

NOS V2.1 OPERATING SYSTEM  
LEVEL 580/577

SOFTWARE RELEASE BULLETIN

CDC recommends that the Software Release Bulletin be read in its entirety prior to software installation. Any conflicts between the IHB and the SRB are to be resolved in favor of the SRB.

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INSTALLATION RESPONSE FORM

## 1.0 INTRODUCTION

CDC recommends that the Software Release Bulletin be read in its entirety prior to software installation. Any conflicts between the IHB and the SRB are to be resolved in favor of the SRB.

### 1.1 Installation Tape

The format of the RELO tape is as follows:

| <u>FILE</u> | <u>RECORD</u> | <u>DESCRIPTION</u>                                  | <u>FILE NAME*</u> |
|-------------|---------------|-----------------------------------------------------|-------------------|
| 1           | 1             | Procedure to install files from RELO                |                   |
|             | 2             | REP binaries (Installation Summary Report)          | REP               |
|             | 3-n           | Installation Decks (MODIFY PL)                      | DECKOPL           |
| 2           | 1-n           | Operating System Corrective Code (Text file)        | MDYMODS           |
| 3           | 1             | Product Set Corrective Code (UPDATE PL format)      | CPRD              |
| 4           | 1             | Miscellaneous Corrective Code** (UPDATE PL format)  | MISCPL            |
| 5           | 1             | Network Products Corrective Code (UPDATE PL format) | CNSP              |
| 6           | 1             | APL Corrective Code (UPDATE PL format)              | CAPL              |

\* Permanent files are created from RELO by procedure TAPE with the indicated file names. All files are direct access.

\*\* MISCPL contains only NOS V2.0 modsets for downward compatibility.

Files MDYMODS and CNSP contain no corrective code for this release.

### 1.2 Unconfigured Deadstart Tape

The Unconfigured Deadstart Tape (UDST) contains sample CMRdecks with associated LIBdecks and IPRdecks for CYBER 170 models 176, 730, 760 and 825. These decks are provided for example only to show various configurations including new equipment such as NOS High Speed I/O (DB devices) and RHF NADs (NC devices).

Since QU3 uses DBU, which is not supported on NOS V2.1, the UDST will contain overlays ABS/DFRCU and ULIB/DMSLIB. The source for DBU is not available with this release.

## 2.0 INSTALLATION NOTES

### 2.1 New Installation Procedures

Significant and fundamental changes have been made to the installation process since NOS V2.0. This section is provided to highlight the changes and to clarify the explanations in the Installation Handbook and cannot be considered a full explanation of the process. You should read this section, Section 2 of the Installation Handbook (IHB) and the publications errata for the NOS Version 2 Installation Handbook very carefully to obtain a good understanding of the build process.

Major new features are as follows:

- \* By far the most meaningful feature is the ability to perform the entire installation in a production environment that is running a NOS V2.0 system. You can also install using the NOS V2.1 580/577 Unconfigured Deadstart Tape (UDST) for your running system in a dedicated environment. The same build process is used regardless of the running system in use.
- \* DECKOPL has been redesigned to use the Global Library Set feature for storage of compiler binaries and text overlays used in the build process on file GLOBLIB. The file PRODUCT holds all user libraries needed. The build procedures do not use these items from the running system.
- \* SYSEDIT is no longer used. Those products that previously required SYSEDIT now use the procedure called END to store all necessary compiler binaries and text overlays in a permanent file containing a user library called GLOBLIB. This library is made local to all build jobs and the CYBER Loader searches GLOBLIB first to locate and execute binaries, thus removing any need to add binaries to the system libraries for subsequent build steps.
- \* A new procedure called SEED is provided in DECKOPL to initialize the files PRODUCT and GLOBLIB. When SEED is called, the UDST must be available as a local file.

An example of the use of the SEED procedure is as follows:

```
LABEL,tape,D=density,PO=R,LB=KU,VSN=udst.  
COPYEI,tape,udst,V.  
BEGIN,SEED,INSTALL,DST=udst.
```

(where tape is the lfn of the UDST)

The COPYEI of the deadstart tape to a disk file will greatly reduce the execution time of the SEED procedure.

SEED creates file PRODUCT with all the necessary user libraries from the UDST. SEED also creates a user library called GLOBLIB, containing all text overlays and compiler binaries from the UDST needed to begin the installation process.

NOTE: SEED will by default only extract binaries and user libraries from any deadstart tapes that are available on the UDST. If you are SEEDing with an intermediate deadstart tape, as created by the proc GENSYS, then you need to include in PRODUCT and GLOBLIB additional binaries and user libraries created by the build jobs that have previously been executed. This is accomplished by including the parameter REBUILD on all calls to SEED after the initial call. This parameter causes SEED to extract all available binaries and user libraries from the deadstart tape that are needed to rebuild any product already installed, or to continue the installation process. An example of this use of the SEED procedure is as follows:

```
LABEL,tape,D=density,PO=R,LB=KU,VSN=NTHDST.  
COPYEI,tape,NTHDST,V.  
BEGIN,SEED,INSTALL,DST=NTHDST,REBUILD.
```

(where tape is the lfn of the most recent deadstart tape generated via GENSYS)

- \* The procedure MDYBIN previously was used to do binary installations of modify products and the SYSTEM procedure to do source installations from the composite OPL generated by COMBINE. These have been replaced with separate procedures for the each product. The procedures each have a BINARY install option with the exception of the NOS procedure since the binaries for NOS are provided on the UDST.

- Binary installations use the released REL tape.
- The composite OPL is used to build the modify products as was done in the past. The name has been changed from SYSOPL to RELOPL however to accommodate the needs of the AUXPL procedure.

Other features include:

- \* Direct calling of installation procedures. If called from an interactive job, the installation procedure submits a batch job to install the product. If called from DIS or a BATCH job, it executes in line.

- \* All use of the COMMON(SYSTEM) command has been removed from the installation process. Binaries which used to be obtained by using COMMON(SYSTEM) will be used from GLOBLIB or PRODUCT.
- \* All procedures reside on a direct access procedure file named INSTALL. The name can be changed from INSTALL to any legal file name of your choice. To change the name:

1. Use the permanent file command:

CHANGE,newname=INSTALL.

(or)

2. Include INSTALL=newname on the call to SETUP.

PROCFIL is a convenient name for the file INSTALL if PROCFIL is not already being used. The use of PROCFIL would allow the string INSTALL to be left out of the call to the installation procedure.

- \* Local site code may be kept on a permanent file and made available to the installation procedure via the parameter

USERF=pfname

where USERF is a formal parameter used by all build procedures, and pfname is the permanent file name of a direct access or indirect access file containing all the local site code for the product.

- \* The build procedures may be run with the product program libraries on:

1. Magnetic tape,
2. Permanent files, or
3. Permanent files on removable disk packs.

Options 2 and 3 are used by setting the default value of parameter DISKINS in DECKOPL to YES.

Building from permanent files applies to all jobs except CROSS/CCP. CROSS/CCP no longer requires the R parameter (for disk type) when you are building from an auxiliary disk pack. Prior to calling the CROSS/CCP procedure use the following command:

PACKNAM,packname/R=devicetype.

at your terminal or in your batch job.

- \* Most of the formal parameters used in the build procedures are defined in common decks on DECKOPL. You may set your own default values prior to starting the install process. You are not required to change any of the default settings. See number 3 below under GETTING STARTED.
- \* Procedures DECKFIX and GENFILS have been replaced with the procedure called SETUP which also performs additional functions.
- \* Procedure GENJOB has been deleted. Build procedures are called directly and the procedure SUBPROC is used to perform common functions for all jobs.

#### GENERAL INSTALLATION NOTES

- \* When installing under DIS, it may be necessary to create a procedure similar to the following to call COMBINE since the length of the COMBINE command may exceed the line length accepted under DIS.

```
.PROC,COMBINE.  
BEGIN,COMBINE,INSTALL,XEDIT,MMF,TRACER,  
      TOOLS,TAF,IAF,MSS,HSIO.  
REVERT.
```

- \* Seven Track Installation.

The composite OPL created by procedure COMBINE and referred to as RELOPL requires two tapes when using 800 bpi 7-tk tapes. These tapes should be blank labeled before beginning COMBINE.

- \* Tape installation - seven or nine track

Considerable tape time can be saved by copying RELOPL and REL3A to permanent files and including commands similar to the following in batch jobs which use these tapes.

```
ATTACH,RELOPL=pfn.  
ATTACH,REL3A=pfn.
```

(where pfn is the file name of the permanent file copy)

- \* Disk Installation

Should unrecovered tape errors occur during setup for a disk installation, all files created by the job should be purged and the setup job rerun.

- \* Dependency Changes

COBOL5 installation depends upon completion of CDCS2.  
TOOLS/TRACER installation depends upon completion of FTN5.

RHP installation depends upon completion of RHF. IAF and TAF depend upon completion of NAM.

- \* CID will not install properly running under NOS V2.0. Complete the installation excluding CID; deadstart with your NOS V2.1 deadstart tape. Install CID and then generate a new deadstart tape including CID.
- \* The NOS V2.1 Installation Handbook on page 5-75 lists as possible values for the Px parameter of the HF.LIST micro: 740, 750 and 760. Page 5-76 lists these values as part of the default values for HF.LIST. Installation verification showed these values do not work. Sites with these types of machines should use the value P175 instead, in order to avoid installation job aborts.

#### MINIMUM CONFIGURATION INSTALLATION NOTES

- \* When central memory size is 65K, CMRdeck changes will have to be made to avoid memory overflow. Limiting the number of control points (NCP= ), account dayfile and errorlog size are areas that could be used to increase working size of central memory.
- \* LIBDECK changes making as many decks as possible disk resident will also free up central memory. The trade off being increased system overhead and a slower build process.
- \* There will be times when build jobs are rolled out because they need more central memory. The first action would be to drop the subsystems one at a time. If the build job does not complete you will have to abort the job and begin a GENSYS to create a new deadstart tape.
- \* The GENSYS and SEED procedure sequence can be run to free needed disk space.

#### GETTING STARTED

This discussion assumes interactive or DIS access. Refer to the IHB for additional information relating to the following discussion.

1. Assign RELO as local file TAPE. Enter:

BEGIN,,TAPE.

The CCL procedure, TAPE, which is on the first record of RELO, transfers many of the files used in the installation process to permanent files.

Files DAYFILS and JOBSTAT are initialized as empty files by the procedure SETUP as documented in the IHB. The remaining files used are PRODUCT and GLOBLIB which are defined by the procedure SEED, and which initially contain all user libraries, text overlays and compiler binaries from the UDST.

2. If you desire to install with the installation files on disk rather than tape, then read the directions in the common deck named HELP in DECKOPL. The following commands will produce a listing of common deck HELP on file LIST:

```
ATTACH,DECKOPL.  
MODIFY,P=DECKOPL,LO=A,C=0,L=LIST,Z./*EDIT HELP
```

3. Determine parameter defaults if desired by entering the following command:

```
BEGIN,UCOMMOD,INSTALL.
```

This command creates an indirect access file named COMMOD containing a modset which can be used to alter the default values for parameters in all DECKOPL common decks. Print this file and decide what changes are to be made to default parameter values to suit your installation. Use an editor to make the changes to the permanent file COMMOD. If you require additional modsets to DECKOPL, append them to file COMMOD as separate records where the first line contains the name of the modset. COMMOD parameters are in interactive CCL format - refer to the NOS Version 2 Reference Set Volume 3. Step 4 below explains what to do with the file COMMOD.

NOTE: It is not necessary to use any of the capabilities provided to change INSTALL via COMMOD to complete a basic installation.

4. The procedure SETUP is used to build the procedure file INSTALL from DECKOPL. INSTALL contains all of the installation procedures. The initial creation of INSTALL is performed by the TAPE procedure - (see step 1 above). You will need to recreate INSTALL if you have changed default parameter values in file COMMOD. On the command below, the RESET parameter initializes files JOBSTAT and DAYFILS and the INSTALL parameter recreates procedure file INSTALL with default parameter settings as specified in COMMOD. Note: This call to SETUP does not create an updated copy of DECKOPL, since the parameter, NEWPL, is not present. The modset on file COMMOD should never be permanently added to DECKOPL.

```
BEGIN,SETUP,INSTALL,RESET,MOD=COMMOD,INSTALL.
```

5. Next you must seed files PRODUCT and GLOBLIB. Assign the U DST as local file lfn. Then type:

```
BEGIN,SEED,INSTALL,DST=lfn.
```

This procedure will seed the file GLOBLIB with binaries and text overlays from the UDST. It also seeds the file PRODUCT with all user libraries. Both files are purged and redefined before SEEDing.

Important Note: It is no longer necessary to use GENSYs to write intermediate deadstart tapes prior to writing the final deadstart tape. Permanent file space considerations may, however, prompt you to use GENSYs to write intermediate deadstart tapes. The space saving is achieved by running the procedure SEED with your last deadstart tape as input. If you include the parameter REBUILD on the call to SEED then GLOBLIB and PRODUCT will be seeded with the minimum binaries necessary to continue the installation process.

6. Establish all necessary user code files. A suggested convention is to use the build procedure name prefixed with UF. Then the command CATLIST,FN=UF\*\*\*\*\* will list only the user files. Note: user files may be direct access.
7. Create an indirect access file named USERCHG containing the following commands:

```
USER,username,password.  
CHARGE,*.  
RESOURC,p1,p2,...pn.
```

The resources specified on the RESOURC command must match or exceed those defined in the parameter common decks in DECKOPL or in modset COMMOD if the default parameter settings have been changed via the MOD parameter on the SETUP call.

8. You are now ready to build. Initiate build jobs with commands of the following form:

```
BEGIN,jobname,INSTALL,p1,p2,p3,...pn.
```

RDFEX/IAFEX Notes

The unconfigured deadstart tape includes the binaries for Remote Diagnostic Facility (RDF). RDF allows Customer Engineers terminal access to the system via the two port mux. (Refer to the NOS 2.1 Feature Notes for more information about RDF.) The binaries are:

ABS/RDFEX,OVL/IAFEX1,IAFEX2,IAFEX3,IAFEX4

If your site intends to use the RDF subsystem when you build NOS, use the command:

BEGIN,NOS,INSTALL,NOIAF.

If you intend to use the IAF subsystem when you build NOS, use the command:

BEGIN,NOS,INSTALL.

The NOS build job then includes the MODIFY directive \*DEFINE IAF\$ when obtaining the COMPILE file for the OPL deck IAFEX. This causes the IAF source code to be written to the COMPILE file. The binaries for the IAF subsystem are:

ABS/IAFEX,OVL/IAFEX1,IAFEX2,IAFEX3,IAFEX4

When you run GENSY, be sure to remove the RDFEX binary from the new deadstart tape by including the following LIBEDIT directive on the USERD file.

\*D ABS/RDFEX

## 2.2 Notes on Product Installation

Several installation jobs exhibit non-fatal loader errors or "COPYL DID NOT FIND" messages. These are not conditions which affect the generated binaries although it is expected that these conditions will be corrected in a future release. The following table details these errors for the associated products. The frequency of occurrence of these conditions as documented below is relative to the products as released. Any local code may change these frequencies.

| !          | !NON-FATAL! | PARTITIONS !   |
|------------|-------------|----------------|
| !          | ! UPDATE    | !NOT REPLACED! |
| !PRODUCT ! | ! ERRORS    | ! IN COPYL !   |
| !ALGOL5 !  | !           | 5 !            |
| !BAM !     | 1 !         | !              |
| !BASIC3 !  | !           | 2 !            |
| !PLI !     | !           | 1 !            |
| !TEXT !    | 1 !         | !              |
| !SORT5 !   | !           | 1 !            |

### SYSJOB

SYSJOB does not show up on REPORT if run from system origin. Therefore, there is no record of it failing or passing and in such a case a useless DAYFILS file will be created under user name SYSTEMX.

### 2.3 NOS Evaluation Changes to Installation Defaults

The following code is installed in the NOS System used for system evaluation. This code should be placed on file USER when installing the product concerned to insure its proper installation if these options are desired. Binary files contained in the release materials include these installation parameter changes.

#### TEXT INSTALLATION

The following code allows use of extended memory by the CYBER Loader.

```
*IDENT ALLOWECS
*I,IPARAMS.15
  IP.MECS  EQU    1777B
*/ END OF MODSET.
```

#### LOADER INSTALLATION

The following code is used to turn off the LOAD map and define the LOADER preset value to zeros.

```
*IDENT NOS01
*I LDRCOM.13
  IP.MAP   CEQU    0
  IP.PSET  CEQU    1
*/ END OF MODSET.
```

#### COBOL5 INSTALLATION

The following code is used to turn on CDCS2.

```
*IDENT NOS01
*PURGE DMGMNT
*DELETE CB5TEXT.245
  OP.DCS   CEQU    OP.DCS2      CDCS ACTIVE
*DELETE ASSEMOP.36
      DEF  CB5$CDCS      #"CDCS2"#;    #CDCS ACTIVE#
*/ END OF MODSET.
```

## 2.4 Network Products

We recommend that users install a DEBUG network (using NAM5D installation deck as described in the Installation Handbook). Although this will degrade performance the DEBUG network will assist in problem resolution. A non-DEBUG network should be installed after several weeks of trouble free operation.

### NOTE:

ANY 2550 USED TO RUN THE NOS V2.1 NETWORK MUST HAVE BEEN UPGRADED TO INCLUDE THE 8K RAM BOARD.

The following code is installed in the NOS System used for system evaluation. It has been provided for reference only. These changes are not included in release material binary files.

### NAM2 INSTALLATION

```
*IDENT BUILDLEV
*B,HISTORY.2
  BUILDLEV LOCAL MOD TO UPDATE BUILD LEVEL
*C,HISTORY
*D,PSRLEVEL.3
  NAMLV C(1,18,5) = {" 580"};
*C,NAMLEV
*/ END OF MODSET.
```

### 3.0 OPERATING SYSTEM MODIFICATIONS

#### 3.1 Operating System Enhancements

##### 3.1.1 CYBER 170-815

The NOS operating system now supports the CYBER 170-815 mainframe. The 815 uses U1BL07 microcode.

##### 3.1.2 Eight and one half inch Paper Support

Local printers may be configured with either 8 1/2 inch or 11 inch paper on a device basis when this feature is used. When 8 1/2 inch paper is indicated in the EST entry BATCHIO permanently selects eight lines per inch density which provides room for 66 lines per page. This is compatible with 11 inch paper using six lines per inch density.

Printers configured with 8 1/2 inch paper ignore the "S" and "T" carriage controls. Output to these devices must be formatted in the same way as output intended for 11 inch paper at six lines per inch. Use of the "PD=8" parameter on products supporting density selection will produce incorrectly formatted print output.

The CMRdeck EQ entry has an additional parameter to select short paper (NOS Version 2 Installation Handbook). The PRSIZE DSD command allows the operator to change the configured paper length (NOS Version 2 Operator/Analyst Handbook). The "I" display shows which size is specified for each printer device.

##### 3.1.3 NOS High Speed I/O Option

The NOS High Speed I/O Option is a high speed disk subsystem which uses the parallel head FMD disk and performs I/O directly through a low speed port of extended memory. Use of this feature requires optional High Speed I/O hardware and ECS/ESM hardware. Support of this feature has caused the following change:

- \* The allocation algorithm for 819 single density (DV) devices has been changed. This will necessitate a full initialize of these devices when moving from a NOS V2.0 562/552 system to a NOS V2.1 level 580/577 system.
- \* Programs which generate unnecessary CIO calls, reads or writes when there is insufficient buffer space or data available may use considerably more SRUs on buffered disks than on non-buffered disks. Since these calls are processed by CPUMTR for buffered disks, the calling programs will be charged for the CPU time to process the extraneous calls, and since a PP load will not be involved, the real time to process the call will be much shorter allowing more of them (and thus more SRU accumulation) to occur in a given amount of time. The impact on older programs which generate CIO requests while waiting for other external events (such as complete on a different FET) can be significant. Enabling ANALYST LOGGING at deadstart can provide useful information in diagnosing this situation.

#### 3.1.4 Permanent File Access Modes

Two new access modes for direct access permanent files have been added. These modes are update and read/allow update. Update mode will allow a file to be modified, but not extended or shortened (the EOI cannot move). When a file is attached in this mode, the only other concurrent access can be in read/allow modify or read/allow update modes. Update mode access will be granted only if the file is currently unattached or is attached by another user in read/allow modify or read/allow update mode.

Read/allow update mode will allow concurrent updating (no EOI change) while the file is being read. When a file is attached in this mode, the only other concurrent access can be in update mode or any read type mode. This mode of access will be granted unless the file is currently attached in write, append or modify mode. These modes will be supported to the same extent as all of the current access modes except that a WRITECW cannot be done on a file attached in update mode.

There existed a non-rollable modify mode that was used by some PP programs when attaching fast attach files to indicate to other PP programs that the file was to be released shortly and it was reasonable to wait. This concept has been extended to all write modes (write, modify, append, update). The non-rollable option is now a parameter on the AFAM function rather than a separate mode. This feature is not available to PP programs using PFM to attach files.

To prevent false error idles when dumping fast attach files, PFDUMP will attach fast attach files in read/allow update mode rather than read/allow modify mode. Thus, if the file is being written and possibly extended, it will be reported as busy and not dumped. This type of operation will not normally be in progress during a PFDUMP since it is under the control of the site (using MODVAL or PROFILE to alter the validation or profile files). This will require a change in the way the resource files (RSXDid and RSXVid) are managed. To eliminate possible deadlock situations, the resource files will be defined with the backup requirement set such that they will not be dumped by PFDUMP.

Previously in an MSS environment, if PFDUMP and ASMOVE were run at the same time, MSS files may have been lost following a release of MSS space by ASVAL because an incorrect RDF (release data file) may have been written by PFDUMP. To eliminate this situation, PFDUMP will now prevent destagings of files residing on devices that are in the process of being dumped. All other MSS operations are able to proceed normally during PFDUMP, and any destaging which was in progress will continue when PFDUMP completes.

With the addition of the two new permanent file access modes, the status bits returned by the FILINFO macro changed. Any user programs that specifically check for read/allow modify mode will have to be changed. The format of the FNT/FST entries returned by the GETFNT macro has also changed. Refer to the NOS Reference Set, Volume 4 for further details. Files checkpointed on the NOS V2.0 system may not be restarted correctly on a NOS V2.1 system because of the change in the GETFNT macro.

There is a downward compatibility modset (NS2PFAC) available, which will allow files with the permission mode set to one of the new modes to be handled on a NOS 2.0 level 562/552 system. This modset is on MISCPL.

### 3.1.5 Remote Host Facility Support

Enhancements have been made to several areas of the operating system and utilities to support the Remote Host Facility (RHF) software. Many of these enhancements relate to the added ability to have a logical identifier (lid) associated with a queue file that specifies which mainframe is to process that queue file. Logical identifiers are also used to identify the mainframe for a permanent file transfer using the MFLINK command. Please refer to section 16 for more information about RHF.

- \* The DSP and QAC parameter blocks have been changed. Changes are upward compatible with NOS V2.0 level 562/552 if unused fields contain binary zero.
- \* The following areas were enhanced to support logical identifiers (lids):
  - The DSD Q-display now shows the lid values associated with queue files.
  - The STATUS and ENQUIRE commands are enhanced to show lid values.
  - The Queue Utilities (QALTER, QDUMP, etc.) have been enhanced to allow lid values to be used as selection criteria.
  - A new operator utility, LIDOU, provides the operator an interface to the lid table in central memory.
  - Deadstart via the CMRdeck will allow the length of the lid table to be set:

LIDT=nnn.

- Deadstart via the IPRdeck will allow the lid table to be set up via entries of the form:

LID=lid, parameters.

- \* The applications QTF, QTFS, and PTFS, included in the PTF/QTF File transfer Facilities package, are executed under system origin with the new Communications Task (CT) service class.
- \* LOADBC has been enhanced to load NAD controlware. It is externally compatible with NOS V2.0 level 562/552.
- \* FCOPY has been enhanced to allow many new file conversions. It is compatible with NOS V2.0 level 562/552. As noted in the NOS V2.0 SRB, support for ASC8 (LCN ASCII) available on NOS Version 1 has been removed from NOS Version 2 since conversions to and from LCN ASCII are automatically performed by RHF.

### 3.1.6 Tape Processing Modifications

- \* Tape error processing has been enhanced to log in the Binary Maintenance Log (BML), the number of single track error corrections that occur on a reel in 6250 CPI while it was assigned to the user. These corrections can occur on both writes and reads. Excessive write error counts indicate inferior tape media and a new (different) tape should be used. Excessive read error counts indicate a deteriorating tape. The tape should be copied to new media. The single track error corrections were not previously reported to the system. Late data errors, in all densities, are now counted and presented in the same manner as single track error corrections. Previously these errors, being non-fatal, were reported to the user's dayfile on each occurrence and could cause some very large dayfiles.
- \* RESEX will now force write ring in during tape assignment for a LABEL control statement or LABEL macro when sequence number 9999 is specified for multi-file set extension.
- \* RESEX no longer returns a file that was previously assigned (except for VSN pre-assignments to TE equipment) if an error occurs, such as argument error on the LABEL, REQUEST, or ASSIGN control statement, terminal interrupt, operator drop, etc.

- \* RESEX operator assignment of tape equipment has been redesigned. Previously, for LABEL or REQUEST of a MT or NT device with no VSN specified, RESEX required operator assignment of the tape equipment before checking for error conditions such as MAGNET not active, insufficient resources on system, demand validation error, or demand exceeded. Also, the operator equipment request was posted even when no acceptable tape unit was available for assignment.

RESEX now completes user and equipment/environment validations before requesting operator assignment of tape equipment. If no acceptable drive is available, the job will be rolled with the overcommitment event until a matching resource becomes available.

### 3.1.7 Wall Clock Chip

- \* The Wall Clock Chip feature eliminates the need to enter date and time at deadstart on the CYBER 170-825 and CYBER 170-815 mainframes. The DSD commands DATE and TIME will update the wall clock chip.

The FCA index level required to support this change for NOS V2.1 level 580/577 is level 1 for CYBER 170-815 and level 2 for CYBER 170-825 mainframes.

### 3.2 Miscellaneous Changes

#### 3.2.1 Commands

##### 3.2.1.1 CATALOG

- \* DDSDECK and DDSDC have been deleted from the list of special record names in CATALOG, which is used to determine whether the entire record is to be listed when the T option is selected. DDSDC and DDSDECK are no longer of any special significance.
- \* The record length and sum fields on an output listing from CATALOG have been shifted two display characters to the right. This was done to correct a problem where a record length (or sum) of more than eight digits was not being printed properly.

##### 3.2.1.2 CKP/RESTART

- \* The CCL files ZZZZZC0, ZZZZZC1 and ZZZZZC2 are dumped from BOI to EOI when appropriate. These files are not restored from the checkpoint file if the RI parameter is specified on the RESTART statement.

- \* When using the RI parameter on the RESTART statement, the values of the CCL registers in control point area words JCDW and JCRW are placed in the DM\* file instead of the values from the checkpoint file. This allows the procedure(s) in use at the time the RESTART is issued to continue to function correctly since the same values of the control registers will be in use after the RESTART has been executed.
- \* CKP/CHECKPT will no longer attempt to copy a local magnetic tape file to the checkpoint file. For selected magnetic tape files, only the tape position information will be copied to the checkpoint file. Also, on a macro or RA+1 call which specifies that other than the information table should be copied (fi .NE. 4 in the CHECKPT parameter block), a warning message will be issued, and only the position information will be copied.

#### 3.2.1.3 CONVERT

- \* The CONVERT command is no longer supported. FCOPY has been enhanced to do 63/64 display code to ASCII file conversions previously done by CONVERT.

#### 3.2.1.4 GTR, LIBEDIT and SYSEDIT Changes

- \* GTR, LIBEDIT and SYSEDIT have been changed to generate OPLD entries for zero-length records as is done by LIBGEN. The entry is a record name of binary zero with TEXT as its type. 026 has been changed to recognize this OPLD entry and display it as '(00)' as is done by CATALOG.

#### 3.2.1.5 MODIFY

- \* The \*SORSEQ directive has been added to MODIFY to allow COMPILE file sequence numbers to appear on source files.

Example:   MODIFY,S=A,Z./\*SORSEQ/\*EDIT,deck

          (generates file A with sequence numbers)

If no source file is specified, this directive will have no effect.

#### 3.2.1.6 ROUTE

- \* In order to make ROUTE disposition code processing compatible with DROP and QGET commands, the WT (wait queue) disposition code has been added to ROUTE and DSP.

- \* The verification for the EC, IC and OT parameters on the ROUTE command has been changed such that there are new error messages issued for incorrect parameters. These read as follows:

ROUTE INCORRECT \*EC\* PARAMETER.

ROUTE INCORRECT \*IC\* PARAMETER.

ROUTE INCORRECT \*OT\* PARAMETER.

### 3.2.1.7 SYSEDIT

- \* SYSEDIT has been changed to ignore KCL type PROC entries. SYSEDIT will not create library entries for KCL records. Such records are ignored and an informative message is issued to the output file.

### 3.2.1.8 TRMDEF

- \* See TRMDEF changes documented in section 9.0.

### 3.2.1.9 UPROC

- \* The message:

ERROR IN UPROC ARGUMENTS.

is issued when an argument error is detected in the UPROC call. The old error message was:

ERROR IN MODVAL ARGUMENTS.

- \* The UPROC command now handles both equivalenced and positional parameters. (Positional parameters were not supported before.)

The initial user procedure file name will be cleared if no parameter is specified or a zero file name is specified.

## 3.2.2 Common Decks

### 3.2.2.1 COMCFCE

- \* COMCFCE (Format Catalog Entry for Output) has been changed to list 7 decimal digits of the file access count rather than 5. This value will be right justified in columns 13 to 19 of the second output line. Previously the access count was right justified in columns 14 to 18.

### 3.2.2.2 COMCZAP

- \* Several problems in COMCZAP have been resolved. The following changes have been made:

COMCZAP will now generate a blank line when consecutive delimiters are encountered.

COMCZAP now accesses COMCUSB variables without a qualifier. The calling program must correct qualification errors (if any) by using QUAL\$ or by redefining the common deck symbols as needed with the appropriate qualifier.

COMCZAP documentation has been clarified to inform users that the ZAP\$ option will not append an additional terminator on a directive if a period or right parenthesis has been detected within the directive. Note that if the period or right parenthesis was in a literal or part of a logical expression, it will still be considered the directive terminator, and the caller must provide the additional terminator at the end of the directive (if needed) in this case.

### 3.2.3 Deadstart Text Decks

- \* The IOB= and UEC= CMRdeck directives have been deleted and are replaced by the XM= entry.
- \* The Network Access Device (NAD) used by the Remote Host Facility to communicate over the Loosely Coupled Network (LCN) requires a CMRdeck entry as follows:

EQeq=NC,status,0,0,channel.

- \* MID's must be two character, as specified in the CMRdeck. Previously accepted one character MID's will be rejected.
- \* The CMRdeck entry:

LIDT=nnnn.

will allow the length of the Logical Identifier (LID) tape to be set. An IPRdeck entry:

LID=lid,parameters.

will make an entry in the LID table. See section 3.1.5 for more information on logical identifiers.

- \* A 100B word CM BML buffer is now created by default when no MAINLOG directive is present in the CMRdeck.

#### 3.2.4 General

- \* Batch I/O punch banner cards have been changed to show four characters of user index hash plus the four character JSN.
- \* HFM will no longer return an error code to SCRSIM (or any other calling program). If an error is encountered, an appropriate dayfile message is issued, and the job is aborted.
- \* ESM error processing has added the message:

##### ESM ERROR - BUFFERED I/O

to report the occurrence of a half-exit from an ESM block copy instruction during buffered device request processing. Recovery is not attempted and the system will be hung, since such an error from ESM is usually catastrophic (such as a double SECEDED error). Deadstart will be required if this message is posted at the system control point.

- \* A 100B word CM BML buffer will now be created by default if no MAINLOG directive was present in the CMRdeck.
- \* Security has been tightened on execute only files. Previously any SSJ= program could read "execute-only" files. Now, only the CYBER Loader will be able to read "execute only" files since a check will be made for the LDR= entry point.
- \* A new command, SP, has been added to 026 to allow files with special characters (those having display codes greater than 57B) to be displayed in a readable form. The SP command toggles the clearing of these special characters before the file is displayed.

Clearing special characters could cause the display to flicker when displaying large files, or files having many special characters.

- \* When processing a fatal hardware error on a Cyber 170-815/825/ 835/855, 1MB now dumps the P, Q, K and A registers for each PP to a buffer. A new DSDI directive, FMFREG, can be used to print the contents of these registers.
- \* A new error flag RSET has been added to PPCOM(NOSTEXT). This error flag indicates that the job is a recovered subsystem (used for level-3 recovery). The error type only exists during the initial level-3 recovery process (i.e. a normal running job will not set this error flag).

NOTE: Error flag ORET has changed value from 37 to 40. All programs using ORET must be reassembled.

- \* Message DSD WAIT MTR has been changed to NO MONITOR RESPONSE to provide a better description for the error encountered. See Appendix C for further discussion.
- \* NOS monitor functions have been renumbered in NOS V2.1. All code referencing monitor functions should be reassembled using a NOS V2.1 NOSTEXT.
- \* On all 800 series mainframes, user ECS may be defined in UEM without allocating UEM as an ECS equipment. If user ECS space only is needed in UEM, clear or do not specify an ECS equipment entry in the CMRdeck and enter:

XM=mid,0,uec,EM.

- \* Due to a 100B word increase in the maximum NFL (negative field length) size, the largest attainable job field length has decreased by 100B words. On a machine with a memory size of 262K or greater this means the upper bound on MAXFL is 376500B (377700B minus maximum NFL).

### 3.2.5 KCL

- \* KCL is not supported on NOS V2.1.

### 3.2.6 Macros

#### 3.2.6.1 CHECKPT

See section 3.2.1.2, paragraph three.

#### 3.2.6.2 DISTC

- \* Most of the Common Products are now using extended reprieve. This means DISTC cannot be used with these products and extended RECOVER is the only way terminal interrupts can be detected (see FORTRAN Version 5 Reference Manual - 80481500). DISTC is available to programs not using extended reprieve.

#### 3.2.6.3 LFM Functions

- \* LFM function 22B (ENCSE macro) no longer allows a control statement file to be replaced by a file in execute-only mode.

- \* LFM will now handle a track limit condition for functions 14, 15, and 26. If the REQUEST macro is used (functions 14 and 15) and the error processing bit is set in the FET, LFM will return the "no mass storage available" (21B) error code in the abnormal termination code field of the FET when track limit is detected. If user error processing is not selected, LFM will issue the message "TRACK LIMIT EQxx." or "TRACK LIMIT." to line 1 on the B-display, recall and retry the request. If an error flag is set on the job (i.e. by operator drop), LFM will not complete equipment assignment.

### 3.2.7 Utilities

#### 3.2.7.1 DFTERM

- \* Errors which occur while DFTERM is executing will now cause the K display to be forced even if the PO=N parameter was specified. If the error occurred while defining the permanent file for the terminated dayfile, the file will remain at the control point to allow operator access.

#### 3.2.7.2 MODVAL

- \* The special applications names LOP, NOP, and NOPLOP have been replaced by a single name "CS". CS uses the same application access bit NOPLOP previously used, leaving the NOP and LOP bits unused. Because the application bit numbers remain the same for all other applications, a new validation file does not need to be generated if your site uses only NOPLOP.

If NOP and LOP are currently used validations at your site, you will need to convert. To make this conversion generate a source file using a NOS V2.0 MODVAL. Edit the source file manually, changing LOP, NOP and NOPLOP AP directives to CS, and regenerate the validation file from source using a NOS V2.1 MODVAL.

#### 3.2.7.3 PFDUMP/PFLOAD

- \* PFDUMP will no longer include entries for files with no backup requirement (BR=N) in the catalog image record (CIR) written on incremental dumps. Since these files are never dumped by PFDUMP, there is no need for PFLOAD to search for them. PFLOAD will complete normally, without any leftover files.

- \* A table of special fast attach files has been defined in PFDUMP. These files will be dumped on an incremental dump (OP=M) even if they do not meet the specified date/time criteria. This table contains the files VALIDUZ and PROFILB.
- \* An option has been added to PFLOAD to cause direct access files to be loaded to the device with the most available space of those where the device mask allows the file to reside. This option is selected by specifying OP=L on the PFLOAD command. It will override the DD (destination device) parameter if that is also specified.

If this option is not used and no device is found for the file, the dayfile message issued is changed to:

PFLOAD - ALTERNATE DEVICE NOT FOUND, FN=filename,  
          UI=userindex.

PFLOAD has also been changed to check if there is enough space available on the selected device before attempting to load a direct access file there. This checking is done in all cases, not just if OP=L has been specified. This change should eliminate most cases of TRACK LIMIT during PFLOAD. If there is not sufficient space for a file, the following dayfile message will be issued, and the file skipped:

PFLOAD - NO SPACE FOR FILE, FN=filename, UI=userindex.

When a permanent file family is reconfigured by adding or subtracting devices, or changing the device masks, using the OP=L parameter on the PFLOAD command may greatly simplify the procedure. The following sequence will accomplish the required operations for the reconfiguration.

1. PFDUMP, FM=familyname.
2. Full INITIALIZE of all devices in the family.
3. PFLOAD, FM=familyname, OP=L.

#### 4.0 COMMON PRODUCT SET MODIFICATIONS

##### 4.1 New Features

###### 4.1.1 CDCS 2.3 and FDBF 1.3

- \* CDCS 2.3 is an enhancement to CDCS 2.2. Some features added in CDCS 2.3 involve extensions to QU and FDBF.

The feature enhancements added to CDCS are aimed at improving:

- flexibility - allowing the association of more than one set of physical files with a logical (schema) description;
- recoverability - allowing automatic recovery of a database after a program or system failure;
- usability - allowing enhanced information on the CDCS control statement, including specification of an optional directive file; and allowing an application program to get an immediate return from CDCS when certain resource conflicts arise or fatal errors occur.

- \* FDBF 1.3 is an enhancement to FDBF 1.2. The FDBF Data Manipulation Language (DML) preprocessor and interface routines to CDCS are changed to accept new and modified commands, in support of the new CDCS features in CDCS 2.3.

The feature enhancements added to the FDBF DML preprocessor and the interface routines are aimed at improving:

- flexibility - allowing the association of more than one set of physical files with a logical (schema) description of the areas in a database;
- recoverability - allowing sequences of updates in an application program to be bracketed by "begin transaction" and "complete transaction" requests;
- usability - allowing an application program to get an immediate return on resource conflicts.

- \* The major new features are Automatic Recovery and Database Versions. For a more detailed description, see the Feature Abstract Memo for number 52 Version 2.1.

#### 4.1.2 IMF1.1 and QU3.4

- \* QU3.4 includes the VERSION feature for use with CDCS 2.3 and syntax changes in QU/IMF to be consistent with other database interfaces. Improvements have been made in usability and performance.
- \* IMF1.1 improvements include the capability to load, unload, reload and validate data bases, extending reprieve capability.
- \* Refer to the Feature Abstract Memo for a more detailed description.

#### 4.1.3 PASCAL-170

- \* PASCAL-170 is a new product operating as a subset of the ISO standard, to be released on NOS V2 only.

## 5.0 NETWORK MODIFICATIONS

### 5.1 Terminal User Inputs Changed

\* The AL TIP command has been changed to AB.

\* The CD=A TIP command changed to AR.

AR performs speed and code-set recognition (i.e. 2 CRs required as for initial auto-recognition)

\* Page width may be set via the PW command to values of 0 or 20-255.

\* Page length may be set via the PL command to values of 0 or 8-255.

\* The special TIP characters (BS, AB, CN, CT, B1, B2, EB, or EL) may not be 0-9, or A-Z.

\* A new special TIP character (EB) has been defined. The default is EOT for Async terminals. (To restore EOT as a data character, set EB=EL).

\* IN=PT/XP and OP=PT cannot be selected for a 2741 terminal.

\* An input line may be cancelled at a 2741 terminal by entering ... <CN> ATTN RETURN.

\* If paper-tape is not defined as input device; X-OFF has no significance.

\* If paper-tape is defined as the input device; X-OFF after <EL> is assumed to stop tape.

\* If paper-tape is defined as the input device; X-OFF following <EL> is taken as data.

\* If page width is set at less than 57 via the PW command, CCP will allow the user to backspace into the previous line or lines.

\* RBF does not rewind the output file if the connection is broken during printing of the file.

\* The type-ahead queue in NAM is not discarded over connection switches. To protect typed-ahead data the user should wait until the application responds to the END (or other switch command) before entering data for the next application.

## 5.2 Network Responses Changed

- \* The new CCP banner indicates <CT> character and system status.
- \* When CCP regulates Async terminals, it outputs WAIT.. to indicate the last input was discarded. The user should not enter input until REPEAT.. is output.
- \* TIP command responses are output after a command is performed (e.g. after auto-recognition is complete).
- \* TIP command parameters are converted to hex before they are validated (i.e. error responses are more meaningful).
- \* Two line feeds are output after line speed recognition and one line feed is output after the code-set recognition phase of auto-recognition.
- \* The user is not timed-out and disconnected after the AR command is entered.
- \* After output is stopped by entering BREAK, CR causes output to resume at the next character.
- \* The network no longer double spaces after an output line that is the same length as PW. (Note: terminals should always be defined with the proper output device (OP=PR or DI) or proper folding will not occur.)
- \* The NVF prompts issued when HELLO/LOGIN is entered are consistent with the prompts sent at initial login.
- \* Terminal characteristics are not reset by logout/login.
- \* At a terminal running in echoplex mode (i.e. EP=Y), echoplexing is turned off when the user is prompted to enter his password. Echoplexing is restored before the next input is requested.
- \* NVF responses to login errors have changed.
- \* CCP now gives a reason for rejecting a TIP command.

### 5.3 New Features/Commands

- \* TIP commands may be concatenated in a single line separated by the <CT> character. (Only one ACCEPTED.. or ERR.. is issued.)
- \* TIP commands with Y/N values may be entered without "=value" (Y is default).
- \* BREAK entered during auto-recognition returns the TIP to line speed recognition.
- \* The OP command may be used to change the output device from PR to DI and vice versa.
- \* Page waiting at hard copy terminals works (PG=Y and OP=PR).
- \* The CH TIP command displays some terminal characteristics parameters.
- \* The BR=Y/N TIP command selects/deselects the BREAK key as User Break 1 and Cancel character.
- \* The LK=Y/N TIP command disables/enables unsolicited messages from TIP.
- \* The IC/OC=Y/N TIP commands enables/disable X-ON, X-OFF flow control.
- \* The EL/EB=<char> CR TIP command allows the user to change
  - EB LF end-of-line or end-of-block
  - EL CL character or cursor positioning
  - NO response.
- \* The FA=Y/N TIP command allows the user to select/deselect translated but unedited input.
- \* The CP=Y/N TIP command allows the user to select whether or not a carriage positioning response is returned to the terminal following input of a LF, <EL>, or <EB>.
- \* The IN=BK TIP command selects block mode input device. The TIP holds the output until the <EB> character is entered.
- \* The XL=Xhh,Yhh,Cnnnn,T0 TIP command selects multi-message transparent input.
- \* The TM TIP command terminates the user's connection to the current host.

- \* The HD=Y/N TIP command allows the user to request a display of status of paths to hosts in the network.
- \* The HN=nn TIP command allows the user to change the coupler to which connection will occur the next time a host connection is requested.

#### 5.4 Terminal Interface Changes

- \* Terminal Class 2 now supports CDC 713, 751, and 756 terminals. Terminal Class 7 supports CDC 752 terminals. (TC=7 is the same as TC=2 except that for TC=7 CCP delays output for 100 msec after issuing a Clear Screen function.)
- \* EM, CAN is sent to both TC=2 and TC=7 terminals to clear the screen.
- \* Mode 4 TIP changes:
  - Unsupported carriage control characters are sent to the terminal (not converted to blanks).
  - Zero-compression is not performed.
  - The terminal is polled between batch I/O and interactive output.
  - The E4 (unlock keyboard) code is not sent with transparent output.
  - Cluster recovery uses Status Request, not Clear Write.
  - Device recovery sends Clear Write only, no Poll message.
  - The user can enter multiple TIP commands per screen.
- \* X.25 TIP changes:
  - PVC connections can be defined.
  - SVC connections can be shared between sub-TIPs.
  - A reverse charge option has been added.
- \* The upline blocking algorithm uses UBZ instead of PW or 150 as the blocking factor. Terminals which cannot send less than 100 character blocks should set UBZ .GE. the minimum upline transmission block size. The terminal user can enter <CT> BF=2 if the block size is between 100 and 200.

- \* The upline queuing algorithm requires that UBL be set .GE. the maximum number of network blocks a terminal may generate before it pauses to receive output.
- \* Async auto-recognition recognizes line speeds up to 2400 bps.
- \* CCP will raise DTR whenever a port is enabled, instead of waiting for the ring indicator. This permits statistical multiplexers and port contenders to be supported with line type A1.
- \* CCP will stop outputting when CTS is dropped and will resume sending when CTS is raised.
- \* Synchronous TIPS do not consider it an error if the carrier drops or stays up (for hard-wired and dial-up lines).
- \* CCP will delay 5 seconds before enabling a port after a switched line disconnects.
- \* The CDCCP LIP and HASP TIP support 56Kb communication lines.
- \* CCP is capable of auto-recognizing BSC, HASP, or Mode 4 terminals on a synchronous port.

## 5.5 Application Program Changes

### 5.5.1 Supervisory Messages

- \* CON/REQ (T-A)
  - HW deleted
  - BSZ changed to DBZ
  - UBZ added
  - aparm 1 - aparm52 deleted
  - RIC field shortened to 1 bit
- \* CON/REQ (A-A)
  - ABN added

- \* CON/REQ/N
  - NXP added
  - SCT added
- \* CON/ACRQ/A
  - ABN added
- \* CON/END
  - aparm1 - aparm52 deleted
- \* LST/ON

Enables inut for connection with half-duplex (HDX) list processing on.
- \* FC/BRK

RC = 3 & 4 deleted
- \* FC/STP & FC/STRT deleted

(Code deleted at PSR level 543, NAM reference manual being changed now.)
- \* CTRL/STOP, CTRL/START, & CTRL/STPD deleted
- \* DC/CICT
  - NXP added
  - SCT added
- \* CTRL/CHAR, CTRL/RTC, CTRL/TCD added
- \* INTR/APP and TO/MARK added
- \* MSG/LOP deleted
- \* Type-ahead queue not discarded by NAM over connection switch, may receive data/commands from previous application.
- \* The cancel flag may be set in the only block of a network message.

### 5.5.2 AIP Routines

- \* NETLOG added
- \* NETDMB added
- \* NETLGS added
- \* AIP routines must be reloaded from NOS V2.1 ULIB/NETIOD.

### 5.5.3 QTRM

- \* A-A support flag moved.
- \* QTTIP added to send TIP commands.
- \* QTRM uses DC/TRU to truncate too long input messages instead of terminating connection.

### 5.6 Changes Affecting Network Operators

- \* To stop and reload NPUs, purge any existing host or NPU dumps, and start-up NAM, the operator types:

NAMNOGO.  
CFO,NAM.RN=INIT.  
CFO,NAM.GO.

- \* To restart NAM and collect any host and NPU dumps from a previous abnormal termination, the operator types:

NAM.

- \* To recover NAM and purge any existing host and NPU dumps from earlier abnormal terminations of NAM, the operator types:

NAMNOGO.  
CFO,NAM.RN=RECOVR.  
CFO,NAM.GO.

- \* In case of abnormal termination (including STOP,NAM.), start-up procedures INIT and RESTRT will take host dumps and halt NPUs. Start-up procedure RECOVR takes dumps but does not halt NPUs.

In case of normal network termination (including IDLE or DISABLE HOST), no host dumps are taken and the NPUs are left running. NPU dumps may have been taken, however.

- \* Collection of host and NPU dumps is done as a part of the subsequent network start-up. A collector job will be run automatically as a part of all 3 network start-up procedures. The collector called by the RESTRT procedure (normal case) will request 2 tapes on which to write the NPU and host program dumps and traces. (Dumps and traces will be added to the end of dump tapes as assigned.)
- \* To control or monitor the network from a terminal, the operator must login to NAM and request to be connected to the application CS. Commands the operator may enter from the terminal are listed in Appendix B.
- \* From the CYBER console, the operator may communicate with NAM, NVF, NS, and CS, by assigning the K-display to NAM. Host Operator (HOP) commands entered via the K-display allow the operator to status and control the network. See Appendix B for HOP commands.

#### 5.7 Installation Procedure Changes

- \* The installation may specify to the CCP Binary Library Build (CCPBLB) step, the TIPS and options to be included in the combined binary library. Therefore, it is not necessary to compile TIPS or optional code that an installation does not plan to use.
- \* Options that may be included in the CCP binary library build or variant build are:
  - TUP and CONSOLE support (costs 10K of buffer memory)
  - NPU statistics
  - On-Line diagnostics
  - CONSOLE support (costs 5K of buffer memory)
- \* A SAM-D cassette is provided to allow installations to reproduce their own SAM-P cassettes. See appendix A for instructions concerning its use.

#### 5.8 NDLP Changes

- \* The NDL language has been significantly changed. This necessitates a complete rewrite of the Network Configuration File. See the NDL Reference Manual for the new specifications.
- \* The Network Products Stimulator is no longer available.

- \* Two new utilities, NAMI and COLLECT have been added to improve the Network start-up and termination process.

By default, the Network will use its own user index (UN=NETOPS, PW=password, UI=377772) for all Network-related files.

#### 5.9 Migration Considerations

- \* Rename V2.0 NAM & NAMNOGO under SYSTEMX - otherwise there may be confusion in V2.1 procedures.
- \* Before bringing up V2.1, either enter V2.0 RELOAD command to all NPUs and then drop V2.0 or manually master clear all NPUs.

#### 5.10 Documentation Information

The Network Products Publications covering the Network Access Method (NAM) and the Communications Control Program (CCP) PSR level 580 support NOS Version 2.1 only. Neither the Network Products and CCP products nor their manuals apply to operation under NOS 1 or under NOS 2 versions before version 2.1.

#### Manuals to Become Obsolete

We believe the manuals listed in this subsection are no longer needed by users of Control Data software. Therefore, these manuals will not be revised or reprinted. LDS will stock these manuals for at least one year from the date of this release.

|                                                                                  |           |
|----------------------------------------------------------------------------------|-----------|
| Communications Control Program Version 3<br>Operator's Guide                     | 60471700A |
| Communications Control Program Version 3<br>Reference Manual                     | 60471400G |
| Communications Control Program Version 3<br>System Programmer's Reference Manual | 60475000C |
| Communications Control Program<br>Terminal Interface Program<br>Writer's Guide   | 60474600A |
| Communications Control Program<br>State Programming Language<br>Reference Manual | 60472200B |
| Network Products Stimulator<br>Reference Manual                                  | 60480500F |

The CCP Operator's Guide is being frozen at PSR level 439 because the information it contains has been superseded by the CCP Version 3 Diagnostic Handbook and the NOS Version 2 Operator/Analyst Handbook.

The core of the information previously contained in the CCP Reference Manual has been incorporated into the revised NAM Reference Manual, which is now called the NAM 1/CCP 3 Reference Manual. This consolidation was done to reduce redundancy and to provide a central location for information needed by the general networks user. Other information previously found in the CCP Reference Manual has been placed in other Network Products books. See the preface of the NAM 1/CCP 3 Reference Manual to find out where this information is now located.

A new Internal Maintenance Specification (IMS) is being created to house the information previously found in the CCP System Programmer's Reference Manual (SPRM), the State Programmer's Reference Manual, and the CCP TIP Writer's Guide.

The SPRM for CCP Version 3.4 has been frozen at PSR level 552.

The State Programmer's Reference Manual for CCP Version 3.2 has been frozen at PSR level 497.

The TIP Writer's Guide for CCP Version 3.1 has been frozen at PSR level 504.

The Network Products Stimulator (NPS) Reference Manual has been frozen at version 1.2, PSR level 541, which is the last current level indicated in the Software Publications Release History.

#### Manuals that are no Longer Active

A year ago, prior to the announcement of NOS 2, we indicated that we had devised a plan to minimize the costs of manuals and related difficulties in migrating from NOS 1 to NOS 2. This plan included such features as maintaining the product set manuals in common for as long as possible and not revising manuals merely to add the new operating system on the cover. In addition, we stated that NOS 2 changes would be delivered to NOS 1 customers through the automatic distribution service. At some point, it would be necessary to split the paths of the manuals in order to maintain clarity. The overriding goal was to minimize the number of new manuals that we would have to create and you would have to buy.

We were hopeful that the Network Products manuals could be kept common for some time. Unfortunately, the next release of those products (under NOS version 2.1) will not be available under NOS 1. Consequently, we are at a decision point. Either we create a new set of manuals for the products under NOS 2 or we freeze the existing revisions for NOS 1 sites. After carefully considering the alternatives and the risks, we have decided that it is to everyone's advantage that we do not create a new set of manuals at this time. We do not anticipate changes to the NOS 1 versions of the products. (Any minor clarifications that are required will be handled through SOLVER and/or the PSR Summary.)

The following manuals will be frozen at the indicated revision levels for NOS 1 sites. The record of revision pages for the next revision will indicate that these manuals are no longer applicable to NOS 1 sites. These manuals will be available through LDS at the indicated revision levels for a minimum of one year from the date of this release. Subsequent revisions of these manuals will apply to NOS 2 sites only.

| <u>Manual</u>                  | <u>Pub. No.</u> | <u>PSR Level</u> |
|--------------------------------|-----------------|------------------|
| NAM 1 Reference Manual         | 60499500N       | 559              |
| NAM 1 User's Guide             | 60481500A       | 518              |
| NDL 1 Reference Manual         | 60480000J       | 541              |
| NAM 1 Terminal Interface Guide | 60480600B       | 528              |
| RBF 1 Reference Manual         | 60499600L       | 559              |

#### 5.11 Network Products Configuration and Performance Notes

CCP-generated statistics messages (SCLN, SCTR, and SCNP) have been replaced by SCLI, SCTU, and SCNQ, all of which report different information from the messages they replace. The option to generate NPU statistics or NPU performance statistics has been removed. If statistics messages are generated, line/trunk statistics are reported at the rate of 1 every 2 minutes and approximately every 2 minutes the NPU statistics measured over the previous 8 seconds are reported. The NPU statistics allow the installation to monitor buffer availability and NPU throughput and to calculate line utilization.

Network Products must support a wide range of configurations. Many different parameters are provided to allow control of the configurations. For a complete description of these parameters refer to the appropriate Reference Manuals, such as Network Definition Language Reference Manual, NOS System Maintenance Reference Manual and NOS Installation Handbook.

Following are some results of actual measurements performed during the development of this system. All measurements were performed using CCP statistics during Downline Bandwidth runs. This means, that data was sent only from the Host computer to the terminals and the objective was to achieve as high line utilizations as possible.

All measurements were performed on an otherwise idle system. Recommendations made in this section are of a very general nature and should be used with discretion by the local site analyst.

Mode 4 Downline Bandwidth

| <u># of</u><br><u>Lines</u> | <u>Speed</u> | <u>DBZ</u> | <u>DBL</u> | <u>Line</u><br><u>Utiliz. %</u> | 2550 CPU<br><u>Utiliz. %</u> | Ave # of<br><u>Buffers</u><br><u>Used</u> | <u>Downline</u><br><u>Chars/Sec.</u> |
|-----------------------------|--------------|------------|------------|---------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| 18                          | 9600         | 1280       | 2          | 70.9                            | 95.2                         | 458                                       | 15322                                |
| 18                          | 9600         | 640        | 1          | 62.3                            | 83.7                         | 265                                       | 11963                                |
| 18                          | 4800         | 640        | 1          | 76.5                            | 59.3                         | 266                                       | 8264                                 |
| 18                          | 2400         | 640        | 1          | 85.9                            | 34.9                         | 272                                       | 4637                                 |

From these results it appears that a downline block size of 1280 (2 PRUs) and an outstanding downline block limit of 2 are needed in order to attain a 70% line utilization on 18 9600 BPS Mode 4 lines. This, of course, is at the expense of the number of buffers used in the NPU. For lower line speeds a DBZ of 640 (1 PRU) and DBL=1 already achieves a high line utilization. Setting DBZ and DBL to large values would merely increase the number of buffers used in the 255X without achieving a significant increase in Bandwidth.

General recommendation for downline data on Mode 4 terminals:  
(Note upline block sizes and limits must be defined separately)

|             |                  |                          |
|-------------|------------------|--------------------------|
| line speeds | 2400 - 4800 BPS  | DBZ = 640, DBL = 1       |
| line speeds | 9600 - 19200 BPS | DBZ = 1280, DBL $\geq$ 2 |

For systems where there is a great deal of contention in the Host (PPUs, disks) large values may be needed for DBZ and DBL to achieve high bandwidth values. In general, however, too large values for DBZ and DBL tend to waste buffer space in the NPU.

Note: An adequate number of PRU buffers of the right sizes must be allocated in NIP. This is done via the N1PRUBUF, N2PRUBUF and N3PRUBUF parameters on the NIP command (refer to NOS V2.1 System Maintenance Manual).

HASP Downline Bandwidth

| # of<br>Lines | Speed | Xmission<br>Blk Size<br>(XBZ) | DBZ  | DBL | Line<br>Utiliz. | 2550 CPU<br>Utiliz. | Avg. # of<br>Buffers<br>Used | Downline<br>Char/Sec |
|---------------|-------|-------------------------------|------|-----|-----------------|---------------------|------------------------------|----------------------|
| 1             | 56000 | 800                           | 1280 | 5   | 83.8            | 42.8                | 54                           | 5865                 |
| 1             | 56000 | 800                           | 1280 | 4   | 80.7            | 40.4                | 51                           | 5646                 |
| 1             | 56000 | 800                           | 1280 | 3   | 79.7            | 40.4                | 42                           | 5582                 |
| 1             | 56000 | 800                           | 1280 | 2   | 81.2            | 40.4                | 39                           | 5682                 |
| 1             | 56000 | 800                           | 1280 | 1   | 80.7            | 40.2                | 35                           | 5647                 |
| 1             | 19200 | 800                           | 1280 | 5   | 93.5            | 17.8                | 61                           | 2244                 |
| 1             | 19200 | 800                           | 1280 | 4   | 93.5            | 17.9                | 52                           | 2244                 |
| 1             | 19200 | 800                           | 1280 | 3   | 93.8            | 18.0                | 48                           | 2251                 |
| 1             | 19200 | 800                           | 1280 | 2   | 93.6            | 17.9                | 44                           | 2246                 |
| 1             | 19200 | 800                           | 1280 | 1   | 93.6            | 17.9                | 37                           | 2246                 |
| 1             | 9600  | 400                           | 640  | 1   | 89.4            | 11.8                | 23                           | 1073                 |
| 1             | 4800  | 400                           | 640  | 1   | 89.5            | 7.4                 | 31                           | 573                  |
| 1             | 2400  | 400                           | 640  | 1   | 88.0            | 5.3                 | 30                           | 264                  |

The transmission block size (XBZ) for HASP can be 400 or 800 characters. Here DBZ = 800 is used for 19200 - 56000 BPS and DBZ = 400 for 2400 - 9600 BPS. (This may be dependent on the type of terminal.) No definite gain in line utilization is achieved for higher values of DBL even for line speeds of 19200 - 56000 BPS! Note that here only one line is used, and for a large number of lines or for Host systems with disk access contention higher values for DBL could be warranted.

In general, larger values for XBZ (e.g. 800) and DBZ (e.g. 1280) will provide higher line utilizations at lower 255X CPU utilization rates. This is at the expense of NPU buffer utilization.

ASYNCR Downline Bandwidth

| <u># of<br/>Lines</u> | <u>Speed</u> | <u>Xmission<br/>Blk Size<br/>(XBZ)</u> | <u>DBZ</u> | <u>DBL</u> | <u>Line<br/>Utiliz.</u> | <u>2550 CPU<br/>Utiliz.</u> | <u>Avg. # of<br/>Buffers<br/>Used</u> | <u>Downline<br/>Char/Sec</u> |
|-----------------------|--------------|----------------------------------------|------------|------------|-------------------------|-----------------------------|---------------------------------------|------------------------------|
| 16                    | 9600         | 800                                    | 800        | 2          | 86.6                    | 99.8                        | 474                                   | 13301                        |
| 16                    | 4800         | 800                                    | 800        | 2          | 94.6                    | 57.9                        | 466                                   | 7268                         |
| 16                    | 2400         | 400                                    | 400        | 2          | 96.5                    | 35.6                        | 293                                   | 3707                         |
| 16                    | 1200         | 200                                    | 200        | 2          | 98.2                    | 22.0                        | 276                                   | 1885                         |
| 24                    | 4800         | 800                                    | 800        | 3          | 93.6                    | 93.4                        | 550                                   | 10779                        |
| 48                    | 1200         | 200                                    | 200        | 2          | 96.9                    | 67.7                        | 431                                   |                              |
| 96                    | 1200         | 200                                    | 200        | 2          | 78.4                    | 98.9                        | 431                                   | 9030                         |

This is not a typical use for asynchronous terminals. The results are included for information use primarily.

## 6.0 HIVS (CTI) MODIFICATIONS

- \* CTI now displays a message prior to the point where EDD asks for the operator to select ECUU. This message defines E, C, and UU. The values for C have been changed to be consistent with the rest of CTI.

1 = 66X  
2 = 67X

- \* HIVS Level 143 CTI includes code to improve the Power-on initialization of the CYBER 170-800 series mainframes.

The Power-on initialization feature added to CTI is dependent upon the following:

1. LDS (Long Deadstart) must be run before CTI power-on initialization can execute. Running LDS will ensure good parity in location 7777B of all PP's. On model 815/825, LDS will fail the first time it is run after a power on with status summary errors. It is mandatory to run a second LDS on model 815/825 until this problem is corrected.
2. On model 815/825, micro-code level U1BL07/U1CL07 or beyond must be used for system initialization to complete correctly in a power-on condition.
3. On model 835, micro-code U2AL10 or beyond must be used for system initialization to complete correctly in a power-on condition. If you do not have U2AL10 or beyond the power-on master clear must be performed by Engineering Services personnel. Command buffers have been provided to Engineering Services which will perform power on initialization.

All Memories will be initialized for maintenance loads when power on initialization is selected regardless of the deadstart level. For operating system and maintenance loads, if power on initialization is also selected, all errors will be cleared but not logged (in the MSL dayfile) or displayed for the operator. It is recommended that power on initialization not be selected before selecting the utilities because master clear will be issued to the memory and processor elements via the maintenance activity channel, and some error information may be lost.

When using the CTI Common Disk Area utility, the options to load microcode and EI (options C and D) apply only to lower 170-800 mainframes (such as models 815/825, 835, and 855).

7.0 MASS STORAGE SUBSYSTEM MODIFICATIONS

- \* MSS issues several account dayfile messages including field length changes. The message identifier which indicates that the activity being recorded is a decrease to idle field length is changed from STP4 to STF4. The format of the message will now be:

STF4, newfl.

8.0 TAF MODIFICATIONS

- \* TAF users that have recoverable MIP files must include RMKDEF cards in the XXJ file. There must be one RMKDEF card for each alternate key.

Incorrectly formatted RMKDEF statements in the XXJ file will cause the message:

ERROR IN BUILDING \*RMKDEF\* FILE

when DMREC attempts to build a file of RMKDEF statements for a subsequent MIPGEN run.

## 9.0 IAF MODIFICATIONS

- \* The addition of the High Speed Terminal Support feature makes it possible to transfer terminal I/O between an executing interactive program and the terminal without having to roll the job out.

A new PP deck (IMI) is called whenever the program issues a READ or WRITE request to a file assigned to the terminal. IMI uses the TGPM and TSEM monitor functions to transfer terminal I/O between the executing job and IAF. Output is then queued in IAF until it can be sent to the terminal, and input typed ahead by the user is queued in IAF until requested by IMI. If output queues up in IAF beyond defined maximum levels or if no input has been typed ahead and the program issues a READ request, IMI forces the job to roll and I/O is then handled as in the previous system.

Avoiding rollouts slightly changes the way in which a terminal file using an RA+2 list or SETLOF macro is flushed. A "list of files" terminal file is flushed at job abort, when the job rolls out or immediately after a READ with recall has been issued on INPUT by the program. When users are typing ahead a rollout is no longer required to process input. The timing of arrival of output with respect to past systems may vary in this case. COMPASS programmers should use READ with recall on input if they want the same output timing as on previous systems.

- \* The size of the input message to IAF has been increased to 600 characters. The program's input buffer must be large enough to handle the entire message or excess data will be discarded without notification.
- \* The following statistics will now be issued to the IAF dayfile:  
  
n.nnn TSEM REJECTS DUE TO FULL QUEUE.  
  
n.nnn TGPM REJECTS DUE TO NO POTS IN QUEUE.
- \* The TRMDEF command has four additional terminal definition parameters. Multiple values may be defined for these new parameters. These values may be defined individually or in one string using a new TRMDEF command format. This format and the additional parameters are documented in the NOS Version 2.1 Reference Set Volume 3.

See section 12.1 for information concerning TRMDEF problems.

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- \* Almost all terminal definition values have been changed. This will affect any active application using 0016 control bytes. (See NOS Version 2.1 Reference Set, Volume 4 page 12-11).
- \* IAF will no longer terminate with an SPR abort when the pot link table (PLT) is at maximum size. When this condition occurs, the message:

PLT INCREASE NOT POSSIBLE.

will be issued to the IAF dayfile.

## 10.0 FUTURE CHANGES

### 10.1 Compatibility of the NOS SCOPE 2 Station

In a future release, modifications will be made to the NOS SCOPE 2 Station package to take advantage of the enhanced RHF queue file capabilities. The following incompatibilities will exist between the NOS 1 and NOS 2 station packages.

Link validation (MODVAL AACW bit) will be required in order to access the link for permanent files and queue files.

The LID attribute of S will be dropped. The L attribute (linked) is all that will be required.

The DSP interface will be changed to allow the specification of a forced service class. A new communication task service class (CTSC) will be added for the subsystem server jobs (SPOTs). This service class will allow the server jobs a higher scheduling priority in the INPUT and ROLLOUT queues. It also will allow sites to control the number of batch or interactive jobs (with the NJ parameter) independent of their SPOT jobs. SPOT origin type will no longer be supported.

Remote output files resulting from jobs submitted by a terminal user under HELLO7 will reside in the interactive wait queue. Users must use the standard QGET utility to retrieve them. The QFETCH utility will be dropped.

Support of the DSP option to specify any 7 character banner page will be dropped. The 7 character name will appear in the UJN field on the banner page.

The name of the Q application will be changed to QUEUE7. Only SCOPE 2 queues may be examined through QUEUE7. ENQUIRE should be used to status local queues.

### 10.2 Network Products Application Interface Changes

#### 10.2.1 K-Display Support

In a future release, The Host Operator (HOP) may direct commands to applications other than network supervisors (NS, CS, NVF) from the NAM K-Display. When this feature is available, applications may receive the new HOP supervisory messages described in the R6.1 NAM/CCP Reference Manual.

#### 10.2.2 New User Break Protocol

In a future release the FC/BRK supervisory message and Break-occurred flag will no longer be used to inform the application of a User Break. Instead new User Interrupt Break Indicator Marker, and Resume Output supervisory messages will be used.

#### 10.3 CYBER 170-865/875 Support

Various NOS V2 manuals refer to support of the CYBER 170-865/875. NOS V2.1 has not been verified on these mainframes at the time of this release. In a future release the NOS operating system will support CYBER 170-865 and 875 mainframes.

#### 10.4 CLB= ENTRY POINT

Contrary to the statement in the NOS 2.0 (562) SRB, the CLB= entry point will not be removed in the NOS V2.1. This capability may be removed in the future. Therefore, it is recommended that this capability not be used in local code.

## 11.0 HELPLIB

HELPLIB is a user library containing a set of CCL procedures that provide the user with interactive syntax correcting and detail help for many, although not all, of the NOS commands.

There are three basic ways to use HELPLIB.

1. If you want help in using any particular command including prompting for all parameters, use the system command (actually a procedure), HELPME. This command has one parameter, namely the system command to execute (e.g. HELPME,TDUMP.). This command will prompt the user for every parameter of the command the user asked for and then execute the command.
2. If you want help in using any particular command in the system, but only want to be prompted for the required parameters, use the system procedure EZ (e.g. EZ,TDUMP.). This command will prompt the user for every required parameter of the specified command and then execute the statement.
3. If you want help or prompting available for all commands you should make HELPLIB a global library. To do this, use the procedure NOVICE on the unconfigured Deadstart Tape.

The information necessary to carry on a dialogue with interactive procedures (ask for HELP, enter parameters) is described in the NOS Version 2 Reference Set, System Commands, Volume 3. The procedures on HELPLIB conform to the rules listed in this section.

As a user of these procedures on HELPLIB, you must be aware of a few differences between the procedure and the corresponding system command. These are:

- \* HELPLIB does not support multiple file names on the call. For example, "GET,pfn1,pfn2", must be changed to "GET,pfn1," "GET,pfn2,".
- \* HELPLIB does not allow equivalenced parameters. For example, GET(LFN=PFN) must be changed to GET,LFN,PFN. This form is most common on the permanent file commands, but remember that the RENAME command also is of this syntax. The conversion simply requires the user to use a "," instead of "=".

- \* HELPLIB does not support the MODIFY/COMPASS interface. The CB, CG, CL, CS parameters are not supported in the MODIFY procedure.
- \* HELPLIB does not support the "Z" parameter option. This affects the MODIFY, LIBEDIT, and OPLEDIT commands.
- \* HELPLIB does not support changing the escape character on the SUBMIT command. The default for the SUBMIT command is the "/" and it cannot be changed if you are using the SUBMIT procedure.
- \* HELPME, EZ, HELPLIB, and BLDHLIB are on the unconfigured deadstart tape. BLDHLIB will install HELPLIB on the user name LIBRARY to allow usage methods 1 and 2 to work.

For this release, these procedures are available for you to use. This material is provided for information only and PSR support is not available. At some future release, CDC may replace the current HELP program with HELPME. If this occurs, the existing HELP material will be moved to an online reference capability. CDC may continue to add procedures to the HELPLIB library in the future. Although PSR support is not provided, we are interested in your experience with this material. If any problems are found, or if you have suggestions for the improvement of HELPLIB, please send your comments to:

CONTROL DATA CORPORATION  
ARH244: HELPLIB  
4201 N. LEXINGTON AVE.  
ST. PAUL, MN 55112

## 12.0 KNOWN PROBLEMS

- \* During the final testing of a release, problems are usually uncovered. Some of these problems are not corrected in the release materials due to time constraints. Those not included in the release materials are made visible here with corrective code made available through SOLVER. Our final system test which included RHF and Networks was very successful and did not include any of the following code. Because these mods have not been system tested it is suggested that you use caution when introducing any of this code to your system.

### 12.1 Operating System

#### CCL

##### Problem:

Substitution for a parameter may fail when \*N or \*N=value is the only attribute pattern in the checklist. CCL will substitute null for occurrences of the parameter in the procedure body on BEGIN calls where HELP is requested. This problem is documented by PSR CCLA315.

#### NOS

##### Problem:

If the NOS 2.1 system device is configured as an HSIO (885-4x) disk drive that has a particular pattern (all ones, 2525, or 5252) written on it, NOS will not complete its deadstart process. This could happen after maintenance has been performed or during initial installation startup.

##### Solution:

Configure the system device to another disk and when the system comes up run MST on the HSIO disk with the bad pattern. Redeadstart with the original configuration.

##### Problem:

A security problem when RMSHELL is in force has been identified by PSR NS2B494. Corrective code will delete SHELL from RMSHELL's list of valid statements.

Problem:

A user may circumvent a SHELL program by entering a user break to followed by a "SHELL,." command. PSR NS2B501 addresses this problem.

IAF

- \* TRMDEF does not check for complete definitions in cases where multiple terminal definitions are required to set terminal functions. This problem is most apparent when dealing with block mode and transparent type functions. Future changes to TRMDEF will address this problem.

RHF

- \* "K.IDLE" should be used to idle down RHF. "IDLE,RHF." will abort RHF.

TAF

Problem:

Running TAF with the TAF/CRM data manager with the EFL parameter set to a non-zero value may result in TAF hanging. This is usually caused by CRM needing more memory, and CMM being unable to provide it even though CMM has not used all of its buffer space as implied by the BFL and EFL parameters. In this case CMM cannot get the additional memory because TAF is close to its maximum field length and cannot expand enough to satisfy the CMM request. This problem is reported by PSR NS2A318.

Problem:

TAF will not function properly if the installation parameter IPTAR is set to 0. This problem is documented by PSR NS2B545.

12.2 Network Products

Problem:

The 12-8-6 multipunch causes problems when running Mode 4 on a CYBER 18 using the External BCD code set.

Solution:

The user must change the 12-8-6 multi-punch to a site defined character code.

Method:

A. Controlware in card media.

Refer to section 4 Controlware Reference Manual Pub. No.  
96768910

B. Controlware in diskette media

1. Load controlware from floppy.
  - \* Turn on write enable on floppy.
  - \* Type SC (US) to display current selection card.
  - \* Type new selection card including C in column 26 (SI).
  - \* To confirm change type Y (SI)
2.
  - \* Type CR (US)
  - \* Following memo type 1 (SI)
  - \* Following directions ready the card reader which contains the following card.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15...80 |   |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|---------|---|
| ! | E | 2 | 6 | S | ( |   |   | ) |    | E  | X  | S  | (  | )       | ! |
| ! |   |   |   |   |   |   |   |   |    |    |    |    |    |         | ! |
| ! |   |   |   |   |   |   |   |   |    |    |    |    |    |         | ! |
| ! |   |   |   |   |   |   |   |   |    |    |    |    |    |         | ! |
| ! |   |   |   |   |   |   |   |   |    |    |    |    |    |         | ! |

HEX Value of 12-8-6 !  
desired character Multipunch!

3. Controlware must be reloaded for change to take effect.

Problem:

A PM message at the beginning of an output file may be treated as output data and not recognized as a PM message. This occurs only if the output file is rewound after it began printing.

Solution:

To avoid the problem, the PM message at the beginning of the output file should be preceded by a dummy line of output.

Problem:

Page wait at a Mode 4 console does not always take effect. Also an extra blank line may appear after a page is filled.

Solution:

Install code ident CC5A006 from SOLVER.

Problem:

The NPU may be forced into regulation while processing an extremely long print line destined for a Mode 4 printer.

Solution:

Install code ident CC5A039 from SOLVER.

Problem:

The NPU may be forced into regulation due to insufficient input regulation on HASP card readers.

Solution:

Install code ident CC5A046 from SOLVER.

Problem:

Some shared modules are assigned to paged memory, when they could be assigned to the SAM area, thereby freeing up paged memory space.

Solution:

Install code ident CC5A047 from SOLVER.

Problem:

A CCP HALT 2 (memory parity error) will occur when reloading an NPU after a power failure.

Solution:

Install code ident CC5A051 from SOLVER.

Problem:

Some Mode 4 printers are not always reported as not ready when printing stops.

Solution:

Install code ident CC5A052 from SOLVER.

Problem:

A HOST regulation change may cause unpredictable results in NPU processing.

Solution:

Install code ident CC5A053 from SOLVER.

Problem:

Page width sizes for Mode 4, Bisync and HASP devices are incorrectly validated.

Solution:

Install code ident CC5A054 from SOLVER.

Problem:

A CCP HALT 0 may be caused by Block Protocol Error 93 on a card reader connection.

Solution:

Install code ident CC5A055 from SOLVER.

Problem

A CCP HALT E may occur while running on-line diagnostics.

Solution:

Install code ident CC5A056 from SOLVER.

Problem:

An extra line feed may be inserted when a page width length line is sent to an asynchronous display device with a page length set to 0.

Solution:

Install code ident CC5A058 from SOLVER.

Problem:

The punch selector sequence for a 2780 card punch is incorrect.

Solution:

Install code ident CC5A059 from SOLVER.

Problem:

A CCP HALT 0 may occur during Bisync card reader input.

Solution:

Install code ident CC5A060 from SOLVER.

Problem:

On-line diagnostics do not work for the buffered CLA. A CCP HALT 20 may result.

Solution:

Install code ident CC5A062 and DG5A001 from SOLVER.

Dependency:

Must also install code ident CC5A055.

Problem:

HELLO command resets the terminal characteristics to the default values.

Solution:

Install code ident CC5A065 from SOLVER.

Problem:

CS does not crack its control card.

Solution:

Install code ident NA5A112 from SOLVER.

Problem:

CS aborts with \*BAD NCF READ\* dayfile message.

Solution:

Install code ident NA5A079 from SOLVER.

Problem:

NVF aborts with \*NVFTACC - CANNOT FIND PRODUCT ENTRY\* message in the dayfile.

Solution:

Install code ident NA5A123 from SOLVER.

Problem:

PIP cannot handle the case when it receives PRU input on a card reader connection that has been converted to an IVT connection due to RBF failing. PIP starts processing the input as PRU input, but after reading in the network header and determining the connection to be an IVT connection, PIP begins processing the input as IVT input. The result is that PIP uses the FBA, CBA, and LBA internal address pointers without initializing them. This cause PIP to overwrite the LIMBO buffer table and NIP overlay table.

Solution:

Install code ident NA5A006 from SOLVER.

PIP has been corrected to check for PRU input on IVT connections and discard the PRU input after sending NIP a worklist with a new error code.

Problem:

Due to timing problems PIP may halt the NPU with a coupler error 90 or send an err/lgl message to RBF.

Solution:

Install code ident NA5A126 from SOLVER.

PIP has been corrected to be more tolerant of CCP when a batch interrupt occurs and more tolerant of RBF when it processes a ofc/abort supervisory msg.

Problem:

NIP should dayfile coupler error code from HE/CP.

Solution:

Install code ident NA5A119 from SOLVER.

Problem:

The CS connection may hang if user break is entered while CS is outputting to the terminal.

Solution:

Install code ident NA5A111 from SOLVER.

Problem:

Fix HPUTF to return the first word of a bad NETPUTF text array on an error logical condition.

Solution:

Install code ident NA5A109 from SOLVER.

Problem:

NTOTBTS should check for matching host node number before discarding queue NPU/IN/R for NS.

Solution:

Install code ident NA5A105 from SOLVER.

Problem:

NIP aborted on NBSTTP error upon receiving an unexpected -BACK- from CCP on an IVT connectin that was just converted from a PRU connection because of RBF failure. NIP aborted also on HBSTTP error when RBF netted off and then failed, HAPFAIL should not issue reconnect trigger to HBSTTP when application is awaiting NET/OFF/N from NVF.

Solution:

Install code ident NA5A129 from SOLVER.

Problem:

Remove QTGET code that processes upline FC/STP and FC/STRT supervisory messages which are no longer valid for a Multi-Host Network.

Solution:

Install code ident NA5A118 from SOLVER.

Problem:

A negative NETWAIT time specified for NETWAIT call would cause application to stay in NETWAIT state if no upline messages are queued for it.

Solution:

Install code ident NA5A130 from SOLVER.

Problem:

MACREF NFETCH and MACREF NSTORE cause assembly errors.

Solution:

Install code ident NA5A121 from SOLVER.

Problem:

Introduce the new NS control statement parameter NDFCT to allow the installation to specify file category of NPU dump files.

Solution:

Install code ident NA5A113 from SOLVER.

Problem:

NDLP may generate a dayfile message containing an incorrect count of warning messages.

Solution:

Install code ident NA5A088 from SOLVER.

Problem:

NDLP now makes a direct entry to the NCF for UBZ and DBZ when TIPTYPE is user defined.

Solution:

Install code ident NA5A101 from SOLVER.

Problem:

NDLLIST is changed to report TA values for user defined TIPTYPES.

Solution:

Install code ident NA5A092.

Problem:

An X.25 link to a public data network may fail when the network is heavily congested.

Solution:

Install code ident CC5A066 from SOLVER.

12.3 Common Product Set

IPF

Problem:

The DISPOSE command in the REPORT subsystem will not function correctly in IPF2 V2.3 on NOS V2.1. This problem will be fixed for the IPF2.4 release on NOS V2.

Impact:

Until this problem is fixed, users will have to do their own "routing" of REPORT output files outside of IPF. The REPORT output file is left local on file REPORT and can be routed to a batch printer via the use of the NOS ROUTE command.

Problem:

NOS V2.1 CRM REPRIEVE processing will not function correctly after either a terminal timeout or disconnect.

Impact:

IPF2 is dependent on CRM to REPRIEVE correctly under terminal timeout/disconnect conditions in order to close database files (and flush buffers) opened for OUPUT. Because of this problem, files will not be closed after terminal timeouts/disconnect and they will, consequently, be marked "damaged" by CRM. Users subsequently will not be able to access these "damaged" files within IPF2. A previous good backup of the "damaged" files will have to be reloaded before successful accesses of the data can again be performed by IPF2.

Corrective Action:

PSR NS2B507 has been submitted. Corrective code has been generated to fix the problem on NOS V2.1. Both a description of the problem and the suggested corrective code are available through SOLVER. It is suggested that this code be installed in all NOS V2.1 systems where IPF2 will also be installed.

### 13.0 COMMON PRODUCT SET CORRECTIVE CODE

Product Set corrective code is listed by associated product. This corrective code is contained on file 3 of the RELO tape and is put on permanent file CPRD during the initial setup (except for APL corrective code which is contained on file 6 and is put on permanent file CAPL). The corrective code may not exist in the same order on CPRD as listed below. This corrective code is automatically installed by the installation procedures provided with NOS V2.1 level 580/577. (Note: Common Product Set Corrective Code described in the PSR Summaries as being contained in the Notes and Cautions file is contained in the CPRD and CAPL files for NOS V2.1. This code has been tested during system evaluation.)

| <u>AAM2</u> | <u>APL</u> | <u>BAM</u> | <u>RHF (PTF/QTF)</u>          |
|-------------|------------|------------|-------------------------------|
| AM2A287     | AP2A085    | SW1A623    | RHFA683<br>RHFA692<br>RHFA708 |
|             |            |            | RHFA691<br>RHFA704            |

| <u>QU3</u> | <u>RHF</u>         | <u>SORT5</u>       |
|------------|--------------------|--------------------|
| QU3A640    | RHFA682<br>RHFA713 | RHFA700<br>RHFA714 |
|            |                    | ST5A330            |

#### AAM2

**Problem:** When MIPGEN encounters a bad RMKDEF card, it gives an error message and does an ENDRUN. Some TAF users would like it to abort in this case.

**Solution:** Corrective code ident AM2A287 from file CRPD is included for any TAF users, but has no benefit outside TAF. It adds a new capability in AAM.

#### APL2

**Problem:** A change in the field numbers for network terminal definitions causes overstruck characters not to be transmitted properly to APL.

**Solution:** Corrective code ident AP2A085 on file CAPL fixes this problem.

BAM

Problem: BACKSPACE will misposition the file by one PRU if the file is positioned before a zero length PRU and the buffer is empty. Symptoms are dependent upon processing following the mispositioning of the file.

Solution: Corrective code ident SW1A623 on file CPRD fixes this problem.

Note: LIBdeck setting for FILE field length should be FILE-6031.

QU3

Problem: The QU interface to SORT5 does not pass the proper type for integer and real numbers and does not check the entire record for duplication when the unique option is chosen. Also a call was not made to retain the input order on duplicates.

Solution: Corrective code ident QU3A640 on file CPRD fixes this problem. The problem does not occur if QU is installed with the SORT4 option.

SORT5

Problem: If QU3 is installed with the SORT5 interface; some long sorts may fail or return garbled data.

Solution: Corrective code ident ST5A330 on file CPRD fixes this problem.

RHF

Problem: The NAD PP drivers (NDR,NLD,5CV) generate incorrectly formatted BML hardware error messages.

Solution: Corrective code ident RHFA682 (including RHFA682A through G) on file CPRD ensures that correct messages are generated.

Problem: DMPNAD may abort with the message:

NLD04 - WAITED TOO LONG FOR SHARED ACCESS  
when dumping large NAD memories.

Solution: Corrective code ident RHFA700 on file CPRD prevents NLD from incorrectly timing out during dump operations.

Problem: RHF does not reset its internal timers when coming out of the idle overlay. This can cause several problems, including connect requests timing out too rapidly, occasionally resulting in issuing the incorrect diagnostic:

REMOTE NOT RESPONDING.

Solution: Corrective code ident RHFA713 on file CPRD corrects the problem.

Problem: Configurations having a NAD on channel 6 will experience poor performance through that NAD if multiple file transfers are active simultaneously.

Solution: Corrective code ident RHFA714 on file CPRD corrects the problem.

#### RHP (PTF/QTF FILE TRANSFER FACILITIES)

Problem: PTFS does not process any directives in an MFLINK directives record after a file transfer directive. For example, in the following directives record:

PURGE,A/NA.  
DEFINE,A.  
CHANGE,B/CT=PU.

The CHANGE directive will not be processed.

Solution: Corrective code ident RHFA683 on file CPRD corrects the problem in PTFS.

Problem: The R= option on the PTFS PACKNAM directive does not work correctly.

Solution: Corrective code ident RHFA691 on file CPRD corrects the problem in PTFS.

Problem: If an MFQUEUE routing directive specifies both UN and TID=C parameters, then the TID=C parameter is ignored.

Solution: Corrective code ident RHFA692 on file CPRD will cause an output file to print at the central site if both UN and TID=C are specified on the routing directive.

Problem: Occasionally QTF can abort with "I/O sequence error".

Solution: Corrective code ident RHFA704 on file CPRD corrects the problem.

Problem: When using MFLINK without an ST parameter, PTFS could ignore certain directives or give incorrect error messages.

Solution: Corrective code ident RHFA708 on file CPRD corrects the problem.

14.0 NETWORK PRODUCTS CORRECTIVE CODE

There is no Network Products Corrective Code associated with this release.

15.0 CONTROLWARE LEVELS

NOS V2.1 level 580/577 was tested in an environment containing the following controlware, microcode, environment interface, CML, and HIVS/CTI:

|                                                      |            |                                                              |
|------------------------------------------------------|------------|--------------------------------------------------------------|
| 7054/844 (BCS-Half Track)                            | MA710-A13  | (PN52706607)                                                 |
| 7021/67X (FIRM67X)                                   | MB434-A14  | (PN52653361)                                                 |
| 7154/844 (BCF-Full Track)                            | MA401-A07  | (PN22724600)                                                 |
| 7155/885/844-4X (FMD-HT/FT)                          | MA721-A07  | (PN18783673)                                                 |
| 7155-401/885-42/885-1X<br>/844-4X(PHD-HT/FT)         | MA722-A01  | (PN52706629)                                                 |
| 380-170(NAD)                                         | MG101-A04  | (PN21935422)                                                 |
| CYBER 18 Mode 4 emulator                             | MD-426-A05 | (PN88952276)                                                 |
| Model 815 Mainframe Microcode U1BL07<br>FCA index #1 |            | (PN19267916 on 7 track tape)<br>(PN19267917 on 9 track tape) |
| Model 825 Mainframe Microcode U1CL07<br>FCA index #2 |            | (PN19267919 on 7 track tape)<br>(PN19267920 on 9 track tape) |
| Model 835 Mainframe Microcode U2AL09<br>FCA index #1 |            | (PN19267677 on 7 track tape)<br>(PN19267678 on 9 track tape) |
| Model 855 Mainframe Microcode U3XL42<br>FCA index #3 |            | (PN21946233 on 7 track tape)<br>(PN21946234 on 9 track tape) |
| 800 Series Environment<br>Interface                  | Level 8    | (PN77987535A)                                                |

CML release level 142

HIVS/CTI release level 143K

## 16.0 REMOTE HOST FACILITY (RHF)

RHF enables NOS V2 to communicate with multiple NOS V2 and/or non-NOS V2 mainframes via the Loosely Coupled Network (LCN).

RHF provides the following capabilities:

### Remote Host Facility Access Method (RHFAM) - REL16A

This package consists of a subsystem which monitors application connections and the Facility Interface Package (FIP) which is externally call-compatible to a subset of the Applications Interface Package (AIP) defined by Network Host Products (NHP). This package allows the installation to develop unique applications using the Loosely Coupled Network. RHFAM provides the system operator control over the LCN configuration and the applications via the K-display. The RHFAM package also includes the following utilities.

Maintenance Log Transfer Facility (MLTF) collects and logs network statistics and error information from Network Access Devices in an LCN configuration.

The LOADBC and DMPNAD utilities are provided to load and dump controlware to/from Network Access Devices in an LCN configuration.

### PTF/QTF File Transfer Facilities 1.0 (REL16B)

Queue File Transfer Facility (QTF) transfers queue files to/from the NOS V2 system via the RHFAM.

Permanent File Transfer Facility (PTF) transfers permanent files to/from the NOS V2 system via the RHFAM using the MFLINK command.

## 16.1 NOS V1 - NOS V2 RHF Differences

### 16.1.1 User Interface

- \* The commands MFLINK and MFQUEUE, by default, read the job command stream for directives instead of the INPUT file. This allows the user to more easily specify directives. However, if the keyword I is used without a local file specified both NOS Version 1 and NOS Version 2 will read the INPUT file and processing will be the same.

- \* MFLINK and MFQUEUE automatically convert 8/12 ASCII files to LCN ASCII files. The user does not need to pre-convert or post-convert the data with FCOPY. The .C8 data declaration assumes 8/12 ASCII with zero byte end of line terminators and will convert the data to/from the LCN ASCII format. For queue file transfers between NOS V1 and NOS V2, conversions will be automatically performed as appropriate between 8/12 ASCII and LCN ASCII.
- \* To provide a more consistent user view between batch and interactive processing, the interactive use of MFLINK has been changed. The interactive user does not need to terminate the MFLINK sequence with a USER BREAK.
- \* The definition of an MFLINK session has been changed to allow other control statements to be placed in an MFLINK session. An MFLINK session is initiated by an MFLINK statement with an ST parameter. Subsequent MFLINK statements without an ST parameter continue the session to the same remote mainframe using the recovery directives saved (such as USER and CHARGE statements) without requiring the user to respecify them.
- \* Between NOS V2 hosts and between NOS V2 and NOS/BE hosts, files can be transferred using all appropriate ROUTE parameters without the need to use the MFQUEUE command. NOS V2 will also accept files from NOS V1 or any other host without requiring the use of MFQUEUE. Note that MFQUEUE may be needed in this case to set some special file characteristics (such as forms code).

NOS V1 however will not accept an output file from a non-NOS V1 host unless one of the following is true:

- MFQUEUE (with an appropriate ROUTE directive) was used to queue the file.
- The job producing this output originated on NOS V1.

Thus, a NOS V2 user may need to use MFQUEUE to transmit an output file to NOS V1.

### 16.1.2 Installation/Operation

- \* Configuration specification has been simplified by centralizing all configuring into one utility, RCFGEN.
- \* The operator interface is done by the RHFAM without requiring the operator to initiate a separate utility. Some additional capabilities are provided, such as the ability to disable a mainframe (PID) with one command or the ability to display active applications.
- \* There are a few minor differences in the FIP interface. This will only be noticed by sites who have written their own RHF applications:
  - The NTPXFR entry point is no longer needed and thus was removed.
  - The NETUXFR entry point was added to allow an application to transfer data from CM rather than disk. This could be used for example, by an application receiving data from an external source and transmitting it across the network.
  - Several supervisory messages have been added for improved compatibility with AIP or for additional capability.
- \* A potential deadlock situation can occur with RHF jobs and the support of removable packs. An assembly option is now available in PTFS that controls whether deadlock prevention is or is not selected. If deadlock prevention is selected (Default), then PTFS does not wait for an unavailable removable pack to be mounted.

## 16.2 Operational Considerations

### 16.2.1 NAD Controlware Loading/Dumping

- \* Switch settings on the NAD are very important. Many switch settings must be correct to obtain any response from the NAD (Access code, NAD address, TCI enable, etc.) The RESYNC and CONTENTION parameters, if not set properly, can cause occasional trunk errors. For example, if two NADs connected by one trunk have the same RESYNC parameter, a file transfer in one direction may fail with a broken connection. Setting of the CONTENTION/RESYNC parameter is as follows:

On any given trunk, the CONTENTION number for all NADs should be the same.

On any given trunk, the RESYNC parameter for all NADs should be unique and less than n where  $n = (2 * \text{CONTENTION NUMBER}) + 2$ . Please see the NAD reference manual for further information. Note however that the information given here is accurate and should take precedence over any information to the contrary in the NAD reference manual.

- \* LOADBC and DMPNAD may abort with either NLD ERROR 4 or CVL ERROR 33. While generally either of these errors indicate a failure in the local or remote NAD, a trunk failure, or possibly an incorrect switch setting on the local or remote NAD, there is another possible cause:

- Under certain conditions, a remote NAD load will fail with NLD ERROR 4 but a second remote load attempt will succeed. This problem can be prevented by always preceeding a remote load by a remote dump request to ensure the remote NAD controlware is halted before loading is attempted.

For example: To load the remote NAD with NAD address 7F and access code FOF0 connected to TCU 0 of the local NAD on channel 5:

```
X.DMPNAD(CH=05,ND=7F,AC=FOF0,LT=1000)
X.LOADBC(C=05,ND=7F,AC=FOF0,LT=1000)
```

#### 16.2.2 Debug Code

In the process of writing and testing some of the RHF components, it was found to be useful to include certain conditional debug code. This code is normally not compiled or assembled. It can be invoked by including the E and C parameters on all SYMPL compiler commands and PC=DEBUG on all COMPASS commands. You are warned, however, that any conditional debug code is not supported and is not intended for a production environment.

#### 16.2.3 Banner Pages

##### \* General Philosophy

NOS V2 banner pages for output files that have been transmitted across the network are produced using the same philosophy that NOS V2 uses for output files from local jobs. That is, the banner page is produced from a hash of the user index of the user that submitted the job or routed the file.

Thus if a user submits a job to another mainframe via LCN, the output returning will be given a banner page of the hash of that user. In some cases a user cannot be identified for that hash generation, and in that case the job name (or UJN or FID) will be used for the banner page.

\* Typical Cases

- Network contains only NOS V2 mainframes having identical VALIDUZ files. Thus all LIDs in the CMR LID table will have the "validate" bit set.

For this case banner pages should be identical to what would be expected on the local mainframe case and will be the same on all mainframes.

If a user submits a job from one mainframe to another for execution, the output from the job will, by default, return to the first mainframe for printing and will have a banner page of the hash of the user submitting the job. If a user transmits a print file from one mainframe to another, the banner page will be the hash of the user that routed the file.

- Network contains only NOS V2 mainframes having identical VALIDUZ files and NOS/BE mainframes. Thus all LIDs for NOS V2 mainframes will have the "validate" bit set.

All files transmitted only between NOS V2 mainframes will follow the same rules as above.

Output from a job submitted on NOS for execution on NOS/BE will return, by default, to NOS for printing.

If the file has an identifiable user name (job submitted on NOS from an IAF terminal or from a batch job) then the banner page will be generated from that user.

If there is no identifiable user name (job submitted through BIO or RBF) then the banner page will be the UJN/FID. The UJN/FID will be the NOS/BE job name (from the job statement) or the UJN or FID if one is specified on a ROUTE statement or directive.

If an output file is transmitted from NOS/BE to NOS for printing then the banner page will again be the UJN/FID. The UJN/FID will be the name of the NOS/BE job that routes the file (job name or the terminal hash=IOxxOxx) or the UJN/FID specified by the user on the ROUTE statement or directive.

- Network contains only NOS V2 or NOS V1 mainframes that have identical VALIDUZ files. On NOS V2 mainframes all LIDs will have the validate bit set.

All files transmitted only between NOS V2 mainframes will follow the same rules as in the first typical case. Files transmitted to NOS V2 mainframes or returning to NOS V2 mainframes will also follow those rules.

\* Other Cases

It is recommended that sites use identical VALIDUZ files if possible. The use of different VALIDUZ files may cause some confusion about banner pages and job validation.

The remainder of this section on banner pages should be skipped except by those with a real need to understand the intricacies of this topic.

Terminology: Owner User Name - Owner User Name is the user name of the user that routed the job or output file to the I/O queue. If a file is routed from IAF, then the owner user is the user name of the person logged in at the terminal. If a job is read in from BIO/RBF, the owner user comes from the job's USER command. If a job or file is routed from a running job, then the owner user of that file or job is copied from the owner user of the job doing the route.

Example: (NOS V2 configuration with different VALIDUZ files and thus the "validate" bits not set in the CMR LID table).

- user routes an output file from one mainframe (A) to another (B).

There are three cases:

- 1) Owner user on mainframe A is also valid on B and has the same user index on both mainframes. In this case the banner page on mainframe B will be the same as if the file had printed on A.
- 2) Owner user on mainframe A is also valid on B but the user indexes on both mainframes are different. In this case the banner page on mainframe B will be generated from the user index on mainframe B of the owner user.

- 3) Owner user on mainframe A is not valid on B. In this case the UJN is used. There are three cases:
- Route is done from IAF - Default UJN will be the hash of the user logged into IAF.
  - Route is done from batch job - default UJN will be the job card job name.
  - Route statement or directive specifies UJN or FID. This value will override either of the other two cases.

The following chart gives specific information about the banner page generated for an output file received on NOS V2 from the network. The following terms are used in the chart:

- \* OUN - Owner User Name
- \* Hash of sending MF OUN - This is the hash on the receiving mainframe of the sending mainframes owner user name for this file.
- \* RJN - Remote job name - This is the name assigned to the file by the sending mainframe. This name is overridden by a ROUTE directive UJN or FID parameter.
  - If the sending mainframe is NOS/BE:  
The RJN is the name of the NOS/BE job that routes the job or file (job name or terminal hash IOXXOxx) or the FID parameter specified on the ROUTE Statement.
  - If the sending mainframe is NOS V2:  
The RJN is the UJN of the job that routes the job or file (job name or terminal hash) or the UJN parameter specified on the ROUTE statement.
  - If the sending mainframe is NOS V1:  
The RJN is the NOS V1 job name (user name hash plus sequence number or terminal number).
- \* Originating Mainframe
  - Mainframe where the job that resulted in this output file transfer first entered the input queue. If that job was submitted from another batch job, then the mainframe where the first of the series of jobs entered the input queue.

If a ROUTE DO parameter was entered anywhere along the series of job/file transfers, then the originating mainframe is changed to the last mainframe on which the ROUTE with DO parameter was entered.

Note: This term is not to be confused with the term "Source Mainframe" documented in the reference manual.

# NOS V2 BANNER PAGE

## Use of Chart:

The conditions listed in each condition column will cause the banner page value listed at the bottom of the column.

|                                                                                                           | CONDITIONS  |                              |     |                              |     |
|-----------------------------------------------------------------------------------------------------------|-------------|------------------------------|-----|------------------------------|-----|
|                                                                                                           | 1           | 2                            | 3   | 4                            | 5   |
| Output returning to<br>originating mainframe                                                              | YES         | YES                          | YES | NO                           | NO  |
| Job has valid owner<br>name*                                                                              | YES         | NO                           | NO  | **                           | **  |
| Sending mainframe is<br>NOS V2 and owner user<br>on that mainframe is<br>also valid on this<br>mainframe. | **          | YES                          | NO  | YES                          | NO  |
| BANNER PAGE VALUES                                                                                        | OUN<br>HASH | HASH<br>Sending<br>MF<br>OUN | RJN | HASH<br>Sending<br>MF<br>OUN | RJN |

\*i.e., The job on the originating mainframe was submitted from IAF or another batch job, or the job on the originating mainframe was submitted through BIO/RBF and the job statement lid has the "validate" bit set in the CMR LID table.

\*\* Conditions do not apply in this column.

#### 16.2.4 QTF Rejected Files

There are a number of conditions under which the queue file transfer initiator (QTF) may not be able to successfully complete the transfer of a queue file to a remote host. These conditions fall into two categories:

- \* Temporary - Examples include remote host is not available, connection breaks due to hardware or software failures, or resources are temporarily unavailable on the remote host (server not available, queue full, or disk full).
- \* Permanent - Examples include validation errors on remote host (invalid user number or password) queue type not supported on remote host, MFQUEUE routing directive not acceptable to the remote host, or file creator is not validated to send files via QTF.

For temporary conditions, QTF will immediately retry the transfer up to an installation parameter defined number of times (default=3) before temporarily disabling further transfers to that remote host.

If a permanent error occurs, QTF will attempt to notify the file creator that the transfer could not take place. For each file acquired, QTF keeps a record of all status and error messages. This record is called the connection log file. In a permanent error case, QTF will evict the offending file from the local queue and route the connection logfile to the local queue to be sent back to the owner of the evicted file (in so far as is possible). If known, the source lid, owner user name, remote batch terminal id, and terminal wait queue will be used to route the connection log file back to the appropriate place.

If the source mainframe rejects the connection logfile, it will print at the local mainframe at the central site.

Note: Mainframes other than NOS V2 or NOS/BE have different rules for handling permanent errors.

#### 16.2.5 PC Parameter

The PC parameter on MFLINK and MFQUEUE has several restrictions:

- \* Must be non-alphanumeric
- \* Must not be "." or ")".

#### 16.2.6 IDLE,RHF.

The IDLE,RHF command currently causes an immediate RHF termination. To idle RHF use the RHF K-display IDLE command.

#### 16.2.7 DMPNAD

The LT parameter must be specified when doing a remote NAD dump and must not be specified when doing a local NAD dump. If LT is not specified, it is considered a local NAD dump and parameters such as ND and AC are ignored. In the next release, the ND and AC parameters will not be ignored; instead an error message will be issued.

#### 16.2.8 Configuration Restrictions

NADs must not be physically connected on channel 0.

#### 16.3 RHF Installation Verification

The VRHF procedure on the unconfigured deadstart tape can be used to verify the correct installation of RHF and permanent and queue file transfer applications. Before submitting the procedure for execution, the LID table must be set up correctly:

- \* Bring up the LIDOU utility.
- \* Ensure the PID matches the PID to be used on the BEGIN statement to be entered under DIS ("M" plus machine id).
- \* Ensure the lid LBK is a host, linked lid. Enter:  
L.SA,LBK,HLV. (if necessary)
- \* Ensure the lid LB2 is only a linked lid. Enter:  
L.SA,LB2,L. (if necessary)

REQUEST,PAUSE statements are used to control when RHF is brought up and what verifications to perform. Success of the verification is indicated by the "VERIFY GOOD" message in the output listing of the RHFVJOB job. Under DIS, execute VRHF with the following command using the correct physical id and NAD parameters for the mainframe where the test is to execute:

BEGIN,VRHF,INSTALL,PID=Mxx,NADADDR=yy,CHANNEL=zz.

(where xx = machine id, yy = NAD address, and zz = the NAD channel)

#### 16.4 Remote Host Verifications

Since the various system releases occur asynchronously, the standard release software used on a link system may be dependent on additional code to support a new system release. A definition of any dependent code is communicated to the Field Support organization. Please contact Field Support for information about any dependent code or if a problem occurs at your site.

The following systems were functionally verified for proper operation with this release of the Remote Host Facility.

NOS V2.1 Level 580/577 to NOS V2.1 level 580/577  
NOS V2.1 Level 580/577 to NOS V1.4 L573/564  
NOS V2.1 Level 580/577 to NOS/BE 1.5 Level 577/577

##### 16.4.1 NOS V1 Corrective Code

It is recommended that the following NOS V1 Corrective Code idents are installed at sites running NOS V2 to NOS V1 RHF:

NS10277 (Files are queued without running text)  
NS1A338 (RHF - unable to send files to a NOS V2 wait  
queue with MFQUEUE)  
NS1A339 (QTFS cannot accept multiple file transfers)  
NS1A340 (QTFS does not provide default implicit text)

These Corrective Code idents are available from SOLVER.

Please contact Field Support for additional information that may be available for NOS V1-NOS V2 support.

#### 16.5 NAD Controlware Initialization Parameters

As documented in the NAD Hardware Reference Manual Pub # 60458500, there are a set of initialization parameters which must be loaded into NAD memory along with the NAD controlware. These parameters are assembled into LOADBC and are appended to all NAD controlware loads. The default values provide for a maximum of 10 remote NADs, 24 paths, the use of all available NAD memory, and no NAD buffer tracing. To change any of the initialization parameters, you must modify the default values and reinstall LOADBC. LOADBC subroutine CNP attempts to maximize NAD memory utilization by allocating as much memory as possible to NAD buffers. This automatic allocation is defeated if the NAD memory size initialization parameter is set non-zero. This parameter should not be changed without a thorough understanding of NAD controlware memory utilization.

#### 16.6 Site Written Applications

The Remote Host Facility Access Method (RHFAM) has been designed to allow sites to write their own applications to interface through RHFAM and transmit data across the Loosely Coupled Network (LCN). Verification of this capability has not been completed at this time. The primary emphasis of this release was support for the standard applications: MFLINK, PTFS, QTF, QTFS.

Until the next release of RHFAM, it is suggested that any site written applications be debugged before they are introduced into a production environment.

Certain errors a site written application can make will cause that application to hang and will cause RHF to appear hung. If this should occur, the offending application should be dropped and normal RHF operation will resume.

## APPENDIX A

### WRITING SAM-P CASSETTES

#### MATERIALS/HARDWARE REQUIRED

- \* 2550 Series Network Processing Unit with Cassette Controller and Cassette Tape Unit
- \* SAM-D Cassette Tape
- \* Cassette Tape(s)

#### PROCEDURE

NOTE: While building a SAM-P tape make sure there are no terminals, hosts or neighboring NPUs communicating with the NPU. All data connections will be broken.

1. Set toggle switch in DISABLE (down) position on the cassette tape unit.
2. Place SAM-D (read mode)\* into the cassette tape unit. If the tape does not rewind, lift then close lid to cause the tape to rewind.
3. At the maintenance panel
  - \* Select REMOTE mode
  - \* Push the MASTER CLEAR button
  - \* Push the INITIATE button

The SAM-P bootstrap and program will be loaded into the NPU. At the end of the load SAM-D will stop.

#### WARNING

If SAM-D starts to rewind, remove the SAM-D cassette tape AS SOON AS POSSIBLE or SAM-D will be written over.

4. Remove the SAM-D cassette tape.
5. Place the cassette tape (write mode)\*\* into the unit.

The cassette tape will rewind then position itself to load point. The SAM-P bootstrap and program will be written to the tape, then the tape will rewind and stop. If a parity error is encountered, the tape will be rewound and SAM-D will try to write SAM-P again. After 15 times, if it is not successful, SAM-D will

stop. Return to step 1 and repeat the procedure using a new write mode cassette. If parity errors persist four or five times, stop the cassette tape WHILE IT IS REWINDING, remove it, and replace it with another cassette tape. SAM-P will then be written on the replaced cassette tape. Remove the cassette tape. Repeat step 5 to generate another copy, if desired.

6. At the maintenance panel, push the MASTER CLEAR button. This will terminate the SAM-D program.

NOTE:

- \* For READ MODE, the tab should be positioned toward the center of the tape.
- \*\* For WRITE MODE, the tab should be positioned away from the center of the tape.

APPENDIX B

Interactive CS Commands:

CONTROL, (ON/OFF)  
GO  
ENABLE, TRUNK/LLINK/LINE/TERM=name  
          LINES/TERMS, NPU=name  
          TERMS, LINE=name  
DISABLE, TRUNK/LLINK/LINE/TERM=name  
DUMP, NPU=name, (ON/OFF)  
LOAD, NPU=name, (DUMP/NDMP)  
SEND, TERM/LINE/LLINK/NPU=name, MSG=string  
          NPUS=name, MSG=string  
TST, NPU=name, REQUEST/MSG=string/DROP  
STATUS, NPU/CPLER/TRUNK/LLINK/LINE/TERM=name  
          CPLERS/TRUNKS/LLINKS/LINES, NPU=name, (EN/AC/DI/DN)  
          TERMS, NPU/LINE=name, (EN/AC/DI/DN)  
          TERMS, LLINK=name  
HISTORY, ALL  
INFO  
END/GOODBYE/LOGOUT/BYE/HELLO/LOGIN

Host Operator (HOP) Commands

NAM Commands:

ST  
DB = (appl/ALL)  
DE = (appl/ALL)  
DU = (appl/ALL)  
FL = nnnnnn  
LE = (appl/ALL)  
RS = (appl/ALL)  
LB = (appl/ALL)  
LR = (appl/ALL)

NVF Commands:

ENABLE, APPL=name  
IDLE, (APPL=name/HOST)  
DISABLE, (APPL=name/HOST)  
STATUS, (APPL/TERM/UNAME)=name  
          APPLS, AC  
          TERMS, (APPL/UNAME)=name  
          UNAMES, APPL=name  
HISTORY, ALL

NS Commands:

STATUS, NPU=name  
FILE, NPU=name, NLF=pfn, UN=name, PW=pw  
NOFILE

CS Commands:

Identical to those listed above as interactive CS commands except for CONTROL. CONTROL is not a valid HOP command.

APPENDIX C

DESCRIPTIONS OF HUNG PP/PP HUNG  
and  
NO MONITOR RESPONSE  
(DSD WAIT MTR)

## 1.0 INTRODUCTION

The purpose of this paper is to give the reader a better understanding of what HUNG PP, PP HUNG and NO MONITOR RESPONSE (DSD WAIT MTR) messages mean on a NOS operating system. This will be accomplished by discussing the following areas:

- o NOS architecture in the area of PP/CP communication
- o Situations leading to a hung PP
- o How to analyze a system dump of a hung PP situation
- o Situations leading to a NO MONITOR RESPONSE (DSD WAIT MTR)

It should be remembered that what is presented here highlights the most frequently encountered situations that can lead to a hung PP or a NO MONITOR RESPONSE (DSD WAIT MTR) situation. Because of the complexity of the system (both NOS and the hardware), it is not possible to document every situation that can result in these error conditions.

The NOS Version 1 message DSD WAIT MTR has been changed to NO MONITOR RESPONSE at NOS Version 2.1. This document will use the message NO MONITOR RESPONSE even though both messages apply.

When the terminology "CYBER 170-8X5" is used, this is referring specifically to the CYBER 170-815, CYBER 170-825, CYBER 170-835 and CYBER 170-855 mainframes.

## 3.0 PP/SYSTEM MONITOR COMMUNICATION ON NOS

NOS allocates 10B CM words for each PP to be used for communication between the PP and the system monitor. The format of the communication area is documented in figure 3.0

|          |  |                 |  |
|----------|--|-----------------|--|
| WORD 1   |  | INPUT REGISTER  |  |
|          |  |                 |  |
| WORD 2   |  | OUTPUT REGISTER |  |
|          |  |                 |  |
| WORD 3   |  | MESSAGE BUFFER  |  |
|          |  |                 |  |
| .        |  |                 |  |
| .        |  |                 |  |
| .        |  |                 |  |
|          |  |                 |  |
|          |  |                 |  |
| WORD 10B |  |                 |  |

Figure 3.0

The first word, called the input register, is used by the system monitor to tell the PP what function to perform. Information passed through the input register includes a 3 character PP program name, and typically a function code and a CM address pointing to a parameter block. While a PP program is executing, it will make requests to the system monitor by writing the request in its output register, that is, the second word of the 10B word communication area. The PP program will wait for the system monitor to complete the request before continuing its execution. The remaining 6 words of the 10B communication area are referred to as a message buffer. This area is used to pass additional information between the PP and system monitor.

An example may be helpful to illustrate how the PP communication area is used. Assume a CPU program has posted a PFM RA+1 request to attach a permanent file to its job. CPUMTR will assign a PP to perform this function by writing the appropriate PFM request into the input register of an available PP. When the available PP detects a request in its input register, it will process the request by loading and executing the PP program specified. In this example, the PP program, PFM, will be loaded. While PFM is executing, it will make requests to the system monitor by writing the request to its output register. The system monitor will detect the request, process it, and clear the output register when the request is completed. When PFM has completed its task of attaching a permanent file, it will write a release PP request to its output register. The system monitor will respond to this request by clearing both the input and output registers for this PP. The PP is now ready to accept the next task to be assigned by the system monitor.

#### 4.0 HUNG PP AND PP HUNG

A HUNG PP or PP HUNG message indicates one of the following:

- o The system monitor has detected a bad request in a PP's output register. The bad request may be due to an invalid function code or invalid parameters.
- o The program executing in the PP has encountered a situation that is not expected. The PP will ask the system monitor to hang the PP by issuing an MXFM function on NOS Version 1 or a HNGM function on NOS Version 2.

In either situation, the system monitor will hang the PP that issued the request in the following manner:

- o Place the packed time and date in the last word of the PP's message buffer. By examining the contents of the last word of all of the PP's message buffers, it is possible to determine which PPS have been hung and possibly when they were hung.
- o If CPUMTR detected the bad request, the message PP HUNG will appear at the system control point. If MTR detected the bad request, the message HUNG PP will appear at the system control point.
- o The request will not be completed by the system monitor. The output register will not be cleared. Therefore, the PP program will wait indefinitely for the request to be processed.

The following steps should be taken to analyze a hung PP situation:

- o Take an express deadstart dump to tape.
- o Use DSDI to interpret the express deadstart dump tape. The following information may be useful to have interpreted: Low core, control point areas, CPUMTR, contents of all PPs, SCR register or maintenance registers, system dayfile, ERRLOG, EST, MST's, EJT's and QFT's. Other information may be required after analysis of this information.
- o Determine which PP was hung. This is done looking for the packed time and date in the last word of the PP's message buffer. The format of the packed date and time is as follows:

```
+-----+
!  0000  0000  yy  mm  dd  hh  mm  ss  !
+-----+
```

where

yy = year (biased by 1970)  
mm = month  
dd = day  
hh = hour  
mm = minutes  
ss = seconds

- o Once the hung PP is found, determine what is wrong with the request in the output registers. This can be done by consulting the System's Programmer's Instant, a listing of CPUMTR or a listing of MTR. These sources will document the format of the request that is expected to be in the output register and the reasons that will cause the request to hang.
- o Determine why the bad request was issued by the PP. This step will involve analyzing the contents of the PP that was hung. A listing of the PP program that issued the request would be helpful during this stage. The listing should match the binaries. The location of where the monitor request was built can be determined by where the PP resident routine FTN was last called.

Other items to consider when analyzing the dump include:

- o Is the code in CPUMTR or MTR that processes the request intact? Sometimes the code has been altered in such a way to cause a hung PP. In this situation, the problem is to determine how the code was altered.
- o Is the problem due to a hardware error? For instance, a bit could have been dropped when the request was written to the output register. The ERRLOG and maintenance registers should be analyzed.

## 5.0 NO MONITOR RESPONSE

DSD is a PP program that is resident in PPl. Its main function is to drive the system console, i.e., to generate the displays that are seen on the console, and to process commands entered at the console. Occasionally, DSD must issue requests to the system monitor by writing the request into its output register. MTR will monitor DSD's output register. If a request is found, it will either process the request itself, or cause an exchange in the CPU to have CPUMTR process the request. DSD will know when the request is complete by monitoring byte 0 of the output register for a zero value.

A "NO MONITOR RESPONSE" situation occurs when DSD has written a request to its output register, but the request has not been processed by the system monitor (MTR and/or CPUMTR) in a specified amount of time. The question that needs to be asked when a NO MONITOR RESPONSE is encountered is "Why isn't MTR/CPUMTR processing DSD's requests?"

There are many situations that will cause a NO MONITOR RESPONSE. A few of these situations will be discussed here. These situations are used in order to give the reader an idea of what to look for in the operating system and hardware when analyzing a NO MONITOR RESPONSE situation.

#### MTR not responding

As stated earlier, MTR monitors all DSD requests. MTR will either process the request itself or it will exchange the CPU and have CPUMTR process the request. MTR may not respond to the DSD request for the following reasons:

- o An MTR request written into MTR's output register may have caused a hung PP. The question to ask would then become "why did MTR hang?"
- o MTR is executing a tight loop and as a result is not monitoring DSD's output register. This situation may be caused by bad code in MTR, or a hardware problem such as problems with PP memory or in the PP barrel.
- o MTR hangs internally when certain conditions occur, such as, overlapping job field lengths.

Other symptoms that would further confirm that MTR (or PPO) is not responding would include:

- o If the time being displayed at the top of the left screen DSD display is changing, MTR is not hung. If the time is not changing, then either MTR or CPUMTR are hung. The time that is displayed comes from word TIML of central memory. (Refer to a listing of NOSTEXT for the exact location of TIML.)
- o If the real time clock that is maintained in word RTCL of low core is not changing, the MTR is hung. If RTCL is changing but TIML is not, then CPUMTR is not responding. (Refer to a NOSTEXT listing for the exact location of RTCL).
- o The maintenance registers on a Cyber 170-8X5 mainframe or the SCR register on a Cyber 170-7XX mainframe indicate a hardware error.

#### CPUMTR not responding

When DSD issues a request for CPUMTR to process, MTR will detect the request and issue an exchange to the CPU to let CPUMTR process it. CPUMTR may not respond to the request for one of the following reasons:

- o The CPU has been halted due to the execution of bad code (illegal instruction, address out of range, or indefinite/infinite operand) while in Cyber 170 monitor mode or a hardware error has been detected while in monitor mode. On a Cyber 170-8X5 mainframe, a simulated CPU halt is performed by Executive State (EI).
- o CPUMTR is in a tight loop in Cyber 170 monitor mode and can not be exchanged. This may be the result of bad code in CPUMTR.
- o A problem has occurred with the microcode on a CYBER 170-8X5. This may be due to the wrong version of microcode being used or a logic problem within the microcode.
- o A problem has occurred with Executive State (EI) on a CYBER 170-8X5. This may be due to the wrong version of EI or a logic problem within EI.
- o A hardware problem exists. For example, exchange jump does not work. These problems should be reported in the maintenance registers for Cyber 170-8X5 mainframes or in the SCR register for Cyber 170-7XX mainframes.

Other symptoms that may indicate CPU or CPUMTR related problems would include:

- o Other PP's are waiting for requests to CPUMTR to be processed.
- o The CPU status of jobs that are displayed on the DSD B display are not changing.
- o On a Cyber 170-8X5 mainframe, the processor status summary register shows the CPU has been halted, detected an uncorrectable error, or is in Executive State mode. If the error was due to hardware, further information can be seen in the processor fault status registers. CMSE or EDD/DSDI can be used to status the contents of the maintenance registers.
- o The P address as displayed on the upper right DSD display in NOS V1 or the JSN to which the CPU is assigned does not change.
- o Word 0 of central memory is non-zero. If the upper 3 bytes of word 0 are non-zero, this may indicate that a CPUMTR ERROR EXIT situation has occurred. (The NO MONITOR RESPONSE message may have overwritten the CPUMTR ERROR EXIT message).

Bad DSD Request

The request that DSD wrote into its output register may have been bad thus causing a hung PP condition. In this situation the NO MONITOR RESPONSE message can overwrite the HUNG PP message.

When a NO MONITOR RESPONSE situation occurs, as much information as possible should be collected. An express dump should also be taken so that further analysis can be done by a system analyst. It is strongly recommended to reconfigure the PP's such that the contents of MTR (PP0) is dumped. Refer to Appendix J of the NOS Version 2 Operator/Analyst Handbook (Pub. number 60459310) for further information regarding PP reconfiguration.

NOS Version 2.1 Software Release Bulletin  
January 31, 1983

INSTALLATION RESPONSE FORM

NOS Field Support maintains a list of the sites using NOS. In order that we can represent the customer base more effectively, we ask that you fill out the form found below and return it to NOS Field Support. Thank you.

-----  
SITE NAME AND CODE

SITE ADDRESS

CONTACT

DATE

This site has installed NOS V2.1 Level 580/577 and is currently using it in a production environment.

Please return to:

NOS FIELD SUPPORT - ARH213  
CONTROL DATA CORPORATION  
4201 Lexington Avenue North  
St. Paul, MN 55112

NOS3156E/ap

end