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SOFTWARE UPDATE NOTICE

FOR SOFTWARE REVISION 1840

DATE: September 22, 1978 **PAGE:** 1 of 59

This notice describes the changes in software and related documentation that is now compatible with software revision code 1840.

Library Index No.
HP 1000·220·SUN-3

DATA SYSTEMS TECHNICAL MARKETING
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I. INTRODUCTION

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II. CURRENT SOFTWARE CATEGORIES

New software has been introduced as part of the 1840 revision period. These offer increased capability in the form of one new driver and two new device subroutines.

DVB12 Line Printer Driver (in 92062B)

A driver has been released for the new Model 2608A Line Printer. At this point in time, DVB12 will support only the alphanumeric mode on the 2608A.

GRAPHICS/1000 Device Subroutines

The addition of two new device subroutines enables the use of two other devices previously not supported in GRAPHICS/1000. The Model 9874 Digitizer and the Model 7221 RS232 Four Color Pen Plotter can now be utilized in GRAPHICS/1000 operations.

The following list shows the categories of available software.

Active

RTE-IV Operating System (92067A)
RTE-M Operating System (92064A)
RTE FORTRAN IV Compiler (included in RTE Operating System)
BASIC/1000M (92065A)
BASIC 1000/D (92101A)
RTE Assembly Language (included in RTE Operating System)
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RTE Measurement and Control Package (92066A)
RTE Drivers Package (92062B)
Diagnostics Library (24396A,B,C,D,E,F)
IMAGE/1000 Data Base Management System (92063A)
Distributed Systems/1000 (91740A/B, 91741A)
GRAPHICS/1000 Plotting Software (92840A)
DATACAP/1000
HP/1000 Multipoint (91730A)

Mature

RTE-III Operating System (92060B)
Basic Control System (BCS) (20855A)
RTE-B Operating System (2300B)
RTE-C Operating System (2300C)
RTE-II Operating System (92001B)
Real-Time Plotter Library (92409A)
Distributed Systems/1B (91700A,91703A,91704A,91705A)

The obsolescence of DOS-III will begin within the next few weeks.

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III. DESCRIPTION OF SOFTWARE CHANGES

III.A. HP/1000 MULTIPOINT (91730A)

The modifications to Multipoint appear below.

NOTE: DVR07 has been modified to test for the "M" bit (Bit 6) of a WRITE request. If set, the 12790 interface is instructed to do no modification or editing of the data as it is being sent.

NOTE: XLIB has been added to MPLIB to provide support for using the CTU's and printer over Multipoint. XLIB has three entry points:

- XREAD--for reading from the CTU's
- XWRIT--for writing to the CTU's and printer
- XCONT--for controlling the CTU's and printer

NOTE: Two unnecessary relocatable modules (%CNVSC and %FIXMP) have been deleted from the updated %MPLIB library.

III.B. DS/1000 (91740A/B,91741A)

Modifications to DS/1000 are described below. These changes were made to enhance aspects of DS/1000 to DS/3000 communication, and to correct bugs in the software.

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NOTE: The size of the DS/1000 to DS/3000 "Logical Driver" HSLC has been reduced from 4470 (octal) to 2425 (octal). The removal of the unused code enables a savings of slightly more than one page. This module is part of the library D3KLB.

NOTE: The DS/1000 to DS/3000 master communications module D3KMS has been enhanced. It is possible to change the list device from RMOTE (via LL command) without changing the input device, thereby directing all output, including subsytem prompts, to the new list device. With the modification , a re-prompt before a read occurs when the input device is interactive and the prompt was written on another device. More specifically, D3KMS now repeats the last output record on the input device when (1) the input LU is not equal to the output LU, (2) the last output record has not already been echoed, and (3) the input device is interactive.

NOTE: The DS/1000 to DS/3000 driver DVG67 has been modified to recognize spurious interrupts. For diagnostic purposes, the driver bumps a counter (at D$EQT+65) when the continuator is entered with EQT1=0 and no ENQ is expected.

PROBLEM: (SSB #4145) Specifying a write length greater than 4096 in a FWRIT intrinsic can cause undetected errors or an HP3000 system halt. The 3000 sends a reply to the FWRIT request with the continuation bit off. The 1000 continues to send data.

SOLUTION: FWRIT now checks the continuation bit after sending a partial data block. If not set, it returns to the user.

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PROBLEM: (SSB #4146) Unless all twenty parameters are specified, the last specified parameter is not returned from FINFO. A mask is set up assuming there are twenty-one parameters possible. Because there are twenty, the mask is one bit inaccurate.

SOLUTION: The mask is now set up for twenty parameters.

PROBLEM: (SSB #4148) When the 3000 sends a "DLE EOT" (hang up message), the 1000 driver is put into "DISCONNECT" state. The communications module QUEX does not always recognize this, and can no longer communicate with the driver.

SOLUTION: QUEX now re-initializes after receiving a DLE EOT.

PROBLEM: (SSB #4149) Lower case commands are not recognized by RMOTE. When a user enters "byé" the command is sent to MPE and the session is terminated but RMOTE thinks it is still logged on.

SOLUTION: Commands are upshifted before checking for special cases (such as HELLO and BYE).

PROBLEM: (SSB #4150) Entering a blank line while switched to remote (#) prompt causes RMOTE to go into an infinite loop. Leading blanks are moved from the front to the back of MPE commands. When there is no non-blank character in the command, the algorithm never completes.

SOLUTION: When the number of blanks removed is equal to the line length, the input is ignored.

PROBLEM: (SSB #4147) When a program logged on to a 3000 terminates without issuing a BYE, UPLIN sends a BYE

to log it off. If the session is busy, the BYE will be ignored by MPE. In that case, the 1000 has no record of the session, and it cannot be "gracefully" terminated.

SOLUTION: UPLIN now sends a kill request to MPE. This terminates a session, even if it is busy.

PROBLEM: (SSB #4043) APLDR will not load from a logical unit after DS has been initialized unless the node where the logical unit is located has RFAM enabled. This is because APLDR converts all DS post-initialization load requests to RFA reads.

SOLUTION: APLDR now makes loads from LU's via DEXEC (for both local and remote). If loading from an RTE-III/IV remote node, the LU..xx file is no longer necessary (as described in the DS/1000 Programmer's Reference Manual, p. 2-22).

PROBLEM: (SSB #4062) DMESG increments its return address by one after a no-error return from its DEXEC call. This does not agree with the documentation.

SOLUTION: DMESG no longer increments its return address. ALSO NOTE that the operator interface program REMAT has been modified to incorporate the DMESG change.

PROBLEM: (1) The loop-back method for testing DS/1000 communications (as described in the Network Manager's Manual) does not re-queue replies for EXEC write operations via a logical unit number. Thus, the class queue block-size specification (which was made negative to prevent RTE from releasing the vital reply parameters, upon completion of the class write operation) is not restored to a positive value. The result is catastrophic, when RTE is finally requested

to return the block to the System Available Memory pool. (2) If the link word of a class queue list incorrectly contains a zero the routine will loop endlessly, effectively preventing any other system activity.

SOLUTION: (1) #REQU, additionally, checks all re-queued class buffers for negative block size specification. If this is so, the value is made positive. (2) If #REQU encounters a zero link word when examining a class queue list, it will abort the current operation, and return a -9 error to the caller.

PROBLEM: (1) When an inter-active write/read request is re-queued onto an EQT, the inter-active flag (Bit #11) remains set in the CONWORD which is passed to RTIOC. RTIOC does not mask the bit, when the device subchannel is configured into Word #4 of the EQT. This results in the arbitrary allocation of DMA channels. (2) EXECM will arbitrarily re-queue a request onto a device which is LU-LOCKED.

SOLUTION: (1) EXECM will not pass Bit #11 in the configured CONWORD. (2) EXECM will check for the LU-LOCK flags in the specified DRT entry. The request will be rejected with a DS-08 error, if the device is currently locked.

III.C. RJE/1000 (91780A)

The modifications to RJE/1000 as described below are results of correcting reported and unreported bugs, along with enhancements made to the system.

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NOTE: RJE/1000 is now supported in RTE-IV. The subsystem was extensively tested in RTE-IV systems and the user manual now contains RTE-IV generation specifications.

NOTE: A built-in trace capability was added to RJE/1000 in the form of two additional programs,TRACE and TDUMP. Program TRACE runs concurrently with RJE and produces a binary file of the transmitted and received line data. Program TDUMP does an off-line analysis of this information.

Enhancements for easier use and increased understanding

PROBLEM: A listen state was formerly invoked with the #E, #R, and #W commands. These commands were cumbersome and limited in their capability to receive multiple streams.

SOLUTION: A new #P command was added to RJE/1000 to permit the user greater flexibility in listening for output streams.

PROBLEM: RJE/1000 could previously be accessed with the RTE BREAK command only when receiving output and during #W operation. Other cases remained in which the user could lose control of RJE/1000.

SOLUTION: The break capability was extended to #R, #P, and auto answer modes of operation.

PROBLEM: Logical units referenced by RJE/1000 were not locked and could be simultaneously used by other programs, interleaving output.

SOLUTION: Logical unit locking capability was added to RJE/1000.

PROBLEM: Upon abnormal termination of RJE/1000 the driver and the line to the remote site were left in incorrect states.

SOLUTION: A clear request (control Q) was added to the RJE/1000 driver to accommodate abnormal terminations.

PROBLEM: Transparent punch streams were never translated.

SOLUTION: Translation was automatically invoked for punch streams directed to the line printer or interactive devices, and can now be invoked selectively with the #X command for other destinations.

PROBLEM: Diagnostic information was reported as a two digit code and could be activated only at the time of program scheduling.

SOLUTION: Diagnostic messages now produce ASCII descriptions as well as the two digit code and can be activated at any time with the new #S command.

Enhancements for compatibility with current IBM methods

PROBLEM: IBM has revised its line bid sequence by now sending alternating ENQ's and EOT's. Due to a bug in RJE/1000, this sequence might not be correctly recognized, causing RJE to neglect to reply.

SOLUTION: The line bid checking routine in RJE/1000 was improved.

PROBLEM: RJE/1000 was originally written to bid for the line and maintain it in a TTD/NAK mode until the user requested a line turnaround to receive data. When RJE needed to turn the line around it sent an EOT. This caused some IBM access methods to consider RJE/1000 as if it were in active reader mode and inhibited IBM from bidding for the line when it had output to transmit.

SOLUTION: RJE/1000 has been changed so that it now leaves the line in control mode when it has nothing to send to IBM. Only when RJE/1000 needs the line does it now bid for it. A control mode timeout was also created to limit the maximum amount of time that RJE 1000 will leave the line in this mode and thus prevent excessive connect time charges.

Resolution of bugs in RJE/1000

PROBLEM: (SSB #4132) The command "ON,RJE,,3" hangs the system with the interrupt system on after 18.2 hours.

SOLUTION: The same fix as suggested in the SST report was implemented. The flag causing the problem was selectively cleared upon entry into #C.50.

PROBLEM: The first file name in the configuration file was incorrectly parsed if it was less than six characters.

SOLUTION: The parsing routine in RJE/1000 was corrected.

PROBLEM: Character codes greater than 72 (decimal) that were

within file names and security codes were not recognized.

SOLUTION: The character parsing routine in RJE/1000 was corrected.

PROBLEM: The #R command paused for a maximum of four long timeouts while waiting for an output stream rather than three as specified in the manual.

SOLUTION: The method of handling the listen commands (#E, #R, #W) was changed.

PROBLEM: While in the optional EOM mode of operation, the first record transmitted in each block was always padded incorrectly.

SOLUTION: The routine was changed so that only the first record of the first transmitted block (normally the sign-on card) will be padded.

PROBLEM: If no response was received by RJE/1000 to the transmission of a NAK during a TTD/NAK sequence, RJE failed to timeout and thus would hang indefinitely.

SOLUTION: The timeout routine was found to be using a flag incorrectly and was corrected.

III.D. RTE-II (92001B) and RTE-III (92060B) Operating Systems

The changes to the RTE-II and RTE-III Operating Systems in order to correct bugs are documented below.

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NOTE: Due to two changes, the size of SCHED module has been increased by one word.

PROBLEM: (SSB #4036) When loading the program's base page, the Dispatcher in the RTE-II Operating System will allow location 1649 octal (the save X/Y register pointer) to be destroyed.

SOLUTION: Modify the RTE-II Dispatcher near labels PRES6 and C177 to make a comparison against 1650 octal rather than 1651 octal (bottom of system communication area plus 1). There is no change in the size of the Dispatcher.

PROBLEM: When setting a disc device into the up state which contains $XSIO calls, the disc $XSIO requests would not be relinked into I/O lists at the correct priority.

SOLUTION: The RTIOC module in the RTE-II and RTE-III Operating Systems has been modified near label XXUP9 to add 4 instead of 5 to the EQT1 address in order to get the EQT5 address. This allows the routine to properly identify disc devices. There is no change to the size of RTIOC.

PROBLEM: Using the Operator Suspend command SS with no program name would cause the system to crash.

SOLUTION: The SCHED module in RTE-II and RTE-III has been modified near label NPRG to leave unaltered the $LIST return address if the specified program is not found on a schedule-by-name request ($LIST address code of 2). Previously, the return address was incorrectly adjusted which caused $LIST to return to an incorrect point in the Operating System, thus causing the system to crash.

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PROBLEM: (SSB #3964) When parsing alphanumeric data which contains less than six ASCII characters and begins with a minus sign, the $PARS routine in the SCHED module of RTE-II and RTE-III jumps back into the number conversion section of code. When a parameter consists of a minus sign only, the data type is incorrectly set to numeric.

SOLUTION: The SCHED module source code has been modified in order to correct the situation. This corrects the data type for the minus-sign-only case.

III.F. RTE DRIVER PACKAGES (92062A, 92062B)

The modifications below serve to note the addition of the new driver DVB12 for the Model 2608A line printer, and to correct various bugs in various drivers.

NOTE: Add the 2608A Line Printer driver DVB12 to the RTE Driver Package 92062B to support the 2608A as a HP1000 peripheral line printer. This will allow support of special features such as graphics mode, character dot-matrix READ/WRITE, ping-pong READ/WRITE, and programmable self test.

PROBLEM: The 7970 mag tape unit ignores a REWIND/STANDBY request if issued after an initial REWIND request (e.g. the tape unit does not go OFF-LINE).

SOLUTION: The problem has been alleviated by making a minor change in the source assembly code.

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PROBLEM: I/O NR (Not Ready) occurs intermittently on a disc LU using DVR32 in a busy multi-CPU environment. The 13037A firmware cannot handle the "WAKE-UP" command correctly. When it receives such a command from the driver, it locks out the disc drive from access by any CPU.

SOLUTION: (1) DVR32 has been modified so that it does not send a "WAKE-UP" command to the disc controller. The 13037B disc has been modified to incorporate in the firmware a version of its WAKE-UP command into all commands that access a disc drive. (2) There is no fix for the 13037A controller. Under the conditions described above, the first contention will cause a tight interrupt loop.

PROBLEM: (SSB #4053) HP-IB DVR37 sets the BUS Configuration Word to the default value when the first DIRECT I/O Request is made and then sets FLAG to one. However, the first time through, FLAG is stored locally in the driver. Thus in a Multi-BUS system, when a DIRECT I/O Request is made to another BUS, the driver thinks that the BUS Configuration word has already been set since the first request has already set it. The result of this is that the first BUS to which a DIRECT I/O REQUEST is made will have its Configuration word set to the default value and for all the other BUSes it will be zero.

SOLUTION: The FLAG indication that the default BUS Configuration Word has been set is moved from the local buffer 'FLAG' to Bit 7 in EQT Word 12. Prior to this change, the lower eight bits of EQT word 12 contained the number of words in the EQT Extension for that particular BUS. With this change, only the lower seven bits will indicate this. So now the maximum number of words in the EQT Extension is 127 instead of the previous 255. The new format for EQT Word 12 is as follows:

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S P A B B B B F E E E E E E E

where: S=SRQ pending flag
P=ALARM program scheduling ACTIVE FLAG
A=SRQ Interrupt arming FLAG
B=no. of active BEQT entries (devices)
F=first DIRECT I/O FLAG
E=no. of EQT extension words

PROBLEM: (SSB #4094) HP-IB DVR37 currently uses the ID segment address to schedule a SRQ ALARM program. The ID segment address of the program is stored in the second word of the device EQT extension when a driver Control Request 20 is made to set up a SRQ ALARM program. If a user deletes the SRQ ALARM program from the system (OFF,8) after it has been set up, DVR37 has no way of detecting this. The ID segment may be empty or it may contain the address of another program that replaced it.

SOLUTION: DVR37 will now schedule a SRQ ALARM program using the program name instead of the ID segment address. This will require the following changes to internal driver functions:

NOTE: The EQT format has changed. The relevant section in the reference manual should be noted well.

1) When a Control Request 20 is made to set up a SRQ ALARM program, DVR37 will still make a call to $LIST to retrieve the ID segment address of the specified proram. If the call fails, ERROR 4 will be returned. If successful, the specified program name will be stored in the EQT Extension for that device, instead of the ID segment address. This will require a change in the structure of the Device EQT Extension. Three words will be added to

accommodate the program name. The ID segment address of the SRQ ALARM program now stored in Word Two will be deleted and the SRQ Status Byte currently in Word Three will be moved to Word Five. The new Device EQT Extension will be defined as follows:

WORD	DEFINITION/FORMAT	
1	DEVICE CONFIGURATION WORD	S RDI JOP E00 0UU UUU
2	SRQ PROGRAM SCHEDULE ACTIVE BIT/FIRST TWO CHARS OF ALARM PROG NAME	S XXX XXX X0Y YYY YYY S=SRQ PROG SCHED ACTIVE XXXXXXX=1ST CHAR SRQ PROG YYYYYYY=2ND CHAR SRQ PROG
3	3RD AND 4TH CHARS OF SRQ PROGRAM	
4	5TH CHAR OF SRQ PROGRAM NAME	
5	SRQ STATUS BYTE	

2) When a SRQ occurs for a device, the driver will attempt to schedule that program using the program name instead of the ID segment address. If it cannot find the program, the driver returns an ERROR CODE 5 in the lower byte of EQT Word 5 and will then proceed to down the device. If the program is there but cannot be scheduled, the driver will continue to try to schedule it.

3) When a DISABLE SRQ ALARM Program Driver Control Request 21 is made, Words 2,3, and 4 in the Device EQT Extension containing the SRQ ALARM program name will be cleared.

4) When DVR37 detects a SRQ it will check Word Two of the Device EQT Extension which contains the first two characters of the SRQ ALARM program name. If nonzero, it will attempt to schedule the program. If zero, it will ignore the interrupt.

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PROBLEM: (SSB #4115) HP-IB becomes ready to accept data when NRFD is false, ATN is false, and DAV is true. The driver currently issues a request to HP-IB to set ATN false and NRFD false. HP-IB first sets ATN and then sets NRFD. Since devices set DAV when ATN is true, it is possible for fast devices to set DAV in between the time that HP-IB sets ATN and NRFD false. HP-IB will never read data since NRFD was true when DAV became true.

SOLUTION: DVR37 now sets NRFD false before setting ATN false.

PROBLEM: (SSB #4144) Whenever DVR37 talks to a device in the Auto Addressing Mode, it issues UNTALK, UNLISTEN commands followed by one or two other BUS commands. The driver uses a local buffer, CMDBF, to store these Auto Addressing commands. In a multi-BUS system the driver uses this same buffer for each BUS. The resultant problem is that the driver sometimes modifies the buffer for one BUS before the previous request for another BUS has been completed. The wrong device address is then sent to a device and a timeout occurs.

SOLUTION: The Auto Addressing Command Buffer, CMDBA, is being moved from the driver to the fixed BUS EQT Extension. This will require the addition of two more words to the fixed extension increasing its length from ten words to twelve. Currently, Words Nine and Ten of the Fixed EQT Extension are labeled as BCNFG. Word Nine is used to store the address of the BUS Configuration Word. Word Ten is used to store the address of the dummy timeout value. Prior to 1805, Word Ten was not being used. To clarify this, Word Ten will now be labeled as DTOUT for the dummy timeout value.

PROBLEM: (SSB #4103) When a SRQ interrupt occurs, DVR37 initiates a serial poll to all devices that have a

nonzero entry in Word Two of the device EQT Extension. If a timeout occurs on any device that has an activated SRQ ALARM program due to that device not returning its SRQ Status because of a hardware malfunction or not responding to a serial poll (note that this type of device should never be assigned a SRQ ALARM program), DVR37 ignores this condition. There is no indication to the user's program that a device has not responded to a serial poll and that the related SRQ ALARM program has not been scheduled.

SOLUTION: If the device does not return the SRQ Status byte before a timeout occurs, DVR37 will return an Error Code of 7 in the lower byte of EQT Word 5 and will then proceed to down the device.

PROBLEM: In DVA47, TIMEOUT in a READ request was never processed if the SRQ signal was set and not declared as terminator (EQT 15 was reset).

SOLUTION: Do not reset the TIMEOUT value if SRQ interrupt.

PROBLEM: With DVA47, the content of the B-register was incorrect when returning from a timeout processing (it was 100000B instead of the transmission log).

SOLUTION: In case of timeout, the transmission log is returned in the B-register and Completion-Code = 1 is returned in the status and in the A-register. SRQ Read Completion and Timeout Completion will both return Completion-Code = 1. In order to differentiate between the two cases, the program must check Bit 7 of the status (this bit reflects the status of the SRQ line).

PROBLEM: With DVA47, in the case of a READ or a WRITE/READ in transparent mode, with bit 3 set (user specifying

card/badge read), two polling cycles are issued, the first with the UNTALK HP-IB command, the second to get the SRQ line status. Previously, the subroutine BACA1 was testing the wrong bit.

SOLUTION: BACA1 has been modified to check the transparent mode flag instead of the card-reader bit.

III.F. IMAGE/1000 (92063A)

The modifications described below have been made to correct outstanding bugs in the IMAGE software.

PROBLEM: (SSB #4120) DBDS utility allowed for the creation of data sets with more than 127 data items.

SOLUTION: The SETS segment of DBDS was altered to check the item amount for each data set.

PROBLEM: (SSB #4134) DBBLD printed the column number improperly when the list device was a terminal.

SOLUTION: The BPUT and BCLOS segments of DBBLD were altered to output the header in the proper columns on a terminal.

PROBLEM: (SSB #4159) DBBLD would not add more than 100 data items to a data set.

SOLUTION: The BPUT segment of DBBLD was altered to allow for storage of up to 127 items in a data set.

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PROBLEM: (SSB #4096) IMAGE Management System allowed for opening a second data base before the first data base was closed.

SOLUTION: The DBINT and DBOPN subroutines of the Management System were altered to check for a data base already open to the user in the event of a DBINT or DBOPN call. A second meaning was also assigned to the Error #103 and that receiving such an error from a DBINT or DBOPN call signifies that a data base is already open to the user and a second cannot be opened.

PROBLEM: (SSB #4135) IMAGE Management System left a window in the processing of both DBOPN and DBCLS such that if a DBCLS interrupted a DBOPN (in mode 2) the data base being opened could be corrupted.

SOLUTION: The DBOPN and DBCLS subroutines of the Management System were altered by surrounding, with privileged calls, the critical code which alters the state of .DBRN. This then ensures the closing of the window in DBOPN and DBCLS. Also, both subroutines now check the state of .DBRN upon entry to and before exit from the subroutine to ascertain that its state has remained the same.

PROBLEM: (SSB #4110) QUERY reported an error code #111 when a FIND command was performed on a detail data set with the following condition: the key item value specified in the FIND command was not in the detail data set, but was in the related master data set. A "0 RECORDS RETRIEVED" message should have been reported.

SOLUTION: The QS01 segment of QUERY has been altered to detect the above case and output the proper response.

PROBLEM: (SSB #4153) DBRST did not close the DCB for the last

data set restored. This possibly results in that data set being corrupted.

SOLUTION: DBRST has been altered to perform a close of the data set DCB after the last record of the last data set has been written.

PROBLEM: (SSB #4168) QUERY did not unlock the data base when an UPDATE command failed to terminate correctly.

SOLUTION: The QS07 and QS14 segments of QUERY were updated to do a DBUNL after every UPDATE command regardless of error condition.

III.G. RTE-M OPERATING SYSTEM (92064A)

The change that was effected in RTE-M was for the purpose of adding the new 2608A line printer driver. See the following sections on relevant manual and software updates.

III.H. RTE MEASUREMENT AND CONTROL PACKAGE (92066A)

Enhancements and updates to the Package are given below.

NOTE: SET Delay mode is being restored to 2313B On-Line Verification (%!2313), having been removed for unknown reasons by an earlier revision. When SET Delay is requested by the user, the verification program will ask the user for the number of milliseconds delay. Until cleared, !2313 will insert

a software delay of at least the requested number of milliseconds after each group of SEquential ADC readings. The program will NOT allow the user to SET Delay and SET LAD (Last Address Detector) both at the same time.

the delay is implemented by a software loop executed enough times to cause one millisecond delay in a HP1000 F-series computer with high performance memory. Executing the loop the same number of times in an earlier series computer with standard memory will cause a longer delay. The one millisecond loop will be executed once for each millisecond of delay requested by the user.

NOTE: The 2313B Off-Line Verification Rev 1840 is to be updated with the revised On-Line Verification Rev 1840 and with the 6940B Driver DVA72 Rev 1826.

NOTE: A new 2313A/B Verification Manual has been added to the 92066A Measurement and Control Software Package. The Verification section of the 2313B Operating and Service Manual has been removed to create a new and separate verification manual.

III.I. RTE-IV (92067A)

Following are the changes made to RTE-IV. These alterations were made to correct bugs in the RTE-IV Operating System, SWTCH program, WHZAT and LOADR programs, and the System Library. Additionally, note that the changes to the driver package affect RTE-IV.

RTE-IV Operating System

PROBLEM: If a program has been suspended for I/O and the operator suspends the program with the SS command and then does a soft abort with the OF command, the program is lost in state 2. This sequence of operations causes the D&D bits to get set in the ID segment status word. When the I/O completes,the list processor does not change the state of the program.

SOLUTION: Correct logic in the list processor SCHD4 so that the program is set dormant.

PROBLEM: If a power fail occurs while the system is processing a parity error, the return address for the parity routine is incorrect.

SOLUTION: Save the return address at the beginning of the parity error processing. PLEASE NOTE that this does not eliminate the problem completely, but only narrows the window of when the error will occur. The fix required changes to the System module PERRA and the Power Fail module DVP43.

PROBLEM: The upper map registers of a partition which does not use its entire 32K logical address space are set to 1,2,3,... with the read/write protect bits set. This happens to point to the operating system which makes it vulnerable.

SOLUTION: Set unused map registers tc the last 32 pages of physical memory.

PROBLEM: The dispatcher does not check if a segment that is being loaded will fit into the partition. Since the

Port maps do not honor read/write protect the segment can be loaded into memory that does not belong to the partition.

SOLUTION: Add test in DISP4 (92067-18015) of upper and lower memory bounds.

PROBLEM: The upper memory limit check algorithm in RTI04 (92067- 18018) was incorrect.

SOLUTION: Correct the error by changing one instruction in the module.

PROBLEM: The dispatcher calls $ABRE with the wrong value in the A-Register, causing memory resident programs to not release reentrant memory.

SOLUTION: The code was corrected in the ABORT routine of &4DISP to call $ABRE with the correct value in the A-register.

RTE-IV SWTCH Program

NOTE: The part number of SWTCH segment SWSG2 has been changed to 92067-16010.

PROBLEM: The invalid disc specification occurs because the DMA word length was changed to 128 words from 6144 words when the cartridge directory of LU2 was updated. Therefore when a track was spared or marked defective only the preamble on the first sector was marked.

SOLUTION: Reset DMA word count in SWTCH to 6144 after cartridge

directory update.

PROBLEM: SWTCH had an incorrect buffer length when displaying subchannels on a destination unit, therefore displaying garbage on the screen.

SOLUTION: When converting the buffer length from words to characters the number was incorrectly multiplied by four. SWTCH was corrected, incorporating a multiplication factor of two instead.

RTE-IV LOADR and WHZAT Programs

NOTE: Program LOADR has been enhanced to run as a Type 4 program and to provide a capability to align modules. This helps to solve base page overflow problems in large programs.

PROBLEM: When WHZAT displays I/O status it tracks down an EQT list, some of which can be SAM. Since WHZAT does not enter privileged mode to do this, the SAM may be released from one access to the next. Therefore the next pointer may be incorrect causing a DM error.

SOLUTION: A test will be made on the sign bit so that an indirect chain will not be tracked down until a DM error occurs. The pointer may still be invalid but since a cross load is being done a DM will not be encountered.

RTE-IV System Library

NOTE: The RTE-IV System Library was enhanced by adding the following routines:

1. IXGET (92067-18080) RTE-IV Cross load routine.
2. IXPUT (92067-18081) RTE-IV Cross store routine.
3. FTIME (92067-18082) RTE-IV ASCII formatted time.

PROBLEM: (SST#4165) MESSS is not reentrant; therefore it cannot be a Type 6 subroutine for memory-resident programs.

SOLUTION: MESSS has been changed to be a Type 7 subroutine.

PROBLEM: (SST#3964) When parsing alphanumeric data which begins with a minus sign but is not a number the $PARS (92067-18049) jumps back into the number conversion section of code. When a parameter consists of only a minus sign the data type is incorrectly set to numeric.

SOLUTION: The parser has been corrected to branch properly to the correct area of code and to set the data type, for the "minus sign only" case.

III.J. GRAPHICS/1000 PLOTTING SOFTWARE (92840A)

The changes below are for the purpose of adding two new subroutines and to correct bugs in the software.

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NOTE: Two new device subroutines, %DVG07 and %DVG05 have been added.

PROBLEM: When clipping is disabled, the physical pen and the CP will not coincide if the CP is outside the clipping boundaries.

SOLUTION: XCLPN now moves the physical pen to coincide with the CP when clipping is disabled.

PROBLEM: (SSB #4172) No check for ID<=0 is made, so no error message is output and the program aborts.

SOLUTION: SETUP now checks for an ID<=0. If an ID<=0 is entered, the GPS will output error message 2 and terminate.

PROBLEM: (SSB #4147) When an illegal LU number,or one not matching the device subroutine, is entered for a PLOTR(1 or 4) command, the error is detected and the program terminates. However, no error message is output because the error is not flagged as a hard error.

SOLUTION: SETUP will flag error 5 as a hard error so that it will be reported to the operator.

PROBLEM: The LU for firm and hard error output can not be specified using the LGERR command and defaults to LU#1, the system terminal, which is not always desirable.

SOLUTION: PLTER and SETUP now default to the terminal from which the program was initiated.

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III.K. DATACAP/1000 (92903A)

The changes for DATACAP appear below.

PROBLEM: Transaction Specification Listing indicated NO printer used in a DISPLAY when in fact the printer was specified to be used.

SOLUTION: The flag for indicating printer or no printer was being checked exactly opposite of the proper manner which should have been applied. This condition was changed in segment RTGP13.

PROBLEM: TGP would not allow two FIND items to be specified from the same card input on two U-Questions.

SOLUTION: The code in segment RTGP9 was intended to prevent switching from a U to an M Question on the same card input. It also caused the above problem. Consequently, the code was modified to allow all permissible cases, but still prevent switching from a U to a M Question on the same card.

PROBLEM: Incorrect wording on Screen #14.

SOLUTION: Segment TGP4 was modified such that the wording on Screen #14 was corrected.

PROBLEM: DVA47 Change Rev 1840. In transparent mode, DVA47 no longer set bit 15 of the Transmission log when the device timed out. DATACAP was using this convention.

SOLUTION: DATACAP now checks for Completion-Code = 1 to determine if a HP3070 has timed out. The SRQ is

detected by bit 7 in the status. Thus, DATACAP now concludes that a 3070 has timed out when the completion code has value 1 and bit 7 is not set.

PROBLEM: The subroutine IXGET has been included in the system library as of the 1840 revision. There is a subroutine IXGET in %GPLB4 that performs the same function and the duplication of entry points will cause a generation error.

SOLUTION: The subroutine IXGET has been removed from %GPLB4.

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IV. REQUIRED HARDWARE AND FIRMWARE CHANGES

The 13037A disc controller firmware must be updated in order to make it compatible with the 1840 updated driver DVR32. Firmware in the 2645A and the 2648A terminals must also be updated to accept the new additions to the HP/1000 Multipoint Library.

V. CHANGES IN PROGRAM SIZE

Software updates for the 1840 revision have resulted in changes of the size of two modules. The size of the DS/1000 to DS/3000 "logical driver" HSLC has been reduced by slightly more than one page. The SCHED module of RTE-II and RTE-III has been increased by one word.

VI. LIST OF MANUALS CHANGED

The following manuals have been updated as part of the 1840 revision.

VI.A. HP/1000 Multipoint (91730A)

Part Number	Title	Type of Update
91730-90001	Multipoint SW Numbering Catalog	Revision

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91730-90002 Multipoint User's Guide — Revision

VI.B. DS/1000 (91740A/B, 91741A)

Part Number	Title	Type of Update
91740-90001	Software Numbering Catalog	Revision
91740-90002	DS/1000 Programmer's Ref. Manual	Change notice
91740-90003	DS/1000 Network Manager's Manual	Revision
91741-90001	Software Numbering Catalog	Revision

VI.C. RJE/1000 (91780A)

The following new manuals replace the existing manuals of the same name:

Part Number	Title	Type of Update
91780-90005	Software Numbering Catalog	New
91780-90006	Programmer's Reference Manual	New

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VI.D. RTE-II (92001B)

Part Number	Title	Type of Update
02116-9015	FORTRAN II Ref. Manual	Revision
92001-93001	Operator and Programmer Ref Manual	Change notice
92001-93003	Software Numbering Catalog	Revision
92060-90005	RTE-II/III Assembler Manual	Change notice
92060-90020	RTE-II/III On Line Gen. Manual	Change notice
59310-90063	HPIB DVR37 Driver Manual	Change notice
59310-90064	User's Guide HPIB in 1000 Systems	Change notice
91200-90005	DVA13 Prog. and Oper. Manual	Change Notice
92001-90010	DVA12 Driver Manual	Change notice
92062-90001	92062A RTE-2/3 Driver SW Numb. Cat.	Revision
92200-93005	Driver Writing Manual	Change notice
92202-93001	HP7970 Series Mag Tape Unit	Revision
92900-90005	DVA47 Driver Manual	Change notice

VI.E. RTE-III (92060B)

Part Number	Title	Type of Update
02116-9015	FORTRAN II Reference Manual	Revision
92060-90004	RTE-III Operator/Prog. Ref. Manual	Change Notice
92060-90005	RTE-II/III Assembler Manual	Change notice
92060-90013	Batch Spool Monitor Manual	Change notice
92060-90019	Software Numbering Catalog	Revision
92060-90020	RTE-II/III On Line Gen. Manual	Change notice

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59310-90063	HPIB DVR37 Driver Manual	Change notice
59310-90064	User's Guide HPIB in 1000 Systems	Change notice
91200-90005	DVA13 Prog. and Oper. Manual	Change Notice
92001-90010	DVA12 Driver Manual	Change notice
92062-90001	92062A RTE-2/3 Driver SW Numb. Cat.	Revision
92200-93005	Driver Writing Manual	Change notice
92202-93001	HP7970 Series Mag Tape Unit	Revision
92900-90005	DVA47 Driver Manual	Change notice

VI.F. IMAGE/1000 (92063A)

Part Number	Title	Type of Update
92063-90001	IMAGE Reference Manual	Change notice
92063-90003	IMAGE Software Numbering Catalog	Revision

VI.G. RTE-M (92064A)

Part Number	Title	Type of Update
02116-9015	FORTRAN II Reference Manual	Revision
92060-90005	RTE-II/II Assembler Manual	Change Notice
92064-90001	RTE-M Software Numbering Catalog	Revision
92064-90002	RTE-M Programming Ref. Manual	Revision
59310-90063	HPIB DVR37 Driver Manual	Change notice
59310-90064	User's Guide HPIB in 1000 Systems	Change notice
91200-90005	DVA13 Prog. and Oper. Manual	Change Notice

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92001-90010	DVA12 Manual	Change notice
92062-90004	RTE Driver DVB12 Manual	New
92200-93005	Driver Writing Manual	Change notice
92202-93001	HP7970 Series Mag Tape Unit	Revision
92900-90005	DVA47 Driver Manual	Change notice

VI.H. RTE Measurement and Control Package (92066A)

Part Number	Title	Type of Update
02313-93007	2313A/B Verification Manual	New
92066-90001	92066A Software Numbering Catalog	Revision

VI.I. RTE-IV (92067A)

Part Number	Title	Type of Update
92060-90013	Batch Spool Monitor Manual	Change notice
92067-90001	RTE-IV Prog. Reference Manual	Change notice
92067-90002	RTE-IV On-LIne Generator Manual	Change notice
92067-90003	RTE-IV Assembler Manual	Change notice
92067-90004	RTE-IV Software Numbering Catalog	Revision
59310-90063	HPIB DVR37 Driver Manual	Change notice
59310-90064	User's Guide HPIB in 1000 Systems	Change notice
91200-90005	DVA13 Prog. and Oper. Manual	Change Notice
92001-90010	DVA12 Driver Manual	Change notice
92062-90004	RTE Driver DVB12 Manual	New

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92200-93005	Driver Writing Manual	Change notice
92202-93001	HP7970 Series Mag Tape Unit	Revision
92900-90005	DVA47 Driver Manual	Change notice

VI.J. BASIC/1000D (92101A)

Part Number	Title	Type of Update
92060-90016	BASIC/1000D Reference Manual	Change notice

VI.K. Graphics/1000 Plotting Software (92840A)

Part Number	Title	Type of Update
92840-90001	User's Manual	Change notice
92840-90005	Software Numbering Catalog	New

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VI.L. DATACAP/1000 (92903A)

Part Number	Title	Type of Update
92903-90001	DATACAP User's Manual	Change notice
92903-90003	DATACAP SW Numbering Catalog	Revision

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VII. LIST OF SOFTWARE CHANGED

VII.A. HP/1000 Multipoint (91730A)

Changes have occurred involving the following Multipoint software part:

Part Number	Module Name	Module Description	Prior Rev	New Rev
91730-12001	%MPLIB	Multipoint Library	1805	1840
91730-16001	%DVR07	Multipoint Driver	1805	1840

The above change has necessitated modifications to the following Multipoint/1000 multi-media parts:

Part Number	Description	Type of Change
91730-13301	Multipoint Cartridge	Modified

VII.B. DS/1000 (91740A/B, 91741A)

Changes have occurred involving the following Multipoint software parts:

Part Number	Module Name	Module Description	Prior Rev	New Rev
91740-12001	%DSLB1	DS/1000 Base Library	1740	1840

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91740-12002	%DSLB2	HP/1000 to HP/1000 Library	1740	1840
91740-16002	%UPLIN	Network Watchdog Monitor	1740	1840
91740-16005	%EXECM	Remote EXEC Request Monitor	1805	1840
91740-16017	%2APLD	Remote APLDR RTE-MII	1740	1840
91740-16018	%3APLD	Remote APLDR RTE-MIII	1740	1840
91740-16024	%REMAT	Network Operator Interface	1805	1840
91741-12001	%D3KLB	HP/1000/3000 Link Library	1740	1840
91741-16001	%DVG67	HP3000 Communications Dvr	1805	1840
91741-16003	%QUEX	HP3000 Communications Mtr	1740	1840
91741-16007	%RMOTE	Operator Access to HP3000	1805	1840

The above changes have necessitated modifications to the following DS/1000 multi-media parts:

Part Number	Description	Type of Change
91740-13301	DS/1000 Cartridge #1	Modified
91740-13302	DS/1000 Cartridge #2	Modified
91740-13303	DS/1000 Cartridge #3	Modified
91740-13304	DS/1000 Cartridge #4	Modified
91741-13301	DS/1000/3000 Cartridge #1	Modified

VII.C. RJE/1000 (91780A)

The following new software modules replace the current software modules having the same file names:

Part Number	Module Name	Module Description	Prior Rev	New Rev
91780-16011	%RJE	RJE/1000 Main	New	1840
91780-16012	%#COMN	#COMN Communications Buffer	New	1840

91780-16013	%#BSC	#BSC Communications Dvr	New	1840
91780-16014	%#DIAL	#DIAL Line Connect Module	New	1840
91780-16015	%DVR50	DVR50 Communications Dvr	New	1840
91780-16016	%TRAC	TRACE Diagnostic Program	New	1840
91780-16017	%#TDMP	TDUMP Diagnostic Program	New	1840

The above changes have necessitated creation of the following RJE/1000 multi-media parts:

Part Number	Description	Type of Change
91780-13302	RJE/1000 Mini-Cartridge	New

VII.D. RTE-II (92001B)

Changes have occurred involving the following RTE-II software parts:

Part Number	Module Name	Module Description	Prior Rev	New Rev
92001-16012	%CR2SY	RTE-II Core-Res. Op. Sys.	1813	1840
59310-16002	%1DV37	DVR37 HPIB w/o SRQ	1805	1840
59310-16003	%2DV37	DVR37 HPIB w/ SRQ	1805	1840
92060-16031	%DVR32	RTE 7905/06/20 Disc Dvr	1805	1840
92202-16001	%DVR23	RTE 7970 Mag Tape Driver	A	1840
92900-16002	%2DV47	RTE 3070 Driver w/o DMS	1805	1840

The above change has necessitated modifications to the following RTE-II multi-media parts:

Part Number	Description	Type of Change
92001-13001	RTE-II 7900 Grandfather Disc	Modified
92001-13101	RTE-II 7905/6 Grandfather Disc	Modified
92001-13201	RTE-II 7920 Grandfather Disc	Modified
92001-13301	RTE-II Software	Modified
92062-13302	RTE NonMeas DR2 Driver Package	Modified
92062-13304	RTE NonMeas DR4 Driver Package	Modified
92062-13305	RTE NonMeas DP5 Driver Package	Modified

VII.E. RTE-III (92060B)

Changes have occurred involving the following RTE-III software parts:

Part Number	Module Name	Module Description	Prior Rev	New Rev
92060-12003	%CR3SY	RTE-III Core-Res. Op. Sys.	1813	1840
59310-16002	%1DV37	DVR37 HPIB w/o SRQ	1805	1840
59310-16003	%2DV37	DVR37 HPIB w/ SRQ	1805	1840
92060-16031	%DVR32	RTE 7905/06/20 Disc Driver	1805	1840
92202-16001	%DVR23	RTE 7970 Mag Tape Driver	A	1840
92900-16003	%3DV47	RTE 3070 Driver w/ DMS	1805	1840

The above changes have necessitated modifications in the following RTE-III multi-media parts:

Part Number	Description	Type of Change
92060-13001	RTE-III 7900 Grandfather Disc	Modified

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92060-13101	RTE-III 7905/6 Grandfather Disc	Modified
92060-13201	RTE-III 7920 Grandfather Disc	Modified
92060-13301	RTE-III Software	Modified
92062-13302	RTE NonMeas DR2 Driver Package	Modified
92062-13304	RTE NonMeas DR4 Driver Package	Modified
92062-13305	RTE NonMeas DR5 Driver Package	Modified

VII.F. IMAGE/1000 (92063A)

Changes have occurred involving the following IMAGE/1000 software parts:

Part Number	Module Name	Module Description	Prior Rev	New Rev
92063-12001	%DBLIB	IMAGE Management System	1826	1840
92063-16002	%DBDS1	Utility DBDS Part 1	1826	1840
	%DBDS2	Utility DBDS Part 2		
92063-16003	%DBBLD	Utility DBBLD	1645	1840
92063-16005	%DBRST	Utility DBRST	1645	1840
92063-16011	%QS001	QUERY Part 1	1826	1840
	%QS002	QUERY Part 2		
92063-16012	%QS003	QUERY Part 3	1826	1840
	%QS004	QUERY Part 4		

The above changes have necessitated modifications to the following IMAGE/1000 multi-media parts:

Part Number	Description	Type of Change
92063-13301	IMAGE Libraries	Modified
92063-13302	QUERY Subsystem Part 1	Modified
92063-13303	QUERY Subsystem Part 2	Modified
92063-13304	IMAGE Utility Subsystems	Modified

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VII.G. RTE-M (92064A)

Changes have occurred involving the following RTE-M software parts:

Part Number	Module Name	Module Description	Prior Rev	New Rev
59310-16002	%1DV37	RTE HPIB Driver w/o SRQ	1805	1840
59310-16003	%2DV37	RTE HPIB Driver w/ SRQ	1805	1840
92062-16004	%DVB12	RTE 2608A LP Driver	New	1840
92202-16001	%DVR23	RTE 7970 Mag Tape Driver	A	1840
92900-16002	%2DV47	RTE 3070 Driver w/o DMS	1805	1840
92900-16003	%3DV47	RTE 3070 Driver w/ DMS	1805	1840

The above changes have necessitated modifications to the following RTE-M multi-media parts:

Part Number	Description	Type of Change
92062-13302	RTE NonMeas DR2 Driver Package	Modified
92062-13304	RTE NonMeas DR4 Driver Package	Modified
92062-13308	RTE NonMeas DR8 Driver Package	New
92064-13401	RTE-M Generation Disc	Modified

VII.H. RTE Measurement and Control Package (92066A)

Changes have occurred involving the following 92066A software parts:

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Part Number	Module Name	Module Description	Prior Rev	New Rev
02313-16002	%!2313	RTE 2313 On-Line Verification	1630	1840
09611-16014	!2313	RTE 2313 Off-Line Verification	1742	1840

The above changes have necessitated a modification in the following 92066A multi-media part:

Part Number	Description	Type of Change
92066-13302	2313B Software on Mini-Cartridge	Modified

VII.I. RTE-IV (92067A)

Changes have occurred involving the following RTE-IV software parts:

Part Number	Module Name	Module Description	Prior Rev	New Rev
92067-16002	%4LDR	RTE4 Relocating Loader	1826	1840
92067-16004	%4DP43	RTE4 Power Fail	1805	1840
92067-16007	%4WHZT	RTE4 WHZAT Program	1826	1840
92067-16010	%4SWTH	RTE4 SWTCH Program	1805	1840
92067-16014	%CR4S1	RTE4 Memory Res. Op. Sys.--1	1826	1840
	%CR4S2	RTE4 Memory Res. Op. Sys.--2		
92067-16035	%4SYLB	RTE4 System Library	1826	1840
59310-16002	%1DV37	RTE HPIB Driver w/o SRQ	1805	1840
59310-16003	%2DV37	RTE HPIB Driver w/ SRQ	1805	1840
92060-16031	%DVR32	RTE 7905/06/20 Disc Driver	1805	1840
92062-16004	%DVB12	RTE 2608A LP Driver	New	1840

92202-16001	%DVR23	RTE 7970 Mag Tape Driver	A	1840
92900-16002	%2DV47	RTE 3070 Driver w/o DMS	1805	1840
92900-16003	%3DV47	RTE 3070 Driver w/ DMS	1805	1840

The above changes have necessitated modifications in the following RTE-IV multi-media parts:

Part Number	Description	Type of Change
92067-13001	RTE-IV 7900 Grandfather Disc	Modified
92067-13101	RTE-IV 7905/06/20 Grandfather Disc	Modified
92067-13201	RTE-IV 7920 Grandfather Disc	Modified
92067-13501	7900 Grndfthr. Image on 800 BPI Mag Tape	Modified
92067-13502	7906/20 Grndfthr. Image on 800 BPI Tape	Modified
92067-13601	7900 Grndfthr. Image on 1600 BPI Tape	Modified
92067-13602	7906/20 Grndfthr. Image on 1600 BPI Tape	Modified

VII.J. GRAPHICS/1000 (92840A)

Changes have occurred involving the following GRAPHICS/1000 software parts:

Part Number	Module Name	Module Description	Prior Rev	New Rev
92840-16001	%GPSCM	Graphics Plotting S/W	1819	1840
92840-16002	%GCBIM	Graphics Comm & Lnkge Module	1819	1840
92840-16007	%DVG07	9874A Device Subroutine	New	1840
92840-16011	%DVG05	7221A Device Subroutine	New	1840

The above changes have necessitated modifications in the following GRAPHICS/1000 multi-media parts:

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Part Number	Description	Type of Change
92840-13301	Cartridge #1 GPS Commands	Modified
92840-13302	Cartridge #2 GPS Commands	Modified

VII.K. DATACAP/1000 (92903A)

Changes have occurred involving the following DATACAP/1000 software parts:

Part Number	Module Name	Module Description	Prior Rev	New Rev
92903-12306	%TGP9	TGP Relocatable Segment 9	1805	1840
92903-12310	%TGP13	TGP Relocatable Segment 13	1805	1840
92903-16001	%GPLB4	DATACAP General Purpose Lib	1805	1840
92903-16359	%TGP4	TGP Relocatable Segment 4	1805	1840
92903-16510	%ZTMP	Transaction Mtr Prog Module	1805	1840

The above changes have necessitated modifications in the following DATACAP/1000 multi-media parts:

Part Number	Description	Type of Change
92903-13302	DATACAP #2	Modified
92903-13304	DATACAP #4 TGP	Modified
92903-13305	DATACAP #5 TGP	Modified
92903-13306	DATACAP #6 TGP	Modified
92903-13309	DATACAP #9 TGP	Modified

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VIII. CURRENT SOFTWARE REVISION CODES (RTE-II/III/IV)

VIII.A. RTE-II (92001B)

The following is a list of relocatable modules and revision codes of software on the RTE-II grandfather disc.

```
CR=32767
ILAB=R2.5/2  NXTR=0141  NXSEC=062  #SEC/TR=096 LAST TR= 0202 #DR
TR=01
```

FILE NAME	MODULE NAME	REVISION CODE
%RDNAM	RDNAM	?????-????? 760413
%XREF	XREF	92067-16012 REV.1805 771121
%1FTN	FTN	(NO REVISION LEVEL SUPPLIED)
%2FTN	FTN01	(NO REVISION LEVEL SUPPLIED)
%3FTN	FTN02	(NO REVISION LEVEL SUPPLIED)
%4FTN	FTN03	(NO REVISION LEVEL SUPPLIED)
%5FTN	FTN04	(NO REVISION LEVEL SUPPLIED)
%ALGL1	ALGL1	(NO REVISION LEVEL SUPPLIED)
%FF.N	FF.C	(NO REVISION LEVEL SUPPLIED)
%DVR30	DVR30	(NO REVISION LEVEL SUPPLIED)
%1DV10	DVR10	(NO REVISION LEVEL SUPPLIED)
%2DV10	DVR10	(NO REVISION LEVEL SUPPLIED)
%AUTOR	AUTOR	(NO REVISION LEVEL SUPPLIED)
%MTM	PRMPT	92001-16003 REV.B 741216
%2DP43	DVP43	92001-16004 REV.1633 760810
%CAL10	DVR10	(NO REVISION LEVEL SUPPLIED)
%CALIB	PLOT	760218
%ASMB	ASMB	92067-16011 REV.1805 780112
%ALGOL	ALGOL	24129-60001 REV.D 761020

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```
%DVA13   DVA13    91200-16001 REV 1648 -- 761124
%TVLIB   CHARS    91200-16002 REV 1648 -- 761124
%TVVER   TVERF    91200-16004 REV 1648 -- 761203
%DECAR   SADD     (NO REVISION LEVEL SUPPLIED)
%SAVE    SAVE     92060-16039 REV.1704 770117
%RESTR   RSTOR    92060-16040 REV.1704 770117
%VERFY   VERFY    92060-16041 REV.1704 761201
%COPY    COPY     92060-16042 REV.1704 770214
%DBKLB   DBKLB    92060-16043 REV.1704 770214
%KEYS    KEYS     (NO REVISION LEVEL SUPPLIED)
%KYDMP   KYDMP    (NO REVISION LEVEL SUPPLIED)
%DVR11   DVR11          29030-60001 REV 1710     3-1-77
%SCMD2   SSCMD    92001-16029 REV.1710 770216
%DVR31   DVR31    29013-60001 REV.1710 770216
%HPIB    HPIB     59310-16004 REV. 1614, 760329
%FFTN4   SEG.F    92060-16093 770531 REV. 1726
%WHZT2   WHZAT    92001-16030 REV.1726 770520
%LDR2    LOADR    92001-16002 REV.1732 770811
%DVR00   DVR00    29029-60001 REV 1740 770808
%MSAFD   SAFD     (NO REVISION LEVEL SUPPLIED)
%LP31    LPCON     92062-16003    REV. 1805 5-19-77
%DVR15   DVR15    (NO REVISION LEVEL SUPPLIED)
%DVR33   DVR33       12732-16001   REV 1805 10-20-77
%DVA05   DVA05        92001-16035    REV. CODE 1806   1-17-78
%0DV05   DVR05        92001-16028    REV. CODE 1806    1-17-78
%4DV05   DVR05        92001-16027   REV.1806   1-17-78
%DVR12   DVR12    (NO REVISION LEVEL SUPPLIED)
%DVR24   DVR24    (NO REVISION LEVEL SUPPLIED)
%MESS    MESS      59310-16011   REV 1805   780105
%SRQ.P   SRQ.P     59310-16005   REV 1805   780110
%EDITR   EDITR    92002-16010 REV 1805 780117
%FF4.N   FF4.A       24998-16002 REV.1805 780303
%RLIB1   RLIB1     24998-16001   REV.1805   771116
%RLIB2   RLIB2     24998-16001   REV.1805   771116
%SYLIB   SYSLB    92001-16005 REV 1813 780212
%FTN4    IDN.F    92060-16092 771022
%0FTN4   F4.0     92060-16094 780310 REV. 1805
%1FTN4   F4.1     92060-16095 771128 REV. 1805
%2FTN4   F4.2     92060-16096 780310 REV. 1805
%3FTN4   F4.3     92060-16097 771213 REV. 1805
```

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%4FTN4	F4.4	92060-16098 780203 REV. 1805
%5FTN4	F4.5	92060-16101 780221 REV. 1805
%CLIB	$CLIB	92060-12005 REV.1805 771022 $CLIB
%2SP01	$SPOL	92002-16001 REV. 1805 771116
%2SP02	SMP	92002-16002 REV. 1740 770908
%DVA12	DVA12	92001-16020 780511 REV 1826
%BMPG1	$BMON	92002-12001 REV.1826 780419
%BMPG2	MR..	92002-16008 780621
%BMPG3	CO..	(NO REVISION LEVEL SUPPLIED)
%BMLIB	$BALB	92002-16006 REV.1826 780419
%SWTCH	SWTCH	92060-16038 REV.1826 780510
%RT2G1	RT2GN	92001-16031 REV.1826 780508
%RT2G2	RT2G3	92001-16031 771219
%CR2SY	$CRSY	92001-16012 REV.1840 780810
%2DV47	DVA47	92900-16002 REV.1840 780724
%1DV37	DVR37	59310-16002 REV. 1840 780811
%2DV37	DVR37	59310-16003 REV. 1840 780811
%DVR23	DVR23	92202-16001 REV. 1840 780503
%DVR32	DVR32	92060-16031 REV 1840 780515

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VIII.B. RTE-III (92060B)

The following is a list of relocatable modules and revision codes of software on the RTE-III grandfather disc.

CR=32767
ILAB=R3.5/2 NXTR=0141 NXSEC=094 #SEC/TR=096 LAST TR= 0202 #DR TR=01

FILE NAME	MODULE NAME	REVISION CODE
%RDNAM	RDNAM	?????-????? 760413
%XREF	XREF	92067-16012 REV.1805 771121
%1FTN	FTN	(NO REVISION LEVEL SUPPLIED)
%2FTN	FTN01	(NO REVISION LEVEL SUPPLIED)
%3FTN	FTN02	(NO REVISION LEVEL SUPPLIED)
%4FTN	FTN03	(NO REVISION LEVEL SUPPLIED)
%5FTN	FTN04	(NO REVISION LEVEL SUPPLIED)
%ALGL1	ALGL1	(NO REVISION LEVEL SUPPLIED)
%FF.N	FF.C	(NO REVISION LEVEL SUPPLIED)
%DVR30	DVR30	(NO REVISION LEVEL SUPPLIED)
%1DV10	DVR10	(NO REVISION LEVEL SUPPLIED)
%2DV10	DVR10	(NO REVISION LEVEL SUPPLIED)
%3DP43	DVP43	92060-16001 REV.1633 760810
%AUTOR	AUTOR	(NO REVISION LEVEL SUPPLIED)
%MTM	PRMPT	92001-16003 REV.B 741216
%SPVMP	SPVMP	92060-16035 REV.A 750505
%CAL10	DVR10	(NO REVISION LEVEL SUPPLIED)
%CALIB	PLOT	760218
%ASMB	ASMB	92067-16011 REV.1805 780112
%ALGOL	ALGOL	24129-60001 REV.D 761020
%DVA13	DVA13	91200-16001 REV 1648 -- 761124
%TVLIB	CHARS	91200-16002 REV 1648 -- 761124
%TVVER	TVERF	91200-16004 REV 1648 -- 761203
%DECAR	SADD	(NO REVISION LEVEL SUPPLIED)
%SAVE	SAVE	92060-16039 REV.1704 770117
%RESTR	RSTOR	92060-16040 REV.1704 770117
%VERFY	VERFY	92060-16041 REV.1704 761201

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```
%COPY    COPY     92060-16042 REV.1704 770214
%DBKLB   DBKLB    92060-16043 REV.1704 770214
%KEYS    KEYS     (NO REVISION LEVEL SUPPLIED)
%KYDMP   KYDMP    (NO REVISION LEVEL SUPPLIED)
%DVR11   DVR11         29030-60001 REV 1710     3-1-77
%SCMD3   $SCMD    92060-16036 REV.1710 770216
%DVR31   DVR31    29013-60001 REV.1710 770216
%HPIB    HPIB     59310-16004 REV. 1614, 760329
%FFTN4   SEG.F    92060-16093 770531 REV. 1726
%WHZT3   WHZAT    92060-16006 REV.1726 770520
%LDR3    LOADR    92060-16004 REV.1732 770811
%DVR00   DVR00    29029-60001 REV 1740 770808
%MSAFD   SAFD     (NO REVISION LEVEL SUPPLIED)
%LP31    LPCON     92062-16003   REV. 1805 5-19-77
%DVR15   DVR15    (NO REVISION LEVEL SUPPLIED)
%DVR33   DVR33       12732-16001  REV 1805 10-20-77
%DVA05   DVA05        92001-16035   REV. CODE 1806  1-17-78
%0DV05   DVR05        92001-16028   REV. CODE 1806   1-17-78
%4DV05   DVR05        92001-16027  REV.1806  1-17-78
%DVR12   DVR12    (NO REVISION LEVEL SUPPLIED)
%DVR24   DVR24    (NO REVISION LEVEL SUPPLIED)
%MESS    MESS      59310-16011  REV 1805  780105
%SRQ.P   SRQ.P     59310-16005  REV 1805  780110
%EDITR   EDITR    92002-16010 REV 1805 780117
%FF4.N   FF4.A       24998-16002 REV.1805 780303
%RLIB1   RLIB1     24998-16001  REV.1805  771116
%RLIB2   RLIB2     24998-16001  REV.1805  771116
%SYLIB   SYSLB    92001-16005 REV 1813 780212
%FTN4    IDN.F    92060-16092 771022
%0FTN4   F4.0     92060-16094 780310 REV. 1805
%1FTN4   F4.1     92060-16095 771128 REV. 1805
%2FTN4   F4.2     92060-16096 780310 REV. 1805
%3FTN4   F4.3     92060-16097 771213 REV. 1805
%4FTN4   F4.4     92060-16098 780203 REV. 1805
%5FTN4   F4.5     92060-16101 780221 REV. 1805
%CLIB    $CLIB    92060-12005 REV.1805 771022 $CLIB
%3SP01   $SPOL    92002-16001 REV. 1805 771116
%3SP02   SP.CL    92060-16034 REV.A 750505
%DVA12   DVA12     92001-16020  780511  REV 1826
%BMPG1   $BMON    92002-12001 REV.1826 780419
```

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%BMPG2	MR..	92002-16008 760621
%BMPG3	CO..	(NO REVISION LEVEL SUPPLIED)
%BMLIB	$BALB	92002-16006 REV.1826 780419
%SWTCH	SWTCH	92060-16038 REV.1826 780510
%RT3G1	RT3GN	92060-16037 REV.1826 780508
%RT3G2	RT3G3	92060-16037 771219
%CR3SY	$DPSY	92060-12003 REV.1840 780810
%3DV47	DVA47	92900-16003 REV.1840 780724
%1DV37	DVR37	59310-16002 REV. 1840 780811
%2DV37	DVR37	59310-16003 REV. 1840 780811
%DVR23	DVR23	92202-16001 REV. 1840 780503
%DVR32	DVR32	92060-16031 REV 1840 780515

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VIII.C. RTE-IV (92067A)

The following is a list of relocatable modules and revision codes of software on the RTE-IV grandfather disc.

```
CR=32767
ILAB=RTE4.5 NXTR=0187 NXSEC=054 #SEC/TR=096 LAST  TR=  0255  #DR
TR=01

  FILE    MODULE        REVISION
  NAME     NAME           CODE
**********************************
 %DVR15   DVR15    (NO REVISION LEVEL SUPPLIED)
 %DVR33   DVR33       12732-16001  REV 1805 10-20-77
 %DVR31   DVR31    29013-60001 REV.1710 770216
 %DVR12   DVR12    (NO REVISION LEVEL SUPPLIED)
 %DVR00   DVR00    29029-60001 REV 1740 770808
 %DVR11   DVR11         29030-60001 REV 1710    3-1-77
 %DVA05   DVA05        92001-16035   REV. CODE 1806  1-17-78
 %DVA13   DVA13    91200-16001 REV 1648 -- 761124
 %SCNFX   SCNFX    92067-16006 REV.1805 780112
 %0DV05   DVR05        92001-16028   REV. CODE 1806   1-17-78
 %0FTN4   F4.0     92060-16094 780310 REV. 1805
 %1FTN4   F4.1     92060-16095 771128 REV. 1805
 %2FTN4   F4.2     92060-16096 780310 REV. 1805
 %3FTN4   F4.3     92060-16097 771213 REV. 1805
 %4FTN4   F4.4     92060-16098 780203 REV. 1805
 %5FTN4   F4.5     92060-16101 780221 REV. 1805
 %1DV10   DVR10    (NO REVISION LEVEL SUPPLIED)
 %2DV10   DVR10    (NO REVISION LEVEL SUPPLIED)
 %4ASMB   ASMB     92067-16011 REV.1805 780112
 %4ASB0   ASMB0    92067-16070 REV.1805 771017
 %4ASB1   ASMB1    92067-16071 REV.1805 771102
 %4ASB2   ASMB2    92067-16072 REV.1805 770919
 %4ASB3   ASMB3    92067-16073 REV.1805 771102
 %4ASB4   ASMB4    92067-16074 REV.1805 770919
 %4AUTR   AUTOR    92067-16005 REV.1805 771219
 %4DV05   DVR05        92001-16027  REV.1806  1-17-78
 %4MTM    PRMPT    92067-16003 REV.1805 780119
```

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%4PVMP	PVMP4	92067-16001 REV.1805 771219
%4XREF	XREF	92067-16012 REV.1805 771121
%CAL10	DVR10	(NO REVISION LEVEL SUPPLIED)
%CALIB	PLOT	760218
%CLIB	$CLIB	92060-12005 REV.1805 771022 $CLIB
%COPY	COPY	92060-16042 REV.1704 770214
%DBKLB	DBKLB	92060-16043 REV.1704 770214
%DBUGR	DBUGI	(NO REVISION LEVEL SUPPLIED)
%DECAR	$ADD	(NO REVISION LEVEL SUPPLIED)
%EDITR	EDITR	92002-16010 REV 1805 780117
%FF4,N	FF4,A	24998-16002 REV.1805 780303
%FFTN4	SEG,F	92060-16093 770531 REV. 1726
%FTN4	IDN,F	92060-16092 771022
%HPIB	HPIB	59310-16004 REV. 1614, 760329
%KEYS	KEYS	(NO REVISION LEVEL SUPPLIED)
%KYDMP	KYDMP	(NO REVISION LEVEL SUPPLIED)
%LGTAT	LGTAT	92067-16008 REV.1805 780321
%MESS	MESS	59310-16011 REV 1805 780105
%MSAFD	$AFD	(NO REVISION LEVEL SUPPLIED)
%RDNAM	RDNAM	?????-????? 760413
%RESTR	RSTOR	92060-16040 REV.1704 770117
%RLIB1	RLIB1	24998-16001 REV.1805 771116
%RLIB2	RLIB2	24998-16001 REV.1805 771116
%RT4G1	RT4GN	92067-16009 REV.1805 780320
%RT4G2	RT4G3	92067-16009 REV.1805 780302
%SAVE	SAVE	92060-16039 REV.1704 770117
%SRQ,P	SRQ,P	59310-16005 REV 1805 780110
%TVLIB	CHARS	91200-16002 REV 1648 -- 761124
%TVVER	TVERF	91200-16004 REV 1648 -- 761203
%VERFY	VERFY	92060-16041 REV.1704 761201
%LP31	LPCON	92062-16003 REV. 1805 5-19-77
%#EMA	#EMA	92067-16013 REV.1805 780323
%4SP01	GASP	92067-16028 REV.1805 780323
%4SP02	SMP	92067-16028 REV.1805 771115
%DVA12	DVA12	92001-16020 780511 REV 1826
%BMPG1	$BMON	92002-12001 REV.1826 780419
%BMPG2	MR..	92002-16008 760621
%BMPG3	CO..	(NO REVISION LEVEL SUPPLIED)
%BMLIB	$BALB	92002-16006 REV.1826 780419
%2DV47	DVA47	92900-16002 REV.1840 780724

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%3DV47	DVA47	92900-16003	REV.1840	780724
%1DV37	DVR37	59310-16002	REV. 1840	780811
%2DV37	DVR37	59310-16003	REV. 1840	780811
%DVR23	DVR23	92202-16001	REV, 1840	780503
%DVR32	DVR32	92060-16031	REV 1840	780518
%DVB12	DVB12	92062-16004	REV. 1840	780707
%CR4S1	SCSY4	92067-16014	REV.1840	780811
%CR4S2	STRN4	92067-16014	REV.1805	780104
%4DP43	DVP43	92067-16004	REV.1840	780731
%4LDR	LOADR	92067-16002	REV.1840	780804
%4SYLB	SYSLB	92067-16035	REV.1840	780811
%4WHZT	WHZAT	92067-16007	REV.1840	780727
%4SWTH	SWTCH	92067-16010	REV.1840	780810

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IX. UPDATE PROCEDURES

Customers who are signed up for the Software Subscription Service, and those customers still under warranty, will receive minicartridges or paper tapes with the new modules. This section contains hints to assure a successful update.

General Instructions

DO: "Backup" your grandfather disc before starting the update procedure. Then, if you make a mistake, you can always go back to what you had and start over.

DO: Verify your backup copy. It is suggested that you make two copies and verify them both.

Grandfather Disc Updates on Paper Tape (Option 010)

If you are receiving software on paper tape, the following procedure is recommended for updating the grandfather disc from each tape:

1) Put the tape in the photoreader.
2) Run the FMGR and perform the following steps:

   a. :ST,5,X::::-1,BR (You may wish to add a security code and/or cartridge reference number.)

   b. When the tape has been read successfully, purge old file (security code is "RT", cartridge is "32767" for RTE-II/III) and rename "x" to be the new file. Notice that using this procedure, you do not lose the old file until you are sure the new one has been read properly.

c. You may need to pack the disc periodically to recover space.

Library Minicartridges (Option 020)

If you are receiving library minicartridges (not associated with the grandfather disc concept), then simply replace the old version of each cartridge with the new version shipped.

Grandfather Disc Updates on Minicartridges (Options 030-032)

If you have a grandfather disc and you are receiving software on minicartridges to update this disc, be sure to follow the procedures described in the RTE Utilities Manual (92060-90017) for updating via program UPDAT.

After the Update

DO: Generate your system right away. If there have been any errors in the transfer process, they probably will be detected in this way.

DO: Check the revision codes against those listed at the end of this SUN to be sure that you have not left out any modules.

DO: Make backup copies of your newly updated grandfather disc.

DO NOT: Use the same tape to backup your new system. Keep the old copy until it is time to update once again, and

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then use it to copy the next "new" system.

DO: Keep the update paper tapes or minicartridges together with your old backup tape. If you discover problems later, you will always be able to get back to where you started and go through the update procedure again.