Software Release Bulletin

NOS 2.0

LEVEL 562

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NOS
VERSION 2

SOFTWARE
RELEASE
BULLETIN

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1.0 INTRODUCTION

1.1 Materials

The NOS 2.0-562/552 REL0 (Installation Tape), the Unconfigured Deadstart Tape, the HIVS tape, the Common Product Set (CPS) release tapes, the Network Products (NP) release tapes, and the Operating System release tapes constitute the materials required for NOS 2.0 level 562/552 installation.

1.2 Installation Tape

The format of the REL0 tape is as follows:

FILE	RECORD	DESCRIPTION	FILE NAME*
1	1	Procedure to install files from REL0	
	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		PSR Data Base Report	
	1	Operating System PSRs (fixed)	
	2	(Empty Record)	
	3	552 CPS and 562 NP PSRs (sorted by product and PSR number)	
	4	552 CPS and 562 NP PSRs (sorted by product and routine)	
	5	552 CPS and 562 NP PSRs (sorted by product and site)	
5	1	Network Products Corrective Code (UPDATE PL format)	CNSP
6	1-n	Miscellaneous Code (UPDATE PL format)	MISCPL
7	1-n	APL Corrective Code (UPDATE PL format)	CAPL

* Permanent files are created from REL0 by procedure TAPE with the indicated file names. All files are direct access except REP which is indirect access.

2.0 INSTALLATION NOTES

2.1 Corrected SIM Problems

Problems documented by SIMs are corrected in the NOS Version 2 Level 562/552 release materials as indicated in the following sections.

2.1.1 NOS SIM Problems

Software Information Memos (SIM) will be published for NOS Version 2 using a new set of sequence numbers. SIM corrective code for NOS Version 1 does not apply to NOS Version 2.

2.1.2 Common Product Set SIM Problems

Corrective code for the following SIM problems is contained in release materials corrective code file (file 3 of REL0 - CPRD) for the Common Product Set.

P066, P069, P070, P071, P078, P079

Corrective code CD20058 has been resubmitted since being published in SIM P071. The resubmitted code has been included with the release materials for NOS Version 2.

2.1.3 Network Products SIM Problems

Corrective code for the following SIM problems is contained in the release materials PLs for Network Products.

N042, N043, N044, N045, N046, N047, N048, N049, N050, N051, N052, N055, N057, N058, N059, N060.

Corrective code RB2A564 was published in SIM N052 without History comments. The corrective code included with the NOS Version 2 release materials contains History comments. This will change the sequence numbering of this corrective code when processed by UPDATE.

The CCP configurator data provided by SIM's N053 and N054 is included in Appendix C of this SRB in a rewritten and expanded form.

2.1.4 CEDIAG SIM Problems

Corrective code for SIM D025 is contained on the release materials PL, REL2B.

2.2 SCOPE 2 Station

The redesign and testing of a NOS Version 2 Station for Scope 2 has not been completed. Availability of the NOS Version 2 Station will be announced at a future date.

2.3 Non-Supported Software Products

The following products are not available with NOS Version 2:

AAM1, ALGOL4, ALGEDIT, COBOL4, C45, CDCS1,
DDL2, SIFT, UPMOD, TELEX, EI200, TAF/TS,
TAF Data Manager.

2.4 Non-Supported Hardware

All support code for the following hardware has been removed from NOS Version 2:

65X, 841, 667X, 2550-100.

2.5 HIVS Installation

Installation of HIVS Level 132 (first released with NOS 1.4 Level 552) may destroy permanent files even if a previous level of HIVS was installed. It is recommended that the device on which HIVS resides be dumped on the predecessor system; then install HIVS, then initialize and reload permanent files on the NOS Version 2 system.

2.6 Resequenced Program Libraries

The following program libraries (PLs) have been resequenced in the release materials for NOS Version 2.0.

REL1A	REL2A
REL1D	REL12C
REL1F	REL12E
REL1G	REL14C

3.0 OPERATING SYSTEM MODIFICATIONS

3.1. Deadstart Text Decks

* Error messages for 819 disks are issued to the binary maintenance log (BML). The MAINLOG entry is required in the CMRDECK for CYBER 176 systems using 819 storage devices if these error messages are to be analyzed by HPA.

* The ability to flaw equipments in the deadstart text decks has been changed in NOS Version 2 from the capability provided in all previous releases. This capability now uses the deadstart text deck, APRDECK. Refer to the NOS Version 2 Installation Handbook for details. The CMRDECK command, IPR., is provided to bypass displaying the flaw decks and go directly to IPRDECK. This command is described in the NOS Version 2 Operator/Analyst Handbook.

* A new CMRDECK entry, MINCM, has been added to allow sites using UEM (Unified Extended Memory) to ensure a minimum amount of CM. Since CTI allows memory to be resized, the CM entry in CMRDECK has been removed.

* The site operator will no longer be allowed to specify a DP or DE unit which is OFF as a LINK device. If the operator does so, the message "INVALID ENTRY" will occur when making the CMRDECK entry. Only units which are ON will be accepted.

* A new CMRDECK entry is provided for independently shared rotating mass storage devices in a multi-mainframe environment.

  ISHARE=eq_1,eq_2,....eq_n.

  This entry enables a device to be shared by more than one mainframe (two through 16) where ECS is not available.

  The format of the PRESET command has been extended to preset each independently shared rotating mass storage device used in a multi-mainframe environment.

  PRESET=eq_1,eq_2,....eq_n.

  See the NOS 2 Installation Handbook for a complete description of both commands.

* CMRDECK entries have been added to define the size of the Executing Job Table (EJT), Queued File Table (QFT), and the Family Ordinal Table (FOT). Refer to the NOS Version 2 Installation Handbook for details on these changes.

* The FNT area in central memory resident defined by CMRDECK entry FNT is used only for system fast attach files. The release default value for this entry is recommended. This value may have to be increased if multiple families are used.

* The syntax of the INITIALIZE CMRDECK entry has been changed to allow more than one equipment number to be specified. The new format is:

  INITIALIZE,op,eq_1,eq_2,...,eq_n.

  While the new format is more convenient to use, a typing error such as dropping a comma can more readily result in the initialization of a wrong device if multiple devices are specified.

* The maximum number of SYSTEM equipments that can be specified is defined by the COMSMSC symbol MXSY. The released value is 5.

* The INSTALL CMRDECK entry is no longer available. The system deadstart file may still be installed to a disk storage device after deadstart is complete with the INSTALL utility.

* New IPRDECK entries, ENABLE,LOGGING. and DISABLE,LOGGING. have been added to the system. These entries enable/disable logging of messages that are not intended for the average user, but would be of interest to an analyst concerned with performance, program efficiency, or future compatibility.

* All IPRDECK commands and DSD commands that correspond to operator ENABLE/DISABLE commands will now have the same syntax, e.g. ENABLE,USER ECS. or DISABLE,BIO. Making the same entry twice will no longer toggle the status of these options.

  This syntax also applies to subsystems. It is possible to specify a mandatory control point number where the subsystem will execute provided the specified control point is not occupied by a non-rollable job. For example,

  ENABLE,NAM,2.

  will cause NAM to run at control point 2 whenever it is initiated. It is not possible to specify a mandatory control point for IAF or STM.

* The IPRDECK entries to enable/disable the following capabilities have been removed.

  QPROTECT
  PRIORITY AGING
  AUTOROLL
  ACCOUNT
  VALIDATION

* The mnemonic keywords and prefixes for defining the scheduling parameters in the QUEUE entry of the IPRDECK have changed in NOS Version 2. See the NOS 2 Installation Handbook for new service parameter definitions.

3.2 Job Ownership

A formal definition of job ownership has been implemented with NOS Version 2. A job is owned by a user if:

a) it entered the system from a batch, remote batch, or interactive terminal with the user's user name on the job USER command, or

b) it has been routed to the input queue (using ROUTE or SUBMIT) from a job owned by that user.

Ownership extends to any level of job submission regardless of the user names being used by the intervening levels. This definition controls the scope of influence of user job control and is applied uniformly to all but system origin jobs.

3.3 Job Identification

* Each user job will be identified by a unique four character alphabetic job sequence name (JSN) rather than user index hash plus terminal number or user index hash plus three character JSN. This same identification will appear in dayfile messages, job commands, DSD and RBF displays, and as part of the banner page. This may require changes in the output sorting procedures used by individual sites.

* When a queued file is activated or reloaded by the queue utilities, it will be assigned a new JSN.

* A unique JSN is assigned to each queued file that a job creates. Only the output file which contains the job dayfile will have the JSN of the job.

3.4 Macros/Commands

* The DISPOSE command and the RELEASE macro have been removed. A user must use the ROUTE or OUT command or ROUTE macro to release queue files to the output queue.

* The SUBMIT macro has been removed. Users must use the ROUTE macro to release files to the input queue. Note: the SUBMIT command is still available.

* The OUT RA+1 call (and PP routine) is removed. The OUT command is still available.

* The COMMON command cannot be used to create common files. It may still be used to acquire the SYSTEM file if the user is properly validated.

* The DAYFILE command default option has been changed from OP=F to OP=I for terminal output files. If the FR parameter is specified, the default is OP=M.

* The RENAME macro and command will not propagate file type except for primary files. For example, RENAME OUTPUT=SCR. will still route a file to the output queue. However RENAME SCR=OUTPUT. will not cause a file to be routed to the output queue.

* The LIBRARY command has been changed to automatically set NDST ("No-Auto-Drop") file status on the specified user library. The user library will therefore remain available to the job until the job explicitly returns the file by specifying the file name on a RETURN or UNLOAD command.

* The SETID macro and command have been removed. An ID may still be set on a file by using the ROUTE command or macro. Special IDs (those greater than or equal to 70B) are replaced by file status set by the SETFS macro or by DSP disposition codes.

* The GETFNT macro now has two formats. The old format will eventually be discontinued. It is recommended that users convert to the new format. See NOS 2 Reference Set Volume 4 for details.

* CATALOG no longer lists the contents of certain special TEXT-type records, unless the new T parameter is specified. If the T parameter is specified, CATALOG will continue to list the contents of these records (TEXT records whose names start with CMRDECK, CMRDC, IPRDECK, IPRDC, LIBDECK, LIBDC, DDSDECK, or DDSDC), just as it has

done in the past. In addition, the contents of TEXT records whose names start with APR0 will also now be listed if the T parameter is specified.

* The SETTL command and macro no longer round up the user's CPU job step time limit to the next multiple of 8 seconds. Also, the T parameter on the job card is no longer rounded up to the next multiple of 8 seconds. The field used for job step time limit has been expanded from 12 to 18 bits and rounding is no longer necessary.

* The interface to the PACKNAM, GETPFP and SETPFP macros has changed; a formerly ignored field is now being used to designate the device type of the pack being specified. This allows a user to specify the device type once (on a PACKNAM command or macro), rather than having to specify it on each subsequent PFM request.

* The way GTR processes ULIB type records has been changed. When the D option is selected, GTR writes an EOF record following the new random access directory (OPLD). This is consistent with the format of files with OPLDs created by LIBGEN and LIBEDIT. The U option will no longer write an EOF following the appended records (a new directory is not written with the U option).

* The MEMORY macro in NOSTEXT is now capable of handling 21 bit ECS and LCM memory requests. This will affect a user's program when a MEMORY macro request for ECS/LCM field length is greater than 377777B words. Such requests must pass the desired FL to the MEMORY macro in an X-register. The user should be certain that bits 21-18 of the X-register do not contain erroneous information.

* SFP has been altered to only return equipment type AZ for STS function calls 1 or 2.

  A message has been added to function 1 of STS to indicate the support of this function is being dropped.

  STS function 2 will now only return device type and file permissions, along with a warning message to use FILINFO in the future. The message is only issued if LOGGING is enabled.

  STS function 3 and the PRM function will also issue the use FILINFO message if LOGGING is enabled.

* The DSP parameter block has been changed. Changes are upward compatible with previous levels of NOS if unused fields contain binary zero.

* The QAC interface is now available for general use but its format, content, and features have been totally redesigned. Refer to NOS Reference Set Volume 4 for further information.

* The SETQP and GETQP macros will be eliminated in a future release. They are defined in this release but do nothing but generate an informative message if executed. Programs using these macros must be reassembled at a minimum on this release. The new macro GETSSID (get subsystem ID) partially replaces GETQP while SETRNR (set roll/no-roll) partially replaces SETQP.

* The SETCORE command will no longer set word two in the user's field length (RA+2). This word will be left containing the last three instructions of SETCORE.

* The ASSIGN macro has been changed. Programs using this macro must be reassembled.

  On NOS 1 two versions of the ASSIGN macro existed and the function performed depended on the macro's parameters. On NOS 2 ASSIGN (001) has been removed and its function incorporated in ASSIGN (020). Programs using the ASSIGN macro must be reassembled to work properly on NOS 2.

* CPM has been changed to return the contents of the MAP III accumulator in the block returned from a GETJA macro call. Information pertaining to the layout of the block can be found in COMCMAC or in the NOS 2 Reference Set Volume 4.

* RESEQ will now detect and truncate lines longer than 160 characters, and will write the error message "LINE xxxxx TRUNCATED." to output. In addition, when resequencing BASIC programs, lines which are not valid BASIC statements (per NOS BASIC) will be left unaltered.

* The RESEQ command now has an F option to allow the user to select FORTRAN processing. The use of the F option causes the resequenced file to have a five digit number appended to the beginning of each line if no line number exists. The difference between the F option and the "other" option is that no blank will be added after the appended line number.

3.5 Monitor Functions

NOS monitor functions have changed in Version 2. Many functions are incompatible with previous versions. Functions have been deleted and new functions added. All monitor function interfaces should be reviewed for these changes.

3.6 Negative Field Length (NFL)

Local file FNT entries, dayfile buffers and control statement buffers have been moved to an area which is contiguous with a job's field length and precedes the field length. This area is referred to as negative field length or NFL. A further change was made to the local file FNT entries, which increased their length to three words. MAXFL for any job is 377700B minus maximum NFL (376600B as released).

3.7 PF/Queue Utilities

* PFS will now perform file name conflict checking. If, on any PF utility, the same file is specified for conflicting parameters (archive and output files for example), a message will be issued to the dayfile and the K-display.

  FILENAME CONFLICT - filenam

  The operator must correct the conflicting parameters via the K-display.

* The permanent file and queue utilities have been changed in the following manner:

  1. Tape requests have been removed. This means that sites must preassign any required tapes with the standard tape request commands. Using a procedure to do the preassignment and the call to the utility is the simplest way to accomplish this.

     If no file is preassigned, the dump utilities will write to a local mass storage file. PFLOAD, when loading a series of incremental dumps, will continue to request the tapes following the first one. The tape attributes will be the same as those for the first tape.

2. The dump file will not be automatically rewound or unloaded before or after processing by any utility.

These changes include removing the NR, NU, and NT parameters from the permanent file utilities and the ME and VSN parameters from the queue utilities.

* The following changes have been made to the queue utilities:

a) The FNTLIST utility has been renamed QFTLIST.

b) The JN parameter has been replaced by the JSN parameter.

c) The EI parameter has been replaced with the RB parameter.

d) The TID parameter has been replaced with the TF and the TUI parameters.

e) The JC parameter has been replaced with the UJN parameter.

f) QALTER may change device selection (NDC parameter) and external characteristics (NEC) of a file.

g) The FC parameter has been changed to be consistent for all utilities.

h) The DS parameter has been removed. File selection based upon origin type has been changed to select files on disposition code.

i) The NK, R, and E command arguments have been replaced by the PO parameter.

For further details, refer to the System Maintenance Reference Manual.

* The DT and TM parameters and the B and N options of the OP parameter have been removed from the PF utilities. The AD, AT, BD and BT parameters may be used to replace these parameters. Also, the V parameter has been removed since the VF parameter is sufficient to specify the use of the verify option.

* Due to changes for NOS Version 2, the system sector for queued files has been reformatted. QLOAD will be able to load Version 1 QDUMP dump tapes. However, it will not be possible to use QREC to recover Version 1 files on a Version 2 system. Modifications are available, as indicated below, to allow Version 1 systems to use QLOAD to load version 2 QDUMP dump tapes. It will not be possible to use QREC to recover Version 2 files on a Version 1 system.

System Level	Modification Identifier	Decks Modified
531	KRAQFC1	COMSSSE, QLOAD
543	KRAQFC1	COMSSSE, QLOAD
552	KRAQFC2	COMSSSE, QLOAD

These modifications are on file MISCPL (file 6 of REL0). Procedure MISCGET has been provided in the release materials to access the corrective code for these modifications and make them available on file USER. For example, the procedure call BEGIN,,MISCGET,KRAQFC1. will add corrective code with modification identifier KRAQFC1 to local file USER.

* It is now possible to specify DA=ALL to process all dates when using the queue utilities.

* The method of validating users of PFU and the PF utilities has been changed. When one of the utilities is initiated, PFS will use the new GETSPS macro to verify that the job has system origin privileges. (This macro is defined in COMCCMD, but not documented in the NOS Reference Set. It allows a CP program to get the information returned by COMPCUA). Callers of PFU will be validated for SSJ= only. The requirement for using the SETPFP macro, and all special PFM requests, such as UATTACH, has been changed from system origin to SSJ=. This will allow all options on the PF utilities to be available to privileged non-system origin users.

* If PFDUMP finds the system control error flag or the data error flag set in the PF catalog for a non-disk resident file, staging requests will not be made. Only the PFC and permits will be dumped for this file. Previously, the file was skipped if the system control error flag was set, and the data error flag was ignored.

* PFLOAD previously ignored the secondary mask for direct access files on user indexes above AUIMX (377700B), and loaded them to the device where they previously resided (from the PF catalog entry on the dump tape). When reconfiguring, device numbers and masks may have changed, but PFLOAD still loaded these files back to their original device number, where the new secondary mask may not have allowed them to reside. This resulted in files residing on a device where they were not cataloged and whose user indices did not fall within the device's secondary mask definition.

  When using tapes created by PFDUMPs using the DN parameter to reload an individual equipment, the normal process requires selecting tapes based on the equipment's device number and secondary mask. This is to insure that all files residing on the equipment but not cataloged there will also be reloaded. However, because of the potential situation created by PFLOAD, noted above, it is not possible to determine if additional tapes must be used to guarantee that all required files will be reloaded.

  To avoid this problem, PFLOAD has been changed to not override the secondary mask when loading direct access files. The only special case will be to insure that direct access files for user indices 377760-377767 (the MSF subfamily user indices) reside on their master device. The ability of jobs running under user indices greater than AUIMX to DEFINE an existing file as a direct access permanent file on any device, regardless of its secondary mask, is being retained. Anyone using this feature should be careful to load the proper tapes and be aware of the above changes in the way PFLOAD will handle these files. Permanent files created by DFTERM from terminated dayfiles fall in this category.

3.8 PP Resident (PPR)

* The RCH and DCH entry points have been removed from PPR. All programs should use the RCHAN and DCHAN macros.

* The values of all PPR entry points have changed.

3.9 Common Decks

* Two sets of PP macro instructions have been added to common deck COMPMAC. One of these macro sets allows the programmer to perform constant mode operations upon the A-Register with the COMPASS assembler selecting the instruction mode - Constant or No-Address depending upon the value of the instruction operand. The second set of macro instructions will simplify generation of long conditional branches, since unnecessary tags and structure breaks are eliminated.

The A-Register constant mode arithmetic instruction macros are:

Macro Call	Function	Implementation
ADK v	Add v to (A);	assembles ADN v or ADC v instruction
LDK v	Load v into A;	assembles LDN v or LDC v instruction
SBK v	Subtract v from (A);	assembles SBN v or ADC -v instruction
LMK v	Logical minus with (A);	assembles LMN or LMC
LPK v	Logical product with (A);	assembles LPN or LPC

The conditional short/long jump instruction macros are:

Macro Call	Function	Implementation
MJP tag	Branch to tag if (A) is negative;	assembles MJN or PJN and LJM instructions.
NJP tag	Branch to tag if (A) is nonzero;	assembles NJN or ZJN and LJM instructions.
PJP tag	Branch to tag if (A) is positive;	assembles PJN or MJN and LJM instructions.
ZJP tag	Branch to tag if (A) is zero;	assembles ZJN or NJN and LJM instructions.
UJP tag	Branch unconditionally to tag;	assembles UJN or LJM instructions.

* A new common deck, COMSRPV, defines various symbols related to extended reprieve processing. This common deck is not included in any system texts. The RPVBLK macro has been added to COMCCMD to set up reprieve blocks. Since COMCCMD is included in PSSTEXT, the RPVBLK macro is available in PSSTEXT.

* A new common deck, COMSPIM, has been created for PP instruction constant definitions.

* COMCARG will now process equivalenced arguments for both NOS and product set (NOS/BE) parameter cracking formats. Parameter key words can be up to 7 characters. The format of the argument table has changed, but COMCARG is upward compatible with old format argument tables. The ARG macro may be used to generate new format argument tables.

If COMCARG processes an argument equivalenced to a null parameter, it will be treated as if it was not specified at all; this holds whether or not that parameter is allowed to be equivalenced. This change will be noticeable in any program which uses this NOS common deck. This change will make the writing of CCL procedures easier, because of the ability to specify null as the default for an unsubstituted parameter.

The COMCARG common deck on the COMPASS program library supports both NOS and product set parameter cracking formats. The other changes mentioned above have not been implemented in the common deck on the COMPASS PL.

* COMCSYS, as provided on the NOS program library, will now abort (by jumping to *+400000B) if (RA+1) is non-zero when called. This is to allow determination of nonstandard callers which failed to either use XJ or ensure the acceptance of the request by the system.

  If this occurs, (X1) will be the (RA+1) contents and (X6) will be the desired request. Normal traceback can be performed from the dump to determine the second (RA+1) attempt.

  COMCSYS on the COMPASS program library and CPU.SYS on SYSLIB have not been changed. COMCSYS can still be used concurrently from both the NOS program library or the COMPASS program library with consistent and compatible results.

3.10 DSD

* Most operator commands have been changed for one of two reasons: making the syntax more uniform or identifying jobs by JSN rather than control point number or table entry ordinal. See Appendix B for a summary of the changed commands.

  Operator displays have been revised to display JSN. Individual job displays (A, C, D, F, G, J, K, M, P) select the job by specifying JSN rather than control point number. Many displays have been reformatted. See the NOS 2 Operator/Analyst Handbook for new display formats.

* The DSD L Display no longer works the same way as the K Display. The new L Display can be initiated through the DSD commands FOTD, QDSPLAY, and SUBSYST. It now works in conjunction with the DSDINP and DSDOUT macros defined in COMCMAC and support code in CPM. The DSDOUT macro transfers data from the user's FL to a buffer in CMR. DSD then displays the data from the CMR buffer on the screen. When the operator enters an "L." command, DSD will transfer the data to a CMR buffer, and the DSDINP macro will then transfer the data to the user's FL. DSD will automatically assign the L Display to the left screen when the L Display is requested and if input is requested, it will display "L." on the screen. If the L Display is not active but data is available DSD will issue the message "SEE *L* DISPLAY" on the right screen header.

* Memory addresses on displays and commands are now a maximum of 8 digits long.

* P=xxxxxx. on the right screen header is replaced by "CPUn=jsn" to indicate the job to which the CPU is assigned.

* CM=xxxxxx. for available CM has been changed to display the amount/100B that is available.

3.11 Permanent File Processing

* The absolute maximum size for an individual indirect access file has been reduced from 262143D sectors to 131071D sectors.

* PFM GET processing is changed to return the actual permitted access mode of a file to the access mode field of the FET. This allows the user program to determine, among other things, that a file is in execute-only mode.

* For consistency with other permanent file commands and to strengthen security, the default access mode used when creating files with the SAVE or DEFINE commands has been changed from WRITE to READ. If this causes a problem for a site, the WRITE default mode can be reinstated by inserting PTWR in the two corresponding lines in TMOD (Table of default modes) in deck PFILES. Macro calls or direct calls to PFM have not been changed.

* In the past, when PFM has encountered a catalog or permit sector with an illegal sector length, PFM has hung with an MXFM. PFM will now set Error Idle on the device and issue the error log message BAD CATALOG/PERMIT SECTOR. An additional error log message is issued identifying the equipment, track and sector involved.

* A new special request subfunction, SRIE, has been added to PFM. This new subfunction allows SSJ= programs to make PFM requests on devices which have Error Idle status set. This allows SSJ= programs to perform appropriate exit/cleanup processing when Error Idle is set on a device.

* The parameter UP has been added to the routine PF (interface to PFM commands for programs written in higher level languages). Specification of UP sets the user processing bit in the FET. UP is valid for all the PFM requests supported by PF.

* A new bit in the PFM FET (bit 46, FET+1) is used to allow suppression of the address on PFM error messages. This bit is now used by PFILES, CATLIST and PURGALL. Therefore, no dayfile messages issued by PFM as a result of a permanent file command will contain the ", AT nnnnnn." suffix any more.

* A new installation parameter in COMSPFM, MNHS, defines the minimum size of a hole that PFM will create when using an existing hole. If, in the searching for a hole in which to save an indirect access file, PFM finds that the use of the largest available hole would result in the creation of a new hole shorter than MNHS, PFM will allocate space for the file at the end of the indirect chain. In addition, on the creation of a hole, if a delink operation would cause the hole to be smaller than MNHS, PFM will delink one less track to avoid this. It should be noted, however, that a hole smaller than MNHS will still result from the PURGE of a file whose total length is less than MNHS.

  Too small a value of MNHS may result in the fragmentation of the available hole space into very small holes; too large a value may result in medium-sized holes not being used for some time. The released value for MNHS is 5 sectors (including system sector and EOI). An installation might want to change this value if it observes that their average indirect access file size is much less or much greater than this value. MNHS may be changed by modifying COMSPFM and reassembling PFM.

* PFM has been changed to ignore the alternate user name in the FET if it is the same as that of the calling job. This will affect users who want to check out alternate user access from their own user name.

3.12 Tape Processing

* The released default tape type in the system has been changed to nine track (NT). The release default density for nine-track tapes has also been changed, to 1600 cpi (D=PE). It will now be necessary to specify type and density for all tapes with values other than the above, unless these defaults are changed at deadstart time by the IPRDECK entries, TDTR and TDEN.

* Design changes in MAGNET have modified external requests (such as the CIO RETURN function) to prevent PP deadlock situations, tape jobs hanging at a control point, and return of incomplete tapes (EOF trailer label sequence not written). External RETURN requests are now queued rather than clearing all pending tape processing from the unit descriptor table (UDT) in MAGNET.

  The following design changes have also been made:

  1. The EOF trailer label sequence is now written to the tape for a REWIND function before setting the FET complete.

  2. For REWIND and CLOSE/REWIND processing, rewind of the current reel is initiated and then a flag is set in the UDT to indicate that further rewind and/or repositioning may be required (for multi-volume and/or multi-file set tapes). When a new CIO function is issued on the tape, reel swap processing or multi-file set repositioning is then initiated, since the tape activity assignment is again set to prevent job advance. If a RETURN or UNLOAD CIO function is issued on the tape (via the external request queue), the rewind required flag in the UDT is cleared, since no further tape repositioning needs to be done.

  3. For CLOSER function processing, the FET will be set complete only after all end-of-volume, reel swap processing, and initial labeling of the next reel has been done.

  These design changes also eliminate several trailing error cases; such as errors in writing trailer labels which are now returned on the CIO operation that caused them, rather than being detected on the next CIO function.

Design changes in MAGNET external request processing will impact multi-volume and multi-file set tape processing. Reel swap/reel mount processing and multi-file set tape repositioning for a REWIND or CLOSE/REWIND function will be delayed until the next CIO operation is issued on the tape (this may even be visible to users by the position of the NEXT VSN message in their job dayfile). Additional time will be required to complete reel swap/tape repositioning before the processing of the next CIO function can be initiated. CLOSER processing will not set the FET complete until all processing to switch to the next reel has been done.

* An "=" will be displayed in the seventh character position of the VSN field on the E,P display if equivalenced VSNs have been specified for a tape assignment request. If an equivalenced VSN is used, the tape assignment is not completed until the time expires for the job in timed-event rollout, since the VSN events will not match. To avoid this delay, the operator could manually roll the job in.

* The error message "BLANK LABELS DO NOT VERIFY." will now be issued to the system dayfile as well as to the user dayfile before the job is aborted, if BLANK detects an error.

* LISTLB will now abort a user job if no HDR1 label is found on the tape label, after issuing the following messages:

```
NO HDR1 LABEL RETURNED ON OPEN.
LISTLB ABORT.
```

* ASSIGN, LABEL, REQUEST, and RESOURC commands no longer allow = as a separator between parameters or with keywords that cannot be equivalenced. Use of = as a separator is allowed only with keywords requiring an equivalenced value.

* A number of error messages previously issued by 1MT only to the user's dayfile will now be issued to the system dayfile also.

3.13 Conversion of VALIDUZ File

The format of the VALIDUZ file has been redefined in NOS Version 2. VALIDUZ files must be converted to NOS Version 2 format. See example 13 in section 5 of the NOS Version 2 System Maintenance Reference Manual for a description of how to convert NOS Version 1 VALIDUZ files.

3.14 PP Access to Large Memory

To allow a PP to access up to 2 million words of central memory, a new hardware register, called the R-Register, has been added to the PP hardware on CYBER 170-8X5 mainframes. This register will normally be set to the RA/100B - NFL/100B of the control point to which the PP is assigned. Bit 2**17 of the A-Register (sign bit) controls the use of the R-Register on the following instructions; CRD, CRM, CWD, CWM, MXN, and EXN. If bit 2**17 is zero, the R-Register is not used and the A-Register contains the CM address. If bit 2**17 is one, the CM address equals the lower 17 bits of the A-Register plus the R-Register*100B. This allows a PP to access CMR (addresses less than 131K) without the need of setting the R-Register. Also PP Resident (PPR) will reset the R-Register as well as direct cells RA and FL on each monitor function call. This results in normal pool PP programs which are assigned to a control point, not needing to set the R-Register. To further eliminate coding differences between mainframes, direct cell RA will be set to 4000B + NFL/100B when executing on a CYBER 170-8X5. This allows the following PP code to execute without change on all mainframes.

Accessing relative address within control point:

```
LDD   IR+3    upper bits of relative address
SHN   6
ADD   RA      add RA (add R-Register bit)
SHN   6
ADD   IR+4
CRD   CM      read first word of FET
```

At this point (A) = absolute address of 400000B + relative address + NFL.

To access NFL:

```
LDD   RA
SHN   6
SBN   DAPN
CRD   CM      read dayfile pointers
```

3.15 Miscellaneous

* New commands have been added and existing ones enhanced to give a user more control over jobs belonging to that user. These are DROP, SETJOB, CFO, COMMENT, ONSW, OFFSW and QGET. ENQUIRE has been enhanced to present more information in better formats. See NOS Reference Set Volume 3.

* The values of all error flags have been changed, and a number of new error flags have been created. User breaks are now error flags. REPRIEVE error codes and error classes are unaffected by these changes.

* Extreme caution must be exercised when running MREC on a non ECS multi-mainframe configuration. MREC has no way of knowing if the machine being recovered is running or not. Hence running MREC to recover a machine which is actually running will cause a system crash on one or more systems.

* A user may route output files to any valid family and user name. The previous restriction allowing routing only within a user name hierarchy group has been removed.

* The option to run jobs on NOS without USER commands has been removed. All jobs with the exception of system origin jobs now require a USER command. A USER command is automatically generated for interactive jobs.

* The DAYFILE DUMPED message issued by DAYFILE/SFM has been changed to DAYFILE PROCESSED. This is intended to reduce confusion, since some DAYFILE calls (a batch job which specifies an FR which is not found, for instance) may not actually produce any output (and thus, do not "dump" anything).

* When routing a print file to the output queue, the default for the internal characteristics will be display code when A6 is specified for the external characteristics.

* Deck COPYB will issue the FILE NOT FOUND message only when the input file does not exist. The EOI ENCOUNTERED message is suppressed in this case, in order to allow terminal users to see the FILE NOT FOUND warning at the terminal.

* A maintenance user may now obtain exclusive access to a channel that is not defined in the EST. The channel does not have to be DOWN.

* DFSORT has been converted from FORTRAN 4 to FORTRAN 5 and increases field widths on the output. PSAMP has also been converted from FORTRAN 4 to FORTRAN 5. The SMP call format has been changed.

* Special user names such as SYSTEMX and LIBRARY are now created by MODVAL with 7 character passwords.

* NOTE will now correctly generate blank lines when consecutive delimiters are encountered.

* TDUMP has been corrected to interpret input and display alphanumeric output as 6/12 display code when the user is in ASCII interactive mode and the output file is assigned to a terminal.

* If the use of a replace command under O26 increases a line's length to greater than 90 characters, the message "LINE OVERFLOW." will appear on the console and no replacement will occur.

* Local batch carriage control characters C, D, E, F, G, and H (skip to channel x after print) now work correctly when immediately followed by a carriage control character + (plus) on the next line (suppress space before print). They are also now consistent with NOS/BE.

* New account file messages have been created to track changes in service class as a job executes. Accounting of queued files has been improved by providing charge information when the file is processed and also a way to track a specific file over QDUMP/QLOAD operations.

* The job name appearing in the system, account, error log or binary maintenance log dayfile messages on NOS 1 has been changed. The job sequence name (JSN) consisting of four alphabetic characters or a subsystem name consisting of three alphabetic characters followed by a blank is now used. The origin field has been changed from a one-character origin indicator to a one-character service class indicator. The JSN is found in characters 13 through 16 and the service class character is in position 17. The first character of the account message identifier remains in character position 21.

* A new error message will be issued to the error log when a calling PP, issuing an error log dayfile message, cannot dump a full dayfile buffer. Its purpose is to inform the user that dayfile messages were lost. The message format is as follows:

```
hh.mm.ss. **ERROR**.MESSAGES LOST.
```

* The number of local files a user may have at a given time is no longer a MODVAL validation parameter. Implementation of the local FNT for each job removed the need for individual job control in favor of a global, per job, upper bound.

* The limit on the number of files a job could place in the output queue has been changed to a limit on the total number of queued files and jobs owned by the user existing at one time.

* The following changes were made to convert NOS to use CCL instead of KCL:

  1. ISF has been changed to call SYSPROC via BEGIN.

  2. ENTER is now compatible with CCL. Also, if when executing the ENTER command you use two consecutive delimiter characters, the dayfile message "ILLEGAL CONTROL CARD" will be issued.

  3. The ENTER entry point in CONTROL has been deleted and moved to NOTE.

  4. The subsystem procedure files have been changed to use CCL.

* With this release of CCL it is not possible to run procedures from an execute only file.

  This change is necessary for the following reasons:

  1. To prevent CCL access to execute only files it was not entitled to.

  2. To avoid a false sense of security in believing that this file was secure. There are multiple methods available to user applications for accessing information in the command (control statement) file.

* Local programs using the SSJ= entry point should be modified if a queue priority was specified in the SSJ= block. This function is now performed by subsystem indices.

* The length of the list of files list must be less than or equal to 4096. If the length is greater than 4096, the following warning is issued when the system processes the list:

  LIST OF FILES LENGTH TOO LONG OR ZERO.

  The search of the list of files will terminate when byte zero of any entry is zero or 7777B, or when the number of entries processed equals limit where

  limit = min (length - 1, 4095)

  The list of files will not be searched if length is zero.

* The functions of the L and LO parameters in LIBEDIT have been changed to conform to the parameter conventions used by other utilities. The list option for a short list (formerly L=1) is changed to three separate list options. LIBEDIT now inserts records from the replacement file, for which there are no corresponding records on the OLD file, on the NEW file preceding the EOF. See NOS Version 2 Reference Set Volume 3 for a complete description of LIBEDIT.

* Several commonly used NOSTEXT symbols are no longer defined. Local code must be modified accordingly. Symbols that have been deleted include MNPS, MXPS, PRFT, PHFT, CMFT, FNCT, and FECT.

* The capability of running more than one copy of CPD at the same time is no longer supported.

* The subsystem idledown flag that is maintained in word RA has been moved from bit 13 to bit 15.

* Bit 13 of word RA will be unconditionally cleared whenever the pause flag (bit 12 of word RA) is set or cleared by the PAUSE/GO command. A program that must determine whether a PAUSE/GO command has been entered, should set bit 13 of word RA and then status it. When bit 13 is cleared by the system, the program can then status the pause flag. Programs that check the pause flag on NOS Version 1 will continue to execute properly on NOS Version 2. However, these programs will not be able to determine when a PAUSE command has been entered.

* The seconds portion of the real time clock (bytes 0 and 1 of low core word RTCL) is being preset to 377700B. This is being done to allow the DSD ENQP command to properly set queue priorities on queue files. Programs that use the seconds portion of the real time clock should be using 24 bit arthimetic to avoid sign extension problems.

* Jobs that are in memory when a level 3 deadstart recovery is performed will now be recovered. The current job step will be aborted and advanced to the next EXIT command. The system will rerun the job instead of terminating the job if the job was in RERUN status at the time of the level 3 recovery.

* Level 3 deadstart recoveries will be aborted if CPUMTR was moving storage for any job at the time of deadstart. Devices will be checkpointed.

* SSJ= entry point programs can not change control point area fields at end of job step by changing the SSJ= parameter block during the job step. The system restores the control point area from an SSJ= parameter block that is maintained in NFL, not the SSJ= parameter block maintained in the job's field length.

* In order to provide compatibility through future releases of NOS 2, the 819 mass storage device feature for CYBER 176 has been implemented such that files residing on an 819 are not compatible between NOS 2 and the C176/819 pre-release. Permanent files and other preserved files residing on an 819 must be dumped and reloaded whenever a transition is made between the two systems.

4.0 PRODUCT SET MODIFICATIONS

Items 4.2, 4.3 and 4.4 of this section were included in the System Release Bulletin for NOS 1.4 Level 552. They are repeated here for those who have not installed Level 552.

4.1 FORTRAN 5

Certain information about command parameters will be displayed within the output listing.

The ROUND and directive suppression parameter values for this compilation will be indicated within the main title line.

Title line two will contain the DO loop control option, argument list attributes, collating sequence, debugging options, and print limit selection.

Title line three will contain the FTN5 command with a 120 character maximum size.

The main title line will appear as the first line of every page for each program unit.

4.2 CYBER Interactive Debug

CYBER Interactive Debug (CID) Version 1.2 extends CID to provide interactive, symbolic debugging facilities for COBOL 5.3. Formerly, CID provided symbolic level debugging for FTN4, FTN5 and BASIC 3.5. In addition, this version also provides a new CID command, STEP.

The following new features are provided for debugging COBOL programs:

* COBOL-like commands. CID provides COBOL-like MOVE, SET, DISPLAY, and GO TO commands that look and operate like corresponding COBOL statements. These commands enable the COBOL user to change and display program values using commands that are familiar to the COBOL programmer.

* Symbolic access to COBOL names and line numbers - CID allows qualified, subscripted, indexed, and simple COBOL data names, qualified and simple procedure names, and source line numbers to be referenced in CID commands.

* Procedure trap - CID provides a new trap type that enables CID users to gain control whenever a new procedure is reached.

* Access to current procedure name - CID provides a new CID variable similar to HOME which will contain the current COBOL procedure name. By displaying this variable each time a procedure trap occurs, a procedure trace can be produced.

* Run time error trap - CID provides a trap type which enables the CID user to gain control whenever COBOL detects a run time error. This trap is already available for BASIC users.

* STEP Command - CID provides a new command that enables the CID user to gain control after n lines or procedures have been executed.

NOTE: The STEP n lines command is also available for FTN4, FTN5 and BASIC 3.5.

4.3 APL2

A set of APL2 functions is provided which allows users of TOTAL Universal to access TOTAL databases using APL2. The functions cannot be used with TOTAL Universal Extended. The APL functions are installed in the TOTALWS workspace under user name APL1 by the APL installation procedures.

4.4 COMPASS

Redefinable instructions (SET, MIN, MAX, MICCNT) were not all being undefined at the end of PASS 1 of COMPASS. Thus, reference to the symbol prior to its first definition was not diagnosed, and the last value defined was used for the symbol.

Corrective code CPS211, released at level 552, corrects COMPASS to handle redefinable symbols as advertised in the COMPASS reference manual.

CAUTION: This code may cause previously diagnostic-free programs to get UNDEFINED SYMBOL errors if redefinable symbols are being used incorrectly.

EXAMPLE:

```
          IDENT     TEST
          ENTRY     TESTER
A         SET       0
B         SET       0
          .
          .
          .
          IFC       GT,*"JDATE"*81275*
A         SET       *
          .
          .              PROCEDURE A
          .
          ELSE
B         SET       *
          .
          .              PROCEDURE B
          .
          ENDIF
TESTER    MAX       A,B
          END       TEST
```

This will now get an UNDEFINED SYMBOL error on the ENTRY pseudo because TESTER is being referenced before it is defined. To correct this program, replace

```
TESTER    MAX       A,B
```

with

```
TEST1     MAX       A,B
TESTER    EQU       TEST1
```

Since the EQU defines a non-redefinable symbol, TESTER is defined for the entire program.

NOS Version 2 will assemble correctly. However, use of COMPASS as released with NOS Version 2 to assemble NOS Version 1 programs, or local programs, may encounter the problems described above.

4.5 Advanced Access Methods

CYBER Record Manager Advanced Access Methods, Version 1, is no longer a part of the release software with NOS Version 2. The default for the ORG field in the file information table (FIT) is now ORG=NEW. All ORG=OLD files should have been changed to ORG=NEW prior to the installation of NOS Version 2. Any relocatables or absolutes that explicitly state ORG=OLD in the FIT must be recompiled. All AAM Version 1 utilities will no longer run, this includes SISTAT, ESTMATE and IXGEN.

5.0 NETWORK MODIFICATIONS

Items 5.1, 5.2 and 5.3 of this section were included in the System Release Bulletin for NOS 1.4 Level 552. They are repeated here for those who have not installed Level 552.

5.1 X.25 Public Data Network Support

The X.25 software enhancement to CCP provides the capability of connecting a 255X network processing unit (NPU) to a public data network (PDN). This capability was formerly announced in the Communication Control Program (CCP) 3 Level 532 Software Availability Bulletin (SAB No. 244), dated May 19, 1981; that description is repeated here to announce added PDN capability.

The X.25 software was enhanced at level 552 to provide extended support of X.25; certification with both TELENET and TYMNET is complete. Asynchronous terminals connected to the Packet Assembly/Disassembly (PAD) facility of the PDN are permitted access to applications in a CYBER mainframe. The terminal user interface to the CYBER application is similar to that provided for the same terminal connected directly to a 255X. The supported terminals are those supported by the existing asynchronous TIP except for the IBM 2741 which is not supported.

The X.25 transport protocol is supported by two independent software modules for the X.25 packet level (L3) and the link level (L2). This software is capable of adapting to a variety of future uses and can currently support more than one link to more than one PDN. Configuration options are provided for PDN subscription options.

Connection into a Public Data Network requires a CDC 2563-11, 12, or 13 Communications Line Adaptor (CLA) for the Host 255X NPU.

The PSN parameter in the NDLP LINE statement can have the following values:

DATAPAC	
TELENET	
TRNSPAC	
TYMNET	
PSN1USR	A user-defined packet switching network
PSN2USR	A user-defined packet switching network

The following is an example of the LINE and TERMINAL statements used for TYMNET certification during system evaluation:

```
COMMENT       PORT - TYMNET CONNECTION (X25).

  L158 : LINE  PORT = 8, LTYPE = H1, TIPTYPE = X25, DFL = 128,
                  K = 7, T1 = 3000, N2 = 15, TYMNET, LAP.

  T158A : TERMINAL  TC = 713, W = 7.

      B
      .
      .
      .
      .
      .
      .
      .
      .
```

Number of TERMINAL definitions = Number of Logical Channels + 1.

The following NDL processor diagnostic messages have been added or changed:

Error Code	Severity	Message	Significance	Action	Issued By
143	Fatal	DATAPAC Valid on X.25 lines only	Self explanatory	Remove DATAPAC (PSN Parameter)	LINEPR
145	Fatal	TRNSPAC Valid on X.25 lines only	Self explanatory	Remove TRNSPAC (PSN Parameter)	LINEPR
146	Fatal	PSN1USR Valid on X.25 lines or PSN2USR	Self explanatory	Remove PSN1USR or PSN2USR (PSN Parameter)	LINEPR
164	Fatal	TYMNET Valid on X.25 lines only	Self explanatory	Remove TYMNET (PSN Parameter)	LINEPR

5.2 NPU Performance Counters Sent to Host

Code is available in CCP (correction identifiers CC4C079 and CC4C188) which allows the reporting of the NPU performance counters to the CYBER Host instead of the local NPU console. A "*DEFINE,PERFORM" UPDATE directive must be placed in the UCCP file during CCP installation to activate this capability.

The data in the NPU statistics service message is replaced with the performance data. The NPU statistics service message is reported every - CBTIMTBL(COPERF).CBINTVAL - (and -CBTIMER-), divided by 2, seconds.

The following performance parameters are reported:

- CPU load of the NPU (% of time CPU is not idle).
- Minimum data buffers available in the last reporting period.
- Average characters per second received from the host.
- Average characters per second sent to the host.
- Average number of worklists (OPS level worklist entries) processed per second.
- Theoretical max number of active printers at end of report period.
- Number of rejects during sampling period of input from terminals due to regulation.
- Numbers of rejects during sampling period of data from host due to insufficient buffer space.
- Actual number of active printers at end of report period.

The data is reported in the ACCOUNT dayfile SCNP messages in the order shown above: SCNP...C1 contains the first 3 parameters, SCNP...C2 the next 3 parameters, SCNP...C3 the last 3 parameters.

If the *DEFINE,PERFORM directive is not included or the UCCP file during CCP installation the original statistics (not the performance statistics) are reported in the SCNP messages.

5.3 Frame Size for Remote Concentrator

If the remote concentrator product is installed and there is one or more downline batch devices connected to the remote NPU, make the following changes to improve interactive response time.

```
*D RN1B749.17
MAXFRMSZE = n;
```

where n = 260 if trunk speed is less than 9.6K

= 520 if trunk speed is equal to 9.6K

The default frame size is 1050 which is used for 19.2KB or 56KB.

5.4 Miscellaneous Modifications

In earlier releases, if the Network Access Method's communication supervisor (CS) was built with DEBUG defined, it would abort when it encountered a supervision error. If CS was built with DEBUG not defined, it would abort when it encountered two supervision errors. Now CS will never abort on a supervision error unless sense switch one is turned on at CS's control point. Sense switch one can be turned on, by either inserting an ONSW(1) command in JOBCS or by having the operator turn on the sense switch. Whether DEBUG is defined or not no longer affects CS supervision error aborts.

6.0 MASS STORAGE SUBSYSTEM MODIFICATIONS

* MSS transport read/write heads can now be cleaned as a part of read parity error recovery, without having to idle MSS. If 5 attempts at reading a block fail, the cartridge is unloaded and the K-display message "CLEAN READ/WRITE HEAD ASSEMBLY" appears, along with the transport's EST ordinal and MST ID. The operator then turns the transport offline, cleans the heads, puts the device back online and answers the message. Once answered, the message "HEADS CLEANED, MST ID = xx" is placed in MSSEXEC's dayfile and also displayed at line 1 of the MSS control point. The cartridge is then re-loaded and error recovery continues, with more attempts made at reading the block.

  If, after cleaning the heads, the operator forgets to turn the MST back online and answers the above K-display message, another K-display message, "PUT DEVICE ON LINE", comes up to remind the operator to do so. Answering the message up to 4 times without actually putting the MST back online will cause the message to be re-issued. Answering it for a fifth time in such a manner will cause the transport to be turned off, and any cartridges in it to be returned.

* The ASUSE reports require the following clarification. In the basic report, the totals given for cartridges with zero streams available include any cartridges for which one of the following flags is set: the lost cartridge flag, the inhibit allocation flag, or the excessive write parity errors flag. For both the basic report and report A, only streams which are unallocated and free of errors are counted as being available streams.

  When Report A is selected without report B, any cartridges having one of the three previously mentioned flags set are omitted. In contrast, report E includes all cartridges in the specified family, subfamily and CSU, regardless of errors. Thus, it is normal for cartridges with errors to appear in report E but not in report A.

  This item appeared in the NOS 1.4 Level 552 SRB as a "Known Problem". ASUSE is designed to work as stated and this is not considered a problem. No changes in this area are anticipated.

7.0 TAF MODIFICATIONS

TAF Automatic Recovery, TAF/CRM Recovery

The TAF Automatic Recovery and TAF/CRM Recovery features include the interfaces needed by the data base recovery feature to provide complete recovery from the user's point of view. Significant areas in which there are incompatibilities with previous releases include:

1. A new command, TAFREC, has been added to the procedure that initializes TAF and must appear in the procedure even if the recovery feature is not enabled.

   TAFREC performs several functions formerly processed by TAFNAM1 and, in addition, processes the new TAF Configuration File (TCF) directives: DISPLAY, NETWORK, RECOVER and K. (initialization K-Display commands).

   Two files are produced by TAFREC. File ZZTIF is used by TAF1 and file ZZIRRF is a recovery report which contains detail information about the TCF, initial K-display and recovery errors.

2. TAF can now use from one to eight network files. The name of the files, NCTFn (n=0,1,...,7), user name and family where they reside is specified on the NETWORK TCF directive. At least one NETWORK directive is needed in the TCF.

3. LIBTASK can now define a named transaction, by using the "/name" directive, which may have the attribute of being recoverable. This directive specifies the first task to be executed in this named transaction and allows specification of up to four additional tasks which may be part of the sequence, to be executed one after the other.

   A task may be part of more than one named transaction and system tasks may be included in a named transaction definition.

4. Initial terminal input results in the execution of a named transaction as follows:

   a. If the first three characters of input are recognized by ITASK as a transaction code which is associated with a named transaction, then ITASK will attempt to schedule the transaction. Transaction codes can be associated with named transactions through the STRAN macro in ITASK:

```
STRAN     sc,tname
```

      where:

      sc = two character subtransaction code.
      tname = named transaction

   b. If no transaction was associated with the transaction code, then ITASK will use as a named transaction the string of characters starting with the first character of input and terminating with the first non-alphanumeric. If this string is 1 to 7 characters long, ITASK will attempt to schedule the transaction; otherwise, an error message will be issued.

   In either case, if the named transaction does not exist (either associated with the task library corresponding to the terminal application data base, or in the system task library), then an error message will be issued via MSABT.

5. BTRAN request changes:

   a. The user name parameter (specifying the user name within TAF with which the request is to be associated) is no longer specified in the BTRAN header word. Rather the user name with which the request is associated is the user name of the submitting batch job. This provides a security enhancement.

   b. The user validation required to use this request has changed from the CSTP bit to the CUCP bit in the access word. Batch jobs with improper validation will be aborted by the system with no error exit or reprieve processing and receive the message: "ILLEGAL USER ACCESS.".

   c. Status values returned to the user have changed slightly -- some new ones have been added, status 11B has been deleted. Where possible upward compatibility has been maintained.

d. A BTRAN initiated transaction cannot run under a username assigned to another batch or transaction terminal user.

e. A SEND to the originating username is not allowed in a BTRAN initiated transaction.

f. A SEND is no longer required of a BTRAN initiated transaction.

6. New tasks BTASK, CTASK, RCTASK, and RTASK along with MSABT, ITASK, KDIS, OFFTASK, and SYSMSG must be on the system task library, TASKLIB. These tasks are required to initialize TAF. Externals are satisfied by:

```
LDSET(LIB=TRANF4,LIB=TRANLIB)
```

System tasks LOGT, CRMTASK and XTASK are not required to initialize TAF, but may be required if the installation uses them.

7. The xxJ file for TAF/CRM data bases requires a new statement that specifies the number of before image recovery files associated with this data base. The format of this statement is BRF,n., where n is a number from 0 to 64 (limited also by installation parameter, BMAX). This statement is required for all TAF/CRM data bases even if they contain no recoverable files.

8. An additional LIBTASK input directive is needed when building TASKLIB if XTASK is used to initiate transactions.

```
/XTRAN,T1=XTASK
```

TAF FL Changes

The maximum value to which the field length of TAF can be set to is now 376600B which is the default value. This limit applies whether the value is set via the installation option SCMFL, the initialization K-Display command K.MFL or the run time K-Display command K.MAXFL. This change was necessary to provide for negative field length.

Miscellaneous Changes

* Default values of some TAF installation parameters have changed as follows:

  DSQID has been set to 0.
  NCMB has been set to 40.
  NCTL has been set to 250.
  NLIN has been set to 4.
  NSCP has been set to 31.

* A new capability for TAF/CRM applications has been added. This capability allows an operator to change the base and expandable field length for CRM memory management at initialization time.

  The new initialization K-Display operator commands are

  K.BFL=n. Changes the base field length for the CMM buffer. "n" must be in the range of 20000B to 100000B. The default base value is given by the installation symbol CMMBFL which is released as 50000B.

  K.EFL=n. Changes the expandable field length for the CMM buffer. "n" must be in the range of 0 to 100000B. The default expandable value is given by the installation symbol CMMEFL which is released as 0.

  The installation parameters for the TAF/CRM data manager, CMMST and CMMFL, are replaced by CMMBFL and CMMEFL respectively.

  These K-Display commands have no effect if the CRM data manager is not used in TAF.

* The network half-duplex mode has been implemented in TAF. This will allow a terminal to initiate only one task/transaction at a time via terminal input. Half-duplex mode enables the type-ahead feature to work correctly because NAM queues the requests and the inputs are processed serially.

* TAF will now return the current field length to the task when it requests more field length than its maximum allowed field length and no abort (NA) is specified.

* When a data manager related statement is specified in the XXJ file and that data manager is not loaded into TAF, the statement and the following dayfile message will be issued:

  "xxJ FILE ERROR - yy DM NOT LOADED."

  where xx is a data base name and
        yy is CRM or TOTAL.

* A new origin code has been added to the journal file entry header. This origin code (12B) indicates a message macro with a zero function code was encountered by TAF and the message was journaled to the JOUR0 file.

* TAFNAM1 is now TAF1. TAFNAM2 is now TAF2.

* Data base administrators should note that making the CRMTASK commands DBUP and DBDOWN generally available could present possible security problems. Consider preceding these commands with a task that requires a password in order for the transaction to continue. (Refer to the TAF/CRM Reference Manual.)

8.0 IAF MODIFICATIONS

* IAF provides dynamic field length allocation and management with NOS 2.0. This deletes the requirements for the VMPL and VSPL installation parameters. In cases where field length reduction is of extreme significance, IAF dayfile statistics concerning field length should be monitored. COMSREM parameters VFLI and VFLR can then be adjusted to fine tune field length requirements.

* IAF will no longer issue the message "*SYSTEM CLOSED, SORRY*". Instead, "IAF CLOSED" will be issued when restricted usage is in effect or the maximum number of terminals supported by the subsystem is attained.

* The field length dump in overlay IAFEX3 is changed from a DMP to a DMD for ease of debugging. Additional information from central memory resident is also dumped to facilitate problem analysis. This information must be processed with DSDI. The procedures installed with IAF have been changed to support this additional processing.

* Terminal inactive processing has been revised in IAF. This revision will insure that terminals in any state will timeout if left inactive for the installation defined time limit. The aim of this correction is to circumvent a common user practice of interrupting output as a means of stopping terminal timeout.

* Under the following circumstances, the syntax using the control character followed by a letter (e.g. ESC/E) will elicit only a line feed:

    login not yet complete
    break in progress
    input requested from running program (includes editors)
    TEXT mode
    AUTO mode

  IAF will no longer stack status requests internally. If a status request (entered as ESC/E or ESC/S) is outstanding, subsequent status requests will be discarded. When the outstanding request has been processed, another will be accepted.

* All delays were removed when the scheduling of interactive job steps was rewritten for NOS Version 2. IAF sense switch 2 no longer causes an artificial delay to be inserted into the scheduling of interactive job steps.

* If sense switch 3 is set, IAF will now abort for connection reject conditions (invalid connection number requested by network, previous user on connection not completely logged out). If sense switch 3 is not set, a connection reject condition will cause the dayfile message

  IAFEX ABNORMAL - NWC n. (n = connection number)

  to be logged in IAF's dayfile. No abort or dump will take place. If a site is running IAF with sense switch 3 set, and a connection reject condition is detected, IAF will enter a message in the dayfile then abort and produce a field length dump.

* Interactive jobs may utilize the System Control Point (SCP) facility.

* If more than one file is assigned to TT, an I/O sequence error will be detected if a program attempts simultaneous writes or reads to different file names. In previous systems this condition was not detected and resulted in arbitrary loss of data or hanging the program in recall on one of the files.

* An interactive job may be detached from the terminal and run to completion without further intervention. This feature is described in the NOS Version 2 Reference Set Volume 3.

* If a line disconnect is encountered or if IAF terminates, the active user jobs will be detached by IAF. These detached jobs will continue to execute.

* Interactive job recovery is possible whenever commands are recognized during a session by entering the RECOVER command. The RECOVER program generates a display of recoverable jobs, one of which may be selected by the user. The recovery process is automatically activated at login to determine whether or not any recoverable jobs exist. If no recoverable jobs are found, the RECOVER utility does not conduct a dialogue with the user.

* The user responses required at login have changed but appropriate action should be obvious. The RECOVER/CHARGE prompt will not appear at the terminal. Instead a CHARGE prompt will be issued if default charge is not active on the user name and a charge number is required. If there are recoverable jobs, the recovery program will conduct a dialogue with the user as described above.

* User breaks utilize the standard system error flag mechanism allowing user break 2 (terminate) to invoke EXIT processing in procedures.

  Programs which do use REPRIEVE, but do not select REPRIEVE mask 200, will not be affected by this change. The only change for those programs which use REPRIEVE with mask 200 is that a TAET error flag (indicating user break 2) will be available in addition to the existing TIET (indicating user break 1) error flag. Programs using EREXIT without DISTC will regain control on a user break 2 (terminate) but not on a user break 1 (interrupt). Usage of EREXIT and DISTC is discouraged on NOS Version 2.

* Interactive jobs are terminated using standard system processes which extend EXIT and reprieve processing to the interactive user in cases of job timeout.

* ACCESS subsystem command DIAL uses JSN's rather than terminal numbers to address destination terminals. The new command WHATJSN (formerly USER) returns a list of JSNs associated with connections logged in with a specified user name.

* Enhancements have been made to IAF's in-line editing capabilities. The edit file may be in display code or NOS 6/12 ASCII and must be a line numbered primary file. New commands are described in NOS Version 2 Reference Set Volume 3.

* The capability of file structure reporting (R parameter) has been removed from the LIST/LNH command. A new command, SCOPY, (added to deck COPYC), has been added to the system to provide this capability. See NOS Version 2 Reference Set Volume 3.

* The output headers issued by the RUN and LIST commands will no longer appear. This makes LIST and RUN functionally equivalent to LNH and RNH respectively, however, these commands will still be supported for compatibility with previous systems.

  It is strongly recommended that LIST and RUN be used in preference to LNH and RNH since the latter are candidates for removal in the future.

9.0 FUTURE CHANGES

9.1 Remote Host Facility

Remote Host Facility (RHF) is not available with the initial release of NOS 2.0. The following changes to RHF, as released with NOS 1.4 Level 552, are anticipated when RHF is made available with future releases of NOS 2.0.

- The commands MFLINK and MFQUEUE will, by default, read the job command stream for remote text instead of the INPUT file. 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 compatible.

- MFLINK and MFQUEUE will 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.

- The FCOPY conversion in LCN ASCII (ASC8) will be deleted.

- The CONVERT utility will be dropped. Conversion from 63 to 64 character sets will be incorporated into the FCOPY utility.

- The VALID macro (CPM function 40) return information will be expanded to include the user's default charge information. This will cause the parameter block to be extended by 4 words. The old parameter block was 6 words long while the new block will be 10 words.

- A potential deadlock situation can occur with RHF jobs and the support of removable packs. Support of removable packs by the permanent file server (PTFS) will be an assembly option. Removable pack support will be, by default, deselected.

- To provide a more consistent user view between batch and interactive processing, the automatic interactive prompting of MFLINK will be deleted. Since there is no automatic prompting, the interactive user does not need to terminate the MFLINK sequence with a USER BREAK.

9.2 CDCS2 Automatic Recovery

The CDCS2 automatic recovery feature is scheduled for a future NOS release. It is described in the current revision of the TAF Reference Manual to facilitate planning and to show areas of similarity and difference between the planned CDCS2 automatic recovery feature and the current TAF/CRM automatic recovery feature.

9.3 CLB= Entry Point

The CLB= entry point introduced in NOS Version 2 will be removed in the next release. It is recommended that this capability not be used in local code.

10.0 HELPLIB

HELPLIB is 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. It also serves as a set of examples on how to use the new enhancements to CYBER Control Language.

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 command LIBRARY(HELPLIB). With this method, any command that would normally abort due to a parameter error, will now prompt you for the parameter in error and then execute the command. If there are no errors, the command will execute without any prompting. This method would be particularly useful for a new user or casual users of the system, but is inefficient since a procedure will be called for nearly every command.

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:

1. HELPLIB does not support multiple file names on the call. For example, "GET,pfn1,pfn2", must be changed to "GET,pfn1," "GET,pfn2,".

2. 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 "=".

3. HELPLIB does not support the MODIFY/COMPASS interface. The CB, CG, CL, CS parameters are not supported in the MODIFY procedure.

4. HELPLIB does not support the "Z" parameter option. This affects the MODIFY, LIBEDIT, and OPLEDIT commands.

5. 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.

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

How to Install These Procedures

HELPME, EZ, and HELPLIB are already installed on the unconfigured deadstart tape. However, HELPLIB should also be installed on the user name LIBRARY to allow usage methods 1 and 2 to work. To do this, run the following job.

```
X.DIS
SUI(377776)
COMMON(SYSTEM)
GTR(SYSTEM,B)ULIB/HELPLIB
GTR(B,A)PROC/*
DEFINE(HELPLIB/CT=PU,M=R)
REWIND(A)
COPYEI(A,HELPLIB)
```

11.0 ACCOUNT DAYFILE MESSAGES

This section documents account file differences a site will see when moving from NOS Version 1 to NOS Version 2.

1. Format of Account File Message

NOS has a standardized account file message format to ease account dayfile analysis. The general format of the account dayfile message has been changed in NOS Version 2. All account dayfile messages now have the following general format.

hh.mm.ss. jsn s. gaec, additional information.

Field	Message
hh.mm.ss	Current time in the form of hour.minute.second. This field begins in column 2 and ends with a period.
jsn	Job sequence name of the job which caused the entry of this message into the account dayfile. This field begins in column 13 and ends in column 16.
s	A single character in column 17 which describes the service class of the job. The following service class types can be specified.

s	Service Class
A	Deadstart sequencing service class.
B	Batch service class.
D	Detached interactive service class.
M	Maintenance service class.
N	Network supervisor service class.
R	Remote batch service class.
S	System service class.
T	Interactive service class.
X	Subsystem service class.

geac	A unique four-character message identifier which defines the particular activity identified. The field begins in column 21 and ends with a comma-blank (,) or a period.
additional information	Information that gives further detail to the activity identified by geac. The field begins in column 27 and ends with a period.

This new standardized message format differs from the NOS Version 1 format, which has the following format:

hh.mm.ss.jobnameo.gaec,additional information.

Field	Description
hh.mm.ss.	Current time in the form of hour.minute.second.
jobname	Name of the job which caused the entry of this message into the account dayfile. This field begins in column 11 and ends in column 17.
o	A single character in column 18 which describes the origin type of the job. The following origin types can be specified.

o	Origin Type
S	System
B	Batch
T	Terminal
E	Remote batch
M	Multi-terminal

geac	A unique four-character message identifier which defines the particular activity identified. The field begins in column 21 and ends with a comma-blank (,).
additional information	Information that gives further detail to the activity identified by geac. The field begins in column 27 and ends with a period.

2. Account Dayfile Messages Added.

The following messages are new account file messages being issued by NOS Version 2. Descriptions of these new messages are contained in the System Maintenance Reference Manual.

New messages pertaining to accounting information are:

ABLQ, C1, jsn, yymmdd, hhmmss, dc. ABLQ, C2, xxxxxx.xxxKUNS.	Denotes file placed in the input queue or output queue for the first time.
ACSC, sc, jsn.	Denotes service class has changed.
AEQP, C1, jsn, yymmdd, hhmmss, dc. AEQP, C2, xxxxxx.xxxKUNS.	Denotes an active or inactive queued file is released from the system.
AERR, DS.	Denotes job was rerun after a deadstart.
ARRQ, C1, jsn, yymmdd, hhmmss, dc. ARRQ, C2, xxxxxx.xxKUNS.	Denotes a file is reentered in the active queue.
ASTD, usernam, family.	Denotes user job suspended because of a user detach.

New messages pertaining to statistical information are:

SCTE, node, C1, port, 0, cluster, terminal, class. SCTE, node, C2, $blocks_t$, $blocks_r$, $blocks_e$.	Denotes statistics about a network terminal.
SDPX, xxxxxx.xxKUNS.	Denotes number of PP exchange priority requests, divided by 1000, for all jobs.
SIDT, yy/mm/dd.	Denotes current date issued every hour, on the hour.
SPUA, filenam, usernam, packnam.	Denotes permanent file UATTACH operation.
SPSA, filenam, usernam, packnam.	Denotes permanent file SETASA operation.

SPSF, filenam, usernam, packnam.	Denotes permanent file SETAF operation.
SPSD, filenam, usernam, packnam.	Denotes permanent file SETDA operation.
SPDD, filenam, usernam, packnam.	Denotes permanent file DROPDS operation.
SPAS, filenam, usernam, packnam.	Denotes permanent file ASSIGNPF operation.
SPGT, filenam, usernam, packnam.	Denotes permanent file OLD/GET operation.
STD1, filenam.	Denotes file attached for MSS destage.
STD2, filenam.	Denotes MSS cartridge loaded for destage.
STD3, filenam.	Denotes MSS copy to be initiated for destage.
STD4, filenam, length.	Denotes MSS copy to complete for destage.
STD5, filenam.	Denotes PFC has been updated for destage.
STS2, filenam.	Denotes MSS cartridge loaded for stage request.
STS3, filenam.	Denotes MSS copy to be initiated for stage request.
STS4, filenam, length.	Denotes MSS copy complete for stage request.
STS5, filenam.	Denotes PFC has been completed for stage request.
STS6, filenam.	Denotes MSS copy from first cartridge complete for multicartridge file.
STF1, newfl.	Denotes acquiring MSS streaming buffer.

STF2, newfl.	Denotes returning MSS streaming buffer.
STF3, newfl.	Denotes MSS FL increase.
STP4, newfl.	Denotes MSS reduced to IDLE FL.

New messages pertaining to job usage information are:

UCMP, xxxxxx.xxKUNS.	Denotes the value of the MAP III Activity Accumulator for a job when overflow occurred.
UDMP, xxxxxx.xxxKUNS.	Denotes the MAP III Activity Accumulator for a job.
UEMP, xxxxxx.xxxKUNS.	Denotes the MAP III Activity Accumulator for a job.

3. Account Dayfile Message Modified

The following messages have been changed. Refer to the System Maintenance Manual for a complete description of the message.

ARUN, usernam, family.	The terminal number is no longer reported in this message.
SANW, application, jsn.	Jobname field was replaced with JSN.
SBER, application, jsn.	Jobname field was replaced with JSN.
SBNW, application, jsn.	Jobname field was replaced with JSN.
SENW, application, jsn.	Jobname field was replaced with JSN.
UEAD, xxxxxx.xxxKUNS.	Measurement unit has changed from UNTS to KUNS.

4. Account Dayfile Messages No Longer Issued.

The following messages are no longer issued by NOS Version 2.

AENR, usernam, family.	Denoted the discarding of user name usernam on family family from the interactive recovery file.
AEPQ, qt.	Denoted the purging of the job from I/O queue.
ASSR, xxxxxx.xxxUNTS.	Denoted the suspension of a job or session that used the indicated amount of SRU-s under the current change number.
ASDx, usernum, family.	Denoted that the user number and logical terminal name were duplicated in the time sharing recovery file. X = H specified the recovery operation was caused by a hang up. X = R specified the recovery operation was caused by the recovery of the time sharing subsystem. X = T specified the operation was caused by a session timeout.
ASNx, usernum, family.	Denoted that the user had not been successfully entered into the time sharing recovery file. X = H specified the recovery operation was caused by a hang up. X = R specified the recovery operation was caused by the recovery of the time sharing subsystem. X = T specified the operation was caused by a session timeout.

USAD, xxxxxx.xxxUNTS.	Denoted the SRU accumulator for a job.
USAU, xxxxxx.xxxUNTS.	Denoted the application program accumulator for a job step.
USCP, xxxxxx.xxxSECS.	Denoted the CPU time for a job.
USMS, xxxxxx.xxxKUNS.	Denoted the mass storage activity accumulator for a job.
USMT, xxxxxx.xxxKUNS.	Denoted the magnetic tape activity accumulator for a job.
USPF, xxxxxx.xxxKUNS.	Denoted the permanent file activity for a job.
UESR, xxxxxx.xxxUNTS.	Denoted usage summary for a user.

12.0 KNOWN PROBLEMS

NOS

CPU time slices are incorrectly processed by 1SJ resulting in CPU time slices being only one quarter of the intended value. This problem affects only system performance. CPU time limits and CM time slices are processed correctly. To alleviate this problem the IPRDECK time slices ("SERVICE,sc,CPnnn." value) can be increased, either in the IPRDECK or by an operator keyin at deadstart or from DSD. This problem is reported by PSR NS2A368.

Level 1 and level 2 recovery deadstarts do not work in a shared RMS configuration. This problem is reported by PSR NS2A102.

A level 3 recovery deadstart does not cause a down-load of disk controlware. This problem is reported by PSR NS2A332.

IAF

IAF does not correctly clean up all active terminals after NAM aborts or is terminated. Problems will result when NAM is reinitialized and users begin to log back in. If NAM aborts or is terminated for any reason, IAF should be idled with an "IDLE,IAF." command and reinitialized before NAM is brought up again. This problem is reported by PSR NS2A168.

If a user types a user break or disconnects the terminal either while in AUTO mode or while entering line numbered data, IAF will occasionally lose track of one pot (8 words) of buffer space. If this happens frequently enough (several hundred times) IAF will eventually run out of buffer space causing an abort. This problem is reported by PSR NS2A310.

TAF

TAF COBOL5 tasks that end with CALLTSK with CEASE, CEASE, or SEND with the CEASE FLAG set are not reusable. To make these tasks reusable, they should be terminated with STOP RUN. This problem is reported by PSR NS2A317.

TAF may hang if NAM is brought up immediately after it aborts or is terminated without reinitializing TAF. When NAM aborts or is terminated, TAF should be idled with an IDLE,TAF. and brought up again after NAM has been reinitialized. This problem is reported by PSR NS2A253.

DMREC is unable to request a data base recovery tape that is not the most current dump. This makes it impossible to recover a data base file from a backup tape which are not the most current dumps. The DELETE directive of DMREC can be used to delete the data base tapes until the set wanted is reached. The data base can then be recovered. It is then possible to use the ADD directive to add back the deleted tapes. This problems is reported by PSR NS2A275.

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.

NAM

If NAM is running with more than one PIP and NAM fails, one of the PIPs may cause the operating system to hang by not issuing monitor function for storage allocation. This problem is reported by PSR NA2B833.

RBF

Terminals may hang, i.e. no response to input, when requesting a connection to RBF. Once this occurs all terminals requesting a connection to RBF will hang in a similar manner. RBF must be terminated and re-initialized to clear this condition. This problem is reported by PSR RB2A632.

CID

CID will occasionally generate Mode 1 or Monitor Call errors at debug termination. This problem is introduced by corrective code ID1A197 and is reported by PSR ID1A204.

Support of DX, DY, DZ and DA Disk Device Types

If a bad spot is encountered on DX, DY, DZ or DA type disk device running on a CYBER 835 or 855 mainframe, an incorrect error response may be given. A function timeout will be reported instead of a non-recovered parity error. The physical address of the bad spot is not reported and therefore cannot be flawed. Recovered errors will be reported properly. This problem is reported by PSR

NS2A073. The correction of this problem will require changes to the disk controlware supporting these device types and possibly to the NOS software.

On-line initialization of a DA device will cause 1MS to hang. This problem does not occur with DX, DY, or DZ device types. This problem is reported by PSR NS2A331.

If only DA device type disks are defined in a configuration, a down-load of disk controlware does not occur at deadstart. This problem can be avoided by loading controlware off-line with the same maintenance software required for disk pre-formatting, or by loading on-line with the LOADBC utility. It is also avoided if DX, DY or DZ device types are defined on the same channel as the DA devices. This problem is reported by PSR NS2A332.

13.0 PRODUCT SET CORRECTIVE CODE

Product Set corrective code is listed by associated product. This corrective code is contained on file 3 of the REL0 tape and is put on permanent file CPRD during the initial setup (except for APL corrective code which is contained on file 7 and is put on permanent file CAPL). The corrective code may not exist in the same order on CPRD as is indicated in these lists. This corrective code is automatically installed by the installation procedures provided with NOS 2.0. (Note: 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 Version 2. This code has been fully tested during system evaluation.)

AAM2	APL	BAM	CDCS2		CID	COBOL5
AM2A273	AP2A062	SW1A589	CD2A378	CD20056	ID1A177	CL5B229
AM20104		SW1A598	CD2A426	CD20058	ID1A197	
		SW1A604	CD2A427			
		SW1A605	CD20048			
		SW1A609	CD20052			
		SW10354				

BASIC	CROSS	QU3	SORT5
BASA276	XSYA181	QU3A593	ST5A311

AAM2

Problem: For performance reasons, TAF needs to flush changed block images of an Indexed Sequential file without flushing the FSTT. A previously unused bit of the FIT, bit 32, counting from 0 on the right, of the 14th word, starting from 1, will be reserved as FTNOFF. FLSH$AA is always called with one parameter, a list of FIT pointers terminated by a zero word. The AAM2 corrective code provides that if this list is not empty, and if the FIT pointed to by the first pointer has FTNOFF set to 1, then all files in the list will be flushed in the usual way, except that their FSTT's will not be written out. If FTNOFF is zero, then the files are flushed as they have always been.

Solution: Corrective code is provided by ident AM2A273 and companion BAM corrective code SW1A598 from Product Set corrective code file (CPRD).

Problem: Simultaneous access to 2 or more MIP files in the same job can lead to a mode 1 abort at close time. Depending on the type of access and the order of processing, a capsule needed to update a file may get unloaded too early.

Solution: Corrective code AM20104 from CPRD fixes this problem.

APL2

Problem: With NOS Version 2, APL2 processing of operating system error conditions does not work properly because of a change in the NOS error flag values.

Solution: Corrective code AP2A062 from CAPL fixes this problem.

BAM

Problem: For performance reasons, TAF needs to flush changed block images of an Indexed-Sequential file without flushing the FSTT. A previously unused bit of the FIT, bit 32, counting from 0 on the right, of the 14th word, starting from 1, will be reserved as FTNOFF. FLSH$AA is always called with one parameter, a list of FIT pointers terminated by a zero word. The AAM2 corrective code provides that if this list is not empty, and if the FIT pointed to by the first pointer has FTNOFF set to 1, then all the files in the list will be flushed in the usual way, except that their FSTT's will not be written out. If FTNOFF is zero, then the files are flushed as they have always been.

Solution: Corrective code SW1A598 and companion AAM2 corrective code AM2A273 from CPRD fixes this problem.

Problem: NOS added a feature to the base O/S which allows a user job to set a NO AUTODROP status on a file so that the file can exist over "CLEAR", "RETURN,*", "OLD", and "NEW" commands. The NO AUTODROP status should be set for the files ZZZZZDG and ZZZZZEG.

Solution: Corrective code SW10354 and SW1A604 from CPRD fixes this problem.

Problem: The ORG default must be changed from OLD to NEW for the FILE macro and the FORTRAN Interface routines FILEIS, FILEDA, and FILEAK.

Solution: Corrective code SW1A589 and SW1A605 from CPRD changes the ORG default. NOTE: The above correction identifiers have associated Installation deck changes. These have been made part of the release materials.

Problem: Code ident SW10326 designed to speed-up BACKSPACE on files with short records works incorrectly in some cases when skipping over an end-of-section.

Solution: Corrective code SW1A609 from CPRD purges code identifier SW10326 during the installation of BAM.

BASIC

Problem: BASIC issues direct RA+1 STS calls which will be phased out on NOS Version 2.

Solution: Corrective code BASA276 from CPRD changes STS calls to FILINFO.

CDCS2

Problem: When an error occurs during an invoke before the count has been increased for this user, this results in inaccurate user counts, possibly causing CDCS not to respond to a TERM command. If the error is "SCHEMA xx NOT IN MASTER DIRECTORY" the count is reduced for a non-existent schema, causing an undefined error, such as a CDCS mode error 25 minutes later.

Solution: Corrective code CD2A378 from CPRD fixes this problem.

Problem: For NOS Version 2, the only messages that CDCS should issue to line 2 of the B display are those messages that require operator action. Currently 4 messages are sent to line 2 of the B display. Two of these ("CDCS ACTIVE" and "CDCS IDLE") should be sent to line 1.

Solution: Corrective code CD2A426 from CPRD fixes this problem. NOTE: This code should be installed if, and only if, CDCS is running under NOS Version 2. CDCS will not function correctly under NOS Version 1 if this code is installed.

Problem: CDCS is required to use a different subsystem identifier code with NOS Version 2.

Solution: Corrective code CD2A427 from CPRD fixes this problem. NOTE: This code should be installed if, and only if, CDCS is running under NOS Version 2. CDCS will not function correctly under NOS Version 1 if this code is installed.

Problem: When two users are doing a read-relation on a file that is open for I-O, a CDCS push-down stack overflow might occur. This results in the CDCS fatal diagnostic - "CDCS INTERNAL ERROR--DB$PUSH 1". This happens when one user is swapped out while holding a record lock and another user attempts to read the locked record.

Solution: Corrective code CD20048 from CPRD fixes this problem.

Problem: The error message "CDCS INTERNAL ERROR--DB$PUSH 2" occurs while doing QRF logging with an MFL memory constraint.

Solution: Corrective code CD20052 from CPRD fixes this problem.

Problem: When an error occurs during a read of a record, DB$ERR attempts to set the pointer from the RSB record control block and call any record level DBPs. One of the quantities used in setting the RSB record control block pointer is the record ordinal. In the case of an invalid key error, no record ordinal exists because no record has been read. Hence, the RSB record control block pointer gets set to an erroneous value which then causes CDCS to mode out when trying to execute record level DBPs.

Solution: Corrective code CD20056 from CPRD fixes this problem.

Problem: When several users are attempting to attach a file that is not available, and the first user that was queued is dropped, the rest of the users will remain in the queue forever, even if the file becomes available.

Solution: Corrective code CD20058 from CPRD fixes this problem.

CID

Problem: Trap on specific overlay does not always work because user's A1 register is not saved.

Solution: Corrective code ID1A177 from CPRD fixes this problem.

Problem: CID jobs running on NOS Version 2 will encounter a CID internal error at the end of the CID session.

Solution: Corrective ID1A197 from CPRD converts CID's monitor call processing to system macro calls.

COBOL5

Problem: COBOL programs using CDCS and TAF abort.

Solution: Corrective code CL5B229 from CPRD fixes this problem.

CROSS

Problem: AUTOLINK may generate a MPLINK directive containing a paged address, but no page register.

Solution: Corrective code XSYA181 from CPRD fixes this problem.

QU3

Problem: QU issues erroneous error dignostics on a NOS Version 2 system.

Solution: Corrective code QU3A593 from CPRD fixes this problem. NOTE: QU3A593 has associated Installation deck changes. These have been made part of the release materials.

SORT5

Problem: Long sorts (i.e. all sorts which require one or more internal merges) will fail with NOS 2/SORT5. The problem is caused by the operating system returning the device type in word FET+1, and some improper 60-bit arithmetic on 18-bit fields.

Solution: Corrective code ST5A311 from CPRD fixes this problem.

14.0 NETWORKS PRODUCTS CORRECTIVE CODE

Network Products corrective code modsets are listed by associated product. These modsets are contained on file 5 of the REL0 tape and are put on permanent file CNSP during the initial setup. These modsets may not exist in the same order on CNSP as indicated in these lists. These modsets are automatically installed by the installation procedures provided with NOS Version 2. (Note: Code described in the PSR Summaries as being contained in the Notes and Cautions file is contained in the CNSP file for NOS Version 2. This code has been fully tested during system evaluation.)

NAM	RBF	CCP
NA20443	RB2A600	CC40620
NA2B823	RB2A612	CC40630
NA2B826	RB2A614	CC4C217
NA2B843	RB2A618	
	RB2A619	
	RB2A620	
	RB2A627	

NAM

Problem: If RBF terminates while a line printer or card reader is active (i.e. reading cards or printing output), NIP will fail with a Monitor Call Error.

Solution: Corrective Code NA20443 from the Network Products corrective code file (CNSP) fixes this problem.

Problem: When the network is brought up, NVF may start execution before NAM does. If this happens NVF will abort because NAM is not available. This will hang the network.

Solution: Corrective code NA2B823 from CNSP fixes this problem.

Problem: NVF does not rollout (i.e. issue NETWAIT calls) if it is waiting for a FC/ACK, CON/END/N, or FC/INIT supervisory message for a terminal connected to it. This may cause NVF to wait forever at a control point if the supervisory message never comes. The problem is due to NVF using 18 bit arithmetic on a 24 bit field from RTIME macro.

Solution: Corrective code NA2B826 from CNSP fixes this problem.

Problem: When the network is brought up, PIP calls 1DL to load in PIP overlays. If there is no free PP available for 1DL, PIP gets confused and continually reissues requests for 1DL.

Solution: Corrective code NA2B843 from CNSP fixes this problem.

RBF

Problem: RBF may fail with a CPU Error Exit when it calls QAP to issue the accounting message for an output file that has just finished being printed, punched, or plotted.

Solution: Corrective code RB2A600 from CNSP fixes this problem.

Problem: RBF may fail with a CPU Error Exit when an output device is in extended divert mode and the line containing the output device fails.

Solution: Corrective code RB2A612 from CNSP fixes this problem.

Problem: RBF may stop procesing Mode 4A console input if a batch interrupt for an output device occurs while there is an outstanding QAC, QAP, or DSP call for that device.

Solution: Corrective code RB2A614 from CNSP fixes this problem.

Problem: RBF will stop processing Mode 4A console input if a GO,LP is entered when there is no output for the output device and the card reader is in STOP state. This will also happen if GO,ALL is entered and there is no output for the output device and no card reader input.

Solution: Corrective code RB2A618 from CNSP fixes this problem.

Problem: RBF may stop processing Mode 4A console input if it receives a batch interrupt at the same time it completes sending the banner for the output device.

Solution: Corrective code RB2A619 from CNSP fixes this problem.

Problem: RBF will stop processing Mode 4A console input if a GO,LP is entered followed by a STOP,LP when there is no output for the output device and the card reader is in STOP state. The output device may also be a card punch or plotter.

Solution: Corrective code RB2A620 from CNSP fixes this problem.

Problem: On a Mode 4A terminal, if the card reader is in STOP state and the output device is in GO state, RBF will periodically send READY messages to the console. If page wait is on at the console and the console is left unattended, a large number of READY messages will get queued in CCP for the console.

Solution: Corrective code RB2A627 from CNSP fixes this problem.

CCP

Problem: Number of cards read at a Mode 4 RJE may be inflated by as much as 65K.

Solution: Corrective code CC40620 from CNSP fixes this problem.

Problem: ASYNC TIP may cause a Halt 20 by attempting to output a REPEAT.. on top of previous output.

Solution: Corrective code CC40630 from CNSP fixes this problem.

Problem: CCP fails to respond to ICMDs. This may cause the Mode 4 terminal to hang after entering ABORT,LP or RETURN,LP.

Solution: Corrective code CC4C217 from CNSP fixes this problem.

15.0 CONTROLWARE LEVELS

NOS Version 2 Level 562 was tested in an environment containing controlware with the following part numbers:

7054/844 (BCS - Half Track)	MA710-A13 (PN52706607)
7021/66X (FIRM66X)	MB434-A14 (PN52653361)
7154/844 (BCF - Full Track)	MA401-A07 (PN22724600)
7155/885/844-4X (FMD - HT/FT)	MA721-A05 (PN52803639)
Model 825 Microcode	U1AL05 (PN19267687 on 7 track tape) (PN19267689 on 9 track tape)
Model 835 Microcode	U2AL09 (PN19267677 on 7 track tape) (PN19267678 on 9 track tape)
800 Series Environment Interface	Level 3 (PN77987514A)

CML 3.2 release level 136

HIVS/CTI release level 132

16.0 INSTALLATION COMMENTS

16.1 NOTES ON PRODUCT INSTALLATION

Several installation jobs exhibit overlapping corrections, 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.

PRODUCT	NON-FATAL UPDATE ERRORS	NON-FATAL LOADER ERRORS	UPDATE OVERLAPPING CORRECTIONS	PARTITIONS NOT REPLACED IN COPYL	LIBEDIT ERRORS
ALGOL5				5	
BAM	1				
BASIC3				2	
COBOL5				7	
DBU		1			
FTN					1
FTN5				3	
F45				1	
PLI				1	
TEXT	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.

16.2 63 Character Set Installation

DECKOPL has been modified and tested to facilitate 63 character set installation. This procedure is applicable only to installation on a dedicated system.

1. Follow the Installation Procedure (section 2 of the NOS Installation Handbook) through Step 7 - Create Validation and Project Profile Files.

2. Replace the LABEL and BEGIN commands with the following commands in the first job of Step 8 - Set up Installation Files.

   ```
   LABEL,TAPE,D=PE,F=I,PO=R,LB=KL,VSN=REL0.
   BEGIN,TAPE,TAPE,63CSET.
   ```

   The MODIFY directive *DEFINE 63CSET is put into decks DECKFIX, GENFILS, GENJOB and COMBINE. Whenever these procedures access DECKOPL, the 63CSET definition will be in effect.

3. Continue the installation process until procedure COMBINE is complete. The composite OPL will be in 63 character set format.

4. Create a new deadstart tape adding the following IPRDECK entry:

   ```
   CSM=63.
   ```

5. Deadstart with the new deadstart tape.

6. Execute the following command to convert DECKOPL to 63 character set.

   ```
   BEGIN,GENJOB,,JOB=DECKOPL.
   ```

7. Continue the installation procedure and include the following on file USER for the call to GENJOB that executes procedure TEXT.

   ```
   *IDENT 63CSET
   *I,IPARAMS.15
    IP.C63   EQU   IP.C64.1
    IP.CSET  EQU   IP.C63
   */        END OF MODSET.
   ```

8. Complete the installation procedures as documented. Note that the parameter DF63 is no longer used in any procedure. Ignore any reference to this paramater in the NOS 2 Installation Handbook.

16.3 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    7777B
*/ 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.
```

16.4 NETWORK HOST PRODUCTS

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.

1. NAM2 Installation

```
*IDENT BUILDLEV
*B,HISTORY.2
 BUILDLEV LOCAL MOD TO UPDATE BUILD LEVEL
*C,HISTORY
*D,PSRLEVEL.3
      NAMLV C(1,18,5) = ["  562"],
*C,NAMLEV
*/ END OF MODSET.

*IDENT MULTNODE
*/  LOCAL MOD TO ALLOW FOUR FRONT ENDS
*/  AND MAXIMUM NODE NUMBER OF 9 AND UP TO 12
*/  APPLICATIONS.
*D INPARU.160
   DEF    NUMHNODE#4#;
*D INPARU.161
   DEF    MAXAPP#12#;
*D INPARU.163
   DEF    MAXNN#9#;
*C INPARU
*/ END OF MODSET.
```

2. RBF Installation

```
*IDENT PSRLEVEL
*BEFORE HISTORY.2
 PSRLEVEL CHANGE PSR LEVEL NUMBER
          PW       78/08/21  RBF$LEV
*COMPILE HISTORY
*DELETE RBF$LEV.6
      DEF RBFLV   #"   562"#;
*COMPILE AAARBF

*IDENT LINES
*DELETE IP$COM.5
   DEF STATIONS#32#;  #MAX NO OF CONSOLES LOGGED ON AT ON TIME#
*DELETE IP$COM.6
   DEF TOTDEV#64#;    #MAX NO OF BATCH DEVICES IN USE AT A TIME#
*COMPILE IP$COM
*/ END OF MODSET.
```

APPENDIX A

CIO INTERFACE CHANGES FOR NOS VERSION 2.0

1.0 INTRODUCTION

The CIO Interface is being revised at NOS Version 2.0 for a variety of reasons including consistency, 819 support, FNT Reorganization support, migration from NOS/BE, and performance. This document will cover both formal interface items where specifications are actually changing as well as items which are not part of the interface, but that may affect how a program executes in areas such as performance. Due to the fact that there is no formal CIO specification for either NOS/BE or NOS, it is not possible to identify all changes, but this document will be our best effort to identify all that we have recognized. Most of the changes discussed in here have been covered in other documents and memos. This document is an attempt to collect them together in one place. Where appropriate, comments have been included on the reasons for the change, expected impact and ways to avoid problems. It is believed that most programs should not be impacted by these changes.

2.0 DETAILED CHANGES

2.1 Interface changes that could impact existing programs/jobs.

2.1.1 In NOS Version 1 when a POSMF (110_8) (ANSI multi-file tapes only) function was performed on a file, the FNT was searched for a file name that matched all seven characters. If no match was found, the FNT was searched a second time matching only six characters. If a match was found, the seventh character position of the file name in the FNT was replaced with the seventh character from the FET file name. For NOS 2.0 this code will be removed and all file names will be unique. This change removes an inconsistency in handling of files.

2.1.2 The validation limit on direct access files applied by CIO in NOS Version 1.4 was that of the user accessing the file. If the file was being accessed by a user other than the owner (alternate user access), this resulted in the alternate users limit being applied. In NOS 2.0 the limit of the file owner will be applied by CIO. In addition the logic of limit enforcement is being changed as to exactly when the limit will be enforced. At NOS 2.0 time the user will be able to write as much as one track less one sector of data over their limit. It is realized that from a consistency standpoint it would be more desirable to limit to exactly the number of sectors the user is validated for, but the additional system complexity to do this cannot be justified at this time. It should also be noted that limits on direct access files will not apply if the files are on private packs.

2.1.3 There are a number of FET parameters which in NOS 1.4 were sometimes special cased for FET's that were only five words long. Furthermore, there were already fields such as level number and EOI bit being returned on NOS to five word FET's which shouldn't be based on the original reason (Chippewa binary support) all of the special cases were invented. Also NOS/BE's action varies depending on whether it is PPCIO or CPCIO. With NOS 2.0 all special cases explicitly for five word FET's will be removed from NOS. Thus, device type and FNT pointer will now be returned to five word FET's. EP and UP options will not be ignored for five word FET's. Previously EP was only valid for seven word and greater FET's and UP was only valid for six word and greater FET's. Also the upper two bits of byte four of FET word zero will be returned on errors on five word FET's. OPEN already returns PRU size regardless of the FET size. Fields such as detailed error status will be returned only if the FET is long enough.

2.1.4 The device type field on NOS 1.4 was special cased for SI, S and L format tapes to return NOS/BE compatible information. With NOS 2.0, tapes will be identified by MT and NT for all formats. The FILINFO macro can be used to provide additional information on tapes when it is needed. This change is being made to remove an inconsistency in device type returned.

2.1.5 CIO Close/Return (174) and Close/Unload (170) functions will no longer route previously queued files to the I/O Queue. The queued files will be treated the same as if they were not queued files (i.e. the file will be released from the job the same as for RETURN and UNLOAD functions). Routing of previously queued files back to the queue will have to be done by DSP. These functions were useless for most file routing due to their lack of ability to specify parameters on file requeuing.

2.1.6 The verification of FIRST, IN, OUT and LIMIT depended on the function code and whether a file by the specified name was local to a job (FNT entry exists) on NOS Version 1. In NOS 2.0 only those parameters that are to be used will be validated. This means, for example, that IN and OUT will not be checked on NOS 2.0 in some cases where they were on NOS Version 1. The REWIND (50/54) and CLOSE/REWIND (150/350) will verify First and Limit on NOS 2.0 as those functions set IN and OUT to FIRST. NOS Version 1 did not verify these parameters. Table A defines the changes in this area in tabular form.

2.1.7 Many CIO functions (see Table A) previously legal for equipment type "TE" will now be illegal. These functions had no meaning or useful purpose in the past. They are being made illegal to make user errors more obvious. (A file is assigned to "TE" when VSN's have been declared, but no tape assignment has been made.)

2.2 Interface changes that should be upward compatible for existing jobs.

2.2.1 FNT ordinals returned in the FET LIMIT word will be fixed within a job step at NOS 2.0. Prior to NOS 2.0 they would change during rollout. They will likely not change during an entire job in NOS 2.0, but the specification is as above so that we can allow the compression of negative FL if we find this to be necessary.

2.2.2 CIO calls for buffered operations with no data in the buffer (write) and no space in the buffer (read) will return a warning message to the user's dayfile. This will allow identification of extraneous I/O calls. These messages will be issued only if LOGGING is enabled.

2.2.3 CIO requests on non-standard equipments will result in a PP hang instead of being treated the same as if equipment "NE" had been assigned. It should be noted that this can only occur if an installation has local code supporting non-standard equipment. Sites having QSE type equipment will have to add entries to a table in CPUCIO to define the processing for that equipment.

2.2.4 Many additional functions (see Table A) such as Open and Close will now be valid on execute only files for SSJ= jobs.

2.2.5 CIO backspace requests 40, 44 and 640 set IN = OUT = FIRST in the FET on NOS 1.4 if and only if the skip count was set to infinite. NOS 2.0 will not change IN and OUT regardless of the skip count. This will make processing of IN and OUT for skip functions consistent.

2.2.6 The level number field will not be changed in NOS 2.0 except where it is defined as a return condition. Prior to NOS 2.0 it was cleared for most operations.

2.2.7 The detailed error return code (dec) field (applies only to mass storage files with the EP bit set in the FET) was not always set when CIO returns an error status. This made it difficult for a program to know when to interrogate the "dec" field. At NOS 2.0 this field will be set to zero when an error is returned to the caller and none of the currently defined codes are applicable. This field will continue to apply only to mass storage.

2.2.8 Close/Return and Close/Unload will return files assigned to TT, TE and NE equipments at NOS 2.0. Previously they simply set the FET complete.

2.2.9 NOS 2.0 will return an error code 23B for Index Too Large on an OPEN. If EP is not selected, the job will be aborted. Prior to NOS 2.0 this condition was ignored. The change is compatible with how NOS/BE handles this situation.

2.2.10 The read list functions will require the address of the list buffer to be at least 2 at NOS 2.0 time.

2.2.11 Open and Close functions where an index length is non-zero, will require the list buffer address to be greater than 1 and the address plus length to be less than field length. If these restrictions are not met, the job will be aborted. This condition previously resulted in no transfer of an index.

2.2.12 Any write operations which do not cause the EOI to change will not set the "file written since last open" bit which controls whether a directory is dumped on a close operation. This change makes rewrite operations done by other than the rewrite codes (214, 224, 234) compatible with the rewrite codes. Prior to NOS 2.0 rewrites done by means other than 214, 224 or 234 resulted in the "file written since last open" bit being set.

2.2.13 NOS Version 1.2 through NOS 1.4 have an internal interlock for the duration of a CIO operation on a direct access file that is being modified by one user and read by another via the "read and allow" attach modes. In NOS 2.0, this interlock may be released during a CIO operation if the operation is put on recall. This interlock did not exist prior to NOS 1.2. The only possible user impact is that if, for example, one job is writing a 5 PRU block of data and another job is reading the same block at the same time the job reading could get say 2 PRU's of data prior to the write and 3 PRU's after the write. If there are any applications depending on this interlock (which has never been specified or documented), they will have to do exclusive attaches or interlock via the data itself.

2.2.14 Error processing for files on 819's will appear different at times to the user. The major reason for this is that while the standard PRU size for devices is 64 words, the 819 sector is 512 words. It consists of eight standard mass storage PRU's and the system automatically converts standard sectors into 819 sectors so the user uses standard size sectors for all mass storage I/O. Thus, in read error processing whenever a parity error occurs on the read of an 819 sector all eight PRU's will be considered to have parity errors as there is no way to isolate the error. The other case of interest is that on a write (either sequential or random) it will often be necessary to read from the device an 819 sector so that the PRU's being written can be merged with the ones already in the 819 sector. If the 819 sector read has a parity error, then the write operation will not be performed, and a write error status will be returned.

2.2.15 The logic for checking for function code to determine if implicit terminal output can be done has been changed at NOS 2.0. Prior to 2.0 any function code that had the write bit set was a candidate for implicit output. At NOS 2.0 a list of functions is used by lRO to make this determination. The changes are documented in Table A.

2.2.16 Prior to NOS 2.0 a parity error on an EOR/EOF/EOI sector (assumes error allowed EOR/EOF/EOI to be determined) did not return EOR/EOF/EOI status in the FET. The operation was simply set complete along with an error code. At NOS 2.0 in this case the appropriate EOR/EOF/EOI status will be returned along with the parity error status. This is consistent with NOS/BE although with NOS/BE it is not possible for a parity error and EOI to occur at the same time since EOI is not actually a sector on disk.

2.2.17 The treatment of control word write codes (204) on blocks with data and a level 17 has been changed at NOS 2.0 to be consistent between disk and tapes as well as to prevent generation of tape blocks outside of the format specification. The following table documents the changes.

	MASS STORAGE			TAPES					
				I, SI FORMAT				S,L,F, FORMAT	
BLOCK WORD COUNT (OCTAL)	0	1 to 77	100	0	1 to 777	1000	0	1 to 377777	
NOS PRE-2.0	B	A+B	A	B	D	A	C	A	
NOS 2.0	B	A	A	B	A	A	C	A	

a) Data block written.
b) End of file block written (no data).
c) End of file (tape mark written).
d) Data block written with level number field in block set to indicate EOF (an illegal block type according to the format specification).

2.2.18 If an unrecoverable disk error occurs during a random rewrite operation that has not extended the file, CIO will not write a new EOI on the file. Prior to NOS 2 this operation truncated the file by writing an EOI prior to the sector on which the error occurred. For all sequential write operations and file extensions, CIO will still write a new EOI at the sector prior to the sector on which the disk error occurred.

2.3 Changes in system action which may affect job performance, but will not result in "breaking" the job.

2.3.1 Portions of I/O to 819's will run at a CPU priority the same as MAGNET. This means that any job that runs at a CPU priority above MAGNET's will not be able to have 819 I/O or tape I/O complete unless it goes on recall from time to time. This would primarily affect "real-time" type applications. This situation already exists for tapes.

2.3.2 CIO requests which encounter track limit on a file will go on recall allowing the job to rollout, etc., if UP is not set in the FET. Previously the PP assigned was dedicated until an error flag was set or space became available.

2.3.3 CIO requests made when no PP's are available will not result in the job being placed in "X" status unless the job has 17 requests outstanding. Instead the request will be processed until the point a PP is required, and then the request will be queued in a FIFO queue. Thus, the CPU can continue to execute.

2.4 Accounting Changes

2.4.1 Rewind will be a free function for all device types. Open on terminal files and non-random mass storage files will be a free function. Return (evict, etc.) of a non-existant file is a free function. This is being done to make CPUCIO processing of these functions simple and fast.

2.4.2 There will be no separate penalty charges for short transfers. The penalty can be simulated by setting the initial charge higher. Random repositions backwards and ones forward of more than IMPL (128) sectors will be charged for upon each occurrence. The amount of sectors transferred are accumulated for all operations including skips, random directory processing, etc. Skips backward charge for the actual number of sectors backed over even though more than that may be read by the system.

The accounting formula used for all CIO operations is: MS increment = Operation charge + penalty + (PRU's transferred X 2**IMPT).

2.4.3 Error processing will update accounting and PRU limit information at NOS 2.0. Previously this was not done in cases where the job was aborted.

2.4.4 Accounting charges for CIO functions will be made regardless of device type at NOS 2.0. This means, for example, that a function will be charged for if the file is on mass storage, terminal (except read and write functions which are not charged for), null equipment, etc. Previously, some of the functions would have only been charged for if they were assigned to mass storage.

TABLE A NOTES

1) The following definitions are used:

X	= Applies to NOS 1.4 and NOS 2.0
1.4	= Applies to NOS 1.4
1.4*	= Applies to NOS 1.4 if FNT entry present
1.4#	= Legal on NOS 1.4, but undefined results.
2.0	= Applies to NOS 2.0

2) This table has been constructed mostly by reading code and in some cases trying test cases. As all items have not been verified by actual test, errors are possible.

3) The magnetic tape only column in regards to NOS 1.4 is only relevant if the file is assigned to mass storage. This check is not made for other devices.

TABLE A

CIO FUNCTIONS	DEFINITIONS CIO CODES	VERIFY FIRST & LIMIT	VERIFY IN & OUT	SET IN= OUT= FIRST	MASS STORAGE ONLY	MAGNET-IC TAPE ONLY	SSJ=MAY ISSUE ON EXECUTE ONLY	ANY JOB MAY ISSUE ON EXECUTE ONLY	VALID ON "TT"	VALID ON "NE"	VALID ON "TE"	VALID CODE FOR IMPLICIT TERMINAL OUTPUT
PRU	000	X	X				X		X	X	1.4	X
READ, READ-SKIP	010,020	X	X				X		X	X	1.4	
WRITE PRU	004	X	X						X	X	1.4	X
WRITE, WRITE EOR, WRITE EOF	014,024,034	X	X						X	X	1.4	X
BACKSPACE	040	1.4*	1.4*				X	2.0	X	X	1.4	
BACKSPACE PRU	044	1.4*	1.4*				X	2.0	X	X	1.4	1.4
REWIND	050	1.4*/2.0	1.4*	X			X	X	X	X	X	
REWIND	054	1.4*/2.0	1.4*	X			X	X	X	X	X	1.4
UNLOAD	060						X	X	X	X	X	
RETURN	070						X	X	X	X	X	
OPEN/READ	100/300	X	1.4				2.0		X	X	1.4	
OPEN/WRITE	104	X	1.4				2.0		X	X	1.4	X
POSITION MULTI-FILE	110	X	1.4			X			1.4	1.4	1.4	
EVICT	114						X	X	X	X	X	1.4
OPEN ALTER	120	X	1.4				2.0		X	X	1.4	2.0
CLOSE	130/330	1.4*	1.4*				2.0		X	X	X	
OPEN READ REWIND	140/340	X	1.4				2.0		X	X	1.4	
OPEN WRITE REWIND	144	X	1.4				2.0		X	X	1.4	X
CLOSE REWIND	150/350	1.4*/2.0	1.4*				2.0		X	X	X	
OPEN ALTER REWIND	160	X	1.4				2.0		X	X	1.4	2.0
CLOSE UNLOAD	170/370	1.4*	1.4*				2.0		X	X	X	
CLOSE UNLOAD RETURN	174	1.4*	1.4*				2.0		X	X	X	1.4
READ CONTROL WORDS	200	X	X				X		1.4#	X	1.4	
WRITE CONTROL WORDS	204	X	X						1.4#	X	1.4	1.4
READ WITH LIST	210	X	X		X		X			2.0		
REWRITE, REWRITER, REWRITEF	214/224/234	X	X		X					2.0		1.4
READ PRU WITH LIST	230	X	X		X		X			2.0		
SKIP RECORD FORWARD	240	1.4*	1.4*				X	2.0	X	X	1.4	
READ TO EOF	250	X	X				X		X	X	1.4	
READ CONTROL WORDS S/L TAPE	260	X	X			X			1.4#	1.4	1.4	
WRITE CONTROL WORDS S/L TAPE	264	X	X			X			1.4#	1.4	1.4	1.4
READ TO EOI	600	X	X				X		X	X	1.4	
SKIP RECORD BACKWARD	640	1.4*	1.4*				X	2.0	X	X	1.4	

APPENDIX B

CONSOLE COMMAND CHANGES

Display Selection

OLD COMMAND	NEW COMMAND	MEANING
A,ACCOUNT FILE.	A,ACCOUNT FILE.	Account dayfile
A,ERROR LOG.	A,ERROR LOG.	Error log dayfile
A,.	A,.	System dayfile
A.	A.	System dayfile (rolls)
A,cp.	DAYFILE,jsn.	Job (at CP) dayfile
	A,OPERATOR.	Operator dayfile
B	B	Executing jobs (at CP's)
C,.	C,.	CM, absolute
C,cp.	C,jsn.	CM, relative to job's RA
Cn, n=0,1,...,6	Cn,	CM, change option "n"
D,.	D,.	CM, absolute
D,cp.	D,jsn.	CM, relative to job's RA
Dn, n=0,1,...,6	Dn,	CM, change option "n"

OLD COMMAND	NEW COMMAND	MEANING
E,.	E,.	Equipment status
E,A.	E,A.	
E,C.	E,C.	Equipment configuration (of mass storage)
E,M.	E,M.	Mass storage status
E,P.	E,P.	Equipment preview
E,T.	E,T.	Tape drive equipment
E,T+.	+(	Page E,T forward
E,T-.	-)	Page E,T backward
F,.	F,.	CM, absolute
F,cp.	F,jsn.	CM, relative to job's RA
Fn, n=0,1,...,6	Fn,	CM, change option "n"
G,.	G,.	CM, absolute
G,cp.	G,jsn.	CM, relative to job's RA
Gn, n=0,1,...,6	Gn,	CM, change option "n"

OLD COMMAND	NEW COMMAND	MEANING
H,cp.		Local files of job at control point "cp"
H,A.		All jobs and queue files and system FNT entries
H,I.	Q,IN.	Input queue
H,O.	Q,PR.	Print queue
H,P.	Q,PU.	Punch queue
H,C.		Common files
	H	System file, fast attach files
H,R.	R	Rolled out jobs
H,T.	R	Timed/event rolled out jobs
I	I	BATCHIO equipment status
J,cp.	J,jsn.	Job status of a job at a CP
K,cp.	K,jsn.	K display of a job at a CP
L,cp.		L display of a job at a CP
	L	System L display

OLD COMMAND	NEW COMMAND	MEANING
M,.	M,.	ECS, absolute
M,cp.	M,jsn.	ECS, relative to job's RA
Mn, n=0,1,...,6	Mn,	ECS, change option "n"
O,SUB CONTROL POINT STATUS.	O,SCP.	TAF
O,TASK LIBRARY DIRECTORY.	O,TLD.	TAF
O,TRANSACTION TERMINAL STATUS.	O,TST.	TAF
P,.	P,.	Status of all PP's
P,cp.	P,jsn.	PP's assigned to a job
Q	Q,IN	Input queue
	R	Rolled out jobs
	Q,PR. and Q,PL. and Q,PU.	Output queue
	Q,.	All queued files
	Q,WT.	Terminal and error (wait) queue
R		EXPORT/IMPORT
	R	Rolled job (not at CP)

OLD COMMAND	NEW COMMAND	MEANING
SET,abcd.	SET,abcd.	Select displays for "right blank" key
S	S	Service class queue and execution control
T	T	Timesharing (IAF) status
	W	CPUMTR/MTR queues
Y	Y	Monitor function table
Z	Z	Display directory
+ (	+ (	Page forward
-)	-)	Page backward
right blank	right blank	Toggle through 4 displays

Job Initiation

OLD COMMAND	NEW COMMAND	MEANING
AUTO.	AUTO.	All enabled subsystems
cp.CDCnnnn.	CDCnnnn.	CDCS
cp.EXPnnnn.		EXPORT/IMPORT
	FOTD,lfn,lo.	Family Ordinal Table L display
IAFnnnn.	IAFnnnn.	IAF
cp.IO.	BIO.	BATCHIO
cp.MAGNET.	MAGnnnn.	MAGNET
MAINTENANCE.	MAINTENANCE.	All enabled subsystems and maintenance jobs
	MAPnnnn.	MAP III
cp.MCSnnnn.	MCSnnnn.	MCS
cp.MSSnnnn.	MSSnnnn.	MSS
cp.NAMnnnn.	NAMnnnn.	NAM
	QDSPLAY,jsn.	Display queued file on L display

OLD COMMAND	NEW COMMAND	MEANING
cp.RBFnnnn.	RBFnnnn.	RBF
STMnnnn.	STMnnnn.	STM
STIMULATOR.		
	SUBSYST,lfn,lo.	L display of subsystem status
TAFnnnn.	TAFnnnn.	TAF
TELEX.		TELEX
X.job.	X.job.	Job "job"

Channel Commands

OLD COMMAND	NEW COMMAND	MEANING
ACNn.	ACN,n.	Activate channel n.
CFRn.	CFR,n.	Clear ECS flag register bit n.
DCHn.	DCH,n.	Drop channel n.
DCNn.	DCN,n.	Disconnect channel n.
DOWN,CHn. DOWN,CHn,EQn.	DOWN,CHn. DOWN,CHn,EQn.	Down channel n.
DOWN,MCHn. DOWN,MCHn,EQn.	DOWN,MCHn. DOWN,MCHn,EQn.	Down mux channel n.
FCNn. FCNn,m.	FCN,n. FCN,n,m.	Function channel n with zero. Function channel n with m.
IANn.	IAN,n.	Input to channel A register from channel n.
LDC,n.	LDC,n.	Load channel A register with n.
MCHn.	MCH,n.	Master clear channel n.
OANn.	OAN,n.	Output from channel A register to channel n.
SFRn.	SFR,n.	Set ECS flag register bit n.

OLD COMMAND	NEW COMMAND	MEANING
UP,CHn.	UP,CHn.	Up channel n.
UP,CHn,EQn.	UP,CHn,EQn.	
UP,MCHn.	UP,MCHn.	Up mux channel n.
UP,MCHn,EQn.	UP,MCHn,EQn.	

Equipment Commands

OLD COMMAND	NEW COMMAND	MEANING
ACCOUNT,eq.	(use X.AFD.)	Copy contents of account dayfile to a file.
cp.ASSIGN,eq.	ASSIGN,jsn,eq.	Assign equipment eq to job's request.
BKSPeq. BKSPeq,n.	BKSP,eq. BKSP,eq,n.	Backspace n logical records on print equipment eq.
BKSPFeq. BKSPFeq,n.	BKSPF,eq. BKSPF,eq,n.	Backspace n logical files on print equipment eq.
BKSPRUeq,n.	BKSPRU,eq,n.	Backspace n PRU's on print equipment eq.
CONTINUEeq.	CONTINUE,eq.	Resume printing of equipment eq.
CPeq,n.	CP,eq,n.	Set ID=n on card punch equipment eq.
CReq,n.	CR,eq,n.	Set ID=n on card reader equipment eq.
	DOWN,EQeq.	Discontinue use of equipment eq.
DAYFILE,eq.	(use X.DFD.)	Copy contents of system dayfile to a file.

OLD COMMAND	NEW COMMAND	MEANING
ERRLOG,eq.	(use X.ELD.)	Copy contents of error log dayfile to a file.
ENDeq. ENDeq,n.	END,eq. END,eq,n.	Terminate BATCHIO equipment eq.
FORMAT,eq.	FORMAT,eq.	Reverses current format pending status of equipment eq.
IDLEFAMILY,eq.	IDLEFAMILY,eq.	Do not allow new files to be accessed.
FORMeq,n.	FORM,eq,n.	Set FC=n on equipment eq.
INITIALIZE,eq,op.	INITIALIZE,op,eq1, eq2,eq3,eq4,eq5.	Initialize type op files on equipments eq1-eq5.
LOAD,eq. LOAD,eq,n.	LOAD,eq. LOAD,eq,n.	Load job with ID=n from equipment eq.
LPeq,n. LQeq,n. LReq,n. LSeq,n. LTeq,n.	LP,eq,n. LQ,eq,n. LR,eq,n. LS,eq,n. LT,eq,n.	Set ID=n on line printer equipment eq.
MSAL,x=eq.	MSAL,x=eq.	Assign job files of type x to equipment eq.
MOUNT,eq. MOUNT,eq,P.	MOUNT,eq. MOUNT,eq,P.	Load removable mass storage equipment eq.
OFFeq.	OFF,eq.	Logically turn off equipment eq.

OLD COMMAND	NEW COMMAND	MEANING
ONeq.	ON,eq.	Logically turn on equipment eq.
REDEFINE,eq.	REDEFINE,eq.	Redefine mass storage equipment eq.
REPEATeq. REPEATeq,n.	REPEAT,eq. REPEAT,eq,n.	Repeat the current operation on BATCHIO equipment eq n times.
RERUNeq. RERUNeq,n.	REPRINT,eq./ REPUNCH,eq. REPRINT,eq,n./ REPUNCH,eq,n.	Reenter the print or punch job from equipment eq into the output queue.
SCRATCH,eq.	SCRATCH,eq.	Set VSN=SCRATCH on tape equipment eq.
SKIPeq. SKIPeq,n.	SKIP,eq. SKIP,eq,n.	Skip forward n logical records on print equipment eq.
SKIPFeq. SKIPFeq,n.	SKIPF,eq. SKIPF,eq,n.	Skip forward n logical files on print equipment eq.
SKIPRUeq,n.	SKIPRU,eq,n.	Skip forward n PRU's on print equipment eq.
STOPeq.	STOP,eq.	Stop printing on equipment eq.
SUPPRESSeq.	SUPPRESS,eq.	Suppress carriage control on printer equipment eq.

OLD COMMAND	NEW COMMAND	MEANING
TEMP=eq1,eq2,....	TEMP=eq1,eq2,....	Reverse current set or clear condition of allowing temporary files on equipment eq.
TRAINeq,n.	TRAIN,eq,n.	Define print train type n on print equipment eq.
UNLOAD,eq.	UNLOAD,eq.	Physically and logically unload tape or removable mass storage device eq.
	UP,EQeq.	Begin using equipment eq.
VALIDATE,eq.	VALIDATE,eq.	Initiate validation of equipment eq.
VSN,eq.	VSN,eq.	Clear VSN on tape equipment eq.
VSN,eq,nnn.	VSN,eq,nnn.	Set VSN=nnn on tape equipment eq.

Job Control

OLD COMMAND	NEW COMMAND	MEANING
DISABLE,ACCOUNT. ENABLE,ACCOUNT.		
DISABLE,AUTOROLL. ENABLE,AUTOROLL.		
	DISABLE,LOGGING. ENABLE,LOGGING.	
DISABLE,FILE STAGING. ENABLE,FILE STAGING.	DISABLE,FILE STAGING. ENABLE,FILE STAGING.	
DISABLE,MSS MASTER. ENABLE,MSS MASTER.	DISABLE,MASTER MSS. ENABLE,MASTER MSS.	Note new format of these commands.
DISABLE,MS VALIDATION. ENABLE,MS VALIDATION.	DISABLE,MS VALIDATION. ENABLE,MS VALIDATION.	
DISABLE,PF VALIDATION. ENABLE,PF VALIDATION.	DISABLE,PF VALIDATION. ENABLE,PF VALIDATION.	
DISABLE,PRIORITY AGING. ENABLE,PRIORITY AGING.		
DISABLE,REMOVABLE PACKS. ENABLE,REMOVABLE PACKS.	DISABLE,REMOVABLE PACKS. ENABLE,REMOVABLE PACKS.	
DISABLE,SECONDARY USER CARDS. ENABLE,SECONDARY USER CARDS.	DISABLE,SECONDARY USER CARDS. ENABLE,SECONDARY USER CARDS.	

OLD COMMAND	NEW COMMAND	MEANING
DISABLE,USER ECS.	DISABLE,USER ECS.	
ENABLE,USER ECS.	ENABLE,USER ECS.	
DISABLE,VALIDATION.		
ENABLE,VALIDATION.		
DISABLE,BATCHIO.	DISABLE,BIO.	
ENABLE,BATCHIO.	ENABLE,BIO.	
	ENABLE,BIO,cp.	
DISABLE,CDCS.	DISABLE,CDC.	
ENABLE,CDCS.	ENABLE,CDC.	
	ENABLE,CDC,cp.	
DISABLE,EI200.		
ENABLE,EI200.		
DISABLE,IAF.	DISABLE,IAF.	
ENABLE,IAF.	ENABLE,IAF.	
DISABLE,MAGNET.	DISABLE,MAG.	
ENABLE,MAGNET.	ENABLE,MAG.	
	ENABLE,MAG,cp.	
	DISABLE,MAP.	
	ENABLE,MAP.	
	ENABLE,MAP,cp.	
DISABLE,MCS.	DISABLE,MCS.	
ENABLE,MCS.	ENABLE,MCS.	
	ENABLE,MCS,cp.	
DISABLE,MSS.	DISABLE,MSS.	
ENABLE,MSS.	ENABLE,MSS.	
	ENABLE,MSS,cp.	

OLD COMMAND	NEW COMMAND	MEANING
DISABLE,NAM.	DISABLE,NAM.	
ENABLE,NAM.	ENABLE,NAM.	
	ENABLE,NAM,cp.	
DISABLE,RBF.	DISABLE,RBF.	
ENABLE,RBF.	ENABLE,RBF.	
	ENABLE,RBF,cp.	
	DISABLE,STM.	
	ENABLE,STM.	
DISABLE,TAF.	DISABLE,TAF.	
ENABLE,TAF.	ENABLE,TAF.	
	ENABLE,TAF,cp.	
DISABLE,TELEX.		
ENABLE,TELEX.		
BLITZ.	(use DROP,jsn.)	Drop all executing jobs except subsystems.
CHECK POINT SYSTEM.	CHECK POINT SYSTEM.	Check point system.
cp.CKP.	CKP,jsn.	Checkpoint job.

OLD COMMAND	NEW COMMAND	MEANING
cp.COMMENT.comment cp.*comment	COMMENT,jsn,comment	Enter comment into job's dayfile.
cp.CFO,command	CFO,jsn,command	Enter command into job field length.
cp.DIS.	DIS,jsn.	Initiate DIS on existing job.
cp.DROP.	DROP,jsn.	Drop job at CP.
DIAL,nn,message	DIAL,jsn,message	Send message to timesharing job.
cp.ENPR,n.	(use DIS ENPR)	Set CPU priority on job.
cp.ENQP,n.	ENQP,jsn,n.	Set queue priority on job.
cp.ENTL,n.	(use DIS ENTL)	Set job step time limit on job.
ENID,n,fnt.	(use QALTER)	Enter ID=n on queued file.
ENPR,n,fnt.	ENQP,jsn,n.	Set queue priority on queue file.
ENQP,n,fnt.	ENQP,jsn,n.	Set queue priority on queue file.

OLD COMMAND	NEW COMMAND	MEANING
EVICT,fnt.	KILL,jsn./ OVERRIDE,jsn.	Terminate queued file or executing job. Logoff terminal.
cp.GO.	GO,jsn.	Clear pause bit for jobs.
	GO,.	Clear pause bit for SYSTEM control point.
IDLE.	IDLE.	Idle system.
cp.IDLE.	IDLE,subsy.	Idle a subsystem.
K.entry	K.entry	Enter K display data.
cp.KILL.	KILL,jsn.	Drop job. Ignore EXIT processing.
L.entry	L.entry	Enter L display data.
MESSAGE,message		Change IAF login message.
cp.NOGO.	PAUSE,jsn.	Set pause bit and nogo flag for job.

OLD COMMAND	NEW COMMAND	MEANING
	PAUSE,.	Set pause bit for SYSTEM control point.
cp.OVERRIDE.	OVERRIDE,jsn.	Drop job, leaving interlocks unchanged.
cp.OFFSWn.	OFFSW,jsn,n.	Turn off sense switch n of job.
cp.ONSWn.	ONSW,jsn,n.	Turn on sense switch n of job.
PURGE,fnt.	DROP,jsn,qt. qt=IN,PR,PU, PL,TT,WT,ALL	Drop queued file or rolled out job.
PURGEALL,n. n=O n=I n=P n=R n=T	DROP,,qt. DROP,,PR. DROP,,IN. DROP,,PU. DROP,jsn. DROP,jsn.	Drop all queued files or rolled jobs of type n.
ROLLIN,fnt.	ROLLIN,jsn,L.	Rollin job. Optionally lock job to stay at a CP.

OLD COMMAND	NEW COMMAND	MEANING
cp.RERUN. cp.RERUN,n.	RERUN,jsn. RERUN,jsn,n.	Rerun job with queue priority n.
cp.ROLLOUT. cp.ROLLOUT,n.	ROLLOUT,jsn,n.	Rollout job for n scheduler cycles.
cp.STOP.	STOP,subsy.	Terminate subsystem.
cp.STEP. cp.STEP,fcn. cp.STEP,fcn,n,m.	STEP,jsn. STEP,jsn,fcn. STEP,jsn,fcn,n,m.	Step job on function fcn.
STEP,fcn. STEP,fcn,n,m.	STEP,,fcn. STEP,,fcn,n,m.	Step on monitor function fcn.
WARN.	WARN.	Clear warning message.
WARN,message	WARN,message	Send message to all timesharing jobs and to all new jobs as they log in.

System Control

OLD COMMAND	NEW COMMAND	MEANING
DATE.yy/mm/dd.	DATE.yy/mm/dd.	
DEBUG.	DEBUG.	
DELAY,JSa,CRb,ARc,JAd,CSe.	DELAY,JSa,CRb,ARc, MXd,MNe,JQf.	
ENGR.	ENABLE,ENGR./ DISABLE,ENGR.	
	LOG,n.	Log completion of error condition n in error log and clear error on A,OPERATOR display.
LOCK.	LOCK.	
QUEUE,ot,qt,LPa,OPb,UPc,INd.	QUEUE,sc,qt,LPa,UPb,ILc,IPd, WFe.	
SERVICE,ot,PRa,CPb,CMc,NJd, FLe,AMf,ECg,EMh,FCk,Csm, FSn,DSp.	SERVICE,sc,PRa,CPb,CMc,NJd, FLc,AMf,ECg,EMh,TPi,TDj,FCk, CSm,FSn,DSp.	
STEP.	STEP.	

OLD COMMAND	NEW COMMAND	MEANING
TIME.hh.mm.ss.	TIME.hh.mm.ss.	
UNLOCK.	UNLOCK.	
UNSTEP.	UNSTEP.	
cp.n,m. cp.n+m. cp.n-m. cp.n,,m. cp.n+,m. cp.n-,m. cp.n,b,m. cp.n+b,m. cp.n-b,m. cp.n,Dm cp.n+Dm cp.n-Dm	(use absolute form of command with relative memory display on left screen)	CM change, relative to job's RA
n,,m. n,b,m. n,m. n-m. n+m. n,,m. n+,m. n-,m. n,b,m. n+b,m. n-b,m. n,Dm n+Dm n-Dm	(no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change)	CM change, absolute (now requires absolute memory display to be on left screen)

OLD COMMAND	NEW COMMAND	MEANING
cp.En,m. cp.En+m. cp.En-m. cp.En,,m. cp.En+,m. cp.En-,m. cp.En,b,m. cp.En+b,m. cp.En-b,m. cp.En,Dm cp.En+Dm cp.En-Dm	(use absolute form of command with M,jsn display on left screen)	ECS change, relative to to job's ECS RA
En,m. En+m. En-m. En,,m. En+,m. En-,m. En,b,m. En+b,m. En-b,m.	(no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change) (no change)	ECS change, absolute (now requires M,. display to be on left screen)
99.	99.	Disable overlay loading.
=		Toggle between absolute and relative display.

APPENDIX C

2551 MEMORY UTILIZATION

This is a rewrite and expansion of SIM's (Software Information Memorandums) N053 and N054. It provides the data necessary to compute the requirements for 2551 memory and allows the user to establish the system memory configurations needed to support these requirements when using Network Products at levels 543, 552, and 562. Section 1 provides the computation for Table Space Requirements. Section 2 provides the data for computing the Buffer Space Requirements. Total 2551 memory requirements are determined by adding the Table Space and Buffer Space requirements and then using the tabulation in Section 3 to determine the configuration necessary to support these requirements. The Tabulation in Section 3 provides the memory space available for Tables and Buffers for various combinations of software and hardware configurations.

Sec. 1 Table Space Memory Computation

The total words required for table space is computed by the following:

Table Space = 50 x total number of configured lines
+ 64 x total number of configured devices
+ 114 x number of configured Remote Link trunks.

Sec. 2 Buffer Space Memory Computations

For each 2551 in the configuration, use the following table to calculate the number of 2551 memory words required for data buffers. Multiply the number of active devices for each traffic type and speed as described by the buffer words required for that entry. The sum of these provides the total Buffer Space requirements for this 2551. Note that Buffer Space must be included for each active device connected to a Packet Switching Network as well as Buffer Space for the X.25 line(s) to the Packet Switching Network.

Words of Buffer Space Required Per Active Device as Described.

Traffic Type	Line Speed (BPS) 300	1200	2400	4800	9600	19200
Mode 4 Batch						
per active output device	--	--	1792	1792	1792	1792
per active input device	--	--	576	576	576	576
HASP M/L						
per active output device	--	--	960	960	960	960
per active input device	--	--	256	256	256	448
BISYNC						
per active output device	--	--	960	960	960	960
per active input device	--	--	200	200	200	200
High Volume Interactive per active input/output device	256	256	512	1024	1024	--
Medium Volume Interactive per active input/output device	176	176	304	560	560	--
Low Volume Interactive per active input/output device	96	96	96	96	96	--
Remote Link Trunk per active trunk	--	--	--	--	1344	1344
X.25 per active line	--	--	400	400	400	400

Sec. 3 2551 Memory Configuration

Total the previously computed Table Space and Buffer Space requirements to determine the total Buffer/Table Space needed. The table below defines the Buffer/Table Space available for the various 2551 hardware and terminal/trunk software configurations. Select the terminal/trunk configurations combination required to support the described network and follow the table across to determine the memory configurations necessary to provide the required Buffer/Table Space in thousands (decimal). If required space exceeds the limits of available space, the network must be configured on multiple 2551s. However, if required memory space exceeds available space by only one or two thousand words, the configuration may be acceptable since CCP regulation mechanisms will accomodate momentary peak buffer requirements. The entry --- means insufficient buffer space to complete initialization within the NPU size.

2551 Available Buffer/Table Space

TIP Configuration								2551 Memory Size			
LOCAL (HIP)	TRUNK (HLIP)	ASYNC	ASYNC EXT.	MODE 4	HASP	BISYN	X.25	64K	81K	96K	128K
X			X	X	X	X	X	---	---	7	31
	X		X	X	X	X	X	---	---	3	26
X	X		X	X	X	X	X	---	---	---	26
X		X		X	X	X	X	---	---	8	32
	X	X		X	X	X	X	---	---	5	27
X	X	X		X	X	X	X	---	---	3	27
X				X	X	X	X	---	---	17	33
	X			X	X	X	X	---	---	13	33
X	X			X	X	X	X	---	---	12	33
X			X		X	X	X	---	---	16	33
	X		X		X	X	X	---	---	13	33
X	X		X		X	X	X	---	---	11	33
X		X			X	X	X	---	---	18	34
	X	X			X	X	X	---	---	14	34
X	X	X			X	X	X	---	---	13	34
X					X	X	X	---	10	26	35
	X				X	X	X	---	7	23	35
X	X				X	X	X	---	5	21	35
X			X	X		X	X	---	---	12	31
	X		X	X		X	X	---	---	9	31
X	X		X	X		X	X	---	---	7	31
X		X		X		X	X	---	---	13	32
	X	X		X		X	X	---	---	10	32
X	X	X		X		X	X	---	---	8	32
X				X		X	X	---	6	22	33
	X			X		X	X	---	2	19	33
X	X			X		X	X	---	---	17	33
X			X			X	X	---	6	22	34
	X		X			X	X	---	2	18	33
X	X		X			X	X	---	---	17	33
X		X				X	X	---	7	23	35
	X	X				X	X	---	4	20	35
X	X	X				X	X	---	---	18	35
X						X	X	---	16	31	36
	X					X	X	---	12	28	35
X	X					X	X	---	11	27	35
X			X	X	X		X	---	---	15	32
	X		X	X	X		X	---	---	12	31
X	X		X	X	X		X	---	---	10	31
X		X		X	X		X	---	---	16	33
	X	X		X	X		X	---	---	13	32
X	X	X		X	X		X	---	---	11	32
X				X	X		X	---	9	25	33
	X			X	X		X	---	5	22	33
X	X			X	X		X	---	4	20	33
X			X		X		X	---	9	25	34
	X		X		X		X	---	5	21	34
X	X		X		X		X	---	4	20	34
X		X			X		X	---	10	26	35
	X	X			X		X	---	6	23	35
X	X	X			X		X	---	5	21	35
X					X		X	3	19	31	36
	X				X		X	---	15	30	35
X	X				X		X	---	14	30	35

2551 Available Buffer/Table Space (Cont.)

TIP Configuration								2551 Memory Size			
LOCAL (HIP)	TRUNK (HLIP)	ASYNC	ASYNC EXT.	MODE 4	HASP	BISYN	X.25	64K	81K	96K	128K
X			X	X			X	---	6	22	32
	X		X	X			X	---	---	18	32
X	X		X	X			X	---	---	17	32
X		X		X			X	---	7	23	33
	X	X		X			X	---	3	20	33
X	X	X		X			X	---	---	18	33
X				X			X	---	16	30	34
	X			X			X	---	12	28	34
X	X			X			X	---	11	27	34
X			X				X	---	16	30	35
	X		X				X	---	12	28	34
X	X		X				X	---	11	27	34
X		X					X	---	17	31	36
	X	X					X	---	13	29	35
X	X	X					X	---	12	28	35
X							X	10	26	37	37
	X						X	6	22	31	36
X	X						X	4	21	31	36
X			X	X	X	X		---	6	22	31
	X		X	X	X	X		---	2	18	31
X	X		X	X	X	X		---	---	17	31
X		X		X	X	X		---	7	23	32
	X	X		X	X	X		---	4	20	32
X	X	X		X	X	X		---	---	18	32
X				X	X	X		---	16	32	33
	X			X	X	X		---	12	28	33
X	X			X	X	X		---	11	27	33
X			X		X	X		---	16	32	34
	X		X		X	X		---	12	28	33
X	X		X		X	X		---	11	27	33
X		X			X	X		---	17	33	35
	X	X			X	X		---	13	29	34
X	X	X			X	X		---	12	28	34
X					X	X		9	26	35	35
	X				X	X		6	22	35	35
X	X				X	X		4	21	35	35
X			X	X		X		---	11	27	31
	X		X	X		X		---	8	24	31
X	X		X	X		X		---	6	22	31
X		X		X		X		---	13	29	33
	X	X		X		X		---	9	25	32
X	X	X		X		X		---	8	24	32
X				X		X		5	21	33	33
	X			X		X		---	18	33	33
X	X			X		X		---	16	32	33
X			X			X		5	21	34	34
	X		X			X		---	18	34	34
X	X		X			X		---	16	32	34
X		X				X		7	23	35	35
	X	X				X		3	19	35	35
X	X	X				X		---	18	34	35
X						X		15	31	36	36
	X					X		11	28	35	35
X	X					X		10	26	35	35
X			X	X	X			---	14	31	32
	X		X	X	X			---	11	27	32
X	X		X	X	X			---	10	26	32
X		X		X	X			---	16	32	33
	X	X		X	X			---	12	28	33
X	X	X		X	X			---	11	27	33
X				X	X			8	24	34	34
	X			X	X			5	21	33	33
X	X			X	X			3	19	33	33

2551 Available Buffer/Table Space (Cont.)

TIP Configuration							2551 Memory Size			
LOCAL (HIP)	TRUNK (HLIP)	ASYNC	ASYNC EXT.	MODE 4	HASP	BISYN	X.25	64K	81K	96K	128K
X			X		X			8	24	34	34
	X		X		X			4	20	34	34
X	X		X		X			3	19	34	34
X		X			X			9	25	35	35
	X	X			X			6	22	35	35
X	X	X			X			4	20	35	35
X					X			18	34	36	36
	X				X			14	30	36	36
X	X				X			13	29	36	36
X			X	X				5	21	32	32
	X		X	X				---	18	32	32
X	X		X	X				---	17	32	32
X		X		X				6	22	34	34
	X	X		X				3	19	33	33
X	X	X		X				---	17	33	33
X				X				15	31	34	34
	X			X				11	27	34	34
X	X			X				10	26	34	34
X			X					15	31	35	35
	X		X					11	27	35	35
X	X		X					10	26	35	35
X		X						16	32	36	36
	X	X						13	29	36	36
X	X	X						11	28	36	36
X								25	37	37	37
	X							21	36	36	36
X	X							20	36	36	36

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 2.0 Level 562/552 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

CORPORATE HEADQUARTERS, P.O. BOX 0, MINNEAPOLIS, MINN. 55440
SALES OFFICES AND SERVICE CENTERS IN MAJOR CITIES THROUGHOUT THE WORLD

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CONTROL DATA CORPORATION