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computer systems

COMMUNICATOR

3000

Issue No. 16

HP Computer Museum
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TABLE OF CONTENTS

EDITOR'S NOTE

Everyone who is on speaking terms with an HP 3000 Series II will find an item of special interest in this issue - the introduction of MPE III, a new version of the Multiprogramming Executive Operating System.

Our lead article, "Introducing MPE III," provides an overview of the salient characteristics of this new operating system. We hope the article, which includes brief descriptions of the major differences between MPE II and MPE III, will help smooth your upcoming conversions. Of particular note is the listing of MPE II error messages and warnings with the corresponding text under MPE III. A more formal introduction to MPE III is contained in the Series II Software Update section.

We at HP are excited about the enhancements contained in MPE III and solicit your comments and questions concerning this new product.

Other articles in this issue deal with a variety of topics including a DS/3000 enhancement which establishes communication between an HP 3000 and an HP 2026, the terminal/MPE interaction of various character and escape key sequences, and the multi-leaving remote job entry capabilities of the HP 3000.

Under BAUD LINE we've included several short articles which we hope you will find both interesting and informative. If you have had difficulty performing memory dumps of the HP 3000 after a system crash, try following the procedures charted on page 157. And if COBOL is your area of concern, we have three offerings on the subject this issue from our resident COBOL guru, John Pavone.

As always, we invite your correspondence:

Editor
COMPUTER SYSTEMS - COMMUNICATOR 3000
HP General Systems Division
5303 Stevens Creek Boulevard
Santa Clara, CA 95050

Address your subscription and distribution correspondence to:

SUBSCRIPTION SUPERVISOR
COMPUTER SYSTEMS - COMMUNICATOR 3000
HP Computer Services Division
974 East Arques Avenue
Sunnyvale, CA 94086

INTRODUCING MPE III

Several major enhancements have been added to the Multiprogramming Executive Operating System (MPE) for Series II. Enough changes have been made, in fact, to consider the resulting product a new version of MPE: MPE III (Product Number HP32002B). All of these enhancements are designed to increase the capabilities of your system and, perhaps just as importantly, to make these capabilities more accessible and flexible.

The purpose of this article is tc provide an overview of these added features of MPE III and to advise you of those changes which could affect programs prepared and executed under MPE II. A more technical description of the enhancements can be found in the Series II Software Update section of this issue.

In a related development (see BAUD LINE), the format of the Master Installation Tape has been rearranged to facilitate the installation of software updates. Under the new arrangement, less disc space and about half the previous load time of one hour will be needed to install updates to MPE III.

SECTION ONE: ENHANCEMENTS

Hal Goodwin
HP General Systems Division

I. INCREASED CAPABILITIES

A. PRIVATE VOLUMES

MPE III will allow users to access removable disc packs (private volumes). Such packs will be supported on HP 7905 and HP 7920 disc drives.

Some features of private volumes are:

- Operate under MPE's accounting structure.
- Provide extendable disc storage.
- Auto-recognition of disc drives.
- On-line disc formatting (private volumes only -- not for system disc).

- Transportable between HP 3000 systems.
- Disc-to-disc copy.

B. TAPE LABELS

MPE III will allow users to read and write ANSI-standard tape labels, and read (but not write) IBM-standard tape labels. Some features of tape labels are:

- Protects tape files from inadvertent destruction by over-writing.
- Protects private files from unauthorized use.
- Provides automatic volume recognition; no operator =REPLY required, when using labeled tapes.
- Provides automatic reel switching; directs operator to mount next reel for multi-reel applications.
- Facilitates processing of tapes not created on HP computers.

II. USER/OPERATOR ENHANCEMENTS

A. UNIFIED COMMAND LANGUAGE

The Unified Command Language (UNCL) facility provides:

- On-line help facility. Syntax, description, and example of any MPE command can be obtained by typing :HELP.
- Improved error handling. Provides error messages that are easily understood. Allows user to enter :REDO command and correct erroneous entry instead of re-typing entire entry.
- Job control words and :IF, :ELSE, and :ENDIF commands allow user to control execution of programs and pass information from program to program and to Command Interpreter.
- User-defined commands allow users to combine several MPE commands into one user-defined command.

B. GENERIC NAMES

Generic names allows the use of certain "wild card" characters in many commands. For example, entering :LISTF n@ will cause a listing of all files whose first character is n.

C. DISC CONDENSE

Condensing of private volume disc areas can be accomplished on line. It is no longer necessary to reload disc files to accomplish compression.

D. SERIAL DISC

Commands, which under Mpe II were reserved exclusively for use with mag tape, can now also specify disc. This feature may be particularly useful in conjunction with the :STORE/:RESTORE and :SYSDUMP commands.

E. MULTI-VOLUME STÓRE TAPES

The :RESTORE operation for a single file on a multi-volume store tape does not require successive mounting of all volumes to serially scan for the proper file.

III. SUMMARY OF CHANGES BETWEEN MPE II AND MPE III

In addition to the new features listed above, there are many enhancements in MPE III, which will result in changes in the way some commands and intrinsics operate, and several new commands and intrinsics have been added. A summary of these changes is as follows:

- Changes to commands
- Changes to intrinsics
- Changes in password handling
- Changes to console interface
- Changes to system failure messages
- New files in PUB.SYS
- Internal MPE changes.

A. CHANGES TO COMMANDS

With the :SHOWJOB, :SHOWIN, :SHOWOUT, and :SHOWDEV commands, the Command Interpreter reports most syntax errors and then attempts to execute the command. Under MPE II, command execution would not continue after an error had been reported.

The :HELLO and :JOB commands try to log the user on, if at all possible. Most syntax or semantic errors are reported, then ignored (security provisions are unchanged). Although their formats are different, the contents of log-on and log-off messages are unchanged.

Operation of :TELL command is altered. If a particular user identification is specified, all jobs and sessions which qualify receive the message. Under MPE II, only one user would receive the message. Also, @J, @S, and @ are new options.

Leading blanks before commands are ignored, and null (blank) command records are ignored.

Many errors have been converted to warning messages with appropriate defaults. These are documented below.

Error numbers returned by the COMMAND intrinsic have been changed. In all cases, except errors involving the file system, the PARMNUM is the index of the particular parameter in error. For file system problems, such as an error on a file open, an FCHECK is executed and the file system error number is returned in PARMNUM. In cases involving execution problems (as opposed to parsing problems), PARMNUM is 0. Warnings are not reported to callers of the COMMAND intrinsic.

1. A listing of the error message changes is presented below.

MPE II ERR NO.	MPE III ERR NO.	CHANGE
None	Error 207	The :FILE command requires at least two parameters. (Having just the file name would not cause an error under MPE II.)
None	Error 261	The DEV parameter of the :FILE command allowed output priority and/or number of copies for any file. For non-output devices this resulted in a run-time error. MPE III checks for this when the command is parsed.
If neg, none; if pos, 30	Error 266	The number of records in a file must be positive; between 1 and 2,147,483,647. (MPE II did not detect negative numbers.)
None	Error 268	Number of initially allocated extents must be between 1 and 32. (MPE II did not detect negative numbers.)
None	Error 271	Record size must be a positive integer. (MPE II did not detect negative numbers.)
None	Warning 420	Level of :LISTF not between -1 and 2. Defaults to 2. MPE II defaulted without comment if between -32768 and 32767, and gave error 30 if not an integer.
None	Error 646	Dumpfile name for SYSDUMP must be either a back reference to a file equate or $NULL. MPE II was much less critical, which resulted in run-time errors.

None	Error 726	A blank list file name is disallowed for :LISTACCT, :LISTGROUP, :LISTUSER, and :LISTVS commands.
None	Warning 1021	BREAK detected during :STORE operation. (MPE II did not warn the user.)
Warning	Error 1442	Disallow logon due to account being out of time.
Warning	Error 1443	Disallow logon due to group being out of time.
None	Warning 1457	TERM= parameter only valid for sessions.
None	Error 1503	Junk after "@S" in :SHOWJOB command. (Was not detected by MPE II.)
None	Error 1504	Junk after "@J" in :SHOWJOB command. (Was not detected by MPE II.)
None	Error 1700	:JOBPRI command did not detect extraneous parameters.
None	Errors 1703, 1704,1705	:JOBPRI command did not detect the fact that the default JOBPRI could exceed the MAXPRI.

2. The following table lists MPE II errors that have been changed to warnings on MPE III.

(a) :FILE AND :BUILD COMMANDS

MPE II ERROR	MPE III WARNING	DESCRIPTION
21	202	CODE= value is optional -- defaults to 0.
20	211	The domain of a system-defined file such as $STDLIST may not be changed. Any attempt to do so is overridden.
21	215	Extraneous delimiters in keyword lists are ignored.
27	221	Specification of CCTL overrides previous NOCCTL.
27	222	Specification of NOCCTL overrides previous CCTL.
28	223	Specification of TEMP overrides previous DEL.
28	224	Specification of TEMP overrides previous SAVE.
28	225	Specification of SAVE overrides previous DEL.

28	226	Specification of SAVE overrides previous TEMP.
28	227	Specification of DEL overrides previous TEMP.
28	228	Specification of DEL overrides previous SAVE.
24	229	Specification of SHR access overrides previous EXC.
24	230	Specification of SHR access overrides previous EAR.
24	231	Specification of EAR access overrides previous EXC.
24	232	Specification of EAR access overrides previous SHR.
24	233	Specification of EXC access overrides previous EAR.
24	234	Specification of EXC access overrides previous SHR.
27	235	Specification of NOBUF overrides previous BUF.
27	236	Specification of MR access overrides previous NOMR.
27	237	Specification of NOMR access overrides previous MR.
27	238	Specification of MULTI overrides previous NOMULTI.
27	239	Specification of NOMULTI overrides previous MULTI.
27	240	Specification of WAIT overrides previous NOWAIT.
27	241	Specification of NOWAIT overrides previous WAIT.
27	244	Access specification overrides previous access.
24	248	BUF parameter overrides previous NOBUF.
24	249	BUF parameter overrides previous BUF parameter.
27	252	File code overrides previous file code.
27	256	DEVICE= parameter overrides previous occurrence in command. All sub-fields are reset to their default values before the parameter list is parsed.
27	265	Similar to Warning 256, for DISC= parameter.
27	270	Similar to Warning 256, for REC= parameter.
None	287	Similar to Warning 256, for LABEL= parameter.

NOTE: In general, for the :FILE and :BUILD commands, if a keyword is specified redundantly or inconsistently, the user is warned and the latest (rightmost) occurrence is used.

(b) :PURGE AND :SAVE COMMANDS

MPE II ERROR	MPE III WARNING	DESCRIPTION
20	386	:PURGE command syntax requires a comma between the file name and TEMP, if present. With MPE III, :PURGE accepts a semi-colon as well, although it issues a warning.
20	387	:SAVE command syntax requires a comma between the name $OLDPASS and its permanent file name. With MPE III, :SAVE accepts a semi-colon as well, although it issues a warning.

(c) FILE ACCESS RESTRICTION MASKS

MPE II ERROR	MPE II WARNING	DESCRIPTION
22	505	When save access is specified for a file access mask, the user is warned and the mistake is ignored. Parsing of the mask continues, and if otherwise OK, the command is executed.
22	506	Same as Warning 505, for save access at account level.
22	511	Creator only access is inappropriate for groups and is ignored.
22	512	AL, GL, CR, GU are inappropriate for accounts and are ignored.
25	513	Read access redundantly specified.
25	514	Append access redundantly specified.
25	515	Write access redundantly specified.
25	516	Lock access redundantly specified.
25	517	Execute access redundantly specified.
25	518	Save access redundantly specified.
25	519	Access mode redundantly specified in this access list.

(d) :PREPRUN, :RUN, AND :PREP COMMANDS

MPE II ERROR	MPE III WARNING	DESCRIPTION
21	606	Extraneous delimiter (i.e., nothing between two delimiters). Ignored.
27	620	Keyword redundantly specified. Second occurrence taken as the desired value.

(e):ALTACCT, :ALTUSER, :ALTGROUP, :ALTVSET, :NEWUSER, :NEWGROUP, :NEWVSET COMMANDS

MPE II ERROR	MPE III WARNING	DESCRIPTION
24	741	ACCESS= specified for user. Inappropriate, ignored.
27	742	ACCESS= redundantly specified. The access field is reinitialized and the new occurrence is parsed as if it were the only one encountered.
27	744	Same as Warning 742, for MAXPRI parameter.
24	745	MAXPRI inappropriate for :NEWGROUP or :ALTGROUP command. Ignored.
27	746	CAP= redundantly specified. Last list is used.
22	747	While parsing the capability list, two delimiters with nothing between them were found. This condition is ignored and parsing continues.
24	749	Inappropriate group capability specified for :NEWGROUP or :ALTGROUP command. Ignored.
25	750	A capability was redundantly specified. Ignored.
50	751, 752	Neither IA nor BA was specified for a user or an account, so both were added.
24	753	LOCATTR is inappropriate for groups and was ignored.
27	761	PASS= redundantly specified. Last value used.
24	765	HOME= appropriate only for :NEWUSER or :ALTUSER commands. Ignored for accounts and groups.
24	767	FILES= inappropriate for :NEWUSER, :ALTUSER. Ignored.
27	770	FILES= redundantly specified. Last value used.

24	771	CPU= inappropriate for users. Ignored.
27	776	CPU= redundantly specified. Last value used.
24	779	CONNECT= inappropriate for users. Ignored.
27	782	CONNECT= redundantly specified. Last value used.
50	785	Attempt to remove SM capability from SYS account was overridden.
54	787	Group CPU limit exceeded account limit. Request overridden; assigned limit equal to account limit.
54	788	Same as Warning 787, for CONNECT=.
54	789	Same as Warning 787, for FILES=.
52	790	Same as Warning 787, for CAP=.
53	793	User MAXPRI requested is greater than account MAXPRI. User limit lowered to account limit.
52	794	Same as Warning 793, for CAP=.
52	795	Same as Warning 793, for local attributes.
27	796	HOME= redundantly specified. Last group name used.
27	797	LOCATTR= redundantly specified. Last value used.

(f):STORE AND :RESTORE COMMANDS

MPE II ERROR	MPE III WARNING	DESCRIPTION
27	1007	FILES= redundantly specified. Last value used.
Various	1014	Unable to use file SYSLIST as requested by user. Listing forced to $STDLIST.
27	1041	DEV= redundantly specified. Last device or device class specified used.

(g) :HELLO, :JOB, :DATA COMMANDS

MPE II ERROR	MPE III WARNING	DESCRIPTION
21	1451	Extraneous delimiters. Ignored.
26	1452	Unknown keywords. Ignored.
28	1453	Extraneous "=" after HIPRI or RESTART. Ignored.
21	1454	Expected a value after the current keyword. The whole parameter is ignored.
27	1455	Keyword redundantly specified. Last value used.
26	1456	Numeric value for keyword expected, not found. Used default value.
48	1458	Invalid term type. Configuration value used.
22	1459	Invalid PRI. Used default value.
4	1460	SM or OP capability required to use HIPRI. Defaulted to maximum INPRI.
28	1461	HIPRI overriden by subsequent INPRI.
23	1462	INPRI requested below minimum value. Defaulted to lowest possible value.
23	1463	Requested INPRI exceeds maximum possible. Defaulted to maximum possible.
28	1464	INPRI overridden by subsequent HIPRI.
28	1465	OUTCLASS ignored for sessions or :DATA command.
22	1466	Invalid OUTCLASS specified. Uses previous value, if any, or default. Continues to parse output priority and number of copies parameters.
4	1467	User lacks ND capability. Since OUTCLASS implies use of a non-sharable device, it is disallowed. $STDLIST is used as default.
23	1468	User specified an OUTCLASS output priority less than one. Defaulted to 1.
31	1470	Numcopies value not integer. Default of 1 used.
23	1471	Maximum number of copies is 127. Numcopies defaulted to 127.

27	1472	Extraneous parameter to OUTCLASS keyword (beyond number of copies). Ignored.
28	1473	Restart only appropriate for jobs. Ignored.

3. While file system error message numbers under MPE III are the same as under MPE II, MPE III provides a greatly expanded list of system error messages in a new file named CATALOG.PUB.SYS. This increase in number permits each message to be more descriptive of the specific problem encountered and, thus, more helpful in suggesting the necessary corrective action.

The correspondence between MPE II and MPE III error messages is not one for one. For some MPE II messages, such as error 20, MPE III may return any one of several different errors or warnings. Applications which use the COMMAND intrinsic to examine specific CI error numbers should be tested under MPE III and adjusted accordingly. Also affected by this change, because it uses the COMMAND intrinsic, is the SYSTEM statement in BASIC.

What follows is a partial listing of the correspondences between MPE II and MPE III error messages. For additional information, please refer to the Error Messages and Recovery Manual (4/78 edition).

MPE II Error #	MPE III Error #	MESSAGE/WARNING
1	975	UNKNOWN COMMAND NAME. (CIERR 975)
1	1402	EXPECTED HELLO, :JOB, :DATA, OR (CMD) AS LOGON. (CIERR 1402)
1	1421	(COMMAND) LOGON IS MISSING RIGHT PARENTHESIS. (CIERR 1421)
1	1422	(COMMAND) LOGON IS MISSING LEFT PARENTHESIS. (CIERR 1422)
2	204	FILE COMMAND REQUIRES AT LEAST TWO PARAMETERS, INCLUDING THE FORMAL NAME OF THE FILE. (CIERR 204)
2	643	COMPILE STEP FAILED, NO PREP WAS DONE. (CIERR 643)
2	976	PROGRAM TERMINATED IN AN ERROR STATE. (CIERR 976)
2	989	PROGRAM ABORTED PER USER REQUEST. (CIERR 989)
3	977	COMMAND NOT ALLOWED IN SESSION MODE. (CIERR 977)
4	422	LISTF ,-1 ON THIS REQUIRES SM CAPABILITY. (CIERR 422)
4	423	LISTF ,-1 ON THIS REQUIRES AM CAPABILITY. (CIERR 423)
4	705	REPORT ON ENTIRE ACCOUNT REQUIRES ACCOUNT MANAGER CAPABILITY. (CIERR 705)
4	706	REPORT ON GROUP OTHER THAN LOGON REQUIRES ACCOUNT MANAGER CAPABILITY. (CIERR 706)
4	707	REPORT ON ALL ACCOUNTS REQUIRES SYSTEM MANAGER CAPABILITY. (CIERR 707)
4	708	REPORT ON ACCOUNT OTHER THAN LOGON REQUIRES SYSTEM MANAGER CAPABILITY. (CIERR 708)
4	724	EXECUTING THIS COMMAND ON ALL ACCOUNTS REQUIRES SYSTEM MANAGER CAPABILITY. (CIERR 724)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
4	725	EXECUTING THIS COMMAND ON ANY ACCOUNT OTHER THAN THE LOGON ACCOUNT REQUIRES SYSTEM MANAGER CAPABILITY. (CIERR 725)
4	850	! NAME CONTAINS SPECIAL CHARACTER(S) (CIERR 850)
4	955	THIS COMMAND REQUIRES OPERATOR (OP) CAPABILITY. (CIERR 955)
4	956	THIS COMMAND REQUIRES SYSTEM MANAGER (SM) CAPABILITY. (CIERR 956)
4	957	THIS COMMAND REQUIRES ACCOUNT MANAGER (AM) CAPABILITY. (CIERR 957)
4	958	THIS COMMAND REQUIRES ACCOUNT MANAGER (AM) OR SYSTEM MANAGER (SM) CAPABILITY. (CIERR 958)
4	959	THIS COMMAND REQUIRES COMMUNICATION SYSTEMS (CS) CAPABILITY. (CIERR 959)
4	962	THIS COMMAND REQUIRES PRIVILEGED MODE (PM) CAPABILITY. (CIERR 962)
4	963	THIS COMMAND REQUIRES INTERACTIVE ACCESS (IA) CAPABILITY. (CIERR 963)
4	964	THIS COMMAND REQUIRES BATCH ACCESS (BA) CAPABILITY. (CIERR 964)
4	965	THIS COMMAND REQUIRES SAVE FILES (SF) CAPABILITY. (CIERR 965)
4	1431	USER NEEDS IA CAPABILITY FOR SESSIONS. (CIERR 1431)
4	1432	USER NEEDS BA CAPABILITY FOR JOBS. (CIERR 1432)
4	1460	SYSTEM MANAGER (SM) OR OPERATOR (OP) CAP. REQUIRED. (CIWARN 1460)
4	1467	USER LACKS ND CAPABILITY. REQUIRED FOR OUTCLASS. $STDLIST USED. (CIWARN 1467)
5	200	MORE THAN 30 PARAMETERS TO BUILD COMMAND. (CIERR 200)
5	203	MORE THAN 30 PARAMETERS TO FILE COMMAND. (CIERR 203)
5	208	NO PARAMETERS MAY BE SUPPLIED WHEN BACK REFERENCING A FILE. (CIERR 208)
5	370	MAXIMUM OF 3 PARAMETERS. (CIERR 370)
5	380	PURGE HANDLES ONLY ONE FILE AT A TIME. (CIERR 380)
5	427	ONLY 3 PARAMETERS TO LISTF. (CIERR 427)
5	640	ONLY ONE PARAMETER, THE LIST FILE, IS ALLOWED. (CIERR 640)
5	642	ONLY ! PARAMETERS ALLOWED WITH THIS COMMAND. (CIERR 642)
5	730	ALTACCT CAN HANDLE A MAXIMUM OF 71 PARAMETERS. (CIERR 730)
5	731	ALTGROUP CAN HANDLE A MAXIMUM OF 71 PARAMETERS. (CIERR 731)
5	732	ALTUSER CAN HANDLE A MAXIMUM OF 71 PARAMETERS. (CIERR 732)
5	733	NEWACCT CAN HANDLE A MAXIMUM OF 71 PARAMETERS. (CIERR 733)
5	734	NEWGROUP CAN HANDLE A MAXIMUM OF 71 PARAMETERS. (CIERR 734)
5	735	NEWUSER CAN HANDLE A MAXIMUM OF 71 PARAMETERS. (CIERR 735)
5	980	COMMAND GREATER THAN 270 CHARACTERS LONG. (CIERR 980)
5	1011	MORE THAN ! PARAMETERS TO STORE COMMAND. (CIERR 1011)
5	1051	RESTORE COMMAND LIMITED TO ! PARAMETERS. (CIERR 1051)
5	1401	COMMAND IMAGE TOO LONG, MAXIMUM 243 CHARACTERS. (CIERR 1401)
5	1630	TARGET FILE IS THE ONLY PARAMETER ALLOWED. (CIERR 1630)
5	1640	THE ONLY PARAMETERS ARE THE INPUT AND OUTPUT SPEEDS. (CIERR 1640)
5	1650	ALLOCATE HAS ONLY TWO PARAMETERS. (CIERR 1650)
5	1660	QUANTUM COMMAND HAS ONLY FOUR PARAMETERS. (CIERR 1660)
5	1670	THIS COMMAND HAS NO PARAMETERS. (CIWARN 1670)
5	1681	MORE THAN 4 PARAMETERS SPECIFIED FOR SETDUMP. (CIERR 1681)
5	1784	BACK REFERENCE TYPE LINE SPECIFICATION MAY NOT HAVE MORE THAN THE LINE NAMES INVOLVED. (CIERR 1784)
6	201	NAME OF FILE TO BE BUILT IS A REQUIRED PARAMETER. (CIERR 201)
6	360	EXPECTED EITHER FILE DESIGNATOR OR "@". (CIERR 360)
6	361	EXPECTED EITHER LINE DESIGNATOR OR "@". (CIERR 361)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
6	375	EXPECTED OLD NAME OF FILE HERE. (CIERR 375)
6	376	EXPECTED NEW NAME FOR FILE AS SECOND PARAMETER. (CIERR 376)
6	381	REQUIRES FILE NAME TO BE PURGED. (CIERR 381)
6	391	REQUIRES NAME OF FILE TO BE SAVED. (CIERR 391)
6	410	ALTSEC REQUIRES AT LEAST A FILE NAME. (CIERR 410)
6	600	NO PROGRAM FILE SPECIFIED. (CIERR 600)
6	601	NO USL FILE SPECIFIED. (CIERR 601)
6	602	NEITHER PROGRAM FILE OR USL FILE SPECIFIED. (CIERR 602)
6	645	REQUIRED DUMP FILE NAME MISSING. (CIERR 645)
6	1012	A TAPE FILE NAME IS REQUIRED. (CIERR 1012)
6	1039	NAME OF TAPE TO BE RESTORED IS REQUIRED. (CIERR 1039)
6	1631	TARGET FILE IS A REQUIRED PARAMETER. (CIERR 1631)
6	1641	SPEED REQUIRES EITHER AN INPUT OR AN OUTPUT SPEED. (CIERR 1641)
6	1651	REQUIRES AT LEAST A PROGRAM NAME. (CIERR 1651)
6	1661	QUANTUM COMMAND REQUIRES AT LEAST ONE PARAMETER. (CIERR 1661)
6	1690	GETRIN REQUIRES EXACTLY ONE PARAMETER, THE RIN PASSWORD. (CIERR 1690)
6	1691	FREERIN REQUIRES EXACTLY ONE PARAMETER, THE RIN NUMBER. (CIERR 1691)
6	1782	REQUIRES AT LEAST A LINE NAME. (CIERR 1782)
7	981	MISSING COLON BEFORE COMMAND NAME. (CIERR 981)
8	1436	ACCT/USER EXIST, GROUP NAME DOESN'T. (CIERR 1436)
8	1437	NON-EXISTENT ACCOUNT. (CIERR 1437)
8	1438	ACCT EXISTS, USER NAME DOESN'T. (CIERR 1438)
8	1439	ACCT/USER EXIST, NO HOME GROUP FOR USER. (CIERR 1439)
8	1441	INCORRECT PASSWORD. (CIERR 1441)
9	1403	LOGON DEVICE WON'T ALLOW THIS COMMAND. (CIERR 1403)
10	1015	INSUFFICIENT STACK TO DO STORE. (CIERR 1015)
10	1046	NOT ENOUGH STACK SPACE AVAILABLE FOR RESTORE. (CIERR 1046)
11	987	COMMAND NOT YET IMPLEMENTED. (CIERR 987)
14	1411	IDD FULL. CAN'T LOGON. SEE SYSTEM MANAGER. (CIERR 1411)
14	1412	JMAT FULL. CAN'T LOGON. SEE SYSTEM MANAGER. (CIERR 1412)
14	1413	CILOG TABLE FULL. CAN'T LOGON. SEE SYSTEM MANAGER. (CIERR 1413)
15	641	! SUBSYSTEM NOT FOUND IN PUB.SYS. (CIERR 641)
15	647	DS SUBSYSTEM NOT FOUND. (CIERR 647)
16	353	DISC I/O ERROR RELATED TO FILE LABEL ACCESS. (CIERR 353)
16	428	I/O ERROR ON DISC WHILE GETTING FILE LABEL INFORMATION. (CIERR 428)
16	1020	DISC ERROR ON LABEL OF FILE ! - STORE STOPPED. (CIERR 1020)
20	210	NO PARAMETERS MAY BE SUPPLIED WHEN EQUATING TO $NULL. (CIERR 210)
20	211	THE DOMAIN OF A SYSTEM DEFINED FILE IS FIXED BY THE SYSTEM. PARAMETER IGNORED. (CIWARN 211)
20	213	UNKNOWN FILE DOMAIN. EXPECTED OLD, NEW OR OLDTEMP. (CIERR 213)
20	214	EXPECTED A SEMICOLON TO START THE PARAMETER LIST. (CIERR 214)
20	242	THE KEYWORD ! HAS NO SUBPARAMETERS. (CIERR 242)
20	243	EXPECTED AN EQUALS SIGN (=), SEPARATING THE KEYWORD FROM ITS SUBPARAMETERS. (CIERR 243)
20	247	ACCESS SYNTAX IS ACCESS = access type. NO OTHER PARAMETERS ALLOWED. (CIERR 247)
20	251	EXTRANEOUS PARAMETER. THE SYNTAX IS BUF=number of buffers. (CIERR 251)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
20	255	THE CODE= PARAMETER HAS ONLY ONE SUBPARAMETER. (CIERR 255)
20	269	UNEXPECTED DELIMITER. SYNTAX OF DISC PARAMETER IS DISC=[# of logical records][,[# of extents][,[# extents allocated]]] (CIERR 269)
20	275	UNEXPECTED DELIMITER. SYNTAX OF REC= PARAMETER IS REC=[record size][,[blocking factor][,[F/V/U][,[ASCII/BINARY]]] (CIERR 275)
20	277	EXPECTED ";" OR CARRIAGE RETURN. "," WOULD IMPLY ILLEGAL ATTEMPT TO SPECIFY FILE DOMAIN. (CIERR 277)
20	278	EXPECTED ";" OR CARRIAGE RETURN. "=" WOULD IMPLY ILLEGAL ATTEMPT TO SPECIFY AN ACTUAL FILE DESIGNATOR. (CIERR 278)
20	386	WARNING: EXPECTED COMMA, FOUND SEMICOLON. (CIWARN 386)
20	397	WARNING: SAVE EXPECTED COMMA, FOUND SEMICOLON. (CIWARN 397)
20	424	EXPECTED ";", FOLLOWED BY LIST FILE NAME. (CIERR 424)
20	426	UNIDENTIFIABLE FILESET NAME. (CIERR 426)
20	500	EXPECTED "(" TO START SECURITY SPECIFICATIONS. (CIERR 500)
20	501	EXPECTED A ")" FOLLOWING THE SECURITY SPECIFICATIONS. (CIERR 501)
20	563	EXPECTED LOCKWORD; "@" NOT PERMITTED. (CIERR 563)
20	583	UNEXPECTED, EXTRANEOUS SPECIAL CHARACTER. (CIERR 583)
20	586	EXPECTED A DELIMITER OF SOME SORT. (CIERR 586)
20	604	EXPECTED SEMICOLON OR CARRIAGE RETURN, FOUND COMMA. (CIERR 604)
20	605	EXPECTED SEMICOLON OR CARRIAGE RETURN, FOUND EQUAL SIGN. (CIERR 605)
20	612	KEYWORD REQUIRES VALUE, DID NOT FIND EQUAL SIGN. (CIERR 612)
20	700	EXPECTED JUST "@", IMPLYING ALL ACCOUNTS. (CIERR 700)
20	702	RESETACCT HAS ONLY 2 PARAMETERS. (CIERR 702)
20	709	EXPECTED A LIST FILE NAME. (CIERR 709)
20	711	EXTRANEOUS CHARACTERS IN GROUP NAME. (CIERR 711)
20	723	UNIDENTIFIABLE NAME. (CIERR 723)
20	736	EXPECTED COMMA AFTER ACCOUNT NAME, BEFORE MANAGER'S NAME. (CIERR 736)
20	737	EXPECTED KEYWORD IDENTIFYING PARAMETER. ONE OF PASS, FILES, CPU, CONNECT, CAP, ACCESS, MAXPRI, LOCATTR, VS, HOME. (CIERR 737)
20	738	THE SYNTAX REQUIRES THAT AN EQUAL SIGN (=) FOLLOW KEYWORD. (CIERR 738)
20	739	EXPECTED ONE OF PASS, FILES, CPU, CONNECT, CAP, ACCESS, MAXPRI, LOCATTR, VS, HOME. (CIERR 739)
20	740	UNIDENTIFIABLE PARAMETER. POSSIBLY A DELIMITER WAS OMITTED. (CIERR 740)
20	1006	SEMICOLON REQUIRED BETWEEN KEYWORDS. (CIERR 1006)
20	1008	EXPECTED "FILES=". (CIERR 1008)
20	1013	UNEXPECTED "=" WHILE PARSING FILE SET NAMES. (CIERR 1013)
20	1022	UNEXPECTED SPECIAL CHARACTER IN FILESET. (CIERR 1022)
20	1040	EXPECTED ";" SEPARATING COMMAND OPTIONS. (CIERR 1040)
20	1042	EXPECTED "DEV= <DEVICE NAME>". (CIERR 1042)
20	1052	EXPECTED SEMICOLON AFTER TAPE NAME. (CIERR 1052)
20	1057	EXPECTED EITHER "," OR ";" TO DELIMIT FILE SET NAMES. (CIERR 1057)
20	1311	THE FIRST CHARACTER OF AN ID SEQUENCE MUST BE A " OR A ((CIERR 1311)
20	1312	THE ID SEQUENCE MUST TERMINATE WITH A). (CIERR 1312)
20	1313	THE ID SEQUENCE MUST TERMINATE WITH A ". (CIERR 1313)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
20	1314	A NUMERIC ID SEQUENCE ELEMENT MUST BE 1 THRU 255 (OR 377). (CIERR 1314)
20	1315	LINEBUF MUST BE A NUMERIC VALUE FROM 304 THRU 4096. (CIERR 1315)
20	1316	UNABLE TO COMPLETE THE REMOTE COMMAND. (CIERR 1316)
20	1317	NOT A CURRENTLY AVAILABLE DSLINE. (CIERR 1317)
20	1318	USE OF EXCLUSIVE REQUIRES BOTH NS AND CS CAPABILITY. (CIERR 1318)
20	1319	THE DS LINE #L! IS IN USE BY A PROGRAM OR SUBSYSTEM AND CANNOT BE CLOSED. (CIERR 1319)
20	1320	EXPECTED A RESPONSE OF YES, Y, NO OR N. (CIERR 1320)
20	1321	UNABLE TO OPEN THE DS LINE ON DEVICE !. (CIERR 1321)
20	1322	@ IS INVALID IN THIS CONTEXT. (CIERR 1322)
20	1323	A DSLINE OPEN REQUIRES A VALID DS DEVICE NAME AS THE FIRST PARAMETER. (CIERR 1323)
20	1395	OPEN PARAMETERS ENTERED ON A CLOSE REQUEST ARE IGNORED. (CIERR 1395)
20	1396	AN ID LIST MUST CONTAIN 255 OR LESS ELEMENTS. (CIWARN 1396)
20	1397	AN UNNECESSARY DELIMITER IS IGNORED. (CIWARN 1397)
20	1398	THERE ARE NO DS LINES OPEN. (CIWARN 1398)
20	1399	MULTIPLE USE OF ! IS REDUNDANT AND IGNORED. (CIWARN 1399)
20	1433	PARAMETERS ARE NOT ALLOWED FOR :DATA. (CIERR 1433)
20	1515	DEFERRED/NONDEFERRED ONLY APPROPRIATE WITH WAIT STATE. (CIERR 1515)
20	1540	INAPPROPRIATE - INPUT FILES CANNOT BE DEFERRED. (CIERR 1540)
20	1541	THIS PARAMETER APPROPRIATE ONLY FOR "READY" FILES. (CIERR 1541)
20	1543	EXPECTED "JOB=". (CIERR 1543)
20	1610	EXPECTED A JOB NUMBER BETWEEN 1 AND 16383 (CIERR 1610)
20	1611	EXPECTED A SESSION NUMBER BETWEEN 1 AND 16383. (CIERR 1611)
20	1612	EXPECTED "J" OR "S" INDICATING JOB OR SESSION. (CIERR 1612)
20	1613	EXPECTED "@J" OR "@S". (CIERR 1613)
20	1614	EXPECTED "@" OR A PARTICULAR JOB NAME. (CIERR 1614)
20	1615	JOB NAME MAY NOT EXCEED 8 CHARACTERS. (CIERR 1615)
20	1616	JOB NAME MUST START WITH ALPHABETIC CHARACTER. (CIERR 1616)
20	1617	"." REQUIRED BETWEEN USER AND ACCOUNT NAMES. (CIERR 1617)
20	1618	TELL COMMAND REQUIRES THE ID OF THE JOB TO BE TOLD. (CIERR 1618)
20	1656	EXPECTED EITHER "PROGRAM" OR "PROCEDURE". (CIERR 1656)
20	1680	UNKNOWN OPTION TO SETDUMP COMMAND. (CIERR 1680)
20	1769	EXPECTED EQUAL SIGN (=) AND VALUE HERE. (CIERR 1769)
20	1771	SYNTAX ERROR IN LINE SPECIFICATION. (CIERR 1771)
20	1774	EXPECTED A COLON (:) HERE. (CIERR 1774)
21	202	FILE CODE MISSING, DEFAULTED TO 0. (CIWARN 202)
21	212	EXPECTED A FILE DOMAIN. (ONE OF OLD, NEW OR OLDTEMP). (CIERR 212)
21	215	EXTRANEOUS DELIMITER IGNORED. (CIWARN 215)
21	245	THE ACCESS TYPE IS A REQUIRED SUBPARAMETER OF THE ACCESS KEYWORD. (CIERR 245)
21	531	FILE NAME MISSING. (CIERR 531)
21	541	GROUP NAME MISSING. (CIERR 541)
21	551	ACCOUNT NAME MISSING. (CIERR 551)
21	591	USER NAME MISSING. (CIERR 591)
21	603	NO PROGRAM FILE SPECIFIED FOR PREP. (CIERR 603)
21	606	IGNORED EXTRANEOUS DELIMITER. (CIWARN 606)
21	754	ACCOUNT MANAGER NAME MUST BE SPECIFIED IN :NEWACCT. (CIERR 754)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
21	1005	TAPE FILE NAME IS A REQUIRED PARAMETER. (CIERR 1005)
21	1424	EXPECTED USER NAME. (CIERR 1424)
21	1426	EXPECTED ACCOUNT NAME. (CIERR 1426)
21	1451	IGNORED DELIMITER. (CIWARN 1451)
21	1454	EXPECTED "= 'VALUE' " AFTER KEY WORD. (CIWARN 1454)
21	1502	EXPECTED JOB IDENTIFICATION. (CIERR 1502)
21	1544	EXPECTED ONE OF @,@J,@S,@J',@S',#Jnn,#Snn,#J'nn,#S'nn. (CIERR 1544)
21	1552	EXPECTED "DEV= device specification". (CIERR 1552)
21	1675	EXPECTED EITHER "ON" OR "OFF". (CIERR 1675)
21	1770	VALUE OF KEYWORD NOT OPTIONAL. (CIERR 1770)
21	1775	EXPECTED ONE OF KEYWORDS FOR CLINE COMMAND. (CIERR 1775)
21	1783	REQUIRES ACTUAL LINE DESIGNATOR. (CIERR 1783)
22	220	UNKNOWN KEYWORD FOR FILE COMMAND. (CIERR 220)
22	243	EXPECTED AN EQUALS SIGN (=), SEPARATING THE KEYWORD FROM ITS SUBPARAMETERS. (CIERR 243)
22	246	UNKNOWN ACCESS TYPE. EXPECTED ONE OF IN, OUT, UPDATE, OUTKEEP, APPEND, INOUT. (CIERR 246)
22	273	EXPECTED RECORD FORMAT OF F, V OR U. (CIERR 273)
22	274	EXPECTED "ASCII" OR "BINARY". (CIERR 274)
22	299	UNKNOWN KEYWORD FOR BUILD COMMAND. (CIERR 299)
22	371	EXPECTED "TEMP". (CIERR 371)
22	382	EXPECTED "TEMP". (CIERR 382)
22	502	EXPECTED ONE OF R,A,W,L OR X FILE ACCESS MODES. (CIERR 502)
22	503	EXPECTED ONE OF R,A,W,L,X OR S GROUP FILE ACCESS MODES. (CIERR 503)
22	504	EXPECTED ONE OF R,A,W,L OR X ACCOUNT FILE ACCESS MODES. (CIERR 504)
22	505	IGNORED. SAVE ACCESS HAS NO MEANING AT FILE LEVEL. (CIWARN 505)
22	506	IGNORED. SAVE ACCESS NOT ALLOWED AT ACCOUNT LEVEL. (CIWARN 506)
22	507	EXPECTED ":" SEPARATING MODE LIST FROM USER LIST. (CIERR 507)
22	508	EXPECTED ONE OF ANY,AC,AL,GU,GL OR CR USER TYPES. (CIERR 508)
22	509	EXPECTED ONE OF ANY,AC,AL,GU OR GL USER TYPES. (CIERR 509)
22	510	EXPECTED EITHER "ANY" OR "AC" USER TYPE. (CIERR 510)
22	511	USER TYPE CR NOT ALLOWED AT GROUP LEVEL. (CIWARN 511)
22	512	THIS USER TYPE NOT ALLOWED AT ACCOUNT LEVEL. (CIWARN 512)
22	607	CONTEXT FOR THIS KEYWORD IS THE RUN COMMAND, NOT PREP. (CIERR 607)
22	608	CONTEXT FOR THIS KEYWORD IS THE PREP COMMAND, NOT RUN. (CIERR 608)
22	609	EXPECTED ONE OF ZERODB,PMAP,MAXDATA,STACK,DL,RL,CAP. (CIERR 60
22	610	EXPECTED ONE OF NOPRIV,LMAP,DEBUG,MAXDATA,PARM,STACK, DL,LIB,NOCB. (CIERR 610)
22	611	PREPRUN COMMAND: EXPECTED ONE OF NOPRIV,PMAP,DEBUG, LMAP,ZERODB,MAXDATA,PARM,STACK,DL,LIB,CAP,RL,NOCB. (CIERR 611)
22	618	REQUIRES ONE OF IA,BA,PH,DS,MR,PM CAPABILITIES. (CIERR 618)
22	619	DID NOT RECOGNIZE CAPABILITY AS IA,BA,PH,DS,MR OR PM. (CIERR 619)
22	701	EXPECTED "CPU" OR "CONNECT". (CIERR 701)
22	743	EXPECTED ONE OF AS, BS, CS, DS, OR ES. (CIERR 743)
22	747	NO CAPABILITY SPECIFIED. IGNORED. (CIWARN 747)
22	748	EXPECTED ONE OF SM,AM,AL,GL,DI,OP,PH,DS,MR,PM,IA,BA, CS,ND,SF,UV,CV. (CIERR 748)
22	1001	SPECIAL CHARACTER IN TAPE FILE NAME. (CIERR 1001)
22	1002	EXPECTED ALPHABETIC CHARACTER TO START TAPE NAME. (CIERR 1002)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
22	1003	TAPE FILE NAME > 8 CHARACTERS LONG. (CIERR 1003)
22	1004	EXPECTED "*" INDICATING BACK REFERENCE FOR TAPE FILE. (CIERR 1004)
22	1009	EXPECTED FILE COUNT LIMIT BETWEEN 1 AND 2147483647. (CIERR 1009)
22	1010	UNKNOWN OPTION - EXPECTED EITHER "SHOW" OR "FILES=". (CIERR 1010)
22	1459	EXPECTED ON OF BS, CS, DS, ES. DEFAULT USED. (CIWARN 1459)
22	1466	INVALID OUTCLASS. EXPECTED CLASS NAME OR LDEV. (CIWARN 1466)
22	1505	EXPECTED EITHER "@S" OR "@J". (CIERR 1505)
22	1509	EXPECTED EITHER "J" OR "S". (CIERR 1509)
22	1516	EXPECTED EITHER "N" (NONDEFERRED) OR "D" (DEFERRED). (CIERR 1516)
22	1518	EXPECTED PERIOD SEPARATING USER NAME AND ACCOUNT NAME. (CIERR 1518)
22	1530	ONLY OUTPUT DEVICE FILES ARE APPROPRIATE WITH SHOWOUT. (CIERR 1530)
22	1531	ONLY INPUT DEVICE FILES ARE APPROPRIATE WITH SHOWIN. (CIERR 1531)
22	1542	EXPECTED EITHER "D" (DEFERRED) OR "N" (NOT DEFERRED). (CIERR 1542)
22	1544	EXPECTED ONE OF @,@J,@S,@J´,@S´,#Jnn,#Snn,#J´nn,#S´nn. (CIERR 1544)
22	1545	EXPECTED EITHER @S OR @S´. (CIERR 1545)
22	1546	EXPECTED EITHER @J OR @J´. (CIERR 1546)
22	1547	EXPECTED ONE OF @, @S, @S@, @J, @J´. (CIERR 1547)
22	1553	INVALID DEVICE SPECIFICATION. (CIERR 1553)
22	1554	USE OF DEVICE CLASS IS INAPPROPRIATE FOR INPUT FILES. (CIERR 1554)
22	1555	DIRECT ACCESS DEVICE MAY NOT BE SPECIFIED. (CIERR 1555)
22	1580	SHOWDEV MAY HAVE ONLY ONE PARAMETER, THE DEVICE NAME OR NUMBER. (CIWARN 1580)
22	1581	LOGICAL DEVICE NUMBER ! DOES NOT EXIST ON THE SYSTEM. (CIERR 1581)
22	1582	CLASS NAME "!" IS INVALID, MORE THAN 8 CHARACTERS LONG. (CIERR 1582)
22	1583	LOGICAL DEVICE CLASS "!" CANNOT BE FOUND ON THE SYSTEM. (CIERR 1583)
22	1591	EXPECTED JUST ONE CHARACTER AS COLON PROMPT REPLACEMENT. (CIERR 1591)
22	1592	INVALID COMMAND SYNTAX; SHOULD BE :STREAM [<FILE NAME>][,<COLON PROMPT REPLACEMENT>] (CIERR 1592)
22	1663	QUANTUM SIZE MUST BE BETWEEN 1 AND 32767 MILLISECONDS, FOUND "!". (CIERR 1663)
22	1676	UNEXPECTED PARAMETER TO SETMSG COMMAND. (CIERR 1676)
22	1701	PARAMETER NOT ONE OF CS,DS,ES OR 0. (CIERR 1701)
22	1702	DEFAULT PRIORITY OF 0 NOT ALLOWED. DEFAULTED TO CS. (CIWARN 1702)
23	250	EXPECTED INTEGER BETWEEN 0 AND 16 AS NUMBER OF BUFFERS. (CIERR 250)
23	254	NUMERIC FILE CODE MUST BE A POSITIVE INTEGER. (CIERR 254)
23	262	OUTPUT PRIORITY MUST BE AN INTEGER BETWEEN 1 AND 13. (CIERR 262)
23	263	NUMBER OF COPIES MUST BE AN INTEGER BETWEEN 1 AND 127. (CIERR 263)
23	267	NUMBER OF EXTENTS MUST BE AN INTEGER BETWEEN 1 AND 32. (CIERR 267)
23	272	BLOCKING FACTOR MUST BE INTEGER BETWEEN 1 AND 255. (CIERR 272)
23	768	EXPECTED POSITIVE INTEGER < 2147483647 AS SECTORS LIMIT. (CIERR 768)
23	769	FILE SECTORS LIMIT MAY NOT BE A NEGATIVE NUMBER. (CIERR 769)
23	774	EXPECTED POSITIVE INTEGER < 2147483647 AS CPU SECONDS LIMIT. (CIERR 774)
23	775	CPU SECONDS LIMIT MAY NOT BE A NEGATIVE NUMBER. (CIERR 775)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
23	780	EXPECTED POSITIVE INTEGER < 2147483647 AS CONNECT TIME LIMIT. (CIERR 780)
23	781	CONNECT TIME LIMIT MAY NOT BE A NEGATIVE NUMBER. (CIERR 781)
23	798	EXPECTED INTEGER BETWEEN -2147483648 AND 2147483647. (CIERR 798)
23	1462	LOWEST INPRI VALUE IS 1. 1 USED. (CIWARN 1462)
23	1463	HIGHEST INPRI VALUE IS 13. 13 USED. (CIWARN 1463)
23	1468	LOWEST OUTPRI IS 1. 1 USED. (CIWARN 1468)
23	1469	HIGHEST OUTPRI IS 13. 13 USED. (CIWARN 1469)
23	1471	127 IS MAXIMUM NUMBER OF COPIES, 127 USED. (CIWARN 1471)
23	1548	EXPECTED A SESSION NUMBER BETWEEN 1 AND 16383. (CIERR 1548)
23	1549	EXPECTED A JOB NUMBER BETWEEN 1 AND 16383. (CIERR 1549)
23	1662	PRIORITY LIMITS MUST BE BETWEEN 150 AND 250, FOUND "!". (CIERR 1662)
23	1773	INTEGER NOT IN RANGE 0 - 255. (CIERR 1773)
23	1778	INTEGER NOT IN RANGE 0 - 63. (CIERR 1778)
23	1779	INTEGER NOT IN RANGE 0 - 15. (CIERR 1779)
23	1781	INTEGER NOT IN RANGE 0 - 127. (CIERR 1781)
24	229	SPECIFICATION OF SHR ACCESS OVERRIDES PREVIOUS EXC. (CIWARN 229)
24	230	SPECIFICATION OF SHR ACCESS OVERRIDES PREVIOUS EAR. (CIWARN 230)
24	231	SPECIFICATION OF EAR ACCESS OVERRIDES PREVIOUS EXC. (CIWARN 231)
24	232	SPECIFICATION OF EAR ACCESS OVERRIDES PREVIOUS SHR. (CIWARN 232)
24	233	SPECIFICATION OF EXC ACCESS OVERRIDES PREVIOUS EAR. (CIWARN 233)
24	234	SPECIFICATION OF EXC ACCESS OVERRIDES PREVIOUS SHR. (CIWARN 234)
24	248	BUF PARAMETER OVERRIDES PREVIOUS NOBUF. (CIWARN 248)
24	249	BUF PARAMETER OVERRIDES PREVIOUS BUF PARAMETER. (CIWARN 249)
24	741	ACCESS INAPPROPRIATE FOR USER. IGNORED. (CIWARN 741)
24	745	MAXPRI INAPPROPRIATE FOR GROUPS. IGNORED. (CIWARN 745)
24	749	THIS CAPABILITY INAPPROPRIATE FOR GROUPS. IGNORED. (CIWARN 749)
24	753	LOCAL ATTRIBUTE INAPPROPRIATE FOR GROUPS. IGNORED. (CIWARN 753)
24	765	HOME GROUP OPTION APPROPRIATE ONLY TO USERS. IGNORED. (CIWARN 765)
24	767	FILES OPTION INAPPROPRIATE FOR USERS. IGNORED. (CIWARN 767)
24	773	CPU LIMITS OPTION INAPPROPRIATE FOR USERS. IGNORED. (CIWARN 773)
24	779	CONNECT TIME OPTION INAPPROPRIATE FOR USERS. IGNORED. (CIWARN 779)
25	513	READ ACCESS FOR THIS USER TYPE REDUNDANTLY SPECIFIED. (CIWARN 513)
25	514	APPEND ACCESS FOR THIS USER TYPE REDUNDANTLY SPECIFIED. (CIWARN 514)
25	515	WRITE ACCESS FOR THIS USER TYPE REDUNDANTLY SPECIFIED. (CIWARN 515)
25	516	LOCK ACCESS FOR THIS USER TYPE REDUNDANTLY SPECIFIED. (CIWARN 516)
25	517	EXECUTE ACCESS FOR THIS USER TYPE REDUNDANTLY SPECIFIED.(CIWARN 517)
25	518	SAVE ACCESS FOR THIS USER TYPE REDUNDANTLY SPECIFIED. (CIWARN 518)
25	750	THIS CAPABILITY REDUNDANTLY SPECIFIED. IGNORED. (CIWARN 750)
26	1305	EXPECTED LINEBUF, PHNUM, LOCID, REMID, OPEN, CLOSE, QUIET, COMP, NOCOMP OR EXCLUSIVE. (CIERR 1305)
26	1307	THE SYNTAX FOR ! REQUIRES AN = SIGN FOLLOWED BY DATA. (CIERR 1307)
26	1452	UNKNOWN KEYWORD. EXPECTED ONE OF TERM, PRI, TIME, INPRI, HIPRI, OUTCLASS, RESTART. (CIWARN 1452)
26	1456	EXPECTED NUMERIC VALUE. (CIWARN 1456)
26	1501	UNKNOWN PARAMETER TO SHOWJOB. (CIERR 1501)
26	1510	EXTRA PARAMETERS EXTRANEOUS IN THIS CONTEXT, IGNORED. (CIERR 1510)
26	1511	EXPECTED ONE OF JOB, SUSP, INTRO, WAIT, EXEC OR STATUS. (CIERR 1511)

MPE V[Error #	MPE III Error #	MESSAGE/WARNING
26	1533	EXTRA PARAMETERS ARE INAPPROPRIATE, IGNORED. (CIERR 1533)
26	1534	EXPECTED ONE OF SP, STATUS, DEV, JOB, ACTIVE, READY, OPENED, LOCKED. (CIERR 1534)
27	221	SPECIFICATION OF CCTL OVERRIDES PREVIOUS NOCCTL. (CIWARN 221)
27	222	SPECIFICATION OF NOCCTL OVERRIDES PREVIOUS CCTL. (CIWARN 222)
27	235	SPECIFICATION OF NOBUF OVERRIDES PREVIOUS BUF. (CIWARN 235)
27	236	SPECIFICATION OF MR ACCESS OVERRIDES PREVIOUS NOMR. (CIWARN 236)
27	237	SPECIFICATION OF NOMR ACCESS OVERRIDES PREVIOUS MR. (CIWARN 237)
27	238	SPECIFICATION OF MULTI OVERRIDES PREVIOUS NOMULTI. (CIWARN 238)
27	239	SPECIFICATION OF NOMULTI OVERRIDES PREVIOUS MULTI. (CIWARN 239)
27	240	SPECIFICATION OF WAIT OVERRIDES PREVIOUS NOWAIT. (CIWARN 240)
27	241	SPECIFICATION OF NOWAIT OVERRIDES PREVIOUS WAIT. (CIWARN 241)
27	244	ACCESS SPECIFICATION OVERRIDES PREVIOUS ACCESS. (CIWARN 244)
27	252	FILE CODE OVERRIDES PREVIOUS FILE CODE. (CIWARN 252)
27	256	DEVICE= PARAMETER OVERRIDES PREVIOUS DEVICE= PARAMETER. (CIWARN 256)
27	265	DISC PARAMETER OVERRIDES PREVIOUS DISC PARAMETER. (CIWARN 265)
27	270	REC PARAMETER OVERRIDES PREVIOUS REC PARAMETER. (CIWARN 270)
27	296	NOLABEL OVERRIDES PREVIOUS LABEL. (CIWARN 296)
27	620	DUPLICATE KEYWORD. SECOND VALUE TAKEN. (CIWARN 620)
27	742	ACCESS REDUNDANTLY SPECIFIED. LAST OCCURRENCE USED. (CIWARN 742)
27	744	MAXPRI REDUNDANTLY SPECIFIED. LAST OCCURRENCE USED. (CIWARN 744)
27	746	CAPABILITY LIST REDUNDANTLY SPECIFIED. LAST OCCURRENCE USED. (CIWARN 746)
27	761	PASSWORD REDUNDANTLY SPECIFIED. LAST OCCURRENCE USED. (CIWARN 761)
27	770	FILE SECTORS LIMIT REDUNDANTLY SPECIFIED. LAST USED. (CIWARN 770)
27	776	CPU SECONDS LIMIT REDUNDANTLY SPECIFIED. LAST USED. (CIWARN 776)
27	782	CONNECT TIME OPTION REDUNDANTLY SPECIFIED. LAST USED. (CIWARN 782)
27	796	HOME GROUP REDUNDANTLY SPECIFIED. LAST OCCURRENCE USED. (CIWARN 796)
27	797	LOCAL ATTRIBUTE REDUNDANTLY SPECIFIED. LAST OCCURRENCE USED. (CIWARN 797)
27	1007	"FILES=" REDUNDANTLY SPECIFIED. LAST USED. (CIWARN 1007)
27	1041	DEV OPTION REDUNDANTLY SPECIFIED, LAST USED. (CIWARN 1041)
27	1306	MULTIPLE USE OF ! IS NOT ALLOWED. (CIERR 1306)
27	1455	DUPLICATE KEY WORD, PREVIOUS VALUE IGNORED. (CIWARN 1455)
27	1472	EXTRA OUTCLASS PARAMETER, IGNORED. (CIWARN 1472)
27	1520	JOB PARAMETER REDUNDANTLY SPECIFIED. (CIWARN 1520)
27	1521	EXPECTED "=" AFTER JOB KEYWORD. (CIERR 1521)
27	1551	JOB PARAMETER REDUNDANTLY SPECIFIED, LAST USED. (CIWARN 1551)
27	1556	"DEV=" PARAMETER REDUNDANTLY SPECIFIED, LAST USED. (CIWARN 1556)
27	1777	THIS KEYWORD REDUNDANTLY SPECIFIED. (CIERR 1777)
28	216	THE ! KEYWORD IS NOT APPROPRIATE IN THE CONTEXT OF A BUILD COMMAND. (CIERR 216)
28	217	THE ! KEYWORD IS NOT APPROPRIATE IN THE CONTEXT OF A SYSTEM DEFINED FILE. (CIERR 217)
28	218	THE ! KEYWORD IS NOT APPROPRIATE IN THE CONTEXT OF AN OLD FILE. (CIERR 218)
28	219	THE ! KEYWORD IS NOT APPROPRIATE IN THE CONTEXT OF A NEW FILE. (CIERR 219)
28	223	SPECIFICATION OF TEMP OVERRIDES PREVIOUS DEL. (CIWARN 223)
28	224	SPECIFICATION OF TEMP OVERRIDES PREVIOUS SAVE. (CIWARN 224)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
28	225	SPECIFICATION OF SAVE OVERRIDES PREVIOUS DEL. (CIWARN 225)
28	226	SPECIFICATION OF SAVE OVERRIDES PREVIOUS TEMP. (CIWARN 226)
28	227	SPECIFICATION OF DEL OVERRIDES PREVIOUS TEMP. (CIWARN 227)
28	228	SPECIFICATION OF DEL OVERRIDES PREVIOUS SAVE. (CIWARN 228)
28	1453	NO "=" AFTER HIPRI OR RESTART. (CIWARN 1453)
28	1461	HIPRI PREVIOUSLY SPECIFIED, INPRI VALUE USED. (CIWARN 1461)
28	1464	INPRI PREVIOUSLY SPECIFIED, HIPRI VALUE USED. (CIWARN 1464)
28	1465	OUTCLASS VALID FOR JOBS ONLY, IGNORED. (CIWARN 1465)
28	1473	RESTART FOR JOBS ONLY, IGNORED. (CIWARN 1473)
28	1500	INAPPROPRIATE TO SPECIFY STATUS WHEN OTHER PARAMETERS PRESENT; STATUS REQUEST IGNORED. (CIERR 1500)
28	1514	JOB STATE INCONSISTENT WITH PREVIOUS PARAMETER; LAST USED. (CIWARN 1514)
28	1535	STATUS INAPPROPRIATE WHEN OTHER PARAMETERS SPECIFIED. (CIERR 1535)
28	1539	FILE STATE INCONSISTENTLY SPECIFIED, LAST USED. (CIWARN 1539)
29	260	DEVICE [CLASS] NAME > 8 CHARACTERS LONG. (CIERR 260)
29	540	FIRST CHARACTER IN GROUP NAME NOT ALPHABETIC. (CIERR 540)
29	542	GROUP NAME > 8 CHARACTERS LONG. (CIERR 542)
29	543	EXPECTED GROUP NAME; "@" NOT PERMITTED. (CIERR 543)
29	544	EMBEDDED NON-ALPHANUMERIC CHARACTER IN GROUP NAME. (CIERR 544)
29	550	FIRST CHARACTER IN ACCOUNT NAME NOT ALPHABETIC. (CIERR 550)
29	552	ACCOUNT NAME > 8 CHARACTERS LONG. (CIERR 552)
29	553	EXPECTED ACCOUNT NAME; "@" NOT PERMITTED. (CIERR 553)
29	554	EMBEDDED NON-ALPHANUMERIC CHARACTER IN ACCOUNT NAME. (CIERR 554)
29	590	FIRST CHARACTER IN USER NAME NOT ALPHABETIC. (CIERR 590)
29	592	USER NAME > 8 CHARACTERS LONG. (CIERR 592)
29	593	EXPECTED USER NAME; "@" NOT PERMITTED. (CIERR 593)
29	594	EMBEDDED NON-ALPHANUMERIC CHARACTER IN USER NAME. (CIERR 594)
29	716	EXPECTED JUST THE ACCOUNT NAME. (CIERR 716)
29	755	MANAGER NAME MUST START WITH ALPHABETIC CHARACTER. (CIERR 755)
29	756	MANAGER NAME CANNOT BE MORE THAN 8 CHARACTERS LONG. (CIERR 756)
29	758	EMBEDDED SPECIAL CHARACTER IN MANAGER'S NAME. (CIERR 758)
29	760	PASSWORD MUST START WITH ALPHABETIC CHARACTER. (CIERR 760)
29	762	PASSWORD CANNOT BE MORE THAN 8 CHARACTERS LONG. (CIERR 762)
29	766	EMBEDDED NON-ALPHANUMERIC CHARACTER IN PASSWORD. (CIERR 766)
29	1429	EXPECTED GROUP NAME. (CIERR 1429)
29	1434	FIRST CHARACTER IN NAME NOT ALPHABETIC. (CIERR 1434)
29	1435	NAME GREATER THAN 8 CHARACTERS LONG. (CIERR 1435)
29	1506	JOB NAME > 8 CHARACTERS LONG. (CIERR 1506)
29	1507	JOB NAME MUST START WITH ALPHABETIC CHARACTER. (CIERR 1507)
29	1508	EMBEDDED SPECIAL CHARACTERS NOT ALLOWED IN JOB NAME. (CIERR 1508)
29	1517	EXPECTED USER NAME PART OF JOB ID. EMBEDDED SPECIAL CHARACTERS NOT ALLOWED. (CIERR 1517)
29	1519	EXPECTED ACCOUNT NAME. EMBEDDED SPECIAL CHARACTERS NOT ALLOWED (CIERR 1519)
29	1766	EMBEDDED SPECIAL CHARACTERS FOUND IN NAME. (CIERR 1766)
29	1767	NAME MAY NOT BEGIN WITH NUMERIC CHARACTER. (CIERR 1767)
29	1768	NAME LENGTH LIMITED TO 8 CHARACTERS. (CIERR 1768)
29	1776	DEVICE NAME MAY NOT BE MORE THAN 8 CHARACTERS LONG. (CIERR 1776)
29	1780	DRIVER NAME > 8 CHARACTERS LONG. (CIERR 1780)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
30	253	UNKNOWN FILE CODE TYPE. (CIERR 253)
30	264	UNEXPECTED DELIMITER FOUND. DEVICE PARAMETER SYNTAX IS DEV=[device][,[output priority][,[number of copies]]] (CIERR 991)
30	266	NUMBER OF RECORDS MUST BE BETWEEN 0 AND 2147483647. (CIERR 266)
30	271	RECORD SIZE MUST BE NON-ZERO INTEGER. (CIERR 271)
30	420	LEVEL OF LISTF MUST BE AN INTEGER BETWEEN -1 AND 2. (CIWARN 420)
30	614	MAXDATA VALUE MUST BE BETWEEN -1 AND 62767. (CIERR 614)
30	615	PARM VALUE MUST BE BETWEEN -32768 AND 62767. (CIERR 615)
30	798	EXPECTED INTEGER BETWEEN -2147483648 AND 2147483647. (CIERR 798)
30	1532	EXPECTED A FILE NUMBER BETWEEN 1 AND 16383. (CIERR 1532)
30	1550	EXPECTED A JOB OR SESSION ID OF THE FORM #Jnn, #J´nn, #Snn, #Snn. (CIERR 1550)
30	1772	INTEGER OUT OF RANGE OR BAD FORMAT. (CIERR 1772)
31	1470	EXPECTED NUMERIC VALUE FOR NUMCOPIES. DEFAULT USED. (CIWARN 1470)
41	1044	DEVICE NAME IS MORE THAN 8 CHARACTERS LONG. (CIERR 1044)
48	1458	INVALID TERMINAL TYPE, CONFIGURATION VALUE USED. (CIWARN 1458)
50	751	CREATOR SPECIFIED NEITHER IA NOR BA FOR ACCOUNT, SO BOTH WERE IMPOSED. (CIWARN 751)
50	752	CREATOR SPECIFIED NEITHER IA NOR BA FOR USER, SO BOTH WERE IMPOSED. (CIWARN 752)
50	785	ATTEMPT TO REMOVE SM CAPABILITY FROM SYS ACCOUNT OVERRIDDEN. (CIWARN 785)
50	792	ACCOUNT MANAGER ATTEMPTED TO REMOVE HIS OWN ACCOUNT MANAGER CAPABILITY. COMMAND REJECTED. (CIERR 792)
51	786	FILE SPACE LIMIT REQUESTED LESS THAN ACTUAL SPACE ALREADY IN USE. COMMAND REJECTED WITH NO CHANGES. (CIERR 786)
51	791	GROUP FILE SPACE LIMIT REQUESTED IS LESS THAN SPACE ALREADY IN USE. COMMAND REJECTED. (CIERR 791)
52	790	GROUP CAPABILITIES REQUESTED EXCEED ACCOUNT CAPABILITIES. GROUP CAPABILITIES LOWERED TO ACCOUNT´S. (CIWAR 790)
52	794	USER ASSIGNED CAPABILITIES GREATER THAN THE ACCOUNT CAPABILITES. USER CAPABILITIES LOWERED TO ACCOUNT´S. (CIWARN 794)
52	795	USER ASSIGNED LOCAL ATTRIBUTES GREATER THAN THE ACCOUNT LOCAL ATTRIBUTES. LOWERED TO ACCOUNT´S. (CIWARN 795)
53	793	USER MAXPRI REQUESTED IS GREATER THAN THE ACCOUNT MAXPRI. USER MAXPRI LOWERED TO ACCOUNT´S. (CIWARN 793)
54	787	GROUP CPU LIMIT REQUESTED EXCEEDS ACCOUNT LIMIT. GROUP LIMIT LOWERED TO ACCOUNT LIMIT. (CIWARN 787)
54	788	GROUP CONNECT TIME LIMIT REQUESTED EXCEEDS ACCOUNT LIMIT. GROUP LIMIT LOWERED TO ACCOUNT LIMIT. (CIWARN 788)
54	789	GROUP FILE SPACE LIMIT REQUESTED EXCEEDS ACCOUNT LIMIT. GROUP LIMIT LOWERED TO ACCOUNT LIMIT. (CIWARN 789)
55	390	SAVE HANDLES ONLY ONE FILE AT A TIME. (CIERR 390)
55	392	EXPECTED "$OLDPASS". (CIERR 392)
55	580	UNKNOWN SYSTEM DEFINED FILE NAME. (CIERR 580)
55	581	UNEXPECTED CHARACTER IN FILE NAME; EXPECTED "." (CIERR 581)
55	582	UNEXPECTED CHARACTER IN FILE NAME; EXPECTED "." OR "/". IS THE DELIMITER BETWEEN PARAMETERS CORRECT? (CIERR 582)
56	276	FILE COMMAND TABLE FULL, UNABLE TO ENTER FILE COMMAND. (CIERR 276)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
56	656	FILE COMMAND TABLE FULL, UNABLE TO DO IMPLICIT FILE COMMAND. (CIERR 656)
57	209	UNABLE TO FIND A FILE COMMAND FOR FILE !. (CIERR 209)
58	657	TOO MANY BACK REFERENCES TO FILE !. (CIERR 657)
59	205	A FORMAL FILE DESIGNATOR MAY NOT BE A BACK REFERENCED FILE NAME (CIERR 205)
59	206	A FORMAL FILE DESIGNATOR MAY NOT BE A SYSTEM DEFINED FILE NAME. (CIERR 206)
59	257	THE USER MAY NOT REDEFINE THE DEVICE FOR $STDIN, $STDINX AND $STDLIST. (CIERR 257)
59	258	UNEXPECTED SPECIAL CHARACTER IN DEVICE NAME. (CIERR 258)
59	259	DS CLASS NAME > 8 CHARACTERS LONG. (CIERR 259)
59	984	REQUIRES FORMAL FILE DESIGNATOR. (CIERR 984)
60	1300	REMOTE JOBS ARE NOT ALLOWED !. (CIERR 1300)
60	1301	DSLINE CANNOT CONTAIN BOTH OPEN AND CLOSE. (CIERR 1301)
60	1302	DSLINE REQUIRES AT LEAST ONE PARAMETER. (CIERR 1302)
60	1308	PHNUM IS 1 TO 20 DIGITS AND DASHES. (CIERR 1308)
61	1016	FOPTIONS ON TAPE WRONG - SHOULD BE NOCCTL, UNDEFINED RECORD FORMAT, BINARY, NEW. (CIERR 1016)
61	1017	AOPTIONS OF TAPE WRONG - SHOULD BE WAIT, NOBUF, EXCLUSIVE, NO MULTIRECORD, WRITE ONLY. (CIERR 1017)
61	1018	CAN ONLY STORE TO TAPE. (CIERR 1018)
61	1047	FILE OPTIONS ON TAPE SHOULD BE BINARY, UNDEFINED RECORD FORMAT. (CIERR 1047)
61	1048	TAPE FILE ACCESS OPTIONS SHOULD BE NOBUF, EXCLUSIVE, NOMR. (CIERR 1048)
61	1049	RESTORE TAPE RECORD LENGTH MUST BE 1024 WORDS. (CIERR 1049)
61	1050	CAN ONLY RESTORE FROM TAPE. (CIERR 1050)
62	519	THIS ACCESS MODE REDUNDANTLY SPECIFIED IN THIS ACCESS LIST. (CIWARN 519)
63	613	ONLY LEGAL LIBRARY NAMES ARE G,P,S. (CIERR 613)
64	1309	! LIST CAN CONTAIN ONLY ONE ELEMENT. (CIERR 1309)
64	1636	UNABLE TO ACCESS PAPER TAPE READER ON TERMINAL. (CIERR 1636)
65	658	ATTEMPT TO RUN SUBSYSTEM OTHER THAN APL WITH APL CHARACTER SET. (CIERR 658)
66	1642	INPUT SPEED MUST BE ONE OF 10,14,15,30,60,120,240. (CIERR 1642)
67	1643	OUTPUT SPEED MUST BE ONE OF 10,14,15,30,60,120,240. (CIERR 1643)
70	1694	RIN IN USE, COMMAND IGNORED. (CIERR 1694)
71	1693	THIS RIN ISN'T ALLOCATED. (CIERR 1693)
72	1692	CAN'T ALLOCATE RIN, RIN TABLE FULL. (CIERR 1692)
73	905	I/O ERROR IN DIRECTORY ROUTINES. (CIERR 905)
73	1029	UNIDENTIFIED DIRECTORY ERROR - RESTORE STOPPED. (CIERR 1029)
75	1619	THERE WAS NO JOB OR SESSION FOUND WHICH MATCHED THIS ID. (CIWARN 1619)
76	617	DL SIZE VALUE MUST BE BETWEEN -1 AND 62767. (CIERR 617)
76	1626	SOME SORT OF I/O ERROR IN SENDING MESSAGE TO CONSOLE. (CIERR 1626)
77	1054	RESTORE LIMITED TO ! FILESETS OF THE FORM @.@.ACCOUNT. (CIERR 1054)
77	1055	LIMITED TO ! FULLY QUALIFIED FILE NAMES. (CIERR 1055)
77	1056	LIMITED TO ! FILESETS OF THE FORM @.GROUP OR @.GROUP.ACCT. (CIERR 1056)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
78	1035	TAPE APPARENTLY NOT A STORE TAPE. (CIERR 1035)
78	1036	OPERATOR UNABLE TO FIND NEXT TAPE VOLUME. (CIERR 1036)
78	1038	IMPROPER TAPE FORMAT. (CIERR 1038)
79	717	EXPECTED JUST THE USER NAME. (CIERR 717)
79	727	ONLY TWO PARAMETERS ALLOWED, THE ITEM TO BE LISTED AND THE OPTIONAL LISTFILE. (CIERR 727)
79	910	NON-EXISTENT USER. (CIERR 910)
82	82	STREAM FACILITY NOT ENABLED: SEE OPERATOR. (CIERR 82)
83	1590	STREAM FILE MAY NOT BE A SYSTEM DEFINED FILE. (CIERR 1590)
100	1590	STREAM FILE MAY NOT BE A SYSTEM DEFINED FILE. (CIERR 1590)
106	909	NON-EXISTENT ACCOUNT. (CIERR 909)
107	532	FILE NAME > 8 CHARACTERS LONG. (CIERR 532)
107	710	REPORT HAS ONLY TWO PARAMETERS. (CIERR 710)
107	715	EXPECTED JUST THE GROUP NAME. (CIERR 715)
107	727	ONLY TWO PARAMETERS ALLOWED, THE ITEM TO BE LISTED AND THE OPTIONAL LISTFILE. (CIERR 727)
107	908	NON-EXISTENT GROUP. (CIERR 908)
108	352	FILE ! NOT FOUND. (CIERR 352)
108	622	PROGRAM FILE ! NOT FOUND. (CIERR 622)
108	907	NON-EXISTENT FILE. (CIERR 907)
109	354	SECURE EXPECTED ONLY THE FILE NAME. (CIERR 354)
109	355	SECURE REQUIRES ONE PARAMETER, A FILE NAME. (CIERR 355)
109	400	RELEASE EXPECTED ONLY THE FILE NAME. (CIERR 400)
109	401	RELEASE REQUIRES ONE PARAMETER, A FILE NAME. (CIERR 401)
109	411	EXTRANEOUS PARAMETER TO ALTSEC. (CIERR 411)
109	530	FIRST CHARACTER IN FILE NAME NOT ALPHABETIC. (CIERR 530)
109	532	FILE NAME > 8 CHARACTERS LONG. (CIERR 532)
109	560	FIRST CHARACTER IN LOCK WORD NOT ALPHABETIC. (CIERR 560)
109	561	LOCKWORD EXPECTED, NOT FOUND. (CIERR 561)
109	562	LOCKWORD > 8 CHARACTERS LONG. (CIERR 562)
109	564	EMBEDDED NON-ALPHANUMERIC CHARACTER IN LOCKWORD. (CIERR 564)
109	565	MISSING DELIMITER AFTER LOCKWORD. (CIERR 565)
109	1031	INVALID DEVICE CLASS NAME. (CIERR 1031)
109	1032	DEVICE CLASS NOT PRESENT ON SYSTEM. (CIERR 1032)
109	1033	NO SUCH LOGICAL DEVICE NUMBER IN THE SYSTEM. (CIERR 1033)
109	1034	MUST BE A DISC DEVICE. (CIERR 1034)
110	1037	LOGICAL DEVICE NUMBER ! NOT AVAILABLE FOR RESTORE. (CIERR 1037)
111	1030	CANNOT RESTORE TO VIRTUAL DEVICE. (CIERR 1030)
111	1043	EXPECTED DEVICE NAME AFTER "DEV=". (CIERR 1043)
111	1045	EMBEDDED NON-ALPHANUMERIC CHARACTER IN DEVICE ID. (CIERR 1045)
115	913	USER LACKS SAVE ACCESS TO SPECIFIED GROUP. (CIERR 913)
115	914	FILES CANNOT BE SAVED IN ANOTHER ACCOUNT. (CIERR 914)
116	906	DUPLICATE NAME IN DIRECTORY. (CIERR 906)
117	915	DIRECTORY OUT OF SPACE - SYSTEM PROBLEM. (CIERR 915)
119	916	IN USE: CAN'T BE PURGED. (CIERR 916)
120	350	LOCKWORD SUPPLIED BY USER DIFFERENT FROM FILE. (CIERR 350)
120	351	ACTION DISALLOWED SINCE NOT CREATOR OF FILE. (CIERR 351)
121	917	GROUP FILE SPACE WOULD EXCEED LIMITS. (CIERR 917)
122	918	ACCOUNT FILE SPACE WOULD EXCEED LIMITS. (CIERR 918)
200	624	UNABLE TO CREATE PROGRAM TO BE RUN. (CIERR 624)

MPE II Error #	MPE III Error #	MESSAGE/WARNING
200	648	UNABLE TO CREATE "BASIC" SUBSYSTEM. (CIERR 648)
200	650	UNABLE TO CREATE ! SUBSYSTEM. (CIERR 650)
200	652	UNABLE TO CREATE ! COMPILER SUBSYSTEM. (CIERR 652)
200	654	UNABLE TO CREATE COMPILED PROGRAM AS PROCESS FOR "GO" STEP. (CIERR 654)
201	617	DL SIZE VALUE MUST BE BETWEEN -1 AND 62767. (CIERR 617)
201	625	UNABLE TO LOAD PROGRAM TO BE RUN. (CIERR 625)
201	649	UNABLE TO LOAD "BASIC" SUBSYSTEM. (CIERR 649)
201	651	UNABLE TO LOAD ! SUBSYSTEM. (CIERR 651)
201	653	UNABLE TO LOAD ! COMPILER SUBSYSTEM. (CIERR 653)
201	655	UNABLE TO LOAD COMPILED PROGRAM FOR "GO" STEP. (CIERR 655)
203	627	ENTRY NAME MORE THAN 15 CHARACTERS LONG. (CIERR 627)
205	616	STACK SIZE VALUE MUST BE BETWEEN 511 AND 62767. (CIERR 616)
208	626	INVALID PROGRAM FILE. (CIERR 626)
250	621	PREP FAILED DUE TO SEGMENTER ERROR. (CIERR 621)
250	644	PREP STEP FAILED, NO RUN WAS DONE. (CIERR 644)
800	1760	CLINE EQUATE TABLE FULL. (CIERR 1760)
801	1761	BACK CLINE REFERENCE NOT FOUND. (CIERR 1761)
802	1762	TOO MANY BACK CLINE REFERENCES. (CIERR 1762)
803	1763	INVALID CLINE DESIGNATOR. (CIERR 1763)
804	1764	CLINE EQUATION NOT FOUND. (CIERR 1764)
900	900	END OF FILE ON INPUT. (CIERR 900)
901	901	I/O ERROR ON INPUT. (CIERR 901)
950	950	END OF FILE ON LIST FILE. (CIERR 950)
951	951	UNEXPECTED I/O ERROR ON LIST FILE. (CIERR 951)

The following table, which matches the MPE III error message numbers listed above with the respective MPE II message numbers, is provided for user reference.

MPE III	MPE II	MPE III	MPE II	MPE III	MPE II
82	82	621	250	1300	60
200	5	622	108	1301	60
201	6	624	200	1302	60
202	21	625	201	1305	26
203	5	626	208	1306	27
204	2	627	203	1307	26
205	59	640	5	1308	60
206	59	641	15	1309	64

MPE III	MPE II	MPE III	MPE II	MPE III	MPE II
208	5	642	5	1311	20
209	57	643	2	1312	20
210	20	644	250	1313	20
211	20	645	6	1314	20
212	21	647	15	1315	20
213	20	648	200	1316	20
214	20	649	201	1317	20
215	21	650	200	1318	20
216	28	651	201	1319	20
217	28	652	200	1320	20
218	28	653	201	1321	20
219	28	654	200	1322	20
220	22	655	201	1323	20
221	27	656	56	1395	20
222	27	657	58	1396	20
223	28	658	65	1397	20
224	28	700	20	1398	20
225	28	701	22	1399	20
226	28	702	20	1401	5
227	28	705	4	1402	1
228	28	706	4	1403	9
229	24	707	4	1411	14
230	24	708	4	1412	14
231	24	709	20	1413	14
232	24	710	107	1421	1
233	24	711	20	1422	1
234	24	715	107	1424	21
235	27	716	29	1426	21
236	27	717	79	1429	29
237	27	723	20	1431	4
238	27	724	4	1432	4
239	27	725	4	1433	20
240	27	727	79	1434	29
241	27	727	107	1435	29
242	20	730	5	1436	8
243	20	731	5	1437	8
243	22	732	5	1438	8
244	27	733	5	1439	8
245	21	734	5	1441	8
246	22	735	5	1451	21
247	20	736	20	1452	26
248	24	737	20	1453	28
249	24	738	20	1454	21
250	23	739	20	1455	27
251	20	740	20	1456	26
252	27	741	24	1458	48
253	30	742	27	1459	22
254	23	743	22	1460	4

MPE III	MPE II	MPE III	MPE II	MPE III	MPE II
255	20	744	27	1461	28
256	27	745	24	1462	23
257	59	746	27	1463	23
258	59	747	22	1464	28
259	59	748	22	1465	28
260	29	749	24	1466	22
262	23	750	25	1467	4
263	23	751	50	1468	23
264	30	752	50	1469	23
265	27	753	24	1470	31
266	30	754	21	1471	23
267	23	755	29	1472	27
269	20	756	29	1473	28
270	27	758	29	1500	28
271	30	760	29	1501	26
272	23	761	27	1502	21
273	22	762	29	1505	22
274	22	765	24	1506	29
275	20	766	29	1507	29
276	56	767	24	1508	29
277	20	768	23	1509	22
278	20	769	23	1510	26
296	27	770	27	1511	26
299	22	773	24	1514	28
350	120	774	23	1515	20
351	120	775	23	1516	22
352	108	776	27	1517	29
353	16	779	24	1518	22
354	109	780	23	1519	29
355	109	781	23	1520	27
360	6	782	27	1521	27
361	6	785	50	1530	22
370	5	786	51	1531	22
371	22	787	54	1532	30
375	6	788	54	1533	26
376	6	789	54	1534	26
380	5	790	52	1535	28
381	6	791	51	1539	28
382	22	792	50	1540	20
386	20	793	53	1541	20
390	55	794	52	1542	22
391	6	795	52	1543	20
392	55	796	27	1544	21
397	20	797	27	1544	22
400	109	798	23	1545	22
401	109	798	30	1546	22
410	6	850	4	1547	22
411	109	900	900	1548	23

MPE III	MPE II	MPE III	MPE II	MPE III	MPE II
420	30	901	901	1549	23
422	4	905	73	1550	30
423	4	906	116	1551	27
424	20	907	108	1552	21
426	20	908	107	1553	22
427	5	909	106	1554	22
428	16	910	79	1555	22
500	20	913	115	1556	27
501	20	914	115	1580	22
502	22	915	117	1581	22
503	22	916	119	1582	22
504	22	917	121	1583	22
505	22	918	122	1590	83
506	22	950	950	1590	100
507	22	951	951	1591	22
508	22	955	4	1592	22
509	22	956	4	1610	20
510	22	957	4	1611	20
511	22	958	4	1612	20
512	22	959	4	1613	20
513	25	962	4	1614	20
514	25	963	4	1615	20
515	25	964	4	1616	20
516	25	965	4	1617	20
517	25	975	1	1618	20
518	25	976	2	1619	75
519	62	977	3	1626	76
530	109	980	5	1630	5
531	21	981	7	1631	6
532	107	984	59	1636	64
532	109	987	11	1640	5
540	29	989	2	1641	6
541	21	1001	22	1642	66
542	29	1002	22	1643	67
543	29	1003	22	1650	5
544	29	1004	22	1651	6
550	29	1005	21	1656	20
551	21	1006	20	1660	5
552	29	1007	27	1661	6
553	29	1008	20	1662	23
554	29	1009	22	1663	22
560	109	1010	22	1670	5
561	109	1011	5	1675	21
562	109	1012	6	1676	22
563	20	1013	20	1680	20
564	109	1015	10	1681	5
565	109	1016	61	1690	6
580	55	1017	61	1691	6

MPE III	MPE II	MPE III	MPE II	MPE III	MPE II
581	55	1018	61	1692	72
582	55	1020	16	1693	71
583	20	1022	20	1694	70
586	20	1029	73	1701	22
590	29	1030	111	1702	22
591	21	1031	109	1760	800
592	29	1032	109	1761	801
593	29	1033	109	1762	802
594	29	1034	109	1763	803
600	6	1035	78	1764	804
601	6	1036	78	1766	29
602	6	1037	110	1767	29
603	21	1038	78	1768	29
604	20	1039	6	1769	20
605	20	1040	20	1770	21
606	21	1041	27	1771	20
607	22	1042	20	1772	30
608	22	1043	111	1773	23
609	22	1044	41	1774	20
610	22	1045	111	1775	21
611	22	1046	10	1776	29
612	20	1047	61	1777	27
613	63	1048	61	1778	23
614	30	1049	61	1779	23
615	30	1050	61	1780	29
616	205	1051	5	1781	23
617	76	1052	20	1782	6
617	201	1054	77	1783	21
618	22	1055	77	1784	5
619	22	1056	77		
620	27	1057	20		

B. CHANGES TO INTRINSICS

In PRINTOP, the only valid values for the carriage control parameter are %320 (no carriage return, line feed) and 0 (carriage return, line feed). In PRINTOPREPLY, the carriage control character is ignored. Under MPE II, these intrinsics were documented as accepting a variety of carriage control parameter values.

New intrinsics are FMTCALENDAR, FMTCLOCK, FMTDATE (all dealing with changing time stamps to strings), PUTJCW, FINDJCW and GENMESSAGE, which is part of the message system, described below.

C. CHANGES IN PASSWORD HANDLING

Under MPE III, when the system asks for a password it turns ECHO off, so the typed characters do not appear on the CRT. For passwords on hardcopy terminals, however, MPE still overprints rows of characters and behaves the same as MPE II.

D. CHANGES TO CONSOLE INTERFACE

Console messages will have a slightly different format and do not send the bell character to the console. The DATE and TIME questions when the system is brought up are in a different format, errors for date and time are changed, and carriage return is accepted as an answer to the DATE question (the default time and date selected by MPE is midnight, November 1, 1972).

E. CHANGES TO SYSTEM FAILURE MESSAGES

Numerous changes (deletions and additions) have been made to the system failure messages. The details of these changes may be found in the Software Update section of this issue and in the Console Operator's Guide (4/78 edition).

F. NEW FILES IN PUB.SYS

COMMAND -- Used by user-defined commands as a directory of all user-defined command catalogs in the system. This file is not part of MPE. It must be built by the System Manager. User-defined commands require that it have a record size of 20 words.

```
:BUILD COMMAND;REC=20,6
```

CATALOG -- MPE will fetch its messages from a catalog (CATALOG.PUB.SYS). This catalog may be changed by the System Manager. Users may access this catalog through the GENMESSAGE intrinsic. Users may also build their own message catalogs with the program MAKECAT (documented in the System Manager/System Supervisor Reference Manual) and access their catalogs with GENMESSAGE (documented in the MPE Intrinsics Reference Manual).

CATALOG.PUB.SYS is not part of MPE. It is not protected and can be purged by the System Manager. If this file is purged, MPE continues to run but has a limited vocabulary: the error section and number are printed without the accompanying text.

CICAT -- Used by the Help subsystem to hold command descriptions. This file is not part of MPE. It must be :RESTOREd from tape if it is purged, or built using the program MAKECAT.

MAKECAT -- Program used to build a message system catalog. This file is part of MPE and is protected from being purged.

NOTE: None of the new files in PUB.SYS mentioned above are constrained to residence on system disc.

SECTION TWO: MPE II/III CONFIGURATION DEPENDENCIES

Len Croley
HP General Systems Division

In order to accommodate the enhancements discussed above, several adjustments were made to the internals of the operating system. These adjustments may affect the manner in which certain user programs run. For example, the new system error message catalog (CATALOG.PUB.SYS) will affect programs which depend upon specific error checks. Several of the more important areas in which MPE III may affect user programs are discussed below.

Example SYSDUMP

The following SYSDUMP dialogue is provided for user reference. Paragraph references have been inserted to note where, in this article, specific parameter changes are discussed. To simply check what the current value of a parameter is, perform a :SYSDUMP $NULL (Note: "$NULL" is now required if a valid tape filename is not supplied).

```
:FILE DUMPTAPE;DEV=TAPE
:SYSDUMP *DUMPTAPE

ANY CHANGES? Y
SYSTEM ID = HP32002B.00.00.?
MEMORY SIZE = 192.?
I/O CONFIGURATION CHANGES?

    <<REFERENCE PARAGRAPH # 21>>

SYSTEM TABLE CHANGES? Y
CST = 192.?

     <<REFERENCE PARAGRAPH # 4>>
```

```
EXTENDED CST = 200.?
DST = 200.?

     <<REFERENCE PARAGRAPH # 6>>

PCB = 48.?
I/O QUEUE = 48.?
TERMINAL BUFFERS = 48.?
SYSTEM BUFFERS = 8.?

     <<REFERENCE PARAGRAPH # 15>>

MEMORY MANAGEMENT TABLE = 256.?
ICS = 512.?
UCOP REQUEST QUEUE = 32.?
TIMER REQUEST LIST = 32.?
BREAKPOINT TABLE = 32.?
MISC CONFIGURATION CHANGES? Y
LIST GLOBAL RINS?
DELETE GLOBAL RIN?
# OF RINS MIN = 5, MAX = 48.?
# OF GLOBAL RINS USED = 2, MAX = 16.?
# OF SECONDS TO LOGON = 120.?
MAX # OF CONCURRENT SESSIONS = 16.?
MAX # OF CONCURRENT RUNNING JOBS = 2.?
DEFAULT JOB CPU TIME LIMIT = 0.?
MESSAGE CATALOG CHANGES?
LOGGING CHANGES? Y

     <<REFERENCE PARAGRAPH # 17>>

LIST LOGGING STATUS?
STATUS CHANGES?
LOG FILE RECORD SIZE (SECTORS) = 2.?
LOG FILE SIZE (RECORDS) = 1023.?
DISC ALLOCATION CHANGES? Y
VIRTUAL MEMORY = 5120.?

     <<REFERENCE PARAGRAPH # 5>>

DIRECTORY USED = 546, MIN = 754, MAX = 768.?

     <<REFERENCE PARAGRAPH # 3>>

LIST VOLUME TABLE?
DELETE VOLUME?
ADD VOLUME?
LIST VOLUME TABLE?
MAX # OF SPOOLFILES KILOSECTORS =128?
# OF SECTORS PER SPOOLFILE EXTENT = 384.?
SCHEDULING CHANGES?
SEGMENT LIMIT CHANGES? Y
MAX # OF CONCURRENT RUNNING PROGRAMS = 24.?
MAX CODE SEG SIZE = 8192.?
MAX # OF CODE SEGMENTS/PROCESS = 63.?
```

```
MAX STACK SIZE = 31232.?
MAX EXTRA DATA SEG SIZE = 8192.?
MAX # OF EXTRA DATA SEGMENTS/PROCESS = 4.?
STD STACK SIZE = 1200.?
SYSTEM PROGRAM CHANGES? Y
ENTER PROGRAM NAME , REPLACEMENT FILE NAME
```

1. A.01.03?

MIT 1814 contains the first version of MPE III. Past references to software fixes that were to be contained in version A.01.03 of MPE II, which has been superceded by this new system, should be considered to reference version B.00.00 of MPE III.

2. UPDATE, COLDLOAD, and RELOAD from MPE II Tapes

Because of changes to the system directory and the I/O configuration needed to implement the private volumes facility, the UPDATE, COLDLOAD and RELOAD commands are not sufficient for conversions between B.00.00 and A.01.02 (or earlier versions). Such conversions can be accomplished by using the utility programs contained in CREATOR.SYS (see "MPE Conversion Procedures" in this issue). This limitation will not apply to conversions between B.00.00 and future versions where the standard procedures (UPDATE, COLDLOAD, and RELOAD) will be operable.

3. System Directory Size

New account entry formats have been designed to accommodate the information needs of the private volumes facility. These formats, described in Appendix D of the System Manager/System Supervisor Reference Manual (4/78 edition), require more storage space than did the formats under MPE II. Consequently, a limited number of user directories may need to be enlarged. To determine the volume of storage a system is currently using, check the USED= , MIN= , and MAX= values from a SYSDUMP $NULL.

If your system directory currently uses in excess of 4500 sectors, some reconfiguring of the directory before MPE III is installed will be required. Your HP Systems Engineer should be contacted.

If the MAX= size is under 6000 sectors, and the USED=/MAX= ratio is greater than 70 percent, the MAX= size should be increased accordingly, before MPE III is installed. This can be easily accomplished by doing a full SYSDUMP, answering the MAX= question with a value at least twenty percent larger than the current MAX= value, and RELOADing the system.

The RELOAD should be performed with whichever option will produce the most free space on LDEV 1. For most users, this will be OPTION SPREAD. If your system disc is an HP 7905, you may want to remove class name, DISC, from LDEV 1, forcing files to be reloaded onto other discs.

4. SL Code Segments

MPE III will require approximately 15 more system SL code segments than did MPE II. If below the 192 maximum, the value in the

CST=(value)?

question of the SYSDUMP dialogue can be changed to accommodate the required increase in code segments. A RELOAD or COLDLOAD should follow.

If the CST= value is already at maximum (192), and you are currently using 177 or more entries, you will not be able to reinstall all of your own code segments in SL.PUB.SYS. Because there is no simple method of checking for this problem, please contact your HP System Engineer if you suspect these limits are being reached.

5. Virtual Memory

One problem previously encountered under MPE involved the system's procedure of scanning for free areas in virtual memory. Because of the method used, some users erroneously received "OUT OF VIRTUAL MEMORY" messages during peak load periods.

This problem has been corrected in MPE III. However, users who increased their virtual memory size to avoid this MPE II bug may find their current VM size larger than necessary. If reductions in VM size, through SYSDUMP/RELOAD procedures, are indicated, the reduction process should be gradual.

6. User Defined Commands

For each job and session, MPE II automatically assigns two data segments to the main job/session process. These extra data segments hold the Job Directory Table (JDT) and the Job Information Table (JIT).

The User Defined Command (UDC) enhancement of MPE III requires that a third data segment be assigned for each job/session using UDC's. Accordingly, a user may need to increase the size of the Data Segment Table (DST) for MPE III.

To increase the number of DST's available in your system (maximum of 1024) perform a SYSDUMP, using a future date for the dump date, and alter the DST= value. After the dump has been completed, perform a COLDLOAD to implement the parameter change.

7. Main Process Data Stack

In order to accommodate the UDC enhancement, a larger job/session main process data stack is required. MPE commands have always been parsed on the job/session main data stack. UDC's and the :REDO command, however, require a larger working stack.

8. System Disc Space

MPE III requires approximately 4500 more sectors of disc space than did MPE II, and new files have been added to PUB.SYS. As a result, additional system disc space will be required under MPE III. However, this space requirement should impact only those few users whose system discs are presently full, or nearly so.

9. :LISTF Format

The ACC column has been removed from the LISTF,2 command format. This change could affect programs which search listings generated by the LISTF,2 command.

The format of the :LISTF,-1 command has also been changed and could affect the results of programmatic searches:

Old format: F=bbfilename (b=space)
New format: Fbb=bbfilename

10. Octal Output

Some of the details within the octal output of the LISTUSER, LISTACCT,LISTGROUP, and LISTF,1 commands have been changed. These changes are noted in Appendix D of the System Manager/ System Supervisor Reference manual (4/78 edition).

11. New PUB.SYS Files

Listed below are the new files added to PUB.SYS in MIT 1814. Users who currently have files on PUB.SYS with any of these names should be aware that the files will be overwritten when MPE III is installed on their systems.

- COMMAND
- CATALOG
- CICAT
- HELPCAT

12. FOPEN

In the FOPEN intrinsic certain bits, not used by MPE II, are now reserved for use by MPE III. For example, FOPTIONS.(6:1) is now used for tape labels. User programs that set FOPTION and AOPTION bits -- previously listed as "Reserved for MPE," -to a logical 1, could have unanticipated results.

13. Tape Directory Formats

The format of the SYSDUMP and STORE tapes has been changed under MPE III. A file directory is now written at the beginning of each reel of multi-reel files and volumes. Programs which read from such tapes should be adjusted accordingly. Further details are contained in Appendix F of the System Manager/System Supervisor Reference Manual (4/78 edition).

14. CPU Time Reduction

The file system now locks and unlocks control blocks more efficiently. This will likely result in a reduction in CPU time for most programs and, to a lesser degree, a reduction in elapsed time. Users billing on a CPU time basis may wish to adjust their rates accordingly. Programs which are file access bound, as opposed to those which are CPU bound, will be especially affected. Some potential reductions in CPU time are:

PROCEDURE	REDUCTION
SORT	0 %
COBOL Compile	10-12 %
FCOPY (Disc to disc)	20-25 %

15. System Buffers

The file system no longer uses system buffers, and the default number of system buffers is now eight for all memory sizes. MPE III does, however, use system buffers for other operations not directly related to the file system. Therefore, for normal system operation, the number of system buffers should never be set to less than eight.

Special situations do exist. For example, if the MONITOR facility is used, the number of buffers must be set to 18.

The number of system buffers should be checked after installation of MPE III. If the number of buffers is not set to eight, it can be corrected by adjusting the SYSTEM BUFFER= value in the SYSTEM TABLE CHANGES section of a future date SYSDUMP. To put this parameter into effect, perform a COLDSTART from the SYSDUMP tape.

16. Memory Size Default Values

The CONFDATA file on PUB.SYS now has only one set of default values for all memory sizes. As under MPE II, the operating system still receives default values from the CONFDATA file if the memory size has been altered during SYSDUMP or INITIAL.

17. Log Record Types

Three logging types, new with MPE III, are:

- Physical mount/dismount record
- Logical mount/dismount record
- Tape labels record.

Please refer to the System Manager/System Supervisor Reference Manual (4/78 edition) for a discussion of the formats. To be implemented, these new log record types require a future date SYSDUMP with an adjustment to the LOGGING CHANGES section followed by a COLDSTART from the dump tape.

18. SHARED File Limit

MPE limits the number of files, designated as SHARED, which have been opened more than once and which are still open, to 64. MPE II did not require use of any shared files; MPE III does. Consequently, users who have been operating at or near this 64 file limit may find they will exceed the limit after MPE III is installed and will need to adjust their operations accordingly. The only users -- anticipated to be very few, if any -- who could be affected by this limit are those with applications that access many data bases at the same time.

19. Directory Routine Parameters

In order to implement the Private Volumes facility, several new parameters (non-optional) have been added to certain directory routines. These new parameters may affect contributed library or user programs, written in privileged mode, that call these directory procedures.

20. HP 7905

The HP 7905 should not be used as a serial disc for SYSDUMP. If the cartridge and lower platter have been configured with separate I/O Configuration Table entries (subtypes 4 and 5), SYSDUMP will be able to write only on the cartridge platter (2 heads). The INITIATOR process, however, will try to use all three surfaces to bring up the system, and will fail.

If the HP 7905 is configured as subtype 6 or 7 (for serial disc), all three surfaces available will be used during the SYSDUMP. Removing the cartridge at this point would cause the loss of data stored on the lower platter and, again, failure of the INITIATOR process.

21. SYSDUMP Via Batch Job

Section 6 of the System Manager/System Supervisor Reference Manual (4/78 edition) should be checked for changes in the SYSDUMP dialogue which could affect current user-created STREAM jobs. Of particular note are two new questions in the I/O Configuration Changes section of the dialogue:

- List CS Devices?
- I/O Configuration Changes?

The second question permits users to redo the I/O Configuration Changes section without performing a completely new SYSDUMP.

22. Logon Time

Although the logon process has been streamlined in MPE III, other factors contained therein could cause the process to appear slow. If UDC's have been set, the logon process will require an FOPEN of the UDC file, as well as execution of the OPTION LOGON commands. These steps require time.

The time required for logon may seem especially long if OPTION LIST has not been specified because of the large amount of "non-displayed" work done by the system under this option.

23. =VMOUNT ON,AUTO

If the console command =VMOUNT ON,AUTO is issued, followed by a :STORE @.@.acctname command, no mount requests will be sent to the system console and those groups whose volume sets have not already been mounted will not be stored. To obtain a listing of the files not stored, issue the following commands:

- :FILE T;DEV=TAPE
- :FILE SYSLIST;DEV=LP (Note: The formaldesignator must be SYSLIST)
- :STORE @.@.acctname;*T;SHOW (Show also lists the files stored; names of files not stored are sent to the LP.)

24. JCW Format

The definition of the JCW has been altered slightly under MPE III (the JCW intrinsics now use bit 1 in addition to bit 0). Jobs which explicitly use the JCW should be checked for valid operation.

25. I/O Request Format

Since the format of the console I/O request has been modified slightly, console operators may wish to review the =REPLY section of the Console Operator's Guide (4/78) edition.

26. Lost Disc Space

MPE III records the location of disc space occupied by temporary files in the Job Directory Table (JDT). Since this table is lost when the system crashes, MPE also loses its record of temporary file locations. The actual space on disc, however, is still flagged as used in the disc free space bit map. The RECOVER LOST DISC SPACE feature of the INITIATOR dialogue is used to recover this flagged -- but not recorded -- space.

One method of checking for lost disc space is as follows: (This operation should be necessary only in a catastrophe and is analogous to a RELOAD in the system domain.)

- Store all files in the suspect group on a serial disc or magnetic tape. (Using the COPY feature of the VINIT subsystem will copy the entire disc, not just the area recorded in the Job Directory as used and, therefore, should not be used in this case).
- Reinitialize the disc
- Respan all groups and accounts
- Restore all files.

27. Updating UDC Files

A common process of updating SHARED files, such as User Defined Command files, involves correcting an EDITOR work file and KEEPing the result to the source file. Users should be aware of a pitfall often encountered in this procedure.

Among other things, the KEEP command of EDITOR performs an FOPEN of the source file (using the OLD and EXCLUSIVE parameters) to determine if the file being referenced exists, and an FCLOSE to complete the KEEP procedure. With SHARED files, the FOPEN (EXCLUSIVE) will fail if the file is in use elsewhere, such as in another active job or session. EDITOR will then create a new file,

with the same name as the source, to receive the contents of the work file. The following FCLOSE will fail because there are now two source files with the same name. A DUPLICATE FILE error message will result.

To avoid this confusing situation, simply KEEP the updated work file under another name until exclusive access to the SHARED source file can be assured.

28. Private Volume Drives

Message to all console operators: DO NOT SIMPLY TURN OFF A PRIVATE VOLUME DISC DRIVE. The proper procedure is as follows:

- =DOWN (Repeat =DSTAT until
- =DSTAT drive is AVAIL)
- =VSUSER
- Change Packs
- =UP

For further details, refer to the Console Operator's Guide (4/78 edition)

29. Removable Disc Packs

With removable disc packs the temptation exists to place labels, for identification purposes, on the HP 7920 pack itself. Because of the possibility of damaging the drive, no labels should be placed on the pack -- including the plastic top -but rather, should be placed on the case for the pack. If a label placed on the pack should work free (remember, the pack rotates at 3600 RPM) it could cause a head crash. Damage resulting from such circumstances is not covered by the maintenance contract.

30. Serial Disc versus Magnetic Tape

The serial disc enhancement in MPE III permits the utilization of disc packs in place of magnetic tapes. Most differences are transparent to the user; that is, serial discs are programmed in the same manner as are magnetic tapes. For example, FCONTROL 6 will write a physical EOF on the disc.

One of the differences between serial discs and magnetic tapes involves recovering data after some problem has occured. Unlike on magnetic tape, the record length words which bound each record on serial disc provide a way to determine where the valid data ends when a physical EOF was not written. A user can read the suspect data until a read error occurs and need not be greatly concerned whether the data read is his or something from a previous operation.

Another difference between these two mediums involves the use of the CRITICAL OUTPUT VERIFICATION feature of the FSETMODE intrinsic. With the serial disc enhancement, this intrinsic does not necessarily cause full posting of the data because there is an additional level of buffering. The only way to have buffer contents physically posted to the disc is FCONTROL 6 (WRITE EOF) followed by FCONTROL 8 (BACK TO TAPE MARK or BACKSPACE FILE). To position oneself to overwrite the physical EOF and to continue writing data, follow the above sequence with FSPACE (to backspace one record).

31. New SL Procedures

Several new procedures have been added to the system library, SL.PUB.SYS. If the names of any procedures which you intend to install match those in SL.PUB.SYS, installing your procedures will generate ENTRY POINT ALREADY DEFINED errors. The procedures newly added to SL.PUB.SYS are:

PROCEDURE NAME	SOURCE MODULE
ADJUSTWS	MMCORER
ALLOCSECWS	MMCORER
ALTSECURITY	CIFILEM
AVAILABLE	PVSYSM
AVREC	LABSEG
BACCEPT	DSSEG5
BACKBLOCKREAD	SDISC
BGET	DSSEG5
BUZZFETCH	HELPUSER
CHECK'N'MOVENAM	CIORGMAN
CHECKFILENAME'	CIERR (*)
CHECKHOMEACCT	CISYSMGR
CHECKHOMEGROUP	CISYSMGR
CHECKUL	LABSEG
CHKFORDISMOUNT	STORE
CIBADFILENAME	CIERR
CIERR	CIERR
CISUBSYSFINISH	CIPREPRUN
CKFORLABEL	LABSEG
CLEANDEV	LABSEG
CLEANTAPE	LABSEG
CLEANTLT	LABSEG
CLEANTLTF	LABSEG
CLEANUPVOLUMES	MORGUE
CLOSESDISC	SDISC
CLOSEUDC	UDC
CONDEXP	CIMISC
CONVERTDATE	USER
CONVERTTIME	USER
CPRIMARY	CIMISC
CREATEERROR	CIERR
CREATETLTENT	LABSEG

CTERM	CIMISC
CTRLSDISC	SDISC
CXALTVSET	CIALTORG
CXDSTAT	CIMISC
CXELSE	CIMISC
CXENDIF	CIMISC
CXHELP	CIUSERUTIL
CXIF	CIMISC
CXLISTVS	CISYSMGR
CXLISTVSD	CIALTORG
CXMOUNT	CIMISC
CXMRJE	CIPREPRUN
CXNEWVSET	CIALTORG
CXPURGEVSET	CIORGMAN
CXREDO	CIUSERUTIL
CXSETCATALOG	UDC
CXSHOWCATALOG	UDC
CXSHOWJCW	CIMISC
CXSHOWME	CIUSERUTIL
CXVINIT	CISUBS
CXVSUSER	CIMISC
CYALTVC	CIALTORG
CYALTVS	CIALTORG
CYDIRERR´	CIERR (*)
CYORGCOMS´	CIORGMAN (*)
DEALLOCSECWS	MMCORER
DECAVAILSPACE	MMCORER
DECLAREHOLE	SDISC
DIREC´TO´TAPE	STORE
DIRECBIND	DIRC
DIRECUNBIND	DIRC
DIRMATCH	CILISTF
DIRUPDATE	UDC
DISCERROR	PVSYSM
DISCIO	PVSYSM
DISMOUNT	PVSYSD
DOULABEL	LABSEG
DQPROC	CHECKER
ERROR	UDC
FCLOSEDA	FILESYS7
FEEDCI	UDC
FERROR´	CIERR (*)
FINDCOMUSER	UDC
FINDJCW	JOBTABLE
FINDPARM	USER
FINDPARMD	USER
FINDSDISCGAP	SDISC
FMTCALENDAR	USER
FMTCLOCK	USER
FMTDATE	USER
FORMACCESS´	CIFILEM (*)
FORMNAME	USER
FORMUSERID	CIUSERUTIL
GENMESSAGE	USER
GENMSG	MESSAGE

GENMSGU	MESSAGE
GETABENTRY	PVSYSD
GETCOMREC	UDC
GETDIRINFO	CILISTF
GETGENNAME	CILISTF
GETJITINFO	PVSYSM
GETMVTABENTRY	PVSYSD
GETNEXTIFOP	CIMISC
GETNUM	USER
GETSUBTYPE	PVSYSM
GETVSDEFN	PVSYSM
GPTMOD	SDISC
HELPROC	HELPUSER
IMPLICITMNT	CISYSMGR
INCAVAILSPACE	MMCORER
INITUDC	UDC
INITUDCNO	UDC
JCWPRIMARY	CIMISC
JITBIND	PVSYSD
JOBSESSIONMAIN	CIERR
LINKLABEL	LABSEG
LISTFDISMNT	CILISTF
LISTFNOTMTDMSG	CILISTF
LISTVSDEFN	CISYSMGR
LISTVSINFO	CISYSMGR
LOADERROR	CIERR
LOG12	PCREATE
LOG13	PCREATE
LOG14	PCREATE
LOGIT	LABSEG
MOUNT	PVSYSM
MVTABLE	PVSYSD
NEXTPARM	USER
NEXTPARMD	USER
ONOLST´	MMCORER (*)
ORDERBANKS	MMCORER
PARSECOM	UDC
PARSEJOBID	JOBTABLE
PARSEUDCHEAD	UDC
PMOUNTED	PVSYSM
POSITION	LABSEG
PUTABENTRY	PVSYSD
PUTJCW	JOBTABLE
PUTMVTABENTRY	PVSYSD
PVCLOSE	FILESYS7
PVOPEN	FILESYS6A
PVRECIP	PVSYSM
QUALIFYFILENAME	USER
READBLOCK	SDISC
READFILE	UDC
READSDISC	SDISC
RECIPUDC	UDC
REELSWITCH	LABSEG
RELCOMREC	UDC
RITESDISC	SDISC

SDICSFINDGAP	SDISC
SDISCIO	SDISC
SDISCTRANSFER	SDISC
SDISCWRITE	SDISC
SEARCHUDC	UDC
STARTVOLUME	RESTORE
TRANSJCWEQUATE	CIMISC
UDC	UDC
UDCCI	CIINIT
UDCHELP	UDC
UPSHIFT	UDC
USERTABLE	PVSYSD
VSUSERCOM	PVCOMSEG
VTABINDEX	PVSYSM
WAITFORDISC	SDISC
WRITETLAB1	LABSEG
WRITETLAB2	LABSEG
ZEROBYTE4GENMSG	UTILITY1

(*) Indicates that the new procedure name, except for the addition of a prime character (′), is identical to an MPE II procedure name.

32. Performance Features

Several internal processes have been modified with MPE III to improve performance.

A. The memory manager has been changed to:

- Deallocate memory space more efficiently
- Alter the working set table size dynamically
- Search the list of queued processes more quickly.

B. The file system has been modified to speed up file control block locking and unlocking.

The memory management changes will tend to improve performance for all users, but increasingly so as the system memory sizes increase. The file system changes will speed up processing for users whose applications are oriented toward data base manipulations.

These theories have been verified in our performance testing. Upon execution, test jobs ran better on MPE III than on MPE II and the improvement was greater on systems with larger memory sizes.

MPE II/III CONVERSION PROCEDURES

Terry Ishida
HP General Systems Division

I. PREPARATION

The conversion from MPE II to MPE III will, in most cases, be a simple process involving two short utility programs and a standard MIT update. However, in some cases a full RELOAD may be required. Therefore, the conversion should take place during an appropriately scheduled down time.

Customers should be aware of several items in the MPE II to MPE III conversion process and of preparations that can be completed before the CE arrives on-site.

A. Conversion Items

1. The INITIATOR for MPE III will not operate on systems containing only 128 kbytes of main memory. If you have a system of this type, HP will provide the additional memory required through your Customer Engineer. Please advise the CE of your system's memory limitations before he attempts to install MPE III.

2. The MPE II directory will increase by approximately 25% for MPE III. This is due to a structural change in the system directory and the implementation of Private Volumes.

3. The conversion will require two free spaces on the system disc (LDEV 1). The first free space must be equal to the maximum size of the directory. This can be checked by performing a SYSDUMP. The second free space must be 550 sectors for a required new file. Each of these free spaces must be a contiguous free space (1 extent).

4. The SL will increase to a total of approximately 5000 sectors, and must reside on the system disc (LDEV 1). LDEV 1 must have enough TOTAL free space for the two areas described above plus the SL increase.

All of these items are concerned with the available space on LDEV 1. If more than 75% of the existing directory is being used, a RELOAD is necessary for conversion. If free space does not exist on the system disc, then space must be made by purging files/groups/accts or a RELOAD will be necessary.

B. Customer Preparation

Of the following, steps 1 through 4 may be completed by the customer anytime prior to the CE's arrival on-site. Step 5 should be completed immediately prior to the CE's arrival. Failure to perform these steps may hinder the conversion.

1. COOLSTART and RECOVER LOST DISC SPACE (see step 5.7, page 6-59 of the System Manager/System Supervisor Reference Manual - 6/76 edition).

2. Set SYSTEM BUFFERS=8. This can be done by performing a SYSDUMP (see step 4.7, page 6-23 of the System Manager/System Supervisor Reference Manual -6/76 edition), changing the parameter value, and COLDSTARTing from the SYSDUMP tape.

3. Check DIRECTORY SIZE, USED and MAX. This can be done through a SYSDUMP (see item #3 of "MPE II/III Configuration Dependencies" in this issue). If more than 75% of the DIRECTORY MAX is USED, then the directory must be increased accordingly through a SYSDUMP and RELOAD.

4. :BUILD the following files in PUB.SYS

   - :BUILD CVTDDIR;DISC=<directory MAX>,1,1
   - :BUILD CATALOG;DISC=550,1,1;DEV=1
   - :BUILD SLSIZE;DISC=5000,1,1;DEV=1

   If these files cannot be built, space must be made by storing and purging enough files/groups/accts or by RELOADing.

   NOTE: File SLSIZE need not be built if your SL.PUB.SYS already has a 5000 sector limit.

5. Immediately before the CE's arrival, perform a SYSDUMP, DATE ZERO. Mark this, MPE II RELOAD TAPE.

II. CONVERSION

The following steps will be performed by the CE during a scheduled down time to convert from MPE II to MPE III:

1. The CE will logon as MANAGER.SYS,PUB and will remove all passwords from MANAGER.SYS,PUB and FIELD.SUPPORT,PUB. Job and session limits will be set to 1,1 (=LIMIT 1,1) and =STREAMS will be enabled.

2. A SYSDUMP to tape will be performed to check:

   a. SYSTEM BUFFERS=8

      If not set at 8, an adjustment will be made through a SYSDUMP and COLDSTART.

   b. The DIRECTORY must have room for a 25% expansion. If sufficient room does not exist, a future date SYSDUMP will be performed to increase the directory size; then this SYSDUMP tape will be RELOADed, OPTION ACCOUNTS. Next, see step 1.

   c. Other System Table sizes should not be excessively large. This includes the CST, XCST, DST, PCB, and so forth. Appendix C of the System Manager/System Supervisor Manual is the appropriate reference for these values. The I/O configurations will also be checked to make sure that there are no "holes" in allocated LDEV numbers or DRT numbers. (e.g. LDEV 200 should not be allocated unless LDEV's 1-199 are, for the most part, filled. This is especially true for DRT's.) If tables must be reconfigured, a SYSDUMP and COLDSTART will be performed to do so.

3. A :LISTF,2 will be entered for the following files in PUB.SYS :

FILE	LIMIT	#X
CVTDDIR	directory max	1
CATALOG	550	1
SLSIZE or SL	5000	1

   If these files are not present, the CE will attempt to build them (see step 4 of Customer Preparation). If the files cannot be built, the CE will RELOAD, OPTION ACCOUNTS from your MPE II RELOAD TAPE, and return to step 1.

4. :NEWGROUP CREATOR

   This creates a new group in the SYS account which will contain the MIT installation files.

5. The following files will be :RESTOREd from the MPE III MIT:

   - SUPACCT.PUB.SYS
   - @.CREATOR.SYS

6. :STREAM SUPACCT.PUB.SYS

   This will recreate the SUPPORT account. Your CE will wait until this job is finished and printed before proceeding to the next step.

7. :STREAM BEFORCVT.CREATOR.SYS

   This stream job is long and will do the following:

   a. Alter the capability of the group CREATOR.SYS

   b. Purge files CVTDDIR, CATALOG, SLSIZE in PUB.SYS

   c. Stream another job which will:

      i. :RUN FWDCVT

      TIME: approximately 10 minutes per 1000 files. This creates an alternate directory which is not activated. If this program aborts, the CE will RELOAD, OPTION ACCOUNTS from your MPE II RELOAD TAPE, expand the DIRECTORY SIZE by 25% during the RELOAD, and return to step 1.

      ii. :RUN FWDZAP

      TIME: 3 to 5 minutes. This activates the new directory. If this program should abort, the CE will RELOAD, OPTION ACCOUNTS from your MPE II RELOAD TAPE, and return to step 1.

   NOTE: If this stream job executes correctly, a message will appear at the system console to update or coldload to MPE III. The system will then HARD HALT. This is a normal termination. If the stream job aborts and a listing is printed showing the abort, then the CE will RELOAD, OPTION ACCOUNTS from your MPE II RELOAD TAPE, and return to step 1.

8. UPDATE to MPE III using the new MIT.

   If the UPDATE should fail with the message,

   "OUT OF MEMORY"

   then the CE will RELOAD, OPTION ACCOUNTS from your MPE II RELOAD TAPE, recheck table sizes as in step 2, and return to step 1.

9. Logon to MANAGER.SYS,CREATOR. Enable =STREAMS.

10. :STREAM AFTERCVT.CREATOR.SYS

    This job will alter the capabilities of MANAGER.SYS and FIELD.SUPPORT.

11. =SHUTDOWN and COOLSTART the system.

    This step must be done before Private Volumes can be used.

12. Logon to MANAGER.SYS,CREATOR. Enable =STREAMS.

13. From the MPE III MIT, :RESTORE @.@.@

14. PERFORM STANDARD MIT PROCEDURES (e.g. :RUN SOFTWARE.CREATOR).

III. CUSTOMER COMPLETION

The following steps must be performed by the customer, following a successful conversion from MPE II to III:

- If a RELOAD, OPTION ACCOUNTS was performed by the CE, then :RESTORE @.@.@;KEEP;FILES=<# of files> (or all desired files) from the MPE II RELOAD TAPE. Remember, the default value for "# of files" is 4000.

- Perform a SYSDUMP, DATE ZERO. Mark as MPE III RELOAD TAPE.

IV. BACKWARD CONVERSION

Should the need arise, utility programs exist which convert from MPE III back to II. Disc free space is not as crucial in converting backwards, so the process should be easier.

A. Customer Preparation

These steps should be performed by the customer immediately prior to the CE's arrival on-site.

1. :STORE onto tape all Private Volume groups (i.e. all groups residing on Private Volumes). Use the SHOW option to get a list of all groups/files stored.

2. Perform a SYSDUMP, DATE ZERO. Mark this as the latest MPE III RELOAD TAPE.

3. In PUB.SYS, :BUILD CVTDDIR;DISC=<directory max>,1,1. The directory max can be found be doing a SYSDUMP $NULL. If CVTDDIR cannot be built, create free space by purging files until it can be built.

B. Conversion

The CE will perform the following steps to convert from MPE III back to II:

1. Configure out MTS (Multipoint), MRJE (if converting back to MIT 1737) and all Private Volume discs by performing a SYSDUMP, then a COLDSTART.

2. The CE will logon to MANAGER.SYS,PUB; set =LIMIT 1,1; enable =STREAMS and remove all passwords from MANAGER.SYS,PUB.

3. :NEWGROUP CREATOR

   This creates a new group in the SYS account which will contain the conversion programs.

4. From the MPE III MIT, the CE will restore @.CREATOR.SYS

5. :STREAM BACKCVT.CREATOR.SYS

   This stream job is long and will do the following:

   a. Alter the capability of the group CREATOR.SYS

   b. Purge CVTDDIR.PUB.SYS

   c. Stream another job which will:

      1. :RUN BWDCVT.CREATOR.SYS

      TIME: approximately 10 minutes per 1000 files. This creates an alternate directory which is not activated. The CE will not access any files nor alter the accounting structure after running this program.

      2. :RUN BWDZAP.CREATOR.SYS

      TIME: 3 to 5 minutes.

   NOTE: If this stream job executes correctly, a message will appear at the system console to update or coldload to MPE II. The system will then HARD HALT. This is a normal termination.

6. UPDATE to MPE II using the previous MPE II MIT or your MPE II RELOAD TAPE.

7. From the MPE II MIT or your MPE II RELOAD TAPE, the CE will :RESTORE the following files:

   - LISTDIR2.PUB.SYS
   - SADUTIL.PUB.SYS

8. If you wish to add the private volume drives back to the system, the CE will perform a SYSDUMP which:

   a. Adds the new disc LDEV's to the I/O Configuration Table.

   b. Adds the new volume names and LDEV's to the Volume Table. The CE must ensure the volume names match the correct volumes and devices, then COLDSTART the system.

9. Logon to MANAGER.SYS,PUB

10. :PURGEGROUP CREATOR

    This will purge all of the MIT conversion programs. Proceed to Customer Completion.

C. Customer Completion

The following steps must be performed by the customer following a successful conversion from MPE III to II:

1. :RESTORE, from the latest MPE III RELOAD TAPE, any files which may have been purged to make room for file CVTDDIR (see step 3 of Customer Preparation).

2. :RESTORE, as needed, groups which previously resided on private volumes. Users should note that not all files may fit on disc or in the directory since these groups were not originally in the system domain. If the directory is too small, a RELOAD is required. If there is not enough disc space, the only alternative is to purge files/groups/accts and RESTORE only those files immediately needed.

3. Perform a SYSDUMP, DATE ZERO. Mark as latest MPE II RELOAD TAPE.

2026/3000 COMMUNICATIONS LINK VIA DISTRIBUTED SYSTEM 3000

Dick Baumann
HP General Systems Division

The Distributed Systems/3000 (DS/3000) Software enhancements to the MPE operating system provide the capability to establish interactive communications links between different types of HP computer systems. One of these links permits an HP 3000 Series II Computer System to communicate with an HP 2026 system.

The HP 2026 is a specialized system for data entry, retrieval, and data communications applications, designed to meet the data entry and data communications needs of companies with geographically dispersed locations. Each HP 2026 is capable of communicating interactively with a network of HP 2645 terminals. Data transmission between an HP 3000 and an HP 2026 is normally in batch mode. Thus, data can be entered at an HP 2026 station and then transmitted to a central HP 3000 for batch processing.

To enhance the remote processing functions and data communications between an HP 3000 host computer and an HP 2026 system, DS/3000 provides:

- Remote command processing from the HP 2026 console
- Point-to-point file transfer

REMOTE COMMAND PROCESSING

All HP 3000 MPE commands can be executed remotely from the system console of the HP 2026 in an interactive mode. After the remote data link is established, the procedure for entering the MPE commands at the HP 2026 system console is as follows:

```
#COMMAND
```

where "command" is the desired MPE command in its normal form. For example, to display the names of all disc files residing in the remote log-on group and account of the remote HP 3000, you could issue a remote LISTF command from the local HP 2026 system console as follows:

```
#LISTF
```

The system responds by printing

```
FILENAME

DATA1   DATA5   DATA6   FILE3   SOURCE1
```

This new capability opens the way to do many other applications from the 2026 console, such as program development and access to the HP 3000's files.

POINT-TO-POINT FILE TRANSFER

HP 2026 users located at remote terminals can create files to be sent to the host HP 3000 and place them in a queue until transmission to the HP 3000 is initiated from the HP 2026 system console. The system operator at the HP 2026 system console can specify additional files for transfer after the 2026/3000 link is established.

Files residing on the HP 3000 can be transmitted to the HP 2026 at the request of the system operator at the HP 2026 system console. Requests can be made for specific files, or all files named in the HP 3000 transfer queue may be sent to the HP 2026 after the 2026/3000 link is established. The queued files could, for example, be report listings from various operations performed on the HP 3000. Thus, multiple processing systems on the HP 3000 can send information to the HP 2026 by placing their report listings in disc files and these disc file names in the queue for transfer to the HP 2026.

Procedures may also be initiated in advance by the HP 2026 system operator to permit the HP 3000 to retrieve all of the HP 2026 queued files and send any queued HP 3000 files to the HP 2026 on request.

A typical DS application for the HP 2026 could be the creation of order files on a local HP 2026 system at a sales office. Once the communications link has been established by either the HP 2026 or the HP 3000, these data files could be transferred to the remote HP 3000 for processing. After the orders are processed, report files and updates to the local HP 2026 data files could be transmitted back to the local HP 2026.

IMAGE/3000 SUPPORTS RDBA

Sam Boot
HP General Systems Division

In conjunction with DS/3000 networks, IMAGE users can now access data bases stored on remote DS nodes without running programs in the remote node. Using Remote Data Base Access (RDBA) features, programmers may write programs which run on local HP 3000's and which manipulate data in remote data bases. In some cases, programs so written are identical to programs written to access local data bases. One may implement RDBA in one of the three ways described below.

A. USING ON-LINE COMMANDS

The first way to implement remote access is through on-line commands. In this method the user:

- Logs-on to the local HP 3000.
- Types a :DSLINE command to establish connection to a remote node.
- Types a :REMOTE HELLO command to logon to the remote HP 3000.
- Types a :FILE equation to equate the data base mentioned in the program to the remote data base.
- Runs the local program. The program opens the data base mentioned in the :FILE equation. The system automatically opens the remote data base and performs future data base requests on the remote data base. The program is coded as if the data base existed on the local HP 3000.

B. USING THE COMMAND INTRINSIC

For users not desiring to type all of the commands on-line, programmers may imbed the commands into the application program using the MPE COMMAND intrinsic. The user simply logs-on to the local HP 3000 and runs the application program. The :DSLINE, :FILE, and the :REMOTE HELLO commands are all coded into the application program and are issued from the program prior to opening the data base. If the data base is moved from one remote node to another, the programmer must change the application program accordingly so that the COMMAND intrinsic issues the correct MPE commands.

C. USING A DATA-BASE-ACCESS FILE

The third method is to use a data-base-access file. The programmer uses EDIT/3000 to create a file containing the :DSLINE command, the :FILE equation, and the remote logon codes. The

application program uses the name of the data-base-access file as the name of the data base when the program attempts a data base open. The system performs the remote logon for the user and accesses the remote data base automatically thereafter. One advantage of the data-base-access file is that a programmer may specify a list of logon user, group, and account codes for the remote machine. These are equated in the data-base-access file to a list of local logon codes. In this way, local users in one account are logged on to an account on the remote node of the programmer`s choosing.

Whichever method is used, RDBA offers a high-level tool to build and use remote data bases in an HP Distributed Systems Network.

MRJE/3000 CAPABILITIES

Richard Scott
HP General Systems Divisions

MRJE/3000 is a new IBM compatible HASP workstation emulator for the HP 3000 Series II. Complementing RJE/3000 (IBM 2780/3780 emulation), MRJE/3000 extends multileaving remote job entry into the full multiprogramming environment of the 3000. It enables HP 3000 users to submit jobs to and retrieve job output from IBM 360/370-compatible host systems which utilize HASP II (version 3.1 or 4.0) or JES2 job entry subsystems. Up to seven job input streams, seven print streams, seven punch streams and one interactive HASP or JES console stream can be interleaved on the same communications line. A single HP 3000 with MRJE/3000 installed can simultaneously communicate with multiple IBM 360/370 compatible hosts at up to 9600 bits per second per line. Multiple lines can also be connected between one HP 3000 workstation and a single host. Each simultaneous line uses a single HP 30055A, Synchronous Single Line Controller.

For maximum productivity, any or all HP 3000 terminals can be concurrently used for job submission by utilizing input spooling files. Because of transparent default parameters, the new user will find MRJE/3000 commands easy to understand, yet the experienced programmer is provided with full power and flexibility. Jobs can be submitted from any HP 3000 file or input device with output directed (by the user, not the IBM host) to one or more output devices or files. The user has the ability to cancel his job or display its status at any time because all jobs are tagged with a unique 3000 resident number in addition to the standard job name. It is also possible to monitor host activity since MRJE/3000 recognizes and transmits HASP and JES console commands. Any HP 3000 terminal may be used in the HASP or JES interactive console mode.

Remote Job Entry with DS/3000

The remote job entry requirements of an entire network of HP 3000 Series II sites may be met by one or more MRJE/3000 lines from a single system. With DS/3000, both local and remote HP 3000 users can be serviced simultaneously when utilizing the MRJE/3000 workstation emulator.

HP 3000 System Requirements

MRJE/3000 operates with any HP 3000 Series II computer system equipped with a minimum of 192 Kbytes of memory and an HP 30055A Synchronous Single Line Controller.

Host System Requirements

MRJE/3000 operates with IBM 360/370-compatible OS/MFT, OS/MVT or OS/VS2 (SVS and MVS) operating systems with either the HASP II (versions 3.1 or 4.0, or JES2 remote job entry capability.

HP 3000 SERIES II ASYNCHRONOUS TERMINAL - SPECIAL CHARACTERS UNDER MPE

Don Van Pernis and
Ed Basart
HP General Systems Division

This article describes how various characters and escape sequences affect terminal/MPE interaction on the HP 3000 Series II. These characters/sequences are only effective when dealing with the ATC in an ASCII mode. When operating in a binary synchronous mode, a subject not covered here, some of these characters have double meanings (e.g., STX, SOH).

SPECIAL CHARACTERS

KEYBOARD ENTRY	DECODED ASCII	MEANING
BREAK		1. When in the Command Interpreter (CI) • Individual commands handle BREAK as a special case, although the general case is: READ (prompt issued) - BREAK is ignored. WRITE (i.e., LISTF) - The remaining operation of the command is flushed by the I/O system and the CI issues a prompt character followed by a read to $STDIN. • :STORE or :RESTORE. If operator has answered the tape request, the operation stops after the next encountered EOF on tape and the remainder of the operation is flushed. If operator has not answered the request, the complete operation will be aborted when this tape request is answered.

KEYBOARD ENTRY	DECODED ASCII	MEANING
		2. When in a son process of the CI (e.g., EDITOR, FCOPY) The son process is hybernated as soon as possible (process is no longer SETCRITICAL), but will continue to run for a short interval. The CI is reawakened and issues a prompt character and a terminal READ. The CI is now in BREAK mode.
CTL A	SOH	At the console, MPE will give a "=" prompt providing the console is not already in the middle of a read (at least one character has been typed). Control A will not give the prompt if MPE is waiting for ACK (Control F).
CTL B	STX	Start of Transmission used for 202 type modems.
CTL C	ETX	End of Transmission. Used for 202 type modems.
CTL E	ENQ	Enquire. Sent by the CPU to a 264X terminal as part of the "handshaking."
CTL F	ACK	Acknowledge. Returned by a 264X terminal as part of "handshake."
CTL H	BS	Backspace. On most term. types, MPE echoes BS. On Term = 4, CTL Y is echoed. On Term = 0,1,2; "/" is echoed.
CTL J	JF	Line Feed. MPE echoes LF and CR.
CTL M	CR	Carriage Return. Terminates READ request.
CTL Q	DC1, XON	Device Control. When writing, this will resume a write suspended by CTL S. When reading, this will enable paper tape mode.
CTL R	DC2	Device Control 2. Issued by a 264X terminal to indicate the start of a block mode read.
CTL S	DC3, XOFF	Device Control 3. Causes MPE to pause while writing; MPE stops without dropping any characters. The write can be resumed by CTL Q.

KEYBOARD ENTRY	DECODED ASCII	MEANING
CTL X	CAN	Cancel. All characters are flushed from the read buffer. MPE issues "!!!" followed by CR and LF.
CTL Y	EM	Escape Mode. If XCONTRAP is enabled, user program will be soft-interrupted as soon as the program leaves MPE code. If terminal is in tape mode (CTL Q), tape mode is exited.
CTL [	ESC	Escape sequences consist of ESC and one or more additional characters. Some of the more common associated with the 264X terminals are cursor and screen functions. Escape sequences are always stripped from the read buffer. Some of the more common ones are: A - up B - down C - right D - left E - home up H - home J - clear to end of display K - clear to end of line. (a complete listing may be found in the 264X user manual) Other ESCAPE sequences: J - turns off G.E. terminet motor. K - turns on G.E. terminet motor. ";" - turns echo off. ":" - turns echo on.
:		Terminates a read on $STDIN.
@		In the CI, this can be used in place of a file name to indicate all files in a group. Can also substitute as group or account name to indicate all groups or all accounts.
	blank	Used to indicate a null parameter for user defined commands.
#		DS/3000 REMOTE CI prompt.
$		Control card indicator for compiler subsystems.
%		Indicates octal value.

KEYBOARD ENTRY	DECODED ASCII	MEANING
&		Line Continuation Indicator. MPE, as well as most subsystems, re-issues a read and continues to fill buffer.
*		Back file reference indicator. Used preceding a file name. Also used alone to indicate private volume or home volume set.
>		Prompt issued by many subsystems (including HELP command in CI).
?		DEBUG prompt and BASIC input prompt.
.		For CI and file system: file, group and account name separator.
!		Default STREAM prompt character. :EOD terminates read on both $STDIN and $STDINX. :EOJ terminates read on $STDIN. :EOF terminates read on $STDIN or read on non-terminal device. :DATA, :BYE, :JOB, :HELLO also terminate read on $STDIN.

NOTE on :TELLOP

Characters with octal values from 1 to %40 are converted to blanks in the message. The following characters are excepted: ESC, BELL, SHIFT'IN and SHIFT'OUT.

MPE - C SOFTWARE UPDATE

MULTIPROGRAMMING EXECUTIVE OPERATING SYSTEM
****

CONTENTS OF MASTER INSTALLATION TAPE DATE CODE 1814

PRODUCT NAME	PRODUCT NUMBER	LEVEL	DATE CODE	DOCUMENT GROUP FILE CONTAINING CHANGES
*MPE	32000C	01.00	1814	N00N000C
*SEGMENTER	32050A	00.00	1814	N00N050A
*SPL	32100A	06.05	1814	N00N100A
*BASIC	32101B	00.08	1814	N00N101B
*FORTRAN	32102B	00.09	1814	N00N102B
*BASIC COMPILER	32103B	00.08	1814	N00N103B
*RPG	32104A	03.07	1814	N00N104A
BUILDINT	32150A	03.01	1623	
*EDITOR	32201A	07.02	1814	N00N201A
STAR	32204A	01.00	1603	
*SCIENTIFIC LIBRARY	32205A	02.04	1814	N00N205A
*DEL/3000	32206A	01.07	1814	N00N206A
*INDEX	32207A	01.02	1814	N00N207A
SDM	32210A	05.00	1508	
*COMPILER LIBRARY	32211C	04.06	1814	N00N211C
*FCOPY	32212A	03.04	1814	N00N212A
*COBOL	32213B	03.01	1814	N00N213B
*COBOLC	32213C	02.01	1814	N00N213C
*SORT/MERGE	32214B	01.07	1814	N00N214B
*IMAGE	32215A	04.05	1814	N00N215A
QUERY	32216A	03.04	1709	
*TRACE	32222A	03.03	1814	N00N222A
*XA2100	32223A	01.03	1814	N00N223A
XL2100	32226A	02.00	1636	
CALCOMP PLOTTER	30126A	00.01	1640	
*2780/3780 EMULATOR	30130D	00.02	1814	N00N130D
PROG CTRLR/BCS	30300A/ 30361A	00.00	1621	
PROG CTRLR/RTE-C	30301A/ 30361A-1	00.02	1701	
*ONLINE DIAGNOSTICS		-- --	1814	NDONLN
*OFFLINE DIAGNOSTICS		-- --	1814	NDOFFLN

*Updated/changed in this M.I.T. Files which pertain to both MPE-C and MPE III appear only in the MPE III Software Update Section.

I. MPE 32000C.01.00

A. MODULES MODIFIED

MODULE		CHANGE HISTORY								
NAME	NO	C.00.XX						C.01.XX		
		11	12	13	14	15	16	00	01	02
INITIAL	0	X	X	X		X		X		
SYSDUMP	1		X		X	X	X	X		
SEGPROC	2							X		
SEGDVR	3		X							
DISPATCH	4	X	X							
LOAD	5		X					X		
MAPP	6						X			
UCOP	7									
DEVREC	8									
PROGEN	9		X			X	X	X		
ININ	10	X		X				X		
EXIN	11	X			X	X		X		
LOG	12									
IOPTRD0	13									
IOPTPN0	14					X				
IOPLOT0	15									
IOMDISK0	16							X		
IOFDISK0	17					X		X		
IOTAPE0	18									
IOLPRT0	19		X	X						
IOCDRD0	20									
IOCLTTY0	21							X		
IOTERM0	22	X					X	X		
IOCDPN0	23									
IOPRPN0	24	X	X			X		x		
IOREM0	25									
IOBSC0	26									
IOMDISK1	27					X		X		
PFAIL	30									
FILESYS	50	X	X	X	X	X	X	X		
COMM'INT	51	X	X		X	X	X	X		
STORE/RESTORE	52		X			X				
DIRC	53			X						
ALLOCATE	54	X	X			X	X			
DISKSPC	55									
MMCORER	56	X					X	X		
MMDISKR	57	X			X		X			
ABORTRAP	58	X		X			X			
MESSAGE	59	X				X	X	X		

CROUTINE	60	X				X	X		
IOUTILTY	61			X	X	X	X		
TTYINT	62				X	X	X		
PCREATE	63					X			
MORGUE	64					X	X		
PROCMAIL	65					X			
PINT	66	X		X		X			
DATASEG	67								
IOPM	68	X	X			X	X		
CHECKER	69								
UTILITY	70			X	X		X	X	
SEGUTIL	71		X		X	X		X	
LOADER1	72				X			X	
RINS	73		X						
JOBTABLE	74						X		
DEBUG.	75						X		
NURSERY	76						X		
SYSDPLY	77			X					
FIRMWARESIM	78	X					X		
SPOOLING	79	X		X		X	X		
SPOOLCOMS	80		X			X	X	X	
MESSAGE CAT	--		X	X				X	

B. ENHANCEMENTS

1. IOMDISK1 and INITIAL have been modified to support HP7925 disc drives.

2. INITIAL, EXIN, TTYINT, IOCLTTY0, IOPM, and ININ have been modified to support HP2635 terminals.

3. COMMINT "DISK I/O ERROR" messages have been expanded to include sector address and logical device number.

4. FCOPY is now compatible with SERIES II tape labels.

5. The size of CROUTINE has been decreased by using a single common routine to invoke the dispatcher.

6. The performance of the procedure TERMINATE has been improved by calling EXPIRE directly, instead of going through FINISH.

7. The ACCOUNT option has been added for system reloads.

8. SAMPLER support code has been permanently installed in EXIN.

C. CORRECTIVE SOFTWARE CHANGES

1. IOQ entries should no longer be lost by IOUTILTY.

2. MORGUE has been temporarily modified to convert occasionally occurring unrealistic CPU usage times to 1 second. This should prevent any significant damage to logging information. A permanent fix will be implemented when the source of this problem is discovered.

3. ININ and IOUTILTY console handlers have been modified to prevent all known occurrences of console lockout.

4. FILESYS1 now checks for invalid byte count fields in variable length records. A bad length will produce file system error 74 - "INVALID VARIABLE LENGTH RECORD".

5. EXIN, IOTERM0, and IOCLTTY0 have been modified to prevent FCHECK error 31 on a carriage return when a line termination character is defined.

6. INITIAL will skip and report on user files in which parity errors are found while performing a system reload.

7. The CTRANSLATE intrinsic now produces the correct error messages if passed invalid parameters.

8. IOMDISK0, IOMDISK1, and IOFDISK0 now correctly report invalid disc addresses.

   The FOPEN intrinsic now processes 8-character device class names correctly.

10. Byte address computation has been corrected in SPOOLCOMS.

11. The TELL command now works from JOB streams.

12. Console commands WELCOME and RECALL now work for consoles configured with any logical device number.

13. IOPM now aborts outstanding timer requests before initializing asynchronous multiplexor DIT entries.

14. The FOPEN intrinsic now checks for valid record types.

15. System failure %140 traps have been added to LOAD and LOADER1.

16. The FCONTROL intrinsic now returns the correct result for PARAM when CONTROLCODE = 13.

17. It will no longer be possible to RENAME files outside of the logon account.

18. IOPRPN0 has been modified to handle punch not ready conditions properly.

19. IOPRPN0 now returns error 65 if a write is issued when no card is in the wait station. It previously returned error 89 signifying a powerfail.

20. A LATCH/UNLATCH sequence has been corrected in MMCORER.

D. KNOWN PROBLEMS

1. Lower case :EOD is not recognized as an end-of-file on data accepting devices.

2. The line printers 2613A, 2617A, and 2618A may intermittently report a unit failure condition to the I/O driver that will abort the print operation. This condition has been observed when the unit is brought online after being placed offline while printing.

3. The directory may indicate a table overflow even though there is room available. This situation has been observed when doing a full RELOAD on a system with a full directory, and on systems where large numbers of files are created and purged daily.

4. The EOF on a disc file can exceed the file limit. This situation occurs as a result of files being allocated on sector boundary.

5. When configuring I/O devices in INITIAL, if the I/O device is greater than the maximum DRT number the system may wipe out lower memory.

6. System clock overflow counter overflows after 24 days of continuous running giving bad current dates and times.

7. Store bit in file label may remain set after STORE if accessed by another process during the STORE.

II. SUPPORTED UTILITIES

A. UTILITIES MODIFIED

UTILITY	C.00.XX						C.01.XX		
	11	12	13	14	15	16	00	01	02
DISKEDIT									
DPAN		X				X			
FREE							X		
LISTDIR									
LISTEQ		X				X			
LISTLOG									
PATCH									
RECOVER							X		
SAEDIT					X		X		
SAVIOUR					X		X		

B. ENHANCEMENTS

1. List of RECOVERed files may now be directed to the line printer using :FILE LIST;DEV=LP.

2. SAEDIT, SAVIOUR, and FREE have been modified to support the HP7925 disc drive.

C. CORRECTIVE SOFTWARE CHANGES

1. RECOVER now recomputes file label checksums.

2. RECOVER now detects and reports tape drive open failures.

3. RECOVER is now capable of replacing privileged files.

4. FREE will now work correctly if the space table is being modified during its execution.

D. KNOWN PROBLEMS

When DPAN finds that the PCB table has been filled, it prints the erroneous message "INVALID UNASSIGNED ENTRY" and "INVALID BACKWARD SUBQUEUE POINTER" even though there is no error in the PCB table.

SCIENTIFIC LIBRARY/3000 HP32205A.02.04

DATE CODE 1814, N00N205A.HP32205.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

SMR# 3638 - THE double precision error function returned the negative of the correct answer. This has been fixed.

INDEX/3000 32207C.1.02

DATE CODE 1814, N00N207A.HP32207.SUPPORT

A. ENHANCEMENTS

1. The command 'PURGE' has been added to the utility 'XUTIL' to purge a specified index data set.

2. There has been a new entry called -BUILD4K added to Index/3000 utility program -XUTIL. It computes blocking factor based on 4k(4096) bytes for the block size of the key file (it previously defaulted to the system computation of blocking factor).

   If the entry -BUILD4K is not used in the XUTIL-.PUB.SYS call then the default blocking size of 2k(2048) bytes for the block size is used in computation of blocking factor.

   To install this new feature simply follow the instruction below:

   Example:

```
:HELLO INDEX,FIELD.SUPPORT,HP32207
:RELEASE P00P207A
:HELLO MANAGER.SYS
:PURGE XUTIL
:RUN FCOPY
FROM=P00P207A.HP32207.SUPPORT;TO=XUTIL;NEW
EXIT
:EOJ
```

B. CORRECTIVE SOFTWARE CHANGES

1. The Index/3000 utility program - XUTIL has been modified to correct the problem of when :FILE XUTILOUT=$NULL was equated the XUTIL program terminated due to minimum record size being less than 72 bytes (it was set to 0). It is now fixed so that when $NULL is used in the file equation, the XUTILOUT recordsize is set to minimum of 72 bytes.

2. The Index/3000 utility program - XUTIL has been corrected to give the correct CURRENT'KEY'EOF of the key file. Previously, it was designating CURRENT'DATA'EOF.

3. The Index/3000 has been fixed to resolve the creator conflict problem. Previously, if the data was added from a non-creator of the key file and the data file but of the same group, the attempt to XCLOSE the key file caused "CREATOR CONFLICT" error. This is now corrected so that Index/3000 created scratch file "IXSCRTCH" (temporary) in log on creator is checked against the creator of the key file and if they are not the same then the scratch file is written back into the original key file of the key file creator.

4. The Index/3000 has been fixed to correct the "XREADBYKEY" problem. With the following sequence of Index/3000 Intrinsic call, Error #314 was given:

```
XOPEN
XWRITE
  .
  .
  . < (ADD 5 RECORDS)
  .
XCLOSE
XOPEN
XREADBYKEY     < (ONE OF THE ABOVE 5 RECORDS)
XDELETE        < (DELETE THAT RECORD)
XCLOSE
XOPEN
XWRITE
  .
  .  < (ADD 2 RECORDS)
  .
XREADBYKEY     < (ONE OF THE 2 RECORDS JUST ADDED)
  .  < (**** ERROR #314 *******)
```

The problem was corrected when it was determined that two parameters in the FIND´RECORD procedure were in the reverse order. This procedure is called when the key value is searched in the added index record area of the key file. When the parameters were reversed (corrected), then the problem was resolved.

5. Now the problem of sorting under "XUTIL" across creator boundary is resolved.

6. Now the problem of executing XSEEKKEY OR XREADBY-KEY followed by XREAD which gave -EOF- indication when seeking a known key value or non-existing key value and not finding the next highest key value has been corrected.

C. DOCUMENTATION CHANGES

1. Part number of Index/3000 manual is 30000-90095.

2. The XUTIL "PURGE" command can be used to remove an index file, both data and key files from the system.

   The command "PURGE" is executed when one replies to the query "WHICH COMMAND DO YOU WANT?" with "PURGE".

   Example:

```
"WHICH COMMAND DO YOU WANT?" PURGE
"ENTER NAME OF THE KEY FILE - " CUSTOMER
"DO YOU WANT TO PURGE ANOTHER INDEX FILE?" NO
```

COMPILER LIBRARY/3000 HP32211C.04.06

DATE CODE 1814, N00N211C.HP32211.SUPPORT

There have been no changes to COMPILER LIBRARY since the last MIT date code 1737.

COBOL B HP32213B.03.01

DATE CODE 1814, N00N213B.HP32213.SUPPORT

A. ENHANCEMENTS

The implementation of the ACCEPT statement has been changed to require a terminal user to press the return key no more than once to terminate data input.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR 2983. Sometimes a test for ZERO in an IF statement generated erroneous results if it was immediately preceeded by a MOVE statement that moved a numeric literal to a data item containing a different number of digits to the right of the decimal point.

2. SMR 3038. A compound condition in a SEARCH or SEARCH ALL statement generated ERROR 100, "ILLEGAL ARITHMETIC OPERAND", if the condition consisted of three or more simple conditions separated by the logical operator AND.

3. SMR 3080. The compiler aborted with a bounds violation at %26.14 when attempting to compile a COMPUTE ROUNDED statement containing a divide operator. Both the divisor and the dividend contained items whose pictures have eighteen digits.

4. SMR 3143. A compute statement containing an arithmetic expression of the form, (A - B) - (expl), failed when A and B were data items with pictures between 9 and 9(9) or were integer literals with a maximum of nine digits.

5. SMR 3860. A WRITE to a disc I-O file overwrote the last record in the file if the previous access to the file was a READ that encountered an EOF.

6. SMR 3214. ERROR 95 is incorrectly generated by the following data definition: PIC S9(9)PP COMP-3 VALUE 0.

7. SMR 3322. A COMPUTE statement used as a simple assignment statement may give an erroneous result when immediately preceded by another compute statement. The erroneous result will be shifted left or right one or more digits.

8. A COMPUTE statement containing a COMP-3 data item that has both an OCCURS clause and an INDEXED BY clause changes the result from a negative value to an unsigned value.

9. SMR 3463. Compiler outputs ERROR 63, "UNDEFINED WORD IGNORED", in a MOVE statement and aborts with a bounds violation.

10. SMR 3643. The COBOL compiler erroneously emits an error 53, "SIZE OF DATA SEGMENT GREATER THAN 65K BYTES", if the size of an OCCURS table lies between 32768 and 65536 bytes.

11. SMR 3720. ADDing a literal to an unsigned numeric COMP-3 field converts the sign in the COMP-3 field from an "F" (unsigned) to a "C" (plus). The same problem also occurs when using the SUBTRACT statement.

12. SMR 3687. COMPUTE with ON SIZE ERROR option interferes with the correct execution of the CALL statement. If the ON SIZE ERROR clause is invoked, a CALL statement with a file name in the USING clause will fail.

13. SMR 3698. Using the figurative constant, SPACES, in a MOVE statement whose destination field is defined as PIC A results in an error 164, "Illegal Into-From Option or Move Operand."

14. Changes to the COBOL/3000 run-time library:

    a. SMR 3117. If the data item in an ACCEPT...FROM CONSOLE statement did not begin on a word boundary, the input data received from the console was shifted left one byte, destroying the information in the adjacent data item.

    b. SMR 3153. A WRITE statement that writes to the printer after advancing N lines failed if the data item containing the line count had a PICTURE in excess of four digits, i.e. 9(5), 9(6), etc. Error message 755 was erroneously output at run-time.

    c. SMR 3389. A WRITE statement containing an INVALID KEY clause that writes to a sequential disc file, executes incorrectly if the previous access to the file was a READ. Instead of updating the current record, the next record is erroneously updated.

C. DOCUMENTATION CHANGES

a. The explanation for ERROR 707 on page C-45 is changed to read: "The maximum result of an exponentiation must be between +10 ** 28 and -10 ** 28." All intermediate results in processing a COMPUTE statement are carried to 28 digits of accuracy. However, only a maximum of 18 digits can be transferred to the target data item.

b. In conjunction with the fix for SMR 3389, the following new error message has been inserted into the COBOL/3000 manual:

#	Type	Text	Programmer Response
191		INVALID KEY CLAUSE MISSING This clause permits user to detect physical EOF when WRITE'ing to a sequential file.	If programmatic control is desired, when physical EOF is detected, change the program & re-compile.

D. KNOWN PROBLEMS

1. The base shown in the symbol table map for an indexname in an INDEXED BY clause in the LINKAGE section is shown as LINK when it should be OWN for non-dynamic sub-programs.

2. SMR 3125. Error message 707, "OVERFLOW IN EXPONENTIATE," is output when no overflow has occurred. This is caused by assigning the data item in the exponent a value greater than +56 and less than +100. Remember that the result of the exponentiate must still be between -10 ** 28 and +10 ** 28. See documentation changes above.

3. SMR 3124. A COMPUTE statement containing an exponent equal to or greater than 100 gives incorrect results. For exponents between +100 and +999 the left most digit is ignored when performing the exponentiation.

4. SMR 3058. A MOVE A TO B, where A is a table controlled by a DEPENDING ON variable, causes the entire field to be moved, ignoring the DEPENDING ON value.

IMAGE/3000 HP32215A.04.05

DATE CODE 1814, N00N215A.HP32215.SUPPORT

A. MISCELLANEOUS

The purpose for this change is to comply with the new distribution formats.

RJE/3000 2780/3780 EMULATOR HP30130D.00.02

DATE CODE 1814, N00N130D.HP30130.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. The RJE driver IOSBSC0 has been repaired to process received ITB's correctly. Consequently, the Emulator once again works in 2780 mode.

2. If the REC= parameter is specified on the #RJIN command, RJE no longer expands the records to twice the record size.

3. The Emulator now correctly performs code conversion (or not) for all combinations of configured line code and linecode specified (or not) on the #RJLINE command.

B. KNOWN PROBLEMS

In 2780 mode, irrecoverable errors may occur when receiving variable length output blocks separated by ITB's at line speeds greater than 2400 baud.

RELEASE ISSUE OF THE SERIES I ONLINE DIAGNOSTICS.

DATE CODE 1814, NDONLN.HPONLN.SUPPORT

I. MAGNETIC TAPES ASSOCIATED WITH HPONLN

SOURCE	30000-1X011
MAINTENANCE	30000-1X008

II. ON-LINE DIAGNOSTICS 1814

DIAGNOSTIC NAME	NAME	LEVEL	COMMENTS
DISC FILE-2888A	PD360A	00.00	
CART DISC-7900A	PD361A	00.00	
MAGNETIC TAPE	PD362A	03.00	
TERMINAL DATA	PD363A	02.00	
CARD READER	PD365A	05.00	
LINE PRINTER	PD366A	03.00	FOR 2607/10/14
LINE PRINTER	PD366B	01.01	FOR 2607/13/17/18
TELEPRINTER	PD367A	02.00	
TERMINAL CONTROL	PD368A	01.00	
2640 TERMINAL	PD369A	00.00	
CARD PUNCH	PD370A	00.00	
TERM-2600A	PD371A	00.00	
PAPER TAPE READER	PD372A	01.00	
PAPER TAPE PNCH	PD373A	01.00	
TERM-2635A	PD374A	00.00	**NEW RELEASE**
TERM-2762A/B	PD375A	00.01	
CALCOMP PLOTTER	PD376A	00.00	
TERM-2615A	PD378A	01.01	
CARD-READ/PUNCH	PD379A	01.01	

III. NEW RELEASE DIAGNOSTICS

D374A.00.00 2635A ON LINE VERIFIER

This is a new on line verifier for the 2635A terminal.

RELEASE ISSUE OF THE SERIES I STANDALONE DIAGNOSTICS.

DATE CODE 1814, NDOFFLN.HPOFFLN.SUPPORT

I. MAGNETIC TAPES ASSOCIATED WITH HPOFFLN

SOURCE	30000-1X005
MAINTENANCE	30000-1X006
CPU COLD LOAD	30000-1X001
NON-CPU C/L	30000-1X002

II. OFFLINE DIAGNOSTICS 30000-1X002, DATE CODE 1814

A. DIAGNOSTICS CHANGED

DIAGNOSTIC NAME	NAME	LEVEL	OCTAL FILE #
*SLEUTH	PD211A	02.02	(01)
*SDUP	D217A	04.01	
CART DISC-7905A	PD319A	02.02	(02)
MEMORY PATTERN	PD321B	00.00	(03)
MULTIPLEXOR CHAN	PD322A	00.00	(04)
DISC FILE-2888A	PD323A	01.00	(05)
CART DISC-7900A	PD324A	01.00	(06)
SYSTEM CLOCK	PD325A	00.00	(07)
TELEPRINTER	PD326A	00.00	(10)
FIXED HEAD DISC	PD328A	02.00	(11)
SELECTER CHAN	PD329A	00.00	(12)
TERM-2762A/B	PD330A	01.00	(13)
EXTEND FLT PT	PD331A	00.00	(14)
HSI (unused)	PD332A	00.00	
MAGNETIC TAPE	PD333A	01.01	(15)
SSLC INTERFACE	PD334A	01.00	(16)
UI DIAG	PD335A	00.01	(17)
CARD-READ/PUNCH	PD336A	00.01	(20)
DECIMAL FIRMWARE	PD337A	00.00	(21)

* UPDATED/CHANGED in this MIT

B. CORRECTIVE SOFTWARE CHANGES

STANDALONE SLEUTH DIAGNOSTIC

1) SLEUTH will now accept units other than 0 for type 12 (7920).

2) A new type has been added to SLEUTH for the 7925 disc, which is 11. All commands valid for 7905 and 7920 are now valid for the 7925.

SDUP PROGRAM

1) SDUP will now work on the 2607, 2613, and 2617 line printers, as well as the 2610 and 2614.

2) SDUP will no longer abort if a program does not exist.

3) SDUP will now accept upper and lower case input.

4) SDUP will now print the response to a question in batch mode.

5) Programs may be dumped from groups and accounts other than LOG ON.

C. ENHANCEMENTS

SDUP PROGRAM

1) SDUP will now respond with a linefeed and a backspace on the 2640x terminals, when CTL H is entered.

2) The run with NOPRIV is no longer necessary.

3) The question:

ENTER DRT NUMBER FOR THE CONSOLE DEVICE

has been deleted and is always set to 3.

4) The loading sequence has been simplified.

a) I/O RESET
CPU RESET
COLD LOAD

b) Enter program number in switch register, Press RUN

c) Enter program origin in switch register, Press RUN

5) The standalone magtape driver now does retries on parity errors. To try another 10 times just press RUN.

6) Segments 0-%17 now have an EXIT instruction after the HALT. This allows you to return to the segment from whence you came. This is of great value on unexpected external interrupts, for example.

7) A listing of the programs on a NON/CPU standalone tape may now be received by loading program 0. After the listing enter the program number you desire to load and press RUN.

III. SLEUTH CANNED PROGRAMS

A. PROGRAMS

*) VERI7920
*) VERI7925

B. CORRECTIVE SOFTWARE CHANGES

VERI7920
****

1) A canned program VERI7920 which verifies 7920 Disc and runs under SLEUTH has been modified to give specific Cylinder, Head, and Sector numbers when reporting compare buffer errors in the Randomized Cylinder WRITE/READ Test section. Also modified is the "MASK" value which is now changed to perform 10 RE-TRIES for those SLEUTH commands requiring the "MASK" parameter.

C. NEW PROGRAM(S)

VERI7925
****

1) There exists now a canned program which is executable under SLEUTH called VERI7925. This canned program verifies 7925 Disc. The sections contain executable sections identical to those in VERI7920.

The sections are:
---

1 - Selectable Unit Test (0-7).
2 - Format entire disk (823 Cylinders).
3 - Pack Certification Test (1 Pass).
4 - Pack Certification Test (2 Passes).
5 - Randomized Cylinder WRITE/READ Test.
6 - Randomized Cylinder/Track Switching Test.
7 - Randomized Cylinder,Head,and Sector WRITE/READ Test.

IV. CPU DIAGNOSTICS 30000-1X001, DATE CODE CL 1403/MAINT 1531

SECTION	FILE NAME	REV
1	PD320A	03.00
2	PD320A1	03.00
3	PD320A2	03.00
4	PD320A3	03.00
5	PD320A4	03.00

MPE III SOFTWARE UPDATE

MULTIPROGRAMMING EXECUTIVE OPERATING SYSTEM

****

CONTENTS OF MASTER INSTALLATION TAPE DATE CODE 1814

PRODUCTS WITH ASTERISKS ARE THE PRODUCT(S) UPDATED/CHANGED BY THIS M.I.T. AND ALSO REFERENCE PERTINENT NOTE FILES CONTAINING INFORMATION ABOUT THE MODIFICATIONS. THESE FILES MAY BE LISTED USING EDITOR OR FCOPY.

****

PRODUCT NAME	PRODUCT NUMBER	LEVEL	DATE CODE
*MPE	32002B	00.00	1814
*SEGMENTER	32050A	00.00	1814
*SPL	32100A	06.05	1814
*BASIC	32101B	00.08	1814
*FORTRAN	32102B	00.09	1814
*BASIC COMPILER	32103B	00.08	1814
*RPG	32104A	03.07	1814
*APL/3000	32105A	00.05	1814
BUILDINT	32150A	03.01	1623
*DS/3000	32190A	02.01	1814
*MRJE	32192A	00.01	1814
*MTS	32193A	00.00	1814
*EDITOR	32201A	07.02	1814
*SCIENTIFIC LIBRARY	32205B	00.03	1814
*DEL/3000	32206A	01.07	1814
*KSAM/3000	32208A	01.06	1814
COMPILER LIBRARY	32211D	00.06	1737
*FCOPY	32212A	03.04	1814
*COBOL	32213C	02.01	1814
*SORT/MERGE	32214B	01.07	1814
*IMAGE	32215B	00.00	1814
QUERY	32216A	03.04	1709
*TRACE	32222A	03.03	1814
*XA2100	32223A	01.03	1814
XL2100	32226A	02.00	1636
PROG CONTROLLER 30300B/30361B-BCS	30361B	00.00	1621
PROG CONTROLLER 30301B/30361B-1-RTE	30361B-1	00.02	1701
*RJE 2780/3780	30130E	00.02	1814
CALCOMP PLOTTER	30126A	00.01	1640
*DIAGNOSTICS	32230A	-- --	1814

* NOTE FILES(NXXNYYYZ) CONTAIN THE CHANGE INFORMATION

WHERE XX =MODULE NUMBER WITHIN THE PRODUCT STRUCTURE.
YYY =LAST THREE DIGITS OF THE PRODUCT NUMBER.
(I.E., MPE IS HP32002; THEREFORE, YYY=002.)
Z =CURRENTLY RELEASED VERSION DIGIT OF PRODUCT.

MPE HP32002B.00.00

DATE CODE 1814, N00N002B.HP32002.SUPPORT

I. MPE 32002B.00.00

A. MODULES MODIFIED B.00.00

	MODULE		CHANGE HISTORY												
	NAME	NO	A.01.XX				B.00.XX								
			1	2	MR	0	1	2	3	4	5	6	7	8	9 10
	INITIAL	0	X		X	X									
	SYSDUMP	1	X		X	X									
*	SEGPROC	2													
*	SEGDVR	3													
	DISPATCH	4				X									
	LOAD	5				X									
	UCOP	7				X									
	DEVREC	8				X									
	PROGEN	9	X		X	X									
	ININ	10	X	X		X									
	MEMLOGP	11				X									
	LOG	12		X		X									
	IOPTRD0	13				X									
	IOPTPN0	14		X		X									
	IOPLOT0	15				X									
	IOMDISC0	16													
	IOFDISC0	17													
	IOTAPE0	18	X	X		X									
	IOLPRT0	19				X									
	IOCDRD0	20				X									
	IOTERM0	22	X	X		X									
	IOPRPN0	24		X		X									
	IOREM0	25													
	IOMDISC1	27		X		X									
	PFAIL	30													
	PVPROC	31				X									
	VINIT	32				X									

MAKECAT	40				X	
FILESYS	50	X	X	X	X	
COMM'INT	51	X	X	X	X	
STORE/RESTORE	52	X			X	
DIRC	53				X	
ALLOCATE	54	X	X		X	
DISCSPC	55					
MMCORER	56	X	X		X	
MMDISKR	57	X	X		X	
ABORTRAP	58		X		X	
MESSAGE	59				X	
CROUTINE	60	X	X		X	
CLOCKIO	61	X			X	
NRIO	62	X	X		X	
PCREATE	63		X		X	
MORGUE	64	X	X		X	
PROCMAIL	65					
PINT	66	X	X		X	
DATASEG	67	X	X		X	
CRIO	68	X	X	X	X	
CHECKER	69				X	
UTILITY	70	X	X		X	
SEGUTIL	71					
LOADER1	72		X		X	
RINS	73					
JOBTABLE	74	X	X		X	
DEBUG	75				X	
NURSERY	76				X	
STKDUMP	77					
FIRMWARESIM	78				X	
SPOOLING	79	X	X		X	
SPOOLCOMS	80	X	X		X	
PVSYS	81				X	
UDC	82				X	
USER	83				X	
HELPUSER	84				X	
LABSEG	86				X	
SDISC	87				X	
CATALOG					X	
CICAT					X	

*Segmenter modules have been moved to HP320050.

B. ENHANCEMENTS
(Excluding those mentioned for MPE III)

1. COMM'INT. The command "MRJE" has been added to the Command Interpreter.

2. PROGEN. External plables for Multipoint or MRJE are called when =MPLINE or =MRJE is entered as an operator command.

3. INITIAL. External labels for Multipoint and MRJE console precedures have been added to SYSDB.

4. SYSDUMP. This change allows SSLC to be configured with subtypes 0, 1, 3 or 7; allows HSI to be configured with subtypes 0 or 3.

5. DEBUG. Hexadecimal display has been added to DEBUG. This is used by specifying "H" to indicate the representation mode for output values.

```
Examples:  ?D5,H
           DB+5    6DF5
           ?=32767,H
            =7FFF
```

SMR# 4226.

6. FILESYS. SF 50s have been replaced with a series of unique system failure numbers (reflected in the new documentation) to make it easier to pinpoint the source of file system problems.

7. FILESYS. Entry point has been added for KSAM's KCLOSE procedure.

8. LISTDIR2. With new fix, 128 words are read instead of 127 for file label Define statements containing =(ENT(127) -- 127 and above has been adjusted by offset of 1. SMR #4225.

C. CORRECTIVE SOFTWARE CHANGES

Note: All problems referenced as fixed in 1.03 have been included in MPE-III.

1. COMM'INT. The MPE commands SAVE and RENAME have been modified to handle KSAM files. SMR #3199.

2. CRIO. This change solves the timing problem between SIODM and MEMORY MANAGER. When SIODM is called in state %16, SIODM now reenters state 2 or 3 and checks whether the driver code segment is present. If not, SIODM calls MAKEPRESENT again.

3. FILESYS. This change allows an EOF to be written if the file is opened with execute access.

4. INITIAL. WARMSTART now executes correctly when there is little free system disc space (<30K sectors) and 1 or more ready spoofles. The JMAT and ODD tables are no longer destroyed when WARMSTARTing under these conditions. SMR# 3611.

5. FIRMWARESIM. Is now pseudo disabled when Q and S registers are changed. This corrects a problem causing a System Failure 10.

6. MMDISKR. The algorithm to scan for available virtual memory for allocation has been corrected. This corrects an "Out of Virtual Memory" error condition even though space is available. SMR #3910.

7. MMCORER. A stack overflow while trying to expand the stack for a previous overflow could cause a System Failure 17. The second overflow is now handled correctly.

8. STORE/RESTORE. Prior to this fix a System Failure 311 would result if STORE was unable to expand Z by %2000 words for buffer space. STORE now handles the insufficient stack space error condition correctly. SMR #3922.

9. NRIO. I/O requests are aborted correctly to avoid a timing problem which previously resulted in a System Failure 21 after the operator commands:

```
                    RESET
=SPOOL ldev,DELETE
                    DEFER
```

SMR# 4205, 4206.

10. IOPRPN0. An extra word has been deleted from the stack that caused a System Failure #9 when an invalid Hollerith punch was detected by card reader/ punch. SMR# 3105, 3242.

11. CRIO. This change prevents returning IOQ entry. SMR# 3401, 3226.

12. DATASEG & MMCORER. Previously, routines in MPE responsible for expanding areas of the stack would fail when there was not enough main memory available to fit the new stack. System intrinsics DLSIZE and ZSIZE would return with the stack unchanged. A no-mem condition would also cause a SF 34 when MPE attempted to expand the PCBX area of the stack or a SF 131 when processing a stack overflow. Changes have been made such that stack expansion routines will wait until enough memory for the new stack is available and the SF 34 and SF 131 problems will be avoided. SMR# 3308.

13. PINT. A problem has been corrected in the system intrinsic CAUSEBREAK which would cause various system failures when trying programmatically to simulate a break from a third generation user process. SMR# 4399.

14. IOTERM0. A timing problem has been fixed which resulted in SF 137 or SF 21 when the system is under a heavy load. SMR# 3110.

15. DATASEG. Multiple calls to GETDSEG with the same "ID" now always return the same index. Calls to ALTDSEG with an INC which causes the new size to be greater than maximum allowed will result in allocation of the maximum. SMR# 3119, 2788, 4426.

16. MORGUE. ABORT of a job which is using process handling will no longer hang up the process tree structure. The abort will now complete. SMR# 4006.

17. CRIO. SIODM properly checks to verify that a driver is present before PCAL. SMR# 3854.

18. IOPTPN0. Change of parameter values passed to IOMESSAGE. SMR# 4069.

19. A SF 206 could result if a terminal (used as $STDIN and as $STDLIST) was successfully allocated as an input device but failed allocation as an output device. This is now fixed. SMR# 3025.

20. DEBUG. The DEBUG facility now checks that in "MR, S" command that the new value assigned to S is not greater than MAXSTACK (MAXSTACK:=MAXDATA minus the DL-DB area and PCBX area). This is in addition to the current check that this value must also be greater than Q and less than Z. This new check is needed for when a stack overflow has occurred, causing an extra amount beyond MAXSTACK to be added to Z to handle the abort. Previously, S could be modified up to the new value of Z which would result in a SF 129 on the next stack overflow. SMR# 2177.

21. PROGEN. The console commands =LOGOFF and =SHUTDOWN will no longer hang waiting for jobs with pending IO. Outstanding IO will automatically be aborted. The console command =ABORTJOB will also abort any IO for the job in question. SMR# 1013.

22. IOPRPN0. The algorithm of the word to byte and byte to word conversion has been changed. SMR# 3546.

23. CLOCKIO. Previously, the system timer would overflow at 8:31 p.m. after the system had been up continuously for 25 days.

Incorrect times and dates from almost a month back would appear on listings, HELLO and BYE messages, system console output and datelines printed by subsystems.

Changes have been made to force the system timer to roll-over on 24 day intervals at exactly 12:00 midnight. CLOCK and CALENDAR intrinsics as well as other parts of MPE will be able to handle the roll over properly.

User programs may want to check for this case if they call the system intrinsic TIMER before and after this 24 day midnight roll-over. Detection and correction of this case between two calls to TIMER (less than 24 days apart) for computing a time interval, can be done as follows:

> If, when subtracting a current TIMER count from a previous count, the result is negative, add 2,073,600,000 (the number of milliseconds in 24 days) to the result.

SMR# 3416.

24. FILESYS. The following problems have been fixed:

    a. Plotter spooling was causing SF 50 due to improper record definition. SMR# 3402.

    b. On busy systems, file label pointer to the volume table was destroyed due to poor synchronization of moving of FCB on multiple FOPENs. SRM# 3663.

    c. FSPACE corrected so that it no longer gives EOF indication when backspacing over EOF on tape. SMR# 3368.

    d. SETACB: Change makes sure that ACB shared count doesn't overflow, causing SF 50. SMR# 3272.

    e. Opening spooled tape file as a new file could cause SF 50.

    f. FWRITE of CCTL only with no characters transferred a blank line anyway for CCTL between %101 and %103. SMR# 2045.

25. LOADER1. Prior to this fix LOADER segment table entries could change "state" improperly (due to timing problems) leaving certain processes in a state which would not allow them to be cleared up (thus appearing "HUNG").

26. FILESYS. Spooled plotter caused SF 50 in level 1737 due to error in forms message termination. This fixes problem, allowing plotter to be spooled. SMR# 2774.

27. FILESYS.

    a. DS was ignoring disposition on FILE command. If process was aborted, file was not being saved. This is now fixed.

    b. DS forms message size corrected.

28. DATASEG. When the remainder of MAXDATA was used to determine the maximum increment allowed for expanding the stack in the ZSIZE intrinsic and MPE's STACK-OVERFLOW routine, no check was made to insure that this number was a multiple of 128 for ZSIZE and a multiple of 4 for STACKOVERFLOW. Because of this, it was possible for the memory manager to obtain a non-divisible by 4 address following a no-mem condition, thus causing a SF 134. SMR# 4440.

29. NRIO. A previous fix used PDISABLE/PENABLE. This was changed back to DISABLE/ENABLE and a second ENABLE was removed.

30. CRIO. State 15 will now awaken DEVREC (a request status function has noticed an attention interrupt and the unit happens to be the unit on which the request status function was run.

31. UTILITY. SEARCH has been developed to do a bounds check on directory parameter. PRINTOP gets rid of random byte clobber.

32. CROUTINE. This fix removes a bug catcher code from RELSIR.

    Note: This was a temporary internal fix.

33. DIRC. This change restores the correct mask for RELSIR for special visits from DIRSTARTOFF.

34. UTILITY. This fix corrects end-address bounds error sometimes not being detected.

35. LOADER1. This fix does the following:

    a. Avoids "MAKEPRESENT WHILE DISABLED" crash (SF #108).

    b. Detects zero-width garbage entry in LST and HALT (New S.D. #348 & 349) - Bug Catcher.

36. PVSYS. Removed bug catcher code (call to SUDDEN-DEATH=419).

37. MAKECAT. Can now run MAKECAT, DIR PRINT' FILE'INFO --> PRINTFILEINFO.

38. CHECKER. Use of invalid index for Job SIR could result in impede of process. This has been corrected. SMR# 4461.

39. MMCORER. This change does the following:

    a. Avoids overlay of data segment even when dirty.

    b. Extra traps for invalid memory address in LINKFA, DELINKFA.

    c. Avoids loss of memory through timing problem in IOFREEZ2.

    d. Avoids use of invalid CSTX index in MAM due to timing problem.

40. ININ. Stackoverflow on APL instructions was handled incorrectly, causing a re-execution of the instruction. This has been corrected. SMR# 4400.

41. DIRC. This fix causes the system to correctly decrement file space counts in group and account entries if group is bound to its home volume set at the time of "PURGEGROUP".

42. FILESYS. FWRITE has been changed to use a CBNEWEOF rather than write count for labeled tape.

43. LOAD. Prior to this change LOADER ERRORS 28 and 61 could result when trying to satisfy an external reference either in the GROUP SL or the PUB SL. This is now fixed. SMR# 4666.

D. DOCUMENTATION CHANGES

MANUAL PART # REF #

The following manuals have been modified to reflect the changes for MPE III.

MANUAL	NEW OR UPDATE	PART NO.
GENERAL INFORMATION	N	30000-90008
MPE COMMANDS	N	30000-90009
INTRINSICS	N	30000-90010
CONSOLE OPERATOR'S GUIDE	N	30000-90013
MANAGER/SUPERVISOR	N	30000-90014
ERROR MESSAGES	N	30000-90015
SYSTEM UTILITIES	U	30000-90044
INDEX	N	30000-90045
POCKET GUIDE	N	30000-90049
USING FILES	N	30000-90102

E. KNOWN PROBLEMS

See HP 3000 Software Status Bulletin

II. SUPPORTED UTILITIES

A. UTILITIES MODIFIED

UTILITY	A.01.XX			B.00.XX
	1	2	MR	0
DISKED2	X	X		X
DPAN2	X	X		X
FREE2	X	X		X
LISTDIR2	X			X
LISTEQ2	X			X
LISTLOG2	X	X		X
PATCH	X	X		X
MEMLOGAN	X	X		X
MEMTIME	X	X		X
SADUTIL	X			X
SLPATCH	X			X
SPOOK	X			X
RECOVER2	X	X		

B. CORRECTIVE SOFTWARE CHANGES

1. FREE2. FREE2 is now fixed so that you can file equate to a formal designator named FREE2OUT for list output. SMR# 2801, 4060.

2. LISTEQ2. LISTEQ2 is now fixed so that when "MULTI", "NOMULTI", "NOMR", "WAIT", "NOWAIT", or "NOCCTL" is declared in the file equation, they will be listed as existing in the file equation. SMR# 2196, 2237, 4601.

3. LISTLOG2. This fix was implemented so that the output buffer pointer is no longer clobbered when title #2 message is output. SMR# 4316, 4484.

4. LISTLOG2. A fix was implemented to resolve the emission of an error message whenever a type #5 log was requested. With this fix there will be no error emitted and an appropriate first record of the log file is read whenever Type #5 log is requested. SMR# 4230.

5. LISTLOG2. Logfile outputs for I/O errors were previously evaluated incorrectly.

6. LISTDIR2. Call to ATTACHIO with request for 127 words caused 2 last bytes of the device class name to be dropped. Change for 127 to 128 will now include all 8 bytes (max) for device class name.

SEGMENTER HP32050A.00.00

DATE CODE 1814, N00N050A.HP32050.SUPPORT

A. ENHANCEMENTS

The listing produced by the commands LISTRL, LISTSL, and LISTUSL may now be aborted by CONTROL Y. This also has a side benefit in SYSDUMP, in that the listing of the library may also be aborted.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR #818,#1021 Several problems in the segmenter, which caused it to abort while working with RL's have been fixed.

2. SMR #1317,#1704,#2732 The segmenter was incorrectly appending parameter definitions from the primary entry point to CP type secondary entry points when adding procedures to RL's. This resulted with error #45 when adding FORTRAN subprograms to RL's which had secondary entry points with a different number of parameters than the primary.

3. SMR #3679 Segmenter would purge the wrong entry point sometimes when over 16 adds or deletes were done to an RL without exiting the segment or listing the RL.

4. The error in which LISTRL showed external references even through all entry points had been deleted has been fixed.

5. The error in which once a UNIT has been purged from the RL, the segmenter would continue to purge UNITs even though asked to purge ENTRYs, has been fixed.

6. An error in RL space management has been fixed, which resulted in a code module using space even after all entry points to it had been deleted.

7. SMR #2492,#2503,#2523 Extra checks have been made to detect SL's that were copied to a file of a different size or number of extents. This is believed to be the cause of some of the system crashes in which a code segment crossed an extent boundary.

SPL/3000 HP32100A.06.05

DATE CODE 1814, N00N100A.HP32100.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. SMR 2635 - Large initialized arrays are now properly initialized in the program file.

2. SMR 2532 - "SET" reference and "PRINT" values to the object of OWN pointer variables were incorrect. This fix is valid with version A.03.03 of TRACE.

3. SMR 3397 - When initializing a word pointer with a previously initialized BYTE pointer (points to negative DB) an improper conversion was done. This initialization has been changed to be consistent with the same initialization in a procedure.

B. KNOWN PROBLEMS

1. The construct A.(2:1):=TOS.(4:2) produces incorrect code. A temporary solution is to use a variable instead of TOS.

C. DOCUMENTATION CHANGES

1. A bit extraction from a byte quantity first right justifies the byte quantity on the stack placing zeroes in bits 0 through 7. The bits specified are then extracted from this word.

BASIC/3000 HP32101B.00.08

DATE CODE 1814, N00N101B.HP32101.SUPPORT

A. ENHANCEMENTS

1. BASIC programs can now lock multiple files when run in MR status. The new parameter [,MR] has been added to the SAVE and RUN commands to allow a user who has MR capability to SAVE and RUN programs in MR status. Using MR in the RUN command allows that one run to have MR status. For subsequent runs, the MR parameter must be respecified. When MR is used in the SAVE command, the program will be saved with MR status. This gives only the saved version MR status and does not affect the status of the current version. Once saved with MR, any user (with or without MR capability) can run the program in MR status. A program will lose its MR status if it is modified in any way though. Attempting to lock a second file in a program lacking MR status will result in the message "MULTIPLE FILE LOCK IN LINE XX". An attempt to use the MR parameter by a user lacking MR capability will result in the message "COMMAND EXCEEDS USER CAPABILITY".

B. CORRECTIVE SOFTWARE CHANGES

1. When program execution began at an alternate entry point, the DATA statement pointer was set at the first DATA statement after the alternate entry point instead of at the first DATA statement of the program. [SMR #3191]

2. The BASIC interpreter would not properly pseudocompile the numeric expression in an UNLOCK statement. This resulted in a bounds violation whenever any use was made of the fast form of a BASIC program (i.e. when running the program, when listing it, or in the BASIC COMPILER when compiling a program.)

3. The UND function produced invalid results when passed a type LONG parameter. This would affect the evaluation of any expression which contained such a reference to UND, as well as the execution of FOR loops. [SMR #3877]

4. BASIC failed to load procedures from an SL for the CALL statement in some cases, resulting in failure of the BASIC program, without giving reason for the failure of the load. BASIC has been modified to print the loader error number.

   Failure to load frequently occurs because the CST is full. One way to avoid this is to gather small procedures into a common segment.

C. KNOWN PROBLEMS

1. The interpreter aborts with a stack underflow when control-Y is typed in certain circumstances. This occurs most often when printing a FREQ table. The problem may also arise in some cases when INVOKing or using the ABORT, CALLS, or FILES commands in BREAK-mode.

   WORK-AROUND Type control-Y and set a breakpoint at the next statement to be executed. Then enter the GO or RESUME command. When you break at the next statement, it will then be safe to use any BREAK-mode commands.

2. For an ASCII file, the READ statement cannot read a string beyond a character whose internal representation is binary zero (i.e. NUM(character)=0). Part of the record is effectively lost. [SMR #3420]

   WORK-AROUND Use one of the following when the possibility of a string containing binary zero exists:

   a. If the file is being created by a BASIC program use a BASIC formatted file instead of an ASCII file.

   b. Use file LINPUT statement to read the record and then use a user defined function to scan the record to find the data fields. The convert statement can be used to convert strings to numbers.

3. When an input character string is greater than 255 characters in length, a file LINPUT statement will incorrectly give the error "STRING > 255 CHARACTERS IN LINE xxx in xxxx" rather than properly discarding the extra characters. [SMR #4728]

4. When a BASIC program INVOKEs a program which contains an error, the INVOKing program is partly destroyed. [SMR #4324]

   WORK-AROUND Save all programs to be INVOKEd in FASTSAVE form. This causes the interpreter to check for errors before the program is saved.

5. BASIC inadvertently allows branching from one multi-line function to another. Results produced when this is attempted are unpredictable. There may be invalid results produced without warning, incorrect error messages may be given, or there may be a bounds violation by BASIC. [SMR #4125]

FORTRAN/3000 HP32102B.00.09

DATE CODE 1814, N00N102B.HP32102.SUPPORT

A. ENHANCEMENTS

Since its release, FORTRAN/3000 has imposed the limit of not allowing more than approximately 254 simple variables and/or arrays which can be defined in COMMON. The limit exists due to the fact that each such variable or array is assigned one of the 254 pointers available in primary DB. The reason for this is to allow efficient access to variables in the COMMON area. For most applications, the limit does not pose a problem. However, there are certain applications involving extremely large, but modular, programs, which while fitting the system-wide limits of 16K maximum code segment size and 32K maximum data stack size cannot be converted to the 3000 because of the COMMON block limitation.

This enhancement will offer an alternate addressing method for variables in COMMON. In order to preserve the original goal of efficient execution, the enhancement will be optional, and will be invoked by a "$CONTROL MORECOM" statement.

The new scheme will assign one primary DB location per COMMON block. Thus, the new limit will be a maximum of 254 COMMON blocks. Different code will be generated to handle a variable's offset into a COMMON block. This method will produce more code, which will cause program execution to be slightly less efficient. However, it will not restrict the number of variables in COMMON. A typical large FORTRAN program with extensive use of COMMON will result in approximately a 10-30% increase in code segment size and approximately a 0-4% increase in execution time when the MORECOM option is invoked. Thus, this option should only be specified when a program cannot otherwise be PREPed due to Segmenter "** ERROR 66 ** TOO MANY COMMON DATA LABELS". Due to internal reasons, COMMON variables may not be TRACEd when MORECOM is in effect. (NOTE: The existing maximum data stack size of 32K can still restrict the total size of the COMMON area.)

B. CORRECTIVE SOFTWARE CHANGES

1. SMR #2572 and #2940 -
The compiler improperly allocated arrays with dynamic bounds when $CONTROL BOUNDS was in effect causing the program to produce incorrect results or abort.

2. SMR #2752 -
The compiler improperly handled a four-word DOUBLE PRECISION number represented in octal format (e.g. DP = %64333D)

3. SMR #3136 -
The compiler did not use logical arithmetic in computing a byte address causing an integer overflow error.

4. SMR #3197 -
A warning is given when two outer blocks are compiled together. This could be caused by two END statements in the main program.

5. SMR #2461 and #3178 -
System intrinsics without arguments can now be called without generating the error "FUNCTION MISSING ARGUMENTS".

6. SMR #3557 -
The FORTRAN compiler incorrectly optimized the use of the index register inside a complex IF statement. This optimization has been deleted and the index register is now properly loaded.

C. KNOWN PROBLEMS

1. Calling the system intrinsic WHO in a main program and in a subroutine using different parameter lists produces an extraneous segmenter error. A temporary solution is to use the same parameter list with dummy parameters if necessary.

2. Under certain circumstances the CROSSREF facility will produce incorrect line numbers. This occurs when the declaration line has been continued onto another line. A temporary solution is to break the line into parts which fit onto one line each.

3. Backspace N works only when N is a number, not if N is a variable. A temporary solution is to use only numbers.

4. Upon passing a subroutine to SORTINITIAL an extraneous error "VALUE VS REFERENCE ARGUMENT" is produced.

D. DOCUMENTATION CHANGES

1. The range representable by a double integer was incorrect. The correct range is from -2147483647 to 2147483646. The correct upper range for double precision is 0.115792-0892373161x10-78, and the upper range of real numbers is .1157920x10+78.

2. Changes have been made to the manual to explain the MORECOM enhancement and new error messages generated when used improperly.

3. Changes have been made to explain the new error message generated when two outer blocks are active.

4. A return statement in a main program is treated as a STOP statement.

5. The error message "LOCATION DISALLOWED FOR INTERACTIVE TEXT AND LIST FILES" is now explained in the manual.

6. Note that each storage location may be initialized only once in DATA statements and may otherwise cause incorrect initial values.

7. Substring designators move byte by byte from the source to the destination. Thus, X[2:2]= X[1:2] where X=ABC initially will produce X=AAA.

BASICOMP/3000 HP32103B.00.08

DATE CODE 1814, N00N103B.HP32103.SUPPORT

A. ENHANCEMENTS

The BASIC COMPILER now allows multiple files to be locked when the BASIC program is prepared with MR capability.

B. CORRECTIVE SOFTWARE CHANGES

1. The LINPUT# statement failed to input the next record from a variable length file after having read a zero-length record. Instead, subsequent LINPUT#'s re-read the same zero-length record. [SMR #3171]

2. The built-in function BUF caused an INTEGER OVERFLOW error and a program abort when the buffer contained a number in the range 32720 to 32767. [SMR #3075]

3. Lower-case characters were not recognized as format specifications in PRINT USING format string expressions.

4. String variables referenced using substring designators were not properly evaluated when used in a CALL parameter list. For example: [SMR #2818]

```
CALL SUB(I$[4])
```

5. The unary-minus operator preceding a constant was not always handled correctly. This caused the following two incorrect results (where "x" represents a constant and "y" represents any variable, constant or expression):

   a) "-x MOD y" was evaluated as "(-x) MOD y" instead of "-(x MOD y)"

   b) "-x**y" was evaluated as "(-x)**y" instead of "-(x**y)".

6. The MOD operator produced either inaccurate or totally incorrect results when used with type-LONG constants or expressions unless both operands were type-LONG variables.

7. When the base was type-REAL and the power was type-LONG, representable as type-REAL (last word(s) equal to 0), single precision rather than double precision arithmetic was performed. This happened whether the power was a LONG constant or a LONG variable.

8. The step size was also included in the FOR list of an integer IO FOR-loop when the step was explicitly given and when any of the following conditions was also met:

   1) LIMIT = -1 STEP = 1
   2) LIMIT = 0 STEP = 1
   3) LIMIT = 1 STEP = -1
   4) LIMIT = 0 STEP = -1

9. Evaluation of a type LONG expression within a PRINT # statement caused a compiled BASIC program to abort. [SMR #3939]

10. A forward branch to an ELSE statement caused invalid code to be generated. This code caused anomalous results. Possible symptoms of this problem are: [SMR #3049]

    a. The compiler could abort with "BOUNDS VIOLATION".

    b. The segmenter could abort with the message "ERROR #81 ILLEGAL PATCH" during program preparation.

    c. The compiled program could give incorrect results or go into an infinite loop or abort with "ILLEGAL INSTRUCTION" error.

11. On occasion, when many entries had been given with the $ENTRY command, BASICOMP would abort with the message "ERROR 73: END OF FILE TEMPORARY FILE" after the $EXIT command was given. [SMR #4070]

12. On rare occasions BASICOMP aborted at %0.%4671 with STACK OVERFLOW. There is no specific construct that caused this to occur. [SMR #4070]

13. In rare circumstances the BASIC compiler would abort at either 14.4450 or 14.4551(depending on the version). There is no specific construct which caused this to occur. [SMR #3818]

C. KNOWN PROBLEMS

1. Incorrect code is generated for a FOR-loop which encloses both an ONEND statement with a destination outside the loop. This situation will cause spurious run-time aborts if an end-of-file is detected while inside the FOR-loop.

   WORK-AROUND Place a superfluous GOTO statement outside the FOR-loop with a destination inside the loop. The GOTO statement itself is not intended to be executed.

2. A bounds violation or other anomalous results occur when a user-defined function is used within a subscript expression on the left-hand side of a LET statement. For example:

```
X(FNA(Y))=10
```

   WORK-AROUND Eliminate the reference to the user-defined function in the subscript expression by evaluating it in a preceding statement. For example:

```
Z=FNA(Y)
X(Z)=10
```

3. A BASIC program compiled using the SUBPROGRAM option and using type-LONG variables can give spurious errors when prepared with a separately compiled BASIC program not using type-LONG variables. [SMR #2833]

   WORK-AROUND Compile all BASIC programs together without using the SUBPROGRAM option. Alternatively, place dummy type-LONG variables in all BASIC programs.

4. When there is a string array reference such that the product of the element number and the maximum string length plus two is greater than 32768, an abort with an INTEGER OVERFLOW error occurs.

   WORK-AROUND In the DIM statement specify a smaller string if possible, otherwise the string array must be broken into smaller arrays.

5. For an ASCII file the READ statement cannot read a string beyond a character whose internal representation is binary zero (i.e. NUM(character) =0). Part of the record is effectively lost. [SMR #3420]

   WORK-AROUND Use one of the following when the possibility of a string containing binary zero exists.

   a. If the file is being created by a BASIC program use a BASIC formatted file instead of an ASCII file.

   b. Use file LINPUT statement to read the record and then use a user defined function to scan the record to find the data fields. The CONVERT statement can be used to convert strings to numbers.

RPG HP32104A.03.07

DATE CODE 1814, N00N104A.HP32104.SUPPORT

A. ENHANCEMENTS

1. The RPG manual states that only IMAGE data sets or KSAM files can be referenced in the file sharing group field DSNAME. RPG users may now include sequential files in the file name field. This will, for example, allow a file name qualified by a group name.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR 2887 Specifying a packed decimal array in INPUT specs within a record which also was being converted from ebcdic with the EBCDIC continuation spec and for which partial field translation was also necessarily specified resulted in a BOUNDS VIOLATION at run-time.

2. SMR 3104 a MOVEL calc op, where factor 2 length is < result length caused a sign change in the result, whereas the sign should not have been changed.

3. SMR 2722 If a field was not defined at first reference and was subsequently used as a key for a KSAM file CHAIN op, the subsequent definition resulted in an erroneous 671T compile time message.

4. SMR 2562 In certain unusual cases, a call to fetch overflow at total time resulted in a run-time bounds violation.

5. In certain peculiar circumstances, RPG attempted erroneously to LOCK the same file twice. Most of the circumstances occurred when an Update file was being ADDed to.

6. As stated in the RPG manual, a file for which LOCK has been specified will never be unLOCKed if there is no output to that file in the cycle. This condition has been remedied by going thru an unLOCK /LOCK sequence at the start of the next cycle if the file is already locked. This will allow other users who are queued for the file to be able to lock it before this process can.

7. SMR 3224 A program with a KSAM file processed under a chaining file and without either tables or arrays gave a run-time bounds violation if the last key in the chaining file did not exist in the KSAM file. This error did not affect program execution in any way, because it occurred at file close time.

8. SMR 3299 In a program with a KSAM file which is Update DEMAND and for which ADD and DEL are performed at detail time, if a record is ADDed in one cycle followed by a cycle which includes a SETLL followed by a READ, followed by detail output DELete or update, then the wrong record was updated or DELeted.

9. SMR 3452 Placing an N in position 20 of the control record informs RPG that the user is not interested in the current line number during run-time error processing. Previous to this correction, the line number reported was garbage. The line number reported under these circumstances will now be zero.

10. SMR 3580 An IMAGE data base was left in a locked state when a read of an update data set resulted in any of the following...

    -end of chain
    -end of file
    -record not found

    The data base will now be unlocked following a read which results in any of the above conditions.

11. An update KSAM file for which LOCKing was specified was left in a locked state after a read which resulted in a 'record not found' condition. The KSAM file will now be unlocked immediately under these circumstances.

12. SMR 3759 A program with more than 63 decimal (77 octal) arrays and tables resulted in an erroneous compile time message in Output specs. The message was 753W and was associated with elements of arrays or tables which were 64th or greater as determined by the order of specification in E specs.

13. SMR 3881 User translation tables did not work properly, that is to say they did not translate input and output according to user supplied tables.

14. SMR 3528 An attempt to SETON an overflow indicator followed by EXCPT processing, followed by the execution of CALC ops conditioned by the overflow indicator, caused these calcs not to be executed due to RPG erroneously setting the indicator off during the EXCPT processing.

15. SMR 3927 If a CHAIN calc op was attempted to a DETAIL data set for which there was a chain entry in the corresponding MANUAL master, but for which there were zero members in the DETAIL, then RPG only turned on the end of chain indicator. Henceforth, RPG will also turn the record not found indicator on under these circumstances.

C. KNOWN PROBLEMS

1. An error in the MPE FILE SYSTEM causes two extra lines to be output on the first page, which are not counted by RPG.

   WORK-AROUND Back the printer carriage up two lines prior to printing the report.

2. SMR 3760 A program using field indicators on an input record and with 'N' in position 20 of the control record (to suppress retention of the current line # for run-time error reporting), gives program abort at run-time.

   WORK-AROUND Remove the 'N' in position 20 of the control record.

3. SMR 4047 Program with IMAGE data set and sequential output file conditioned by user indicator gives IMAGE ERROR #50 if the indicator is off.

4. SMR 4048 An indicator which is defined and referenced does not appear in the cross-reference.

5. SMR 4049 If more data is supplied for a compile-time table than is allowed in the table specification, RPG does not issue a warning to the user.

6. SMR 4050 A program containing only an F spec, a single I spec and a single O spec did not result in a warning at compile-time to indicate that input and output fields were missing.

7. SMR 4120 If a CHAIN op is specified in CALC'S to an update secondary file, RPG does not issue a warning to indicate that this is illegal; the result is a run-time error.

8. SMR 4139 If there is sequence checking in a matching record situation and there is a sequence error, and the program is run in batch, then the operator response to bypass the record results in a program loop.

9. SMR 4245 A SETON LR operation in CALC'S does not turn-on the L1 to L9 indicators.

10. SMR 4266 If there is an EOF test on the primary file and there is a matching situation with a secondary file and the primary file goes to EOF, then if the next secondary record is a non-matching record, then this record is not processed as it should be.

11. SMR 4267 If a user indicator is set using 'JCW', the indicator is not set to the 'JCW' state.

12. SMR 4268 If high and low subfields contain valid indicators for a CHAIN operation, RPG reports a 664W. This message is not valid under these circumstances, instead, a new message will be reported.

13. SMR 4271 Run-time error #4 reports an invalid record number if the input file is $STDIN and the program is executed within a batch job.

APL/3000 HP32105A.00.05

DATE CODE 1814, N00N105A.HP32105.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. Use of encode or decode monadically would abort APL. This has been corrected so these give the proper "SYNTAX ERROR" message.

2. A laminate of the form A,[<expression>] B produced a result in which each element of a given row in the result which came from B was identical. This has been corrected.

3. APL failed to re-enable "BREAK" after either the ")MPE" or ")OFF" commands. This has been corrected.

4. APL failed to release 2641A terminals from APL mode on logoff when APL was entered with the "(APL) user.acct" logon.

5. Inversion of singular matricies sometimes produced an invalid result rather than giving a "DOMAIN ERROR" message. This has been corrected.

6. Loading a workspace occasionally caused APL to abort with a bounds violation. This problem has been corrected.

B. KNOWN PROBLEMS

1. Exact comparison rather than "fuzzy" comparison is performed in some cases when both numbers being compared are whole numbers less than 32768. This problem only shows up when the comparison tolerance is extremely large.

DS/3000 HP32190A.02.01

DATE CODE 1814, N00N190A.HP32190.SUPPORT

A. ENHANCEMENTS.

1. The parameter 'QUIET' has been added to the user :DSLINE command. When used this will suppress all line opening/closing messages and any messages generated as the result of remote hello/bye processing (Including any prompts for passwords).

2. A data compression facility has been added. Configuring a dsline (IODS0) with a subtype of 1 indicates that compression is the default line usage. Compression may also be turned off and on with the console =DSLINE or user :DSLINE commands by using the parameters NOCOMP or COMP. The compression algorithm is compatible with IBM SNA repeat character compression.

3. A set of COBOL and BASIC callable intrinsics are provided to allow program-to-program communication between programs written in those languages.

4. A number of performance improvements have been made which should result in a noticeable improvement in throughput and response time.

   Anyone experiencing system degradation due to DS/3000 is requested to submit a software problem report detailing as much as possible about the operating environment:

   * Type of connection (HSI or Modem type).
   * Line buffer size.
   * Record (or block) sizes.
   * Number of concurrent users.
   * System load (light or heavy).

5. Remote Data Base Access is now supported. See IMAGE for details of use.

6. DS/3000 now takes advantage of the new MPE error message facility to produce expanded error messages.

B. CORRECTIVE SOFTWARE CHANGES

1. An extra data segment which was acquired during a bad :DSLINE is now returned properly.

2. The yes or no (Y or N) response to the 'ABORT SESSION' message is now recognized in all cases.

3. Parameters in a REMOTE HELLO which follow the optional DSLINE= specification are now sent to the remote system properly.

4. It is now an error to break a program to program operation and attempt to do a :REMOTE RESUME or a :REMOTE ABORT. Local resumes/aborts are valid and apply to both sides.

5. DSLINE #Ln;CLOSE now properly closes the line identified by the line number displayed during the line open.

6. A :REMOTE DSLINE @;CLOSE will no longer close the line at the remote computer which is in use back to the master from which the command was issued.

7. If a :DSLINE @;CLOSE is issued and a remote session exists and a no response is given to the ABORT question then the message 'NO DSLINES WERE CLOSED' is issued instead of 'THERE ARE NO DS LINES OPEN'.

8. A condition where a :DSLINE ;CLOSE did not always close the last open line was corrected.

9. A message is now displayed when the remote session is created but is unable to obtain the DS extra data segment it needs.

10. An FREAD to a remote file where the tcount is much greater than the record size requested during the corresponding FOPEN no longer mangles the DS extra data segment.

11. A remote KSAM FGETKEYINFO now works properly.

12. A remote KSAM FFINDBYKEY now works in all cases.

13. A line failure during program to program communication would randomly cause a system failure. This will no longer occur.

14. An =DSLINE ldev,OPEN console command issued to a non-DS device no longer causes an unpredictable system malfunction.

15. An occasional ERR 0 while doing RFA from a remote program or subsystem will no longer occur.

16. If more than one DS line was configured with the same device class name, RFA FOPEN's and POPEN's that specified a device class name (instead of a unique logical device number) would always open on the highest ranking (in the device class table) DS line that was available. This happened even if the user had done a :DSLINE to an explicit logical device of lower ranking. All subsequent RFA or PTOP requests to the erroneously opened line would then fail. This has been corrected.

C. KNOWN PROBLEMS

1. After breaking a PTOP operation during slave access to $STDIN or $STDLIST, RESUME sometimes doesn't work.

2. A REMOTE command issued from a batch job, which results in an error in the remote session that would cause termination of a batch job, does not terminate the local batch job.

3. The file disposition specified in a local :FILE command (i.e., SAVE, DEL, or TEMP) to a remote file has no effect. The temporary work-around is to issue a :REMOTE FILE command to specify the disposition.

4. :REMOTE DEL operations sometimes do not result in the proper formatting of the terminal screen.

MRJE/3000 HP32192A.00.01

DATE CODE 1814, N00N192A.HP32192.SUPPORT

A. ENHANCEMENTS

None.

B. CORRECTIVE SOFTWARE CHANGES

1. January 30, 1978
-Moved $CONTROL SEGMENT statment to correct location in PURGEDISPOLD procedure.
-Corrected host number print problem in DISPLAY DIRECTORY procedure.

2. May 3, 1978
   -Corrected powerfail recovery problem in Pseudo Drivers.
   -Corrected version message in MRJE start up.

C. DOCUMENTATION CHANGES

An MRJE/3000 Reference Manual is available (HP32192A-90001).

D. KNOWN PROBLEMS

1. If the communications line operates at a speed greater than the terminal used for the MRJE console, some output can be lost.

2. It has been reported, but not verified, that occasionally a spool file containing a submitted job will hang. Please get a dump of this situation if it occurs.

3. It has been reported, but not verified, that line errors cause line disconnection before sufficient re-tries have been attempted. If this causes a problem, please get a CS trace of the line.

MTS/3000 HP 32193A.00.00

DATE CODE 1814, N00N193A.HP32193.SUPPORT

A. ENHANCEMENTS

MTS/3000 allows access to the HP 2645 Multipoint Terminals by way of device-independent File System.

EDITOR/3000 HP32201A.7.02

DATE CODE 1814,N00N201A.HP32201.SUPPORT

A. ENHANCEMENTS

1. A "DIRTY BIT" has been established to determine when a TEXT file has been altered (i.e. following an ADD, INSERT, etc.) and when it is "clean" (i.e. following a TEXT (without range), KEEP (without range), or DELETE ALL). Thus when "ENDing" "TEXTing" etc., the user is not burdened with the "OK TO CLEAR?" message unless the file has been altered. The "VERIFY ALL" and "VERIFY FILES" commands will indicate if the WORK file has been altered via the following:

    "WORK FILE HAS BEEN ALTERED"

    For example;

```
/TEXT JOBFILE,UNN
/V FILES
FILES:
    WORK: K2521318
    KEEP:
    TEXT:  JOBFILE.BALKMAN.SUBSYS  FRI, SEP 9, 1977, 1:18 PM
/ADD
    6      JOBFILE MODIFICATIONS
    7      ...
/V FILES
FILES:
    WORK:  K2521318
    WORK FILE HAS BEEN ALTERED
    KEEP:
    TEXT:  JOBFILE.BALKMAN.SUBSYS  FRI, SEP 9, 1977, 1:18 PM
    JOIN:
/KEEP JOBFILE,UNN
JOBFILE ALREADY EXISTS- RESPOND YES TO PURGE OLD AND THEN KEEP
PURGE OLD?Y
/V FILES
FILES:
    WORK:  K2521318
    KEEP:  JOBFILE.BALKMAN.SUBSYS  FRI, SEP 9, 1977, 1:19 PM
    TEXT:  JOBFILE.BALKMAN.SUBSYS  FRI, SEP 9, 1977, 1:18 PM
/END
END OF SUBSYSTEM
```

2. If a user attempts to TEXT in an UNNUMBERED file without specifying the UNNUMBERED option, EDITOR will TEXT the file unnumbered and respond with the following message:

```
"FILE UNNUMBERED"
```

For example:

```
/K JOBFILE,UNN
/TEXT JOBFILE
 FILE UNNUMBERED
/
```

This feature does not apply, if the TEXT command in question is followed by additional EDITOR commands on the same line.

For example;

```
/TEXT JOBFILE;LIST ALL
```

will result in error 29, if JOBFILE is an unnumbered file.

3. A short form of the TEXT and KEEP commands is available. The new short forms are:

```
T[EXT]
 and
K[EEP]
```

When using the short forms of these commands, the file name and the "UNN" option is implied from the last TEXT or KEEP command (whichever was performed last).

In addition:

a) Using the short form implies "ALL" of the file (i.e. no range list).

b) A "KEEPQ" file name will not be used as the implied file name for the short form of TEXT or KEEP.

c) EDITOR will echo the file name and the UNNUMBERED option (if appropriate). For example:

```
(User)   /TEXT JOBFILE,UNN
(USER)   /A
(User)       5     JOBFILE MODIFICATIONS
             6
         ...
(User)   /K
(EDITOR) JOBFILE,UNN
(EDITOR) JOBFILE ALREADY EXISTS- RESPOND YES TO PURGE OLD
         PURGE OLD?Y
```

```
(User)   /T
(EDITOR) JOBFILE,UNN
(User)   /K JOBFILE,UNN
(EDITOR) JOBFILE ALREADY EXISTS- RESPOND YES TO PURGE OLD
          PURGE OLD?Y
(User)   /T
(EDITOR) JOBFILE
         /
```

d) If the file in question belongs to a group and/or account other than that of the logon account, then the file name group and account is echoed.

e) This feature does not apply if the TEXT or KEEP command is followed by additional EDITOR commands on the same line. For example:

```
/TEXT;LIST ALL
```

will result in error 3 (parameter missing).

4. The command:

```
/L ALL,OFFLINE
```

will automatically send the listing to DEV=LP, if no file-equate has been established.

5. An improved method of calculating the blocking factor for fixed length files. The editor calculates the factor by trying various numbers that use up to 8 sectors, and chooses the best one in terms of disc utilization.

6. Added the TRANSLATE option to the LIST command.

7. User labels from disc files will now be copied into the new keep file, if they have the same name.

8. Type 1040 and 1060 coded files will be processed.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR #2244 - an error encountered in a BATCH run of EDITOR will no longer inhibit processing of subsequent EDITOR commands in that BATCH run.

2. SMR #2277 - if an ADD process was terminated via a //, a subsequent MODIFY or DELETE (for example) with a default line number would delete the wrong line. This problem has been corrected.

3. SMR's #2641, 2777 If FORMAT=COBOL, EDITOR will now automatically set FORMAT=DEFAULT when TEXTing in a DEFAULT file. Small variable length record files (i.e. less than 16 records) will no longer take up excessive space on disc.

4. SMR #2804 - bounds violation occured during INSERT from HOLD file. The abort will not happen, but the EDITOR still does not work correctly for all cases.

5. SMR #3028 - TEXTing in a file of record size > 255 gives a warning message.

6. SMR #3168 - the EDITOR will not lose tab settings when an error is made in setting TABCHAR.

7. SMR #3209 - a check is made if you try to KEEP a file across account boundaries. This is not allowed. A check for save file capability is made for saving in another group. (*60* FCLOSE ERROR (93) is the result of not being able to save in another group.) The file will not be purged if you cannot save it.

8. SMR #3723 - TRANSLATE option is implemented.

9. SMR #3803 - See 5. #3028.

10. SMR #4149 - loss of last line of text if the users mind was changed during the first line of an add. This no longer happens.

11. The JOIN command now uses logical record numbers which start with #0. This is the same as the TEXT command.

C. DOCUMENTATION CHANGES

1. Replace paragraph 3-100 with the following:

FORM. The form of the TEXT command is:

```
       |                                                       |
       |             |(linenumber/linenumber)||               ||
T[EXT]| filename    |(#recnum/#recnum)       ||,UNN[UMBERED]||
       |                                                       |
```

Paragraph 3-64 should be modified in a similar fashion for the KEEP command.

```
       |                                        |
K[EEP]|[Q]filename[(range)][,UNN[NUMBERED]]|
       |                                        |
```

2. Add the following to paragraph 3-101.

   If the filename and option are not specified then the filename and the unnumbered option (if appropriate) is implied from the last KEEP or TEXT command (whichever was performed last).

   Add similar text to paragraph 3-65 for the KEEP command.

3. Add the following paragraph 3-102.

   If the filename is not specified, then no other commands are allowed on the same line with this TEXT command.

   If the filename is not specified, then "all" of the file will be TEXT in.

   A KEEPQ filename will not be used as the implied filename when the filename is not specified.

   Add similar text to paragraph 3-66 for the KEEP command.

4. Change paragraph 3-102 to indicate if a file is saved with a KEEP,UNNUMBERED command (or otherwise created without sequence numbers) the TEXT command need not specify UNNUMBERED. The file will be brought in UNNUMBERED by default.

5. Change paragraph 3-71 example (paragraph 3-73 page 3-44) to indicate that using the OFFLINE parameter will send the output to DEV=LP if an alternate output was not specified via the MPE/3000 :FILE command.

D. KNOWN PROBLEMS

1. SMR #2996 - the CHANGE command gives bad results when RIGHT is less than 72.

2. SMR #3265 - & continuation inserts unwanted blank.

3. SMR #3268 - END command not recognized in USE file.

4. SMR #3274 - in MODIFY the R command can give bounds violation if line is too long.

5. SMR #3325 - ADD and INSERT in BATCH mode ignore leading numbers in inserted text.

6. SMR #3363 - Z:: can not be used on same line that defines Z::.

7. SMR #3579 - GATHER command produces unrecoverable lines in its workfile, thereby using up all the space.

8. SMR #3814 - control Y in BEGIN/END block with empty work file causes exit of program.

9. SMR #4572 - FIND of string of blanks positions pointer incorrectly.

10. SMR #4242 - INSERTing blank line from HOLD file sometimes causes bounds violation.

11. SMR #4243 - sometimes the HOLD file is not cleared and the last line from the previous HOLD is still there at the end.

12. SMR #4616 - CHANGE command deletes lines when they are all blank.

13. SMR #4599 - LAST is not updated for each line during a range operation.

SCIENTIFIC LIBRARY/3000 HP32205B.00.03

DATE CODE 1814, N00N205B.HP32205.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

SMR# 3638 - The double precision error function returned the negative of the correct answer. This has been fixed.

A. ENHANCEMENTS

1. DEL/3000 has been modified to operate with MULTIPOINT terminals. This feature should be transparent to user applications software in most cases. However, several important restrictions apply:

   - Since MULTIPOINT terminals require a portion of terminal memory for the Data Communications buffer, care should be taken to avoid using form files that exceed terminal memory.

   - The design of MULTIPOINT restricts an individual terminal read to a maximum of 2048 characters. Thus, application programs reading forms consisting of more than 2048 characters in both unprotected data and number of fields, will not execute properly.

   - The 2048 character limit (see above) also restricts users of FORMAINT. Forms containing more than 2048 displayable/non-displayable characters can not be created or modified via a MULTIPOINT terminal.

   Internal changes to DEL to accommodate MULTIPOINT terminals include:

   - Multipoint terminals are always in BLOCK MODE strapped for PAGE. Therefore DEL is not required to programmatically set the terminal for BLOCK MODE/PAGE (i.e. turn on BLOCK MODE and open straps D&G). Note that setting Bit 0 of the TERMINAL MODE INFORMATION word in COMAREA (3rd word) will have no effect when operating with MULTIPOINT terminals. (This bit is used to allow use of physical switch setting for straps D&G on terminals where they can be set programmatically.)

   - Multipoint terminals are always opened as TERMTYPE 14.

   - Multipoint terminals do not use DC2 handshake.

2. FORMAINT has been modified to use DEL intrinsics. Any restrictions formerly placed on the use of FORMAINT because of term type are lifted (Series II only). Therefore, any terminal which can be opened via the DEL intrinsic OPENTERM can be used by

FORMAINT. FORMAINT will still operate in line mode (MULTIPOINT excepted). Because FORMAINT now uses the READTERM intrinsic to read newly created/ modified forms, the maximum number of displayable/ non-displayable characters allowed on each line of a form is limited to 600.

WARNING: To allow FORMAINT to use READTERM for reading newly created/modified forms from the terminal memory, the Q-relative stack requirements of READTERM have been increased by 240 words (decimal). This change should not affect most user programs. However, if a stack overflow error occurs during a call to READTERM, PREP the user program with a larger MAXDATA parameter.

B. CORRECTIVE SOFTWARE CHANGES

1. Problems were discovered with NRANGE and CNRANGE in the previous version of DEL. NRANGE and CRANGE will now accept signed as well as unsigned range values. CNRANGE converts the signed value to DISPLAY representation.

2. To open a NON-$STDIN/$STDLIST terminal devicefile, the MPE "FILE" command must specify a "NEW" file. The exception to this is opening a NON-$STDIN/ $STDLIST terminal which has been allocated via the MPE ":DATA" command. This terminal will be opened OLD (default). Example:

```
For NON-$STD
    :FILE TERM264X,NEW;DEV=36
For :DATA
    :FILE TERM264X;DEV=36
```

3. The "MESSAGE SUPPRESSION" and "AUTO READ" problem has been corrected for terminals operating in page mode.

4. A problem existed with GETFORM when delivering a form to the user buffer in portions at a time. The 43rd word of COMAREA will now be set to zero by GETFORM when the entire form has been delivered to the users buffer.

5. An unprotected field greater than 7 characters long and ending in column 80 would not accept data in column 80. This problem has been corrected.

6. Procedure OPENTERM overrode the term type used for the 2645K Katakana terminal (term type = 12) changing it to term type 10. This caused random Katakana and Roman characters to be displayed on the terminal. SMR 4239.

7. DEL procedure TERMSTATUS now sets the last eleven status bytes correctly. SMR 4293.

8. OPENTERM does not allow the F strap on 2640B terminals to be set in the open position to enable correct DC1/DC2 handshaking. As a result, READTERM will occasionally encounter -2001 errors during moderate to heavy system load.

9. OPENTERM does not set the terminal type and G flag correctly in the COMAREA (3rd word) when opening a 2640B terminal. If the block mode key is up, upon entrance to OPENTERM, the G flag is not set correctly. This results in READTERM bypassing the -2001 error check. If the block mode key is down, upon entrance to OPENTERM, the terminal is identified as a 2645A instead of a 2640B.

C. DOCUMENTATION CHANGES

Changes to the DEL/3000 reference manual

1. All references to terminal types 2640 and 2644 should be changed to include terminal types 2640A, 2640B, 2641, 2644, 2645A, and 2648.

2. Appendix A page A-2, WORD 43 should specify this word is set to zero when the entire form is delivered to the user buffer.

D. KNOWN PROBLEMS

DEL/3000 does not work over a half duplex data link. A call to OPENTERM, when using a half duplex data link, causes the terminal to home the cursor, clear the display and stop execution of OPENTERM. SMR 4313.

KSAM/3000 HP32208A.01.06

DATE CODE 1814, N00N208A.HP32208.SUPPORT

A. ENHANCEMENTS

1. Duplicate key KSAM files run 5% faster now. But the moral is still to use unique keys whenever possible. If you have to use duplicated keys in your KSAM file, keep the number of duplicated keys on any duplicated key chain to a minimum. If more than 10 keys are duplicated on each key chain, you should not use this as a key at all if you want fast processing.

2. Multiple key processing:

   - The loading of a multiple KSAM file is 100% to 1000% faster than previously, depending on:

     a) The number of keys in the file.
        A 2 key KSAM file loading is much faster than a 3 key KSAM file loading.

     b) The number of records in the file.
        The first 1000 records loading time is much faster than the last 1000 records in a 100,000 record KSAM file.

     c) The environment of the user's system.
        Stand-alone KSAM loading is much faster than loading a KSAM file with 10 other users running on the system at the same time.

   - Rebuilding your KSAM file.
     You do not need to rebuild your KSAM file if your KSAM file is:

     a) single key, or
     b) multiple key but using default keyblocking, or
     c) used as a read only file.

     You have to rebuild your KSAM file if it is:

     a) multiple key, and
     b) not used as a read only file, and
     c) the keyblocking factor makes the keyblocks in different sizes.

- A new error message was added to tell you if you have to rebuild your KSAM file. The error message is 180: "THE KSAM FILE MUST BE REBUILT BECAUSE THIS VERSION DOES NOT HANDLE THE FILE BUILT BY PREVIOUS VERSION". You may use FCOPY version HP32212A.3.00 to rebuild your file by using the following command:

```
>FROM=oldksam;TO=(datafile,keyfile)
```

- How does KSAM allocate keyblock buffers.

  a) For read only files, the number of buffers is equal to the number of levels of the primary key.

  b) For write only files, the number of buffers is equal to the (number of keys *3)+3

  c) For all other access, the number of buffers is equal to the total number of levels of all the keys plus 3.

  d) The number of keyblock buffers is also limited by 3<= (number of keyblock buffers) <=20 and 16,000 words of KSAM extra data segment size.

  e) The above number of buffers can be overridden by:

```
** a file equation  *FILE KSAM;DEV=,,no-
   of-buffer
                    or
** NUMBUFFERS.(4:7) in a FOPEN call.
```

B. CORRECTIVE SOFTWARE CHANGES

1. FOPEN KSAM file with read only and FOPEN the same KSAM file with EAR does not post the KSAM end of file indicator properly.

2. Returns an error if user tries to unlock a file that he did not lock.

3. Does not try to lock the KSAM file on closing if the file was locked when the call to FLOCK was made (the close would fail previously if the FLOCK, BKLOCK or CKLOCK intrinsic was called and the file was left locked.

4. The FUNLOCK counter was incremented after the KSAM information block was written to the file, this resulted in the FUNLOCK counter being zero. The increment of the counter was moved in front of the posting to the file so that the counters were correctly maintained.

5. The CKREAD reads the same record back after a CKREWRITE. It should have read the next record.

6. If a locked KSAM file is closed without unlocking, the buffers are not posted.

7. When file size and keyfile size are not the same, FORTRAN compiler returns "SYSTEM ERROR #6, FILE #2 IS UNDEFINED AND ERROR #0" when calling FOPEN.

8. The key file is destroyed if an RPG program updates a multiple key KSAM file via different paths.

9. The CKREWRITE, BKREWRITE and FUPDATE do not reuse the original space when record lengths are the same in a fixed length KSAM file with no key changes.

10. When reading a variable length KSAM file using FREADC, the length returned is incorrect.

C. KNOWN PROBLEMS

MPE file system does not post data file's end of file properly.

When a KSAM file is built by using KSAMUTIL, the FOPEN counter is one more than that of FCLOSE.

FFINDBYKEY and FREADBYKEY do not work if the byte address of the KEY is DB negative.

D. DOCUMENTATION CHANGES

1. Page 1-7, line 16 should read.

   "where the key is either primary or an alternate.**"

2. Page 2-7, line 30 should read.

   "block size = (((recsize+1)*blockfactor)+1)"

3. Page 2-10, line 14-17.

INTEGER	1-255 characters (default 2)
DOUBLE	1-255 characters (default 4)
REAL	1-255 characters (default 4)
LONG	1-255 characters (default 8)

4. Page 2-10 on keyblocking, add the following:

   a. Keyblock size is rounded up by KSAM to a multiple of 128 words.

   b. For multiple key files, KSAM forces all keyblocks to the same size and adjusts the number of keys accordingly.

5. Page 2-12, table 2-2.

   Change the keysize on INTEGER, DOUBLE, REAL and LONG type key to 1-255 bytes long.

6. Page 2-18, add the following example:

```
>RENAME A.B,C.D
```

7. Page 3-4, figure 3-1.

   Previous operation is a two byte field.

8. Page 3-5, line 1.

   Previous operation is the right byte of word 8 in the Filetable.

9. Page 3-5, add:

```
9=CKOPENSHR
10=CKLOCK
11=CKUNLOCK
```

10. Alphabetize all CK procedures.

11. Page 3-21, delete the following:

    At the end of read, the pointer is positioned to the next record in sequence by key value.

12. Page 4-17.

    The second parameter msgbuf should be a LOGICAL ARRAY.

13. Page 4-25, next to last line.

    Bit 4 is set to 1 for a KSAM file. The foptions parameter returns 7(seven) different file characteristics.

14. Page 4-33, table 4-4.

    Year is a 7 bit field and day is a 9 bit field.

15. Page 4-34, table 4-4.

    Add the following:

    92 File limit (double word)
    94 keyblock size
    95 keyblock buffer size in extra data segment
    96 delete head (double word)

16. Page 4-39, line 1.

    Refer to table 4-7, not figure 4-7.

17. Page 4-39.

    Replace "This parameter is ignored for KSAM files" By NUMBUFFERS.(4:7) to indicate the number of buffers required.

18. Page 4-41, last line.

    The field does not apply when opening an old KSAM file.

19. Page 4-42, add:

    If share access and dynamic locking enable, the FLOCK must proceed and call to FREMOVE, FUPDATE or FWRITE.

20. Page 4-55, add:

    SPECIAL CONSIDERATION.
    Split stack calls permitted.

21. Page 4-59.

    Move "the key could not be located" from CCL to CCG.

22. Page A-3.

New error message 180:

"THE KSAM FILE MUST BE REBUILT BECAUSE THIS VERSION OF KSAM DOES NOT HANDLE THE FILE BUILT BY PREVIOUS VERSION"

23. PAGE A-6.

"02" SUCCESSFUL COMPLETION, DUPLICATE KEY - In a call to BKREAD, the current key has the same value as the sequential key in the last ....

FCOPY/3000 HP32212A.3.04

DATE CODE 1814, N00N212A.HP32212.SUPPORT

A. ENHANCEMENTS

1. HP files are always written logical records aligned on word boundaries, but other systems do not always follow this convention. A new option, DEBLOCK, allows files with unaligned records to be converted to a standard format.

The new option syntax is:

DEBLOCK = logical-record-length

When this option is specified the input is assumed to consist of logical records of length logical-record-length. If logical-record-length is negative it is assumed to be bytes; if logical-record-length is positive it is assumed to be words. These records are written one at a time into the TO file, and are then properly aligned on word boundaries. If logical-record-length is odd number, an extra byte will be added to the output record at the end.

2. It is desirable to be able to do character code conversion on a subset of the characters of each record. This problem arises in converting files containing both character and binary data from one computer to another. To facilitate this FCOPY was modified to allow any of the code conversion keywords with a list of fields to be converted. The syntax is

```
EBCDICIN
EBCDICOUT
BCDICIN [ =(field[;field[; ...]])  [,EXCLUDE]  ]
BCDICOUT
EBCDIKIN
EBCDIKOUT
```

3. Presently a user who wishes to copy one KSAM file into another must first build a new KSAM file, since FCOPY does not build a new KSAM file. FCOPY was modified to support new KSAM "TO" files. This addition to the TO option must be specified as shown below:

```
TO=(datafilename,keyfilename) [;NEW]
```

4. The FCOPY was modified to copy multiple tape files. The syntax is:

```
FILES = "number-of-files"  or "ALL"
```

End of file marks are copied. If "ALL" option is used, there is the possibility of running off the reel.

5. The record SUBSET option in FCOPY was extended so that multiple subsets may be copied by one command. The option for this is as follow:

```
SUBSET=(range[;range[;range...]])

    where range is either
          [starting-record-no] [,no-of-records]
           [starting-record-no] [:last-record-no]
```

6. The old FCOPY selects subsets of magnetic tape records by physical record number. The FCOPY was changed so that selection is by logical record number. If physical block subsets are needed they may be gotten by temporarily defining a logical record length equal to physical record length during the copy operation. The subsets will all be taken with respect to the beginning of the file.

7. The old FCOPY SKIPEOF can only be used for skipping ahead. The current FCOPY was extended to allow forward or backward by a specified count, or to position to an absolute file number. The new syntax is

```
SKIPEOF = [ [+/-] from-eofs ] [, [+/-] to-eofs] ]
                          or
          [ from-file-number] [, to-file-number ]
```

where from-eofs is an integer specifying how many files to be skipped in the FROM file and the + and - specifies forward of reverse skipping; from-file-number is an integer specifying an absolute file number on the from tape. Absolute file numbers begin with one for the first file on a tape. This option may not be used with labeled tapes.

8. The old FCOPY does not copy userlabels. The current FCOPY was modified so that userlabels may be copied. The default will be to copy labels. If no label copying is to be done the user should specify NOUSERLABELS as one of the Command options.

   Disc file userlabels are 256 bytes long and the tape file labels are 80 bytes long. If a user tries to copy labels from tape to disc a warning will be issued. The user may proceed and if so, the labels will be padded with junk bytes. Similarly, in copying for disc to tape the user will be warned, and if the operation is performed the labels will be truncated to their 80 bytes.

9. I/O error messages will no longer be given as just an error number. The English message will be printed along with the error on HP3000 Series II. The user will then type either a return or some other character. If return is typed, no further error information will be printed. Else PRINTFILEINFO will be called to display all available information about the file in which the error occured. Since FERRMSG is not available on SERIES I, there will be no change on these machines.

10. Two new options: CCTL and NOCCTL have been added to FCOPY. They are mutually exclusive. Either or neither may be specified in a command line. Their affects are explained in the new FCOPY manual updates.

11. When the fromfile is on disc, the options SUBSET and NEW will create the tofile with just enough records. Example:

```
FROM=FILE;TO=FILE2;NEW;SUBSET
```

B. CORRECTIVE SOFTWARE CHANGES

1. Copy from $CTUL to disc file using "NEW" option. FCOPY created the disc file using REC=-257,U . The disc file should be 256 bytes long.

2. Copy from a variable length disc file to $STDLIST using "SUBSET" option, an error of 119 was return by FCOPY.

3. Copy from cartridge to disc. (FROM=$CTUL;TO=filename) then copy back -- (FROM=filename;TO=$CTUR) All first blank lines of each block of one or more than one blank lines were replaced by an EOF.

4. FCOPY was using file equation for checking if the NEW TO file existed, even if no "*" was specified.

5. If NOKSAM is used, then the NEW option will create a MPE file correctly.

6. File numbering on a tape will start with 1.

7. Copying from a spooled $STDIN will now work correctly.

C. KNOWN PROBLEMS

1. When copying from $STDIN to a NEW file, the NEW file is not saved when FCOPY exits. Use FILE XYZ;KEEP before copying. This occurs when an error has occured before this copy operation.

2. The CCTL option does not always work when copying from a file with existing carriage control to a new one.

3. Certain errors give a *108* error loop, use CONTROL Y to get out of this condition.

4. Double EOFs are treated as 1 file.

5. Using SKIPEOF=0 gives error 153 instead of syntax error.

D. MANUAL CHANGES

There is a new fifth edition FCOPY/3000 manual. All the enhancements are described in the new edition.

COBOL C HP32213C.02.01

DATE CODE 1814, N00N213C.HP32213.SUPPORT

A. ENHANCEMENTS

The implementation of the ACCEPT statement has been changed to require a terminal user to press the return key no more than once to terminate data input.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR 2983. Sometimes a test for ZERO in an IF statement generated erroneous results if it was immediately preceded by a MOVE statement that moved a numeric literal to a data item containing a different number of digits tc the right of the decimal pcint.

2. SMR 3038. A compound condition in a SEARCH or SEARCH ALL statement generated ERROR 100, "ILLEGAL ARITHMETIC OPERAND", if the condition consisted of three or more simple conditions separated by the logical operator AND.

3. SMR 3080. The compiler aborted with a bounds violation at %26.14 when attempting to compile a COMPUTE ROUNDED statement containing a divide operator. Both the divisor and the dividend contained items whose pictures have eighteen digits.

4. SMR 3143. A compute statement containing an arithmetic expression of the form, (A - B) - (expl), failed when A and B were data items with pictures between 9 and 9(9) or were integer literals with a maximum of nine digits.

5. SMR 3860. A WRITE tc a disc I-O file overwrote the last record in the file if the previous access to the file was a READ that encountered an EOF.

6. SMR 3214. ERROR 95 is incorrectly generated by the following data definition: PIC S9(9)PP COMP-3 VALUE 0.

7. SMR 3322. A COMPUTE statement used as a simple assignment statement may give an erroneous result when immediately preceded by another compute statement. The erroneous result will be shifted left or right one or more digits.

8. A COMPUTE statement containing a COMP-3 data item that has both an OCCURS clause and an INDEXED BY clause changes the result from a negative value to an unsigned value.

9. SMR 3463. Compiler outputs ERROR 63, "UNDEFINED WORD IGNORED", in a MOVE statement and aborts with a bounds violation.

10. SMR 3643. The COBOL compiler erroneously emits an error 53, "SIZE OF DATA SEGMENT GREATER THAN 65K BYTES", if the size of an OCCURS table lies between 32768 and 65536 bytes.

11. SMR 3720. ADDing a literal to an unsigned numeric COMP-3 field converts the sign in the COMP-3 field from an "F" (unsigned) to a "C" (plus). The same problem also occurs when using the SUBTRACT statement.

12. SMR 3687. COMPUTE with ON SIZE ERROR option interferes with the correct execution of the CALL statement. If the ON SIZE ERROR clause is invoked, a CALL statement with a file name in the USING clause will fail.

13. SMR 3698. Using the figurative constant, SPACES, in a MOVE statement whose destination field is defined as PIC A results in an error 164, "Illegal Into-From Option or Move Operand."

14. Changes to the COBOL/3000 run-time library:

    a. SMR 3117. If the data item in an ACCEPT...FROM CONSOLE statement did not begin on a word boundary, the input data received from the console was shifted left one byte, destroying the information in the adjacent data item.

    b. SMR 3153. A WRITE statement that writes to the printer after advancing N lines failed if the data item containing the line count had a PICTURE in excess of four digits, i.e. 9(5), 9(6), etc. Error message 755 was erroneously output at run-time.

    c. SMR 3389. A WRITE statement containing an INVALID KEY clause that writes to a sequential disc file, executes incorrectly if the previous access to the file was a READ. Instead of updating the current record, the next record is erroneously updated.

C. DOCUMENTATION CHANGES

a. The explanation for ERROR 707 on page C-45 is changed to read: "The maximum result of an exponentiation must be between +10 ** 28 and -10 ** 28." All intermediate results in processing a COMPUTE statement are carried to 28 digits of accuracy. However, only a maximum of 18 digits can be transferred to the target data item.

b. In conjunction with the fix for SMR 3389, the following new error message has been inserted into the COBOL/3000 manual:

#	Type	Text	Programmer Response
191		INVALID KEY CLAUSE MISSING This clause permits user to detect physical EOF when WRITE'ing to a sequential file.	If programmatic control is desired, when physical EOF is detected, change the program & recompile.

D. KNOWN PROBLEMS

1. The base shown in the symbol table map for an indexname in an INDEXED BY clause in the LINKAGE section is shown as LINK when it should be OWN for non-dynamic sub-programs.

2. SMR 3125. Error message 707, "OVERFLOW IN EXPONENTIATE," is output when no overflow has occurred. This is caused by assigning the data item in the exponent a value greater than +56 and less than +100. Remember that the result of the exponentiate must still be between -10 ** 28 and +10 ** 28. See documentation changes above.

3. SMR 3124. A COMPUTE statement containing an exponent equal to or greater than 100 gives incorrect results. For exponents between +100 and +999 the left most digit is ignored when performing the exponentiation.

4. SMR 3058. A MOVE A TO B, where A is a table controlled by a DEPENDING ON variable, causes the entire field to be moved, ignoring the DEPENDING ON value.

SORT/MERGE HP32214B.01.07

DATE CODE 1814, N00N214B.HP32214.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES:

1. SORT has been modified to return the physical record number rather than the logical record number for an addrout sort of a KSAM input file.

2. Under some circumstances, SORT would reverse the order of records with equal keys. This has been corrected.

3. Stand-alone MERGE did not set the Job Control Word correctly which resulted in the job stream not being terminated when an error occured. This has been corrected.

4. Entry point SORTINITIALF has been fixed. It used to incorrectly perform as if all parameters were present whether or not they were.

IMAGE/3000 HP32215B.00.00

DATE CODE 1814, N00N215B.HP32215.SUPPORT

A. ENHANCEMENTS

1. This version of IMAGE/3000 (B.00.00) has minor internal changes to be compatible with MPE III. All releases of IMAGE version A (32215A) will not run properly on MPE III; this and subsequent versions will not run properly on any version of MPE IIA. Also, please note that this and subsequent releases of IMAGE/3000 will not run on pre-Series II 3000's.

2. This release of IMAGE/3000 contains a new capability, that of accessing an IMAGE data base on a remote computer, in conjunction with DS/3000.

3. DBUTIL has been completely rewritten. In addition to its old functions, which may be accessed in their old way or from a new "command language," DBUTIL performs some new functions related to remote data base access, mentioned in item 2.

B. DOCUMENTATION CHANGES

A new version of the IMAGE/3000 manual (part number 32215-90003, dated April, 1978) explains the use of the new features mentioned in paragraphs A2 and A3. This manual documents the Series II IMAGE product (32215B). The existing IMAGE REFERENCE MANUAL (part number 30000-90041) still applies to Series I IMAGE (32215A).

TRACE/3000 HP32222A.03.03

DATE CODE 1814, N00N222A.HP32222.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. SMR #2532 - TRACE did not handle "SET" references tc the "@" of pointer values. This has been fixed along with "PRINT" and "SET" references to own pointer variables. Requires version A.06.05 of SPL.

2. SMR #2906 - TRACE would only accept a batch file if the record length was 80 bytes. This has been fixed to allow record lengths of 80 bytes or less.

3. SMR #3189 - A stack reference error was erroneously generated for a variable with a large positive byte address. This has been corrected to be interpreted as a positive address, instead of a negative address.

CROSS ASSEMBLER (XA/2100) HP32223.01.03

DATE CODE 1814, N00N223A.HP32223.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. The cross-reference listing was not sorted correctly when the Assembly object code was of Absolute type. This resulted in incorrect values for ABS constants.

2. The symbol table search resulted in a bounds violation when programs with a very large number of symbols were assembled.

B. KNOWN PROBLEMS

The title which is specified in the HED statement is sometimes printed incorrectly.

RJE/3000 2780/3780 EMULATOR

HP30130E.00.02 (CS A.02.00)

DATE CODE 1814, N00N130E.HP30130.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

If the REC= parameter is specified on the #RJIN command, RJE no longer expands the records to twice the record size.

N00N230A

RELEASE ISSUE OF HP 32230A SERIES II DIAGNOSTICS.

** DATE CODE 1814 **

Magnetic tapes associated with HP32230A

Source	32230-1X001
CPU Coldload	30000-1X016
NON-CPU C/L	30000-1X017

Manuals associated with HP 32230A

32230-60001
32230-60002

*** CPU *** 30000-1X016 1814

SECTION 1	PD420A	01.00	
SECTION 2	PD420A1	01.00	
SECTION 3	PD420A2	01.01	** FIX **
SECTION 4	PD420A3	01.01	** FIX **
SECTION 5	PD420A4	01.00	
SECTION 6	PD420A5	01.00	
SECTION 7	PD420A6	01.00	
SECTION 8	PD420A7	01.00	
SECTION 9	PD420A8	01.00	
SECTION 10	PD420A9	01.00	
SECTION 11	PD420A10	01.00	
SECTION 12	PD420A11	01.00	
SECTION 13	PD420A12	01.01	** FIX **
SECTION 14	PD420A13	01.00	

*** STAND-ALONE *** 30000-1X017 1814 % FILE NO.

SLEUTH	PD411A	01.03 **	(01)	
SDUPII	PD417A	01.03 **		
CART DISC-7905A	PD419A	01.04	(02)	
MEMORY PATTERN	PD421A	01.00	(03)	
MULTIPLEXOR CHAN	PD422A	01.01 **	(04)	
DISC FILE-2888A	PD423A	01.00	(05)	
CART DISC-7900A	PD424A	01.00	(06)	
SYSTEM CLOCK	PD425A	01.00	(07)	
TERMINAL DATA	PD427A	01.00	(10)	
FIXED HEAD DISC	PD428A	01.00	(11)	
SELECTOR CHAN	PD429A	01.01 **	(12)	
FAULT CORRECTING MEM.	PD430A	01.01	(13)	
EXTENDED INSTRUC SET	PD431A	01.00	(14)	
HSI DIAG.	PD432A	01.00	(15)	
MAGNETIC TAPE	PD433A	01.00	(16)	
SSLC INTERFACE	PD434A	01.02 **	(17)	
ASLC INTERFACE	PD434B	01.02 **	(20)	**NEW RELEASE**
UI DIAG	PD435A	01.01	(21)	
TERMINAL CONTROL	PD438A	01.00	(22)	
CALCOMP PLOTTER	PD439A	01.01	(23)	

*** ONLINE ***

CARD READER	PD465A	01.00	
LINE PRINTER	PD466A	01.00	
2617j line printer	pd466j	01.00	
2640 TERMINAL	PD469A	01.00	
TERM-2635A	PD474A	00.00	**NEW RELEASE**
TERM-2762A/B	PD475A	01.00	
term-2645k	pd476a	00.00	
DISPLAY TERMINAL 2644	PD477A	01.00	
TERM-2615A	PD478A	01.00	
CARD-READ/PUNCH	PD479A	01.00	
OPTICAL MARK READER	PD480A	00.00	

** IMPLIES FIXED THIS TIME

****

SPECIAL NOTE:

EIGHT(8) FILES HAVE BEEN ADDED TO EASE THE JOB OF CREATING THE STAND-ALONE DIAGNOSTIC TAPES--BOTH CPU AND NONCPU. THESE FILES ARE STREAMABLE JOB FILES WHICH WILL CREATE CONFIGURED DIAGNOSTIC TAPES OF THE DATE CODES SPECIFIED ABOVE.

FILE NAME	FUNCTION
CPU064	CPU TAPE CONFIGURED FOR 64K OF MEMORY
CPU096	CPU TAPE CONFIGURED FOR 96K OF MEMORY
CPU128	CPU TAPE CONFIGURED FOR 128K OF MEMORY
CPU160	CPU TAPE CONFIGURED FOR 160K OF MEMORY
CPU192	CPU TAPE CONFIGURED FOR 192K OF MEMORY
CPU224	CPU TAPE CONFIGURED FOR 224K OF MEMORY
CPU256	CPU TAPE CONFIGURED FOR 256K OF MEMORY
DIAGIOTP	NONCPU TAPE (%23 FILES SEE ABOVE FOR NEW FILE REFERENCE TABLE)

****

FIX LEVEL .03 SDUPII

d417a.01.03

THIS FIX LEVEL HAS MADE SDUPII COMPATIBLE WITH THE CHANGES MADE TO MPE III TO HANDLE TAPE LABELS. THIS DOES NOT MEAN THAT THE STAND-ALONE TAPES MADE WITH SDUPII HAVE TAPE LABELS.

****

FIX LEVEL .02 SSLC

d434A.01.02

THIS DIAGNOSTIC HAS BEEN CHANGED TO OUTPUT A MESSAGE WHICH WILL REFER THE USER TO D434B IF THE CONFIGURATION TO BE TESTED CONTAINS AN ASYNCHRONOUS CABLE ATTACHED TO THE 30055A INTERFACE BOARD. THIS IS THE CASE WHEN THE BOARD IS USED WITH ASYNCHRONOUS MULTIPOINT TERMINALS.

****

FIX LEVEL .02 ASLC

D434B.01.02

THIS IS A NEW VERSION OF THE SSLC DIAGNOSTIC TO BE USED WHEN TESTING THE 30055A WITH THE ASYNC CABLE(30055-60010). THIS IS THE CASE WHEN THE 30055A IS USED WITH ASYNC. MULTIPOINT TERM--INALS. THE SAME MANUAL OF DIAGNOSTICS IS USED WITH D434B AS WITH D434A.THE DIFFERENCE BETWEEN D434A AND THIS DIAGNOSTIC IS THAT THE APPROPRIATE CONSTANTS HAVE BEEN CHANGED TO ALLOW THE ASNYCHRONOUS OPERATION TO BE EXECUTED.

NOTE: THE SAME SOURCE CODE IS USED FOR BOTH D434A AND D434B DIAGNOSTICS. THE MD434A AND MD434B FILES CONTAIN THE CHANGES NECESSARY TO CREATE THE NEW DIAGNOSTIC.

****

FIX LEVEL .03 SLEUTH

D411A.01.03

THE FIX TO THIS PROGRAM ENABLES IT TO BE USED IN THE TESTING OF THE 7925,7920,7906,AND 7905 DISC DRIVES.

****

SLEUTH07

THIS SLEUTH PROGRAM IS NOW CAPABLE OF VERIFYING THE 7925,7920, 7906,AND THE 7905 DISC DRIVES.

****

NEW RELEASE 2635A ON LINE VERIFIER

D474A.00.00

THIS IS A NEW ON-LINE VERIFIER FOR THE 2635A TERMINAL

****

FIX LEVEL .01 CPU DIAG---SECTION 3

D420A3.01.01

THIS FIX LEVEL MADE CHANGES TO ENABLE THIS DIAGNOSTIC TO BE COMPATIBLE WITH BOTH THE 30003A CPU AND THE 30003B CPU.

****

FIX LEVEL .01 CPU DIAG---SECTION 4

D420A4.01.01

THIS FIX LEVEL MADE CHANGES TO ENABLE THIS DIAGNOSTIC TO BE COMPATIBLE WITH BOTH THE 30003A CPU AND THE 30003B CPU.

****

FIX LEVEL .01 CPU DIAG---SECTION 13

D420A13.01.01

THIS FIX LEVEL MADE CHANGES TO ENABLE THIS DIAGNOSTIC TO BE COMPATIBLE WITH BOTH THE 30003A CPU AND THE 30003B CPU.

****

FIX LEVEL .01 MULTIPLEXOR CHANNEL

D422A.01.01

THIS FIX LEVEL MADE CHANGES TO ENABLE THIS DIAGNOSTIC TO BE COMPATIBLE WITH BOTH THE 30036A AND 30036B VERSIONS OF THE MULTIPLEXOR CHANEL.

****

FIX LEVEL .01 SELECTOR CHANNEL

D429A.01.01

THIS FIX LEVEL MADE CHANGES TO ENABLE THIS DIAGNOSTIC TO BE COMPATIBLE WITH BOTH THE 30030B AND 30030C VERSIONS OF THE SELECTOR CHANNEL.

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DOCUMENTATION

The tables at the end of this section list currently available customer manuals for HP 3000 Computer Systems products. This list supersedes the lists in previous issues of the COMMUNICATOR 3000.

Manuals and updates can be ordered through your local HP Sales and Service office. The address and telephone number of the office nearest you is listed in the back of all customer manuals. Prices are subject to change without notice.

Customers in the U.S. may also order manuals directly by mail. Simply list the name and part number of the manual(s) you need on the Parts and Supplies Order Form found in the back of this publication.

Update packages are free of charge. If you require an update package, complete the Update Order Form in the back of this issue.

TERMS

A few words about documentation terms and procedures:

NEW — A new manual refers to the first printing of the first edition of the manual. When first printed, a manual is assigned a part number that is retained for the life of the manual.

UPDATE — An update is a supplement to an existing manual which contains new or changed information. Updates generally are issued at the same time MIT's are. However, THERE IS NO DIRECT CORRELATION BETWEEN SOFTWARE FIXES AND MANUAL UPDATES. Software enhancements that require documentation changes will be accompanied by manual updates, but software fixes and manual corrections may be made independently.

Updates are retroactively inclusive, that is, whenever successive updates are issued, the later update contains the previous one. This means that one need obtain only the latest update to have all the information added or changed since the last printing of the manual.

Update packages have no part numbers, they are numbered sequentially from the time the last edition was issued.

Updates are supplied upon request at no charge. When a manual is ordered, both the current edition of the manual and the current update, if one exists, are delivered.

NEW EDITION

When major changes must be made to a manual, issuing an update package may be inappropriate or impractical. When this is the case, a new edition is printed. A new edition obsoletes all previous versions of the manual and its updates. A list of the dates of all previous editions and updates is kept on the Printing History page of every manual. The date on the title page and back cover is the printing date of the new edition. The manual part number remains the same.

When further updates are required, they are made to the new edition.

REPRINTING

When our stocks of a manual fall below a certain level, we reprint it. The printing date of the edition remains the same on the title page and back cover, and the date of the reprinting is added to the back cover and Printing History page.

INCORPORATED REPRINTING

Often there are updates outstanding to the manual when we reprint it. Any existing updates to the manual are incorporated into the reprinting at this time. THERE IS NO CHANGE TO THE CONTENT OF THE CURRENT VERSION OF THE MANUAL. An incorporated manual has precisely the same content as the current edition plus the latest update.

The printing date of the edition remains the same on the title page and back cover, and the date of the incorporated reprinting is added to the back cover and Printing History page.

The existing update that was incorporated for reprinting is kept in stock for six months to supply those users of the current edition who have not yet requested the update.

Updates made following the printing of an incorporated manual continue to be numbered sequentially from the point of the latest edition. Such updates only contain corrections to the current version of the manual, that is, to the incorporated manual (the the manual consisting of current edition plus the updates outstanding at the time of incorporation). Note that ALL CURRENT DOCUMENTS ARE BEING UPDATED, WHETHER IT IS AN UPDATED EDITION, OR AN INCORPORATED MANUAL.

COMMUNICATOR BACK ISSUES

If you are ordering past issues of the COMMUNICATOR, please note that supplies are now limited and only the following issues are available:

Issues #5, 8, 9, 13, 14, and 15.

Order information can be found on the COMMUNICATOR order form in the rear matter.

NEW FORM FOR ORDERING CONTRIBUTED SOFTWARE

When ordering contributed software by direct mail, please use the Contributed Software form, not the Parts and Supplies form. A copy of this new form is included in the rear matter.

Contributed software may also be ordered through your local HP Sales Office. No direct mail order can be shipped outside the U.S.A.

MPE MANUAL CHANGES

Several Series II manuals have recently been updated or issued as new editions to reflect enhancements contained in MPE III. These manuals are noted below under their appropriate sections, that is, New Editions and Updates. Some of the more important areas which have been covered in these revisions are:

- Private volumes
- Tape labels
- User/operator enhancements such as the HELP and Unified Command Language (UNCL) facilities, generic names, disc condense, and serial disc capabilities
- Changes to MPE commands and error messages
- Changes to MPE intrinsics
- Changes in password handling
- Changes to console commands and messages
- Changes to system failure messages
- New files in Pub.Sys

These enhancements are detailed in the opening article and Software Update sections of this issue.

USING COBOL: A GUIDE FOR NEW USERS OF HP 3000 COMPUTER SYSTEMS

A new two-color, spiral bound manual similar to the Using Files Guide has just been printed. It leads COBOL programmers step-by-step through the process of developing a COBOL program on the HP 3000. The guide begins by describing how to create and modify source code, providing examples such as the following:

- Creating and editing a source file
- Creating and using an Editor USE file to format a 264x terminal screen with COBOL column headings
- Creating a copy library (in an MPE or KSAM file) and creating the source programs that use it.

A section on compiling includes examples of compiling to check syntax and compiling while using a copy library and a maintenance file.

USLs, RLs, SLs, and other Segmenter mysteries are described with examples showing how to examine and manipulate their contents. The guide illustrates methods of preparing and running programs using these libraries. Other examples show how to:

- Request and interpret a load map
- Adjust the size of data areas
- Perform file operations such as using variable length records, passing a file number to an SPL program, and using special forms on the line printer.

Examples in the last section illustrate debugging. They show how to examine and modify locations in the data stack using PMAPs, LMAPs, and either the :SETDUMP command or interactive :DEBUG commands. MPE operating system, file system, and COBOL terms are defined in a glossary.

The HP part number is 32213-90003 and the price is $6.50.

COMMUNICATIONS POCKET GUIDE

Information about HP 3000 data communications subsystems and related data communications hardware is collected in this manual. The concentrated material is designed for quick reference by those persons who install, manage, and use Hewlett-Packard's data communications products.

When used along with the tutorial manual, titled Guidebook to Data Communications (part number 5955-1715), the two books provide a comprehensive view of the more technical aspects of data communications.

The Communications Pocket Guide comes in a loose-leaf binder with preprinted dividers and spare note pages. The dividers are organized to accommodate additional chapters which will be supplied in the near future to people who complete and return the main card printed at the rear of the manual.

The HP part number is 30000-90105 and the price is $14.00.

COLLEGE INFORMATION SYSTEM REFERENCE MANUAL

This new manual, which has been written primarily for administrators and data processing staff, describes:

- The structure and content of a CIS data base
- Maintenance of the data base
- Registration and grade reporting modules--both interactive and batch
- System implementation

The HP part number is 32902-90003 and the price is $16.75.

COLLEGE INFORMATION SYSTEM TECHNICAL MANUAL

For those interested in a more technical discussion of CIS, this manual provides an overview of the internals of CIS software. Some of the areas covered are:

- Certification procedures
- Procedures called by various modules
- Internal logic flow and block diagrams.

The HP part number is 32902-90005 and the price is $10.50.

FCOPY REFERENCE MANUAL

This new edition of the FCOPY reference manual includes corrections to the old version as well as several enhancements. The enhancements include the following capabilities:

- Translate all or only selected parts of records
- Take different subsets from separate records in a single command
- Avoid copying user labels from files
- Copy several, but not necessarily all, files from a magnetic tape
- Specify whether the first character of each record in a copied file is to be used for carriage control
- Aid, by using the new DEBLOCK command, in converting files with records aligned on byte boundaries to files with records aligned on word boundaries
- Copy old KSAM files into new ones without first building the new KSAM files outside of the FCOPY subsystem.

Included in this package is an update which documents the keywords that are not applicable on an MPE-C operating system. The HP part number is 03000-90064.

HP 3000 COMPUTER SYSTEMS GENERAL INFORMATION MANUAL

An expanded, new edition of the HP 3000 Computer Systems General Information Manual is now available. Designed to introduce the major concepts of the HP 3000 systems based on the Multiprogramming Executive III (MPE III), the new GIM also presents detailed specifications of the individual hardware and software products offered with the system.

Section I of the manual, the system overview, is a thorough discussion of the system architecture, operating system, processing environments and data communications capabilities.

Section II, the reference sheets, contains the specifications of the MPE operating system; individual languages; utility programs; data entry, data base management and data communications subsystems; and the hardware peripherals.

The HP part number is 30000-90008.

DATA ENTRY LIBRARY REFERENCE MANUAL

A third edition of the DATA ENTRY LIBRARY REFERENCE MANUAL is now available. It documents the DEL software enhancements distributed on MITs 1737 and 1814. These include:

- BLOCKMODE/PAGE terminal operation
- Operation with multipoint terminals.

The new edition corrects errors and expands the discussion of various topics throughout the manual. The HP part number is 30000-90050.

DATA ENTRY/COMMUNICATIONS SYSTEM REFERENCE MANUAL

This new edition includes sections on the Report Writer and Distributed Systems/2026. It also incorporates the changes resulting from the introduction of the HP 7920 Disc System. The instruction numbers in Section VI have been replaced by mnemonics. The HP part number is 22704-90001.

INDEX TO MPE REFERENCE DOCUMENTS

Several manuals have been added to the list in the introduction. These include the KSAM REFERENCE MANUAL, USING FILES, and the GUIDEBOOK TO DATA COMMUNICATIONS.

The MPE Manuals Master Index has been revised to reflect numerous updates to the MPE manuals. The HP part number is 30000-90045.

SERIES II MPE MANUALS

Changes to the following Series II MPE manuals are described above in "MPE MANUAL CHANGES":

- USING FILES: A GUIDE FOR NEW USERS OF HP 3000 COMPUTER SYSTEMS (30000-90102)
- SYSTEM MANAGER/SYSTEM SUPERVISOR REFERENCE MANUAL (30000-90014)
- CONSOLE OPERATOR'S GUIDE (30000-90013)
- MPE COMMANDS REFERENCE MANUAL (30000-90009)
- MPE INTRINISCS REFERENCE MANUAL (30000-90010)
- SOFTWARE POCKET GUIDE (30000-90049)

IMAGE REFERENCE MANUALS

A modified version of the IMAGE DATA BASE MANAGEMENT SYSTEM REFERENCE MANUAL is now available to Series II Computer system users. It documents the new features available with IMAGE 32215B. These features include:

- Remote data base access, and
- DBUTIL commands.

The part number for this manual is 32215-90003.

Series I users should continue to use the existing manual (Part No. 30000-90041) which documents IMAGE 32215A. An update has been prepared for this manual to correct errors and alphabetize the procedure call descriptions.

UPDATES

KSAM REFERENCE MANUAL

This update to the KSAM/3000 manual reflects the enhancements to KSAM (version A.01.06) that are being released with the 1814 MIT tape. Most of the enhancements are internal to improve the performance of KSAM. A few are visible to the user; these include the ability to create a KSAM file with FCOPY, a display of the current number of key levels by the VERIFY command, and an entry in the filetable used for COBOL access to indicate whether the file is locked or unlocked.

The bulk of the update consists of improvements to the manual. The procedures used for COBOL access are rearranged in alphabetic order (like those used for SPL and BASIC) so that they will be easier to find for quick reference. Appendix B has been entirely rewritten. It is now called "Internal Structures and Techniques", and consists of a detailed description of the KSAM file structure, a discussion of how KSAM file size is determined that includes details on how key blocking is performed, and a discussion of how KSAM files use Extra Data Segments. This appendix should provide the experienced programmer with information on how to improve performance when KSAM files are used in an application. The HP part number is 30000-90079.

SYSTEM REFERENCE MANUAL

This manual has been updated to correct several minor errors. It has also recently been reprinted (8/77) to include, for Models 6 and 8, descriptions of slot assignments and card cage layouts. The HP part number is 30000-90020.

SERIES I MPE MANUALS

The HP 3000 Series I computer system supports two new peripherals --the HP 2635 Printing Terminal and the HP 7925 disc drive. The following updates were generated to document these new devices and to clarify existing features:

- CONSOLE OPERATOR'S GUIDE (30000-90090)
- SYSTEM MANAGER/SYSTEM SUPERVISOR MANUAL (30000-90089)]
- MPE COMMANDS MANUAL (30000-90088)

SERIES II MPE MANUALS

Changes to the following Series II MPE manuals are described above in "MPE MANUAL CHANGES":

- SYSTEM ERROR MESSAGES AND RECOVERY REFERENCE MANUAL (30000-90015)
- MPE SYSTEM UTILITIES REFERENCE MANUAL (30000-90044)

QUERY REFERENCE MANUAL

This manual has been updated to document the new remote data base access feature and continues to serve as the reference document for both Series I and Series II users. The HP part number is 30000-90042.

FORTRAN REFERENCE MANUAL

This update corrects minor errors, explains the new compiler control statement, $CONTROL MORECOM, and includes an appendix titled "Program Optimization." The MORECOM enhancement allows programs to have more than 254 variables in COMMON. The "Program Optimization" appendix recommends programming techniques to obtain more efficient object code and to lessen the likelihood of symbol table overflow. The HP part number is 30000-90040.

EDIT/3000 REFERENCE MANUAL

The formats of the TEXT, KEEP, and JOIN commands have undergone certain modifications, making them easier to use. The VERIFY ALL and VERIFY FILES commands can now determine when the work file has been altered. Some recommendations are given on the use of "+", "-", and "=" signs as string delimiters. Using the OFFLINE parameter in the LIST command now sends the output to DEV=LP by default if an alternative output is not specified via the FILE command. The HP part number is 03000-90012.

BASIC/3000 INTERPRETER REFERENCE MANUAL

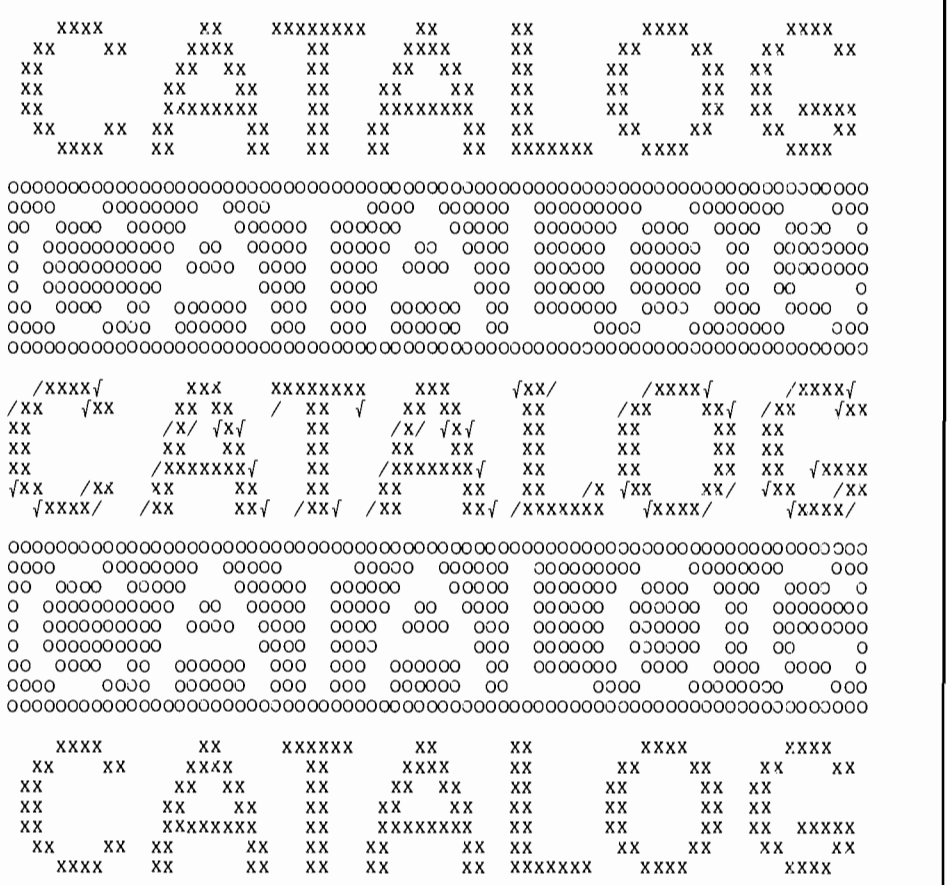
This update contains information about the WAIT command and an enhancement to BASIC that allows programs to do multiple file locking. The multiple file locking capability is invoked by the MR parameter in the RUN and SAVE commands. The HP part number is 30000-90026.

COBOL/3000 COMPILER REFERENCE MANUAL

This update reflects the new ability to segment programs and the new naming conventions for segments. It also references the method for calling MPE intrinsics from within a COBOL program. The HP part number is 32213-90001.

CATALOG OF CUSTOMER PUBLICATIONS
FOR HP 3000 COMPUTER SYSTEMS

JUNE 1978



SYSTEM MANUALS

Manual Title	Part Number	Price	Printed	Up-dated	Incorp
General Information Manual	30000-90008	4.00	6/78		
MPE Commands Reference Manual	30000-90009	*12.50	4/78		
MPE Intrinsics Reference Manual	30000-90010	*17.00	4/78		
MPE Segmenter Reference Manual	30000-90011	4.00	2/77		
MPE Debug/Stack Dump Reference Manual	30000-90012	7.75	9/76	6/77	
Console Operator's Guide	30000-90013	*6.75	4/78		
System Manager/System Supervisor Manual	30000-90014	*10.00	4/78		
Error Messages and Recovery Manual	30000-90015	16.75	6/76	5/78	8/77
System Reference Manual	30000-90020	8.25	6/76	12/77	8/77
Machine Instruction Set	30000-90022	5.50	6/76		
MPE System Utilities Reference Manual	30000-90044	5.00	3/77	5/78	
Index to MPE Reference Documents	30000-90045	*5.50	12/77		
Software Pocket Guide	30000-90049	*3.50	4/78		
Instruction Decoding Pocket Guide	30000-90057	1.00	9/77		
Using Files	30000-90102	*4.50	4/78		
Using the HP 3000: An Introduction to Interactive Programming	03000-90121	8.25	6/78		

*New edition price unavailable at printing.

LANGUAGE MANUALS

Manual Title	Part Number	Price	Printed	Up-dated	Incorp
BASIC Interpreter Manual	30000-90026	10.25	6/76	4/78	
BASIC Compiler Reference Manual	32103-90001	3.00	11/74	6/76	9/77
BASIC/3000 Pocket Guide	03000-90050	1.25	9/74		
BASIC for Beginners	03000-90025	6.25	11/72		
System Programming Language Reference Manual	30000-90024	10.50	9/76	2/77	12/77
System Programming Language Textbook	30000-90025	7.50	6/76	1/77	9/77
SPL Pocket Guide	32100-90001	2.00	11/76		
FORTRAN Reference Manual	30000-90040	8.50	6/76	4/78	5/77
FORTRAN Pocket Guide	32102-90002	1.50	9/77		
RPG/3000 Compiler Reference Manual	32104-90001	30.00	2/77	8/77	12/77
RPG Listing Analyzer	32104-90003	.50	2/77		
APL Reference Manual	32105-90002	9.50	11/76		
APL Pocket Guide	32105-90003	4.50	11/76		
COBOL Reference Manual	32213-90001	12.00	7/75	5/78	11/77
Using COBOL: A Guide for the COBOL Programmer	32213-90003	6.50	3/73		

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ADDITIONAL MANUALS

Manual Title	Part Number	Price	Printed	Up-dated	Incorp
EDIT Reference Manual	03000-90012	5.75	8/75	4/78	10/77
Trace Reference Manual	03000-90015	5.00	6/76		
FCOPY Reference Manual	03000-90064	*4.50	2/78	6/78	
Cross Assembler for 2100 Computers Reference Manual	03000-90047	11.50	5/76		
HP 3000 Cross Loader for HP 2100 Computers	03000-90107	7.25	10/74		1/77
Guidebook to Data Communications	5955-1715	3.50	1/77		
Scientific Library Reference Manual	30000-90027	4.25	6/76	2/77	9/77
Compiler Library Reference Manual	30000-90028	8.50	11/76		
QUERY Reference Manual	30000-90042	7.50	6/76	4/78	
2780/3780 Emulator Reference Manual	30000-90047	7.50	6/77		
Data Entry Library Mnl	30000-90050	*6.50	5/78		
HP 3000 CX to HP 3000 Series II Program Conversion Guide	30000-90046	3.50	6/76		
Programmable Controller Reference Manual	30000-90066	5.75	6/76	10/76	
Real-Time Programmable Controller Reference	30000-90067	7.50	6/76		
KSAM Reference Manual	30000-90079	10.00	1/77	4/78	6/77
Site Preparation Manual	30000-90082	6.00	2/77	10/77	
Site Planning Workbook	30000-90086	7.50	9/77		
Communications Pocket Guide	30000-90105	14.00	12/77		

*New edition price unavailable at printing

HP 2894A Card Reader Punch Operating Manual	30119-90009	11.50	10/76			
Line Printer Operating and Programming Manual	30209-90008	6.75	6/76			
IBM System/3 to HP 3000 Conversion Guide	32104-90004	5.75	12/75			
DS/3000 Reference Manual	32190-90001	11.00	3/77	5/78		
DS/3000 to DS/1000 Reference Manual	32190-90005	7.25	1/78			
MRJE/3000 Reference Manual	32192-90001	8.75	1/78			
SORT Reference Manual	32214-90001	3.50	8/76			
IMAGE Data Base Management Reference Manual	32215-90003	*	4/78			
Student Information System Reference Manual	32900-90001	13.00	9/74	8/76		
Student Information System Technical Mnl	32900-90005	32.00	3/75			
Student Assignment System Reference Manual	32901-90001	15.50	7/75	8/76		
Student Assignment System Technical Manual	32901-90005	9.75	7/75			
College Information System Reference Manual	32902-90003	16.75	1/78			
College Information System Technical Mnl	32902-90005	10.50	2/78			

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RPG Listing Analyzer	32104-90003	.50	2/77		
System Programming Language Reference Manual	30000-90024	10.50	9/76	2/77	12/77
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HP 3000 COMPUTER SYSTEMS USING MPE C

SYSTEM MANUALS

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MPE Intrinsics Reference Manual	30000-90087	20.00	4/77		
MPE Commands Reference	30000-90088	20.00	4/77	4/78	
System Manager/System Supervisor Manual	30000-90089	12.50	4/77	4/78	
Console Operator's Guide	30000-90090	11.00	4/77	4/78	
General Information Mnl	30000-90091	9.50	4/77		
MPE/3000 Operating System, System Utilities	32000-90008	2.05	10/75		
Systems Reference Manual HP 3000 Computer	03000-90019	24.00	9/73	3/77	
Software Pocket Guide	03000-90126	2.70	7/75		
Using Files	30000-90102	4.50	7/77		
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IMAGE Data Base Management Reference Manual	30000-90041	7.00	12/76	5/78	
QUERY Reference Manual	30000-90042	7.50	6/76	4/78	
Index/3000 Reference Ml	30000-90095	10.75	6/77		
Site Preparation Manual	30000-90096	5.25	4/77		
Site Planning Workbook	30000-90100	7.50	4/77		
Programmable Controller Reference Manual	30300-90002	12.50	4/76	1/77	
2780/3780 Emulator Subsystem Reference Mnl	30130-90001	9.00	12/74	2/76	
Data Entry Library Mnl	30000-90050	*6.50	4/78		
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College Information System Reference Manual	32902-90003	16.75	1/78		
College Information System Technical Mnl	32902-90005	10.50	2/78		
IBM 1130/1800 to HP 3000 FORTRAN Conversion Gd	36995-90013	4.70	2/75	5/75	

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BAUD LINE

NEW MIT FORMAT

Hank Cureton
HP General Systems Division

A new format has been adopted for the Master Installation Tape which provides for a division of the tape components required during an installation process from those which are supportive in nature. Under this new scheme, the present MIT will be divided into two tapes:

- an Installation Tape and,
- a Master Maintenance Tape (MMT).

The Installation Tape will consist of the cold load version of MPE, the system and subsystem program files in the account SYS, and the necessary diagnostics in the support account. The Master Maintenance Tape will contain all supportive files for the Installation Tapes (Series I and II).

The advantages of this concept which will be most apparent to users are as follows:

- The installation process will require less disc space than under the previous format.
- The installation process will be accomplished in a shorter time. It is estimated that the new format will allow for an installation time of thirty minutes, as opposed to sixty minutes under the previous format.

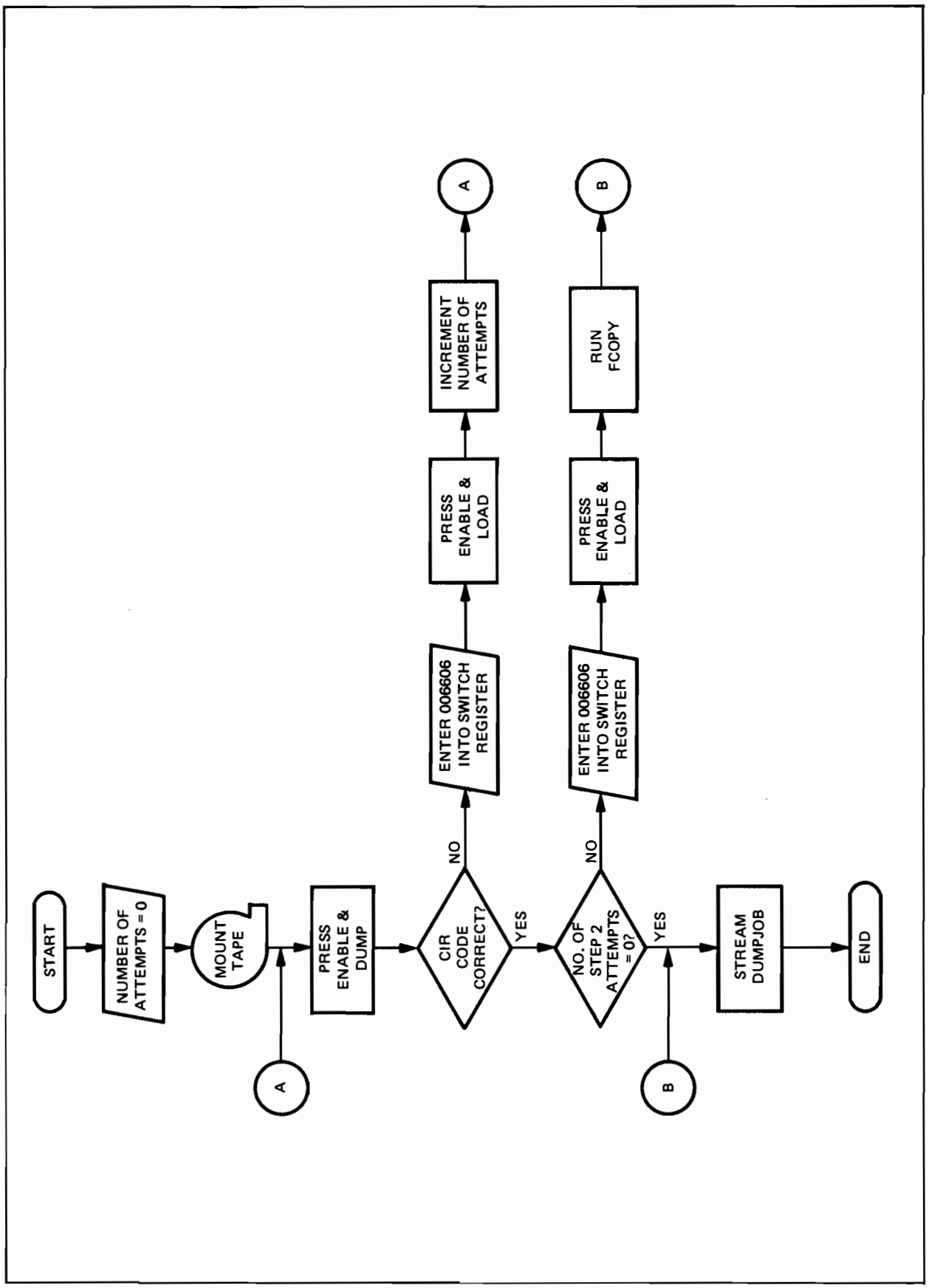
A RELIABLE METHOD FOR TAKING A MEMORY DUMP OF A SYSTEM FAILURE

Len Croley
HP General Systems Division

1. Use the following standard procedures to take a dump:

   A. Put a magnetic tape on DRT 6 UNIT 0 with a write ring.

   B. Press both the ENABLE and DUMP switches at the same time.


START
NUMBER OF ATTEMPTS = 0
MOUNT TAPE
A
PRESS ENABLE & DUMP
CIR CODE CORRECT?
NO
YES
ENTER 006606 INTO SWITCH REGISTER
PRESS ENABLE & LOAD
INCREMENT NUMBER OF ATTEMPTS
A
NO. OF STEP 2 ATTEMPTS = 0?
NO
YES
ENTER 006606 INTO SWITCH REGISTER
PRESS ENABLE & LOAD
RUN FCOPY
B
B
STREAM DUMPJOB
END

C. Check the code which appears in the CIR register on the front panel. (Refer to Section 5 of the Console Operator's Guide, part no. 30000-90013). If the correct code does not appear in the CIR register, go to step 2.

D. If step 2 has been performed at least once, and if the dump just completed is good (CIR code is correct), then go to step 3.

E. If the dump worked the first time through, the tape can now be handled by DPAN2 and the stream file DUMPJOB. Go to 3.D.

2. Accomplish the following procedures (Note: Do not rewind the tape):

A. Put 006606 in the switch register.

B. Push the ENABLE and LOAD switches. (The tape will move only a small amount. This writes an end-of-file mark on the tape.)

C. If you accidentally press ENABLE and DUMP instead of ENABLE and LOAD, rewind the tape or mount another tape and start over at step 1.B.

D. Make a note each time this sequence (i.e., step 2) is completed.

E. Perform steps 1.B and 1.C again.

3. Accomplish the following steps if step 2 has been performed at least once:

A. Enter 006606 in the switch register and simultaneously press the ENABLE and LOAD switches. (This writes a final End-Of-File on the tape. The EOF is not required by DPAN2 but will be needed for the following steps.)

B. Bring up the system.

C. Log onto the system and issue the following commands:

1) :FILE DUMPTAPE;DEV=TAPE;REC=4096,1,F,BINARY
2) :BUILD MDUMP;REC=4096,1,F,BINARY;DISC=100,1,1
3) :RUN FCOPY.PUB.SYS
4) >FROM=*DUMPTAPE;TO=MDUMP;SUBSET;SKIPEOF=(Insert the number of times you performed step 2.)
5) >EXIT

(NOTE: The formaldesignator of the dump source in DPAN2 is MDUMP. If the dump source specified by the user is other than MDUMP, the file command

:FILE MDUMP=filename

must be entered before DPAN2 can be run.)

D. Bring up the system and stream DUMPJOB.PUB.SYS, fill out the Problem Report, and submit this documentation to your Hewlett-Packard service representative.

E. Purge MDUMP.

COBOL HANDLING OF BLANKS AND OVERPUNCHING IN NUMBERIC DISPLAY ITEMS

John Pavone
HP General Systems Division

Effective with COBOL versions B.02.01 and C.01.00 the compiler was enhanced to provide a broader compatibility between the HP 3000 and IBM users who include blanks and overpunching in numeric fields when preparing punched cards for computer input. The enhancement, which was requested by a number of users, was to have the 3000 ignore these overpunches and treat blanks as zeros when processing these data items as numeric fields. Prior to the enhancement, user programs operating on such data fields would encounter numerous run-time error (711 - "Illegal Source Digit in Conversion") conditions with every occurrence of an illegal digit.

Since the enhancement was implemented, a number of users not familiar with the reason or method employed for implementing the feature have raised questions concerning the compilers operation in handling the conversion of these items correctly. The intent of this note is to resolve this confusion.

The basis for utilizing zone punch positions over non-sign digit positions of numeric fields, as control information, is the IBM punched card which utilizes the Hollerith code. Zone punch positions on a punched card are 12, 11 and 0. By combining these positions with the numeric positions 1-9 the following Alpha characters result:

12 and 1 thru 9 = A thru I

11 and 1 thru 9 = J thru R

0 and 2 thru 9 = S thru Z

Within the above code combinations the following zone combinations yield non-alpha characters:

12 and 0

11 and 0

0 and 1

12

11

Identification of these legal non-alpha character combinations can be expressed by the following table:

HOLLERITH	GRAPHIC	ASCII	HEX	OCTAL	DESCRIPTION
12, 0	{	0111 1011	7B	173	left brace
11, 0	}	0111 1101	7D	175	right brace
0, 1	/	0010 1111	2F	057	right slash
11	-	0010 1101	2D	055	dash
12	+	0010 1011	2B	053	plus
12	&	0010 0110	26	046	ampersand

Note: The + is used on IBM model 026 keypunch while the & is used on the model 029 keypunch.

Data Conversion Algorithm

Data originating in this format, used as input to the HP 3000, causes illegal digit error traps when attempts are made to convert the data for arithmetic operations via the CVAD instruction. The error trap transfers control to the error handling routine which applies the following algorithm to determine the legitimacy of the offending digit:

1) If the illegal character is a lower case alphabetic character, it is upshifted before continuing with the algorithm.

2) The resulting character is converted according to the following table:

   0 thru 9 = 0 thru 9 (No conversion here)

   A thru I = 1 thru 9

   J thru R = 1 thru 9

   S thru Z = 2 thru 9

   { = 0

   } = 0

/ = 1

\- = 0

\+ = 0

& = 0

Space = 0

All other combinations result in an error 711 message with the character being replaced by a zero and the CVAD operation being repeated.

SPECIAL NOTE:

Users should be cautioned that the compiler, for run-time performance efficiency, will replace the offending field data value with the adjusted value in order to eliminate continual error-traps as the field is referenced. Users who desire to preserve a copy of the illegal numeric value should move it to a hold-area defined as alphanumeric.

Example:

```
01   INIT-DATA                          PIC 9(4)V99.
01   INIT-RED REDEFINES INIT-DATA       PIC X(6).
01   HOLD-AREA                          PIC X(6).

     MOVE INIT-RED TO HOLD-AREA.
```

HOW COBOL MAIN AND SUBPROGRAMS CAN SHARE A COMMON OUTPUT FILE

John Pavone
HP General Systems Division

A number of requests have been made during the past for a method by which COBOL Main and Subprograms can output to a common file. Since COBOL requires each program to open and close those files which are intended to be accessed, it becomes necessary to identify the file as a "shared file" with "Append" access. The following illustrates programming requirements to accomplish this sharing.

MAIN PROGRAM

```
001000$CONTROL USLINIT
001100 IDENTIFICATION DIVISION.
001200 PROGRAM-ID. COBTST.
```

```
001300 ENVIRONMENT DIVISION.
001400 INPUT-OUTPUT SECTION.
001500 FILE-CONTROL.
001600      SELECT LOUTPUT ASSIGN TO "LPA".
001700 DATA DIVISION.
001800 FILE SECTION.
001900 FD  LOUTPUT
002000     LABEL RECORD IS OMITTED
002100     RECORD CONTAINS 132 CHARACTERS.
002200 01 PRT-REC PIC X(132).
002400 PROCEDURE DIVISION.
002500 START.
002600      OPEN OUTPUT LOUTPUT.
002700      MOVE "MAIN RECORD 1" TO PRT-REC.
002800      WRITE PRT-REC.
002900      CLOSE LOUTPUT.
003000      CALL "SUBPGM".
003100      OPEN OUTPUT LOUTPUT.
003200      MOVE "MAIN RECORD 2" TO PRT-REC.
003300      WRITE PRT-REC.
003400      CLOSE LOUTPUT.
003500      STOP RUN.
```

SUB-PROGRAM (NOTE: MAY BE SUBPROGRAM OR DYNAMIC)

```
001000$CONTROL DYNAMIC
001100 IDENTIFICATION DIVISION.
001200 PROGRAM-ID. SUBPGM.
001300 ENVIRONMENT DIVISION.
001400 INPUT-OUTPUT SECTION.
001500 FILE-CONTROL.
001600      SELECT LOUT ASSIGN TO "LPA".
001700 DATA DIVISION.
001800 FILE SECTION.
001900 FD  LOUT
002000     LABEL RECORD IS OMITTED
002100     RECORD CONTAINS 132 CHARACTERS.
002200 01 PRT-REC1 PIC X(132).
002400 PROCEDURE DIVISION.
002500 START.
002600      OPEN OUTPUT LOUT.
002700      MOVE "SUBP RECORD 1" TO PRT-REC1.
002800      WRITE PRT-REC1.
002900      CLOSE LOUT.
003000      GOBACK.
```

PROGRAM SET-UP AND EXECUTION

```
:BUILD LPA;REC=-132,16,F,ASCII
:FILE LPA;SHR;ACC=APPEND
:RUN $OLDPASS
```

```
 END OF PROGRAM


OUTPUT FILE VERIFICATION

:RUN FCOPY.PUB.SYS
FROM=LPA;TO=

MAIN RECORD 1
SUBP RECORD 1
MAIN RECORD 2
EOF FOUND IN FROMFILE AFTER RECORD 2

3 RECORDS PROCESSED *** 0 ERRORS
```

EXAMPLE OF COBOL/SPL PROCEDURES TO IMPLEMENT A CONTROL-Y TRAP ROUTINE

John Pavone
HP General Systems Division

The two SPL routines "SETY" and "GOTY" control detection and resetting of a Control-Y trap routine. This COBOL program illustrates how to interface with the SPL procedures and can be used to test the implementation of the procedure.

COBOL TEST PROGRAM

```
$CONTROL USLINIT,MAP
 IDENTIFICATION DIVISION.
 PROGRAM-ID. CTLYTST.
 ENVIRONMENT DIVISION.
 DATA DIVISION.
 WORKING-STORAGE SECTION.
 01  FLAG PIC 9(4) COMP.
 PROCEDURE DIVISION.
 START.
     CALL "SETY" USING FLAG.
 TESTCTLY.
     IF FLAG = 0 GO TO TESTCTLY.
     MOVE 0 TO FLAG.
     DISPLAY "GOT CONTROL-Y".
     GO TO TESTCTLY.
     STOP RUN.
```

CONTROL-Y TRAP/RESET PROCEDURES

```
$CONTROL SUBPROGRAM,ADR,CODE,MAP
BEGIN
<<>>
```

```
<<>>
<< THIS SET OF PROCEDURES CAN BE USED TO DETECT CONTROL-Y
   CHARACTER INPUT WITHIN A COBOL PROGRAM.

   TO USE THIS FUNCTION DO THE FOLLOWING:

   1.  DECLARE A COBOL VARIABLE OF 9(4) COMP.

   2.  ISSUE A COBOL (CALL "SETY" USING THE VARIABLE.) AT THE
       BEGINNING OF THE COBOL MAIN PROGRAM.

   3.  TEST THE VARIABLE FOR A NON-ZERO STATE (CTL-Y HAS BEEN
       DEPRESSED).  IF TRUE, RESET THE VARIABLE TO ZERO BEFORE
       ANY FURTHER CTL-Y TESTING.  (THE VARIABLE IS INITIALLY
       SET TO ZERO UPON EXIT FROM "SETY").
<<>>
<<>>
EQUATE DLCELL=-11;  <<ADX OF DL CELL THAT CONTAINS FLAG ADX>>
<<>>
<<>>
PROCEDURE SETY(FLAG);  <<ENABLE YC TRAPS AND GET ADX OF FLAG>>
LOGICAL FLAG;
BEGIN
LOGICAL I,FLAGADX=Q-4;
LOGICAL ARRAY XDB(*)=DB+0;
PROCEDURE GOTY:OPTION EXTERNAL;
INTRINSIC XCONTRAP;
<<>>
FLAG:=0;  <<SET FLAG INITIALLY TO 0>>
XDB(DLCELL):=FLAGADX;  <<SET ADX OF FLAG INTO DL SAVE AREA>>
XCONTRAP(@GOTY,1);  <<SET YC TRAP VECTOR TO PROCEDURE "GOTY">>
END;
<<>>
<<>>
PROCEDURE GOTY;  <<USED TO PROCESS YC SIGNAL>>
BEGIN
LOGICAL N=Q+1;
LOGICAL ARRAY XDB(*)=DB+0;
INTRINSIC RESETCONTROL;
<<>>
XDB(XDB(DLCELL)):=1;  <<SET FLAG TO 1 USING DL CELL ADX FOR
   FLAG>>
RESETCONTROL;  <<ALLOW ANOTHER YC>>
<<>>
TOS:=%31400+N;  <<SET-UP EXIT INSTRUCTION>>
ASSEMBLE(XEQ 0);  <<EXIT USING HOME-MADE EXIT INSTRUCTION>>
END;
<<>>
<<>>
END.
```

RPG SPECIAL FORMS PROCEDURE

John Pavone
HP General Systems Division

Definition: The RPG Option for enabling the special forms mounting and form alignment procedure is accessed by placing a "1" in column 41 of the control record (H specification). This forms feature is enabled by the RPG subsystem and is executed by the spooler subsystem. RPG passes a forms message to the spooler when the file is opened.

Execution: When the file is scheduled by the spooler for printing, the following spooler/console operator dialogue occurs on the system console:

***** EXAMPLE*****

```
 IO/10:08/15/FORMS:      <<SPECIAL FORMS MESSAGE>>
?IO/10:08/15/SP#6/IS #J154:FILENAME ON LDEV#6(Y/N)
```

WHERE:

IO	Represents system notification of an IO message
10:08	Represents system time stamp.
15	Represents the message identification number (PIN)
FORMS	Represents special forms notice to operator
SP#6	Represents spool file on device #N (printer device)
#J154	Represents job ID (NNNN) or #SNNNN if session ID
FILENAME	Represents the RPG assigned file name (F SPEC)
LDEV#6	Represents the logical # of the output device
(Y/N)	Represents spooler's request for the operator's reply when the form has been mounted to the device

*****OPERATOR REPLY*****

```
=REPLY 15,Y     <<OPERATOR REPLY THAT FORM IS MOUNTED>>
```

*****FORM ALIGNMENT*****

The spooler prints a form alignment mask on the output device which looks like:

```
 ...:....1....:....2....:....3....:....4....:....5 etc., for 132
columns.
```

*****OPERATOR CONTROL*****

```
 IO/10:10/15/LDEV#6 FORMS ALIGNED OK?(Y/N) <<ON CONSOLE>>
=REPLY 15,Y    <<REPLY WHEN ALIGNMENT COMPLETE>>
```

NOTE: If additional alignment masks are desired, reply with "N".

Printed output proceeds to completion, after which the next file to be printed is checked for required special forms. If yes, the above dialogue is repeated; otherwise the following forms reset dialogue occurs:

*****EXAMPLE*****

```
 IO/10:19/15/SP#6/STANDARD FORMS:
?IO/10:19/15/SP#6/IS #J154;FILENAME ON LDEV#6(Y/N)
```

After forms have been changed, the operator replies to the message.

*****SUGGESTIONS*****

1. Filename represents the name of the output file to be printed. If a user can relate the output filename to a form number (e.g., FM123456 - maximum of 8 characters allowed), the operator can easily relate the message to the proper form required for this output.

2. If a number of print files are to use the same special form it is improbable that they will occur sequentially, within the spooler, hence the operator would be constantly swapping forms back and forth on the printer.

   To alleviate this problem, users should plan an organization of output priority # assignments for files that require the same special form. With operator adjustment of the output fence, all reports requiring special forms can be deferred until the operator selects them for printing.

   By adjusting the fence, all printer outputs for a specific special form (with the same output priority #) can be scheduled for printing as a group instead of individually. This will make special forms control easier for the operator.

UDC'S AND THE CONTINUE COMMAND

Bob Olson
HP General Systems Division

The basic effect of the CONTINUE command is that it temporarily causes the Command Interpreter to treat errors as if they were warnings. This holds for errors on the very next command following the CONTINUE command. The use of user defined commands introduces some complexity into this otherwise straightforward definition.

1) The "next command" referred to may be a user defined command. Any error which results in a "CIERROR" will cause the execution of that user defined command to stop (with exceptions noted below). If no "CONTINUE" is in effect, a JOB will be flushed. If a "CONTINUE" is in effect, execution will proceed with the next command. Thus, in effect, a user defined command is treated as any other command in its interaction with CONTINUE.

```
EXAMPLE:
    :LISTF
    :CONTINUE
    :XX
```

If XX is a user defined command, the failure of XX will not cause the termination of the job.

2) "CONTINUE" may be used within a user defined command. Its effect is the same; errors in the "next command" will be ignored and execution of the user defined command will continue with the following command.

```
EXAMPLE:
    UDCX
    LISTF
    CONTINUE
    XX
    REPORT
```

The REPORT command will be executed even if XX fails.

3) "CONTINUE" as the last command in a user defined command body has no effect. Leaving a user defined command clears any outstanding "CONTINUEs".

4) Nesting of commands including "CONTINUE" is permitted and operates as one would expect, under the above rules.

```
EXAMPLE:
    :LISTF              XX              YY
    :CONTINUE           SHOWJOB         CONTINUE
    :XX                 CONTINUE        TELL @S;HI
    :REPORT             YY              TELLOP GO
                        FCOPY           SHOWTIME
                        SHOWOUT
```

In YY, even if the TELL fails, the TELLOP will be executed. If the TELLOP fails, the SHOWTIME will not be executed. In XX, even if YY fails (e.g., the TELLOP failed), the FCOPY command will be executed. If the FCOPY command fails, the rest of XX is flushed due to the failure of FCOPY, not due to the failure of YY, which was ignored. The SHOWOUT is not executed only if FCOPY fails. In the body of the job itself, even if XX fails

(due to the failure of SHOWJOB, FCOPY or SHOWOUT), the job continues on to the REPORT command.

FORTRAN/3000 COMMON ENHANCEMENT -(MIT 1814)

Renee Nelson
HP General Systems Division

BACKGROUND:

Since its release, FORTRAN/3000 has imposed the limit of approximately 254 simple variables and/or arrays which can be defined in COMMON. This limit exists because each such variable or array is assigned one of the 254 pointers available in primary DB. The reason for this is to allow efficient access to variables in the COMMON area. For most applications the limit does not pose a problem. However, there are certain applications involving extremely large, modular programs which, while fitting the system-wide limits of 16K maximum code segment size and 32K maximum data stack size, cannot be coverted to the 3000 because of the COMMON block limitation.

ENHANCEMENT:

This enhancement will offer an alternate addressing method for variables in COMMON. In order to preserve the original goal of efficient execution, the enhancement will be optional and will be invoked by a "$CONTROL MORECOM" statement.

The new scheme will assign one primary DB location per COMMON block. Thus, the new limit will be a maximum of 254 COMMON blocks. Different code will be generated to handle a variable's offset into a COMMON block. This method will produce more code, which will cause program execution to be slightly less efficient, but it will not restrict the number of variables in COMMON. A typical, large FORTRAN program with extensive use of COMMON will result in approximately a 10-30% increase in code segment size and approximately a 0-4% increase in execution time when the MORECOM option is invoked. Thus, this option should only be specified when a program cannot otherwise be PREPed because of Segmenter "** ERROR 66 ** TOO MANY COMMON DATA LABELS". Due to internal reasons, COMMON variables may not be TRACEd when MORECOM is in effect. (NOTE: The existing maximum data stack size of 32K can still restrict the total size of the COMMON area.)

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