DATA SYSTEMS GROUP

D N O S

D N C S   N U C L E U S

R E L E A S E   A N D   U P D A T E

I N F O R M A T I O N

Release 1.3.0

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TABLE of CONTENTS

SECTION 1

GENERAL INFORMATION

1.1 INTRODUCTION

This document contains information about the DNCS Nucleus product, release 1.3.0, that is not contained elsewhere in the standard documentation associated with the object installation kit.

The subjects that are discussed in this document are special features or considerations that may be important for the proper installation and operation of the object package.

1.2 DNCS 1.3 OVERVIEW

The following paragraphs provide an overview of topics discussed in greater detail throughout this document.

1.2.1 NEW FEATURES AND ENHANCEMENTS.

Updates to the DNCS Nucleus since the last release are as follows;

1. Gateway/client support. This release provides transparent SNA and X.25 service to client systems that are connected on the same Ethernet LAN as the Gateway. The DNIO communications package allows distribution of DNCS commands and procedures to the client for user friendly and transparent access to Gateway services. Prior to this release, the user was required to do a "network logon" to the Gateway before executing any DNCS command. With this release, the network logon is no longer required. Part of the DNCS user interface can be distributed to the client systems such that all commands can be initiated at the client. All of the commands in the Nucleus command groups /NUC, /DNET, /SVQ, and /SITES have been revised to operate in both

gateway/client and single computer environments.

2. Revised object installation procedures that describe how to install DNCS software on a client computer. The use of a Gateway User ID and Password is also described since various functions asscociated with DNCS require the initiation of a job at the gateway.

3. DNCS Operation Guide revised and reissued to include information on gateway/client operation, SVQ utility improvements, and revised command prompt descriptions for XDNCS, TDNCS, CFQ, HOSTQST, LSITE, and CSDT. The CI command !D TERMS has a new parameter <LOC> which allows display of additional information concerning SNA Emulator user status.

4. All patches from previous release incorporated into source.

1.2.2 MIGRATION FROM DNCS 1.2.

DNCS 1.3 must be installed on a DNOS 1.2.1 or later system volume. DNCS 1.3 is not compatible with earlier versions of DNOS.

The DNCS configurations created by the DNCS 1.2 generation utility are compatible with DNCS 1.3, and may be used as input configurations to DNCS 1.3. You must execute the XDGU procedure for each existing configuration and then follow the object installation procedures defined for DNCS 1.3 because there are changes in the data structures created for DNCS 1.3.

1.2.3 RESOURCE REQUIREMENTS.

Section 2 provides the information necessary to determine how much disk space and memory a particular DNCS configuration will require.

1.2.4 SYSTEM GENERATION CONSIDERATIONS.

Section 3 details several items concerning DNCS configuration definition and operation of XDGU that should be reviewed prior to generating a DNCS configuration.

1.2.5 SPECIAL CONFIGURATION CONSIDERATIONS.

Section 4 addresses several special requirements, such as running DNCS and 3780 from the same CP503, that should be reviewed prior to generating a DNCS configuration.

1.2.6 DNOS COMMUNICATIONS SUBSYSTEM CONSIDERATIONS.

Section 5 contains several items concerning specific communications hardware interface modules, and the standard utilities that should be reviewed when planning a new DNOS/DNCS system.

1.2.7 KNOWN PROBLEMS.

Section 6 documents additional messages that do not appear elsewhere in DNCS documentation, as well as certain known operational restrictions and problems.

1.2.8 PATCHES AND PATCH PROCEDURES.

Section 7 discusses how to obtain and apply patches that are made available after initial installation of this DNCS release.

1.2.9 PROBLEM ISOLATION AND REPORTING.

Section 8 discusses the steps necessary to isolate a DNCS system failure, collect the required data, and report this information to your customer representative for resolution.

SECTION 2

RESOURCE REQUIREMENTS

2.1 DISK SPACE REQUIREMENTS

The following table summarizes the approximate disk space requirements for the DNCS Nucleus and its add-on parts. These requirements fall into three general areas: object installation parts, configuration dependent parts, and execution parts. The figures are estimates and will vary depending on the number of sectors/ADU of the disk and configuration parameters. Generally, the larger the sectors/ADU the more disk space required, due to disk allocation on an ADU basis. Also, the more configurable resources defined in DNCS the more disk space required. The ADU size in the following table is based on 864 bytes/ADU with a physical record size of 768 bytes.

Object Installation Parts	gateway disk resident space (ADUs)	client disk resident space (ADUs)
DCFWO (Nucleus)	4100	-
DCEMO (SNA add-on)	900	-
DCRFTO (RFT add-on)	1000	-
DC9140 (914 add-on)	200	-
Configuration Dependent Parts		
Typical DNCS system	2500-3000	-
Execution Parts		
Commands, program files, and logs	1100-1700	400-500

Note that the configuration dependent parts are on a per system basis; each new configuration requires approximately 2500-3000 more ADUs.

2.2 MEMORY REQUIREMENTS

In that DNCS is highly configurable, its memory requirements vary widely from one configuration to the next. Therefore, a method is presented to give the user an idea of the relative size of a given configuration.

2.2.1 MEMORY WORKSHEET.

The following worksheet will give a rough estimate of how much memory DNCS will require.

COMPONENT	MEMORY	RESIDENT	NON-RESIDENT	
NUCLEUS: Base	61700	61700	51000	51000
SDLC circuit (each)	300	______	1000	______
MAXREADS	__ x 400	______		
LAP circuit (each)	400	______	1500	______
128 byte packets, MAXREADS	__ x 380	______		
256-1024 byte, MAXREADS __ x (.... + 120) (.... is packet size)		______		
SNA SUPPORT: Base			50400	______
PU			100	______
LU			10	______
CIPC circuit (each)	300	______		
RESOURCES	__ x 60	______		
Active EM3278 station (first)			20500	______
(second and subsequent)			7200	______
Active EM3287 task (first)			12900	______
(second and subsequent)			4400	______
X.25 SUPPORT: Base			46500	______
SNA interface			9300	______
DNIO interface			7900	______
RFT circuit	300	______		
MAXREADS	__ x 900	______		
NIO circuit	300	______		
MAXREADS	__ x 700	______		
Active RFT task			35000	______
TOTAL:	resident:	______	non-resident:	______

2.3 IMPACT OF DNCS ON DNOS SYSTEM TABLE AREA

The DNOS system table area is impacted both directly and indirectly by the DNOS communication subsystem and DNCS communication requirements. Directly by inclusion of the Physical Device Tables (PDTs) for each communication channel. Indirectly by increasing the DNOS system root, which limits the maximum allowed system table size. The following equation may be used to calculate the impact on system table area (in bytes) for support of DNCS communications. All variables are specified during the generation of DNOS with DNCS communication support as described in the DNCS Nucleus Object Installation Guide.

```
1032 + 484*(no. of DEVICEs with BOARD TYPE of DIPC)
     + 10*(sum of all SESSIONs for all DEVICEs with BOARD TYPE of
       DIPC)
     + 426*(no. of CHANNELs with PROTOCOL of SDLC)
     + 554*(no. of CHANNELs with PROTOCOL of LAP)
     + 104*(no. of DEVICEs with BOARD TYPE of CP503)
     + 210*(no. of CHANNELs for all DEVICEs with BOARD TYPE of
       CP503 and PROTOCOL of LAP, SDLC, or COMA)
     + 162*(no. of DEVICEs with BOARD TYPE of CP501 or CP502)
     + 218*(no. of DEVICEs with BOARD TYPE of CI421)
```

SECTION 3

DNCS GENERATION CONSIDERATIONS

3.1 DNCS SYSTEM GENERATION

The following paragraphs describe DNCS System Generation (DNCSGEN) features and limitations relating to the current release.

3.1.1 DNCS GENERATION UTILITY (XDGU).

XDGU presents a user friendly interface for entering required configuration parameters. The following information may be helpful in preventing operational problems that may occur when trying to use XDGU.

1. While in XDGU, it is possible to modify a circuit which supports resources, such as CIPC circuits, to a circuit which does not support resources, such as SDLC circuits. This is an error condition. A circuit so defined should be deleted and re-added.

2. The ´print´ key under XDGU works if TIFORM is installed on the user´s system. If TIFORM is not installed, the ´print´ key does not work and the following message appears: ´NTERNAL ERROR CODE >0041 xxxxx´.

3.1.2 VERIFY DEVICE CONFIGURATION PROCESS.

The verify process is not intended to find all possible errors that might be entered when creating a particular DNCSGEN configuration. In particular, the following is a list of errors you might make during DNCSGEN that the verification will not catch:

1. Pooled LU assignments for resources of type SVQ, PTR, or KSR. These resource types normally have dedicated logical units rather than logical units assigned from a pool because it is usually desirable to have messages

sent to a particular logical unit address to always be sent to the same resource.

2. A circuit referencing a port which is defined on the wrong type board to support the required function, i.e., an IPC circuit attached to a port which is defined on a FCCC board, or a SDLC circuit attached to a port which is defined on a VIRTUAL board.

SECTION 4

SPECIAL CONFIGURATION CONSIDERATIONS

4.1 MODIFYING THE SIZE OF THE DNCS BUFFER POOL

Due to the dynamic requirements of the DNCS buffer pool, the XDGU process may not, in some cases, cause a large enough buffer pool to be allocated at DNCS startup time. Therefore, with some configurations, DNCS may display one or more occurrences of either of the following messages:

DNCS0514 E MAXREADS ON CIRCUIT xx REDUCED TO yy

DNCSxx01 E RSVBID: GET BUFFER FAILURE; L/C=aaaa, P=bbbb

If either of these messages occur, terminate DNCS and increase the total number of buffers available to the system in one of the following ways:

1. Text edit the file .SDGU.configname.S.SCTDEF. Near the end of the file, locate the following statement:

   NUMBID DATA nnn

   where: nnn is a 3 digit decimal number

   Increase the value nnn by 20% and rerun ALDC, and PIDC.

   OR

2. Locate the address of BUFHDR+2 in the linkmap .S$DGU.configname.LINKMAP.DNCSSCT and patch (using MPI) the word at this address to a larger value (20%) and restart DNCS.

4.2 SHARING A CP503 BETWEEN DNCS AND OTHER SOFTWARE PACKAGES

When a CP503 (FCCC) communications interface module is specified in the DNCS generation process, the resulting DNCS configuration assumes that DNCS will have exclusive use of the CP503. That is, XDNCS (and TDNCS) will issue a master reset to the CP503. Additionally, during normal operation DNCS will issue a master reset to the CP503 whenever a CI command is issued to stop or restart the DNCS board associated with the CP503. A master reset issued to the CP503 causes all functions on that board to cease immediately, and all downloaded protocol code to be discarded.

Therefore, if other communications software packages, such as 3780, RTS, or ICS are to use one or more ports on a CP503 concurrently with DNCS, the generated DNCS configuration needs to be altered as follows:

1. After XDGU is completed, but before doing ALDC, text edit the file .SDGU.configname.S.PDCDEF. Near the end of the file, locate the following set of statements that corresponds to the CP503 that is to be shared:

```
          BOARD  0
   PORTaa PORT 0,>bb,0,CMxx

   where: aa   is a 2 digit decimal DNCS port number
          bb   is the LUNO specified in XDGU for this port
          CMxx is the DNOS communications device name of
                    a port on the CP503 to be shared.
```

   Change the statement "BOARD 0" to "BOARD 1". This change will prevent DNCS from issuing a master reset to this CP503 whenever a CI stop or restart board command is issued to this board.

   The following items are side effects of making the above change:

   a. DNCS will not load any CP503 firmware patches to this board; therefore, they must be loaded prior to DNCS startup via the CDL common utility.

   b. It will now be impossible to stop a port on this board that is in the disconnected "DISCN" state.

   c. DNCS will not be able to automatically restart a port on this board if certain I/O operations to that port fail to complete properly.

2. Run the ALDC and PIDC procedures.

3. After PIDC completes, text edit the file DNCSASYN in the DNCS command directory (the DNCS command directory is normally .S$CMDS). Locate the following statement:

   ```
   .SYN  $$RSTBRD = "(CMxx,CMyy,...)"
   ```

   This statement defines the list of CMxx device names to which master resets (via CRSET) are to be issued during the execution of the XDNCS and TDNCS procedures. Delete the CMxx device from this list that corresponds to the CP503 that is to be shared. Note that this step must be repeated following each exeuction of PIDC with the option INSTALL=YES.

4. The XDNCS command should now be placed in .S$ISBTCH following the CDL of the firmware patches for this CP503.

4.3 USING LAP NRZI ON CP502

DNCS now supports LAP NRZI on the CP502 (the CP502 supplies the clocking), but this option cannot be directly requested during XDGU. Instead, the following steps must be taken to enable this support:

1. After XDGU is completed, but before doing ALDC, text edit the file .SDGU.configname.S.PDCDEF. Locate the following circuit statement that is connected to the CP502 that is to run LAP NRZI:

   ```
   CIRCnn CIRC PORTxx,4,0,LAP,0,0,278,278,7,134,0,0,7,7,3*2,10
   ```

   where: nn is a 2 digit decimal DNCS circuit number
   xx points to the port statement that, in turn, contains the CMxx DNOS communications device name of the desired CP502.

   Change the character string "LAP" to "LAPN".

2. Run ALDC and PIDC procedures.

SECTION 5

DNOS COMMUNICATIONS SUBSYSTEM CONSIDERATIONS

5.1 DNOS COMMUNICATIONS SUBSYSTEM

The following paragraphs describe communication subsystem features relating to the current release.

5.1.1 COMMUNICATIONS INTERFACE MODULES.

The supported communication interface modules are CP501 (BCAIM), CP502 (X.21 BCAIM), CP503 (FCCC), and CI421 (ALPHA).

5.1.1.1 CP503 - FOUR CHANNEL COMMUNICATIONS CONTROLLER. (FCCC). The FCCC occupies one full slot in the 990 chassis. Refer to the FCCC Installation and Operation Manual (part number 2263878-9701) for a detailed description of the board and its appropriate slot position and interrupt level. The recommended interrupt level and TILINE address is interrupt 8 and TILINE address >F900. The TILINE address is switch selected on the FCCC board and is independent of the slot it occupies in the chassis.

NOTE

> Use communications interface cable, part number 946117-0001 or -0002, when connecting an FCCC channel to an external modem. If a full 24 pin cable is used, the FCCC channel's receive circuitry will be disabled, even with pin 24 cut.

5.1.1.2 CP501 - BIT-ORIENTED/CHARACTER-ORIENTED ASYNCHRONOUS INTERFACE MODULE. (BCAIM). The BCAIM occupies one-half slot in the 990 chassis. Refer to the BCAIM Installation and Operation Manual (part number 2263883-9701) for a detailed description of the board and its appropriate slot position and interrupt level. The recommended interrupt level is 7.

NOTE

When ordering the BCAIM communications Interface Kit (part number 2303091-0002), the kit will include either cable 2303070-0002 or 2303079-0002.

5.1.1.3 CP502 - X.21 BIT-ORIENTED/CHARACTER-ORIENTED ASYNCHRONOUS INTERFACE MODULE. (X.21 BCAIM). The X.21 BCAIM occupies one-half slot in the 990 chassis. Refer to the X.21 BCAIM Installation and Operation Manual (part number 2263886-9701) for a detailed description of the board and its appropriate slot position and interrupt level. The recommended interrupt level is 7. This is the only board that supports NRZI mode via synchronous modems.

NOTE

When ordering the X.21 BCAIM Communications Interface Kit (part number 2265184-0002), the kit will include either cable 2303070-0002 or 2303079-0002.

5.1.1.4 CI421 - TWO CHANNEL COMMUNICATIONS BOARD. (ALPHA). The ALPHA is mounted piggyback on the Business System 300 terminal control board. Refer to the Business System 300 Operator's Guide (part number 2533318-9701) for information related to this device.

5.1.2 USING A COMBINATION OF COMMUNICATIONS INTERFACE MODULES.

In systems where a combination of the above interface modules are present, the BCAIM or X.21 BCAIM should have a higher interrupt level than the FCCC. The higher the interrupt level, the lower its numerical value. In general, the load placed upon the CPU is directly related to the number of interrupts. Interrupt levels, interrupt rates, and the number of devices being supported are all factors to be considered when configuring an operating system.

5.1.3 USE WITH BELL 201B OR SYNTEK MODEMS.

The BELL data set interface (part number 946104-0002) does not operate properly with the BELL 201B modem or SYNTEK modems unless the cable (part number 946117-0001) is modified by cutting the wire connected to pin 24 of the male cable connector. Mark the cable to indicate this modification.

5.1.4 DNOS COMMON COMMUNICATIONS UTILITIES.

The DNCS Nucleus uses the Reset Communications Device (CRSET) to reset the FCCC and BCAIM devices. Refer to the Dnos Common Communications Utilities Guide, part number 2308783-9701 for an explanation of utility commands, log messages, and error codes.

5.1.5 CP503 VERIFICATION OF OPERATION.

The Comm Device List Memory (CLM) utility command may be used to test the CP503. Enter the CP503 CMxx device name and the starting address 09A. If the CLM command executes properly, the version of the firmware will be displayed. This version should be 80.354 or later. Display of this information proves that the CP503 is processing interrupts correctly, thus eliminating a mismatch between the address/interrupt on the board and the system configuration. If problems persist, the CP503 should be tested using diagnostics.

5.1.6 CP501/CP502 VERIFICATION OF TYPE/OPERATION.

The CLM utility command may be used to test the CP501/CP502 and to determine whether the board is, in fact, a CP501 or CP502 without visually checking the board. Enter the CMxx device name for the board and the starting address of 096. If the CLM command executes properly, the second word displayed will be 0002 for CP501 and 0003 for CP502. Display of this information proves that the board is processing interrupts correctly, and is installed/generated at the correct CRU address. If the CLM fails, the board should be tested using diagnostics.

SECTION 6

KNOWN PROBLEMS

This section documents known problems that may be encountered in installing and operating the DNCS Nucleus object package.

6.1 SOFTWARE

1. When certain communication I/O operations are not completed within 10 seconds, DNCS automatically (without operator intervention) issues a master reset to the board. This reset mechanism is used to force completion of the I/O requests so that a failure of one communication interface module will not cause DNCS to "hang", thereby not servicing other active DNCS functions. This automatic board reset, however, is not issued to an FCCC (CP503) when it is marked as shared by non-DNCS protocols (see Section 4 for an explanation of this option).

2. XDNCS and TDNCS procedures issue a reset to the CP503 (FCCC) which clears all downloaded code on the board. If other communications software packages are to share the same CP503, it is recommended that you follow the steps in section 4 concerning "sharing of CP503 between DNCS and other communications software packages".

3. STR 10376 - Password protection of DNCS commands is available only thru a DNCS CI command. However, this specification is not permanent and must be re-entered whenever the system is rebooted. Optional patch 1750 in PATNUC allows permanent enabling of password protection and specification of the password value.

4. STR 18856 - Under certain peak SVQ data I/O traffic conditions, QHOST transactions may be interrupted by an IPC error 06 and force the SVQ host queue server (SVQHST) to abnormally terminate. Patch P3843 corrects this problem.

5. STR 18884 - Under certain data traffic and communications link conditions, SVQHST has been

observed to dequeue unprocessed transactions from the service queue file as though they had been processed. If entries are on the service queue file and SVQHST loses its session (the PU goes inactive), the host reconnect sequence may get disrupted, when SVQHST attempts to send transactions after the PU becomes active. A series of DNCS0013 messages may occur in the host trace file in association with this problem. Any unprocessed transactions must be reentered on the service queue.

6.2 DOCUMENTATION

1. The DNCS Nucleus Object Installation Guide (paragraph 5.5) specifies that when installing a new DNCS configuration, it is necessary to reboot the system before executing XDNCS. If the system is not rebooted, the memory segment allocated for the old PDCT task may not be large enough to hold the new PDCT put into execution by DNCSINIT. This causes PDCT to go to end action. However, the reboot forces the correct segment length.

2. The SBLU resource referenced in the DNCS System Generation Manual is reserved for internal use.

SECTION 7

PATCHES AND PATCH PROCEDURES

7.1 PATCH UPDATE PROCEDURE

Patches are maintained by Texas Instruments and are available to customers from two sources - Customer Support Line and Patch Update Service. The Customer Support Line is able to provide patches on an as needed basis over the telephone or by communications link. Call (512)-250-7407 to get the latest patch files. Periodically, Texas Instruments will ship all current patches for the DNOS system family software to customers on the subscription service. Refer to the DNOS Products Patch Update Service Release Information for a list of the latest patches. In both cases, a detailed explanation will be provided on how to apply the patches to your system.

It is recommended that you call the Customer Support Line to get the latest patches prior to installation of the product.

7.2 APPLYING PATCHES RECEIVED AT A LATER DATE

When you receive patch updates, instructions are included in the update package which describe how to copy the patch files to your master media.

SECTION 8

PROBLEM ISOLATION AND REPORTING

The following steps should be taken to isolate a DNCS system failure, collect the necessary data, and report the problem to your customer representative for resolution.

8.1 DNCS SYSTEM "HANG"

There are many internal integrity checks made by DNCS during normal execution. If one of these checks determines the internal integrity of DNCS has been compromised, the DNCS job will "hang" with all DNCS tasks suspended, except DNCSCLOK. To verify that an intentional DNCS "hang" condition exists, do the following:

1. Execute the DNOS XOI command.

2. Execute the XJM command.

3. Page forward (F1) until XJM displays the DNCS job status.

4. Observe the job status for several seconds; if all DNCSxxxx tasks are in state 06 (except DNCSCLOK) and remain in state 06, then either a task has taken abnormal end action, or an automatic "hang" condition has been forced.

5. Execute the DNOS QOI command.

If it is determined that a DNCS "hang" condition exists, do the following steps to collect data about the condition for later analysis by your customer representative:

1. Create a "PROBLEM" directory to be used to collect pertinent data files.

2. Log off the current SCI session and log onto the DNCS job, USER ID=<DNCS USER ID>, PASSCODE=<DNCS PASSCODE>, JOB NAME=DNCS, RECONNECT=YES (where DNCS USER ID and DNCS PASSCODE are the values defined during the PIDC

installation process). Note that you may need to modify your terminal status via the MTS command in order to RECONNECT.

3. Execute the LJ command with JOB NAME=DNCS, TASK INFO=YES, LISTING ACCESS NAME=<PROBLEM>.LJ

4. Execute the XJM command again; look for the DNCSxxxx task that is causing the "hang" condition as follows:

   a. Look for any DNCSxxxx task in state 06 at PC 0052 or 0058; if any found, this is the task causing the hang; else

   b. Look at DNCSCLOK status; if not present, or in state 06 and remains in state 06, this is the task causing the "hang"; else

   c. Look for a DNCSxxxx task (other than DNCSCLOK) that is in state 06 at a PC that is not 084C, but the PC is less than 26D8; if found, this is the task causing the "hang"; else

   d. Look for DNCSPDCT task, if it is in state 06 at PC 4972, it is the task causing the "hang".

5. Note the RUN ID of the task causing the "hang".

6. Execute the LM command with RUN ID=ID of task causing "hang". STARTING ADDRESS=0, NUMBER OF BYTES=0FFFE, LISTING ACCESS NAME=<PROBLEM>.LMid where "id" is value of RUN ID.

7. Log off the DNCS job and log back on under a different job.

8. Execute the TDNCS command to terminate DNCS.

9. Execute the CC command with INPUT ACCESS NAME=.S$DNCS.LOG, OUTPUT ACCESS NAME=<PROBLEM>.DNCSLOG.

10. Execute the CC command with INPUT ACCESS NAME=.S$LOG1 OUTPUT ACCESS NAME=<PROBLEM>.DNOSLOG1.

11. Execute the CC command with INPUT ACCESS NAME=.S$LOG2 OUTPUT ACCESS NAME=<PROBLEM>.DNOSLOG2.

12. Document, to the best of your ability, what functions were being performed by DNCS just prior to the "hang". For example, "just entered the CI command DISPLAY

BOARDS, then the command DISPLAY CIRCUITS; the DISPLAY CIRCUITS never completed".

13. If desired at this time, execute the XDNCS command.

14. Collect linkmaps and other configuration data as outlined in the next paragraph.

8.2 DNOS SYSTEM CRASH

If a system crash occurs, refer to the DNOS Messages and Codes Reference Manual for an explanation of the crash code shown on the programmer panel of the CPU. To conduct a crash analysis, refer to the DNOS Systems Programmer's Guide. If the crash is not understandable, or if the crash continues to occur, or if the crash was forced, you may want to send information to your customer representative for analysis. Before sending the crash file, be sure that it was created large enough to contain the entire system image.

If your software was supplied to you directly by Texas Instruments and you are sending the information to Texas Instruments for analysis, please send the following information on either magnetic tape, diskettes, or some other disk media:

1. The .S$CRASH file from the system crash saved according to procedures described in the DNOS Messages and Codes Reference Manual.

2. The DNOS system linkmaps (found in files SYSMAP, IOUMAP, DMMAP), system configuration (found in file CONFIG), communication subsystem linkmaps (found in files DMAPCOMA, DMAPCMNS, DMAPSDLC, DMAPLAP, CMAPCSWS), and communication subsystem configuration (found in file LSTCFDSR) for the system in use at the time of the crash. If these linkmaps are on the running system, they can be found in the directory .SSGU.<system name>.

3. The DNCS Nucleus linkmaps found in the directory <dncs generation volume>.SDGU.<configuration>.LINKMAP for the system in use at the time of the crash.

4. The DNCS system configuration found in the file <dncs generation volume>.SDGU.<configuration>.TEXTCONF for

the system in use at the time of the crash.

5. The DNCS configurable task definition files found in the directory <dncs generation volume>.SDGU.<configuration>.LIST.

6. A text file with information about the system activity at the time of the crash.

7. A current listing of your software configuration, the output from the List Software Configuration (LSC) command.

8. The DNCS and RFT log files.