. If a communication device with protocol of CMNS was defined during the XSGU process, the following prompt set appears:

```
DEFINE SINGLE CMNS ON DEVICE CMxx  
NUMBER OF SESSIONS: <integer>
```

where:

CMxx is the name of the device.

<integer> is the number of sessions (or resources) to be allowed on the DNCS IPC channel. The initial value for <integer> is 16, and the valid range is 1 through 255.

This prompt set appears for each communications device defined with the protocol of CMNS.

#### 4.3.4 Linking the DSR

When the last prompt associated with the last device is entered and RETURN pressed, the following prompt appears:

ENTER <CR> TO START DSR GENERATION PROCESS.:

To abort the process, enter NO and press RETURN. Continue pressing RETURN until all messages queued to the station have been displayed and the main DNOS SCI menu appears. These messages can be ignored. The BCD command must be reentered to restart.

To continue with DSR generation, press RETURN. The DSR generation process links each communications DSR generated during the execution of the BCD command. The following messages appear at the top of the screen indicating which DSR is being linked:

GENERATE CMNS DSR LINK CONTROL FILE AND LINK DSR

GENERATE COMA DSR LINK CONTROL FILE AND LINK DSR

When the DSR generation process completes, the following message appears:

COMPLETE XSGU PROCESS AND APPLY DSR PATCHES:

Press RETURN to display the first of a series of messages, each reporting the number of errors that occurred during one phase of the generation process. Press RETURN to display subsequent messages.

#### CAUTION

Pressing the CMD key or entering a hard break sequence before completion of the DSR generation interrupts normal operation of the process. You must enter the Kill Background Task (KBT) command to abort DSR generation. To restart DSR generation, reenter the BCD command.

If the number of errors reported in any of these messages is not zero, examine the file named in the message to determine the cause of the error(s). Correct the problem and restart the DSR generation process. Refer to paragraph 4.3.5 for a list of possible completion messages. When an error-free DSR generation is completed, proceed to assemble and link the DNOS system (paragraph 4.4).

## NOTE

If you are building multiple communications packages, the process described in paragraphs 4.3.3 through 4.3.5 will vary. Refer to the object installation guides for those other packages for further information.

## 4.3.5 Completion Messages

The following list shows the completion messages that appear at the end of the DSR generation process. The messages include the pathnames of the batch listing files describing the errors.

BATCH SCI HAS COMPLETED (appears several times)

- x ERRORS REPORTED IN <directory>.BL.GENINS
- x ERRORS REPORTED IN <directory>.BL.GENPAT
- x ERRORS REPORTED IN <directory>.BL.DSRCOMA
- x ERRORS REPORTED IN <directory>.BL.DSRCMNS
- x ERRORS REPORTED IN <directory>.BL.COMSWS

where:

<directory> is the pathname entered in response to the LISTING DIRECTORY NAME prompt of the IDC command.

## 4.4 ASSEMBLING AND LINKING THE DNOS SYSTEM

Assemble and link the DNOS system by using the Assemble and Link Generated System (ALGS) command as explained in the DNOS System Generation Reference Manual, part number 2270511-9701. When this phase completes successfully, proceed to patch the communications DSRs and the DNOS system as described in the next paragraph.

## 4.5 PATCHING THE COMMUNICATIONS DSRs AND THE DNOS SYSTEM

After successfully assembling and linking the system, apply the necessary patches to the Communications DSRs and the DNOS system. Use the Patch Communications System (PCS) command to apply

Communications DSR and DNOS system patches simultaneously.

1. Patch the communications system by using the PCS command as follows:

```
[ ]PCS
```

```
PATCH COMMUNICATIONS SYSTEM
  SYSGEN DATA DISK/VOLUME:
    TARGET DISK/VOLUME:
      SYSTEM NAME:
        PROTOCOL NAME(S):
          INSTALL KERNEL PATCHES?: NO
          LISTING DIRECTORY DESIRED?: NO
```

#### SYSGEN DATA DISK/VOLUME

Enter the name of the volume or directory containing the DNOS system generation parts and the .S\$OSLINK.PATCH directory (containing KERNEL patches). The response to this prompt must match the response to the DATA DISK/VOLUME prompt in the XSGU command. The default is the value entered in the BCD command.

#### TARGET DISK/VOLUME

Enter the name of the volume or directory that contains the system being patched. The response to this prompt must match the response to the TARGET DISK/VOLUME prompt in the ALGS command. The default is the value entered in the BCD command.

#### SYSTEM NAME

Enter the system name supplied in response to the OUTPUT CONFIGURATION prompt during the XSGU process.

#### PROTOCOL NAME(S)

Enter the names of all communications protocols being patched. This list should contain the names of all communication protocols entered in response to the CHANNEL NUMBER xx PROTOCOL prompts given during the definition of communications devices in XSGU. Commas separate individual protocols in this response.

#### INSTALL KERNEL PATCHES?

If the Patch Generated System (PGS) command has already been executed, enter NO. If PGS has not been executed, enter YES to execute the DNOS kernel patch batch stream.

#### LISTING DIRECTORY DESIRED?

Enter YES to direct the listings to a directory on

disk. Enter NO to direct the listings to a device. If you enter YES, the following additional prompt appears:

LISTING DIRECTORY NAME:

Enter the directory name where the patch batch listing(s) are to be written. PCS creates this directory with a maximum entry size of 5 and further creates the subdirectory .BL for batch listings resulting from the patch process. The recommended directory name is DCFWO.

If you enter NO, the following additional prompt appears:

LISTING DEVICE:

Enter the name of a device to receive the patch batch listing(s).

2. PCS patches the communications DSRs that support the protocols defined for communications devices during XSGU.

When PCS completes, press RETURN to view the first of a series of completion messages, each reporting on one phase of the patching process. Press RETURN again to view subsequent messages. For protocols COMA and CMNS, the following messages appear. Other communications messages appear when other protocols are defined.

The completion messages are as follows:

BATCH SCI HAS COMPLETED (appears several times)

x ERRORS IN DNPCMNS PATCH STREAM:

x ERRORS IN DNPCSWs PATCH STREAM:

x ERRORS IN CMONCOMA (DNPCMON) PATCH STREAM:

x ERRORS IN DNPCOMA PATCH STREAM:

x ERRORS IN CMONCMNS (DNPCMON) PATCH STREAM:

If any one of these messages reports a nonzero error value, the patching process is incomplete. Examine the file named in the message to determine the cause of the error(s). Take appropriate action to correct the error, and reenter the PCS command.

If no errors are reported, the patches have been applied to the disk-resident system image.



#### 4.6 INSTALLING THE COMMUNICATIONS DOWNLOAD UTILITIES

A DNOS system configured with the FCCC must have utilities to download patches to the FCCC. The following paragraphs describe the installation of the download utilities and their use.

##### 4.6.1 Installing the Utilities

Install the download utilities by using the Install Utility Tasks (IUT) command as follows:

```
[ ]IUT
```

```
INSTALL UTILITY TASKS
  SYSGEN DATA DISK/VOLUME:
    TARGET DISK/VOLUME:
  BATCH LISTING ACCESS NAME:
```

##### SYSGEN DATA DISK/VOLUME

Enter the access name of the volume or directory containing the DNOS system generation parts directory (.S\$OSLINK). The response to this prompt must match the response to the DATA DISK/VOLUME prompt in the XSGU command. The default is the value entered in the BCD command.

##### TARGET DISK/VOLUME

Enter the access name of the disk on which the newly generated system resides. This disk must already be installed. The response to this prompt must match the response to the TARGET DISK/VOLUME prompt in the ALGS command. The default is the value entered in the BCD command.

##### BATCH LISTING ACCESS NAME

Enter the pathname of the file designated to hold the batch listing generated by the utility task installation process. The recommended pathname is DCFWO.BL.IUTLST.

When you enter the response to the last prompt, the utility task installation process begins. When IUT completes, the following message appears:

```
BATCH SCI HAS COMPLETED
```

Press the RETURN key to receive the following additional message:

```
x ERRORS REPORTED IN BATCH UTLINS:
```

If the error count is nonzero, examine the batch listing file to determine the cause of the error(s). Then take the appropriate corrective action and reenter the IUT command.

#### 4.6.2 Patching the Utility Tasks

Patch the utility tasks by using the Patch Utility Tasks (PUT) command as follows:

```
[ ]PUT
```

```
PATCH UTILITY TASKS
  SYSGEN DATA DISK/VOLUME:
    TARGET DISK/VOLUME:
  BATCH LISTING ACCESS NAME:
```

##### SYSGEN DATA DISK/VOLUME

Enter the access name of the volume or directory containing the DNOS system generation parts directory (.S\$OSLINK). The response to this prompt must match the response to the DATA DISK/VOLUME prompt in the XSGU command.

##### TARGET DISK/VOLUME

Enter the access name of the disk on which the utility tasks are installed. The tasks located on this disk are on the program file .S\$COMM.S\$COMMDN. The response to this prompt must match the response given to the TARGET DISK/VOLUME prompt in the ALGS command.

##### BATCH LISTING ACCESS NAME

Enter the pathname of a file designated to hold the batch listing generated by the patch utility process. The recommended pathname is DCFWO.BL.PUTLST.

When you enter the response to the last prompt, the patching process begins. When PUT completes, the following message appears:

```
x ERRORS IN UTLPAT PATCH STREAM:
```

If the error count is nonzero, examine the batch listing file to determine the cause of the error(s). Then take the appropriate corrective action and reenter the PUT command.

### 4.6.3 Completing the Utility Installation

To complete the utility installation, edit the initialize system batch stream file (.S\$ISBTCH) to include a Communication Device Download Utility (CDL) command for each FCCC defined during DNOS generation as follows:

```
CDL  COMM DEVICE NAME = <cmxx>,
      INPUT CONTROL ACNM = .S$COMM.FC3CTL,
      OUTPUT CONTROL ACNM = DUMY,
      LISTING ACNM = DUMY
```

where:

<cmxx> is the device name assigned to the FCCC during system generation.

You should specify only one channel/device name for the FCCC for COMM DEVICE NAME. The FCCC should be downloaded following each initial program load (IPL) of the system.

The system log records a message indicating the success of the download operation. If successful, a message appears in the following format:

```
ddd:tttt+      COMMDWNL(CMxx,80.354),L=yyyy
                P= .S$COMM.S$COMMDN                      ,B=0000
```

Unsuccessful download completion messages appear in the following form:

```
ddd:tttt+      COMMDWNL(CMxx,80.354),E=xxxx,
                P=.S$COMM.S$COMMDN                      ,B=0000
ddd:tttt+      COMMDWNL(CMxx,80.354),R=yyyy,
                P=.S$COMM.S$COMMDN                      ,B=0000
```

where:

ddd is the julian day.

tttt is the time that the message is logged.

CMxx is the device name of the FCCC.

L=yyyy is the load address.

E=xxxx is the error returned during execution of the download task. The DNCS Nucleus Release Information, part number 2276805-9901, documents the error codes.

R=yyyy is the starting address of the area that has been released due to the error indicated by E=xxxx.

.S\$COMM.S\$COMMDN is the name of the program file that contains the code being downloaded.

#### 4.7 INSTALLING THE DNOS SYSTEM

Install the generated system by using the Test Generated System (TGS) and Install Generated System (IGS) commands as explained in the DNOS System Generation Reference Manual, part number 2270511-9701. Proceed to paragraph 5.1 to continue the installation.

## Section 5

## Installing the DNCS Nucleus Tasks

## 5.1 GENERAL

The procedures in this section describe how to generate the DNCS Nucleus tasks, install the tasks on a DNOS system, and patch the tasks.

## 5.2 GENERATING THE DNCS NUCLEUS TASKS

Perform the following steps to generate the DNCS Nucleus tasks.

1. Ensure that the DNCS Nucleus volume DCFWO is installed or the synonym DCFWO is assigned to the DNCS Nucleus object directory as explained in Section 2.
2. Enter the following command to access the DNCS Nucleus object installation SCI procedures:

```
.USE DCFWO.RELEASE.PROC,.S$CMDS
```

3. Patch the DNCS generation utility by using the Patch DNCS Generation Utility (PDGU) command as follows:

```
[ ]PDGU
```

```
PATCH DNCS GENERATION UTILITY
DNCS NUCLEUS DIRECTORY: DCFWO
DNCS PATCH DIRECTORY:
```

```
DNCS NUCLEUS DIRECTORY
```

```
Enter the directory pathname of the DNCS Nucleus
object directory. The proper response is DCFWO.
```

```
DNCS PATCH DIRECTORY
```

```
Enter the directory pathname where the patch
subdirectories reside. The standard response is
DCFWO. Otherwise, enter the directory pathname
containing the .PATCH directory.
```

The following messages appear at the station after you enter PDGU. Respond to each message by pressing RETURN.

BATCH LISTING FILE WILL BE...:

^<patch directory>.PATCH.LSTGEN^:

where:

<patch directory> is the value entered for the DNCS PATCH DIRECTORY prompt (synonym expanded).

4. Wait for PDGU to complete by using the Waiting for Background Task to Complete (WAIT) command as follows:

[]WAIT

5. When PDGU completes, the following message appears at the station:

x ERRORS IN DNCSGEN PATCH STREAM:

If the number of errors reported is nonzero, examine the file <patch directory>.PATCH.LSTGEN by using a Show File (SF) command to determine the cause of the error(s). Correct the error(s) and reenter PDGU.

6. Execute the DNCS generation utility by using the Execute DNCS Generation Utility (XDGU) command as follows:

[]XDGU

EXECUTE DNCS GENERATION UTILITY  
 DNCS NUCLEUS DIRECTORY: DCFWO  
 DNCS GENERATION DIRECTORY:  
 INPUT CONFIGURATION:  
 OUTPUT CONFIGURATION:

DNCS NUCLEUS DIRECTORY

Enter the directory pathname of the DNCS Nucleus object directory. The default is DCFWO, the value entered in the PDGU command.

DNCS GENERATION DIRECTORY

Enter the volume name or existing directory pathname desired for the DNCS configuration files. The directory .S\$DGU\$ (with a maximum of 15 entries) is created under this directory to hold the configuration files.

## INPUT CONFIGURATION

Enter the name of the DNCS configuration to be modified, if desired. Otherwise, no name is required.

## OUTPUT CONFIGURATION

Enter the name of the DNCS configuration to be built.

## NOTE

Refer to the DNCS Operations Guide, part number 2302662-9701, for a complete description of the XDGU process.

7. Verify the DNCS configuration by using the Verify DNCS Configuration (VDC) command as follows:

```
[ ]VDC
```

## VERIFY DNCS CONFIGURATION

DNCS NUCLEUS DIRECTORY: DCFWO

DNCS GENERATION DIRECTORY:

CONFIGURATION:

LISTING:

## DNCS NUCLEUS DIRECTORY

Enter the directory pathname of the DNCS Nucleus object directory. The default is DCFWO, the value entered in the XDGU command.

## DNCS GENERATION DIRECTORY

Enter the directory pathname where the DNCS configuration files reside. The default is the value entered in the XDGU command. Otherwise, enter the directory pathname containing the .S\$DGU\$ directory.

## CONFIGURATION

Enter the name of the DNCS configuration. The default is the value entered for the OUTPUT CONFIGURATION prompt in the XDGU command.

## LISTING

Enter the file pathname where the verification listing is to be written.

VDC executes in the foreground and completes with the following message:

NO ERRORS DETECTED IN CONFIGURATION DEFINITION

NOTE

Refer to the DNCS Operations Guide, part number 2302662-9701, for a complete description of the VDC process.

8. Build the DNCS configuration tables by using the Build DNCS Configuration Tables (BDCT) command as follows:

```
[ ]BDCT
```

```
BUILD DNCS CONFIGURATION TABLES
  DNCS NUCLEUS DIRECTORY: DCFWO
  DNCS GENERATION DIRECTORY:
  CONFIGURATION:
```

DNCS NUCLEUS DIRECTORY

Enter the directory pathname of the DNCS Nucleus object directory. The default is DCFWO, the value entered in the XDGU command.

DNCS GENERATION DIRECTORY

Enter the directory pathname where the DNCS configuration files reside. The default is the value entered in the XDGU command. Otherwise, enter the directory pathname containing the .S\$DGU\$ directory.

CONFIGURATION

Enter the name of the DNCS configuration. The default is the value entered for the OUTPUT CONFIGURATION prompt in the XDGU command.

BDCT executes in foreground and completes with the following message:

CONFIGURATION TABLES BUILT SUCCESSFULLY



9. Assemble and link the DNCS configuration by using the ALDC command as follows:

[ ]ALDC

ASSEMBLE AND LINK DNCS CONFIGURATION  
 DNCS NUCLEUS DIRECTORY: DCFWO  
 DNCS GENERATION DIRECTORY:  
 CONFIGURATION:

DNCS NUCLEUS DIRECTORY

Enter the directory pathname of the DNCS Nucleus object directory. The default is DCFWO, the value entered in the BDCT command.

DNCS GENERATION DIRECTORY

Enter the directory pathname where the DNCS configuration files reside. The default is the value entered in the BDCT command. Otherwise, enter the directory pathname containing the .S\$DGU\$ directory.

CONFIGURATION

Enter the name of the DNCS configuration. The default is the value entered for the CONFIGURATION prompt in the BDCT command.

The following messages appear at the station after you enter ALDC. Respond to each message by pressing RETURN.

BATCH STATUS FILE WILL BE...:

^<custom>.LIST.ERRLOGxx^:

where:

<custom> is the pathname defined by the concatenation of the DNCS GENERATION DIRECTORY response, the value .S\$DGU\$, and the CONFIGURATION response.

xx is the station ID.

10. Wait for ALDC to complete by using the WAIT command as follows:

[ ]WAIT

11. When ALDC completes, the following message appears at the station:

BATCH SCI HAS COMPLETED

Press the RETURN key to receive the following additional message:

==>x ERRORS IN ALDC BATCH STREAM:

If the number of errors is nonzero, examine the files <custom>.LIST.ERRLOGxx and <custom>.LIST.ALDC by using an SF command to determine the cause of the error(s). Correct the error(s) and reenter ALDC.

### 5.3 INSTALLING THE DNCS NUCLEUS TASKS

Perform the following steps to install the DNCS Nucleus tasks:

1. Install the DNCS Nucleus tasks on a DNCS system by using the Install DNCS Nucleus (INSFW) command as follows:

```
[ ]INSFW
```

```
INSTALL DNCS NUCLEUS TASKS
```

```
  DNCS NUCLEUS DIRECTORY: DCFWO
```

```
  DNCS GENERATION DIRECTORY:
```

```
    CONFIGURATION:
```

```
    DNCS SYSTEM VOLUME:
```

```
    DNOS SYSTEM VOLUME:
```

```
  DNCS COMMAND DIRECTORY:
```

```
DNCS NUCLEUS DIRECTORY
```

Enter the directory pathname of the DNCS Nucleus object directory. The default is DCFWO, the value entered in the ALDC command.

```
DNCS GENERATION DIRECTORY
```

Enter the directory pathname where the DNCS configuration files reside. The default is the value entered in the ALDC command. Otherwise, enter the directory pathname containing the .S\$DGU\$ directory.

```
CONFIGURATION
```

Enter the name of the DNCS configuration. The default is the value entered for the CONFIGURATION prompt in the ALDC command.

**DNCS SYSTEM VOLUME**

Enter the directory (or volume) name where the DNCS Nucleus program file .S\$DNCS.PGMTASK is to be created to contain the DNCS Nucleus tasks.

**DNOS SYSTEM VOLUME**

Enter the directory (or volume) name where the .S\$SHARED and .S\$UTIL program files reside.

**DNCS COMMAND DIRECTORY**

Enter the directory pathname where the DNCS SCI procedures are to be installed. The normal response is <sysvol>.S\$CMDS, where <sysvol> is the DNOS system volume.

The following messages appear at the station after you enter INSFW. Respond to each message by pressing RETURN.

BATCH LISTING FILE WILL BE...:

^<custom>.LIST.INSFW^:

where:

<custom> is the pathname defined by the concatenation of the DNCS GENERATION DIRECTORY response, the value .S\$DGU\$, and the CONFIGURATION response.

2. Wait for INSFW to complete by using the WAIT command as follows:

[ ]WAIT

3. When INSFW completes, the following message appears at the station:

BATCH SCI HAS COMPLETED

Press the RETURN key to receive the following additional message:

x ERRORS IN INSFW BATCH STREAM:

If the number of errors is nonzero, examine the file <custom>.LIST.INSFW by using an SF command to determine the cause of the error(s). Correct the error(s) and reenter INSFW.

#### 5.4 PATCHING THE DNCS NUCLEUS TASKS

Perform the following steps to patch the DNCS Nucleus tasks:

1. Patch the DNCS Nucleus tasks by using the Patch DNCS Nucleus (PATFW) command as follows:

```
[ ]PATFW
```

```
PATCH DNCS NUCLEUS TASKS
  DNCS NUCLEUS DIRECTORY: DCFWO
  DNCS GENERATION DIRECTORY:
    CONFIGURATION:
    DNCS SYSTEM VOLUME:
    DNOS SYSTEM VOLUME:
  DNCS PATCH DIRECTORY:
```

##### DNCS NUCLEUS DIRECTORY

Enter the directory pathname of the DNCS Nucleus object directory. The default is DCFWO, the value entered in the INSFW command.

##### DNCS GENERATION DIRECTORY

Enter the directory pathname where the DNCS configuration files reside. The default is the value entered in the INSFW command. Otherwise, enter the directory pathname containing the .S\$DGU\$ directory.

##### CONFIGURATION

Enter the name of the DNCS configuration. The default is the value entered for the CONFIGURATION prompt in the INSFW command.

##### DNCS SYSTEM VOLUME

Enter the directory (or volume) name where the DNCS Nucleus program file .S\$DNCS.PGMTASK resides.

##### DNOS SYSTEM VOLUME

Enter the directory (or volume) name where the .S\$SHARED program file resides.

##### DNCS PATCH DIRECTORY

Enter the directory pathname where the patch sub-directories reside. The standard response is DCFWO. Otherwise, enter the directory pathname containing the .PATCH directory.

The following messages appear at the station after you enter PATFW. Respond to each message by pressing RETURN.

BATCH LISTING FILE WILL BE...:

´<patch directory>.PATCH.LSTFW´:

where:

<patch directory> is the value entered for the DNCS PATCH DIRECTORY prompt (synonym expanded).

2. Wait for PATFW to complete by using the WAIT command as follows:

[ ]WAIT

3. When PATFW completes, the following message is displayed at the station:

x ERRORS IN DNCS NUCLEUS PATCH STREAM:

If the number of errors is nonzero, examine the file <patch directory>.PATCH.LSTFW by using an SF command to determine the cause of the error(s). Correct the error(s) and reenter PATFW.

## 5.5 COMPLETING THE TASK INSTALLATION

Perform an initial program load (IPL) to load the DNCS Nucleus memory resident tasks into memory.

Proceed to paragraph 6.1 to continue the installation.

## Section 6

### Executing the DNCS Nucleus Job

#### 6.1 GENERAL

The procedures in this section describe how to start and stop the DNCS Nucleus job.

#### 6.2 EXECUTING THE DNCS NUCLEUS JOB

Perform the following steps to execute the DNCS Nucleus job.

1. If the response to the DNCS COMMAND DIRECTORY prompt in the Install DNCS Nucleus (INFW) command in Section 5 was the DNOS system directory .S\$CMDS, proceed to step 2. Otherwise, enter the following command to use the DNCS procedure library:

```
.USE <cmddir>,.S$CMDS
```

where:

<cmddir> is the value entered for the DNCS COMMAND DIRECTORY prompt in the INFW command.

2. Execute the DNCS Nucleus job by entering the Execute DNCS (XDNCS) command. The following display appears at your station:

```
[ ]XDNCS
```

```
EXECUTE DNCS  
RESTART (YES/NO): NO
```

RESTART(YES/NO)

Enter YES only if you are restarting DNCS following a Terminate DNCS (TDNCS) command. Otherwise, accept the initial value of NO.

### 6.3 TERMINATING THE DNCS NUCLEUS JOB

Perform the following steps to terminate the DNCS Nucleus job:

1. If the response to the DNCS COMMAND DIRECTORY prompt in the INSFW command in Section 5 was the DNOS system directory .S\$CMDS, proceed to step 2. Otherwise, enter the following command to use the DNCS procedure library:

```
.USE <cmddir>,.S$CMDS
```

where:

<cmddir> is the value entered for the DNCS COMMAND DIRECTORY prompt in the INSFW command.

2. Terminate the DNCS Nucleus job by entering the TDNCS command at a station that is under Execute Operator Interface (XOI) control. The following display appears at the station:

```
[ ]TDNCS
```

```
TERMINATE DNCS  
ARE YOU SURE?: NO
```

ARE YOU SURE?

Enter YES to terminate the DNCS job. The initial value is NO.

3. DNCS terminates successfully when the following message appears:

```
I DNCS-0001 DNCS TERMINATED:
```

## Appendix A

## Patching at a Later Date

## A.1 PATCHING THE COMMUNICATIONS DSRs

Apply Communications DSR patches that become available after the system is installed as follows:

1. Load the disk that contains the new patches in an available drive and make it ready. Enable the disk write protection.
2. Install the disk volume by using the IV command as follows:

```
IV U=<dsxx>, V=<patchvolume>
```

where:

<dsxx> is the name of the drive where the disk is loaded.

<patchvolume> is the name of the disk that contains the new patches.

3. Assign the synonym DNCMO to the Common Communications DSR object parts directory by using the AS command as follows:

```
AS S=DNCMO, V=<sysgen data disk>.$OSLINK.DNCMO
```

where:

<sysgen data disk> is the access name of the volume or directory containing the DNOS system generation parts directory (.S\$OSLINK).

4. Copy the new patch files to the Communications DSR object parts disk patch directories by using the Copy/Concatenate (CC) command as follows:

```
CC I=<patchvolume>.DNCMO.DNPCSWS,  
O=DNCMO.DCOMM.P.DNPCSWS,  
R=Y
```



```
CC I=<patchvolume>.DNCSMO.DNPPCOMN,  
O=DNCSMO.DCOMM.P.DNPPCOMN,  
R=Y  
  
CC I=<patchvolume>.DNCSMO.GENPAT,  
O=DNCSMO.DCOMM.P.GENPAT,  
R=Y  
  
CC I=<patchvolume>.DNCSMO.DNPPCOMM,  
O=DNCSMO.DCOMM.P.DNPPCOMM,  
R=Y  
  
CC I=<patchvolume>.DCFWO.DNPPCMNS,  
O=DNCSMO.DCMNS.P.DNPPCMNS,  
R=Y  
  
CC I=<patchvolume>.DCFWO.DNPPCMNS,  
O=DNCSMO.DCMNS.P.DNPPCMNS,  
R=Y  
  
CC I=<patchvolume>.DNCSMO.DNPPCOMA,  
O=DNCSMO.DCOMA.P.DNPPCOMA,  
R=Y
```

where:

<patchvolume> is the name of the disk that contains the new patches.

5. Execute the Install DNCS Communications Installation procedures as described in paragraph 3.2.
6. Execute the Install DNOS Common Communications DSR commands as described in paragraph 4.3.1.
7. Execute the PCS command as described in paragraph 4.5. Enter NO in response to the INSTALL KERNEL PATCHES? prompt.
8. Perform an initial program load (IPL) to load the patched communications DSRs into memory.

## A.2 PATCHING THE COMMUNICATIONS DOWNLOAD UTILITIES

Apply communications download utility patches that become available after the system is installed as follows:

1. Load the disk that contains the new patches in an available drive and make it ready. Enable the disk write protection.

2. Install the disk volume by using the IV command as follows:

```
IV U=<dsxx>, V=<patchvolume>
```

where:

<dsxx> is the name of the drive where the disk is loaded.

<patchvolume> is the name of the disk that contains the new patches.

3. Assign the synonym DNCMO to the Common Communications DSR object parts directory by using the AS command as follows:

```
AS S=DNCMO, V=<sysgen data disk>.$SOSLINK.DNCMO
```

where:

<sysgen data disk> is the access name of the volume or directory containing the DNOS system generation parts directory (.S\$OSLINK).

4. Copy the new patch files to the Communications DSR object parts disk patch directories by using the CC command as follows:

```
CC I=<patchvolume>.DNCMO.DNPPCOMM,  
O=DNCMO.DCOMM.P.DNPPCOMM,  
R=Y
```

```
CC I=<patchvolume>.DNCMO.UTLPAT,  
O=DNCMO.DUTIL.P.UTLPAT,  
R=Y
```

where:

<patchvolume> is the name of the disk that contains the new patches.

5. Execute the Install DNOS Common Communications DSR . commands as described in paragraph 4.3.1.
6. Execute the PUT command as described in paragraph 4.6.2.