HEWLETT hp PACKARD

computer systems

COMMUNICATOR

3000

Series I,II,III,MFG 1906

Series 33 1912

Issue No. 20

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EDITOR'S NOTE

This first issue of the COMMUNICATOR for 1979 brings you some familiar items and some interesting new material. A number of features have been added to MPE III, including several commands and a substantial increase in speed of the STORE and RESTORE functions. These enhancements are described in the issue's opening article, "MPE III 1906 RELEASE," and in the Software Update section.

By the way, a date code, such as 1906, is the expected date of release for an Installation Tape: not the date you receive the update, but the date we anticipate it will be ready to leave our factory. In the event you are not familiar with how a software update is given a date code, here is a brief explanation of how 1906 was generated.

Using 1960 as the base year, 1979 becomes year 19: 1979-1960=19. This Installation Tape was expected to be ready for release during the sixth week of the year (06). So 1906 refers, in our manner, to mid-February of 1979.

As usual, you will find Note files from the current Installation Tape reprinted for the Series II/III and Series I machines. However, as you may have already noticed, this issue contains two additional sets of Note files ...for the Series 33 Installation Tape and the Master Applications Tape (MAT).

The Series 33 is our newest 3000 computer system and, particularly because of its unique features, is worth taking a look at. See "The HP 3000 Series 33" for an interesting description. The fourth set of Note files is the 1906 update for HP's Manufacturing Applications software, which was described in the last issue of the COMMUNICATOR (#19).

The other articles in this issue deal with a new line printer, the HP 2608A, a method for accessing PLOT/21 routines from BASIC, and a description of the new Series III base configuration.

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MPE III 1906 RELEASE

STORE/RESTORE Speed Increase of 50%
Leads the List of Enhancements

Pete Sinclair
General Systems Division

More MPE enhancements are on their way to your site! Our determination to maintain MPE as the number one operating system in the industry is evidenced by the following MPE enhancements supplied on the 1906 Installation Tape:

- STORE and RESTORE (including DBSTORE, DBRESTORE and SYSDUMP) execution time has been decreased by 30-50% and tape requirements reduced by 25%.
- Six new commands have been added to the Segmenter for copying, listing, and cleansing of the User Subprogram and Segmented Libraries.
- User Defined Commands (UDC's) can now be assigned to entire accounts and system-wide.
- The shared file limit of 64 has been eliminated, allowing virtually unlimited shared access to files.

Each of these enhancements is explained in detail below. The manual updates will not be available until midyear, so please keep these pages (and copies of them) handy for quick reference.

STORE/RESTORE

A. Overview

The STORE and RESTORE utilities have been modified to significantly improve their performance. First, the record size was increased from 1K to 4K words. This reduced tape requirements by eliminating three-quarters of the inter-record gaps previously required and eliminated three of the four I/O seeks needed with the smaller 1K blocks. In addition, buffered I/O was implemented on magnetic tape transfers so that a disc seek and a tape write could overlap. The results of these modifications are:

1. Disc backups will execute 40% to 50% faster
2. Tape backups will execute 30% to 40% faster
3. 25% less tape will be used on tape backups

This should result in a significant increase in system utilization and a significant reduction in operator backup time. These speed and space enhancements have also been implemented in the DBSTORE, DBRESTORE, and SYSDUMP commands to maximize data and base system backup and recovery capabilities.

B. Command Modifications

1. :STORE command

When using the :STORE command, the :FILE equation for the storefile can now contain the following parameters:

```
:FILE storefile(=filereference)(;DEV=device)
(REC=recordsize)[; BUF   ]
                [; NOBUF]
```

The syntax of the :STORE command is extended to:

```
:STORE (fileset)(fileset)(,...);storefile[;SHOW]
[;FILES=maxfiles][; DATE<=accdate]
                 [; DATE>=moddate]
```

The following changes should be noted in the above two commands:

a) [;REC=recordsize] -- the user can now specify the tape record size. This may be any number which is a multiple of 256 words between 256 and 8192 words (or 512 and 16384 bytes). The default for nonprogrammatic calls to :STORE will be 4096 words. The default for programmatic calls will be 1024 words. This default was chosen so that users with preexisting programs that do :STOREs programmatically will not need to change their code because of :FILE command changes or re-PREP to accommodate stack requirement changes.

b) [;NOBUF] [;BUF] -- user may specify whether buffered I/O is used to do the store. This can be of considerable benefit when storing to tape. It is of no benefit when writing to serial disc because the I/O system already buffers I/O to serial disc. Thus, when STORing to serial disc, the ";NOBUF" option should be used. The default will be buffered I/O (;BUF) which should be used for tape transfers.

c) [; DATE>=moddate] [; Date<=accdate] -- If >= is specified, then only files which have been modified on or after moddate will be stored (as in a daily dump from SYSDUMP). If <= is specified, then only files not accessed since accdate will be stored (as in PURGEOLD). The default will be to dump all files specified by the filesets (no ;DATE specified).

2. :RESTORE command

The syntax of the :RESTORE command is extended to:

:RESTORE restorefile(;fileset)(,...)[;KEEP][;DEV=device] [;SHOW][;FILES=maxfiles][;OLDDATE]

The following changes should be noted:

[;OLDDATE] -- causes :RESTORE to not alter the modification or access date on the file label of the restored files. The default, that is ;OLDDATE not specified, will continue to be to alter these dates.

3. SYSDUMP command

The file equation for the dumpfile of SYSDUMP is expanded to contain the same additions as the storefile in :STORE.

4. INITIAL operation

INITIAL has no external changes. It will successfully reload from an old SYSDUMP tape or a new SYSDUMP, written with any legal tape record size.

5. DBSTORE operation

The user may specify on the :FILE equation for the store tape the same parameters that are valid on a :STORE.

6. DBRESTORE operation

There are no external changes.

C. Caveats

The STORE/RESTORE enhancements are directly forward compatible but not directly backward compatible. All tapes written with the old version of STORE, DBSTORE, or SYSDUMP are directly readable by the new code. The opposite is not necessarily true. Tapes written with other than the 1K record size cannot be easily reloaded on systems with the old version of code. If you wish to keep the ability to restore a backup tape on a system with the old software (multiple system users who have yet to update all of

their machines, for example), then the following steps should be taken to insure that a 1K record size tape is produced that is readable by the old software:

1. For :STORE, the file equation which specifies the store device must contain the parameter ";REC=1024".

2. For :DBSTORE, the following file equation must be specified:

```
:FILE DBSTORE;REC=1024
```

3. For SYSDUMP, the file equation which specifies the dump tape must contain the parameter ";REC=1024".

The tape produced will be readable by both the old and new versions of the code; however, backup speed will only be about 10% faster due to the elimination of the larger block size enhancement. To avoid these potential problems and to take advantage of the full 50% speed increase, it is recommended that you get all of your systems updated to the 1906 release at the same time.

SEGMENTER ENHANCEMENTS

Six new segmenter commands have been developed to give the user thorough control of the SL (Segmented Library) and USL (User Subprogram Library) code regions. These enhancements provide cleaning, copying, and listing capabilities to the user with the use of a single command. A thorough description of each of these new commands (with examples) is presented below. In addition, one new intrinsic and some new and modified error codes are listed. Again, make copies of these pages for handy reference until the manual updates arrive.

A. New Segmenter Commands

1. -CLEANSL

   Copies the currently managed SL to a new SL file, removing inactive segments. The new command replaces the user contributed program "CLEANSL".

   SYNTAX

   -CLEANSL [filename]

PARAMETER

filename	The name of the new SL file. If omitted, the old file will be purged, and its name will be given to the new SL.

EXAMPLE

-CLEANSL NEWSL	The active segments of the currently managed SL are copied into a new SL file named NEWSL.

REMARKS

The new SL will be a file of the same size as the old SL. (that is, flimit will be unchanged - fewer extents may be allocated, however.)

It is not possible to clean an in-use SL into itself.

The new SL becomes the currently managed SL.

2. -COPYSL

The currently managed SL is copied to a new SL file, removing inactive segments. The new file is allocated a user-specified percentage of file space above the minimum necessary for the new SL.

SYNTAX

-COPYSL percent [,filename]

PARAMETERS

percent	The amount of extra file space to be given the new SL file, as a percentage of the minimum possible. 0 <= percent <= 9900.
filename	The name of the new SL file. If omitted, the old file will be purged, and its name will be given to the new file.

EXAMPLE

-COPYSL 10, NEWSL	The new file will have unused (available) file space that is 10% of the file space used by the active segments.

REMARKS

This command differs from CLEANSL in allowing the user to specify changes in file space.

It is not possible to copy an in-use SL file onto itself. The new SL becomes the currently managed SL.

3. CLEANUSL

Cleans the current USL file using the new CLEANUSL segmenter intrinsic. The cleaned USL is put into a new file.

SYNTAX

CLEANUSL [filename]

PARAMETER

filename	The name to be given the cleaned file. If not specified, the old USL is purged, and its name is given to the new file.

EXAMPLE

CLEANUSL	The currently managed USL file is cleaned (that is, all inactive information deleted) into a new file. The old USL is purged, and its name given to the new USL.

REMARKS

The new USL file becomes the currently managed USL.

4. COPYUSL

The currently managed USL file is copied into a new file, and available file space expands or contracts to a user specified percentage of used file space.

SYNTAX

COPYUSL percent [,filename]

PARAMETERS

percent	The amount of available file space on the new USL expressed as a percentage of file space used: 0< percent <9900

filename	The name to be given the new USL file. If not specified, the old USL is purged, and the new USL is given its name.

EXAMPLE

COPYUSL 100, NEWUSL	The new USL will have available 100% more file space than it has used.

REMARKS

The new USL becomes the currently managed USL.

5. LISTSL

It is now possible to select one segment to be listed by name.

SYNTAX

LISTSL [segment]

PARAMETER

segment	The name of the segment to be listed. If not specified, all segments are listed.

EXAMPLE

LISTSL SEG45	Segment SEG45 of the currently managed SL is listed.

6. LISTUSL

It is possible to select one segment to be listed by name.

SYNTAX

LISTUSL [segment]

PARAMETER

segment	The name of the segment to be listed. If not specified, all segments are listed.

EXAMPLE

```
LISTUSL SEG45        Segment SEG45 of the currently
                     managed USL is listed.
```

B. New Intrinsic

CLEANUSL

Deletes all inactive entries from currently managed USL file.

```
          I                 IV          BA
filenum:=CLEANUSL (uslfnum, filename);
```

FUNCTIONAL RETURN

This intrinsic returns the new file number. If an error occurs, the error number is returned instead of the new file number (see Table 1, Intrinsic Error List, below). The condition code, therefore, must be tested immediately on return from the intrinsic. If an error number were to be used as a file number, unpredictable results would occur.

PARAMETERS

uslfnum integer by value (required).

A word identifier supplying the file number of the file to be cleaned.

filename byte array (required)

The name to be given to the cleaned file. It may be all blanks.

CONDITION CODES

CCE Request granted. The new file number is returned.

CCG Not returned by this intrinsic.

CCL Request denied. One of the following error numbers is returned.

****
* Table 1 - Intrinsic Error List *
****

ERROR NUMBER	MEANING
0	The file specified by uslfnum was empty, or unexpected end-of-file was encountered when reading the old uslfnum, or an unexpected end-of-file was encountered when writing on the new uslfnum.
1	Unexpected input/output error occurred. This can occur on the old uslfnum or the new uslfnum to which the intrinsic is copying the information.
3	Your request attempted to exceed the maximum file directory size (32,768 words).
6	Insufficient space was available in the USL file information block.
7	The intrinsic was unable to open the new USL file.
8	The intrinsic was unable to close (purge) the old USL file.
9	The intrinsic was unable to close (purge) the new USL file.
10	The intrinsic was unable to close $NEWPASS.
11	The intrinsic was unable to open $OLDPASS.
12	Illegal USL file format.

C. Segmenter Error Messages

1. The following new messages have been added to the segmenter.

NUMBER	MESSAGE	COMMENTS
94	Unexpected end-of-file.	In a CLEANUSL command, the CLEANUSL intrinsic returned an error code of 0.
95	Invalid copy factor.	In COPYSL or COPYUSL the percentage was outside the range 0 <=percent<= 9900.
115	Unable to open new SL file.	In CLEANSL or COPYSL, it was not possible to open the new SL file.
117	Insufficient space in new SL file.	The new SL file is not big enough.
121	Unable to open new USL file.	In CLEANUSL or COPYUSL it was not possible to open the new USL file.
122	Duplicate filename.	An attempt to CLEAN or COPY USL or SL into an old file.

2. The following Segmenter Messages have been changed

NUMBER	CHANGE
5	This message now also applies to CLEANUSL and COPYUSL.
16	This message now also applies to CLEANSL and COPYUSL.
93	This message now applies to LISTSL when a specific segment has been requested.

ACCOUNT AND SYSTEM UDC'S

User-Defined Commands (UDC's) are a convenient way to increase the system's friendliness by defining commands that are most meaningful to a particular user. Now this ability has been expanded account- and system-wide. Account and System Managers

can create UDC files that are automatically available to all users who log onto the account or onto the system. Thus, it is now possible for each user not only to have his own UDC's but account and system UDC's also, expanding the flexibility of computer friendliness to groups or all users simply and automatically.

Creating Account or System UDC's involves a nearly identical process to that used when creating UDC's at the User level. Create the UDC file using the EDITOR (as described in the MPE Commands Reference Manual, Chapter 9). In order to make the UDC file account or system-wide, enter the SETCATALOG command as you would for a user and at the end of the line type ";ACCOUNT" or ";SYSTEM" to enable the UDC's for account or system usage respectively. For example, if you wish to establish PUBCAT as the system UDC file, after creating PUBCAT with the EDITOR you would enter:

```
:SETCATALOG PUBCAT;SHOW;SYSTEM
```

PUBCAT would be listed on the screen (the result of the ";SHOW" parameter) and enabled as a system UDC file. As a security measure, only the account manager and system manager are allowed to enable account and system UDC's.

These new UDC's can be identified easily through enhancements to the SHOWCATALOG command. Next to each UDC will be written either USER, ACCOUNT, or SYSTEM as a reference to what level each UDC was created on. If two or more UDC's have the same name, the first one detected by the system will be executed. The detection scheme is user first, followed by account and then system. Thus, the user will still maintain ultimate control over the nature of his UDC's. As you probably are aware, UDC's slow the logon process. It seems likely that the time gained through the UDC capability will more than offset the few extra seconds required at logon. However, you may wish to advise users of your system of this time effect.

SHARED FILES LIMIT

MPE was originally designed with a limitation of 64 shared files at one time. With the performance characteristics of our original systems this limit seemed more than adequate. However, with the ever-increasing performance of the HP 3000, some users have reached this file limit. To eliminate any potential problems we have changed the code to allow almost 8000 shared files on the system at any one time. We feel confident that this new limit (!) should not be a constraint in the future.

IN CONCLUSION

We hope that these enhancements will help expand the friendliness and power of MPE in your environment. This 1906 Installation Tape is part of our ongoing effort to provide software improvements that keep pace with your needs. Keep up the feedback so that we can keep MPE III Number 1 in performance and customer satisfaction in the computer industry.

THE HP 3000 SERIES 33

Rich Edwards & Tom Simon
HP General Systems Division

Hewlett-Packard 3000 computers are especially notable for their orientation toward interactive operation in data communication environments, stressing efficient management of fast-growing data bases. A new generation of hardware and a group of new peripheral devices (including the HP 7902A flexible disc drive and the stand-alone, separately powered HP 2608A line printer) have made it possible for Hewlett-Packard to introduce this new 3000 computer system as a competitor on the basis of price/performance in the commercial marketplace.

Hewlett-Packard's latest addition to the 3000 line of computer systems, the Series 33, is a multiple terminal, interactive business data processing system designed for use as an organization's complete EDP system. The Series 33 incorporates a number of new features which distinguish this system from the Series I, II, and III, but which are designed to complement the common operating system of the HP 3000 family, the Multiprogramming Executive (MPE III).

SPECIAL FEATURES

- Silicon-On-Sapphire Central Processing Unit

Hewlett-Packard's complementary metal-oxide semiconductor silicon-on-sapphire (CMOS/SOS) process has been developed for large-scale integrated circuit technology. The major distinction between SOS and other integrated circuit technologies is that, instead of being formed in a wafer of bulk silicon, the circuit begins with a thin layer of silicon on a sapphire substrate.

The logic implemented with this technology not only achieves high speed with low active power, but also consumes low standby power since the complementary circuits use additional current only during periods of actual switching.

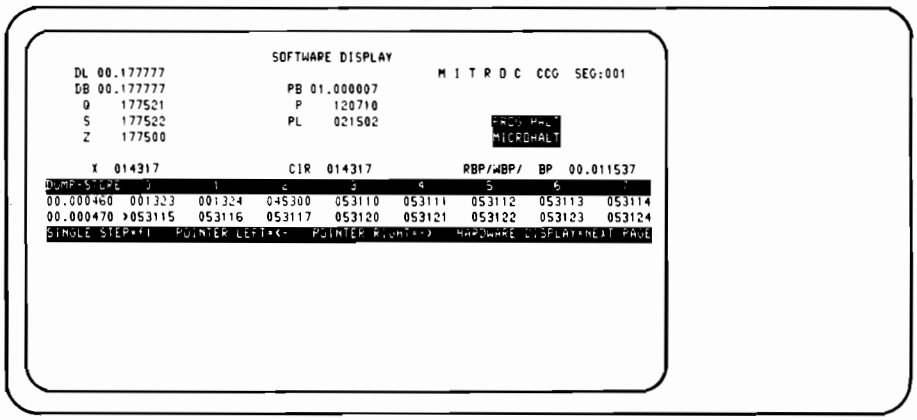
- Maintenance Console

One feature, intended to make the Series 33 easy to service, is the use of the system console as a maintenance console, which replaces the bulky maintenance panels CE's must carry to support the Series II/III and Pre-Series II machines. Through a new PC

board incorporated into the Series 33 CPU design, the Maintenance Interface board, and maintenance display software loaded from a data cartridge into the system console, HP personnel will have a complete maintenance display in English and octal values on the system console. Values such as the contents of all registers, dynamically selected memory contents (16 words at a time), and system status displays are readily available from the maintenance console.

Maintenance Display

(one of 2 displays showing all registers, memory, etc.)

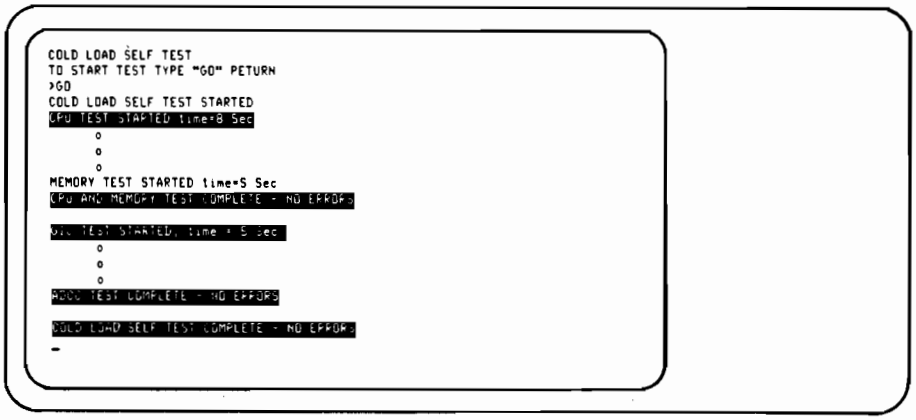


- System Self Test

A hardware diagnostic test is provided with the Series 33 on a data cartridge that is loaded via the system console tape drive. This self test is easy to use, having been designed to be run by you, the user, prior to calling Hewlett-Packard for hardware maintenance. In less than two minutes this diagnostic tool checks the hardware components involved in a system cold load. The test isolates faults to the module level, then prints its findings in concise messages on the console CRT.

System Self-Test

(uses console data cartridge)



- Remote System Verification Program (RSVP)

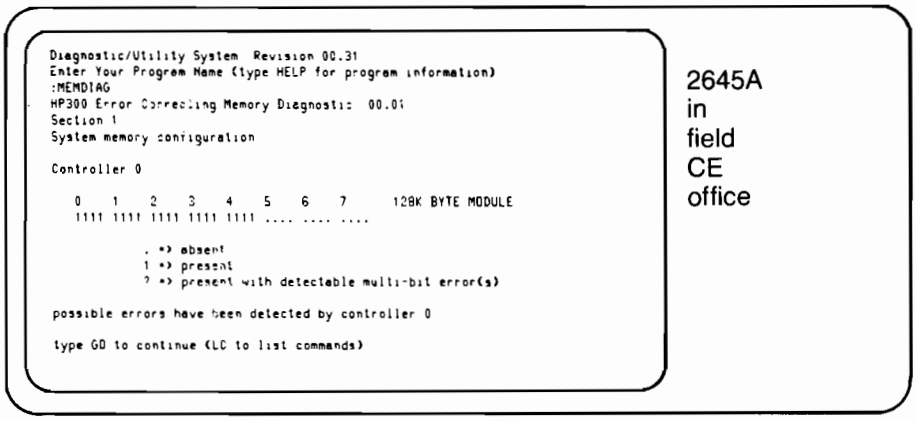
The use of the system console to transmit display and control functions to a remote HP 2645 terminal via a modem and telephone link is a unique feature of the Series 33. With this facility an HP Customer Engineer can call the HP Service Office and have a specialist get "on line" to the system over the telephone via

the remote system console/maintenance console.

To enable this link, the CE or the user loads a remote maintenance code data cartridge into the console, then establishes the telephone link by switching the modem (supplied by the user) to the console by means of a switch built into the terminal junction panel. The Specialist now has a duplicate display of the Series 33 system console display, with the ability to send the CE or System Manager messages that are not transmitted to the computer. The modem need not be dedicated to this maintenance function but can be one used for asynchronous communication.

Remote Console

Perform any function (1 thru 6) remotely on an HP2645A over phone lines with MODEM.

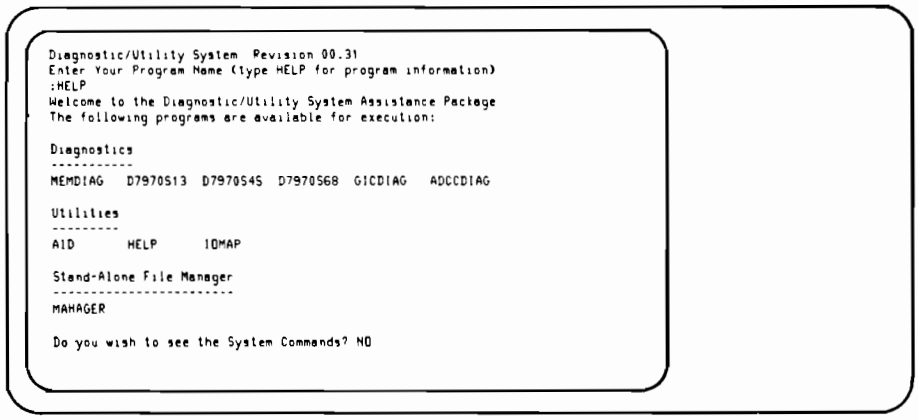


Maintenance of the Series 33 is also aided by several levels of diagnostic software which help identify hardware problems. These diagnostics, which are loaded from flexible discs, are as follows:

- verification programs for peripherals run under MPE
- stand-alone diagnostics to verify all system modules
- PC board microdiagnostics in PROM for CPU, Memory, and I/O.

Monitor System Diagnostics

(loaded from flexible discs)



SOFTWARE FEATURES

Fundamental Operating Software

The HP 3000/33 runs under the widely used Multiprogramming Executive operating system (MPE III), including the recent additions of private disc volumes and a friendlier user interface. A new, easy to use data entry system, VIEW/3000, is supported on the Series 33 and the Series II/III.

All non-privileged HP 3000 Series II/III programs -- both source and object code -- written in COBOL, RPG, BASIC, FORTRAN, or SPL will run without any modification on the Series 33. This new system also runs all HP 3000 Series II/III software subsystems except the data communications subsystems, (DS/3000, RJE/3000, MRJE/3000, and MTS/3000) which are not offered presently on the HP 3000 Series 33, and APL/3000. The MFG/3000 application package for material management in a manufacturing operation is also supported on the Series 33.

In addition to the Multiprogramming Executive operating system each Series 33 comes equipped with the following software products:

- EDIT/3000
- FCOPY/3000
- SORT/3000
- Compiler Library -- a set of subroutines which provide commonly needed operations for language compilers
- SPL/3000

Languages

Five high-level programming languages are supported on the HP 3000/33.

- COBOL/3000
- FORTRAN/3000
- RPG/3000
- BASIC/3000
- SPL/3000

Data Management

VIEW/3000 is a new, stand-alone software subsystem for data entry which is available on the Series 33. Data entry applications can be implemented with no programming effort. Using a Forms Specifications Utility the designer can create forms in

minutes by drawing them on a terminal CRT screen and filling in "menus". A VIEW data entry program can be used to immediately begin entering data without developing any additional data entry programs. (see issue #19 of the COMMUNICATOR 3000 for more information concerning VIEW/3000).

IMAGE/3000, HP's award-winning data base management system, and KSAM/3000 are also supported on the Series 33. IMAGE, along with its QUERY subsystem, facilitates the creation and accessing of complex data bases. KSAM provides keyed sequential access to files that have a primary key and up to fifteen alternate keys per data record.

For companies with discrete manufacturing processes, HP's new inventory control software, Manufacturing Systems/3000, is available on the Series 33. MFG/3000 consists of three modules (Engineering Data Control, Inventory and Order Status, and Material Requirements Planning) which provide numerous control and reporting services.

HARDWARE FEATURES

System Configuration

The basic HP 3000/33 consists of a central processing unit (CPU), cartridge disc storage of 20 megabytes, a double-sided flexible disc drive with a capacity of 1.2 megabytes, and a microprocessor based system console/maintenance console. It includes 256 kbytes of fault control main memory (expandable to 1 megabyte), two general I/O channels, two asynchronous data communications controllers (one main, one extender) for connecting the hardwired system console and up to 7 asynchronous terminals (hardwired or connected through modems), and remote diagnostic capability.

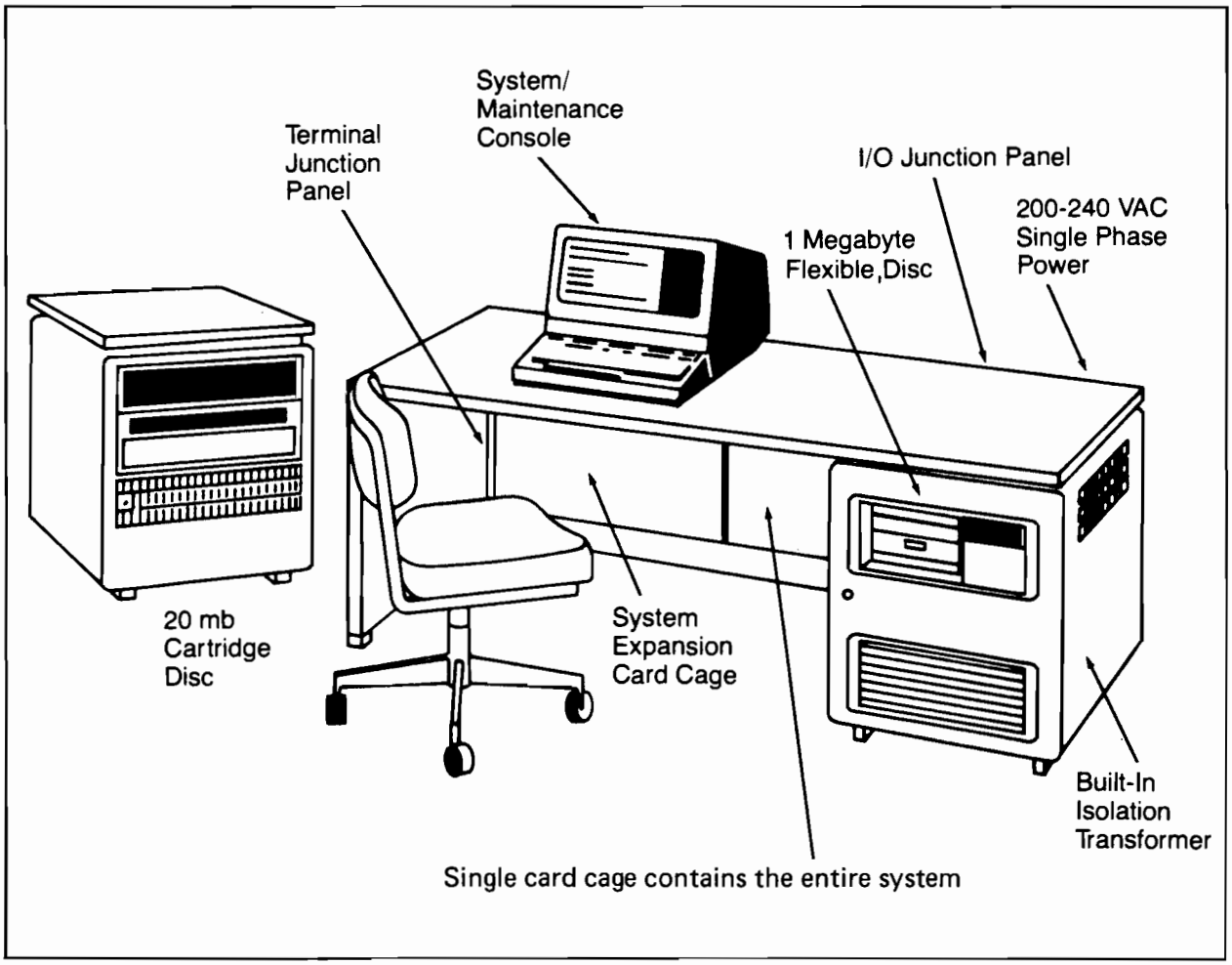
Configuration Flexibility

In addition to the peripheral devices described below, the basic HP 3000/33 can be expanded at the factory or in the field up to:

- 1 megabyte of fault control main memory
- 960 megabytes of disc storage
- 3 general I/O channels
- 8 asynchronous data communication controllers which each support up to 4 terminals.

System Desk Mainframe

The use of Hewlett-Packard's SOS/CMOS three chip microprogrammable processor permitted substantial reductions in size of both the central processing unit and its supportive hardware. As a result, the Series 33 is a quiet system, attractively packaged in a desk mainframe that is compatible with the office environment.



Central Processing Unit

The HP 3000/33 CPU is a state of the art, microprogrammed, three chip silicon-on-sapphire processor. All HP 3000 instructions and sections of the MPE operating system are microcoded. The fundamental CPU clock cycle time is 90 nanoseconds. HP 3000 Series 33 machine instructions are executed with a variable CPU clock; execution times vary from 3 to 7 clock cycles per instruction.

Main memory is Metal Oxide Semiconductor (MOS) utilizing 16K RAM's. Main memory is expandable in 128 kbyte increments. Supported memory sizes are 256, 512, 768 and 1024 kbytes. Access time is 430 nanoseconds giving an effective memory cycle time of 860 nanoseconds.

The Series 33 uses a fault control system in semiconductor main memory that consists of an extra five bits for a Hamming code and another bit for overall parity. This fault control scheme detects and corrects all single bit memory faults. All double bit and most multiple bit faults are detected. Memory faults are logged to a disc file which can easily be accessed by a Hewlett-Packard Customer Engineer during a routine preventive maintenance visit.

HP 7902A Flexible Disc Drive

The HP 7902A flexible disc drive supports double-sided flexible discs. This low cost flexible disc is a reusable magnetic storage device that is used for distribution of all Hewlett-Packard software for the HP 3000 Series 33. In addition, it can be used for data storage, retrieval, data transfer, and system backup. The capacity of the 7902A flexible disc drive, using double sided flexible discs, is 1.18 megabytes.

General I/O Channels

The basic Series 33 contains two general I/O channels with Direct Memory Access (DMA) hardware. Each channel has a bandwidth of 1 megabyte. Data transfers from peripherals on a channel are conducted in block bursts. Up to three general I/O channels may be configured to a Series 33.

Asynchronous Data Communications Controller

Up to 32 asynchronous terminals (including the system console) can be connected to the Series 33 through multiple asynchronous data communications controllers (ADCC's). A main ADCC allows four terminals to be connected, either hardwired (up to 50 feet from the CPU) or through modems. An additional 4 terminals can be connected through an ADCC extender. A main ADCC includes Bell 103 type (300 baud) modem support. An extender ADCC adds Bell 202S type (1200 baud) modem support.

System Console

A specially microprogrammed, microprocessor based HP terminal serves as the HP 3000 system console and the system's maintenance

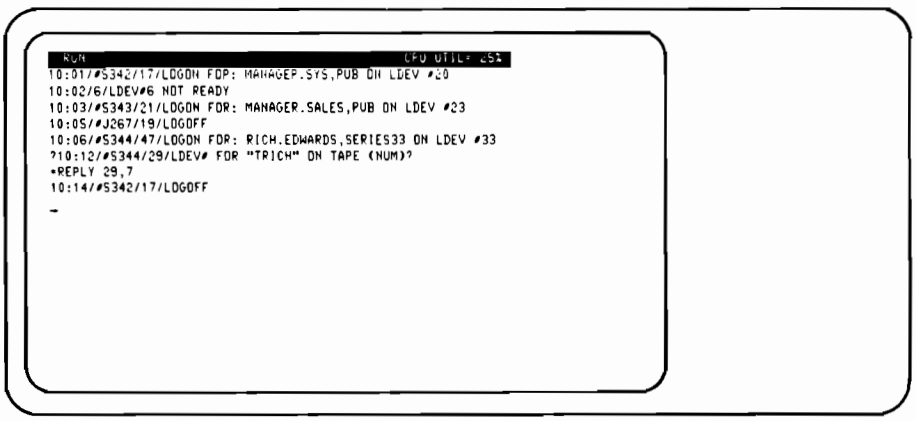
console. The system console is a second computer system utilizing a microprocessor within the terminal for expanded capabilities.

In addition to the maintenance console features discussed above (system self test and diagnostics, RSVP, register display), several important capabilities are provided to the Series 33 system operator through the system console. These capabilities include the folowing:

- All system messages appear on the CRT screen and operator replies are accepted. Alternately, the complete console dialogue may be logged to a disc history file under MPE III.

System Console

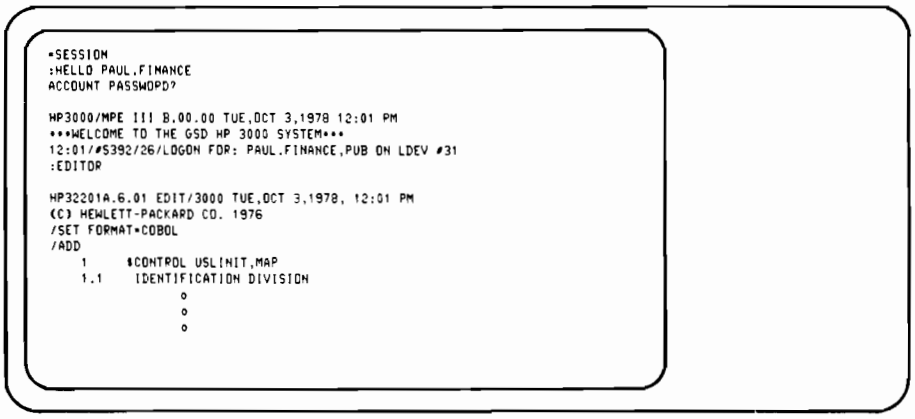
(NEW: All console messages can be logged to disc file)



- The system console may be used as a regular terminal in an interactive session.

Session

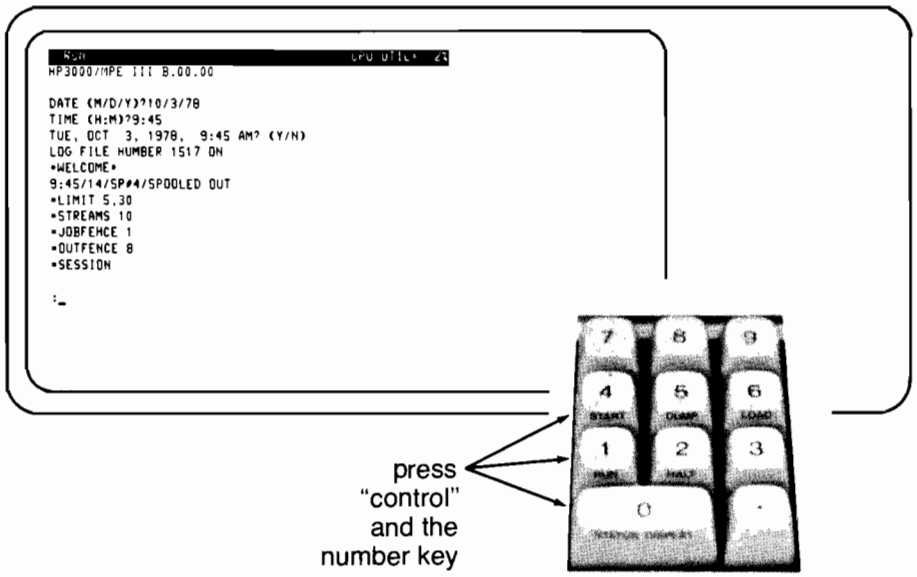
(a regular 2645)



- All operator control functions, such as START, HALT, and STATUS DISPLAY, are provided through keys on the console keyboard.

Console Keys for System Control

(status display, run, halt, warmstart, memory dump, cold load)



Disc Storage

Removable disc storage serves as both virtual memory for the system and file storage. Included in the basic Series 33 is one 19.6 megabyte cartridge disc, the HP 7906M. Average access time is 25 milliseconds.

Available as either system disc replacements or as add-on discs are the HP 7920 and 7925 disc drives. The HP 7920 has a capacity of 50 megabytes; the 7925 can store 120 megabytes. Both have an average access time of 25 milliseconds.

Up to eight disc drives can be connected through the disc controller to the HP 3000/33. The data transfer rate of all discs is 937.5 kilobytes per second.

PERIPHERALS

HP 2621A & P Terminals

The new HP 2621A and HP 2621P terminals offer several features designed to facilitate data entry and editing. These include the addition of eight screen labeled control keys which quickly access editing, configuration, and printer control functions. These same keys double as special function keys which can be used to call computer resident routines. The terminals' built in self-test capability registers go/no go and isolates defective modules. The 2621P features 120 cps thermal printing on a 9 x 15 dot character cell.

HP 2640 Terminals

All terminals in the HP 2640 family are supported on the Series 33. Standard features include local editing and memory storage and inverse video display. Optional features include underlining, half-bright display, additional character sets, and lowercase letters. Some models offer integrated cartridge tape units, user-defined soft keys, and graphics capabilities.

HP 2635A Printing Terminal

The HP 2635A printing terminal is an SOS/CMOS microprocessor based bidirectional serial matrix printer (similar to the HP 2631A) with a built-in keyboard. It may be used as a table top terminal or it can be ordered with an optional stand. Printing is at the rate of 180 characters per second (CPS) using an upper/lowercase 96 character set with a dot matrix of 7 wide by 9 high. Continuous feeding of multiple part (up to six) forms is provided by a variable width forms tractor.

HP 2631 Printer

The HP 2631A printer utilizes the newly developed HP CMOS/SOS microprocessor to optimize printing functions, data manipulation, and other control functions. With a high resolution, seven column by nine row dot matrix character cell for crisp character formation, the HP 2631 has a print speed of 180 characters per second (CPS). Throughput is optimized by printing bi-directionally, suppressing trailing and leading blanks, and returning the carriage at high speed. The entire 128 USASCII character set (upper and lower case alphabets, numbers, symbols, and control codes) can be printed. A long life (greater than ten million

characters) cartridge ribbon employs a mobius loop and a slanted ribbon path to maximize the time between cartridge changes. When a ribbon change is necessary, it is a simple task. Forms of up to six parts are accomodated by a variable width forms tractor.

HP 2608A Line Printer

The HP 2608A is a stand-alone, separately powered, low cost and reliable matrix line printer. It has a fully enclosed paper path and front-feed forms handling. Multiple part (up to six) forms may be used. Vertical spacing is 6 or 8 lines per inch under both operator and program control. The print speed is 400 lines per minute.

The HP 2608A uses a simple to operate cartridge ribbon. A self-test verifies the printer's status. Forms control is accomplished through a 16 channel electronic, vertical format control (VFC) unit. Up to 2 line printers may be attached to a Series 33 and each may be operated under control of a user program or the MPE output spooler. For more information about the 2608, see the separate article in this issue of the COMMUNICATOR 3000).

HP 7970E Digital Magnetic Tape

The HP 7970E digital magnetic tape unit is a high performance magnetic tape drive compatible with the Series 33 computer system. This tape drive automatically corrects single errors in data blocks. High packing density and data transfer rates are achieved using ANSI compatible 1600 CPI phase encoded data electronics. Data written on any IBM or ANSI compatible equipment can be read. Four tape drives can be operated from a single controller. Read/write speed is 45 ips. Data transfer rate is 72,000 characters per second maximum.

THE 'WORKHORSE' 2608A

Chosen Cheng and Russ Yost
General Systems Division

The new 2608A 400 line per minute line printer is available on HP 3000 Series 33, Series II and Series III systems. Manufactured by HP's Boise Division, the 2608A offers very high quality dot-matrix upper and lower case output that produces multiple-part (up to 6-part) copy.

The 2608A is to be used on HP 3000 computer systems as a PRINT and SPACE spooled system printer. Some characteristics of this new peripheral device are listed below.

- You will be able to manage your application's vertical format control (16 channel VFC) by operator commands at the console. This is equivalent to having your operator change a carriage control tape on conventional printers such as our 2613, 2617, and 2618 models.

- Horizontal paper tractors will hold paper widths from 130mm (5 inches) to 385mm (16.16 inches). Positioning of the first printing column on the left is electronically variable (from print position 1 to print position 16) by operator command. For example, if the margin is set at in print position 16, the 2608A can physically print 116 characters per line.

- Up to 13 character sets are available on the 2608A. These can all be resident within the printer concurrently, if desired. By setting switches on the front panel of the printer the operator can specify one primary and one secondary character set. At power on or upon a printer RESET these are the default primary and secondary character sets. User programs may switch back and forth between the specified default primary and secondary character sets by issuing control commands within the program.

  This facility allows you to combine printed output with a line drawing character set to produce forms, or to programmatically handle printing of the standard 128 character USASCII set in conjunction with an international character set.

- Line density of 6 or 8 lines per inch is selectable by operator command.

Several examples of how to implement these features are shown below. Further information on using the 2608A will be included in a future update of the Console Operator's Guide.

HOW TO CONFIGURE THE 2608A ON HP 3000 COMPUTER SYSTEMS

The HP 2608A may be configured on HP 3000 computer systems, Series II, III, and 33, under the line printer driver IOLPRT0 as type 32, sub-type 4. Refer to Appendix B (Table B-8) of the System Manager/System Supervisor reference manual for user responses to the configurator output questions.

HOW TO USE VFC, LEFT MARGIN, AND LINE DENSITY FEATURES

For a routine print job, such as listing a user file or printing the results of a program compilation, the standard default conditions will be adequate. Single line spacing or any other usage of the standard 16 channel VFC for an 11 inch page is contained in ROM; the European user can specify an optional 12 inch page for which a standard 16 channel VFC is also available. Standard default left margin (set at print position 1), and line density (set by front panel switches) are also generally acceptable without change required.

To change any of these standards, a user-created ASCII file may be downloaded by the operator at run time. This file is easily created using the HP 3000 EDITOR. Left margin may but need not come from such a file. It can also be downloaded directly. Also, the default left margin may be changed to any of print positions 1-16.

A typical sequence of events for handling special printing requirements would be:

1. Create and store the EDITOR file.

2. Include in the application code a FORMS message instructing the operator to download the file using an =DOWNLOAD command.

3. At print time, the FORMS message will instruct the operator to download the appropriate file and, if appropriate, to set up special forms in the printer.

4. The job will be printed.

5. Upon completion of the job, new values or the system standard values for VFC, left margin, and line density should be established for the next user. The system will automatically re-establish all the standard settings at the end of a job. All the operator need do is remove special forms (if any) and check that top-of-form is properly set. One need not issue another =DOWNLOAD command unless the next job also requires non-standard settings.

The format of the EDITOR file consists of several 80 character records.

```
Record 1        MARGIN=nn

Record 2*       VFC,x,y,zzzzzzzzzz

Record 3
        .
        .
        .
Record m

* Note if no margin setting is required then this is the
  first record.
```

Key:

nn = A number between 1 and 16 inclusive.
Specifies position of left margin indentation.

x = 6 or 8 or blank
Specifies print density in lines per inch.
Default is 6 lines per inch.

y = A number between 0 and 127 inclusive.
Specifies number of lines (rows) in VFC pattern.
If "0" is specified then the printer will reset its internal VFC to the default state. Note: All parameters are separated by commas.

z = Comments to describe further the VFC file. Useful for documentation purposes.

m = Number of rows needed to describe the desired VFC. Each record will contain at least 16 bytes corresponding to Figure 3. Each record corresponds to a line position on the page.

A blank or a "0" in a character position indicates a 0 (no-punch) and a non-blank indicates a 1 (punch).

Refer to Figures 1 & 2 for descriptions of the standard 16 Channel VFC formats. For reference purposes the full list of octal codes and associated carriage actions are presented in Figure 3.

The =DOWNLOAD console operator command is used to control VFC, line density, and left margin.

A new MPE console operator command is used to enable the operator to control VFC, setting the first print column on the left margin, and varying line density between 6 and 8 lines per inch. This =DOWNLOAD command has the following format:

SYNTAX

```
=DOWNLOAD ldn {[,filename]                  }
              {[,MARGIN=nn[,DEFAULT]]       }
```

PARAMETERS

ldn — The logical device number of the output device. This device must be a 2608 line printer. (Required parameter)

filename — The fully qualified name of a file containing the download control information and data. (Optional parameter)

nn — The print position that the first byte of data will assume. This number can be between 1 and 16 inclusive. This parameter will be overridden by a MARGIN record in the VFC file. (Optional parameter)

DEFAULT — If present then print jobs which do not override this value of "nn" will use "nn" as their left print position. Default value for nn = 1 at system start up. (Optional parameter)

The following examples illustrate the use of the DOWNLOAD command:

1. Download VFC and (if present in file) left margin information, else left margin is unchanged. This applies only to the current job, after which the default VFC and/or the left margin are reinstated.

```
=DOWNLOAD ldn,filename
```

2. Download left margin only; VFC is unchanged. This applies only to the current job, after which the default margin is reinstated.

```
=DOWNLOAD ldn,MARGIN=nn
```

3. Set the default margin for all jobs; VFC is unchanged.

```
=DOWNLOAD ldn,MARGIN=nn,DEFAULT
```

The following examples illustrate the format of the EDITOR file:

4. A standard VFC for 6 lines per inch called VFC6.

```
                    1111111
column 1234567890123456

       VFC,6,0
```

5. A standard VFC for 8 lines per inch called VFC8.

```
                    1111111
column 1234567890123456

       VFC,8,0
```

6. A special VFC for 8 lines per inch. Channel 1 is top of page. There are 88 lines per page, and Channel 9 is line 13.

```
VFC,8,88
1
0
0
0
0
0
0
0
0
0
0
0
000000001
```

7. A Special VFC for 6 lines per inch setting margin to 4. Channel 1 is top of page and there are 66 lines per page. Channel 2 is defined for lines 12 and 24.

```
                MARGIN=4
                VFC,6,66
                1
                0
                0
                0
                0
                0
                0
                0
                0
                0
(line 12)       01
                0
                0
                0
                0
                0
                0
                0
                0
                0
                0
(line 24)       01
```

Note: If no channel specifications appear below line 24 then an EOF can occur after record 24 in this example. Also blanks and zeroes are interchangeable.

Warning: If a =DOWNLOAD command is issued, then the VFC file specified is loaded immediately. This will cause a format change to occur in the middle of the current printout. A form misalignment will likely result. Operators should be warned to set the outfence at 14, wait for the current printout to finish, change the forms, download the VFC file, respond to the forms message, and lower the outfence.

FIGURE 1

STANDARD SIX LINE PER INCH FORMAT

CHANNEL	FUNCTION	LINE POSITIONS OF LOGICAL ONE*
1	Slew to top of next form	0
2	Slew to bottom of form	59
3	Single Space	0, 1, 2,...59
4	Slew to next double space line	0, 2, 4,...58
5	Slew to triple space line	0, 3, 6,...57
6	Slew to half page line	0, 30
7	Slew to next quarter page line	0, 15, 30, 45
8	Slew to next tenth line	0, 10, 20,...50
9	Slew to bottom of form	59
10	Slew to one line previous to bottom of form	58
11	Slew to one line previous to top of next form	65
12	Slew to top of next form	0
13	Slew to next seventh line	0, 7, 14,...56
14	Slew to next sixth line	0, 6, 12,...54
15	Slew to next fifth line	0, 5, 10,...55
16	Slew to next fourth line	0, 4, 8, ...56

* Logical one analogous to the hole in a paper tape or destination point for that channel.

NOTE: Assumes a ten-inch printed form area on an 11-inch page with 60 lines possible.

FIGURE 2

STANDARD EIGHT LINE PER INCH FORMAT

CHANNEL	FUNCTION	LINE POSITIONS OF LOGICAL ONE*
1	Slew to top of next form	0
2	Slew to bottom of form	79
3	Single space	0, 1, 2,...79
4	Slew to next double space line	0, 2, 4,...78
5	Slew to triple space line	0, 3, 6,...77
6	Slew to half page line	0, 40
7	Slew to next quarter page line	0, 20, 40, 60
8	Slew to next tenth line	0, 10, 20,...70
9	Slew to bottom of form	79
10	Slew to one line previous to bottom of form	78
11	Slew to one line previous to top of next form	87
12	Slew to top of next form	0
13	Slew to next seventh line	0, 7, 14,...77
14	Slew to next sixth line	0, 6, 12,...78
15	Slew to next fifth line	0, 5, 10,...75
16	Slew to next fourth line	0, 4, 8, ...76

* Logical one analogous to the hole in a paper tape or destination point for that channel.

NOTE: Assumes a ten-inch printed form area on an 11-inch page with 80 lines possible.

FIGURE 3

OCTAL CODE	ASCII SYMBOL	CARRIAGE ACTION
%40	" "	Single space (with or without automatic page eject).
%53	"+"	No space, return (next printing at column 1). Not valid on 2607 (results in single space without automatic page eject).
%55	"-"	Triple space (without automatic page eject).
%60	"0"	Double space (without automatic page eject).
%61	"1"	Page eject (form feed). Selects VFC Channel 1.
%2nn (nn is any octal number from 0 through 77)		Space nn lines (no automatic page eject). %200 not valid for 2607 (results in single space without automatic page eject).
%300-%307		Select VFC Channel 1-8 (2607)
%300-%313		Select VFC Channel 1-12 (2613, 2617, 2618, 2619)
%300-%317		Select VFC Channel 1-16 (2608)
		NOTE: Channel assignments shown below are the HP standard defaults.
%300		Skip to top of form (page eject).
%301		Skip to bottom of form.
%302		Single spacing with automatic page eject.
%303		Skip to next odd line with automatic page eject.
%304		Skip to next third line with automatic page eject.
%305		Skip to next 1/2 page.
%306		Skip to next 1/4 page.
%307		Skip to next 1/6 page.
%310		Skip to bottom of form.
%311		User option (2613/17/18/19), skip to one line before bottom of form (2608)
%312		User option (2613/17/18/19), skip to one line before top of form (2608)

OCTAL CODE	ASCII SYMBOL	CARRIAGE ACTION
%313		User option (2613/17/18/19), skip to top of form (2608)
%314		Skip to next seventh line with automatic page eject.
%315		Skip to next sixth line with automatic page eject.
%316		Skip to next fifth line with automatic page eject.
%317		Skip to next fourth line with automatic page eject.
%320		No space, no return (next printing physically follows this).
%2-%37		
%41-%52		
%54		
%56-%57		
%62-%77		Same as %40
%104-%177		
%310-%317 (2607)		
%314-%317 (2613/17/18/19)		
%321-%377		
%400 or %100		Sets post-space movement option; this first prints, then spaces. If previous option was pre-space movement, the driver outputs a line with a skip to VFC channel 3 to clear the buffer.
%401 or %101		Sets pre-space movement option; this first spaces, then prints.
%402 or %102		Sets single-space option, with automatic page eject (60 lines per page).
%403 or %103		Sets single-space option, without automatic page eject (66 lines per page).
%1001		Enables CONTIGUOUS WRITE (Privileged Mode Capability only).
%2001		Disables CONTIGUOUS WRITE (Privileged Mode Capability only).

NOTE: All page ejects (codes %61, %300, and (for 2608) %313) are suppressed if the current request has a transfer count of 0 and the previous request ended with a page eject.

Carriage-Control Directives

HOW TO SWITCH BETWEEN PRIMARY AND SECONDARY CHARACTER SETS

Default primary and secondary character sets are specified by switch settings on the front panel.

The user may programmatically switch back and forth between default primary and secondary sets by using a "shift-out/shift-in" protocol. All characters following a shift-out (%16) in the data stream will access the secondary character set, until a shift-in (%17) is detected or until the 2608A is reset. At the end of an output listing (when a Device Close is issued) the 2608A is reset. Note that a shift-out or shift-in should not be the last character in a line. If it desired that the shift-out or shift-in follow the last printed character in a line, add a blank character after the shift-out or shift-in.

Note that if power is lost in the middle of a print job and if the operator restarts the printing at some point in the job beyond the original shift-out (%16), the remainder of the job will be printed in the primary character set, instead of the secondary set. This is a minor potential problem and can be avoided by restarting interrupted jobs at the beginning. Alternatively the application could be written to include a shift-out, shift-in pair with each line to be printed containing secondary character set characters.

The HP 2608A adds a cost-effective, reliable, medium speed "workhorse" printer to the family of peripheral devices supported on HP 3000 Systems. Contact your sales representative for information on configuration, ordering and availability.

MPE III SERIES II-III SOFTWARE UPDATE

MULTIPROGRAMMING EXECUTIVE OPERATING SYSTEM SERIES II/III

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CONTENTS OF INSTALLATION TAPE DATE CODE 1906

PRODUCT NAME	PRODUCT NUMBER	LEVEL	DATE CODE
*MPE	32002B	00.02	1906
*SEGMENTER	32050A	01.00	1906
*SPL	32100A	07.01	1906
*BASIC	32101B	00.10	1906
*FORTRAN	32102B	01.01	1906
*BASIC COMPILER	32103B	00.10	1906
*RPG	32104A	04.02	1906
*APL/3000	32105A	01.00	1906
BUILDINT	32150A	03.01	1623
*DS/3000	32190A	02.03	1906
*MRJE	32192A	00.05	1906
*MTS	32193A	00.02	1906
*EDITOR	32201A	07.04	1906
*SCIENTIFIC LIBRARY	32205B	00.04	1906
*DEL/3000	32206A	01.09	1906
*KSAM/3000	32208A	02.02	1906
VIEW/3000	32209A	00.00	1831+ VIEW
*COMPILER LIBRARY	32211D	00.08	1906
*FCOPY	32212A	03.08	1906
*COBOL	32213C	02.02	1906
*SORT/MERGE	32214B	02.00	1906
*IMAGE	32215B	01.01	1906
*QUERY	32216A	04.00	1906
TRACE	32222A	03.03	1814
XA2100	32223A	01.03	1814
XL2100	32226A	02.00	1636
PROG CONTROLLER	30361B	00.00	1621
30300B/30361B-BCS			
PROG CONTROLLER	30361B-1	00.02	1701
30301B/30361B-1-RTE			
RJE 2780/3780	30130E	00.02	1814
CALCOMP PLOTTER	30126A	00.01	1640
*DIAGNOSTICS	32230A	-- --	1906

DIAGNOSTIC INFORMATION IS CONTAINED IN THE FILE N00N230A.

* Products with asterisks are updated/changed by this Installation Tape and reference Note files containing information about the modifications.

Note files (N00NYYYZ) contain the change information where:

YYY = last three digits of the product number.
(For example, MPE is HP32002; therefore, YYY=002.)

Z = currently released version digit of product

MPE HP32002B.00.02

DATE CODE 1906, N00N002B.HP32002.SUPPORT

I. MPE 32002B.00.02

A. MODULES MODIFIED B.00.02

	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	X	X							
	SYSDUMP	1	X		X	X	X	X							
*	SEGPROC	2													
*	SEGDVR	3													
	DISPATCH	4				X									
	LOAD	5				X	X	X							
	UCOP	7				X	X	X							
	DEVREC	8				X	X	X							
	PROGEN	9	X		X	X	X	X							
	ININ	10	X	X		X		X							
	MEMLOGP	11				X									
	LOG	12		X		X									
	IOPTRD0	13				X									
	IOPTPN0	14		X		X		X							
	IOPLOT0	15				X									
	IOMDISC0	16													
	IOFDISC0	17													
	IOTAPE0	18	X	X		X		X							
	IOLPRT0	19				X		X							
	IOCDRD0	20				X		X							
	IOTERM0	22	X	X		X		X							
	IOPRPN0	24		X		X		X							
	IOREM0	25													
	IOMDISC1	27		X		X									
	PFAIL	30						X							

	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
	PVPROC	31				X	X									
	VINIT	32				X	X	X								
	MAKECAT	40				X		X								
	FILESYS	50	X	X	X	X	X	X								
	COMM'INT	51	X	X	X	X	X	X								
	STORE/RESTORE	52	X			X		X								
	DIRC	53				X	X	X								
	ALLOCATE	54	X	X		X	X	X								
	DISCSPC	55														
	MMCORER	56	X	X		X	X	X								
	MMDISKR	57	X	X		X	X	X								
	ABORTRAP	58		X		X		X								
	MESSAGE	59				X	X									
	CROUTINE	60	X	X		X		X								
	CLOCKIO	61	X			X										
	NRIO	62	X	X		X		X								
	PCREATE	63		X		X		X								
	MORGUE	64	X	X		X		X								
	PROCMAIL	65						X								
	PINT	66	X	X		X		X								
	DATASEG	67	X	X		X	X	X								
	CRIO	68	X	X	X	X		X								
	CHECKER	69				X	X	X								
	UTILITY	70	X	X		X										
*	SEGUTIL	71														
	LOADER1	72		X		X	X	X								
	RINS	73					X	X								
	JOBTABLE	74	X	X		X	X	X								
	DEBUG	75				X		X								
	NURSERY	76				X	X	X								
	STKDUMP	77														
	FIRMWARESIM	78				X										
	SPOOLING	79	X	X		X		X								
	SPOOLCOMS	80	X	X		X		X								
	PVSYS	81				X	X	X								
	UDC	82				X		X								
	USER	83				X										
	HELPUSER	84				X										
	LABSEG	86				X	X	X								
	SDISC	87				X	X	X								
	CATALOG					X	X	X								
	CICAT					X		X								

SYSTEM	LAST CHANGE NUMBER
B.00.00	0066
B.00.01	0134
B.00.02	0472

NOTE: Each change made to MPE is now identified by a unique change number in columns 64/72 (e.g. <<00120>>). This matrix provides the range of the change numbers used to build each version of MPE.

*Segmenter modules have been moved to HP32050.

B. ENHANCEMENTS

(NOTE: The unique fix identification number appears on the first line of each description, followed by the module name, module number (in parenthesis), and related SMR number, if any.

FIX NUMBER — DESCRIPTION

136. NRIO (62)
Added NULL procedure to satisfy a PROGEN PCAL for Series 33.

139. IOTAPE0 (18)
Set error status in TAPE DIT when encountering a TAPE error (for S.E. information only).

144. PFAIL (30)
Causes POWERUP to issue a request via ATTACHIO informing drivers which specify queuing in the DLT that a power failure has occurred.

145. VINIT (32)
New Commands:

COND XX;RECOVER: recovers lost disc space for private volumes if the user

a. is the only user logged on
b. has no temp files
c. no $OLDPASS

HELP: lists command syntax

146. CATALOG
PV messages 139, 160-164, 170 added.

148. CRIO (68)
LDEVTODRT added.

150. SYSDUMP (01)

a. Fix to tape channel program
b. Add checksum to coldload program
c. Allow system files unique to Series 33, specifically SOFTDUMP
d. Pass FUTURE'DATE flag to INITIAL for floppy disc support
e. Support SOFTDUMP Catalog changes, i.e. MAKECAT.

160. SYSDUMP (01)

a. Change message form from "MOUNT SYSTEM DISC #" to "MOUNT SERIAL DISC #" (for Series 33)
b. Update tape channel programs for coldload from tape.

176. PROGEN (09)
Add =DOWNLOAD ldn {,filename / MARGIN=[,DEFAULT]} command.

177. NRIO (62)
Add procedure to validate logical device as being correct type for ATTACHIO function.

178. CATALOG
Add messages in set 2, 3301-3320 for =DOWNLOAD command.

186. VINIT (32)
Change serial command to initialize gap table to -1 (sectors 4 & 5); necessary to support SDISC change #189.

187. ALLOCATE (54)
Alter size of allocated XDS for open SDISC to support SDISC change #189.

188. FILESYSTEM (50)

a. Allow variable length records to SDISC
b. Store PVINFO into FLAB(33) when file is open
c. Force AOPTIONS to NOT-NO-WAIT

189. SDISC (87)

a. Keep gaptable memory resident
b. Don't ask operator again for write ring after it has been rejected.

190. IOTERM0 (22)
If device is offline and file is opened; will speed sense with term type and speed from I/O configuration table. Will allow subsystems to write to devices connected to ATC.

192. CRIO (68)
Improve Multipoint terminal response time.

205. PROGEN (09)
MAINLINE altered: SDFINIT now called before welcome message.

243. NURSERY (76)
Allow QAP to leave intact all spoofles that are flushed for any reason.

243. COMM'INT (51)
Same as NURSERY, above.

244. PVSYS (81)
Additional change to expansion of MOUNT message for inclusion of new disc types.

245. PVSYS (81)
Expand mount message to include additional disc types: 7902 and 7906.

251. PVSYS (81)
Initialize array descriptors if not supplied as parameter to DISMOUNT procedure (declared variable).

254. COMM'INT (51)
File codes for VIEW/3000 added.

263. COMM'INT (51)
Allows inplicit setting of UV capability if CV is specified (XXXACCT and XXXUSER; where XXX is NEW or ALT).

266. SYSDUMP (01)
Allow "%" on input values to denote octal values to ease specification of 3000/33 I/O configuration.

273. MMDISKR (57)
Double TRU VALUE (TCINIT) for Series 33 using THISCPU intrinsic.

297. ALLOCATE (54)
Parameter P1 passed to ATTACHIO will have bit 15 set on terminal file close operations which represent the final deallocation of the device.

300. FILESYSTEM (50)
Remove limit of 64 shared files by permitting multiple shared system control block tables.

305. CATALOG

Added to Set 1:

13 LDEV#! POWERFAIL OR RESET
15 LDEV#! VFC INITIALIZED

for use with new IOLPRTO (2608 driver)

315. DEBUG (75)
The "H TERM" (HELP TERMINAL) command is not permitted on Series 33.

416. CATALOG
Implements account and system level UDC's.

416. COMM'INT (51)
Same as CATALOG #416.

416. UDC (82)
Same as CATALOG #416.

416. PROGEN (09)
Same as CATALOG #416.

416. NURSERY (76)
Same as CATALOG #416.

425. UCOP (07)
Increase maxdata for CI to handle larger buffer in STORE/RESTORE.

425. STORE/RESTORE (52)

a. Implement faster store/restore.
b. Implement ;DATE>=, ;DATE<= on STORE command.
c. Implement ;OLDDATE on RESTORE command.

425. SYSDUMP (01)
Implement faster store on SYSDUMP.

425. INITIAL (00)
Handle new STORE/RESTORE tape format on RELOAD.

425. CATALOG
Add messages for STORE/RESTORE enhancements.

436. IOLPRT0 (19)

a. Add Series III support for 2608 Line Printer (print and space, download VFC, download left margin only).

b. Rewrite entire driver for increased readability, maintainability (no external changes for existing line printers).

436. CATALOG
Add two new messages for use with IOLPRT0:

13 LDEV#! POWERFAIL OR RESET
15 LDEV#! VFC INITIALIZED

452. RINS (73)
New intrinsic LOCRINOWNER added.

C. CORRECTIVE SOFTWARE CHANGES

(NOTE: The unique fix identification number appears on the first line of each description, followed by the module name, module number (in parenthesis), and related SMR number, if any).

MAKECATE (40)
135. Fixes bug in MAKECAT so that it treats "&" and "%" as continuation character only when they are the last character in the line.

136. NRIO (62)
This fix adds NULL procedure to satisfy a PROGEN PCAL for Series 33.

137. SDISC (87)
Causes system to return error #%123 if operator denies write capability.

138. FILESYS (50)
Returns FSERR25 if ATTACHIO returns %123 as the error code.

140. IOPRPN0 (24) SMR# 3869
Prior to this fix, Card Reader/Punch would double punch column coded binary images.

141. MORGUE (64)
Mail waits will no longer cause processes to hang as they are KILLed or TERMINATEd.

142. PROCMAIL (65)

a. SENDMAIL and RECEIVEMAIL now return status 4 as described in the INTRINSICS manual.
b. Same as #142, above.

143. IOPTPN0 (14) SMR# 5175
Paper Tape Punch will no longer punch trailing blanks in ASCII mode.

144. PFAIL (30)
Causes POWERUP to issue a request via ATTACHIO informing drivers, which specify queueing in the DLT, that a power failure has occurred.

146. CATALOG (Supported Utility)
Messages 139, 160-164, 170 added for Private Volumes.

147. COMMAND INTERPRETER (51) SMR# 5254
VINIT can now be accessed with SM capability even if OP capability is not present.

148. CRIO (68)

a. Intrinsic LDEVTODRT added for Series 33.
b. GIP -- Unconfigured units can now interrupt without crashing the system.

149. STORE/RESTORE (52)
Now treats attempt to :STORE to a labelled tape or :RESTORE from a labelled tape as an error.

153. MMCORER (56)
Several timing situations which could result in NOMEM condition on small memory (128K or less) have been resolved.

155. FILESYSTEM (50) SMR# 5437
FRENAME previously did not check for fully qualified new files when attempting to rename a file across accounts, which resulted in the directory

being destroyed and a system failure 206 or 407. Rename is now disallowed across SYS/PV domains.

156. VINIT (32)
SERVOL - allows 7925 as serial disc.

157. FILESYSTEM (50) SMR# 4166, 4227, 5256
FCONTROL modified so that FCONTROL(6) on append only files won't destroy them. FCLOSE modified to eliminate hang due to SIR deadlock. FOPEN disallows append only access to labelled tape.

158. SYSDUMP (01)
CS Drivers will not be configured as core resident even if driver name is proceeded with an "*". A warning message is given if this is attempted.

159. INITIAL (00)
Same description as #158, SYSDUMP, above.

161. FILESYSTEM (50) SMR# 4153
It will no longer be possible to FOPEN a CS device. A FILESYSTEM error #42 will be returned if this is attempted.

162. CATALOG (Supported Utility) SMR# 5178, 5369
Changed CIERR 1016 and 1047 to give error if STORE/RESTORE is opened for labelled tape. Added FILESYSTEM Error #124 for appending labelled tape.

163. IOTERM0 (22) SMR# 3605
Loss of carrier to a modem terminal designated as a data entry device will no longer abort the controlling session.

165. PCREATE (63) SMR# 3326, 4702

a. Record Z-DL size for log records.
b. Record process priority increases for log records.

166. DATASEG (67) SMR# 3326
Allow recording of Max Stack size (Z-DL) in Process Termination Log Record.

167. LOADER1 (72) SMR# 3326
Log Max Stack Size Ever.

168. NURSERY (76) SMR# 4701
Corrected initialization of Max Priority of Job Termination Record.

169. LABSEG (86)
Change to allow operator to enter a volume ID of less than 6 characters for labelled tape.

170. SPOOLCOMS (80)
SHOWFILES - Prior to this fix, GETSIR LOCKOUT doing SHOWOUT (timing problem) could hang the system.

173. SYSDUMP (01)
Insures that bitmap (directory space) for directory size calculation is that of the system directory.

174. PVSYS (81)
Allows devices with "DOWN-PENDING" status to become "DOWNED" as last logical dismount is performed on a volume set.

175. DIRECTORY (53)
Remove INTERNAL from OPTION for directory procedure declarations. Need to be callable for SYSDUMP changes.

176. PROGEN (09)

a. =DOWN needed to check for a logically MOUNTed or RESERVED Private Volume before DOWNing device. (Should set DOWN PENDING.)
b. Add =DOWNLOAD ldn {,filename / MARGIN=[,DEFAULT]} command

177. NRIO (62)
Adds procedure to validate logical device as being correct type for ATTACHIO function.

178. CATALOG
Adds messages in set 2, 3301-3320 for =DOWNLOAD command.

179. SPOOLCOMS (80)

a. Make SHOWOUT, SHOWIN, DELETE options uncallable.
b. Fix SHOWOUT to indicate MRJE output files.

180. DEBUG (75) SMR# 3753
It will no longer be possible in DEBUG to modify the P register to point into the STT.

181. INITIAL (00)
Add 3270 software present/absent flag.

182. PROGEN (09)
Allow =3270 { } as an operator command.

183. FILESYSTEM (50)
Added a new AFT type for the 3270 (secondary) Emulator.

184. COMM'INT (51)
Added 3270 and 3270 mgr as allowable commands in the CI.

185. SYSDUMP (01) SMR# 5459

a. Fix to Series 33 tape channel code.
b. Support tape subtype 15 for coldload.
c. Move SIOBASE to accommodate Series III ucode. Coldload SIOPROG was read into %1000 and for SDISC it extended into %1400 which is used by Series III ucode. It has been moved to 4600 words below INITIAL's DL-REG ~40,000.
d. Allow replacement files for system programs to be on a private volume.

191. NURSERY (76) SMR# 5341
Default time limit for jobs and sessions fixed with this change.

193. LOADER1 (72) SMR# 4703
Corrected check for data segment too large.

195. IOTERM0 (22) SMR# 4130
Fix to terminal buffers not being handled properly for the following sequence:

```
RUN SUBSYSTEM
BREAK
STREAM
BREAK
```

196. LABSEG (86) SMR# 5490
Correct block count in EOF1 label to include truncated blocks. Make sure volume set ID matches and that next reel is correct reel # on reel switch.

197. SYSDUMP (01)
Enlarge LBUF to accommodate Series 33 tape coldload channel program.

199. FILESYS (50) SMR# 4153
A new system entry DFOPEN has been added to FOPEN which acts the same as FOPEN except that a Filesystem error #42 is returned to the file designated is not on a direct-access device.

200. COMM'INT (51) SMR# 4153
The PURGE and BUILD commands now return a File-system Error #42 if the file is not on a direct access device.

202. MORGUE (64)
A move instruction to a local array no longer writes outside the stack when the procedure is entered in split-stack mode. This corrects many random failures.

205. PROGEN (09)
Mainline altered so that SDFINIT is now called before welcome message.

208. SYSDUMP (01)
Prevents SIR deadlock with logging enabled and MOUNT/MOUNT REJECT messages cause SWITCHLOG.

208. FILESYS (50)
FCLOSE - remove hangs with SIR

a. when tape not ready
b. when DISMOUNT logging message causes a SWITCHLOG

209. IOTERM0 (22) SMR 5423, 5424
Fix for System Failure 19 and 21.

210. MAKECAT (40)
SCANCAT fixes bug introduced by Fix #135.

211. STORE/RESTORE (52)
Changes declaration for MOVAT procedure.

211. CATALOG
Adds message to $SET 9 (Load Error 92).

211. LOADER1 (72)
Mount program file's parent Home Volume Set if applicable.

211. PVSYS (81)
Addition parameter was added to allow passing in of a PIN# of the process for which the MOUNT operation will be performed. This function is optional. Same for DISMOUNT.

211. PROGEN (09)
Change declaration for MOUNT procedure to describe the addition of one new parameter.

211. LOAD (05)
Mount SL file's parent Home Volume set if applicable.

211. INITIAL (00)
Create SL type entry in Loader Segment Table with new size of 16*10 words. Old size was 15*10 words.

211. COMM'INT (51)
Change declaration for MOUNT procedure.

211. FILESYSTEM (50)

a. Change declaration for MOUNT procedure.
b. Create new procedure, FGETPVINFO. This uncallable procedure will return the PVINFO word from the FCB of an open file.

212. SDISC (87)
Allow REWIND or REWUNLOAD after SDISC has been unloaded without requiring SDISC to be toggled OFF/ON line.

213. SDISC (87)
Clear taperewound flag upon read or control to allow SDISC to be rewound more than once.

215. CATALOG
Update Set 19 - Serial Disc Error Messages.

215. SYSDUMP (01)
Fixes bug in directory space size calculation which causes SD 400.

216. LABSEG (86) SMR# 5490
Changed the security byte in ANSI standard labels to be set only if the tape file has a lockword.

217. ININ (10)
Calls to the decimal instruction simulation procedures have been placed in the UNIMPLEMENTED-INSTRUCTION trap of ININ.

219. IOPRPN0 (24) SMR# 5431
Speeds up punch operation.

220. NURSERY (76) SMR# 5528
This fix will leave the echo on for term type

222. CATALOG
Two messages were added for documentation purposes. They are not currently printed by system software.

223. STORE/RESTORE (52)
This change makes STORE write 3 consecutive EOF's on the last reel of a STORE or SYSDUMP tape, thus making it consistent with the MPE documentation.

224. DEVREC (08) SMR# 5658
Fix for system failures 204 and 249.

225. CRIO (68) SMR# 5252
An error message is now given when "HELLO, JOB or DATA" followed by only a non-alpha character is typed in while logged on.

226. UDC (82) SMR# 5492
Checking was added to prevent using system defined files and back-referenced files in the SETCATALOG command.

227. PROGEN (09) SMR# 5375
Removed command to get to DEBUG from system console.

228. STORE/RESTORE (52) SMR# 5631
Corrected RESTORE problem where file is on first volume of a sysdump tape and a subsequent volume is mounted first. The first volume is not recognized as a sysdump tape.

229. PINT (66) SMR# 5686
The SUSPEND intrinsic now returns CCL if the SUSP parameter is 2 (wait for SON activation) and there are no SON processes.

232. CROUTINE (60) SMR# 5551
See MMCORER description, #233.

233. MMCORER (56) SMR# 5551
MAM can now detect and correct a NOMEM condition which can occur on small memory (128K or less) systems. Consider a process which will fit in memory only if its stack is in Bank 0 and its XDS is in Bank 1. The NOMEM would result when the stack was placed in Bank 1. MAM now will detect the situation and move the stack to Bank 0.

234. IOTERM0 (22) SMR# 5203
HP2635 will no longer lose data if it runs out of paper.

236. LOADER1 (72) SMR# 5531
Maxdata=0 or less than -1 is caught as illegal maxdata.

237. PCREATE (63) SMR# 5531
Create returns CCG (regarding maxdata) only when MAXDATA granted is less than MAXDATA requested.

239. VINIT (32)

a. 7906, 7902 subtypes added
b. DTRACK now purges files with extents on tracks deleted or reassigned.
c. RECOVER option added to CONDENSE.

239. CATALOG
Messages for above VINIT fix and SDISC, below.

239. ALLOCATE (54)
Initialize fatal error flag for SDISC.

239. SDISC (87)
Reset EOF flag upon entry to allow WRITE/REWIND/ READ/REWIND/WRITE.

240. COMM'INT (51) SMR# 5657
() Command Logon no longer causes random system failures.

242. ALLOCATE (54)
Fixes system failure 19 problem caused by spooler.

244. MORGUE (64)
Added one parameter to declaration for DISMOUNT.

245. ININ (10) SMR#4670
An EXIT from a system procedure to a user segment via a clobbered stack marker will no longer cause a system failure 10. It will now result in an abort of the user process, as it should.

247. PROCMAIL (65) SMR#5753
A process which is in the process of terminating while its SON is in the process of entering a FATHER MAIL WAIT will no longer hang.

248. NURSERY (76) SMR# 5673
The logon subqueue is now recorded for both sessions and batch job initiations. If user without IA logs on from session, he gets no IA error message. If user without BA logs on from job, he gets no BA error message.

249. SYSDUMP (01)
Default value for maximum Directory size has been increased from 768 sectors to 1536 sectors.

250. SPOOLCOMS (80) SMR# 4865
The SHOWDEV COMMAND will no longer cause a system failure 9 if a job or session is in the process of logging on.

251. PVSYS (81)
Initialize array descriptors if not supplied as parameter to DISMOUNT procedure (declared variable).

252. SYSDUMP (01)
A SYSDUMP taken while the Global RIN Table is full will no longer result in a clobbered RIN Table being written to the tape. The bad RIN Table could cause the system to fail with System Failure 134 or 139.

253. FILESYSTEM (50)
The dynamic locking was using the wrong bit in the PMASK in FILE COMVALS. This problem is now fixed.

255. COMM'INT (51) SMR# 5754
A blank line in a batch job after the :CONTINUE command no longer causes system failures.

256. COMM'INT (51) SMR# 5208
File COMMAND.PUB.SYS now has UDC info removed after PURGEUSER or PURGEACCT.

257. COMM'INT (51) SMR# 5025
Missing C/R after command image when using COMMAND intrinsic no longer causes system failures.

258. COMM'INT (51) SMR# 5212
REDO after PURGEUSER or ACCT no longer causes garbage output and system failures.

259. CATALOG
New messages added for :STREAM and LOADER1:

- console message 68
- CI messages 1404-1406, 1444
- LOAD 77

260. ININ (10) SMR# 5539, 5540
System failure 129 will no longer be caused by a stack overflow occurring while an arithmetic trap procedure is in effect.

262. SPOOLING (79) SMR# 4948
STREAM now functions correctly when S is greater than 16K.

263. COMM'INT (51)
NEWACCT command was not cleaning up if command failed because of mount failure when SPAN was specified. The account entry would remain (without a USER entry) in the system directory. This has been corrected.

264. DEBUG (75) SMR# 5774
Altered to do some syntax checking for DV command, in particular check for negative addresses.

265. MORGUE (64) SMR# 5827
Disc space occupied by temporary files is no longer lost when a job or session logs off.

266. VINIT (32)
Makes EOT 'EOD' length #200 sectors for all serial discs.

266. SYSDUMP (01)
Allows "%" on input values to denote octal values to ease specification of 3000/33 I/O configuration.

267. COMM'INT (51) SMR# 5667
LISTF, REPORT, LISTVS did not reset EOF properly when output directed to existing files; thus previous file contents are not deleted. This fix allows EOF to be used properly.

271. JOBTABLE (74) SMR# 4487
The :RESET command has been corrected so that it doesn't reset existing file equations which are not related to the one being reset.

272. JOBTABLE (74) SMR# 4606
Redefining an existing file equation will no longer reset any file equations backreferenced to it.

274. COMM'INT (51) SMR# 5532
Whenever a user ran a program (i.e. RUN ...) or entered a subsystem, the JCW was reset to zero. Now only the two two bits, bit 0 and bit 1 are cleared.

275. COMM'INT (51) SMR# 5510
LISTUSER @.@ did not indicate which account the users were in. This has been fixed, along with similar problems with LISTVS and LISTF,-1.

276. COMM'INT (51) SMR# 5776
No page feed was emitted when doing a LISTF to $STDLIST in a job. This has been rectified.

277. INITIAL (00) SMR# 5923
System Failures 134, 310 and 139 will no longer occur when the system attempts to display I/O messages relating to the card reader.

278. CATALOG SMR# 5554
Added CIERR 81, stack too small for :STREAM to begin processing.

279. CATALOG SMR# 5663
CIERR 955 will be changed from "COMMAND REQUIRES OPERATOR (OP) CAPABILITY" to "COMMAND REQUIRES SYSTEM SUPERVISOR (OP) CAPABILITY" (so as to be consistent with documentation.

280. CATALOG SMR# 5738
Corrected CIERR 614-617.

282. DEBUG (75) SMR# 3067
Concerning the "PV" command: no check was being made for the "+" before the start sector. This omission resulted in system failures. A syntax error is now given when "+" is omitted.

284. UCOP (07) SMR #5668
See NURSERY, #285, below.

285. NURSERY (76) SMR# 5668
The Job Directory Table has been expanded to achieve backward compatibility with MPE II in terms of maximum number of file equations.

287. COMM'INT (51) SMR# 5763
CI no longer accepts commands of length greater than 268 characters (COMMANDS manual, pp 1-4).

288. IOPRPN0 (24) SMR# 3566
Card Punch hopper empty will no longer cause duplication of last card.

291. SPOOLING (79) SMR# 5498
The :STREAM command has been altered to give warnings in (1) the case of prompting (">") a command other than :JOB/:DATA is entered, when :JOB/:DATA is expected; (2) no :JOB/:DATA is

found in a STREAM file; (3) invalid commands precede a :JOB/:DATA in a stream file; (4) invalid commands follow last :JOB - :EOJ sequence in file.

293. ABORTRAP (58) SMR# 4071
A clobbered CST index in a stack marker will no longer be able to cause a SF9 or SF10 while :SETDUMP is in effect.

298. SYSDUMP (01)

a. Include DS-BIT when comparing for terminal DRT conficts to prevent DS-LINE linked to LDEV #12 conflicting with terminal on DRT #12.
b. Allow for device type range=5,6,7 in GETERMCTYPE procedure. Only allow classes of these devices to be created if all devices in the class have identical device types.

298. SDISC (87)
Fix to Backward Space file algorithm. Sets current pointer to beginning of EOF mark instead of at end of EOF mark.

301. CATALOG
Added CIERR 1645 (speed command) and 1646 (Series 33).

304. LABSEG (86) SMR# 5861
Corrected runaway of labelled tape when two are being read simultaneously. Corrected occasional invalid lockword violations on labelled tapes.

306. COMM'INT (51)
CXSPEED - Special Series 33 code added to insure that input speed and output speed are equal.

307. COMM'INT (51) SMR# 3130
LISTF now correctly calculates number of sectors used when:

a. Last extent is allocated
b. Last extent is smaller than the others
c. There is at least one unallocated extent

308. MMDISKR (57)
Returning a data segment when all data segments in the system are assigned will no longer cause a System Failure 176.

309. FILESYSTEM (50) SMR# 5507, 5352

a. RELEASE of a data set of a data base no longer gets a privileged file violation.
b. LDEV is no longer always zero in file label checksum error message.

311. SYSDUMP (01) SMR# 5880
Changed to disallow SPOOFLE extent size in sectors of any value not mod 4. This caused system failures when disc space was released.

312. NURSERY (76) SMR# 5226
When a !JOB card is missing a password, an error message is now sent to both the terminal and the system console.

313. NURSERY (76) SMR# 3384
The account manager is now allowed to logon if there is time left in the account, even if all groups have exceeded their limit. The system manager can logon when all time limits have been exceeded.

314. NURSERY (76) SMR# 5529
Regarding the "JOB" command: TIME=? was not recognized as a request for unlimited time. Now, both "?" and "UNLIM" result in unlimited time.

NOTE: Fix numbers 323/415 have been reserved for Series 33 changes.

418. FILESYSTEM (50)
FREAD did not recognize special terminal STOP characters in B.00.01. This is now fixed.

419. COMM'INT (51) SMR# 5681
Can now stream files with record length greater than record length of $STDLIST.

422. ININ (10) SMR# 3618
Bounds violation due to EXIT through a stack marker in which trace bit has been set - trap to CNTL-Y routine rather than abort. (Problem occurred on internal exits).

423. CHECKER (69) SMR# 3618
Upon exiting GETUSER mode a check is made for a pending CNTL-Y. If, as a result of the change in mode we may now execute the CNTL-Y trap procedure, we trap to CNTL-Y.

424. CATALOG
New error and warning messages 1407, 1479, 1446.

426. MMCORER (56) SMR# 3786
MAM LOCKSEG requests on IOFROZEN segments will no longer cause crashes at IOUNFREEZE time.

427. MMDISKR (57) SMR# 6020
Attempting to ALLOCATE or RUN more programs than the maximum number of processes as configured will no longer cause a System Failure 128. SF 128 has been removed from the system.

428. DATASEG (67) SMR# 6234
Changed so that shared extra data segments are correctly released from job/session domain if no processes are accessing them.

428. JOBTABLE (74) SMR# 6234
Same as #428, DATASEG, above.

429. FILESYSTEM (50)
Minor fix to >64 shared file mods. Corrects "vanishing" DST problem.

430. IOCDRD0 (20) SMR# 5327
Error logic is changed to recognize the difference between Read Check and Unit Failure, and to issue the appropriate message.

430. CATALOG
Two messages are added to the message catalog: READ CHECK and INVALID HOLLERITH. The current messages required a hopper number be reported; the 2893A Card Reader has but one input hopper.

431. DEVREC (08) SMR# 5731
A "DOWN" device will no longer "get stuck" in SYS ownership and be unavailable.

437. STORE/RESTORE (52)
Fix outer block RESTORE SL so it can be preped as a program.

440. INITIAL (00)
PROGEN code segment will no longer become permanently core resident.

441. FILESYSTEM (50)
FPROCTERM: deallocate specially reserved control block table.

444. LOADER1 (72) SMR# 6235
It is now possible to set breakpoints in LOADPROCed procedures.

445. DEBUG (75) SMR# 6021
Debug will no longer let you set Q below INITIAL Q.

447. MMDISKR (57) SMR# 3826, 4035
All data segments are now initialized to zeroes.

449. COMM'INT (51) SMR# 6131
The COMMAND intrinsic returned CCG when executing BUILD $NEWPASS, even though the build was successful. Also, you were not able to specify parameters when building $NEWPASS (the build failed). These problems have been corrected.

450. COMM'INT (51) SMR# 6035
LISTF.X.GROUP.HOMEACCT,-1 incorrectly required system manager capability when the account specified was the logon account. This now just requires account manager capability.

451. COMM'INT (51) SMR# 5982 A fix to UDC's to prevent the terminal from hanging after hitting break in UDC.

452. RINS (73) SMR# 6104
LOCKGLORIN intrinsic will no longer abort a process if called with an invalid RIN number. Instead it will return CCL as specified in the Intrinsics Manual.

454. SYSDUMP (01)
Regroup system program files into three sets (1) Those unique to Series I, II, III; (2) Those unique to Series 33, and (3) Those common to both.

455. SYSDUMP (01)
Corrects SYSDUMP to serial disc.

456. STORE/RESTORE (52)
Fixes pre-MPE III restore bug.

457. MMCORER (56) SMR# 6292
Contraction of the DL-DB area can no longer cause a SF 311, or SF 310.

458. SYSDUMP (01) SMR# 6145
SYSDUMP will now abort in batch when an error is made under either system program changes or system SL changes. Under the replace function of

system SL changes, if the replace fails and the segment in the SL you were replacing has been purged, you will now be given a warning message stating that this is the case.

459. INITIAL (00) SMR# 5961
INITIAL has been fixed to allow a new disc drive to be added during a cool start.

460. INITIAL (00) SMR# 5923
Double the initial stack size in IOMSG (PCB6) which is started up by INITIAL at load time.

461. SYSDUMP (01)
Adds NSYSPROG'ALL to enlarge size of SPC array.

463. INITIAL (00)
The appropriate error message will now appear after a stack marker trace.

464. IOLPRT0 (19)

a. Fixes bug in reporting "UFC INITIALIZED".
b. Doesn't report "POWER FAIL/RESET" if it occurs between jobs.
c. Fixes bug when printing 0-length record to CDC printer in prespace mode, would hang waiting for completion interrupt.

466. SYSDUMP (01)
Limits system program change compare for Series II to 8 characters.

467. SDISC (87)

a. Enlarge XDS to allow for more file marks on larger discs.
b. Speed enhancement to 757 algorithm.

467. ALLOCATE (54)
Enlarge SDISC datasegment to allow more EOF marks on larger discs.

468. INITIAL (00)
Reset PVINFO word in file label for system files as they are replaced during UPDATE, COLDLOAD, RELOAD of system's initialization.

469. FILESYS (50)
DFOPEN will allow remote opens.

470. INITIAL (00)
Allows for larger DL area in INITIAL when loaded in bank 1.

471. FILESYS (50)
Add call to GETREC to correct bug that caused EOT to be missed on Serial discs.

472. CRIO (68)
In TIP set the flag to indicate the direction of the carrier for half duplex modem.

D. DOCUMENTATION CHANGES

See HP 3000 COMMUNICATOR Issue Number 20.

E. KNOWN PROBLEMS

See HP 3000 Software Status Bulletin

II. SUPPORTED UTILITIES

A. UTILITIES MODIFIED

UTILITY	LEVEL
*DISKED2	00.01
*DPAN2	00.03
FREE2	00.01
*LISTDIR2	00.03
LISTEQ2	00.00
LISTLOG2	00.01
*PATCH	00.01
MEMLOGAN	00.00
MEMTIMER	00.00
SADUTIL	00.00
SLPATCH	00.00
*SPOOK	00.03
RECOVER2	00.00

* INDICATES UTILITY UPDATED/CHANGED BY THIS I.T.

C. CORRECTIVE SOFTWARE CHANGES

171. DISKED2 OB´ change:

a. To prevent stack underflow when converting base address.
b. With DUMP command, test to see if the 3rd parameter is equal to "A"; if so, NONUM flag is set true, otherwise "THIRD ´PARM´ INVALID" message is displayed. If NONUM is true, only the ASCII dump is given.

172. SPOOK This fix allows users to COPY/APPEND to a file with priority greater than outfence when printers are idle. Increase the range of printable characters beyond "Z".

204. SPOOK OUTPUT function allows operator to purge files, free up disc space as they are stored. Do not translate (upper shift) escape sequences.

221. DPAN2 Format change to make the evaluation of a dump more meaningful.

241. PATCH SMR# 4996 Now requires user to have write access to modify or access a file with PATCH.

446. LISTDIR2 SMR# 5401 LISTGROUP now includes private volume information:

a. Whether or not group resides on PV
b. MVTABX
c. Home VOL SET name

448. LISTDIR2 SMR# 4862 LISTDIR2 will now abort if it exceeds job/session time limit or if =ABORTJOB command is used.

462. DPAN2 Previous DPAN required Rec=4096 in FILE MDUMP command, if dump was on serial disc. It is no longer required.

SEGMENTER HP32050A.01.00

DATE CODE 1906, N00N050A.HP32050.SUPPORT

A. ENHANCEMENTS

207. SEGPROC (02), SEGDVR (03), SEGUTIL (71) Six new commands, a new intrinsic, and some new error messages have been added to the SEGMENTER:

New commands:
CLEANSL COPYSL CLEANUSL COPYUSL

New intrinsic:
CLEANUSL

New error messages:

94 - Unxpected end-of-file
95 - Invalid copy factor.
117 - Insufficient space in new SL file
121 - Unable to open new USL file
122 - Duplicate filename

Changes to old messages

5 - This message now also applies to CLEANUSL and COPYUSL
16 - This message now also applies to CLEANSL and COPYSL
93 - This message now applies to LISTSL when a specific segment has been requested

310. SEGPROC (02)

The SEGMENTER has been enhanced to allow linking of labelled common blocks of different sizes. In the case that labelled common is a different size, the largest labelled common will be used, and a warning message will be issued instead of the previous fatal error. The SEGMENTER will now list all occurrences of error #45 (actual parameters incompatible with formal parameters) so that all errors may be corrected in one preparation pass.

B. CORRECTIVE SOFTWARE CHANGES

164. SEGPROC (02)
If all entries are purged from a USL file, internal pointers were not correctly set up. This resulted in the SEGMENTER aborting the next time a COPY operation was performed.

198. SEGPROC (02) SMR# 3801, 2368
The SST linkage has been corrected for group and public SL files, such that when a segment being referenced by another segment is purged, the correct linkage will be generated to resolve the externals in the next level SL.

203. SEGPROC (02) SMR# 4000
The SEGMENTER will now print all occurrences of ERROR #67 common declared with different size, and ERROR #45 actual parameters incompatible with formal parameters during the prepare operation.

206. SEGPROC (02)
SEGMENTER will now flush its buffers to disc for RL, SL, and USL files when a fatal file error occurs. This will preserve the integrity of the files which did not get an error.

230. SEGPROC (02) SMR# 4586
The RL file will now be completely updated after the following operations:

```
LISTRL
RL
EXIT
```

231. SEGPROC (02) SMR# 5082
The SL file will now be completely updated after the following operations:

```
LISTSL
SL
EXIT
```

235. SEGPROC (02) SMR# 5553
'PREPARE-PROGRAM' - open program file as old file, but specify filesize just in case file equates to new file, then check explicitly for NEW PROG file.

289. SEGPROC (02)
FIXUPRL - fix of a bug created by moving the buffer flushing code from CLOSERL to FIXUPRL.

294. SEGPROC (02)
LISTUSL - Buffers are flushed to disc.

299. SEGPROC (02)
SEGMENTER error# 68 attempts to use block data on non-existent common will now be emitted as a warning and the Initialization skipped. On previous versions, this was a fatal error.

465. SEGPROC (02)
This fixes the bug where SEGMENTER would sometimes lay a segment across an extent boundary. Multi-extent SL's should work fine from now on.

SPL/3000 HP32100A.07.01

DATE CODE 1906, N00N100A.HP32100.SUPPORT

The SPL source was resequenced and combined with the maintenance file using the maintenance file from MIT 1844.

A. CORRECTIVE SOFTWARE CHANGES

1. SMR# 5320 - The index register is set to zero for a QASL shift. The SPL compiler did not reload the index register after the QASL shift if the same number is needed after the shift. This has been fixed on version A.07.01.

BASIC/3000 HP32101B.00.10

DATE CODE 1906, N00N101B.HP32101.SUPPORT

A. ENHANCEMENTS

1. The built-in function SFN has been added to BASIC. The syntax is: SFN(BASIClocalfilenumber). The file number can be a numeric constant, variable, or expression. Its value must be a valid local file number for a currently open file. SFN returns the corresponding MPE file number as a type-REAL number. [SMR# 4878]

2. BASIC has been enhanced to change the number of nested GOSUB's allowed from 10 to 20. [SMR# 5902]

B. CORRECTIVE SOFTWARE CHANGES

1. When an input character string was greater than 255 characters, the LINPUT statement returned the message "STRING>255 CHARACTER IN LINE xxx IN xxx" rather than properly discarding the extra characters. This problem has been corrected. [SMR# 4278]

2. The SET command caused the error "<var-name> IS NOT ACTIVE" whenever there was an attempt to change the value of a variable in COM. This has been corrected. [SMR# 4828]

3. The interpreter aborted when CONTROL-Y was typed in certain circumstances. As far as is known, all CONTROL-Y problems have been fixed. [SMR# 1797]

4. When a BASIC program INVOKEd a BASIC program which contained an error, the INVOKing program was destroyed. This problem has been fixed. [SMR# 4324]

5. Previously, BASIC inadvertently allowed the user to branch from one user defined function to another user defined function. This was not meant to be allowed (see p.6-5 of the manual). Anomalous errors occurred when a branch from one user defined function to another was executed. BASIC now ensures that there are no branches from one functio to another. [SMR# 4125]

6. The BASIC interpreter would abort whenever there was a series of two or more CHAINs executed and the last program CHAINed to contained an error. This problem has been corrected. [SMR# 5798]

7. The SET command produced the error message "ILLEGAL NUMBER OF SUBSCRIPTS" whenever there was an attempt to set the value of an element of a string array, rather than setting the value. This has been fixed. [SMR# 5806]

8. When invoking a program using the optional starting label, BASIC started the invoked program at 10000 if the label was greater than that. This problem has been fixed. [SMR# 6163]

9. Numeric arrays were not printed in correct format by the file MAT PRINT statement. This did not affect compiled programs. Including string arrays in a MAT PRINT list caused the error message "ILLEGAL DIMENSIONALITY IN LINE xxx" when the program was RUN or SAVE'd FAST. These problems have been corrected. [SMR# 6164]

10. There were two circumstances in which the "optional" semi-colon before the word USING was required in the file [MAT] PRINT USING statements even though the line was subsequently list without the semi-colon. They are:

    1) in a statement of the form
       [MAT] PRINT# <filenumexpr>;USING
       <image>
       when the <filenumexpr> ended with a simple variable reference

and 2) in a statement of the form
[MAT] PRINT# <filenumexpr>,<recnumexpr>
;USING <image>
when the <recnumexpr> ended with a simple variable reference.
This problem has been fixed. [SMR# 6165]

11. The SHOW command did not bounds check subscripts to string arrays. If a string array was subcripted by an invalid subscript in a SHOW command, the interpreter could have produced garbage results, or if the subcript was large, could have aborted. This has been corrected. [SMR# 6082]

FORTRAN/3000 HP32102B.01.01

DATE CODE 1906, N00N102B.HP32102.SUPPORT

The FORTRAN source has been combined with the Maintenance file from IT 1831 and resequenced. This was done by using the control card $EDIT SEQNUM=1000 when compiling. The resulting new file is the resequenced source called B.01.00. This is the first Maintenance file to utilize the new source file.

A. CORRECTIVE SOFTWARE CHANGES

1. SMR# 5207 - In statements of the form: <logical variable> = <char const> <rel op> <char const>, a value of .TRUE. was always assigned to the logical variable. This has been fixed.

2. SMR# 4138 - On rare occasions, the compiler dumped literals in the middle of the code generated for a COMPUTED GO TO statement. This caused the branches which were made by the statement to be incorrect, and the program would behave erratically. The compiler has been modified to place the literal pool in another location.

3. SMR# 4770 - The entry for user-defined traps in a USLfile was not marked inactive when a new trap entry was placed in the USLfile. The segmenter then became confused when trying to locate the correct RBM. The entry is now correctly marked inactive.

4. SMR# 5484 - In FORTRAN B.00.09, the control commands $EDIT, $IF, and $SET produce warning message #40-EXPECTED COMPILER CONTROL KEYWORD, and the commands are ignored. The commands are now executed correctly.

5. SMR# 2683 - Calling a routine declared as a system intrinsic (i.e. SORTINITIAL, STAT) from a FORTRAN program with a subroutine or function name as a parameter resulted in error #178-VALUE VS. REFERENCE. Subroutine parameters of intrinsics are now handled correctly.

6. SMR# 2508 - The FORTRAN compiler would abort with a BOUNDS VIOLATION when parsing the statement "READ (BUF(3.,*)" where BUF was a character array. In general, the problem would occur when the character array could not be correctly parsed. This has been fixed.

7. SMR# 3063 - When the system intrinsic WHO was called from two different program units (i.e. two subroutines) with each call using a different parameter list, the program would compile but then produce a Segmenter error during prep. The compiler was handling character simple variable parameters for system intrinsics in a manner which was unacceptable to the Segmenter. This has been fixed.

8. SMR# 4014 - Statements of the form:

```
C1(J)=COMPLEX(P1(J),P2(J))/CONJG(C2(J))
```

where C1 and C2 are complex arrays and P1 and P2 are real arrays, would result in a BOUNDS VIOLATION at runtime. This was a result of the index J being optimized incorrectly. The compiler now generates correct code for statements of this type.

B. DOCUMENTATION CHANGES

1. Table 3-3 on page 3-6 of the FORTRAN Reference Manual was changed to note that in a substring designator, the linear expressions indicating the first character and number of characters are first evaluated and then converted to integers.

2. Page 9-8 of the FORTRAN Reference Manual was changed to specify that if several program units are compiled separately and then combined into one USLfile using the Segmenter, the MORECOM parameter must appear at the beginning of each textfile involved if the MORECOM feature is to be used.

BASICOMP/3000 HP32101B.00.10

DATE CODE 1906, N00N103B.HP32103.SUPPORT

A. ENHANCEMENTS

1. The built-in function SFN has been added to BASIC. The syntax is: SFN(BASIClocalfilenumber). The file number can be a numeric constant, variable, or expression. Its value must be a valid local file number for a currently open file. SFN returns the corresponding MPE file number as a type-REAL number. [SMR# 4878]

2. BASIC has been enhanced to change the number of nested GOSUB's allowed from 10 to 20. [SMR# 5902]

B. CORRECTIVE SOFTWARE CHANGES

1. A compiled BASIC program which contained a branch out of a FOR-loop with type INTEGER FOR variable could produce anomalous results 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
```

   This problem has been corrected. [SMR# 5229]

2. The BASIC compiler would sometimes allocate the wrong address to a variable if there were very many (above 63) non-COM variables. This caused anomalous errors to occur during execution of the compiled program. This has been fixed. [SMR# 4612]

3. Evaluation of a string variable with a substring designator within a one line function or in a RETURN statement produced incorrect results. This problem has been fixed. [SMR# 4433]

4. A comparison of two substrings always compared as not equal when both of the following conditions were met:

   a. One of the substrings extended past the original (i.e. when A$="123", A$[1,4] will equal "123 ").

   b. The other substring did not begin at the beginning of the string (i.e. the comparison would work for B$[1,4], but would not for B$[2,5]).

   This problem has been corrected. [SMR# 4593]

5. A GOSUB statement inside a FOR-loop whose destination was inside the same FOR-loop caused incorrect code to be generated for subsequent branches out of the loop. This has been fixed. [SMR# 49]

6. Execution of a RETURN statement (for a GOSUB) from a line inside of a FOR-loop to a line outside of the FOR-loop caused anomalous results, including possible bounds violations or stack overflows. This problem has been fixed. [SMR# 5080]

7. The BASIC compiler aborted at %14.%4761 whenever a program contained a DATA statement with a type LONG constant in it. This problem has been corrected. [SMR# 4804]

8. A bounds violation or other anomalous result would occur when a user defined function was used within a subscript expression on the left-hand side of a LET statement. This has been corrected. [SMR# 3013]

9. The BASIC compiler produced invalid code for numeric LET statements which had an array reference on the left-hand side(s) and a user defined function reference within the right-hand side. A compiled BASIC program would evaluate the right-hand side before evaluating the subscripts of the lefthand side in this case. This could have yielded incorrect results if the user defined function changed the value of a variable used in a subscript expression in the left-hand side(s). This has been corrected. [SMR# 5737]

10. Multiplication of a complex array by a scalar in a MAT-MULTIPLY statement produced erroneous results. This problem has been fixed. [SMR# 5000]

11. In rare instances the BASIC compiler would abort at %13.%306 when an expression used a constant -1. This has been corrected. [SMR# 5587]

12. PRINTUSING of a negative number in an E-format without either and S or an M specification previously resulted in the number being printed without the sign. The number is now properly printed using the error format. [SMR# 5001]

13. REDIM of a type-LONG array in a program compiled with the INIT option did not work. This problem has been fixed. [SMR# 5002]

14. MAT PRINT of a numeric array resulted in two blank lines being printed after each row instead of just one whenever each row ended at the end of the print line. This has been corrected. [SMR# 5078]

15. A compiled BASIC program could abort with an "INTEGER OVERFLOW" error when a large string array was subscripted by a large subscript even if it was within the bounds of the array. This problem has been corrected. [SMR# 5846]

16. File [MAT] MAT PRINT USING to disc files resulted in an extra blank record after every record printed. This problem did not affect device files such as magnetic tapes or files equated to a line printer. This has been fixed. [SMR# 6166]

17. Attempting to list a runonly program produced the message "WARNING 84: UNKNOWN ERROR" rather than the correct message "WARNING 84: PROGRAM IS RUNONLY". The correct message is now printed. [SMR# 6169]

18. Execution of a [MAT] PRINT USING or a file [MAT] PRINT USING statement caused compiled BASIC programs to abort if the image was neither an IMAGE nor a string constant and the first item of the image was a literal. [SMR# 6168]

19. A "/" in an image used by a file MAT PRINT USING statement caused a line feed, but no carriage return during printing of a string array. [SMR# 6167]

20. A compile BASIC program could abort during execution of a RETURN from a GOSUB if the program also contained a file PRINT USING statement. This has been fixed.

RPG HP32104A.04.02

DATE CODE 1906, N00N104A.HP32104.SUPPORT

A. ENHANCEMENTS

1. Two new device classes have been added. The new device classes are $STDIN and $STDLST. If an input file is declared on $STDIN it will be opened as $STDIN. Output or display files on device $STDLST will be opened as $STDLIST. Two new error messages have been added to assure that the files are the correct file type for the device.

2. RPG will now check the key length and location when KSAM files are opened. If a KSAM file is opened with an invalid key, a runtime error #1 will occur.

3. Previously, if a KSAM file was opened as an ordinary sequential file, it was read sequentially by primary key. Now, a file may be read sequentially by key or by chronological order. To specify that a KSAM file be read chronologically enter a "C" in column 32 of the F spec.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR# 3486 & SMR# 4048 RPG did not list some defined and/or referenced indicators in the indicator cross reference table.

2. SMR# 4050 RPG did not emit an error message when the the last input or output record specification did not have any field specifications.

3. SMR# 4187 RPG will now flag with an error an F spec that defines a KSAM file without a key field location and length.

4. SMR# 4266 When matching records are used, and EOF is specified for the primary file. When the last primary record has been processed, RPG will process the next record in the secondary file if it does not have a matching field.

5. SMR# 4272 The DEBUG operation only displayed indicators defined or referenced in the program. It will now display all indicators on at the time the statement is executed.

6. SMR# 4447 When an entire array is printed using edit code X the elements will now be separated by two blanks.

7. SMR# 4569 RPG will no longer print an error 912 in reference to a pre-execution array.

8. SMR# 4938 RPG compiler aborted at location 25.3513 because of USL file generation problems. This has been fixed.

9. SMR# 4993 RPG will now check key definitions when KSAM files are opened.

10. SMR# 5049 On a file that called for ASCII to EBCDIC conversion, RPG was converting some packed decimal array elements.

11. SMR# 5117 RPG did not allow more than 21 indicators in calc and/or groups. The limit is now 24.

12. SMR# 5438 On a MOVEL of a numeric field to an alpha-numeric field, the sign was ignored.

13. SMR# 5778 The compiler aborted with an EOF on tempfile on a program with more than 1085 warnings. This will no longer happen.

14. SMR# 5813 In a program containing no input statements, total time operations conditioned by L0 were not skipped the first time through the cycle.

15. SMR# 6251 RPG is able to use the digit portion of a character (as in Hollerith character set) for record identification. Previously only the digit or +digit would work. The digit with either zone will now work.

16. SMR# 6379 The Segmenter aborted with error 81 (illegal patch) on a program that contained many EXIT instructions. This is now fixed.

C. DOCUMENTATION CHANGES

1. SMR# 4268 The reference to the "Low subfield" should be removed from line 3, page 8-56.

2. SMR# 5112 Page 8-22 should be modified to say that if factor 2 of a Z-ADD or Z-SUB operation is longer than the result field, and the actual contents of factor 2 is too long to fit in the result field, the result will be truncated from the left. No overflow will occur.

APL 3000 HP32105A.01.00

DATE CODE 1906, N00N105A,HP32105.SUPPORT

In addition to the program file, APL requires a set of PROMs mounted on the EIS board. This contains the extra instructions which APL executes. Without these instructions an illegal instruction error will occur.

Helpful definitions:

1. Arithmetic Progression Vector (APV) -The data structure used to represent simple integer vectors. It consists of three integers: start, increment and length.

2. Beaten Expression -An expression for which the code has been optimized by the compiler. The functions TAKE, DROP, REVERSAL, TRANSPOSE and SUBSCRIPT manipulate the data descriptors, not the data itself.

A. ENHANCEMENTS

1. The internal representation of integers has been changed from single to double words. The average user will see little effect from this change. However, it changes the limitation on the size of arrays which can be processed by APL from 32,767 elements to 2,147,483,647 elements. Applications which used the fact that integers were single words may require modification.

2. A number of additional system commands are available under program control. These include)LOAD,)COPY,)PCOPY,)SAVE,)CONTINUE,)OFF,)LISTF,)LIB and)RESUME.

3. A commercial formatter, []FMT, has been added.

4. A component file system especially designed to handle APL data has been implemented. The APL 3000 File System is based on KSAM/3000, an indexed sequential file system. The files produced are KSAM files and can be manipulated by the various KSAM utilities such as KSAMUTIL and FCOPY.

5. External Procedure Calls enable the user to link to SPL procedures almost as if they were APL user-defined functions.

6. To improve the security of applications environments, users can LOCK functions, LOCK captured environments and have errors trapped in a userdefined error handler in the workspace.

7. The syntax for a number of system commands has been enlarged to allow them to interact with other systems that may be linked to the user's system via a DS/3000 line. The commands affected are)COPY,)DROP,)LOAD,)PCOPY and)SAVE.

8. The)TERSE and)VERBOSE system commands have been eliminated. Terse error messages will automatically be given. If the user wishes to see a verbose message, a '?' followed by a carriage return will produce the verbose message corresponding to the last error encountered.

9. The)DEPTH command has been eliminated to allow recursive function calls to go as deeply as necessary.

10. The CONVERT system function, []CV, has an additional conversion type. A left argument of 6 converts from characters to a Boolean vector representing the bit values of the characters. A left argument of -6 converts from a Boolean vector into characters. If the length of the Boolean vector is not a multiple of eight then the excess number of trailing elements are ignored.

11. The ACCOUNT INFORMATION system function, []AI, has been changed to conform with the same position meaning as IBM's APLSV to facilitate conversions. []AI now returns a four-element vector. The first and fourth elements are zero. The second element is the process time in milliseconds and the third element is the real time since the start of the process. Timing starts when the user logs on to APL.

12. The MONITOR VALUES system function, []MV, now returns four items of information for each function line. In addition to the execution count and CPU time, it now returns the number of binding errors and page faults for each line.

13. The)COPY and)PCOPY commands have been modified to detect those items in a workspace which may be causing system errors. If, during execution of one of these commands, a 'damaged' data item or function is detected, that item is not copied. The name of that item or items will be displayed in the NOT COPIED message preceded by an asterisk.

B. CORRECTIVE SOFTWARE CHANGES

1. Dyadic Format (Thorn) was not returning temporary storage to the virtual memory free list. This caused workspaces to grow in size and run slower over time. The same problem existed with MATRIX DIVIDE. This has been corrected.

2. Using a long non-APV vector as an index to a large matrix sometimes resulted in a CPU loop. This has been corrected.

3. In some cases reshape of an APV was not producing the correct result when the increment was greater than one. This has been fixed.

4. Indexing a matrix when one of the indexes was created by the TAKE of an APV was producing an INDEX ERROR. This has been corrected.

5. Some expressions which contained the RESHAPE of a REVERSAL were producing incorrect answers. This has been fixed.

6. A precision error in formatting very large numbers was fixed.

7. Some calculations with very large numbers (>2*47) produced incorrect answers. This has been corrected.

8. COPYing of empty data items was producing bad addresses which could cause system errors. This has been fixed.

9. An error in the compress (/) function was sometimes damaging workspaces and causing APL system errors. This has been corrected.

10. The editor was giving an ILLEGAL NAME error message if there were any characters following the name in a VECTOR or MATRIX command. This has been fixed.

11. An APL system error was being caused by trying to display a character variable containing carriage return characters during a batch job. This is now handled correctly.

DS/3000 HP32190A.02.03

DATE CODE 1906, H00H190A.HP32190.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES.

1. Remote READs now preserve the byte in the user's buffer following a received record with an odd number of bytes. This problem previously caused blanks to be inserted in certain cases during remote editing (via EDITOR or REDO.) An example:

```
:REMOTE SHEWJOB
 ^
UNKNOWN COMMAND NAME.  (CIERR 975)
:REMOTE REDO
SHEWJOB
  DIO
SHO WJOB
```

2. A timing problem involving remote session termination and creation has been solved. Previous to to this release, a long stream of :REMOTE HELLOs would cause other unrelated jobs with DS activity to receive spurious message rejects.

3. A problem causing spurious rejects in PTOP programs has been removed.

MRJE/3000 HP32192A.00.05

DATE CODE 1906, N00N192A.HP32192.SUPPORT

A. ENHANCEMENTS

1. JULY 30, 1978

- Enhanced MRJE output routing to send received print/punch data to the unsolicited output device if the user specified file couldn't be opened successfully.

- Enhanced MRJE so that if the joblogger or output process terminate unexpectedly, the MRJE system will shutdown. Also added message:

  "MRJE(hostid) ERROR: SON PROCESS DEAD"

  if this event occurs.

2. AUGUST 31, 1978

- Enhanced MRJE such that no console messages are lost if a user is in the console mode of the MRJE user subsystem.

- Enhanced the MRJE user subsystem so that when one issues a DISPLAY JOB command with various job numbers and ranges of job numbers, only enough EOF messages are issued to make clear what happened instead of having one EOF message per violation.

3. NOVEMBER 1, 1978

- Changed message resulting from purging all of the job log so that it no longer seems that the file itself is purged.

- Added messages that indicate whether or not the spool file associated with a submitted job is purged as the result of a CANCEL command.

- Enhanced the CANCEL command and the job log so that if a system failure occurs between the time that a job is submitted and the time that a CANCEL command is issued for it, the wrong spool file will be deleted. In fact, no spool files are deleted in such a situation.

B. CORRECTIVE SOFTWARE CHANGES

1. JUNE 13, 1978

- Corrected incorrect reply to a special forms message in HASP 3.1 hosts.

- Corrected incorrect print banner decoding in HASP 3.1 hosts.

- Corrected incorrect $S RM##.PR# console message generated in responce to a LOAD FORMS request.

- Corrected problem with display of user host command, if the command has imbedded blanks.

- Corrected problem with punch output being routed incorrectly if the jobnumber had an imbedded zero.

- Corrected problem with "NO 3000 JOB NUMBER FOR HOST JOB XXXX" whenever a job is on the JES2 reader and a $DA is entered on the JES2 console.

- Corrected potential protocol problem; MRJE sometimes responded with text to a host wait-a-bit message.

- Corrected a problem of writing to a KSAM file a record because trailing blanks were truncated.

- Corrected a problem with routing returned data to a spooled reader-punch.

- Corrected a problem with MRJE being active, but a kill insists the system is not active.

2. NOVEMBER 1, 1978

- Corrected condition where the end of file record for an incoming punch file went unrecognized. SMR6158

C. DOCUMENTATION CHANGES

An MRJE/3000 Reference Manual is available (32192-90001).

An MRJE/3000 manual update is available (32192-90001 UPDATE).

D. KNOWN PROBLEMS

1. 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.

MTS/3000 HP32193A.00.02

DATE CODE 1906, N00N193A.HP32193.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. The problem with the MPLINE...TRACE command parameters was solved. All the parameters are now properly passed to the CS intrinsic even if the MPMON stack is expanded.

2. The problem known as "double ENTER problem" was solved. This problem could have caused the same data to be passed to two consecutive reads.

3. If a write error occurs and the retry count is exhausted, data will not be lost. A continuous attempt wiil be made to write until the error condition is removed and the data is successfully accepted by the terminal.

EDIT/3000 HP32201A.7.04

DATE CODE 1906,N00N201A.HP32201.SUPPORT

A. ENHANCEMENTS

1. The EDITOR will now save the file code for all FORMAT=DEFAULT files. If this is not desired then a file equation will have to be used.

2. The CHANGE command has been enhanced to use LAST/FIRST for each line instead of the current line. The format for this is:

```
{ FIRST      +       }
{        | { - } n | }
{ LAST       -       }
{ n                  }
```

3. The above syntax is now valid for column positions in any command that takes "position".

4. When SET SIZE is used, the work file will have room for at least that many lines.

5. The colon (:) command is now allowed in WHILE blocks. This could be used with the Z::= command to iterate MPE commands. Also it can be the last command on a multi-command line.

6. The ADD ,HOLD will no longer terminate the ADD command if the hold file is empty.

7. When a negative length is returned from an user procedure in the PROCEDURE command, the current line is deleted.

8. In the WHILE command, the trailing ";" or CR will no longer be printed during iteration.

9. The range form of the FIND command has been enhanced to act as the LIST command. That is, if FIND 1/200 is used, then this will find the first line (1) or the first existing line before line 200. Also the FIND command with a range limits the search for a string more effectively. That is,

```
F "abc"/100
```

would search for "abc" from the pointer to the end of the file and then compare the position with line 100. Now it will stop searching at line 100.

10. If the JOIN command is attempted on a KSAM file a warning message is produced. That is,

```
**** WARNING FILE IS KSAM
```

11. The KEEP command for FIXED length records will now pick the optimal blocking factor for files of less than 200 records. For over 200 records it will choose larger blocks using version 7.02's method.

12. Variable length binary record files will be treated as ASCII type. If the blocksize is less than 256 then the warning message will no longer be printed.

13. Typing control-Y during the Z::= command will also stop any WHILE block.

14. When KEEPing to a non-disc device the EDITOR will no longer create two files or operator requests.

****

15. The work file, K file, will only have 4 extents out of 16, initially allocated.

****

16. When an empty file is TEXT in, error 23 with EOF file system error, 0, will be produced.

17. Errors will be printed out in long form by default. If the previous method is desired, a number, then the message after any non-carriage return, then set PARM bit 12. That is, ;PARM=8.

18. The EDITOR user interface procedures can now be in non-system SLs. To use them, the EDITOR must be run with PARM=16, that is, the bit (11:1).

```
RUN EDITOR.PUB.SYS;PARM=16
```

This is the only way to activate them, even if they are in the system SL. A simple UDC can be made to facilitate this change. The order of searching is GPS. Along with this change the dummy segment HP32201'USERSEG has been removed from the system SL. Therefore old versions of the EDITOR will no longer work.

19. The user interface procedure, HP32201'USERINIT's result has been changed so that users can selectively use either the user-add or user-command procedures. Bit 15 refers to USERCOMMAND and bit 14 refers to USERADD.

20. The PROCEDURE command now has access to the array USER-SPACE. It contains the input and output file numbers. Its description is with the user interface procedures. To access it, use PROCSPACE (-10 <-> -1).

21. When KEEPing to a VARIABLE file, the number of extents will be 16.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR# 1919 - commands can follow WHILE blocks.

2. SMR# 3042 - DELETE combined with margins will work consistently. That is, characters to the left of LEFT on first line and to the right of RIGHT on the last line will be saved.

3. SMR# 3356 - REPLACing beyond RIGHT margin now works consistently. Also the ,HOLD,NOW options work correctly.

4. SMR# 3357, 3358, 3359 - the ADD command will no longer ADD past 999.998 when FORMAT=COBOL. Also when error 15 occurs, the pointer line and record will match.

5. SMR# 4951 - if the TEXT file is a spooled input file then file code will be 0.

6. The JOIN command will correctly use the TO and BY parameters to calculate the number of lines that will fit. This occured when an existing line was less than BY away from the last line to be added. It will also use the 999.998 limit when FORMAT= COBOL. Also the default TO line will be consistent with the ADD command.

7. SMR# 5487 - LIST OFFLINE in WHILE blocks will produce only one file.

8. SMR# 5562 - the short forms of TEXT and KEEP will correctly check the file's group and account with the logon group and account.

9. SMR# 5588 - the FIND command will no longer fail to find a string when the FIND command is followed by a command with a slash ("/").

10. Using the entry point BASICENTRY with a nonexistent file will no longer cause the first command to go wrong. The first command will be rejected if the implied TEXT fails. Also the JOIN command is now allowed.

11. SMR# 5639 - KEEPing to $NEWPASS is corrected. To access this file, TEXT $OLDPASS.

12. The FIND command will now correctly find any special characters, codes 0-255.

13. SMR# 6043 - typing control-Y before JOIN has processed a line would produce a bounds violation.

14. SMR# 6255 - the EDITOR would not disallow file equations when testing for save access, before purging a file, during a KEEP.

C. DOCUMENTATION CHANGES

1. Add to paragraph 3-66, KEEP, the default KEEP file is limited to disc files on the local computer. If a device or remote file is being used then a "*" and file equation must be used.

2. Add similar text to paragraph 3-102, TEXT command.

3. Change syntax of startcolumn and stopcolumn on page 3-5 to indicate new enhanced syntax.

4. Change syntax of position on page 3-4 to indicate new enhanced syntax.

5. Remove restriction of : command in reference to WHILE blocks and being in column one.

6. Add paragraph 3-36, FIND, the example of:
   FIND "AJAX"/100

7. Add to page 3-4, range, if a range has line numbers then it includes all lines between them, even if they do not exist.

8. Add to paragraph 3-35, FIND, FIND finds the first existing position in a range.

9. Add to paragraph 3-59, JOIN, JOIN starts with FROM or the first available line number.

10. Add information about the new error reporting scheme. Including the PARM option.

11. Add information about use of PARM option to use user interface procedure.

12. Change documentation of HP32201'USERINIT to show the various result bits that can be returned.

13. Add to PROCEDURE, the fact that it can access USERSPACE.

SCIENTIFIC LIBRARY/3000 HP32205B.00.04

DATE CODE 1906, N00N205B.HP32205.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

SMR# 6262 - The LGAMMA function aborted if the value of its first parameter was less than 8. This has been fixed.

SMR# 5758 - The DERF and DERFC functions returned incorrect results for some parameters. Correct results are now returned.

DEL/3000 HP32206A.01.09

DATE CODE 1906, N00N206A.HP32206.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. Occasional OPENTERM failures when using multipoint terminals have been caused by incorrectly performing "timed" status reads in the OPENTERM procedure.

2. The DEL procedure READTERM incorrectly homes the cursor before the call to FREAD if the read is to a multipoint terminal. Thus, if using multipoint, the application can not "pre-initialize" the first few unprotected fields and leave the cursor sitting at the first uninitialized field.

B. KNOW PROBLEMS

1. SMR# 3898. FORMAINT - attempting to create a forms file without save capability causes the system to run out of virtual memory or disc space.

2. SMR# 4455. FORMAINT - cannot create/modify a form when using either the line drawing or large character sets.

3. SMR# 4313. DEL/3000 does not work over a half duplex data link when in page mode. A call to OPENTERM causes the terminal to home the cursor, clear the screen and halt execution of OPENTERM.

4. SMR# 5145. FORMAINT - the upper/lower range fields in the Edit Specification form carry over to the next edit.

5. SMR# 5453. FORMAINT does not clear the screen upon exit.

6. SMR# 5385. FORMAINT - when the message "NO ROOM IN FILE FOR MODIFY" is encountered, the user can not return to the main menu by pressing F8.

KSAM/3000 HP32208A.02.02

DATE CODE 1906, N00N208A.HP32208.SUPPORT

A. ENHANCEMENTS

1. Two new control codes 6 and 7 have been added to the FCONTROL intrinsic:

   a. (SMR# 6059)

      Control code 6 is equivalent to control code 2 (which posts the key buffers, data buffers and KSAM control information, i.e., KSAM EOF etc.) plus the posting of the MPE EOF and extent bit map. Note that the MPE EOF, after calling FCONTROL with code 6, is positioned to the beginning of the data block next to the last block used and not to the record next to the last record used. This means that the MPE EOF leads the KSAM EOF. However, this will not cause any problems when accessing the KSAM file since KSAM only uses it's EOF. When using FCOPY to reload the file, the user should use option KEY=0 which uses KSAM EOF instead of option NOKSAM which uses the MPE EOF. In those cases where NOKSAM option must be used (e.g. key file is lost) the user should use the SUBSET option to copy the valid records. If the KSAM file is opened for shared access, the file has to be locked before calling FCONTROL with code 6.

   b. (SMR # 6153)

      Control code 7 is used to empty the key block and data block buffers (set flags) and to read the KSAM control information (first two sectors of key file) from the disc. In a multi-user environment a KSAM file has to be locked in order to read the most up-to-date information (one of the functions of FLOCK is to empty the key and data buffers). This is because KSAM does not have a global control block shared by all users and the modifications made to the file by one user are not reflected in other user's control blocks. In this environment FCONTROL with code 7 can be used before a read operation to force subsequent reading from the disc. This intrinsic has less overhead than FLOCK because the file is not locked and hence does not have to be unlocked. However, since the file is not locked

there is no guarantee that the record being read by one user is not being modified or deleted by another user. Therefore, the read operation should be performed immediately after calling the intrinsic and the same record should be re-read (after locking the file) before any modifications to ensure its content and existence.

2. (Part of SMR# 6060)

FOPEN has been modified such that when a new KSAM file is created the key file MPE EOF is set to be equal to the file limit. This simplifies the recovery process; any key block in the key file can be accessed after a system failure (see below). The user may use the VERIFY command of KSAMUTIL to determine the KSAM internal EOF for the key file which is under the title "KEY FILE EOF". For an existing KSAM file created before this version, the key file MPE EOF will be reset to the file limit when it is first opened.

3. There are some major enhancements for KSAMUTIL which include three new utilities to analyze and recover a KSAM file.

   a. For all commands allowing OFFLINE option (listing on printer) a file equation with file name KSAMLIST can be used to override the default device class LP. Control-Y can be used during the execution of the KEYDUMP and KEYSEQ commands to interrupt the process.

   b. (SMR # 6100)

      A new option OFFLINE has been added to VERIFY command to allow listing on the printer, for example:

```
VERIFY myfile;OFFLINE
```

   c. In all commands except PURGE, SAVE, ERASE, BUILD, if no options are specified the file reference is optional and the file last referenced is used. Also the file reference can be a back referenced, for example:

```
VERIFY myfile

VERIFY
```

      the second VERIFY will display informations of myfile.

d. (SMR# 6101)

MPE commands can be executed in KSAMUTIL by entering colon followed by the command name, for example:

```
>:LISTF  myfile
```

e. (SMR # 6102)

A new command, KEYSEQ[KS], has been added in KSAMUTIL to verify the key sequence order. For a key sequence (first key or second key, etc.) this command compares all the key values to ensure the ascending sequence order is maintained. The key value numbers (e.g. 3 for third or 5 for fifth key value) is displayed for those out of sequence order. It is important to note that if any of the key values of any key sequence is out of sequence (unrecoverable structural damage of the key file) the KSAM file has to be reloaded. The syntax of the KEYSEQ command is:

```
KEYSEQ      [<filereference>]
[KS]        [;SEQ=<keysequence>]
            [;OFFLINE]
            [;NOLIST]
```

SEQ — to specify the key sequence to be verified, e.g SEQ=1 for the first key sequence, SEQ=2 for the second key sequence and so on. The order of the key sequence is the same as that in the VERIFY command.

OFFLINE-- to obtain a listing on the printer.

NOLIST--- to suppress the listing of the key value number of the key value which is out of order.

The key value numbers obtained can be used as a referenced parameter in the SUBSET option of KEYDUMP command (see below) For example, if the key value number is 4 (means fourth key value is out of sequence) then

```
KEYDUMP myfile;SUBSET=3,3
```

will display (see f below) three key values starting with the third key value, i.e. third, fourth and fifth key values.

f. (SMR # 6102)

A new command KEYDUMP[KD] has been added to KSAMUTIL to obtain a formatted, structural key file dump. The dump basically consists of three columns:

KEY	REC. PTR.	KEY BLOCK ADR.
0001	3	2(4)
0002	5	2
0003	6	2
0004	2	2
0005	1	-- 6(2)
0006	0	18(5)
0007	4	18
0008	9	18
0009	7	18
0010	8	18
0011	10	-- 6
0012	11	24(3)
0013	12	24
0014	13	24

This is a B-tree with 14 key values and the tree has 2 levels. The first column is the key values in ascending order, the second column is the record pointer which is the relative record number for fixed length files and word offset for variable length files, the third column is the key block address of the key block in which the key value resides. Since each key block consists of the same number of records (128 words), the key block address is the relative record number of the first record. Note that there are four key blocks in this B-tree, that is, key block 2,6,18,24. Block 2 contains 4 key values as indicated in parentheses, similarly, block 6 contains 2, block 18 contains 5 and block 24 contains 3. The indentation of the key block addresses indicate the level of the B-tree. For example, blocks 2,18, and 24 are leaf blocks and block 6 is the root block. Also note that key values 0005 and 0011 are both in block 6. Integer,double and packed decimal key values are converted to ASCII and a subset of the tree can be dumped by using the SUBSET option in which generic and approximate search can be specified. The syntax of the KEYDUMP command is:

```
KEYDUMP       [<filereference>]
[KD]          [;SEQ=<keysequence>]
                    [[[-]<position>]]
          [;SUBSET=I                I
                                    [,<number>]]
                    ["char-string"  ]

              [;FILE=<file>]
              I           I
              [;OFFLINE   ]

              [;SORT]
```

SUBSET-- to dump a subset of key values.
<position>- to specify the starting key value, e.g. 1 for first, 2 for second key values and so on. Negative sign can be used to specify no indentation of key block addresses.

char-string-to specify the starting key value to be the same as charstring. Generic key can be used for byte type and approximate key for integer or double type.

<number>--- to specify number of key values to be dumped.

```
SUBSET="1234",3
```

means 3 key values are to be dumped starting with a key value of 1234 (key type could be byte,integer or double)

```
SUBSET=2,100
```

means 100 key values are to be dumped starting with the the second value.

FILE------ to specify information to be dumped to the file named <file>. A file will be created for the user with record size

keylength(round up to word) +
2 words(record pointer) +
2 words(key block address)

The default block size is 1k word. The user may set up a file equation to override everything except the record size. For example,

```
:FILE  file;REC=,100;DEV=TAPE

KEYDUMP myfile;FILE=*file
```

This will dump the primary key sequence to a tape unit.

SORT------ to specify that the record pointers are to be sorted before dumping to the user specified file. Note that this option has to be used together with the FILE option.

g. (SMR # 6060)

A new command KEYINFO[KI] has been added to KSAMUTIL to obtain information regarding the key file and attempt to recover a KSAM file after a system failure. The syntax of the command is:

```
KEYINFO[KI]  [<filereference>]
             [;OFFLINE]
```

This command has two steps:

Step 1.

The KEYINFO command reads the key file and collects information necessary to display the following:

```
# OF LEVELS OF B-TREE
# OF KEY BLOCKS
# OF SECTORS PER KEY BLOCK
# OF KEYS IN ROOT KEY BLOCK
# OF KEYS IN B-TREE
% OF KEY BLOCK UTILIZATION
THE LARGEST KEY BLOCK ADDRESS
```

OF KEYS IN ROOT KEY BLOCK

This is the number of key values in the root key block of the B-tree. If this number is equal to the key blocking factor (under the title "KEY BF" of the VERIFY command) then the next root key block split will increase the level of the tree by one and this will degrade the performance.

OF KEYS IN B-TREE

This is the total number of the key values in the B-tree, i.e. the key sequence. This information is very useful in analyzing the file. This number

should be the same in each B-tree of the key file and should equal to the number of active records (records not flaged deleted) in the data file. (to find the number of active records in the data file, the user may use FCOPY:

```
FROM=myfile;TO=$NULL;KEY=0
```

For each active record there is one and only one key value in each B-tree (key sequence) pointing to it. However, for multiple-key KSAM file the user may observe that, after a system failure, these numbers may be different among B-trees because some of the key values are posted to the disc but some are not. Also, a substantial difference between these numbers indicates that the system failure occured during a key block split.

% OF KEY BLOCK UTILIZATION

This is the average utilization of all key blocks (except the root block for multi-level tree). Better performance for retrieval is achieved with a higher percentage of utilization. The utilization is between 50% - 100% for a multi-level tree and between 0% - 100% for a single-level tree.

THE LARGEST KEY BLOCK ADDRESS

This is the largest key block address encounted in the B-tree. Note that the key file KSAM internal EOF should not be less than this address plus the number of sectors (key file record) per key block, otherwise the key file EOF has been damaged (which will be reset automatically at the end of this step).

Since the MPE EOF of the data file is not posted to the disc until the file is closed (or FCONTROL with code 6 is called with this version of KSAM) and the KSAM EOF (in fact all control information including key file internal EOF) is posted when the file is unlocked (or FCONTROL with code 2 is called), the MPE EOF is always less than the KSAM EOF after a system failure and thus some of the records beyond the MPE EOF are not accessible. Therefore, part of this command's function is to reset the MPE EOF to be the same as the KSAM EOF if the MPE EOF is less than the KSAM EOF (and generate a message). This command also makes sure that all key blocks are within the key file internal EOF.

Step 2.

The second step of this command is optional (user will be asked to enter Y or N or CR). What it does is to delete (from the key file only) those key values (invalid key values) which point to the records beyond the data file EOF. IT IS VERY IMPORTANT TO NOTE THAT THIS STEP IS REQUIRED AFTER A SYSTEM FAILURE. The number of invalid key values deleted is reported at the end of the process. However, if the number of valid key values (equal to # OF KEYS IN B-TREE from step 1 minus the number of invalid key values deleted, or obtained from the rerun of step 1) are still different among B-trees then the KSAM file has to be reloaded because it has records with missing key values, i.e. records can be accessed via one key sequence (e.g. primary key sequence) but not other sequences (e.g. secondary key sequence). If the number of valid key values are the same among the B-trees then, usually, this indicate that the file is not damaged.

B. CORRECTIVE SOFTWARE CHANGES

The following bugs have been fixed in this version:

1. (SMR# 4443)
   KSAMUTIL'S PURGE command will purge the wrong file if a file equation has been used.

2. (SMR# 5780)
   KSAMUTIL'S BUILD command creates an extra user label for the data file.

3. (SMR# 5937)
   A job stream will terminate in an error state if any of KSAMUTIL'S command fail, such as purge of a non-existent file.

4. (SMR# 6273)
   When KSAMUTIL'S ERASE command is used without a file name, the last referenced KSAM file is erased.

5. (SMR# 6274)
   When KSAMUTIL'S PURGE command is used without a file name, the wrong error message (end of file) is issued.

6. (SMR# 6294)
   KSAM'S intrinsic FCONTROL with control code 2, does not check to determine whether the file is currently locked before flushing the buffers and control information to the disc.

7. (SMR# 6354)
A CKREAD, that follows a CKREWRITE (random mode) which does not change any of the key values, will read the record just updated instead of the next record.

8. (SMR# 6632)
Any read operation on a variable length KSAM file, which has been damaged as a result of a system failure (a record which has an invalid negative byte count), may cause another system failure.

9. (SMR# 6633)
The value displayed for "DATA BLOCKS=" by KSAMUTIL's VERIFY command is one block more than the last block when the KSAM file is a variable length file and the last data block is fully used.

10. (SMR# 6634)

    1. FPOINT does not check the record delete flag.
    2. FPOINT returns CCL instead of CCG if the specified record is equal to the EOF pointer (one record beyond the last record.

VIEW/3000 HP32209A.00.00

DATE CODE 1831 + VIEW, N00N209A.HP32209.SUPPORT

A. KNOWN PROBLEMS

1. In FORMSPEC, a MATCH statement with an even number of "!" characters (the transparency operator) immediately preceding a left or right brace ("{" or "}") is not correctly interpreted. (A blank after the last "!" will correct this.)

2. In ENTRY, the keyboard is not locked while displaying appended forms. If keys are pressed while the appended form is being written on the screen, the form will not be correctly displayed. (REFRESH function key will correct this.)

3. In FORMSPEC, the keyboard is not locked while displaying parts of the FIELD MENU. (Specifically, the processing specifications and the lines of the screen that contain the field being described.) If keys are pressed while the form is being written on the screen, the form will

not be correctly displayed. (REFRESH function key will correct this.)

4. If an MPE system failure occurs while creating or modifying a forms file in FORMSPEC or a reformat file in REFSPEC, the file may be left in an unusable state. (When in doubt, use FORMSPEC to list the forms file, correct, and recompile it.)

5. Transmit-only fields (an HP2645 terminal feature invoked by using escape-brace in screen design) which are set to empty are not always correctly cleared in a form that repeats in place. (Do not rely on a transmit-only field being set to $EMPTY or to blanks.)

6. Due to a known problem in FCOPY version A.3.7, KSAMUTIL must be used when copying a KSAM file with variable length records to a new file (i.e. a FORMS file or REFORMAT file):

   a. First, build a new forms file (or reformat file):

```
:RUN KSAMUTIL.PUB.SYS
>BUILD NEW; KEYFILE=NEWKF; REC=-8000,1,V,ASCII; &
>DISC=100,16; KEY=B,1,32; KEYENTRIES=1000; &
>CODE=1035   (...or CODE=1037 for Reformat Files)
>EXIT
```

   b. Then use FCOPY to copy from OLD to NEW.

7. If the intrinsic VCLOSETERM or VCLOSETERM is called while the stack is less than 176 (%260) words, an abort with a bounds violation will occur. (Insure that S is at least 176 (%260) words before calling VOPENTERM or VCLOSETERM.)

B. DOCUMENTATION CHANGES

1. The intrinsic VOPENTERM performs a reset terminal function. If a tape cassette is not at the load point, this causes the cassette to rewind, and can cause VOPENTERM to fail due to a status request read timeout. (Remove or put cassette at load point before running ENTRY, FORMSPEC, REFSPEC, or any program that uses VOPENTERM.)

2. In FORMSPEC, if format mode is turned on manually when designing or modifying a screen, format mode must be manually turned off before ENTER is pressed.

3. When using FORMSPEC or REFSPEC, if lockwords are present on forms files, reformat files, or key files, the lockword must be given with the file name, unless a file equation containing the lockword was given before running FORMSPEC or REFSPEC. This is due to the fact that

FORMSPEC and REFSPEC prompt for the file names in block mode with format mode on and the system will automatically prompt for the lockword(s) expecting a character mode terminal.

4. When using FORMSPEC, REFSPEC, ENTRY, or the intrinsics VREADFIELDS or VSHOWFORM, there must be sufficient terminal buffers available for all concurrently executing terminal I/O operations. It is recommended that the number of terminal buffers be at least 150. Creating, modifying, or displaying a form of 4000 characters requires 134 terminal buffers. Terminal buffers may be set to a maximum of 255, shared by all processes. (See configuration dialogue in System Manager manual.)

5. When using a remote terminal via the DS facility, some forms over 255 characters long are not correctly displayed. This occurs when the LINEBUF parameter is not used in the DSLINE command. When forms larger than 255 characters are being used, include LINEBUF=n in the DSLINE command, where "n" is the number of words required by the screen image of the largest form in the forms file.

6. In the intrinsics VINITFORM, VFIELDEDITS, and VFINISHFORM, because all leading and trailing blanks are stripped from a field before a MATCH statement is executed, any pattern that requires leading or trailing blanks will always fail.

7. If some of the parts of COMAREA that should be initially set to zero have non-zero initial values, the results of some intrinsics are unpredictable. A program must insure that the initialization of COMAREA is done before the first call to the first VIEW intrinsic invoked. The values in COMAREA should not be changed between calls to VIEW intrinsics except under documented conditions.

8. The contributed utility program RESTORE (:RUN RESTORE...) will not correctly copy records over 2000 bytes. If a forms file or a reformat file is copied from a store tape to a disc file using this program, the results are unpredictable. (Use the command :RESTORE and FCOPY.)

9. Field language run-time error handling:

   a. An edit statement failure causes the current field to be flagged in "ERROR" and processing to stop for the current field.

   b. Any run-time processing failure (e.g. divide by zero; illegal indexed retrieve statement; etc.) causes the current field to be flagged in "ERROR" and processing to stop for the current field.

c. If any field used in a statement is in "ERROR", the processing simply stops for the current field.

COMPILER LIBRARY/3000 HP32211D.00.08

DATE CODE 1906, N00N211D.HP32211.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. SMR# 5318 - If the W parameter in the INEXT´ procedure was set to zero, the procedure would return as documented, but the parameter TROUBLE was not set to TRUE as documented. This has been fixed.

2. SMR# 5454 - The invocation of a DOUBLE INTEGER OVERFLOW trap routine would at times result in a BOUNDS VIOLATION. The trap procedure is now correctly invoked.

3. SMR# 4870 - When using an unformatted WRITE statement in FORTRAN to output a large array, an INTEGER OVERFLOW error occurred during program execution if the array was larger than 32K bytes. This has been fixed.

4. SMR# 5991 - A binary transfer of an array of character strings in a FORTRAN program would at times cause the program to abort with a BOUNDS VIOLATION. The transfer now takes place correctly.

FCOPY/3000 HP32212A.3.08

DATE CODE 1906, N00N212A.HP32212.SUPPORT

A. ENHANCEMENTS

1. FCOPY will now read and write ASCII cartridges. Whether ASCII or BINARY is determined by the other file.

2. If reading from $CTUx trailing CR LF´s are stripped in binary mode.

3. With cartridges, you are no longer asked to switch to half-duplex. The echoing will be turned on and off automatically for you. Also when the cartridge file is closed, it will be rewound.

4. The program file's length has been reduced.

5. A better BCDICIN and BCDICOUT conversion table has been put it. It should be equivalent to EBCDIC except for a few characters. The changes include lower case and the other 128 characters.

6. The SUBSET=0,0 option can now be used to create files, but not copy anything into them except user labels.

7. There is now support for NOBUF A-option, if specified in a file equation. This will speed up copying. This will support replication of RIO files, a future MPE enhancement.

8. Users can now type MPE commands in FCOPY by prefixing them with ":". This is the same as the EDITOR : command, as described in the new EDITOR, manual. Example:

```
>:FILE LP;DEV=LP
>FROM=A;TO=*LP
```

   FCOPY commands are now read from $STDINX.

9. FCOPY will eat its own prompt, that is, you can type:

```
>from=abc;to
```

   This can be included in batch files or used to enter lines from the terminal. Along with this change, FCOPY will accept "E" for "EXIT".

10. A formal file designator "HARD" is available to change the record size for $HARD.

```
:FILE HARD;REC=-138
```

   This is 132 plus 6 for escape characters.

11. SMR# 5704 - control-Y will not purge a new file that was just built. This can be used to create files from $STDIN.

12. When writing or reading more than one file from tape, FCOPY will no longer go back and forth over the FILE MARK before going on to the next file.

13. Use of the dump options without NORECNUM will suppress duplicate lines. That is, duplicate lines will have "SAME TO xxxxx-1". Also HEX record numbering will be at the top.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR# 4530 - when creating a new file with CCTL the record length will be the same as the FROM file.

2. SMR# 4714 - FCOPY no longer keeps looping after errors 108 or 109.

3. SMR# 5005 - the OCTAL and CHAR options will now fit on one line nicely.

4. SMR# 5097,5456,5617 - FCOPY will now work in batch jobs that are spooled to narrow line printers. The minimum width is 68 characters.

5. SMR# 5391,5563 - FCOPY will now properly concatenate files to magnetic tape.

6. Random failures of the NEW option with error messages: FROM FILE EMPTY, and CANT CLOSE FROM FILE are fixed. It was introduced in 3.07, and was caused by an MPE bug.

7. The files $NEWPASS and $OLDPASS are now handled correctly.

8. File codes for spooled input files will be set to zero.

9. KSAM keyfile will be created on the default logical device. In version 3.07, they were created on the same logical device as the FROM keyfile.

10. The blocking factor on the TO file will be the same as the FROM file, if the FROM file was nondisk.

11. If FROM file is on magnetic tape, TO file will not be opened repeatedly for each file on the tape. That is, it will not create multiple spool files or overwrite the same disk file.

12. SMR# 5956 - use of the same LABELED TAPE FROM file twice in a row will now work correctly. The * option is still preferable to this procedure.

13. SMR# 6036 - FCOPY will now try to build a MPE file when the NEW option is used and the FROM file is KSAM and the TO=file form is used.

14. SMR# 6390 - FCOPY will copy USERLABELS from LABELED tape. Previous versions forgot to write them.

    MPE has a bug in which the HDR2 label on an IBM tape is returned as a USERLABEL.

15. SMR# 6421 - if IGNERR is used and errors occur, they were sometimes reported as syntax errors.

16. SKIPEOFing on binary cartridge will now work.

17. A few corrections to the error status display for cartridges have been made.

18. The SUBSET performance problem has been improved for files on disk only.

C. DOCUMENTATION CHANGES

1. Error messages 113 and 114 will now refer to "UNLABELED TAPE" instead of just "TAPE", for the SKIPEOF options.

2. Change Appendix A to comform with the new dialog for using catridges. Also describe the differences between ASCII and BINARY cartridges.

3. Change appendix B, TO=$HARD to include formal file designator "HARD".

4. Change appendix C to note changes in ASCII-BCDIC conversion tables.

5. Add to SUBSET option description of SUBSET=0,0.

COBOL C HP32213C.02.02

DATE CODE 1906, N00N213C.HP32213.SUPPORT

A. ENHANCEMENTS

1. SMR# 3871 - when run time error 711 is output, the hex form of the operands will also be output.

2. SMR# 4524 - ACCEPT input is now read from $STDINX. This allows ":" in the first column.

3. SMR# 4611 - extra symbols that have moved in from the identification columns to before column 72 will no longer cause a DATA DIVISION section bypass.

4. SMR# 5030 - when a questionable error is encountered, JCW is set to WARN. This can be tested with the MPE :IF command.

5. SMR# 5072 - NEWFILE's file code will always be 1052.

6. Large programs that use the virtual symbol table can expect up to 8% reduction in compile time. This was obtained by using NOBUF I/O. Also a LRU scheme for page replacement is now used instead of the round robin method.

7. When the listfile is $NULL, NOLIST will be set automatically.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR# 3302 - SORT procedures must be sections. Signed COMP items now sort correctly.

2. SMR# 3514,5362 - bad code generated by PERFORM x TIMES.

3. SMR# 3846 - use of GO TO DEPENDING ON always falls through.

4. SMR# 3861 - qualification is not recognized in linkage section.

5. SMR# 3887 - comparing ALL literal is fixed.

6. SMR# 4029 - qualification is no longer necessary in the REDEFINES clause.

7. SMR# 4032 - TALLY can now be compared against an index.

8. SMR# 4090 - ADD can now follow a SEARCH WHEN condition.

9. SMR# 4132 - ADD CORR on table elements now works.

10. SMR# 4143,4831 - MOVE CORR to an empty group no longer causes a compiler abort.

11. SMR# 4172 - use of SAME AREA clause causes an abort if program had just switched to virtual when the PROCEDURE DIVISION started.

12. SMR# 4208 - bad code generated for an abbreviated relational condition whose subject was an expression.

13. SMR# 4238 - ADD of literal to item is corrected.

14. SMR# 4377 - use of INDEX names in a DISPLAY statement is now flagged. Now INDEX data items can be DISPLAYed.

15. SMR# 4521 - a MOVE of "9" to a PIC 9 item is allowed. Also MOVEs of ALL "9" are allowed.

16. SMR# 4524 - when EOF is read on ACCEPT the program will now abort.

17. SMR# 4551 - use of unnecessary qualification on a GO TO will now go to the local paragraph instead of the one first appearing.

18. SMR# 4578 - errors 105 and 108 caused a bounds violation if they occured together.

19. SMR# 4805,6223 - ALTERing of empty paragraphs is now flagged. ALTERing non alterable paragraphs will no longer cause pass 2 aborts or data table EOFs. If statements follow GO TOs, these statements are still NOT flagged.

20. SMR# 4809 - bounds violation if errors with SAME SORT AREA and SAME AREA.

21. SMR# 4854,5292,5494 - bad code emitted.

22. SMR# 4999 - use of FD instead of SD generates error 177 now, instead of 169.

23. SMR# 5038 - SEARCH can be used in the THEN clause.

24. SMR# 5089 - MOVE of group to JUSTIFIED item now works.

25. SMR# 5181 - use of a RENAMED, level 66, item in a LINKAGE SECTION now works.

26. SMR# 5392 - EOF on COBDTAB when switching to virtual and there was a lookahead symbol.

27. SMR# 5642 - item used in DEPENDING ON clause that is also in an occurs clause will be flagged with error #54.

28. SMR# 5688 - 88 level FILLER will no longer cause compile time loop. 88 and 66 level FILLER will be flagged with error 14.

29. SMR# 5755 - PICTURE clause in 88 level will no longer cause a loop.

30. SMR# 5759 - error 63 causes bounds violations.

31. SMR# 5779 - use of INVALID KEY suppressed CCTL.

32. SMR# 5990 - bounds violation in call to subprogram.

33. SMR# 6074 - IF before ADD fouls up statement after ADD.

34. SMR# 6200 - error 88 will no longer cause an abort.

35. SMR# 6428 - error 55 was generated instead of 150.

36. SMR# 6613 - MOVE of 0 to PIC 99PP caused bounds violation.

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

    a. SMR# 3124,3125 - COMPUTE with three digit exponent.

    b. SMR# 3887 - comparing ALL "x" takes wrong branch.

    c. SMR# 4524 - EOF on ACCEPT.

    d. SMR# 5278 - SEARCH ALL will now work for tables that split the 32k boundary. Also multiple WHEN conditions now work.

    e. SMR# 5575 - AFTER ADVANCING/BEFORE ADVANCING allows overprint.

    f. SMR# 5756 - PICTURE ---B---B--9 now works correctly.

C. DOCUMENTATION CHANGES

1. Add setting JCW to WARN to manual.

2. Add to error 183: Look back to the last FD or SD line, it may not be the line printed.

3. Add to error 21: If this is on the CALL statement, look back to the last parameter.

4. Add to GO TO: compiler will not flag statements following as non-executable.

5. Add to IF: using the WRITE statement in the THEN clause is not allowed it it contains the INVALID KEY clause.

SUBSYSTEM HP32214A.02.00

DATE CODE 1906, N00N214B.HP32214.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES:

1. Job control word is set when any error occurs in sort or merge.

2. SORTINITIALF handles option variable correctly for missing parameters.

3. The RECLEN subparameter in the input command for sort will be recognized for variable length record disc and tape files as well as files from the standard input (INPUT *).

IMAGE/3000 HP32215B.01.01

DATE CODE 1906, N00N215B.HP32215.SUPPORT

A. ENHANCEMENTS

1. DBSTORE and DBRESTOR have been modified to be compatable with the new MPE STORE/RESTORE facility. These facilities achieve improved performance by the use of a larger tape record size and by overlapping disc and tape I/O.

   However, there are compatibility considerations. All tapes written by the old DBSTORE are readable by the new DBRESTOR. The opposite is not true, i.e., tapes written by the new DBSTORE cannot be read by the old DBRESTOR unless the following file equation is specified prior to running DBSTORE:

   ```
   :FILE DBSTORE; REC=1024
   ```

   In addition, DBSTORE and DBRESTOR will now permit the following new parameters to be specified on the file equation for the store tape:

   ```
   ;BUF
   ```
   This will cause the tape and disc I/O to be overlapped. This is the default for DBSTORE.

   ```
   ;NOBUF
   ```
   This will cause the tape and disc I/O not to be overlapped. The default is not NOBUF, i.e., buffered I/O. It is suggested that BUF always be used with tape and NOBUF always be used with serial disc.

2. The unsupported program DBDRIVER has been modified to accept lower-case commands. It will terminate if the command is "exit", "EXIT", "/exit", or "/EXIT". The prompt "COMMAND: " is now performed without a carriage return and an entry point "PRIV" has been added for the privileged user. This permits use of

the "/S" (system debug) command as well as access to privileged calls to the IMAGE intrinsics.

B. CORRECTIVE SOFTWARE CHANGES

1. The BASIC-IMAGE interface routines XDBUPDATE and XDBPUT have been fixed to permit the use of an INTEGER array as the LIST parameter as specified in the IMAGE manual.

2. The procedure which ACTIVATEs data base access files has been fixed so that a 'FILE' command which includes a "=dbname2" part will be allowed as specified in the reference manual.

3. The procedure which processes data base access files for DBOPEN has been modified so that NUMBERRED access files can be handled and so that access file records with more than 36 characters of data will be processed correctly.

4. DBOPEN has been corrected so that unsuccessful opening of a remote data base via a data base access file:

   - will NOT leave the access file open and locked
   - will issue the REMOTE BYE and DSLINE ;CLOSE, as needed

C. KNOWN PROBLEMS

1. If a data base is STORED or DBSTORED while it is being accessed and if it is subsequently RESTORED or DBRESTORed without a change in the system cold-loaded, the first attempt to DBOPEN the data base will result in a system crash.

2. There are many deficiencies and outright bugs associated with the creation, activation, and handling of data base access files. A future version of IMAGE will correct these conditions. Until this occurs, however, it is possible to use data base access files with version B.01.01 if you adhere to the following 'rules':

   - Enter all DBAF records in upper-case
   - Do NOT use leading blanks

- Use a single blank after FILE, DSLINE, and HELLO
- Avoid the use of any other blanks
- Do NOT use records exceeding 72 characters in length

QUERY/3000 HP32216A.04.00

DATE CODE 1906, N00N216A.HP32216.SUPPORT

A. INTRODUCTION

Some of the "Corrective Software Changes" embodied in this version involved but a few lines of code. However, fixing the "bugs" associated with page breaks required significant changes to the line spacing and page control algorithms. Additionally, many of the other modules have been modified so that QUERY JOBs terminate whenever an error is encountered. In syntax checking REPORTs, termination is deferred until all statements have been checked.

The update level has been changed to reflect the fact that this version is, strictly speaking, not backward compatible with previous versions.

B. CORRECTIVE SOFTWARE CHANGES

The following "bugs" have been fixed:

1. The technique employed in building the error message

   MISSING CHAIN HEAD FOR item/set

   caused a bounds violation if the search item name was 16 characters long.

2. QUERY failed to report an end-of-file or write error when writing a report to a spool file or a disc file.

3. In JOB mode, QUERY generally ignored all errors. This invariably led to unsatisfactory, if not disastrous, results. In JOB mode, QUERY now terminates on all errors.

4. In headings containing group break values, QUERY erroneously printed the preceding group break value on the first page following the break.

5. Under a variety of conditions, the first detail, group, or totals line following a header would be printed with the wrong data. This happened most frequently when page breaks occurred in conjunction with group breaks.

6. An erroneous 'divide-by-zero' program termination occurred in conjunction with the AVERAGE option on data items which were 4-word REALs.

7. QUERY did not allow specification of a print position greater than 132. This has been changed to 136.

8. UPDATE ADD erroneously "destroyed" the other sub-items when updating the first sub-item of a compound item.

9. An XEQ C behaved as if it were an XEQ C, NODATA if it was preceded by an XEQ B, NODATA.

10. When printing negative numbers under zero suppression, QUERY failed to suppress the lowest order zero, if present. Also QUERY printed asterisks if the number fit without any leading zeroes.

11. Invalid ASCII characters were treated as zeroes during conversion from ASCII to PACKED. This is now treated as an error.

12. Under XEQ NODATA, QUERY erroneously prompted the terminal for continuation lines of any multi-line command (continued with an &) encountered in the XEQ file instead of reading the next line of the XEQ file.

13. QUERY required that a data base be opened in mode 1 or mode 5 prior to allowing the user to enter an ASSIGN LOCKOPTION command. This restriction has been removed.

14. QUERY "echoed" passwords encountered in JOB streams and XEQ files. This has been replaced with "PASSWORD = **********" regardless of the actual password value.

15. QUERY had a design defect in which a new value of TIME (or DATE) is acquired from the system clock for each occurrence in a report. This has been corrected so that the TIME and DATE are evaluated at the beginning of the report and the same values used throughout the report.

16. QUERY failed to remember a previously specified DATA-SET after executing a REPORT whose literal strings exactly filled an internal table.

17. CREATE terminated creation of a REPORT procedure upon encountering a REPORT statement whose last 3 characters were "END"

18. the PAUSE parameter of the REPORT command was not effective when the REPORT command was in an XEQ file

C. MISCELLANEOUS

1. In order to eliminate the "bugs" associated with page breaks, group breaks and headers, it was necessary to make changes to the SKIP BEFORE, SPACE BEFORE, SKIP AFTER and SPACE AFTER logic.

   In this version these are handled as follows:

   a. If PAGING is in effect and a SKIP AFTER and a SPACE AFTER are both associated with the same output line, the SPACE AFTER is ignored.

b. If PAGING is in effect and a SKIP AFTER is associated with an output line, the page eject (and header printing) is deferred and subsequently effected prior to the printing of the next output line.

c. If PAGING is in effect and there are insufficient lines remaining on the current page to satisfy a SPACE AFTER, the SPACE AFTER is treated as a SKIP AFTER.

d. If PAGING is NOT in effect, all SKIP AFTERs are ignored and all SPACE AFTERs are performed unconditionally.

e. If PAGING is in effect and a SKIP BEFORE and SPACE BEFORE are both associated with the same output line, the SKIP BEFORE is processed before the SPACE BEFORE.

f. If PAGING is in effect and if, (1) a deferred page eject is pending or, (2) a SKIP BEFORE is associated with the output line, or (3) a SPACE BEFORE is, but the remaining number of lines is not sufficient, a page eject is effected (and headers printed). If caused by the SPACE BEFORE, the spacing is then affected.

g. If PAGING is NOT in effect, all SKIP BEFOREs are ignored and all SPACE BEFOREs are performed unconditionally.

2. The following messages have been added:

- END-OF-FILE ON REPORT FILE
- WRITE FAILURE ON REPORT FILE

3. The following message has been deleted:

ILLEGAL SOURCE DIGIT IN CONVERSION CVAD
REPLACED WITH ZERO

N00N230A

Release issue of HP 32230A Series II diagnostics.
** DATE CODE 1906 **

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 1906

SECTION 1	PD420A	01.00
SECTION 2	PD420A1	01.00
SECTION 3	PD420A2	01.01 **
SECTION 4	PD420A3	01.03 **
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
SECTION 14	PD420A13	01.00

*** STAND-ALONE *** 30000-1X017 1906 % FILE NO.

SLEUTH	PD411A	01.04	(01)	
SDUPII	PD417A	01.03		
CART DISC-7905A	PD419A	01.04	(02)	
MEMORY PATTERN	PD421A	01.00	(03)	
MULTIPLEXOR CHAN	PD422A	01.02	(04)	
DISC FILE-2888A	PD423A	01.00	(05)	
CART DISC-7900A	PD424A	01.00	(06)	
SYSTEM CLOCK	PD425A	01.00	(07)	
SYS CLK/FLI	PD426A	00.00 **	(10)	NEW RELEASE
TERMINAL DATA	PD427A	01.01 **	(11)	
FIXED HEAD DISC	PD428A	01.00	(12)	
SELECTOR CHAN	PD429A	01.01	(13)	
FAULT CORRECTING MEM.	PD430A	01.01	(14)	
EXTENDED INSTRUC SET	PD431A	01.00	(15)	
HSI DIAG.	PD432A	01.00	(16)	
MAGNETIC TAPE	PD433A	01.02 **	(17)	

SSLC INTERFACE	PD434A	01.03 **	(20)
ASLC INTERFACE	PD434B	01.04 **	(21)
UI DIAG	PD435A	01.01	(22)
SPECIAL HSUI DIAG	PD436A	00.00	-----
TERMINAL CONTROL	PD438A	01.00	(23)
CALCOMP PLOTTER	PD439A	01.01	(24)

*** ONLINE ***

CARD READER	PD465A	01.00	
LINE PRINTER	PD466A	01.01 **	
2617J LINE PRINTER	pd466J	01.00	
2640 TERMINAL	PD469A	01.00	
TERM-2635A	PD474A	00.00	
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	

UTILITY FILES

SLEUTH BATCH FILES

```
**************************************************
*                                                *
*  THESE FILES MAY ONLY BE USED IN CONJUNCTION   *
*  WITH THE SLEUTH PROGRAM. REFER TO THE SLEUTH  *
*  MANUAL FOR INFORMATION ON HOW THEY MAY BE     *
*  LOADED.                                       *
**************************************************
```

FILE NAME	FUNCTION
SLEUTH01	
SLEUTH02	
SLEUTH03	
SLEUTH04	
SLEUTH05	
SLEUTH06	
SLEUTH07	DISC VERIFIER-7905,7906,7920,&7925
SLEUTH08	
SLEUTH11	LONG CARD READER DIAG-SECTION1
SLEUTH12	LONG CARD READER DIAG-SECTION2
SLEUTH13	LONG CARD READER DIAG-SECTION3
SLEUTH14	LONG CARD READER DIAG-SECTION4

STAND-ALONE DIAGNOSTIC TAPE CREATORS

```
**************************************************
*                                                *
* THESE FILES ARE STREAMABLE JOB FILES WHICH     *
* WILL CREATE CONFIGURED CPU DIAGNOSTIC TAPES    *
* AND NON-CPU DIAGNOSTIC TAPE.                   *
*                                                *
**************************************************
```

FILE NAME	FUNCTION
CPU064	CPU TAPE CONFIGURED FOR 64K OF MEMORY
CPU096	CPU TAPE CONFIGURED FOR 96K OF MEMORY
CPU128S2	CPU TAPE CONFIGURED FOR 128K OF MEMORY
CPU128S3	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
CPU256S2	CPU TAPE CONFIGURED FOR 256K OF MEMORY
CPU256S3	CPU TAPE CONFIGURED FOR 256K OF MEMORY
CPU384S3	CPU TAPE CONFIGURED FOR 384K OF MEMORY
CPU512S3	CPU TAPE CONFIGURED FOR 512K OF MEMORY
CPU640S3	CPU TAPE CONFIGURED FOR 640K OF MEMORY
CPU768S3	CPU TAPE CONFIGURED FOR 768K OF MEMORY
CPU896S3	CPU TAPE CONFIGURED FOR 896K OF MEMORY
CPU1KS3	CPU TAPE CONFIGURED FOR 1024K OF MEMORY
DIAGIOTP	NONCPU TAPE (%24 FILES SEE ABOVE FOR NEW FILE REFERENCE TABLE)

SUPPLEMENTAL FILES FOR DIAGNOSTICS

```
**************************************************************
*                                                            *
*  THESE FILES ARE REQUIRED BY THE INDICATED DIAGNOSTIC      *
*  TO OPERATE PROPERLY.                                      *
*                                                            *
**************************************************************
```

FILENAME	DIAG NO.	FUNCTION
VFCTEST	D466A	DATA FILE FOR 2608 LP
STDVFC	D466A	DATA FILE FOR 2608 LP

** IMPLIES FIXED THIS TIME

****

SPECIAL NOTE:

EIGHT(8) FILES HAVE BEEN ADDED TO THE UTILITY FILES FOR CREATING THE STAND-ALONE CPU DIAGNOSTIC TAPES TO SUPPORT THE SERIES III COMPUTER SYSTEMS.

THESE FILES ARE STREAMABLE JOB FILES WHICH WILL CREATE CONFIGURED DIAGNOSTIC TAPES OF THE DATE CODES SPECIFIED ABOVE.

****

FIX LEVEL .01 CPU DIAGNOSTIC--SECTION 3

D420A2.01.01

THIS FIX WAS NEEDED TO HAVE THE DIAGNOSTIC OPERATE PROPERLY WITH THE NEW SYSCLK/FLI PCA. IF THE SYSTEM HAD THE NEW BOARD INSTALLED THE DIAGNOSTIC WOULD FAIL THE DIRECT IO PORTION OF THIS TEST. THE DIAGNOSTIC NOW USES THE MULTIPLEXOR CHANNEL PCA TO EXECUTE THE WIO/RIO TESTS. THE DRT CODED INTO THE DIAGNOSTIC FOR THE MUX CHAN IS %177. IF THE DRT OF THE MUX CHAN IN THE SYSTEM UNDER TEST IS DIFFERENT THEN SET BIT 7 OF THE SECTION SELECT REGISTER AND ENTER THE DRT NUMBER IN THE SWITCH REGISTER WHEN THE SYSTEM EXECUTES A HALT %11.

****

FIX LEVEL .03 CPU DIAGNOSTIC--SECTION 4

D420A3.01.03

A CHANGE WAS MADE TO THE METHOD FOR SETTING UP THE CLOCK TO CAUSE INTERRUPTS FOR THE INTERRUPTABLE INTSTUCTION SECTION (IIT) TO MAKE IT COMPATIBLE WITH THE SYS CLK/FLI BOARD(30135-60063).

****

FIX LEVEL .03 SYNCHRONOUS SINGLE LINE CONTROLLER

D422A.01.03

THIS FIX LEVEL MAKES THIS DIAGNOSTIC COMPATIBLE WITH BOTH THE OLD AND NEW VERSION CABLES (30055-60008 AND 30055-60011).

****

FIX LEVEL .00 SYSTEM CLOCK/FLI BOARD (30135-60063)

D426A.00.00

THIS IS A NEW RELEASE. THE D425A DIAGNOSTIC SHOULD STILL BE USED WHEN TESTING THE 30031A SYSTEM CLOCK/CONSOLE PCA.

****

FIX LEVEL .01 TERMINAL DATA INTERFACE

D427A.01.01

THIS FIX WAS NEEDED TO ALLOW THE DIAGNOSTIC TO OPERATE IF EITHER OF THE SYSTEM CLOCK BOARDS WERE INSTALLED IN A SYSTEM.

****

FIX LEVEL .04 ASYNCHRONOUS SINGLE LINE CONTROLER

D434B.01.04

THIS FIX CORRECTS THE PROBLEMS THAT WERE ENCOUNTERED WITH SECTION SIX(6). THIS SECTION NOW WORKS.
SECTIONS 7 AND 8 DO NOT WORK IN THE ASYNCHRONOUS MODE. IF DOUBTS EXSIST IN REGARDS THE OPERATION OF THE PCA AFTER RUNNING THIS DIAGNOSTIC, INSTALL THE SYNCHRONOOUS CABLE AND EXECUTE THE D434A DIAGNOSTIC.

****

FIX LEVEL .02 MAGNETIC TAPE

D433A.01.02

STEP 100 THE EXPECTED STATUS WAS CHANGED TO MONITOR ONLY THE STATUS
BITS THAT CAN BE CONTROLLED WITH THE ISSUANCE OF A MASTER
CLEAR.

THE SWITCH REGISTER OPTIONS WERE MODIFIED TO ALLOW THE SUPPRESSION OF THE SIO LISTS NORMALLY DISPLAYED ON THE CONSOLE WHEN ERRORS ARE ENCOUNTERED.

SWITCH REGISTER BIT 3 = NO "SIO LIST"

****
****

FIX LEVEL .01 LINE PRINTER

D466A.01.01

This fix adds on-line diagnostic support of the HP2608A and HP2619A line printers to the existing D466A. Support of the 2619 is identical to that of the 2613/17/18, and consists merely of giving the user the choice of the 2619 in Section 0, the configuration section. For the 2608, Sections 8, 9 and 10 are added and existing sections and utility procedures are modified as required to handle the 2608. Two additional ASCII files, VFCTEST. HP32230.SUPPORT and STDVFC.HP32230.SUPPORT, are supplied for use by Section 9. Sections 9 and 10 require operator interaction at the system console. Section 8 tests the backspace and character set selection capabilities, and also the ability to "print" without advancing (line overwrite). Section 9 tests the down-loadable Vertical Format Control (VFC). Section 10 tests the down-loadable left margin.
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MPE III SERIES 33 SOFTWARE UPDATE

MULTIPROGRAMMING EXECUTIVE OPERATING SYSTEM SERIES 33

****

CONTENTS OF INSTALLATION TAPE DATE CODE 1912

PRODUCT NAME	PRODUCT NUMBER	LEVEL	DATE CODE
*MPE	32033A	00.02	1906
*SEGMENTER	32050A	01.00	1906
*SPL	32100A	07.01	1906
*BASIC	32101B	00.10	1906
*FORTRAN	32102B	01.01	1906
*BASIC COMPILER	32103B	00.10	1906
*RPG	32104A	04.02	1906
BUILDINT	32150A	03.01	1623
*EDITOR	32201A	07.04	1906
*SCIENTIFIC LIBRARY	32205B	00.04	1906
*DEL/3000	32206A	01.09	1906
*KSAM/3000	32208A	02.02	1906
VIEW/3000	32209A	00.00	1831+ VIEW
*COMPILER LIBRARY	32211D	00.08	1906
*FCOPY	32212A	03.08	1906
*COBOL	32213C	02.02	1906
*SORT/MERGE	32214B	02.00	1906
*IMAGE	32215B	01.01	1906
*QUERY	32216A	04.00	1906
XA2100	32223A	01.03	1814
XL2100	32226A	02.00	1636
*DIAGNOSTICS	32231A	-- --	----

* Products with asterisks are updated/changed by this Installation Tape and reference Note files containing information about the modifications. Files which pertain to both Series II-III and Series 33 appear in the MPE III Series II-III Software Update section only.

* Note files (N00NYYYZ) contain the change information where:

YYY = last three digits of the product number,
(For example, MPE is 32002, therefore, YYY=002.)

Z = currently released version digit of the product.

MPE HP32033A.00.00

DATE CODE 1912, N00N033A.HP32033.SUPPORT

I. MPE 32033A.00.00

A. MODULES MODIFIED A.00.00

MODULE NAME	NO	CHANGE HISTORY A.00.XX												
		0	1	2	3	4	5	6	7	8	9	10	11	12	14
INITIAL	00														
ININ	10														
IOTAPE0	18														
IOLPRT0	19														
IOLPRT1	21														
IOTERM0	22														
IOFLOP0	23														
IOMDISC1	27														
PFAIL	30														
* SDFCHECK	33														
* SDFLOAD	33														
SDFGEN	34														
CLOCKIO	61														
NRIO	62														
CRIO	68														

NOTE

* Both program files are generated as part of module 33

SYSTEM	LAST CHANGE NUMBER
A.00.00	0328

NOTE: These module are all MPE modules which differ in code and source between the Series II/III and the Series 33. For changes to modules which are common to both the Series II/III and the Series 33, see the note file for the 1906 IT.

All these modules are fuctionally equivalent to 1906 modules of Series II/III with same module number/name or are new modules for new peripheral support. Details are as follows:

1. INITIAL (00)
   Functional equivalent to 1906 version of Series II/III INITIAL

2. ININ (10)
   Functional equivalent to 1906 version of Series II/III ININ

3. IOTAPE0 (18)
   Functional equivalent to 1906 version of Series II/III IOTAPE0

4. IOLPRT0 (19)
   Functional equivalent to 1906 version of Series II/III IOLPRT0

5. IOLPRT1 (21)
   Driver for 2631A lineprinter. Roughly equivalent to IOLPRT0

6. IOTERM0 (22)
   Functional equivalent to 1906 version of Series II/III IOTERM0

7. IOFLOP0 (23)
   Driver for flexible disc(7902). Roughly functional equivalent to IOMDISC1.

8. IOMDISC1 (27)
   Functional equivalent to 1906 version of Series II/III IOMDISC1

9. PFAIL (30)
   Functional equivalent to 1906 version of Series II/III PFAIL

10. SDFCHECK (33)
    Command file syntax verifier for Soft Dump Facility. See Console Operator's Guide for further discussion on Soft Dump Facility.

10.1 SDFLOAD (33)
    Soft Dump memory image loaded to invoke memory dump. See Console Operator's Guide for further discussion on Soft Dump Facility.

11. SDFGEN (34)
Generator for stand alone serial disc to used for See Console Operator's Guide for further discussion on Soft Dump Facility.

12. CLOCKIO (61)
Functional equivalent to 1906 version of Series II/III CLOCKIO

13 NRIO (62)
Functional equivalent to 1906 version of Series II/III NRIO

14 CRIO (68)
Functional equivalent to 1906 version of Series II/III CRIO

B. KNOWN PROBLEMS AND UNDOCUMENTED FEATURES

1. After powerfail 264X terminal quite often comes into a state which can not be cleared by software. This problem must be cleared by a manual reset of the terminal.

   The problem can be prevented by disabling strap U of the terminal. However strap U must be enabled to use the terminal over 202 modems. The system console is shipped with strap U disabled.

2. When the 7906 is configured as two disc's and ldev is the lower portion, then the Soft Dump Facility will only work in stand alone (backup) mode. See Console Operator's Guide for further discussion on Soft Dump Facility.

3. The COOLstart option does exist on the Series 33 and operates the same as on Series II/III. Use of the WARMstart button on the front panel will result in the operator being asked to chose between the WARM and COOL options as is done on the Series II/III when loading from the system disc.

4. Whenever the system is loaded with UPDATE or COLDLOAD (of course, RELOAD also) the SDFCOM (Soft Dump Facility command) file on the system disc is replaced by what is on the coldload media. See Console Operator's Guide for further discussion on Soft Dump Facility and system program file replacement on COLDLOAD and UPDATE.

RELEASE ISSUE OF THE SERIES 33 DIAGNOSTICS AND UTILITIES

DATE CODE 1912, N00N32231A

** First Series 33 IT **

Cartridge tapes associated with HP32231A:

Maintenance Interface and Cold Load Self Test	30070-10401
Maintenance Display Software	30070-10402
Remote Maintenance/Console Facility	30070-10403

Flexible disc associated with HP32231A:

Diagnostic and Utility System	30070-13401

Manual associated with HP 32231A:

Series 33 Diagnostic Manual Set	30070-60068

*** Maintenance Interface and Cold Load Self Test Cartridge ***
** 30070-10401 Rev 1903 **

Maintenance Interface Diagnostic	Version 0.00
Cold Load Self Test	Version 0.03 **

TO GENERATE AN MI DIAGNOSTIC AND CLST TAPE ON THE RIGHT CARTRIDGE TAPE,
RUN FCOPY.PUB.SYS AND ENTER THE FOLLOWING COMMANDS:

```
>FROM=MIDHEAD;TO=$CTUR
>FROM=MIDLBINS;TO=$CTUR;SKIPEOF=,2
>FROM=CLSTHEAD;TO=$CTUR;SKIPEOF=,3
>FROM=CASET4;TO=$CTUR;SKIPEOF=,4
>EXIT
```

*** Maintenance Display Software Cartridge Tape ***
** 30070-10402 Rev 1835 **

Maintenance Display Software	Version 0.00

TO GENERATE A MAINTENANCE DISPLAY TAPE ON THE RIGHT CARTRIDGE TAPE,
RUN FCOPY.PUB.SYS AND ENTER THE FOLLOWING COMMANDS:

```
>FROM=MPHEAD;TO=$CTUR
>FROM=MPLINKBS;TO=$CTUR;SKIPEOF=,2
>EXIT
```

*** Remote Maintenance/Console Facility Cartridge Tape ***
** 30070-10403 Rev 1835 **

Remote Maintenance/Console Facility Version 0.00

TO GENERATE A REMOTE TAPE ON THE RIGHT CARTRIDGE TAPE, RUN
FCOPY.PUB.SYS
AND ENTER THE FOLLOWING COMMANDS:
>FROM=REMHEAD;TO=$CTUR
>FROM=REMLINKB;TO=$CTUR;SKIPEOF=,2
>EXIT

*** Diagnostic and Utility System Flexible Disc ***
** 30070-13401 Rev 1903 **

Diagnostic Utility System Version 0.34

ININ	PD570A	
SADS	PD590A	
AID	PD550A	Version 0.31
ADCCDIAG	PD509A	Version 0.10
GICDIAG	PD508A	Version 0.19
MEMDIAG	PD507A	Version 0.05
SADUTIL	PD575A	Version 0.03 **
IOMAP	PD560A	Version 0.04
D7902	PD513A	Version 0.04
D13037	PD511A	Version 0.02
D7970S13	PD514A	Version 0.04 **
D7970S45	PD515A	Version 0.02
D7970S68	PD516A	Version 0.02
VERIFIER	PD512A	Version 0.04 **
SLEUTHSM	PD555A	Version 0.04 **

This note describes how to create the DUS flexible disc. A binary image of the DUS flexible disc is in the file DUS.HP32231.SUPPORT. This image may be placed on a previously formatted flexible disc (must be serialized - see note below) by running the program DUSCOPY.HP32231.SUPPORT. This program writes the flexible disc and then reads back the data to ensure that the data is correct.

NOTE: Serializing a Flexible Disc.

Once a flexible disc has been formatted it can be serialized in the following manner:

a) On the system console - down the ldev for the flexible disc.
b) Log on and enter VINIT. Install flexible disc.
c) When prompted (>) enter - serial (ldev) that is, serial 3.

d) The program will return another prompt (>) when complete. Enter exit to end the program.
e) On the system console - up the flexible disc (up ldev).

NOTE: A diskette can also be formatted with VINIT by entering FORMAT (ldev).

MPE C SOFTWARE UPDATE

MULTIPROGRAMMING EXECUTIVE OPERATING SYSTEM SERIES I

****

CONTENTS OF INSTALLATION TAPE DATE CODE 1906

PRODUCT NAME	PRODUCT NUMBER	LEVEL	DATE CODE
*MPE	32000C	01.02	1906
*SEGMENTER	32050A	01.00	1906
*SPL	32100A	07.01	1906
*BASIC	32101B	00.10	1906
*FORTRAN	32102B	01.01	1906
*BASIC COMPILER	32103B	00.10	1906
*RPG	32104A	04.02	1906
BUILDINT	32150A	03.01	1623
*EDITOR	32201A	07.04	1906
STAR	32204A	01.00	1603
*SCIENTIFIC LIBRARY	32205A	02.05	1906
*DEL/3000	32206A	01.09	1906
INDEX	32207A	01.02	1814
SDM	32210A	05.00	1508
*COMPILER LIBRARY	32211C	04.08	1906
*FCOPY	32212A	03.08	1906
*COBOL	32213B	03.02	1906
*COBOLC	32213C	02.02	1906
*SORT/MERGE	32214B	02.00	1906
*IMAGE	32215A	04.06	1906
*QUERY	32216A	04.00	1906
TRACE	32222A	03.03	1814
XA2100	32223A	01.03	1814
XL2100	32226A	02.00	1636
CALCOMP PLOTTER	30126A	00.01	1640
2780/3780 EMULATOR	30130D	00.02	1814
PROG CTRLR/BCS	30300A/ 30361A	00.00	1621
PROG CTRLR/RTE-C	30301A/ 30361A-1	00.02	1701
ONLINE DIAGNOSTICS		-- --	1814
OFFLINE DIAGNOSTICS		-- --	1831

* Products with asterisks are updated/changed by this Installation Tape and reference Note files containing information about the modifications. Files which pertain to both MPE-C and MPE III appear in the MPE III Software Update section only.

Note files (N00NYYYZ) contain the change information where:

YYY = last three digits of the product number,
(For example, MPE is HP32002; therefore, YYY=002.)

z = currently released version digit of product.

MPE 32000C.01.02

DATE CODE 1906, N00N000C.HP32000.SUPPORT

I. MPE 32000C.01.02

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	X	X
SYSDUMP	1		X		X	X	X	X		
SEGPROC	2							##		
SEGDVR	3		X					##		
DISPATCH	4	X	X							
LOAD	5		X					X	X	
MAPP	6						X			
UCOP	7									
DEVREC	8									
PROGEN	9		X			X	X	X		
ININ	10	X		X				X	X	
EXIN	11	X			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					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		

MODULE	CHANGE HISTORY									
NAME	NO	C.00.XX							C.01.XX	
PFAIL	30									
FILESYS	50	X	X	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	X	
MMDISKR	57	X			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	X	X
PROCMAIL	65						X		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	X	
RINS	73		X							
JOBTABLE	74						X			
DEBUG	75						X		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		

- The SEGMENTER modules have been moved to group HP32050 in the SUPPORT account.

B. CORRECTIVE SOFTWARE CHANGES

1. SUBQUEUE in MORGUE has been fixed to prevent invalid subqueues in the SHOWQ command from generating garbage output.

2. The I/O initialization routines have been moved from SEGUTIL to segment TTYINT1. INITIAL was changed to have TTYINT1 present in memory instead of SEGUTIL at system start up.

3. FRENAMEs from files with null file names no longer result in security violations.

4. IOLPRT0 has been modified so that write requests with control codes %100-%103 and %400-%403 will only set spacing options and do no physical I/O. This means that data included in FWRITEs to printer files will be ignored if these codes are included. This now functions as it did in version C.01.00 .

C. KNOWN PROBLEMS

See current Software Status Bulletin

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		
SLPATCH									

B. 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.

COMPILER LIBRARY/3000 HP32211C.04.08

DATE CODE 1906, N00N211C.HP32211.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

SMR #5318 - If the W parameter in the INEXT' procedure was set to zero, the procedure would return as documented, but the parameter TROUBLE was not set to TRUE as documented. This has been fixed.

SMR #5454 - The invocation of a DOUBLE INTEGER OVERFLOW trap routine would at times result in a BOUNDS VIOLATION. The trap procedure is now correctly invoked.

SMR #4870 - When using an unformatted WRITE statement in FORTRAN to output a large array, an INTEGER OVERFLOW error occurred during program execution if the array was larger than 32K bytes. This has been fixed.

SMR #5991 - A binary transfer of an array of character strings in a FORTRAN program would at times cause the program to abort with a BOUNDS VIOLATION. The transfer now takes place correctly.

COBOL B HP32213B.03.02

DATE CODE 1906, N00N213B.HP32213.SUPPORT

A. ENHANCEMENTS

1. SMR #3871 - when run time error 711 is output, the hex form of the operands will also be output.

2. SMR #4524 - ACCEPT input is now read from $STDINX. This allows ":" in the first column.

3. SMR #4611 - extra symbols that have moved in from the identification columns to before column 72 will no longer cause a DATA DIVISION section bypass.

4. SMR #5030 - when a questionable error is encountered, JCW is set to WARN. This can be tested with the MPE :IF command.

5. SMR #5072 - NEWFILE's file code will always be 1052.

6. When the listfile is $NULL, NOLIST will be set automatically.

B. CORRECTIVE SOFTWARE CHANGES

1. SMR #3302 - SORT procedures must be sections. Signed COMP items now sort correctly.

2. SMR #3514,5362 - bad code generated by PERFORM x TIMES.

3. SMR #3846 - use of GO TO DEPENDING ON always falls through.

4. SMR #3861 - qualification is not recognized in linkage section.

5. SMR #3887 - comparing ALL literal is fixed.

6. SMR #4029 - qualification is no longer necessary in the REDEFINES clause.

7. SMR #4032 - TALLY can now be compared against an index.

8. SMR #4090 - ADD can now follow a SEARCH WHEN condition.

9. SMR #4132 - ADD CORR on table elements now works.

10. SMR #4143,4831 - MOVE CORR to an empty group no longer causes a compiler abort.

11. SMR #4160 - ACTUAL KEY items may be flagged as undefined. The map indicates variable has "__" as second and third characters.

12. SMR #4208 - bad code generated for an abbreviated relational condition whose subject was an expression.

13. SMR #4238 - ADD of literal to item is corrected.

14. SMR #4377 - use of INDEX names in a DISPLAY statement is now flagged. Now INDEX data items can be DISPLAYed.

15. SMR #4521 - a MOVE of "9" to a PIC 9 item is allowed. Also MOVEs of ALL "9" are allowed.

16. SMR #4524 - when EOF is read on ACCEPT the program will now abort.

17. SMR #4551 - use of unnecessary qualification on a GO TO will now go to the local paragraph instead of the one first appearing.

18. SMR #4578 - errors 105 and 108 caused a bounds violation if they occurred together.

19. SMR #4805,6223 - ALTERing of empty paragraphs is now flagged. ALTERing non-alterable paragraphs will no longer cause pass 2 aborts or data table EOFs. If statements follow GO TOs, these statements are still NOT flagged.

20. SMR #4809 - bounds violation if errors with SAME SORT AREA and SAME AREA.

21. SMR #4854,5292,5494 - bad code emitted.

22. SMR #4999 - use of FD instead of SD generates error 177 now, instead of 169.

23. SMR #5038 - SEARCH can be used in the THEN clause.

24. SMR #5089 - MOVE of group to JUSTIFIED item now works.

25. SMR #5181 - use of a RENAMED, level 66, item in a LINKAGE SECTION now works.

26. SMR #5642 - item used in DEPENDING ON clause that is also in an occurs clause will be flagged with error #54.

27. SMR #5688 - 88 level FILLER will no longer cause a compile time loop. 88 and 66 level FILLER will be flagged with error 14.

28. SMR #5755 - PICTURE clause in 88 level will no longer cause a loop.

29. SMR #5759 - error 63 causes bounds violations.

30. SMR #5779 - use of INVALID KEY suppressed CCTL.

31. SMR #5990 - bounds violation in call to subprogram.

32. SMR #6074 - IF before ADD fouls up statement after ADD.

33. SMR #6200 - error 88 will no longer cause an abort.

34. SMR #6428 - error 55 was generated instead of 150.

35. SMR #6613 - MOVE of 0 to PIC 99PP caused bounds violation.

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

    a. SMR #3124,3125 - COMPUTE with three digit exponent.

    b. SMR #3887 - comparing ALL "x" takes wrong branch.

    c. SMR #4524 - EOF on ACCEPT.

    d. SMR #5278 - SEARCH ALL will now work for tables that split the 32k boundary. Also multiple WHEN conditions now work.

    e. SMR #5575 - AFTER ADVANCING/BEFORE ADVANCING allows overprint.

    f. SMR #5756 - PICTURE ---B---B--9 now works correctly.

C. DOCUMENTATION CHANGES

1. Add setting JCW to WARN to manual.

2. Add to error 183: Look back to the last FD or SD line, it may not be the line printed.

3. Add to error 21: If this is on the CALL statement, look back to the last parameter.

4. Add to GO TO: compiler will not flag statements following as non executable.

5. Add to IF: using the WRITE statement in the THEN clause is not allowed it it contains the INVALID KEY clause.

IMAGE/3000 HP32215A.04.06

DATE CODE 1906, N00N215A.HP32215.SUPPORT

A. ENHANCEMENTS

The BASIC-IMAGE interface routines XDBUPDATE and XDBPUT have been fixed to permit the use of an INTEGER array as the LIST parameter as specified in the IMAGE manual.

The unsupported program DBDRIVER has been modified to accept lower-case commands. It will terminate if the command is "exit", "EXIT", "/exit", or "/EXIT". The prompt "COMMAND: " is now performed without a carriage return and an entry point "PRIV" has been added for the privileged user. This permits use of the "/S" (system debug) command as well as access to privileged calls to the IMAGE intrinsics.

SCIENTIFIC LIBRARY/3000

DATE CODE 1906, N00N205A.HP32205.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

SMR #6262 - The LGAMMA function aborted if the value of its first parameter was less than 8. This has been fixed.

MFG 3000 SOFTWARE UPDATE

EDC/3000 HP32380A.00.01

DATE CODE 1906, N00N380A.HP32380.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

All of the following known problems have been corrected in EDC.

1. SMR# 4875 - Low Level Code Maintenance in EDC is no longer performed when a default record is added to the STRUCTURE Data Set of the EDC Data Base. Formerly, adding a default record to the STRUCTURE Data Set would cause the abort of the EDCMAINT Jobstream due to an attempt to perform Low Level Code Maintenance. The file affected is EDC0370P.EDCPGM.

2. SMR# 4883 - Unpredictable usage quantities were produced in a summarized bill when a quantity per of zero was encountered in the structure being exploded. This problem has been fixed, in file EDC2200P.EDCPGM.

3. SMR# 4885 - Summarized bill did not select the effective engineering change correctly. This problem has been fixed, in file EDC2200P.EDCPGM.

4. SMR# 4895 - No time stamp was printed when program EDC2200 was run (EDC2200 is part of the EDCMAINT Jobstream). This problem has been fixed, in file EDC2200P.EDCPGM.

5. SMR# 4908 - The OVERSHIP-PCT validation error message indicates that the value entered must be greater than zero when a negative value is entered. A zero entry is correctly processed. The incorrect error message has been corrected in program module EDCVAL used in EDC0100P.EDCPGM and EDC0370P.EDCPGM.

6. SMR# 5022 - "YD" (YARD) is not accepted as a unit of measure. This problem has been fixed in the EDCVAL module used by EDC0100P.EDCPGM and EDC0370P.EDCPGM.

7. SMR# 5086 - The common routing feature of EDC/3000 did not display routings for parts with a COMMON-ROUTE-ID. This problem has been fixed in programs EDC1000P.EDCPGM including changes to the called module EDC1050, EDC1700P.EDCPGM, and EDC0225P.EDCPGM including changes in the called module EDC0250.

8. SMR# 5719 - The indented bill displayed 4 decimal places rather than the 3 used in the EDCDB database, 3 decimal places are now printed by EDC2200P.EDCPGM.

B. KNOWN PROBLEMS

1. SMR# 5302 - If the direct screen override feature is being used and an invalid originator is entered, EDC does not discover the error until the user attempts to enter a transaction.

2. SMR# 5715 - TBL0100 does not recognize MPE III command intrinsic errors.

IOS/3000 HP23284A.00.01

DATE CODE 1906, N00N384A.HP32384.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. SMR# 4851 - When the date due of a released order is changed, the order is re-exploded, even though the order may have been manually modified or released. This problem has been fixed by modifying the called module ORDDB of ORD0100P.IOSPGM.

2. SMR# 4872 - IOS aborts immediately after display of the initial inventory control menu if the following conditions are met: 1) Terminal Type HP2644A with printer interface and page mode 2) DEL Version A.05.01. This problem is fixed in version A.05.07 of DEL.

3. SMR# 4888 - Adding an allocation to an order due to be exploded causes the error message "ALLOCATION PENDING" to be displayed. The message is now "YOU HAVE PREVENTED AUTOMATIC ALLOCATION". This fix is in INV0100P.IOSPGM.

4. SMR# 4891 - File IOS1850J.IOSJCL contained incorrect documentation which referred to the Purchase Committment Report. This documentation has been corrected.

5. SMR# 4893 - Program IOS1850 did not use the company name in the file CPNY when producing the Extra Usage Report. The code to access the CPNY file has been added to program IOS1850.

6. SMR# 4896 - The Backorder Aging Report grouped all backorders into the "least aged" category. This problem has been corrected so that backorders are correctly classified by IOS1850P.IOSPGM.

7. SMR# 4906 - The QTY-UNALLOCATED goes to zero after a negative quantity is received in a RECEIVE transaction. This problem has been fixed so that the QTY-UNALLOCATED is decremented only by the quantity entered of the transaction. This fix is in the ORDDB module of ORD0100P.IOSPGM.

8. SMR# 4910 - ALLOC-MOD-CODE is changed to "MM" when the Material Requisition List Jobstream changes order status from "inactive" to "active". This problem has been fixed so that the ALLOC-MOD-CODE remains unchanged when the allocation status goes from inactive to active. This is fixed in the called module INVDB of INV0100P.IOSPGM.

9. SMR# 4912 - The transaction to delete a purchase order did not allow the deletion of line item 01 but did allow the deletion of other line items or deletion of the entire purchase order. This problem has been fixed in the called module ORDKEY of ORD0100P.IOSPGM.

10. SMR# 5010 - Only the first backorder (on the chain in the BACKORDER data set) for an order is deleted when the order is cancelled. This problem has been fixed in the called module ORDDB of ORD0100P.IOSPGM.

11. SMR# 5096 - Program IOS0720 of the Allocation Maintenance Jobstream would abort if more than 10 phantom parts were associated with the order. This problem has been fixed so that up to 50 phantom parts and 400 components can be associated with an order (the former limit on the number of components was 250).

12. SMR# 5259 - The vendor report produced with QUERY procedure VENDLIST was sorted on vendor number rather than vendor name. This problem has been fixed.

13. SMR# 5298 - The control cards that were placed in :DATA statements in IOS0610J.IOSJCL are no longer required by IOS0610P.IOSPGM. The control cards now follow the :RUN statement in IOS0610J.IOSJCL. Additionally the DATE-OVRD control card has now been replaced by DATE-INCREMENT=nn statement, where nn is the number of days in the future that will be included in the selection of parts to be pulled. The changes are in IOS0610J.IOSJCL and IOS0610P. IOSPGM.

14. SMR# 5659 - Corrected the documentation in the stream file IOS0800J.IOSJCL for the aging policy date comparison.

15. SMR# 5652 - Corrected the EXPLODEV.UTILITY compile stream file to stream IOS0710L.IOSJCL.

16. SMR# 5717 - Unplanned issues of parts that had inactive allocations (ALLOC=STATUS = "IA") did not update the QTY-UNALLOC field. This is corrected in called module INVDB used by IOS0200P.IOSPGM, INV0100P.IOSPGM, IOS0610P.IOSPGM, and IOS0720P.IOSPGM.

17. SMR# 5720 - The priority entered for a backorder was not right justified and zero filled. This affects EDITTIOS, AND TBLINIOS in IOSWORK.

18. SMR# 5833 - Allocations were generated with an incorrect date when a part had two different lead times for the same parent part using the CONFIG-CODE capability. This is fixed in IOS0720P.IOSPGM.

19. SMR# 5943 - The job statement in IOS0950J.IOSJCL incorrectly specified MRPWORK as the logon group, it now reflects IOSWORK.

20. SMR# 6129 - The query procedure VENDLIST had an incorrect column heading. This is corrected in IOSPROC.DATABASE.

21. SMR# 6188 - IOS0720P.IOSPGM randomly aborted with the error message "ERROR RETURNED FROM GET'CAL'INDEX". This is corrected in the called module CAL1200.

22. SMR# 6193 - Random error messages were displayed whenever a user attempted to access an invalid retrieval screen. This is corrected in ORD0100P.IOSPGM.

23. SMR# 6195 - The called module ORDVAL contained an error message that had been misspelled. This change affects IOS0200P and ORD0100P in IOSPGM.

24. SMR# 6205 - The compile jobstream TBLLOADV did not stream ORD0100L and INV0100L in IOSJCL. This is now corrected.

25. SMR# 6347 - The screen ORDFMT20 has been changed to correct the misspelling of INFORMATION. This change is in ORDFORMS.IOSWORK.

B. KNOWN PROBLEMS

1. SMR# 5239 - The Inventory Report does not show a total inventory value for all controllers.

2. SMR# 5241 - The Inventory Value Report should be sorted by controller, six month requirement, and then by part number.

3. SMR# 5242 - There is no separate column heading for configuration code in IOS reports.

4. SMR# 5243 - The Material Requisition Report contains only 21 characters for the description field (the description field is truncated).

5. SMR# 5244 - The Purchase Committment Report truncates the report total after $9,999,999.99.

6. SMR# 5245 - The column headings for the Pick List are not right justified.

7. SMR# 5258 - The Inventory Control portion of IOS allows a user without ADD/DELETE capability to add and delete allocations.

8. SMR# 5273 - There is no way for a user to enter the date a purchase order is confirmed.

9. SMR# 5274 - It is possible to create multiple backorder records for a single extra usage order number.

10. SMR# 5276 - IOS screen ORDFMT19 incorrectly infers that released orders can be deleted.

11. SMR# 5648 - The part description displayed on screen INVRET06 is truncated.

12. SMR# 5649 - IOS0800 does not list the records it deletes from the ORDER and STOCK-ACTIVITY data sets nor does it create a historical file.

13. SMR# 5651 - When originator 95 is deleted, the error message displayed in the Allocation Maintenance Jobstream refers to originator 99.

14. SMR# 5714 - IOS07020 aborts when the shop calendar is used and the pull date is outside the range of the shop calendar.

15. SMR# 5716 - IOS does not allow you to receive goods from inspection when the order number is specified in the transaction and the order is closed.

16. SMR# 5718 - Entering all 9's in an Adjust On Hand transaction results in the inventory balance being adjusted by a "-1".

17. SMR# 5721 - The routine to partially fill backorders loops through the backorder chain only once rather than continuing to fill with partial quantities until all backorders are filled or until the quantity received is exhausted.

18. SMR# 5932 - The logging program UTS0500P.PUB aborts with a file error 54: user lacks multi-run capability.

19. SMR# 5948 - It is not possible to re-open a work order with a negative received quantity when the order is closed short or long.

20. SMR# 5950 - Material receivers and backorder fill documents sometimes are printed on the serration between the pages.

21. SMR# 5952 - When the Material requistion limit feature of the material requistion job stream is used, IOS0610P.IOSPGM does not continue to activate allocations after having reached the limit.

22. SMR# 6209 - When IOS0200 aborts there is no information to indicate how many records have been processed.

23. SMR# 6438 - IOS0400 does not update the CTRL field of the inventory dataset and not all IOSDB datasets.

MRP/3000 HP32388A.00.01

DATE CODE 1906, N00N388A.HP32388.SUPPORT

A. CORRECTIVE SOFTWARE CHANGES

1. SMR# 4925 - MRP1000 would abort from stack overflow. The MAXDATA parameter has been changed from 6000 to 8000 to correct this problem, in MRP1000J.MRPJCL.

2. SMR# 4977 - LEAD-OFFSET was subtracted from the lead time of a part. This was inconsistent with IOS and has been changed so that LEAD-OFFSET is added to the lead time rather than subtracted in MRP2000P.MRPPGM, this is now fixed.

3. SMR# 5240 - MRP2100 drops the first character of the CTLR field heading on the MRP Discrepancy Report. This problem has been fixed in MRP2100P in MRPJCL.

4. SMR# 5246 - MRP2100 changes the controller field to "00" in the MRP Discrepancy Report for part numbers with warning messages relating to suggested date changes of work and purchase orders, this is fixed in MRP2100P.MPRPGM.

5. SMR# 6231 - The job statement in MRP1000J.MPRJCL incorrectly referenced an account other than MFG3000, this problem is fixed.

6. SMR# 6397 - MRP2000P.MRPPGM did not handle multiple engineering changes correctly when at least one engineering change was effective, this is now fixed.

7. SMR# 6398 - MRP2000P.MRPPGM directed all changes to the EC-EFFECT-DATE to the same structure record when there were multiple engineering changes, this is fixed.

8. SMR# 6399 - MRP2000P.MRPPGM rescheduled firm orders when suggesting that these orders be cancelled, this is now fixed.

9. SMR# 6400 - In MRP3000 an EC-EFFECT-DATE for a work order driven engineering change preceded the first working date of the shop calendar, MRP2000P.MRPPGM wrote an update for the EC-EFFECT-DATE to the first working date in the shop calendar. This is fixed in MRP1000P and MRP2000P in MRPPGM.

10. SMR# 6480 - Engineering changes for phantom parts did not work. This is now fixed in MRP2000P.MRPPGM.

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. After being incorporated into a manual through reprinting, updates continue to be available for 6 months.

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 IT'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 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 want to order past issues of the COMMUNICATOR, please note that supplies are now limited and only the following issues are available:

Issues # 13, 14, 15, 16, 17, 18, and 19.

Order information can be found on the COMMUNICATOR order form in the rear matter.

NEW MANUALS

Series 33 Computer Systems Instruction Decoding Pocket Guide
part number 30070-90024
September, 1978

The Series 33 Instruction Decoding Pocket Guide has been developed to reflect the addition of the Series 33 to the 3000 product line.

Series 33 Console Operator's Guide
part number 30070-90025
November, 1978

A new Console Operator's Guide for the HP 3000 Series 33 Computer System is now available. It documents step-by-step instructions on how to initialize and monitor operations on the Series 33 operating system and how to request various operations through the system console.

Many of the features in the Series II/III Console Operator's Guide have been included in this manual, such as:

- operator commands presented alphabetically
- step-by-step procedures on how to perform the routine functions of an operator
- descriptions of the error and system failure messages with suggested recovery procedures for each.

Along with these features are some special capabilities a Series 33 operator may perform, which include:

- loading and unloading flexible discs

- serializing a disc pack or flexible disc
- running a Cold Load Self-Test
- cold loading the diagnostic utility system.

NEW EDITIONS

Using the HP/3000
part number 03000-90121
January, 1979

This third edition of Using The HP/3000 is issued to correct all known errors in the second edition. Essentially, it is an update, but requires a new edition because of the binding methods used.

Index to MPE Reference Documents
part number 30000-90045
August, 1978

A new edition of the Index to MPE Reference Documents has been printed to reflect changes made in MPE documentation through August, 1978.

Series II/III Computer Systems Instruction Decoding Pocket Guide
part number 30000-90057
September, 1978

A new edition of the Series II/III Instruction Decoding Pocket Guide has been printed to correct various errors in the previous edition. In addition, a file label page replaces the less useful "powers of 2" table.

Data Communications Handbook
part number 30000-90105
October, 1978

The second edition of the Data Communications Handbook is now available. In addition to the original chapters, the manual contains reference information about MRJE/3000, MTS/3000, DS/3000 to DS/1000 communications, and HP 2026.

The manual also has a new name; it was formerly titled "Data Communications Pocket Guide."

APL/3000 Reference Manual
part number 32105-90002
January, 1979

This second edition of the APL/3000 Reference Manual is a complete revision of the first. Aside from greatly expanding on the material in the original edition, it also documents the following major enhancements to the APL/3000 subsystem:

- Use of double integers, thus allowing for greatly increased array sizes.
- A commercial formatter for quickly and easily editing numeric and character data.
- APL component file system, designed especially to handle APL data.
- Secure applications abilities, including locking functions, defining error handling routines, and assigning pass numbers to captured environments.
- Calls to user-defined SPL procedures.
- Nine new system functions which effectively allow a user to issue many system commands from within a user-defined function.
- Extension of the abilities to COPY, DROP, PCOPY, LOAD, and SAVE workspaces on a remote system through the use of DS/3000.

UPDATES

EDIT/3000 Reference Manual
part number 03000-90012
February, 1979

Update Package #5 to the EDIT/3000 Reference Manual documents many minor software changes, corrections, and enhancements. In addition, the following changes are explained:

- The FIND command used in the form FIND startlinenbr/stop-linenbr will find the line 'stoplinenbr'.

- Full error messages, rather than just the error numbers, will be printed by default.

- Editor's user interface procedures can be in segmented libraries other than the system SL.

- The result of the user interface procedure HP32201'USERINIT has been changed so that users can selectively invoke either the USERADD or the USERCOMMAND procedures.

System Manager/System Supervisor Reference Manual
part number 30000-90014
November, 1978

The System Manager/System Supervisor Manual has been updated to reflect the addition of the Series 33 to the 3000 product line. Both the Series 33 and the Series II/III operate under MPE III. However, because of differences in hardware and in software configuration between these two systems, numerous minor changes were required throughout the manual.

MPE System Utilities Reference Manual
part number 30000-90044
November, 1978

The System Utilities Reference Manual has been updated primarily to reflect the addition of the Series 33 to the 3000 product line. The areas in this manual which differ most from the previous Series II/III text are as follows:

- SADUTIL

- DPAN

FCOPY Reference Manual
part number 03000-90064
February, 1979

This first update to the fifth edition of the FCOPY Reference Manual documents the following enhancements:

- FCOPY now reads and writes ASCII as well as binary cartridges. Whether the to-file is ASCII or binary, of course, depends upon the from-file.

- You are no longer required to switch to half-duplex mode when copying to (or from) a cartridge from (or to) some other type of device file, since echoing is now automatically turned off and on in such a case.

- When a cartridge file is closed, it is now automatically rewound.

- Using SUBSET=0,0 allows you to write user labels to the to-file, rather than the entire contents of the from-file.

- You may use the NOBUF option in file equations in order to increase the copying speed from one file to another.

- Several MPE commands can be issued from within FCOPY by preceding them with a colon.

- You can use the formal file designator, HARD, in order to change the logical record size for $HARD.

- If any dump option (CHAR, HEX, OCTAL, and so forth) is used without the NORECNUM parameter, duplicate lines are suppressed, and the message, SAME TO xxxxxx-1, is returned, where xxxxxx is a line number. Furthermore, hexadecimal record numbering is used at the top of each record.

- The BCDICIN and BCDICOUT conversion routine has been improved, so that, with the exception of a few characters, it is equivalent to the EBCDIC character set.

- Control-Y no longer purges a new file that was just built.

- You can supply the FCOPY prompt, ">", in batch and stream file mode. Furthermore, "E" is sufficient to exit FCOPY.

RPG/3000 Compiler Reference Manual
part number 32104-90001
November, 1978

Update #3 to the RPG Compiler Reference Manual corrects all known errors, explains the new device class names $STDIN and $STDLST, documents the existence of an RPG interface with VIEW/3000, and reflects the following major changes:

- A new UNLOCK option can be used to open a file with dynamic locking but without calling the FLOCK/FUNLOCK intrinsics normally required by the File System. This feature is usually used to improve program performance. However, its use implies that the input/output buffers may not always reflect the current content of records in the file if concurrent processes are updating the file with the LOCK option specified.

- Carriage control compatibility to the IBM System/3 is now provided. Programs using System/3 line skipping may line up channel one with line one. RPG will assume it is starting at line 1 instead of line 6 if a 1 is entered in column 53 of the header record.

- In order to improve run times, the code generated for reporting source statement error line numbers can be eliminated. The RPG compiler loads and stores the line number for each statement it executes, so that when a run time error appears RPG can inform the user where the error occurred. If this feature is not needed in a program, the user can save up to 30% of code space by entering a N in column 20 of the header record.

COBOL/3000 Compiler Reference Manual
part number 32213-90001
February, 1979

This fourth update to the COBOL/3000 Reference Manual corrects all known errors in the document, as well as documenting the following enhancements to the software:

- $STDINX may be used for the input device to the ACCEPT statement. Thus, a colon (:) may be used as the first character in an input string.

- When the compiler detects a questionable error, the MPE JCW is set to WARN. The JCW can then be tested with the MPE :IF command.

- When a new file is specified in any of the MPE COBOL commands, its file code will always be 1052.

- When COBOL error 711 is generated by a COBOL program at run time, the hexadecimal forms of the operands causing this error are displayed.

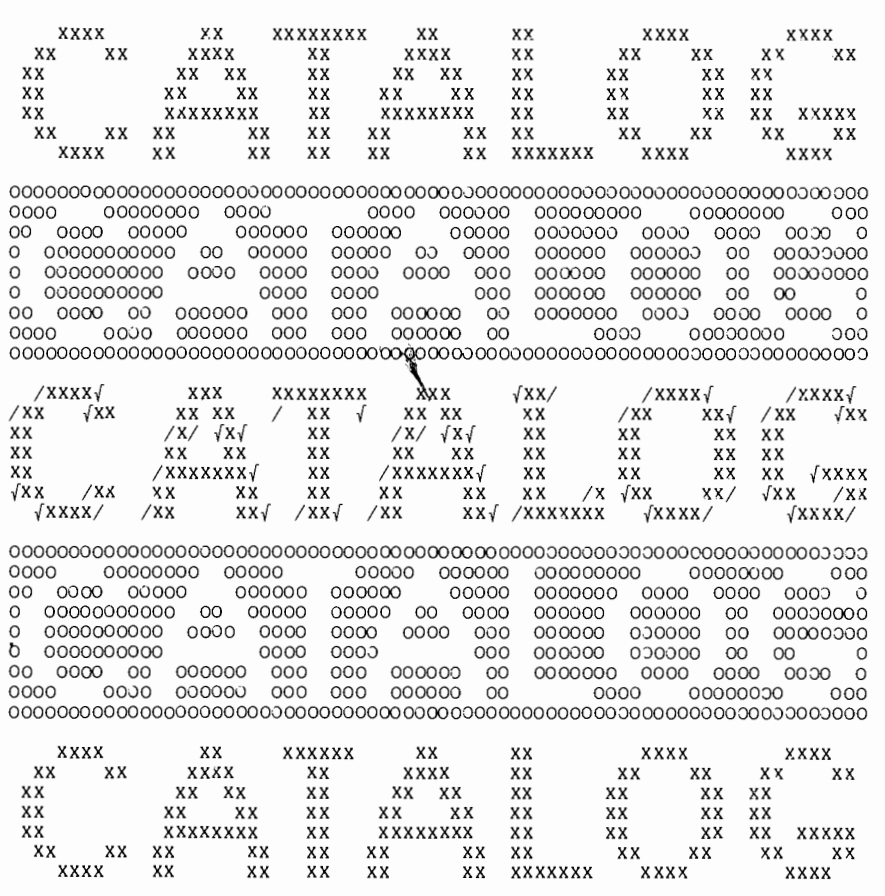
- Extra symbols from the identification columns of a COBOL line which are moved into columns preceding column 72 will no longer cause a Data Division bypass.

MTS/3000 Reference Manual
part number 32193-90002
August, 1978

Update # 1 to the MTS/3000 Reference Manual has been released. Primarily, the update documents changes to the strapping options on the printed circuit assemblies in multipoint terminals.

CATALOG OF CUSTOMER PUBLICATIONS
FOR HP 3000 COMPUTER SYSTEMS

FEBRUARY 1979



ASTERISKS

Manual entries noted by an asterisk (*) in the leftmost column have changed since the last edition of the catalog. An asterisk in the "Price" column indicates that the price of the manual was not available at catalog printing.

HP 3000 COMPUTER SYSTEMS USING MPE III

SYSTEM MANUALS

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
*	Using the HP 3000: An Introduction to Interactive Programming	03000-90121	6.50	1/79		
*	General Information Manual	30000-90008	5.25	10/78		
	MPE Commands Reference Manual	30000-90009	13.50	4/78		
	MPE Intrinsics Reference Manual	30000-90010	20.00	4/78		

SYSTEM MANUALS (continued)

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
	MPE Segmenter Reference Manual	30000-90011	3.50	2/77		
*	MPE Debug/Stack Dump Reference Manual	30000-90012	4.50	9/76	6/77	10/78
	Console Operator's Guide Series II/III	30000-90013	13.50	4/78		
*	System Manager/System Supervisor Manual	30000-90014	12.75	4/78	11/78	
	Error Messages and Recovery Manual	30000-90015	14.00	6/76	5/78	8/77
*	System Reference Manual	30000-90020	8.25	7/78	12/77	8/77
*	Machine Instruction Set	30000-90022	5.50	6/76		
*	MPE System Utilities Reference Manual	30000-90044	5.00	3/77	11/78	9/78
*	Index to MPE Reference Documents	30000-90045	5.50	8/78		
	Software Pocket Guide	30000-90049	5.25	4/78		
*	Instruction Decoding Pocket Guide - Series II/III	30000-90057	1.00	9/78		
	Using Files	30000-90102	4.50	4/78		
*	Instruction Decoding Pocket Guide - Series 33	30070-90024	.75	9/78		
*	Console Operator's Guide Series 33	30070-90025	12.75	11/78		

LANGUAGE MANUALS

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
	BASIC for Beginners	03000-90025	6.00	11/72		
	BASIC/3000 Pocket Guide	03000-90050	1.25	9/74		
	System Programming Language Reference Manual	30000-90024	9.50	9/76	2/77	12/77
	System Programming Language Textbook	30000-90025	7.50	6/76	1/77	9/77
*	BASIC Interpreter Manual	30000-90026	10.50	6/76	8/78	11/78
	FORTRAN Reference Manual	30000-90040	8.50	6/76	4/78	5/77
	SPL Pocket Guide	32100-90001	2.00	11/76		
	FORTRAN Pocket Guide	32102-90002	1.50	9/77		
	BASIC Compiler Reference Manual	32103-90001	3.00	11/74	6/76	9/77
*	RPG/3000 Compiler Reference Manual	32104-90001	22.00	2/77	11/78	12/77
	RPG Listing Analyzer	32104-90003	.50	2/77		
*	APL Reference Manual	32105-90002	*	1/79		
	APL Pocket Guide	32105-90003	4.50	11/76		
*	VIEW/3000 Programmer/ Designer Pocket Guide	32209-90002	*	2/78		
*	VIEW/3000 Entry Program Operator's Quick reference guide	32209-90003	*	2/78		
*	COBOL Reference Manual	32213-90001	12.00	7/75	2/79	11/77
	Using COBOL: A Guide for the COBOL Programmer	32213-90003	6.50	3/78		

ADDITIONAL MANUALS

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
*	EDIT Reference Manual	03000-90012	6.00	8/75	2/79	10/77
	Trace Reference Manual	03000-90015	4.50	6/76		
*	FCOPY Reference Manual	03000-90064	4.50	2/78	2/79	9/78
*	HP 3000 Series System Support Log	03000-90117	17.50	10/78	1/79	
	Guidebook to Data Communications	5955-1715	3.00	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	
	HP 3000 CX to HP 3000 Series II Program Conversion Guide	30000-90046	3.50	6/76		
	2780/3780 Emulator Reference Manual(RJE/3000)	30000-90047	7.50	6/77		
	Data Entry Library Mnl	30000-90050	7.00	5/78		
*	KSAM Reference Manual	30000-90079	10.00	1/77	4/78	1/79
*	Site Preparation Manual Series II/III	30000-90082	7.00	9/78	10/77	
	Site Planning Workbook Series II/III	30000-90086	6.00	9/77		
*	Data Communications Handbook	30000-90105	14.00	10/78		
*	Guide to a Successful Installation	30000-90135	3.25	9/78		
*	Series III(32435A) Site Preparation Manual	30000-90145	1/79			
*	Series III(32435A) Site Planning Workbook	30000-90146	1/79			

ADDITIONAL MANUALS (continued)

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
*	HP 30032B Asynchronous Terminal Controller Ins. & Service Manual	30032-90004	14.00	1/76	8/76	8/76
*	HP 30032B Terminal Data Interface Stand-alone Diagnostic Mnl (D427A)	30032-90011	2.25	2/76		
*	HP 30055A Synchronous Single-line Controller Ins and Service Manual	30055-90001	6.25	12/77	8/78	11/78
	HP 30055A Synchronous Single-line Controller Stand-alone Diagnostic Manual (D434)	30055-90008	1.55	7/78		
*	Series 33 Computer Systems Site Preparation Planning Guide	30070-90007	4.00	10/78		
*	Series 33 Computer Systems Site Planning Workbook	30070-90029	6.00	9/78		
*	Series 33 Diagnostic Manual Set	30070-60068	*			
	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		
	Hardwired Serial Interface, Installation and Service Manual	30360-90001	6.00	3/77		
	Hardwired Serial Interface Stand-alone Diagnostic Mnl (D432)	30360-90007	2.50	3/77	4/77	
*	IBM System/3 to HP 3000 Conversion Guide	32104-90004	5.75	7/78		
	DS/3000 Reference Manual	32190-90001	11.00	3/77	5/78	

ADDITIONAL MANUALS (continued)

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
	DS/3000 Modem Link Site Preparation and Installation Manual	32190-90003	3.00	10/77		
	DS/3000 Hardwired Link Site Preparation and Installation Manual	32190-90004	3.00	10/77		
	DS/3000 to DS/1000 Reference Manual	32190-90005	7.25	1/78		
*	MRJE/3000 Reference Manual	32192-90001	8.75	1/78	5/78	11/78
*	MTS/3000 Site Preparation and Installation Manual	32193-90001	7.00	5/78	9/78	
*	MTS/3000 Reference Mnl	32193-90002	6.50	5/78	8/78	
*	SORT Reference Manual	32214-90001	*	1/79		
*	IMAGE Data Base Management Reference Manual	32215-90003	9.50	4/78	9/78	
	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	13.00	1/78		
	College Information System Technical Mnl	32902-90005	10.50	2/78		

SYSTEM MANUALS

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
	Systems Reference Manual HP 3000 Computer	03000-90019	24.00	9/73	3/77	
*	Using the HP 3000: An Introduction to Interactive Programming	03000-90121	6.50	1/79		
	Software Pocket Guide	03000-90126	2.70	7/78		
	MPE Intrinsics Reference Manual	30000-90087	20.00	4/77	4/78	
	MPE Commands Reference Manual	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	9.25	4/77		
*	Using Files	30000-90102	4.50	4/78		
	MPE/3000 Operating System, System Utilities	32000-90008	2.05	10/75		

LANGUAGE MANUALS

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
	BASIC Interpreter Reference Manual	03000-90008	9.75	7/75		
	BASIC for Beginners	03000-90025	6.00	11/72		
	BASIC/3000 Pocket Guide	03000-90050	1.25	9/74		
*	System Programming Language Reference Manual	30000-90024	9.50	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	32102-90001	10.00	3/76		
	FORTRAN Pocket Guide	32102-90002	1.50	9/77		
	BASIC Compiler Reference Manual	32103-90001	3.00	11/74	6/76	9/77
*	RPG/3000 Compiler Reference manual	32104-90001	22.00	2/77	11/78	12/77
	RPG Listing Analyzer	32104-90003	.50	2/77		
*	COBOL Reference Manual	32213-90001	12.00	7/75	2/79	11/77
	Using COBOL: A Guide for the COBOL Programmer	32213-90003	6.50	3/78		

ADDITIONAL MANUALS (continued)

	Manual Title	Part Number	Price	Print Date	Up-dated	Incorp
	Real-Time Programmable Controller Reference	30301-90002	7.75	2/75	7/76	
*	IBM System/3 to HP 3000 Conversion Guide	32104-90004	5.75	7/78		
*	SORT Reference Manual	32214-90001	*	1/79		
	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	13.00	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	

BAUD LINE

INTRODUCING...THE NEW SERIES III!

Gwen Miller
GSD

Starting February 1, there will be a "New Look" for the HP 3000 Series III! The new system, model number 32435A, incorporates the existing Series III CPU and memory into a single-bay system with a separate "low-boy" magnetic tape. Certain internal design changes have also been made, including reliable new power supplies that operate off single-phase power. Another new feature is the use of the low-cost 2621A as the system console, replacing the older 2640B. These design changes have allowed a reduction in price from the original Series III to $105,000 for the base system. The picture below illustrates the New Look of the New Series III.

The benefits of this new design are in lowering the cost of ownership and in decreasing system down-time. The single-phase power lowers installation costs, as does the built-in isolation transformer. The "low-boy" tape cabinet provides cost savings for add-on tape drives, and the cost of expanding memory past one

megabyte is lowered because an additional power supply is no longer required. The monthly maintenance fee is reduced, partly because of the greater reliability of the new power supplies. If a system failure should occur, new diagnostic aids and improved accessibility to system components minimize the time required to bring the system back up.

The New Series III system uses the same CPU, the same memory, the same peripherals, and the same software as the original Series III. Memory expansion to two megabytes is supported in the single system bay. Nine I/O slots are provided, with an additional 20 slots available in an optional I/O expansion cabinet. The performance of the New Series III is identical to that of the original Series III system.

If you would like more information regarding the newest member of the HP 3000 family, your Hewlett-Packard Sales Representative will be glad to show you how the New Series III can help answer your information processing needs.

ACCESSING HP PLOT/21 GRAPHICS SUBROUTINES FROM BASIC ON HP 3000 SYSTEMS

By Aaron McNaughton & Walter Murray
San Diego Division

PLOT/21 is a set of routines, written in FORTRAN, which facilitates the coding of applications designed for use on the HP 7221A graphics plotter. This article describes a technique for calling the HP PLOT/21 routines from programs written in BASIC.

Any HP 3000 user with the PLOT/21 software will be able to implement this very easily. The PLOT/21 software is still a FORTRAN source, but this technique merely allows the BASIC programmer to call the PLOT/21 FORTRAN subroutines from his BASIC program. This is not a release of a new PLOT/21, just a new way to access the old one.

A. Restrictions

1. Character strings in BASIC/3000 are limited to 255 characters in length.

2. The BASIC/3000 Interpreter permits CALLS ONLY to non-BASIC subroutines which reside in a segmented library (SL). Since PLOT/21 resides in a relocatable library (RL), THE BASIC PROGRAM MUST BE COMPILED, AND CANNOT BE RUN UNDER THE BASIC INTERPRETER.

B. Implementation Technique

Two user defined functions are necessary to allow use of HP PLOT/21 from BASIC/3000.

1. In BASIC/3000 all numeric constants, other than type LONG and type COMPLEX, are represented internally as type REAL (floating-point), even if entered without a decimal point. However, some of the PLOT/21 routines require parameters to be passed as integers. This is overcome by using a one-line integer-value function which converts a numeric expression to type INTEGER. This function, which we called FNI, follows:

```
DEF INTEGER FNI(X) = X
```

2. The other user-defined function, called FNC, facilitates the passing of character strings. The PLOT/21 routines, which are written in FORTRAN IV, expect character strings to be passed as integer arrays. HP 3000/FORTRAN IV passes an integer array by reference, using a word address. On the other hand, when a

string variable or string expression is used as an argument in a BASIC/3000 CALL statement, a byte pointer is passed. FNC is used to convert a string expression to an integer array. It examines the character string from left to right, converting the characters to their numeric equivalents and packing them, two per word, into the integer array. The name of this integer array is then referenced in the call to PLOT/21. FNC follows:

```
DEF FNC (X$ , INTEGER X [*])

    REM FUNCTION TO CONVERT STRING X$ TO INTEGER ARRAY X [*]

    INTEGER I

    FOR I = 1 TO INT(LEN(X$)/2)

     X[I] = 256 * NUM(X$[ 2*I-1;1]) + NUM(X$[ 2*1;1])

    NEXT I

    IF LEN(X$) MOD 2 = 1 THEN DO

     X[INT(LEN(X$)/2)+1] = 256 * NUM(X$[LEN(X$)]) + NUM (" ")

    DOEND

    RETURN 0

FNEND
```

C. Programming Note

Care must be taken by the programmer to insure that all PLOT/21 parameters of type INTEGER do, in fact, get treated as FNI(X). The system cannot catch this if you don't.

Example: Format for PLOT call is?

```
CALL PLOT(X,Y,IPEN).
```

In FORTRAN IPEN must be an integer.

The FORTRAN call could look like:

```
CALL PLOT (X,Y ,3)
```

While in BASIC it must be:

```
CALL PLOT (X,Y,FNI(3))
```

If you accidentally submit

CALL PLOT (X,Y,3) you may or may not get a run-time error because BASIC assumes "3" is a REAL value. If you get strange results, be sure to check your code for errors of this type first.

To write and compile the program in BASIC issue the following control commands:

	Command	Comments
1.	:BASIC	Call interpreter (to develop text source)
2.	>NAME PROGNAME	Define the name of your program
		Enter program text
3.	>SAVE,FAST	Save source
4.	>EXIT	Exit interpreter
5.	:BASICOMP	Invoke compiler
6.	$COMPILE PROGNAME	Compile PROGNAME
7.	$EXIT	
8.	:PREP $OLDPASS,$NEWPASS; RL=RLPLOT21	RLPLOT1 is the name of the relocatable library I used for PLOT/21 subroutines
9.	:SAVE $OLDPASS,OBJECT	
10.	:FILE FTN06 = $STDLIST; REC = -200,1,F,ASCII,CCTL	Allows PLOT/21 to write out up to 200 characters per block
11.	:RUN OBJECT	

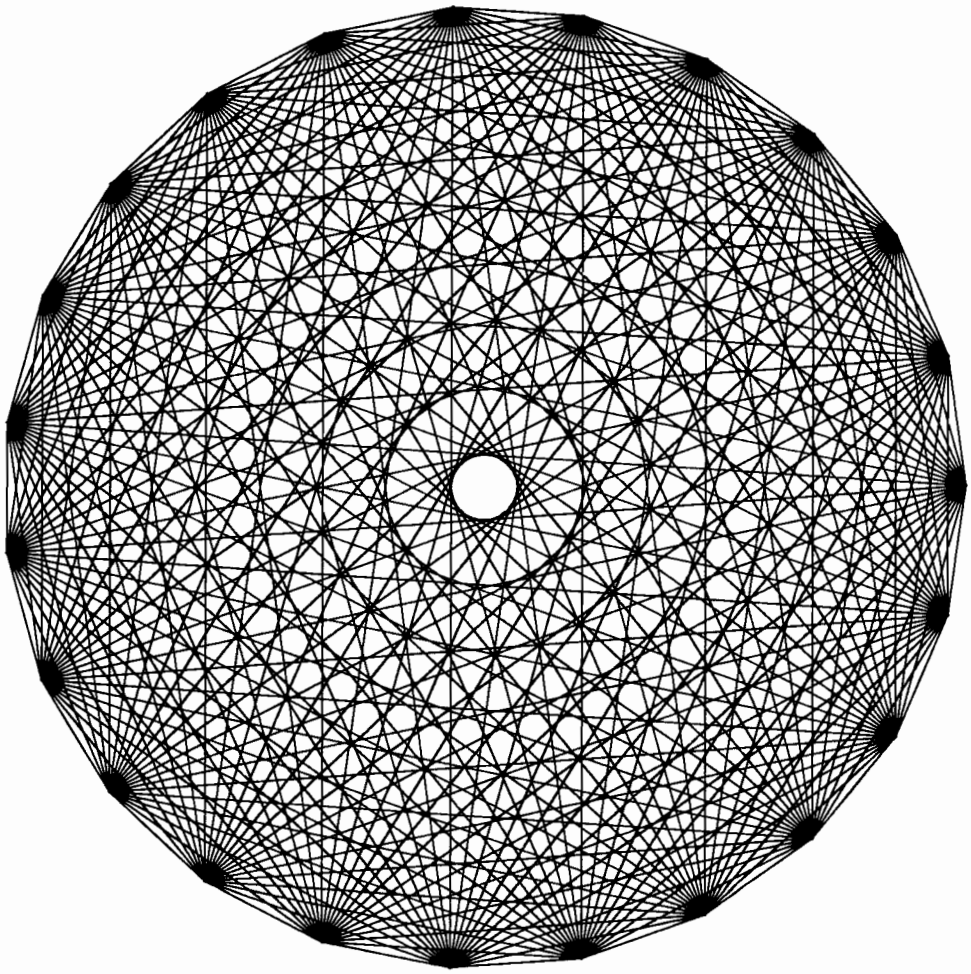
Your program text should include the 2 functions defined previously. A sample BASIC program and the graph it generates on the HP 7221A follow:

D. Sample Program

```
INTRLACE
  10 REM CIRCLE INTERLACE
  20 INTEGER L1[8]
  30 REM ************************************************************
  40 REM
```

```
 50 DEF INTEGER FNI(X)=X
 60 DEF FNC(Xs,INTEGER X[*])
 70   REM INTEGER TO CONVERT STRING X$ TO INTEGER ARRAY X[*]
 80   INTEGER I
 90   FOR I=1 TO INT(LEN(X$)/2)
100     X[I]=256*NUM(X$[2*I-1;1])+NUM(X$[2*I;1])
110   NEXT I
120   IF LEN(X$) MOD 2=1 THEN DO
130     X[INT(LEN[X$)/2)+1]=256*NUM(X$[LEN(X$)])+NUM(" ")
140   DOEND
150   RETURN 0
160 FNEND
170 REM
180 REM ************************************************************
```

CIRCLE INTERLACE



WRITTEN IN BASIC

```
190 REM
200 REM:---BEGINNING OF PROGRAM TO DRAW CIRCLE INTERLACE IN BASIC
210 REM
220 REM ************************************************************
230 SYSTEM T,"FILE FTN06=$STDLIST;REC=-200,1,F,ASCII;CCTL"
240 T=FNC("CIRCLE INTERLACE",L1[*])
250 PRINT "INTERLACE:HOW MANY POINTS (10-30) ?"
260 INPUT A
270 REM ************************************************************
280 REM
290 REM:---INITIALIZE PLOTTER - I/O UNITS 5 AND 6 RESPECTIVELY
300 REM
310 REM ************************************************************
320 CALL PLOTS(FNI(1),FNI(5),FNI(6))
330 REM ************************************************************
340 REM
350 REM:---DECLARE INCHES AS THE UNIT SYSTEM - LOCATE THE COORDINATES
360 REM:---  IN INCHES WHICH DEFINE THE GRAPH LIMITS
370 REM
380 REM ************************************************************
390 CALL SETIN
400 REM ************************************************************
410 REM
420 REM:--- ONTO THE SQUARE JUST DEFINED, MAP THE FOLLOWING USER UNITS.
430 REM:---  THE AREA JUST DEFIND IS A SQUARE 7.5 INCHES PER SIDE
440 REM:---  (FROM CALL LOCATE) AND THE LEFTMOST X COORDINATE IS -1,
450 REM:---  RIGHTMOST X IS 1, MINIMUM Y IS -1, MAXIMUM Y VALUE IS  1.
460 REM
470 REM ************************************************************
480 CALL LOCATE(1.75,9.25,.5,8)
490 CALL MAPUU(-1,1,-1,1)
500 REM ************************************************************
510 REM
520 REM:--- MOVE PEN TO POSITION TO BEGIN PLOT (IN THE USER'S UNIT
530 REM:---   SYSTEM [ DEFINED IN 'MAPUU' CALL]). THIS EXAMPLE
540 REM:---   MOVES TO AN AREA OUTSIDE OF THE MAPUU PARAMETERS SO
550 REM:---   THE TEXT TO FOLLOW WON'T BE WRITTEN WHERE PLOTTING
560 REM:---   MAY OCCUR. NOTE THAT THE COORDINATE IS SPECIFIED IN
570 REM:---   TERMS OF THE USER UNITS.
580 REM:--- SPECIFY HOW TO CENTER THE TEXT (LORG) ABOUT THE COORDINATE
590 REM:---    JUST ADDRESSED AND PRINT THE TEXT (FNC(L1)), ACCORDING
600 REM:---    TO PARAMETERS IN CALL TO 'SYMBOL'.
610 REM:---   (FNC(L1)),ACCORDING TO PARAMETERS IN CALL TO 'SYMBOL'
620 REM
630 REM ************************************************************
640 CALL MOVE(0,1.1)
650 CALL LORG(FNI(4))
660 CALL SYMBOL(0,1.1,.1,L1[*],0,FNI(16))
670 REM ************************************************************
680 REM
690 REM:--- POSITION PEN FOR INITIAL PLOT LOCATION. GET PEN #2 (RED).
700 REM
710 REM************************************************************
720 P1=3.14159
730 CALL MOVE(1,0)
```

```
 740 CALL NEWPEN(FNI(2))
 750 A=3.14159*2/A
 760 REM ************************************************************
 770 REM
 780 REM:--- PLOT THE LINES
 790 REM
 800 REM ************************************************************
 810 FOR X=A TO 2*Pl STEP A
 820   FOR Y=X+A TO 2*Pl STEP A
 830     CALL PLOT(COS(X),SIN(X),FNI(2))
 840     CALL PLOT(COS(Y),SIN(Y),FNI(2))
 850   NEXT Y
 860 NEXT X
 870 REM ************************************************************
 880 REM
 890 REM:--- SPECIFY WHERE TEXT IS TO BEGIN AND GET PEN #3 (GREEN)
 900 REM
 910 REM ************************************************************
 920 CALL MOVE(0,-1.3)
 930 CALL NEWPEN(FNI(3))
 940 REM ************************************************************
 950 REM
 960 REM*--- TURN ON LABEL MODE, PRINT MESSAGE, END LABEL MODE
 970 REM
 980 REM ************************************************************
 990 CALL LABON(FNI(16))
1000 PRINT "WRITTEN IN BASIC"
1010 CALL LABOFF
1020 REM ************************************************************
1030 REM
1040 REM:--- PUT PEN AWAY AND END PLOTTER COMMUNICATIONS
1050 REM
1060 REM ************************************************************
1070 CALL NEWPEN(FNI(0))
1080 CALL PLOTOF
1090 END
```

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