HP 1000 SOFTWARE UPDATE NOTICE

For Software Update C.83

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READER COMMENT SHEET
Software Update Notice (SUN)
5955-3257/E0384

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1. Are you satisfied with this update? YES____ NO____
   Comments:

2. Please check the products you implemented in this update.

___	(24612A)	Diagnostics	___	(91750A)	DS/1000-IV
___	(91782A)	DSN/MRJE 1000	___	(92068A)	RTE-IVB Op Sys
___	(92069A)	Image/1000	___	(92070A)	RTE-L Op Sys
___	(92070B)	RTE-L Op Sys	___	(92071B)	RTE-XL Op Sys
___	(92073A)	Image/1000L	___	(92077A)	RTE-A Op Sys
___	(92078A)	RTE-A VC+	___	(92084A)	RTE-6/VM Op Sys
___	(92833A)	Pascal/1000	___	(92834A)	Fortran-4X
___	(92836A)	Fortran-7X	___	(92843X)	Graphics/1000-II
___	(92860A)	Symbolic Debug/1000			Device Handlers

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Table of Contents

INTRODUCTION	CHAPTER 1

This introductory chapter is a brief explanation of the content and format of the Software Update Notice (SUN).

1.1 Purpose of the SUN and how to use it.

The SUN accompanies software, firmware and/or manual updates. It is designed to be a reference document to describe product changes and to give general considerations on how to incorporate these changes in the system.

The SUN performs basically three functions:

1) Describe the CHANGES that have occurred WITHIN A PRODUCT for both maintenance and enhancements (Chapter 2). If the change is in response to a Service Request from the field, this is noted. The descriptions are meant to be a quick overview to give the user a condensed look at the changes. More specific information must be obtained from the particular product's updated manuals.

   When changes made to a product affect the generation, loading, or installation of that product, mention is made in Chapter 4. Again, for specific instructions you should refer to the appropriate manual.

2) List the CURRENT REVISION CODES, UPDATED MEDIA and MANUAL PART NUMBERS for each product (Chapter 3). This chapter indicates:

   - the current revision codes for the software modules and firmware belonging to a product,

   - the software media part numbers and firmware that are being shipped in this update cycle; these media will contain the updated software for a particular product,

- the part numbers of the manuals that are being updated in this update cycle.

Chapter 3 is not intended to replace the Software Numbering Catalog or Software Numbering File for each product, but rather it is intended to be a quick reference source for revision codes and a help in determining what media and manuals will be received by a customer for a particular product.

Note: The revision codes specified in Chapter 3 are put together during the course of the update cycle, and are not necessarily taken directly from a Software Numbering Catalog or File. THE SUN, therefore, IS NOT CONSIDERED TO BE THE OFFICIAL SOURCE OF REVISION CODES. The media and manual part numbers are, however, obtained directly from the update material list for each product, and should represent exactly what the customer will receive.

3) Describe different MEDIA FORMATS sent to a customer along with a brief explanation of the SOFTWARE UPDATE PROCEDURES associated with each media (Chapter 5). All software media can be read by HP-supported utilities which are described in various manuals. The user is directed to the appropriate reference manual for more specific instructions.

How to use the SUN:

The following are some suggestions to help you use the SUN as the reference it was intended to be:

- When you receive the SUN, check Chapter 1 for any changes that might have occurred in the SUN format and could affect how you will use it.

- Depending on the products for which you have a subsription service and the media you have chosen, you will receive a set of software and/or firmware media and manuals. If you are unfamiliar with the media you have received, check Chapter 5 for a description of the media format and suggestions for update procedures.

- Before you regenerate your system or load any software on-line, be sure to look through Chapter 4 to see if there have been any changes to load or generation procedures.

- Chapter 3 can be used to resolve any confusion concerning what software or manuals you should have received. Any software files or manuals that have been deleted from or added to the product will be highlighted there.

- Chapter 2, along with the updates you receive for your manuals, describes the corrections and enhancements made in this update cycle.

IMPORTANT NOTE: The SUN is only a quick reference document for an update cycle and is not intended to supersede the product manuals. Refer to the product manuals for the precise information on how to use the product.

1.2 Update Naming Convention

The naming convention for update cycles is:

x.yy where: x = A,B,C, etc
yy= last 2 digits of year

e.g. A.83 = the first software update in 1983.

This naming convention will be used in all references to a particular cycle.

This current update cycle is referred to as 'C.83'. Even though we are well into 1984, this would have been the third updated in 1983. Perhaps a short explanation is in order (this ought to be good!).

The update was originally scheduled for the last weeks of 1983. We have been trying to imporve our ability to catch bugs before we ship them (this is good). As a consequence, we did. Rather than ship the C.83 update with serious bugs, we decided to fix them first (this is also good). Because we had already committed to certain changes in C.83 as well as A.84, we could not simply change the name. We thank you for your patience; we think the wait was worth it.

The software in an update may be of different revision codes. This means that the revision code of a software product does not indicate the update cycle in which that software product will be released. An example would be: update A.84 could be released in March 1984 and could contain Graphics software of revision 2350, Image software of revision 2401, DVA05 driver of revision 2410, etc.

DESCRIPTION OF SOFTWARE CHANGES — CHAPTER 2

This chapter lists the reasons behind the software changes in this update. Where applicable, a Known Problem Report (KPR) number is given.

The entries are of three types: Problem/Solution, Enhancement, and Note. A Problem/Solution entry describes the problem and the basic steps taken to solve it. An Enhancement entry similarly describes a change to software that improves its utility or makes it easier to use. A Note entry is useful information about a change that may have some impact but is not directly related to a software fix or enhancement.

All entries are sorted by part number. For information on individual files that have changed, see chapter 3.

2.1 (91750A) DS/1000-IV

Problem: (KPR# 2200-000158) If a PTOP pair, 1000 as slave was aborted from the 3000 side with continuation records outstanding a SYSFAIL occurred on the 3000. This was because RQCNV did not handle PCLOSE with continuation records outstanding properly. RQCNV sent a special message to RPCNV telling it to send all the data on the holding class to the 3000. RPCNV then sent all the data with the PCLOSE message. The 3000 did not check the data length of the message it received, and the long message caused a SYSTEM FAILURE 917 on the 3000.

Solution: RQCNV now treats a BREAK message with a sequence number as a special case, and the holding class is cleared.

Problem: (KPR# 2200-000141) CNSLM did not print TELL messages to the users terminal. This was because it branched to the wrong place after sending the TELL reply.

Solution: The label was moved.

Enhancement: (KPR# 2200-000166) RMOTE now accepts lower case options in the MO processor. RMOTE also upshifts lower case letters, except for commands using the NOW option.

Problem: RMOTE running applications that use V/Plus intrinsics for block mode terminal reads and writes did not work properly. This was because D3KMS lost terminal status which caused the status reply to complete immediately, and did not give the terminal time to reply itself.

Solution: D3KMS now checks to see if terminal status is being requested (escape *) before clearing the screen.

Enhancement: D3KMS now sets the timeout on the HP1000 terminal to the value requested by the 3000 in the FCONTROL 4 message. The terminal timeout will be set to the requested value until the next terminal read completes. At that time the timeout value will be reset to the value it was before the FCONTROL 4 was received.

Currently this enhancement is only supported on MEF machines, as the XL and A terminal drivers do not support the setting of the terminal timeout programmatically. As soon as the terminal drivers support this feature the subroutine D$FCA will be tested and the XL/A systems will also support this feature. Until that time the FCONTROL 4 request will be replied to but no action will be taken on the 1000 system.

Problem: (KPR# 2200-030288) RMOTE with move option, moving a file to the 3000: RMOTE did not prompt the user to ask if he wanted to overwrite an existing file if the file resided on a CS 80 disc. COPY3K, RMOTE's slave, used an FGETINFO call to verify that the device the file being moved to was a disc. COPY3K accepted device type 0, and the CS80 disc has a device type of 3. Since the device type was not 0, COPY3K assumed the device was not a disc.

Solution: COPY3K now recognizes that a 3 is a valid disc type, and RMOTE asks the user for the OVERWRITE? response, as it

should.

Problem: (KPR# 2200-002964) QUEX did not mask off the continuation byte from the LU word in the 3000 LU table when it did a cross load. This caused QUEX to store the wrong value for the 3000 LU internally.

When QUEX called D$UP! to mark the LU up, D$UP cannot find the LU in the table. The LU is not put up. DSINF reports the buffer size as *DOWN*, even though the *COMMUNICATION LINK UP* message is displayed on the system console.

Solution: QUEX now masks off the continuation byte before storing the LU as a local variable.

Problem: (KPR# 2200-003293) When a DS/3000 user tries to log on to a 1000 multiple times from a single session, his second logon request will not complete. The 3000 user will hang until the line goes down.

Solution: RSM now clears the pool entries for 3000 entries properly. In addition, QUEX now masks off the continuation byte of the LU word from the 3000 LU table before storing it locally. This enables RQCNV to find the 3000 LU in the table so it can send the DSLINE reply back to the 3000.

Problem: The logging routine, D$WLG assumed the data to be logged would be in SAM. On outbound messages the data was in the caller's space. D$WLG called D$FRS to move data from SAM, and was handed the actual data; not the data address. The data was not moved properly and a random buffer was logged instead of the data on outbound messages.

Solution: D$WLG now checks if the message it is logging is inbound or outbound. If the message is inbound with data, D$FRS is called to move the data from SAM to the 143 word buffer in the caller's code space.

If the message is outbound, D$WLG calls a new routine to make the data contigous with the header and appendage area. This routine is called D$BMV.

Problem: (KPR# 2200-018754) If a 1000 slave program has multiple masters with multiple requests pending on its class queue and one of the masters issues a PCLOS to the slave, then

the slave program will end execution and flush all requests from its class number and deallocate the class number. Any request the masters have made to the slave for which they are waiting for a reply will time out with no other indication as to what has happened.

Solution: A new error message has been introduced to take care of this situation. Now if the above circumstances occur, instead of flushing the requests from the slave's class and deallocating the class number, the requests are requeued to PTOPM's class with a bit set in the header indicating that an error -49 should be returned to the master program.

Problem: When INCNV had many level 0 (Product 91740) messages queued on its class to be converted to level 1 (Product 91750) messages and these messages occupied most of SAM a deadlock could occur. This was because INCNV released the old (91740) format message immediately after reading it. After converting the message, INCNV did a class write with wait to send the new 91750 message out. If there was no SAM available to write this message because all of SAM was taken up with messages on INCNV's class. a deadlock could occur.

Solution: INCNV now saves the 91740 format message in its code space in case of an error.

The class write to place the 91750 message back in SAM is done without wait. INCNV does not release the 91740 buffer in SAM until it is finished converting the message to 91750 format. This helps ensure there is enough SAM to send the new message.

If not enough SAM is available for an incoming request, INCNV attempts to return the original 91740 message with a DS08 error. If there is not enough SAM to send the old 91740 message with the error, INCNV flushes the 91740 message from its class and returns to a class I/O get.

If not enough SAM is available for a returning reply, INCNV attempts to hand the reply up to the master program via GRPM without data and with a DS03(6) error. If there is too little SAM for even the DS header INCNV still attempts to notify the user via QCLM. If this attempt fails the reply is flushed from SAM.

Problem: (KPR# 2200-018598) If #CLON is called by a DS monitor to

release the ID segment of a slave program, the ID segment will not be released if the slave program is not dormant (not state 0).

Solution: #CLON was changed so that a MESSS call is issued to do a "hard off" to the slave in case the call to IDRPD fails. This fix is necessary to eliminate the slave ID segment remaining allocated if it (slave program) happens to be I/O suspended (state 2) when the call to IDRPD is done.

Problem: (KPR# 2200-018671) When a slave program was cloned by #CLON the ID segment of the slave program was not fully attached to the session. Therefore, when the session was aborted or ended, session programs associated with it were not cleared up.

Solution: #CLON has been changed so the ID segment of the slave program is fully attached (specifically: the session ID word now contains the LU instead of a zero). Programs will now be cleared up by the system upon session termination.

Problem: PTOPM does not reset the idle timer in the #POOL entry for any program-to-program traffic except for a POPEN call.

Solution: PTOPM now calls #RSET (part of #ATCH) to reset the idle timer every time it is entered.

Problem: If the local node was specifed in the IOMAP runstring to establish an I/O map, the runstring will be accepted with no error but the specified I/O mapping will not be established.

Solution: IOMAP treats establishing an I/O map to the local node as a special case. IOMAP now retrieves information itself instead of calling DEXEC if the map is to be set up locally.

Problem: (KPR# 2200-030379) ID.66 does not give any error indication when trying to schedule QUEUE and QUEUE's ID is not in the system.

Solution: Change ID.66 to exit with illegal interrupt bit set when QUEUE's ID is not in the system.

Problem: (KPR# 2200-026419) PROGL has trouble handling more than 4

concurrent downloads. PROGL has only 4 active download control blocks, the rest of the request is queued for service; but if it takes longer than the VCP timeout value to finish an active download request then the VCP will time out before the queued requests have a chance to be serviced.

Solution: Increase PROGL's active download control blocks from 4 to 20. PROGL will be able to handle 20 downloads.

If a user wishes to do more than twenty concurrent downloads, and the download time for each file is greater than the VCP timeout value the same problem will occur.

Enhancement: DS/1000-IV is enhanced to support the new data link master on RTE-A. A device driver and a utility program were added to the product in order to support data link master.

Problem: When PLOG logs its messages into a disc file, the file is used as a circular buffer. When it wrapped around and started overlaying previously written records, it would skip the record containing the first message logged. TLOG would then format this message as part of the normal output, but due to the circular nature of the PLOG file, this message could appear at any point in the trace output.

Solution: Correct PLOG so that it no longer skips this record on wrap around.

Problem: Under some conditions messages could build up on the MA hold class.

Solution: When ever a message is added to the hold class, or deleted from it, the remaining messages currently on the class are checked to ensure their validity and dropped if they have expired sequence numbers.

Problem: In the case of two nodes, both with MA generated in, if node A is initialized with no MA to node B and node B is initialized with MA to node A, messages will not be transmitted to applications over this channel until a message is sent from node A to node B.

Solution: Create a new state internal to #MAPP ("No channel entry"

state) and treat all messages in on this channel just as if there was no MA in the entire system. This will cause the remote end to go to the NONMA state as soon as a message is sent in either direction.

Problem: If an MA initialize message was received in from a node not in the local NRV, MA would go ahead and try to initialize the channel. At the remote system, the channel would come up and the message would be resent, but would never be replied to and time out.

Solution: MA now checks for errors following the search of the NRV. If no node was found, LU 0 is used to send the message. This results in GRPM dropping the message and printing an error via QCLM on the console.

Problem: (KPR# 2200-002105) If the following scenario occurs MATIC may loop indefinately:

1. DINIT is run to initialize a node with MA to at least one other node.

2. DS is shut down for the node (or the first initialization fails).

3. DINIT is run again to initialize the node with no links to HP1000s.

4. All these runs are made with the same copy of DINIT (which terminates serially reusable, so this is possible).

This scenario will cause MATIC to be scheduled, but the MA tables will be invalid, and MATIC may loop indefinately.

If DSINF is given the "MA" command, it too may loop.

Solution: Change DINIT so that it doesn't try to initialize MA if there aren't any 1000s in the network.

Problem: Sessions created through DS may be abandoned in exceptional cases, such as rebooting of the node that created them. In this case, they may either be cleaned up by the idle timer, if it is not disabled, or by ACCTS (DS subsequently notices the shut-down session and cleans up its tables). There is no way, however, to clean up the session from another node, including the initiating node.

Solution: Add a new command to REMAT, the "SD" command, which shuts down the specified session at NODE1, if the Network Management Security Code at the requesting node is given, and if the session was indeed created by DS.

Problem: When logging is enabled, messages handled by RSM but by no other queueing monitors are not logged.

Solution: Modify RSM to log them.

Problem: Normally, RSM notices when one of its sessions has been destroyed for any reason (such as being shut down by ACCTS) and cleans up its tables. Under certain conditions, this table flush was not being performed.

Solution: The table flush is done every time RSM runs.

Problem: REMAT's BC command, which prints one line to the system console of every node in the network, reports an RS03 error after printing to 16 session nodes.

Solution: REMAT's BC and TE commands now execute outside of session.

Enhancement: REMAT's PL, IO, and LO commands, which schedule APLDR at the RTE-L/XL/A/MIII node, suppress some of the information returned to them when APLDR has trouble executing the requested command. When this happens, REMAT reports DS ERROR -1(0) (meaning "APLDR had trouble executing the command"), but fails to report what the trouble was, even though APLDR returned the information in the PRTN parameters.

REMAT now reports the PRTN parameters, as well as the DS ERROR -1(0).

Note that this error is also caused by APLDR aborting, in which case the PRTN parameters are meaningless.

Enhancement: PGMAD (and therefore UPLIN and other DS monitors) did not previously distinguish programs "dormant, saving resources, not in time list" from programs truely dormant. This means that a program could not (without going into the time list) terminate and save DS resources, such as remote sessions.

PGMAD now distinguishes these states. PGMAL (for L/XL/A systems) received this change at a previous PCO.

Problem: In RTE-L/XL/A, OPERM truncates the odd byte of odd-byte-length messages. This happens during a conversion from byte length to word length.

Solution: Odd byte-length messages are now padded with one blank, and then treated as even-length messages.

Problem: (KPR# 2200-028928) DINIT always reprompts when an error occurs. This is not wanted in unattended systems.

Solution: Change DINIT so that it aborts on EOF after reprompt, if using class I/O. This allows retries, if desired, but allows the system console to be genned with a non-zero time-out, and re-asked questions to time out, signaling DINIT to quit.

Problem: (KPR# 2200-026583) If an error occured on a download, the CBL66 PROM would halt, even if RPL was enabled.

Solution: Change the HLT 55B (102055B) to a 106055B instruction. REPLACE 91750-80007 with 91750-80018.

Enhancement: CBL66 was enhanced to have a longer timeout when waiting for data from the central.

Problem: (KPR# 2200-000679) If REMAT receives an error on the file open of the first transfer file in the TR stack, it does not clean up the bogus entry which it has placed on the transfer stack. REMAT continually gives the user a FMGR-006 error when any subsequent transfers to a file are entered (reqardless of whether the correct CRN is specified or not). One is able to back out of the transfer stack by entering TR,-n where 'n' is an integer. If this problem occurs an easy workaround is to clear out REMAT's transfer stack by typing TR,-n.

Solution: REMAT was modified so that the transfer stack is popped if an error occurs on the transfer file open.

Problem: If RFAM received an RS01 error (ie the attach fails) while trying to do a file open or create, RFAM failed to clean

up the RFAMD allocated internally. (An RFAMD is an internal data structure which RFAM uses to keep track of DCBs for opened files.) If this continued RFAM would eventually run out of RFAMDs and report a DS-28 error to the user. The only method of clean up at this point was to 'OF' RFAM.

Solution: RFAM was modified to detect that an RFAMD has been allocated on a file open or create and if an RS01 error occurs the RFAMD will be deallocated.

Problem: 91750A has files for running DS with IMAGE that are duplicates to files found in the 92069A Software. This causes confusion and is difficult to update and track the latest revisions.

Solution: Delete duplicate IMAGE files LIB-$DSDB, %RDBAM, %RDBAP, %RD.TB FROM THE 91750A Software.

Problem: Changes to the X.25 Library made for 2330 complicated the loading of RMOTE.

Solution: 2 load files, #RMOTE and #RMOT1, were added to simplify the loading of RMOTE.

Problem: If a user runs REMAT from a session and switches to another node (SW,nn,,NM) and then tries to set up an I/O map at the new node or runs DSINF remotely (ie RW,DSINF from REMAT), each will fail. IOMAP or DSINF will send a request back to the node where REMAT is running. Since there is a known session at this node which the monitor should attach to, this session number is placed in the DS request header. This situation is known as a setting up a bounce back session. However, the request, upon reaching the node where REMAT is running, is rejected because the specified session is not in #POOL.

Solution: The subroutine which does the validity checking for attaching to sessions has been modified to check for a 'bounce back' session rather than giving back an error.

2.2 (91782A) DSN/MRJE 1000

Problem: (KPR# 2200-003392) BCB from the host with the reset bit turned on caused the PSI card to drop the line.

Solution: Download code changed to handle the reset and maintain the line.

Problem: (KPR# 2200-004127) Configuration file was set up to store only 40 character signon and signoff cards, whereas 80 character cards are needed.

Solution: Code was changed to write to and read from the configuration file all 80 characters of the cards.

Problem: Help message response to help on CONFiguration, link, timeout command had the timeout parameter misspelled.

Solution: Code was changed to correct the spelling.

Problem: (KPR# 2200-003111) Queued assignments to output devices function like standard assignments when they are made to a user terminal. Only standard assignments to user terminal should be allowed.

Solution: Code changed to issue an error message if a user attempts to queue-assign a printer or punch to an LU that is a user terminal.

Problem: (KPR# 2200-003426) Once PSI tracing has begun, if a user types the command USE (after the initial USE) the PSI time stamp is reset to zero in the trace file; but, the formatter does not handle that properly. Instead, the formatter increments the time stamp by a large number and then procedes to reflect the relative time correctly.

Solution: Formatter code changed to properly issue a time stamp of 00:00:00:00 with each USE issued.

2.3 (92068A) RTE-IVB

Problem: During heavy two way traffic between the host and a slave node, the host will occasionally lose a block of data. This occurs when DVR07 clears the state byte in EQT17 and uses the card idle timeout command to restart the driver.

Solution: DVR07 no longer clears the state byte or uses the card idle timeout command to restart the driver.

Problem: When DVR07 is queuing a request onto an inactive EQT, it was possible for the I/O card to generate an interrupt which would destroy the request.

Solution: DVR07 now takes a continuation return rather than a completion return. This prevents the interrupt from occurring during the queuing process.

Problem: (KPR# 2200-051664) (SSB# 5166) Attempting to output data to a disconnected 2608A line printer would cause DVB12 to crash the system when the printer was reconnected and UP'ed.

Solution: The driver was not cleaning up its command mode flag left in temporary storage in the EQT and would erroneously interpret a counter as an address. This flag bit is now cleared on every entry into the initiator.

Problem: (KPR# 2200-051292) (SSB# 5129 & 5573) An attempt to do a buffered read (REIO, Class I/O) of the 2608A character set could cause SAM corruption and subsequent operating system necrosis. This was most commonly accomplished by typing 'LI,6' when meaning to type 'LL,6'.

Solution: DVB12 would furnish one more word of data than was requested by the read call (the character set I.D.). Although this feature was documented, the SAM allocation done by the operating system assumes exact word counts; the extra word returned could overlay the link pointer of some other data block in SAM, unlinking the list. The driver was changed to return the proper number of data items requested.

Problem: (KPR# 2200-055731) Packed character set reads from a 2608A could corrupt one to eight words following the end of the input buffer.

Solution: DVB12 was using the input buffer as temporary storage while byte packing character cell data. This could cause overwrite problems when an inexact number of bytes was requested. The driver was changed to return as many character cell pairs as could be completely contained in the defined buffer.

Problem: DDV63 was moved to its own device table and no longer needed in $DVTB.

Solution: Remove DDV63 from $DVTB.

Problem: (KPR# 2200-023283) If a read were issued to a terminal with the echo bit off, and the user responds with cntl-D, then the status returned did not have the EOT bit set as in driver DDV05 as it is documented in the manual.

Solution: This problem was caused by an extra linefeed being sent to the terminal to advance the cursor to the next line when the echo bit is off. This extra write would cause the status to get updated, thus wiping out the previous status that had the EOT bit set when the cntl-D was entered. The solution was to save the status and restore it upon return from doing extra linefeed write.

Problem: The following are problems with DVC12: 1- Paper jam causes device type in EQT to increment. 2- Does not auto-up as documented

Solution: Changes have been made to DVC12 to fix the problems.

Note: The new formula for the EQT extension is 20 + 7 * (number of devices on the HP-IB bus)

Problem: In RTE-4B, a control request with a subfunction code of 20B could not be used to add an alarm program for an SRQing device. Only a call to the subroutine SRQ could be used.

Solution: As was originally possible with the RTE-6/VM version of

the driver, it is now possible to execute this EXEC control request. It is also possible now to use a special form of an EXEC write request to achieve this same result of configuring an alarm program to run when a device SRQs.

Problem: (KPR# 2200-052282) Spooling, which uses class I/O, conflicted with HP-IB secondary addressing parameters. This meant that when spooling output to an HP-IB printer, output could be garbage.

Solution: As was originally incorporated into the RTE-6/VM version of the driver, there are now different subfunction codes for the EXEC I/O calls to distinguish Class I/O from secondary addressing calls. Please consult the manual, "RTE Driver DVA37 For HP 59310B Interface Bus". Please also note the following. This problem was a conflict between spooling and HP-IB. Although it has been resolved on the HP-IB side, it is still a spooling problem. For future HP-IB applications, please use the new subfunction codes, although at this time spooling to HP-IB devices will still not work.

Problem: (KPR# 2200-056119) If an SRQ occurred while I/O was in progress, the CPU could go interrupt bound.

Solution: The new version of the HP-IB driver for RTE-6/VM and RTE-4B resolves this problem by incorporating the code for the patch originally described in the SSB.

Problem: (KPR# 2200-054734) If an SRQ occurred while a read is pending on the bus, the driver would loop on the SRQ until the read completes. Thus, the entire system would hang in this situation.

Solution: The new version of the HP-IB driver for RTE-6/VM and RTE-4B resolves this problem, using the following logic. First, SRQs are temporarily disabled. The driver remembers which device SRQed. Once the read completes, SRQs are reenabled, and the one that occurred while I/O was in progress is handled.

Problem: (KPR# 2200-056400) A serial poll disable command is not sent if the serial poll fails.

Solution: Now a serial poll disable is sent before scheduling the HP-IB bus alarm program.

Problem: (KPR# 2200-055319) The entire bus is down'ed if the driver encounters a down device when SRQ is asserted.

Solution: Now the HP-IB bus alarm program is scheduled when this event occurs. The HP-IB bus alarm program is documented in the DVA37 Programming and Operating Manual.

Enhancement: A new EXEC control request has been added to the HP-IB driver. It is used to set the number of TBG ticks (tens of milliseconds) between attempts to schedule an HP-IB alarm program when an SRQ occurs. This value cannot be greater than 377B. Negative numbers are converted to their additive inverse. If zero is passed as a parameter, the default of 100 TBG ticks is used.

Problem: DVR32 and its clone, DVP32, do not correctly handle abort and controller unlock requests in a multi-cpu configuration. This problem causes D.RTR to hang on a resource number, and also degrades system performance.

Solution: Modify the abort and unlock decoding in DVR32(92084-16711) and DVP32(92084-16710) to correctly function in a multi cpu enviroment.

Problem: DVA32 and its clone, DVC32, cannot support the 9121 microfloppy.

Solution: Modify the interface cleanup section of DVA32(92084-16708) and DVC32(92084-16709) to properly cleanup the HPIB on request termination.

Problem: (KPR# 2200-032359) FC reported a FMGR -32 error when it encountered a new-filesystem cartridge in the cartridge list while searching for a file on an unspecified cartridge.

Solution: The routine get_next_cartridge in &FCCA2 has been changed to skip cartridges that have a zero CRN (new-filesystem cartridges).

Problem: (KPR# 2200-028225) FC omitted trailing backslashes from file names and CRNs when displaying the names of the files being copied on the terminal.

Solution: The new routine form_string_backslash_not_special has been added to &FCFRM and [FCFRM. Log_current_file in &FCMIS and form_int_or_ascii in &FCFRM now call this new routine.

Problem: (KPR# 2200-055863) FC always reads the entire tape on a restore even when only a few files were selected.

Solution: FC now stops reading the tape after the last selected file has been restored. This required adding a new global to [FCGLB (last_source_file_num_selected_during_pre_scan), and adding one line of code each to scan_dir_chunk_for_matches_and_update_size_and_alloc_info in &FCDAS and get_source_volume in &FCTDH.

Problem: (KPR# 2200-002253) FC did not do a form-feed at the end of a listing.

Solution: FC now does an FMP end-of-file control function before closing the list file (in reset_list in &FCOUT). This causes a form-feed on the printer, a write-file-mark on magnetic tape, etc., when FC exits or when another LL command is entered.

Problem: (KPR# 2200-029330) FC reported tape format error -14 and would not restore a tape if it contained files with an illegal name, negative type, or negative type 2 record length. The latter two caused problems because FC does not check these things when writing or verifying a tape. Therefore FC would backup and verify files with negative types or record lengths, indicating no error, but would not be able to restore any files from a tape containing even one such file.

Solution: The checks for illegal name, negative type, and negative record length were removed from get_info_from_subdir_for_source_file in &FCSBD. FC now restores such files without reporting any errors. Restoring such files causes no problems except possibly to programs trying to access them, and even that will work in many cases.

Problem: FC did not log the offending tape discfile entry to go with a tape format error -14 report, because the calls to log the two pieces of information were done in the wrong order. The first call raised an exception, preventing the second from being executed.

Solution: The order of the tape_format_error and octal_dump calls were reversed in get_info_from_subdir_for_source_file in &FCSBD.

Problem: FC occasionally reported "disc directory read failed" or "disc directory read required retries" for no valid reason. This was seen on disc-to-disc or disc-to-tape copies with verify selected in the open-files (as opposed to lock-cartridges) mode, when other programs were accessing the same cartridge as FC.

Solution: Remove the feature of verifying directory reads by reading the same data twice from the code in read_direc in &FCDIG. This has practically no impact on verify integrity since the directory is only a small fraction of the data transferred and bad directory info would usually result in other errors being detected anyway.

Problem: The call to DSCPR in &FCMIS omitted the third parameter, a required status parameter which is modified by DSCPR. Also, the array parameter in which DSCPR returns information requires 10 words, but only 9 words were passed. No known malfunctions resulted from these errors.

Solution: The status parameter has been added to the DSCPR calling sequence in &FCMIS, and the 9-word array has been changed to 10 words. The status value returned is checked. If it indicates an error, FC reports an internal error, since no error from DSCPR should be possible as it is used by FC. Changing the array parameter to 10 words requried declaring a new data type 'array10' in the FC global include file [FCGLB.

Enhancement: The comment in #FCA has been corrected to say 'LINK command file' rather than 'LOADR command file'.

Problem: (KPR# 2200-004960) A zero length $XSIO request would cause the ICD disc driver to wait forever.

Solution: This condition is now checked for and handled properly.

Enhancement: XREIO was added to the system library for use by the ACCTS program and routines in $FOLDF.

Enhancement: OPSYS was added to the system library for use by the ACCTS program.

Problem: The listing generated by LUPRN for session vs. system lus was incorrect.

Solution: Correct LUPRN to generate correct listing.

Enhancement: Changes were made to LUPRN for easier readability.

Note: The following files were submitted in new record format which is not supported on RTE-4B. They have been changed to old record format.

92068-12006 $RSLTB
12792-16005 %$DVTB
92833-16053 =PRERS
91711-12031 $XXTD1
92084-16423 %VMACK

Problem: (KPR# 2200-050450) (SSB #5045) The section of DVM72 that configures the I/O instructions for the correct select code handles one of the instructions incorrectly.

Solution: This section is fixed to configure all I/O instructions correctly.

Problem: (KPR# 2200-050450) (SSB #5111)In DVM72 the DMA output is set up the same way as DMA input and so would not work correctly.

Solution: Change the code to set the flag on the card to assert SRQ at the beginning of an output request, instead of setting control and clearing the flag on the card as is done to initiate input request.

Problem: (KPR# 2200-050450) (SSB #5255) In DVM72 the function code to define an alarm program would not work from a large background program. The driver needs access to table area II to find the ID segment.

Solution: Determine whether or not the user or system map is enabled in the driver. If the user mao is enabled, do cross loads to get access to table area II.

Note: (KPR# 2200-050450) This function will still not always work from an RTE-6/VM extended background program. The buffer that passes the name of the alarm program to the driver may be in memory page that gets remapped by the operating system before entering the driver. To protect against this would involve extensive changes to the driver. It was decided instead to document the exception in the programming and operating manual.

Problem: (KPR# 2200-055228) (SSB #5522) Normally if an error occurs on a write operation, the driver will retry the operation up to 75 times before an error is reported. However, if the error occurs at EOF, it will only allow 1 retry (the driver will only allow EOT to be sensed twice). If the write is unsuccessful, the tape unit is downed and IONR error is issued. Since the EOT has been sensed, the disk backup utilities (WRITT, LSAVE, USAVE, !DISK, etc.) will issue the "mount next tape" message as soon as the mag tape EQT is upped. However, the last record has not been successfully written and the backup will not restore properly.

Solution: DVR23 has been modified to allow up to 75 retries if an error occurs during a write operation and EOT is encountered.

Problem: (KPR# 2200-055228) (SSB # 5197) ANSI STANDARD X3.22-1973(for 800 BPI NRZI) and X3.39-1973 (for 1600 CPI) states that the usable recording area on a mag tape is from 'BOT' to 10 feet after the 'EOT'. DVR23 does not adhere to this standard and will not allow any data to be written after the EOT.

Solution: DVR23 has been changed to allow for transparent read, write, and control requests. This allows for processing of ANSI standard tapes beyond EOT. The transparent bit has been defined as bit 10 of the control word. When the transparency bit is set, DVR23 will sense EOT, but will no longer disallow requests. The user must check for EOT condition to insure that tape runoff does not occur.

Enhancement: The RTE-4B Answer files were modified in several areas.

#AN400	92068-17007	REV.2340
#AN401	92068-17008	REV.2340
#AN402	92068-17009	REV.2340
#AN403	92068-17010	REV.2340

A.) Changed list file from: 'LF40x::12 To 'LF40x::Px
Changed output files from: !PR40x::12::5000- To
!PR40x::Px::5000-

Where: x = 0,1,2, or 3

B.) Changed memory size from 64 to 128K words.

C.) Deleted:

REL,%2DV37::32767
REL,%DVB12::32767
REL,%TD.BUF::32767
REL,$MLIB1::32767
REL,$MLIB2::32767
REL,%RD.TB::32767
REL,%IB4A::32767
REL,$ACCLB::32767 (DELETED FROM #AN401 & #AN403 ONLY??

Added:

REL,%6DV37::32767
REL,%DVC12::32767 (STANDARD PRINTER NOW 2608S)
REL,%D.BUF::32767
REL,$FLIB::32767
REL,$MATH::32767
REL,$FOLDF::32767
REL,%RDTB::32767
REL,$IB6A::32767

D.) Changed EQT entry #7 as follows:

From: 21,DVR37,X=123,T=6000

To: 21,DVA37,X=123,T=6000

E.) Increased number of I/O classes from 10 to 35.

F.) Increased number of blank ID segments from 20 to 40.

G.) Increased number of short blank ID segments from 20 to 30.

H.) Increased max number of partitions from 16 to 20.

I.) Changed partition definitions as follows: 25,BG 28,BG 28,BG

J.) Changed program page requirements as follows:

LOADR,28 FMGR,14

Enhancement: The RTE-4B Build files were modified as follows:

```
*BL400  92068-17002  2340
*BL401  92068-17003  2340
*BL402  92068-17004  2340
*BL403  92068-17005  2340

Changed from:  :ST,'LF40x::2071,'LF40x::-2::-1
          To:  :ST,'LF40x::Px,'LF40x::-2::-1
```

Enhancement: The RTE-4B CRN# 2071 was modified as follows:

```
Deleted:  %TXPF4 91711-16261 REV. 2201 (REASON: DID'NT LOA??
                                        TO UNDEFINED EXT: ??

  Added:  %VISOD 12824-16002  REV.2026
          %VLIB1 12824-12001  REV.2026
          %DBRED 92069-16160  REV.2340
          %DSDB  92069-12007  REV.2340
          %RDTB  92069-16257  REV.2340
          %TXPF4 91711-16106  REV.1926

Updated:  %RDBA  92069-12003  REV.2340
          %LOCAL 92069-12006  REV.2340
```

2.4 (92069A) Image/1000

Problem: (KPR# 2200-015909) The program relocatable *DBUP was merged with incorrect relocatables. It would memory protect when executed.

Solution: The correct relocatables are now merged to create *DBUP.

Problem: (KPR# 2200-026008) DBGET and DBFND do not always read directly from the disc. If the specified record to read is already in the DCB, FMP will return the data in the DCB, which may not be the correct data on the disc when multiple users are accessing the database. The results of this can be 'corrupt database', 'internal tables are corrupt', 'record is empty', and 'chain pointers are corrupt' errors.

Solution: When a database is opened with shared read/write access, all reads from the database will be preceded with a call to POST to clear the DCB and force FMP to read from the disc to obtain the most recent data.

NOTE!!! This means that when you open a database in mode 1, (shared read/write access), ANYTIME a record needs to be read, it will be read from the disc, even if the record was in the DCB, because the record in the DCB may not be the most accurate. Serial reads, especially, for small record sizes, will be slower than before. A database which is opened read-only (mode 8) or exclusively (mode 3) will not experience this slowdown on DBGETs.

Problem: (KPR# 2200-025361) If DBDS encountered any problem creating a database root file, it always purged the data set files, even if it did not create those files. (The NOSET control option tells DBDS not to create data sets). DBDS was destroying a database against the user's orders.

Solution: If an error occurs while making a root file, DBDS will only purge the data set files if it had created them.

Problem: (KPR# 2200-029728) The IMAGE/1000 transfer file to link IMAGE programs had an incorrect run string for linking the RECOV program for local-only database cleanup. The 'include system common' command for link (+LC) was put in the run string. If the RTE-A system had no system common, RECOV would cause the system to crash when executed.

Solution: Removed the +LC directive from the run string for linking local-only RECOV.

Problem: (KPR# 2200-053223) IMAGE would return (incorrectly) the error 'cannot update key or sort item' after the following events:

1. The program makes a DBGET, DBPUT or DBUPD call with an item list which contains a sort item.

2. The program then calls DBUPD to update: A. A manual master, or B. A detail with no paths.

The subroutine DBPIL did not clear the sort-flag for an item for the conditions of (2). This would cause DBUPD to incorrectly determine that the caller was trying to update a sort item.

Solution: All sort-item flags are cleared before processing an item list.

Problem: (KPR# 2200-02323⅓) Although a single database can have up to 50 data sets, at most only 17 of those data set files can be open to a program at one time. It is often necessary for IMAGE to close one data set in order to open another. The algorithm for deciding which data set to close was inefficient: If all of the DCBs were in use, IMAGE would always choose to close the last DCB. The other DCBs were closed only when the database was closed or by special command from the program (mode 2 of DBCLS). The net result was that performance was significantly hurt if the first N-1 data sets opened by IMAGE were infrequently used.

Solution: IMAGE now will choose a DCB to be closed in a circular fashion, if all DCBs are in use. This will insure that infrequently used data sets will eventually be closed, and heavily used sets will stay open for long periods. The DBCLS mode 2 feature can still be used to manually close a data set.

NOTE!!! This cyclic re-using of DCB's has resulted in performance increases for both DBPUTs and DBDELs on detail records. Depending on the number of sets in the database and the number of chains, performance can be up to 40% better.

Enhancement: QUERY has been enhanced in several ways:

A. TIME and DATE can now be printed in report headers.

B. Database locks can be acquired and held for many database modifications by TRANSBEGIN and TRANSEND.

C. When reporting an ASCII item which is longer than the significant characters in an edit mask, QUERY will now truncate extra characters from the RIGHT instead of the left. Most customers have their character strings left-justified, so edit mask overflows will retain as much significant data as possible for reporting.

D. The default for the EXECUTE command is now EDIT, although if EDIT does not exist on the system, QUERY will next attempt to schedule EDITR for backward compatibility.

E. When scheduling EDITR, QUERY was only passing half of

QUERY's run string to EDITR. (A word count was being interpreted as a byte count). The entire run string is now passed to EDITR.

Note: Several parts in IMAGE-I are no longer needed, namely conversions of double integers to/from three-word reals.

IMAGE's real number conversion algorithm was flawed, so a correct version was found and replaced &CATR. In addition, an assembly language interface was needed to routine .FMUI, so &FMUI was created.

Finally, several entry point names are now reserved for IMAGE, and are required for QUERY's operation: They are DBBEG, DBCTL, DBEND, DBMEM, and DBUND. They are defined in &DBNUB.

Note: Dummy entry points to satisfy new subroutine names in IMAGE-II were added to the %REMOT library, used to create the $DBMS3 library. The entry point names are DBBEG, DBCTL, DBEND, DBMEM, and DBUND.

Note: The RTE-A operating system uses the characters '/' (slash) and '.' (period) to delimit directory names for the file system. The file name %NO/DS conflicts with the new file system naming conventions, so the forward slash has been changed to a backslash '\' to circumvent the conflict.

%RD.TB also conflicts, since the 'TB' characters are interpreted as a file extension. The period has been removed.

Note: The software loading transfer files were updated to account for the addition of RDBAM and RDBAP to the IMAGE subsystem which formerly were included in the DS/1000 product. In addition, for linking IMAGE programs, an additional transfer file was included to lindx the major IMAGE libraries for faster loading time.

Note: The labelled common part of DBBLD had to be relocated before any of DBBLD's segments to satisfy LOADR and LINK requirements. The BLOCK DATA for DBBLD was taken out of $DBBLL and placed in %DBBLX.

Note: The following partnumbers in the software numbering files A92073 and A92069 contain incorrect revcodes:

92069-12003 %RDBA 2340 ----> should be 2213
92069-12006 %LOCAL 2340 ----> should be 2213

2.5 (92070A) RTE-L Operating System

Problem: Status not returned correctly when there is more data on an interface card than the read requested and the remainder of the data must be canceled.

Solution: Save and restore the last response from the card in the IFT extension area of driver IDS00.

Enhancement: The largest possible runstring size that RHPAR can handle has been increased from 80 to 256 characters.

Note: The subroutine KBLNK/KBCHR has been added to $MLIB2. This routine is used by MERGE to remove blanks from within a string.

Problem: (KPR# 2200-017640) (SR# 2200-017640) An INQUIRE command that accesses a file at the local node from a FTN7X program with directive $FILES(1,1,DS) causes the file to be left open to RFAM. The same program with files directive $FILES (1,1) will not leave the file open.

Solution: The library routines now generate the correct internal calling sequences to the DS file closing routine.

Problem: (KPR# 2200-028951) (SR# 2200-028951) When outputting a zero value using In.0 format, the result is 5 blanks and a '0', instead of 6 blanks. This problem did not exist prior to rev 2226.

Solution: The software has been corrected.

Problem: When used with a modem line and the line disconnected, proper clean-up of active programs and the session would not take place.

Solution: Implemented the ability to schedule a modem disconnect and clean-up program upon line disconnects.

Problem: When power is lossed, the MUX card forgets all the previously issued control 30b and 34b commands.

Solution: Have the interface driver save the values of the two control commands and re-issue them to the card when power comes up. (AUTOR is required for the driver to do this operation correctly.)

Problem: (KPR# 2200-31666) (SR# 2200-31666) Calls to JSCOM would fail for the ASCII range of 173B to 176B.

Solution: The software was corrected.

Problem: Some L and XL programs will not load with the 2326 $SYSLB because of references to XREIO which only exists on RTE-A.

Solution: A dummy XREIO (which calls REIO) has been provided.

2.6 (92070B) RTE-L Operating System (Execute only)

Problem: Status not returned correctly when there is more data on an interface card than the read requested and the remainder of the data must be canceled.

Solution: Save and restore the last response from the card in the IFT extension area of driver IDS00.

Enhancement: The largest possible runstring size that RHPAR can handle has been increased from 80 to 256 characters.

Note: The subroutine KBLNK/KBCHR has been added to $MLIB2. This routine is used by MERGE to remove blanks from within a string.

Problem: (KPR# 2200-017640) (SR# 2200-017640) An INQUIRE command that accesses a file at the local node from a FTN7X

program with directive $FILES(1,1,DS) causes the file to be left open to RFAM. The same program with files directive $FILES (1,1) will not leave the file open.

Solution: The library routines now generate the correct internal calling sequences to the DS file closing routine.

Problem: (KPR# 2200-028951) (SR# 2200-028951) When outputting a zero value using In.0 format, the result is 5 blanks and a '0', instead of 6 blanks. This problem did not exist prior to rev 2226.

Solution: The software has been corrected.

Problem: When used with a modem line and the line disconnected, proper clean-up of active programs and the session would not take place.

Solution: Implemented the ability to schedule a modem disconnect and clean-up program upon line disconnects.

Problem: When power is lossed, the MUX card forgets all the previously issued control 30b and 34b commands.

Solution: Have the interface driver save the values of the two control commands and re-issue them to the card when power comes up. (AUTOR is required for the driver to do this operation correctly.)

Problem: (KPR# 2200-31666) (SR# 2200-31666) Calls to JSCOM would fail for the ASCII range of 173B to 176B.

Solution: The software was corrected.

Problem: Some L and XL programs will not load with the 2326 $SYSLB because of references to XREIO which only exists on RTE-A.

Solution: A dummy XREIO (which calls REIO) has been provided.

2.7 (92071A) RTE-XL Operating System

Problem: When doing a cntl 25B on a MUX terminal with other ports busy, the terminal could hang up.

Solution: Remove the lock bit when issuing the status request during the cntl 25B in driver DD.00.

Problem: There was no way to programmatically change timeouts in driver DD.00.

Solution: Implemented a new control function (cntl 27B) to enable timeouts to be changed programmatically.

Problem: Status not returned correctly when there is more data on the card than the read requested and the remainder of the data must be canceled.

Solution: Save and restore the last response from the card in the IFT extension area of driver IDS00.

Problem: DD.23 was incorrectly setting the timeouts for forward/back space file operations. DD.23 was setting the timeout to 3 minutes for these operations. To forward/back space a file on a 2400 ft. tape on a 7970E tape drive could in fact take up to 10 minutes and 40 seconds; (2400 ft. * 12)/45 ips = 640 seconds = 10 min. 40 sec.

Solution: Changed the method that DD.23 uses to set timeouts. It was necessary to design a new way for DD.23 to do its timeouts since the timeout clock allows a maximum timeout of approx. 5 minutes. To achieve a timeout of 11 minutes requires that the timeout clock be set more than once for the forward/back space file operations before the timeout is a real timeout.

Problem: The sub-function field of DD.24 and DD.23 is 6 bits wide. The low 4 bits of the field are used mainly for specifying the type of operation for control requests and the 2 high bits of the field are used for special control. The fifth

bit of the sub-function field is used by DD.23 to specify transparent requests, DD.24 considers all requests to be transparent and does not look at this bit. The sixth bit in the sub-function field is used by DD.24 to specify a streaming mode request, DD.23 does not support streaming mode operation and should not care about the setting of this bit, but it currently does check this bit.

Solution: Change the masking of the sub-function field so that the streaming mode bit is not significant to DD.23.

Problem: Zero length writes to a CS/80 disc caused an invalid transmission log to be returned.

Solution: Modify disc driver DD.33 to save the requested transmission log before the special check for a 0 length request is made.

Problem: (KPR# 2200-032359) FC reported a FMGR -32 error when it encountered a new-filesystem cartridge in the cartridge list while searching for a file on an unspecified cartridge.

Solution: The routine get_next_cartridge in &FCCA2 has been changed to skip cartridges that have a zero CRN (new-filesystem cartridges).

Problem: (KPR# 2200-028225) FC omitted trailing backslashes from file names and CRNs when displaying the names of the files being copied on the terminal.

Solution: The new routine form_string_backslash_not_special has been added to &FCFRM and [FCFRM. Log_current_file in &FCMIS and form_int_or_ascii in &FCFRM now call this new routine.

Problem: (KPR# 2200-055863) FC always read the entire tape on a restore even when only a few files were selected.

Solution: FC now stops reading the tape after the last selected file has been restored. This required adding a new global to [FCGLB (last_source_file_num_selected_during_pre_scan), and adding one line of code each to scan_dir_chunk_for_matches_and_update_size_and_alloc_info in &FCDAS and get_source_volume in &FCTDH.

Problem: (KPR# 2200-002253) FC did not do a form-feed at the end of a listing.

Solution: FC now does an FMP end-of-file contol function before closing the list file (in reset_list in &FCOUT). This causes a form-feed on the printer, a write-file-mark on magnetic tape, etc., when FC exits or when another LL command is entered.

Problem: (KPR# 2200-029330) FC reported tape format error -14 and would not restore a tape if it contained files with an illegal name, negative type, or negative type 2 record length. The latter two caused problems because FC does not check these things when writing or verifying a tape. Therefore FC would backup and verify files with negative types or record lengths, indicating no error, but would not be able to restore any files from a tape containing even one such file.

Solution: The checks for illegal name, negative type, and negative record length were removed from get_info_from_subdir_for_source_file in &FCSBD. FC now restores such files without reporting any errors. Restoring such files causes no problems except possibly to programs trying to access them, and even that will work in many cases.

Problem: FC did not log the offending tape discfile entry to go with a tape format error -14 report, because the calls to log the two pieces of information were done in the wrong order. The first call raised an exception, preventing the second from being executed.

Solution: The order of the tape_format_error and octal_dump calls were reversed in get_info_from_subdir_for_source_file in &FCSBD.

Problem: FC occasionally reported "disc directory read failed" or "disc directory read required retries" for no valid reason. This was seen on disc-to-disc or disc-to-tape copies with verify selected in the open-files (as opposed to lock-cartridges) mode, when other programs were accessing the same cartridge as FC.

Solution: Remove the feature of verifying directory reads by reading the same data twice from the code in read_direc in &FCDIG. This has practically no impact on verify integrity since

the directory is only a small fraction of the data transferred and bad directory info would usually result in other errrors being detected anyway.

Problem: The call to DSCPR in &FCMIS omitted the third parameter, a required status parameter which is modified by DSCPR. Also, the array parameter in which DSCPR returns information requires 10 words, but only 9 words were passed. No known malfunctions resulted from these errors.

Solution: The status parameter has been added to the DSCPR calling sequence in &FCMIS, and the 9-word array has been changed to 10 words. The status value returned is checked. If it indicates an error, FC reports an internal error, since no error from DSCPR should be possible as it is used by FC. Changing the array parameter to 10 words requried declaring a new data type 'array10' in the FC global include file [FCGLB.

Enhancement: The comment in #FCA has been corrected to say 'LINK command file' rather than 'LOADR command file'.

Enhancement: The largest possible runstring size that RHPAR can handle has been increased from 80 to 256 characters.

Note: The subroutine KBLNK/KBCHR has been added to $MLIB2. This routine is used by MERGE to remove blanks from within a string.

Problem: (KPR# 2200-017640) (SR# 2200-017640) An INQUIRE command that accesses a file at the local node from a FTN7X program with directive $FILES(1,1,DS) causes the file to be left open to RFAM. The same program with files directive $FILES (1,1) will not leave the file open.

Solution: The library routines now generate the correct internal calling sequences to the DS file closing routine.

Problem: (KPR# 2200-028951) (SR# 2200-028951) When outputting a zero value using In.0 format, the result is 5 blanks and a '0', instead of 6 blanks. This problem did not exist prior to rev 2226.

Solution: The software has been corrected.

Problem: The 'work=' directive would only allow two character directories or numeric directories to be specifed.

Solution: Fixed &macr0 to accept this.

Note: Some typographical errors and text clarifications were made to the EDIT help file.

Note: To accomplish the 2326 revision of EDIT on RTE-A and RTE-XL, a new set of part numbers were created. With the new file system being rolled onto RTE-6, these part numbers can now be deleted and the old part numbers can be put back into RTE-A and RTE-XL.

Enhancement: The largest possible runstring size that RHPAR can handle has been increased from 80 to 256 characters.

Problem: When doing a cntl 25B on a MUX terminal with other ports busy, the terminal could hang up.

Solution: Remove the lock bit when issuing the status request during the cntl 25B.

Problem: There was no way to programmatically change timeouts.

Solution: Implemented a new control function (cntl 27B) to enable timeouts to be changed programmatically.

Problem: DVTX not defined in an efficient manner.

Solution: Re-arranged the DVTX.

Problem: When used with a modem line and the line disconnected, proper clean-up of active programs and the session would not take place.

Solution: Implemented the ability to schedule a modem disconnect and clean-up program upon line disconnects.

Problem: When power is lossed, the MUX card forgets all the previously issued control 30b and 34b commands.

Solution: The interface driver now saves the values of the two control commands and re-issues them to the card when power comes up. (AUTOR is required for the driver to do this operation correctly.)

Problem: (KPR# 2200-31666) (SR# 2200-31666) Calls to JSCOM would fail for the ASCII range of 173B to 176B.

Solution: The software was corrected.

Problem: Some L and XL programs will not load with the 2326 $SYSLB because of references to XREIO which only exists on RTE-A.

Solution: A dummy XREIO (which calls REIO) has been provided.

2.8 (92073A) Image/1000L

Problem: (KPR# 2200-015909) The program relocatable *DBUP was merged with incorrect relocatables. It would memory protect when executed.

Solution: The correct relocatables have been merged to create *DBUP.

Problem: (KPR# 2200-026005) DBGET and DBFND do not always read directly from the disc. If the specified record to read is already in the DCB, FMP will return the data in the DCB, which may not be the correct data on the disc when multiple users are accessing the database. The results of this can be 'corrupt database', 'internal tables are corrupt', 'record is empty', and 'chain pointers are corrupt' errors.

Solution: When a database is opened with shared read/write access, all reads from the database will be preceded with a call to POST to clear the DCB and force FMP to read from the disc to obtain the most recent data.

NOTE!!! This means that when you open a database in mode 1, (shared read/write access), ANYTIME a record needs to be read, it will be read from the disc, even if the record was in the DCB, because the record in the DCB may not be the most accurate. Serial reads, especially, for small

record sizes, will be slower than before. A database which is opened read-only (mode 8) or exclusively (mode 3) will not experience this slowdown on DBGETs.

Problem: (KPR# 2200-025361) If DBDS encountered any problem creating a database root file, it always purged the data set files, even if it did not create those files. (The NOSET control option tells DBDS not to create data sets). DBDS was destroying a database against the user's orders.

Solution: If an error occurs while making a root file, DBDS will only purge the data set files if it had created them.

Problem: (KPR# 2200-029728) The IMAGE/1000 transfer file to link IMAGE programs had an incorrect run string for linking the RECOV program for local-only database cleanup. The 'include system common' command for link (+LC) was put in the run string. If the RTE-A system had no system common, RECOV would cause the system to crash when executed.

Solution: Removed the +LC directive from the run string for linking local-only RECOV.

Problem: (KPR# 2200-053223) IMAGE would return (incorrectly) the error 'cannot update key or sort item' after the following events:

1. The program makes a DBGET, DBPUT or DBUPD call with an item list which contains a sort item.

2. The program then calls DBUPD to update: A. A manual master, or B. A detail with no paths.

The subroutine DBPIL did not clear the sort-flag for an item for the conditions of (2). This would cause DBUPD to incorrectly determine that the caller was trying to update a sort item.

Solution: Clear all sort-item flags before processing an item list.

Problem: (KPR# 2200-023234) Although a single database can have up to 50 data sets, at most only 17 of those data set files can be open to a program at one time. It is often necessary for IMAGE to close one data set in order to open another. The algorithm for deciding which data set to close was inefficient: If all of the DCBs were in use,

IMAGE would always choose to close the last DCB. The other DCBs were closed only when the database was closed or by special command from the program (mode 2 of DBCLS). The net result was that performance was significantly hurt if the first N-1 data sets opened by IMAGE were infrequently used.

Solution: IMAGE now will choose a DCB to be closed in a circular fashion, if all DCBs are in use. This will insure that infrequently used data sets will eventually be closed, and heavily used sets will stay open for long periods. The DBCLS mode 2 feature can still be used to manually close a data set.

NOTE!!! This cyclic re-using of DCB's has resulted in performance increases for both DBPUTs and DBDELs on detail records. Depending on the number of sets in the database and the number of chains, performance can be up to 40% better.

Enhancement: QUERY has been enhanced in several ways:

A. TIME and DATE can now be printed in report headers.

B. Database locks can be acquired and held for many database modifications by TRANSBEGIN and TRANSEND.

C. When reporting an ASCII item which is longer than the significant characters in an edit mask, QUERY will now truncate extra characters from the RIGHT instead of the left. Most customers have their character strings left-justified, so edit mask overflows will retain as much significant data as possible for reporting.

D. The default for the EXECUTE command is now EDIT, although if EDIT does not exist on the system, QUERY will next attempt to schedule EDITR for backward compatibility.

E. When scheduling EDITR, QUERY was only passing half of QUERY's run string to EDITR. (A word count was being interpreted as a byte count). The entire run string is now passed to EDITR.

Enhancement: Several parts in IMAGE-I are no longer needed, namely conversions of double integers to/from three-word reals.

IMAGE's real number conversion algorithm was flawed, so a correct version was found and replaced &CATR. In

addition, an assembly language interface was needed to routine .FMUI, so &FMUI was created.

Finally, several entry point names are now reserved for IMAGE, and are required for QUERY's operation: They are DBBEG, DBCTL, DBEND, DBMEM, and DBUND. They are defined in &DBNUB.

Note: Dummy entry points to satisfy new subroutine names in IMAGE-II were added to the %REMOT library, used to create the $DBMS3 library. The entry point names are DBBEG, DBCTL, DBEND, DBMEM, and DBUND.

Note: The RTE-A operating system uses the characters '/' (slash) and '.' (period) to delimit directory names for the file system. The file name %NO/DS conflicts with the new file system naming conventions, so the forward slash has been changed to a backslash '\' to circumvent the conflict.

%RD.TB also conflicts, since the 'TB' characters are interpreted as a file extension. The period has been removed from the name.

Note: The software loading transfer files were updated to account for the addition of RDBAM and RDBAP to the IMAGE subsystem which formerly were included in the DS/1000 product. In addition, for linking IMAGE programs, an additional transfer file was included to lindx the major IMAGE libraries for faster loading time.

Enhancement: The labelled common part of DBBLD had to be relocated before any of DBBLD's segments to satisfy LOADR and LINK requirements. The BLOCK DATA for DBBLD was taken out of $DBBLL and placed in %DBBLX.

Note: The following partnumbers in the software numbering file A92073 contain incorrect revcodes:

```
92069-12003   %RDBA  2340   ---> should be 2213
92069-12006   %LOCAL 2340   ---> should be 2213
```

2.9 (92077A) RTE-A Operating System

Problem: (KPR# 2200-035741) DEBUG fails if the buffer containing the name of the new segment is contained in the segment that gets overlaid when the new segment is brought into memory.

Solution: Have SEGLD make a local copy of the segment name for DEBUG to access.

Problem: (KPR# 2200-002642) DEBUG/1000 does not work properly with programs that use shareable EMA. The shareable EMA partition is deallocated when control transfers from the program back to DEBUG and re-allocated when the program continues. This means any data is the shareable EMA is lost.

Solution: Set "saving-resources" bit in ID segment of program being DEBUGged earlier so shareable EMA will be saved.

Problem: (KPR# 2200-030205) Running a 32767-word non-CDS program causes the system to crash.

Solution: ID segment word 24 has a different meaning for non-CDS and CDS programs. For non-CDS it holds the current segment's high address + 1. For CDS it holds shared program information, specifically bit 15 is set if the program is shared. For a 32767-word non-CDS program bit 15 of the word is set. The system now checks that a program is CDS before examining the shared-program bit in word 24.

Problem: RTE-A manual states that a CDS program may not call a .ZRNT subroutine (located in system common) from CDS code via a PCAL, but that an interface routine in old code may be used. In fact any time a CDS program attempts to call a .ZRNT subroutine it will be aborted with an SR error.

Solution: Change .ZRNT handler to abort only if call is via a PCAL.

Problem: (KPR# 2200-030460) If the system is interrupted to enter the VCP and reboot when the snap file is open (eg LINK is

running), the reboot fails because BOOTEX tries to open the snap file exclusively.

Solution: Fix file open options to shared.

Problem: During bizarre powerfail conditions, two problems may occur: sometimes the B-register is not saved and restored properly by ID.43, and I/O system improperly handles the powerfail driver's IFT.

Solution: Fixed ID.43 and RTIOA.

Problem: If the TBG ticks wrong (i.e. 50 microsecond interval rather than 1000 microseconds), TBG handler in RTE-A malfunctions. State is not saved properly, which eventually causes system crash.

Solution: Changed the TBG handler.

Problem: If the same saved named common is in multiple overlays, different data areas are assigned for each overlay.

Solution: All occurences of the same saved named common area are made to access the same area (in the main's save area).

Problem: LINK allows programs with more than 128 segments to be loaded.

Solution: A fatal error is generated (error 176) when this is attempted.

Problem: VMAWRITE call to type 1 file with requested length not a multiple of 128 could cause memory protect.

Solution: Round up value if necessary so if additional logical page is necessary, it is mapped in.

Problem: VMAWRITE uses requested length not actual record length for type 2 files.

Solution: Use DCB record length.

Problem: VMAREAD/VMAWRITE would not allow all of EMA to be

transferred if the size of EMA was less than the size of MSEG+1.

Solution: Allow the transfer if it can be mapped in MSEG+1 pages or within the bound of defined EMA.

Problem: (KPR# 2200-030387) A CLRQ(2) request would result in permanent loss of a class number and permanent loss of a portion of SAM.

Solution: Fix the code in error.

Problem: (KPR# 2200-32516) The VREAD and VWRIT routines would screw up the mapping process on certain types of file transfers, as specified in above SR's. A synopsis of the four problems follow: Vwrit with length not a multiple of 128 when writing to a type 1 file could cause a memory protect. Vread/Vwrit when transfering multiple MSEG size blocks from/to a type 1 file would perform incorrectly when a start record was specified. Vwrit with length not specified as the actual record size for a type 2 file could cause a memory protect. Vread/Vwrit would not allow all of EMA to be transfered if the size of EMA was less than the size of MSEG+1.

Solution: Code changes were made to solve the above problems.

Problem: The CO command in CI allows recursive copying of subdirectories. This would eventually fail when the path name became too long or the disc filled up. This feature is documented in the RTE-A User's Manual (92077-90002).

Solution: A routine was developed which takes the name of a source directory and a destination directory and determines if the destination directory is a subdirectory of the source. If it is then the destination directory is not created and a message is printed describing the problem.

Problem: FmpCopy saves the protection and create time of duplicate files when replacing them with the 'D' option.

Solution: Do not save those values. Special code to implement the above feature was removed. Thus the algorithm for determining the protection is the same as for any other file copy (use the protection of the directory the file is going in). The algorithm for create time is also the same

(create time for this file is when it is copied).

Problem: Given the command: CI> INSTL SNAP SYSTEM 16 0 BOOT The program INSTL will create a modified copy of BOOT which is designed to boot from LU 16 of the system defined by SYSTEM and SNAP. It will then install it on LU 16 of the host system. If LU 16 of the host system is not defined the same as LU 16 of the destination system (type, starting track, select code, ...) the BOOTEX did not go on LU 16 of the target system, even though it was modified as if it was on LU 16 of the target system. The fundamental problem is that the command definition allows ambiguity. There is no problem if the target disc LU is not reconfigured from the host system. (If you do not change your disc LU's there is no problem.)

Solution: INSTL now compares the driver parameters of the target disc LU on the host and target systems. If they match there is no inconsistency and the operation completes. If they do not match a message explaining the problem and the approved method of solving it is displayed. INSTL then quits.

Problem: FVERI mishandles extents on type 6 files.

Solution: FVERI now treats type 6 files the same as type 1 & 2 files.

Problem: FMPPARSENAME parsed ABC>DE::FG as name = ABC, ds = >DE, truncating the DS part at the colon. This caused a serious malfunction in FMPPARSEPATH which calls FMPPARSENAME and depends on the fact the ds part is always at the end of the string.

Solution: A new routine, NONDSLEN, has been written, which is now called by both FMPPARSENAME and FMPPARSEPATH so that the ds part is parsed correctly in all cases. This involved an extensive rewrite of FMPPARSENAME in &FMP2, the addition of NONDSLEN to &FMP2, and a minor change to FMPPARSEPATH in &FCONV.

Problem: CHANGEBITS (in &DLIB) calculated the range of bits to be changed incorrectly when the number of blocks per bit was greater than 2 and the starting block was not a multiple of the number of blocks per bit.

Solution: The code in CHANGEBITS that calculates the bit range from the specified block range has been rewritten.

Problem: (KPR# 2200-057513) During very busy system conditions, several manifestations of memory manager failure occur: - halt 27B - system crash, due to executing move-words instruction improperly, corrupting system - program abort, usually MP, due to operating system setting up invalid map registers All these problems occur when the memory manager gets confused about a swap out in progress, i.e. trying to run a program which is not in memory or treating memory as free before the current resident is swapped out.

Solution: Fixes in MEMRY module.

Problem: Program A may try to schedule Program B by calling FMPRPPROGRAM to RP it, specifying the temporary clone option, and then making an EXEC schedule call. If Program C also schedules Program B, for instance via FMPRUNPROGRAM, it may run the temporary clone of Program B that Program A created. When Program B terminates, its ID segment is flushed since it is temporary. Consequently Program A's EXEC call fails with an SC05 error. (Note that Program C must schedule Program B which must run and terminate in between the two steps Program A takes to run Program B.)

Solution: FMPRPPROGRAM checks for an ID segment for the desired program already existing. If it does, it does not create another one (subject to several restrictions not of concern here). The new FMPRPPROGRAM creates another ID segment unless the existing one is permanent.

Problem: When doing a cntl 25B on a MUX terminal with other ports busy, the terminal could hang up.

Solution: Remove the lock bit when issuing the status request during the cntl 25B in driver DD.00.

Problem: There was no way to programmatically change timeouts in driver DD.00.

Solution: Implemented a new control function (cntl 27B) to enable timeouts to be changed programmatically.

Problem: Status not returned correctly when there is more data on an interface card than the read requested and the remainder of the data must be canceled.

Solution: Save and restore the last response from the card in the IFT extension area of driver IDS00.

Problem: DD.23 was incorrectly setting the timeouts for forward/back space file operations. DD.23 was setting the timeout to 3 minutes for these operations. To forward/back space a file on a 2400 ft. tape on a 7970E tape drive could in fact take up to 10 minutes and 40 seconds; (2400 ft. * 12)/45 ips = 640 seconds = 10 min. 40 sec.

Solution: Changed the method that DD.23 uses to set timeouts. It was necessary to design a new way for DD.23 to do its timeouts since the timeout clock allows a maximum timeout of approx. 5 minutes. To achieve a timeout of 11 minutes requires that the timeout clock be set more than once for the forward/back space file operations before the timeout is a real timeout.

Problem: The sub-function field of DD.24 and DD.23 is 6 bits wide. The low 4 bits of the field are used mainly for specifying the type of operation for control requests and the 2 high bits of the field are used for special control. The fifth bit of the sub-function field is used by DD.23 to specify transparent requests, DD.24 considers all requests to be transparent and does not look at this bit. The sixth bit in the sub-function field is used by DD.24 to specify a streaming mode request, DD.23 does not support streaming mode operation and should not care about the setting of this bit, but it currently does check this bit.

Solution: Change the masking of the sub-function field so that the streaming mode bit is not significant to DD.23.

Problem: The Modem alarm program would not log off an RTE-A session when instructed to.

Solution: Modified to kill active programs upon modem line disconnect.

Problem: The Modem alarm program MACRO library would not properly identify a session LU from a non-session LU in RTE-A.

Solution: Modified to properly identify session and non-session LU's.

Problem: ID.27, the micro 1000 integrated disc driver, attempts to restart the last request on power fail. this may cause problems when the susbsystem is idle when the power fails.

Solution: Modify the interface driver ID.27(92077-18628) to check if the susbsystem is idle on power fail.

Problem: Zero length writes to a CS/80 disc caused an invalid transmission log to be returned.

Solution: Modify disc driver DD.33 to save the requested transmission log before the special check for a 0 length request is made.

Problem: (KPR# 2200-032359) FC reported a FMGR -32 error when it encountered a new-filesystem cartridge in the cartridge list while searching for a file on an unspecified cartridge.

Solution: The routine get_next_cartridge in &FCCA2 has been changed to skip cartridges that have a zero CRN (new-filesystem cartridges).

Problem: (KPR# 2200-028225) FC omitted trailing backslashes from file names and CRNs when displaying the names of the files being copied on the terminal.

Solution: The new routine form_string_backslash_not_special has been added to &FCFRM and [FCFRM. Log_current_file in &FCMIS and form_int_or_ascii in &FCFRM now call this new routine.

Problem: (KPR# 2200-055863) FC always read the entire tape on a restore even when only a few files were selected.

Solution: FC now stops reading the tape after the last selected file has been restored. This required adding a new global to [FCGLB (last_source_file_num_selected_during_pre_scan), and adding one line of code each to scan_dir_chunk_for_matches_and_update_size_and_alloc_info in &FCDAS and get_source_volume in &FCTDH.

Problem: (KPR# 2200-002253) FC did not do a form-feed at the end of a listing.

Solution: FC now does an FMP end-of-file contol function before closing the list file (in reset_list in &FCOUT). This causes a form-feed on the printer, a write-file-mark on magnetic tape, etc., when FC exits or when another LL command is entered.

Problem: (KPR# 2200-029330) FC reported tape format error -14 and would not restore a tape if it contained files with an illegal name, negative type, or negative type 2 record length. The latter two caused problems because FC does not check these things when writing or verifying a tape. Therefore FC would backup and verify files with negative types or record lengths, indicating no error, but would not be able to restore any files from a tape containing even one such file.

Solution: The checks for illegal name, negative type, and negative record length were removed from get_info_from_subdir_for_source_file in &FCSBD. FC now restores such files without reporting any errors. Restoring such files causes no problems except possibly to programs trying to access them, and even that will work in many cases.

Problem: FC did not log the offending tape discfile entry to go with a tape format error -14 report, because the calls to log the two pieces of information were done in the wrong order. The first call raised an exception, preventing the second from being executed.

Solution: The order of the tape_format_error and octal_dump calls were reversed in get_info_from_subdir_for_source_file in &FCSBD.

Problem: FC occasionally reported "disc directory read failed" or "disc directory read required retries" for no valid reason. This was seen on disc-to-disc or disc-to-tape copies with verify selected in the open-files (as opposed to lock-cartridges) mode, when other programs were accessing the same cartridge as FC.

Solution: Remove the feature of verifying directory reads by reading the same data twice from the code in read_direc in &FCDIG. This has practically no impact on verify integrity since

the directory is only a small fraction of the data transferred and bad directory information would usually result in other errrors being detected anyway.

Problem: The call to DSCPR in &FCMIS omitted the third parameter, a required status parameter which is modified by DSCPR. Also, the array parameter in which DSCPR returns information requires 10 words, but only 9 words were passed. No known malfunctions resulted from these errors.

Solution: The status parameter has been added to the DSCPR calling sequence in &FCMIS, and the 9-word array has been changed to 10 words. The status value returned is checked. If it indicates an error, FC reports an internal error, since no error from DSCPR should be possible as it is used by FC. Changing the array parameter to 10 words requried declaring a new data type 'array10' in the FC global include file [FCGLB.

Enhancement: The comment in #FCA has been corrected to say 'LINK command file' rather than 'LOADR command file'.

Problem: (KPR# 2200-004036) TF attempted to back up its own scratch file if it matched the mask used to select the files being backed up. Since TF modified this file during the backup, this resulted in inappropriate verify errors being reported.

Solution: TF has been changed so that it no longer backs up any files that have their temporary bit set. This includes TF's own scratch file, and other scratch files. This required changes to &TFBAK.

Enhancement: TF can now read tapes in the FC format. Restore and DL operations on FC tapes are now possible. This required changes to &TF, &TFRES, &TFTIO, and [TFCND, and the addition of two new files &TFRFC and [TFRFC. To prevent inappropriate reporting of file marks read on FC tapes, additional changes were required in &TFTIO, &TF, &TFRES, and &TFBAK.

Enhancement: TF now allows specification of a disc lu in the destination parameter, for both local and remote restores. When the copy destination parameter specifies a disc lu, TF restores all files to the same name and directory as

the source (the same as leaving the destination parameter blank), but creates any directories on the specified disc lu when possible. No errors are reported if a directory can not be created on that lu or if the directory already exists on another lu. This required changes in &TFRES.

Enhancement: TF now allows files to be restored to a remote system to their original directories and file names by specifying a zero before the ds location, as in "tf co 8 0[account]>node". There was previouly no way to do this. The corresponding command for a local restore was simply "tf co 8". The command "tf co 8 [account]>node" would not work because the [or > is not treated as a ds delimiter if it is the first character in the file specifier. The use of zero in the syntax as a way to allow this function is consistent with the syntax for specifying the disc lu but leaving the file names unchanged, as in "tf co 8 DISCLU[account]>node". Using zero instead of a disc lu still leaves the file names unchanged, but does not override the disc lu. This required changes in &TFRES.

Enhancement: The I option has been added to the TF restore and DL operations. This option prevents TF from terminating the command if the tape header is corrupt (and therefore not recognized as a TF tape). It also prevents TF from terminating when an EOF mark is read, for related reasons. This required changes to &TFTIO, [TFTIO, &TFCMD, [TFCMD, &TFRES, and &TFBAK. Some of these changes were not obviously related to the I option, but had to do with how the expected magtape record length is set on the first valid record read, and other related changes to the design of the tape buffering read/write routines. These other changes were needed to facilitate implementing the I option, and were also desirable to clean up the tape buffering design.

Enhancement: The N option (previously implemented but not documented) is now supported. This option makes it possible to restore binary files from UNIX TAR tapes using TF. A few changes to &TFRES and &TFMIS were necessary to make this option fully functional. The routine fix_dest_name has been added to &TFMIS and is now called from &TFRES. This routine allows the destination file type and record length to be specified in the destination parameter. Without this capability, binary files restored from a UNIX TAR tape could not be accessed correctly by FMP. The correct FMP file type can not be determined from the information

on a UNIX TAR tape and must be specified in the TF command. Also, &TFRES has been changed to get the destination file type (variable fmp_type) from the destination file fmpopen call rather than from the source file type. (Previously the destination file type was always the same as the source file type.)

Note: The command summary information displayed by the TF ? command has been updated to include the new I and N options. This affected the file &TFCMD.

Enhancement: TF now correctly interprets lists of file masks in braces which contain blanks after the left brace or before the right brace. Example: { file1 file2 } now works the same as {file1 file2} in spite of the fact that the former gets converted into {,file1,file2,} by the command preprocessing which converts spaces to commas. Implementing this required skipping blank items in the list of file masks, except when the entire list was blank. This change was made in &TFCMD.

Enhancement: TF now checks each file backed up, when applicable, to make sure the number of words of data indicated in the directory entry (also known as the pointer to the end-of-file) seems valid. Files for which this value is not correct may not be backed up and restored correctly. TF previously detected no error when this happened. TF now attempts to detect this condition when the file is backed up, so that the problem can be corrected and the backup restarted, if desired. TF does this by checking the last word of data saved to tape for each file (determined from the eof pointer in the directory entry) to make sure it is an EOF mark (equal to minus one). This check is not made for FMGR files, which have no indication in the directory entry of the number of words in the file, and therefore can not have this problem. The check is also not made for type 1, 2, and 6 files, because such files contain no eof marks in the data. If the check is made, and an error is detected, TF reports that the file was not saved correctly because the eof mark is missing or the eof pointer is wrong. This error is reported on the backup pass only, not the verify pass. This enhancement required changes in &TFBAK.

Problem: TF did not correctly determine the disc lu from which remote files were saved, so that the feature of restoring

files to the same lu when possible did not work for remote files.

Solution: The call to the fmp routine dsdcbword in &TFMIS has been corrected to reflect the current calling sequence. This also required adding an error code parameter to disc_lu_of_file, defined in &TFMIS and called in &TFBAK.

Enhancement: TF's handling of inadequate EMA size has been improved. TF now detects when its EMA size is below the minimum allowable value and distinguishes this condition from when the EMA size is just not adequate for the size of the current copy group. The error messages reported are now much clearer. This required changes in &TFEML.

Note: &TFLIB has been updated to change the rev and date codes which appear in the library header and which are displayed by TF when it is run interactively, and $TFLIB has been rebuilt.

Note: A version of $TFLIB consisting of two separate relocatables has been created for use on this PCO only. The two pieces are $TFLB1 and $TFLB2, with headers &TFLB1 and &TFLB2. This is a temporary measure to allow the library to be distributed on 264x mini-cassettes, since READR/SAVER does not allow files to be split across cassettes. Customers who receive updates on mini-cassettes will MERGE $TFLB1 and $TFLB2 and LINDX the result to create the file $TFLIB needed by the link command file #TF. Production Engineering will provide a solution to the mini-cassette problem by the next PCO, at which point $TFLB1, $TFLB2, &TFLB1, and &TFLB2 will be obsoleted.

Problem: During bizarre powerfail conditions, two problems may occur: sometimes the B-register is not saved and restored properly by ID.43, and I/O system improperly handles the powerfail driver's IFT.

Solution: Fixed ID.43 and RTIOA.

Problem: The 'work=' directive would only allow two character directories or numeric directories to be specifed.

Solution: Fixed &macr0 to accept this.

Enhancement: Added 2687A line printer functional test to RTE-A (LTEST).

Problem: Entry point $DATC contains rev code of RTE-A. Its current value is 2313.

Solution: Put new value in $DATC.

Enhancement: EDIT was updated on RTE-6 to be able to access files under the CI file system. EDIT on RTE-6 is now essentially the same as EDIT on RTE-A.

Enhancement: The CI file system that was added to RTE-A in revision 2326 (B.83) has now been added to RTE-6/VM. The Command Interpreter subsystem (CI, CIX, DL, LI) has been added to RTE-6, along with all the supporting utilities: FVERI, FREES, FPACK, FOWN, FSCON, CLOSE, and the TF file backup utility. RTE-6 utilities that have been upgraded to access CI files include: EDIT, MACRO, LINK, MERGE, and SCOM. Other products that can be used on RTE-6 to access CI files include FTN7X and DEBUG/1000.

Enhancement: (KPR# 2200-002501) Adding feature to FMGR: the RN command can now change the security code and file type of a file with the following exceptions: (1) can't change file types 0 or 2 to any other type, (2) file types 1 and 6 can be interchanged, but can't be changed to any other type. All other file types (3-5 and 7-32767), may be interchanged with no restrictions. Attempting to change a file's type outside of these restrictions results in a -16 error (new use for this error). Also, the second name may be the same as the first as long as either the sec.code or type is being changed (otherwise, get a -2 error). And the second name may be defaulted to the first name.

Enhancement: (KPR# 2200-002816) Adding feature to FMGR: If, when executing the MC command, a FMGR 012 error occurs, FMGR will print the duplicate CRN it found before the FMGR 012 message. For example: :MC,15,P CRN = XX FMGR 012 :

Problem: (KPR# 2200-029686) If a file has a security code and none is provided in the OPEN call, the truncate option in the CLOSE fails with no error being returned.

Solution: Now, if the caller attempts to truncate the file, and he does not have write access to the file, CLOSE will generate a FMGR-007 error. After CLOSE discovers the -7 error, it will attempt to close the file anyway without truncating. If the close is successful, the -7 error will be passed on to inform the caller that the truncate was not successful. If the close is unsuccessful, the appropriate error will be returned (i.e., the close error will take precedence over the truncate error). Therefore, if a -7 error is returned from CLOSE, then the file has been closed successfully, but not truncated.

Problem: (KPR# 2200-015958) If an attempt is made to create a file on the top-mounted FMGR cartridge, and that cartridge is LU 2 or 3, a FMGR-19 error is returned (RTE-IVB would skip LU 2 or 3 and go to the next cartridge).

Solution: This problem was fixed with the new revision of D.RTR.

Problem: (KPR# 2200-003186) When editting an RTE-A hierarchical file, there are some conditions in which the directory information for the source file may get updated when in fact the file has not been updated. It occurs when the source file is closed without update (i.e., the FCS and EC commands).

Solution: EDIT now correctly updates the directory information.

Problem: (KPR# 2200-003707) If the command: /rufile is entered, EDIT will try to run a program called 'RUFIL' instead of running a program called 'FILE'.

Solution: EDIT now does not require a delimiter between the 'RU' and the name of the program (this is as it used to work).

Problem: (KPR# 2200-005314) If the user performs an L or K command, with the output going to a file that already exists, and the user says NO to EDIT's prompt 'OK?', then EDIT will truncate the file to one block as it gets closed.

Solution: EDIT worked correctly before revision 2326. It now correctly skips the truncation as it used to.

Problem: (KPR# 2200-006346) If a file is edited and no modifications are done, but an ER is exe- cuted, EDIT will

update the time stamp in the file (as expected), but it will not update the 'update time' time stamp in the file's directory entry.

Solution: EDIT now always sets the update time stamp whenever an 'ER' is done.

Problem: (KPR# 2200-006445) If an ER is done from EDIT, specifying the source file name again (to specify the security code, for instance), EDIT will report the error 'DCB is not open'.

Solution: EDIT now just ignores the 'DCB is not open' (FMP -11) error, since the file is closed anyway.

Note: To accomplish the 2326 revision of EDIT on RTE-A only, a new set of part numbers were created. With the new file system being rolled onto RTE-6, these part numbers can now be deleted and the old part numbers can be put back into RTE-A.

Problem: (KPR# 2200-006270) The FmpReName subroutine allows the destination file name to be a numeric value such as '123' or '-25'. For FMGR files, this ascii string gets interpretted into an integer value and that value is used as the new name for the file. If the value is 0 or -1, this could have disastrous effects on the FMGR cartridge directory. Note that this will also occur with the CI 'RN' command.

Solution: Now checks (in D.RTR) the destination file name for a non-ascii value, and returns a -15 error (illegal name) for that case.

Problem: (KPR# 2200-006403) If a user is superuser, or in a non-VC+ environment, D.RTR allows write access to files without having to specify the security code (FMGR files only).

Solution: D.RTR now checks the security code given before checking other protection-override capability. This is done for FMGR files only.

Enhancement: D.RTR was modified for the RN command enhancement to the RTE-6 FMGR (RTE-6 uses the same D.RTR as RTE-A).

Problem: (KPR# 2200-006338) If FmpBuildPath is given a 'dirpath' (global and sub-directories) in which the global directory is exactly 16 characters long, all the sub- directories will be lost when the file descriptor is built.

Solution: FmpBuildPath was not allowing a big enough internal buffer to hold the global directory. This would cause it to miss seeing the '/' that indicated that there are sub-directories also. This internal buffer has been increased.

Problem: (KPR# 2200-006429) The FmpPurge subroutine does not purge a type zero file even though it returns with no error. This affects the CI PU command also (since it uses FmpPurge): when an attempt is made to purge a type zero file, CI responds with an '[ok]' even though the file has not been purged.

Solution: FmpPurge now returns a -16 error when attempting to purge a type zero file (the error is generated by D.RTR).

Problem: (KPR# 2200-006478) The FmpUniqueName function begins repeating names after sometime in the second week of September. That is, the names it generates are no longer really unique.

Solution: The calculations were changed to divide the year in half so that the internal numbers are a little smaller. This means that the names that FmpUniqueName comes up with will repeat every six months, rather than every year as they (theoretically) did before.

Enhancement: FmpRunProgram has been modified to allow up to 256 characters to be passed to the program it schedules. The RU command help file has been updated to reflect this.

Problem: (KPR# 2200-006411) The FMGR PURGE subroutine cannot purge type zero files that were created with read-only access (:CR,file,lu,RE). It returns with a -7 error. The FMGR PU command has the same problem (since it uses the PURGE routine).

Solution: The PURGE routine now opens the file with access based on the accessibility of the file's directory entry, not the LU to which it points. That is, read/write access is based on the file's security code. This allows the purge

to occur as long as write access is allowed to the file itself, regardless of the accessibility of the LU.

Problem: (KPR# 2200-006452) OPENF returns a -18 (illegal LU) error when trying to open a type zero file that was created for reading binary data (CR,file,lu,RE,,,BI). The PURGE routine also fails with a -18 error. This affects the FMGR LI and PU commands, as well as anything else that uses these routines.

Solution: The mask in OPENF used to pick off the LU was changed from 377B to 77B.

Problem: (KPR# 2200-006460) DSRTR aborts with a 601 runtime error if the following file descriptor is supplied in an open request: 'name>[account]>node'.

Solution: DSRTR was finding the first '>' and picking up a zero-length string for the node number, then trying to manipulate it. DSRTR now checks the substring lengths before manipulating them.

Problem: (KPR# 2200-006510) The DL command in CI can display file security codes on FMGR cartridges for any user.

Solution: A parameter has been added to the DL command for specifying the system master security code. If the master security code is not given, or is not correct, file security codes on FMGR cartridges will not be displayed. Note that if the master security code is zero, any value (or no value at all) for this parameter is accepted, i.e., file security codes will be displayed.

Enhancement: The "clear backup bit" option has been added to the CO command. Specifying a 'c' in the option string will cause the backup bit on the source to be cleared after the file has been successfully copied.

Enhancement: CI has been enhanced with new features, including: a 100-line command stack; command stack is saved in a file between sessions; command stack file may be retrieved from different directories (option to the WD command); LI has been separated into a separate program so users may use their own file-listing program if desired. To obtain these new features, CI has been split into two separate

programs: CI and CIX. CIX is scheduled by CI to handle some file-oriented commands such as CO, MO, PU, etc. The entire command interpreter now consists of four programs: CI, CIX, DL, and LI.

Problem: (KPR# 2200-006379) (SR# 2200-006379) FVERI will abort with an MP error if it is not sized large enough.

Solution: FVERI now does an additional check of free memory size. If there is not enough for both the bit map and the masking buffer, it will terminate with the 'buffer not large enough' error.

Note: The MERGE help file has been changed to reflect the enhancements made to the MERGE utility.

Note: For backward compatibility, the library $FOLDF has been added to the RTE-A product. This library is a 'FMGR-file only' version of the $FNEWF library. If this library is searched when loading a user program that contains FTN7X file-I/O calls (OPEN, READ, WRITE, etc.), these calls will be able to access FMGR-files only (i.e., no hierarchical file access).

Enhancement: The largest possible runstring size that RHPAR can handle has been increased from 80 to 256 characters.

Note: The subroutine KBLNK/KBCHR has been added to $FLIB. This routine is used by MERGE to remove blanks from within a string.

Problem: (KPR# 2200-017640) An INQUIRE command that accesses a file at the local node from a FTN7X program with directive $FILES(1,1,DS) causes the file to be left open to RFAM. The same program with files directive $FILES (1,1) will not leave the file open.

Solution: The library routines now generate the correct internal calling sequences to the DS file closing routine.

Problem: (KPR# 2200-028951) When outputting a zero value using In.0 format, the result is 5 blanks and a '0', instead of 6 blanks. This problem did not exist prior to rev 2226.

Solution: The software has been corrected.

Problem: When doing a cntl 25B on a MUX terminal with other ports busy, the terminal could hang up.

Solution: Remove the lock bit when issuing the status request during the cntl 25B.

Problem: There was no way to programmatically change timeouts.

Solution: Implemented a new control function (cntl 27B) to enable timeouts to be changed programmatically.

Problem: DVTX not defined in an efficient manner.

Solution: Re-arranged the DVTX.

Problem: (KPR# 5000-007047) CLRQ cancel requests (type-3) do not work if the active request on the LU is on the specified class number.

Solution: Change CLASS and RTIOA to properly handle the request

Enhancement: SCOM now accepts hierarchical files for input/output. Added the following options: option default meaning AO OFF append to the output file. NH OFF do not output the header lines. NT OFF do not output the trailing lines. NF OFF do not output a form feed at the end. Changed the output code so only 6 columns are used for the line numbers (on the left of the page). Allowed defaults for the second file to be compared and for the 'difference' file. (see utilities manual for details) Added link/loadr command file.

Problem: (KPR# 2200-028555) LINDX cannot create snapshot file for large systems.

Solution: The old limit of 2500 entry points was increased to approximately 3200 by segmenting LINDX. The actual limit may be somewhat less depending on the length of the symbols being indexed.

Enhancement: LINDX will now index hierarchical files as well as FMGR

files. Note: A link/loadr command file was added to RTE-6VM.

Problem: MERGE would always create the destination file to be 256 blocks this would create unwanted extents for large files.

Solution: MERGE now uses the size as specified if creating the file. If the size is not given, MERGE will use the the following algorithm. First try 1024 blocks if that fails (ie. -33) Try 512 blocks if that fails try 256 blocks if that fails give up and report error. Also the file will be truncated to the actual size used if it was created.

Enhancement: MERGE now allows two additional options in the run-string. -d = remove debug records (updates checksum of checksums) -l = do not echo files in the command file These options must be in the 3rd parameter and start with the minus(-) sign. Any combination of 'd' or 'l' may then be specified. (eg. -dl)

Enhancement: MERGE now has a loadr/link command file for RTE-6VM.

Problem: (KPR# 2200-024588) (sr# 2458) LINK was ignoring the WS,xx command.

Solution: The software was corrected.

Enhancement: (KPR# 2200-023895) (sr# 2389) LINK now accepts a relative size command. From run-string use '+sz:+x' where x is the relative size Interactively use 'sz,+x' where x is the relative size

Enhancement: LINK was changed at 2340 to be able to talk to hierarchical files.

Enhancement: (KPR# 2200-031427) (sr# 3142, 3220) LINK now accepts a 'don't clone' option. From run-string use '+dc', Interactively use 'dc'

Note: (KPR# 2200-031427) LINK now has a loadr/link command file.

Enhancement: The PBV program has been built with a system that has LU 1 connected to a MUX card.

Problem: When used with a modem line and the line disconnected, proper clean-up of active programs and the session would not take place.

Solution: Implemented the ability to schedule a modem disconnect and clean-up program upon line disconnects.

Problem: When power is lost, the MUX card forgets all the previously issued control 30b and 34b commands.

Solution: Have the interface driver save the values of the two control commands and re-issue them to the card when power comes up. (AUTOR is required for the driver to do this operation correctly.)

Problem: Currently active output needs to be aborted on MUX LUs during auto restart after a power fail. The interface driver may be waiting for the MUX card to respond to a request for an output buffer on the card (which the card has forgotten because of the power fail).

Solution: Have AUTOR abort the currently active I/O in a MUX LU.

Problem: AUTOR needs to be taught LUs greater than 63.

Solution: The value of Z$CWD is set to indicate 8-bit LUs in MUXUP.

Problem: (KPR# 2200-31666) Calls to JSCOM would fail for the ASCII range of 173B to 176B.

Solution: The software was corrected.

Problem: (KPR# 2200-055129) The loader library routine L.REL was incorrectly processing MSEG records. It was trying to keep track of the largest MSEG size it encountered but instead kept the last MSEG size it encountered. This caused the symptom as described in the SR.

Solution: L.REL was changed to keep the largest MSEG size. Need: The header module was changed to reflect the current revision.

Problem: (KPR# 2200-055749) The loader library routine L.REL was incorrectly processing MSEG records. It was trying to keep track of the largest MSEG size it encountered but instead kept the last MSEG size it encountered. This caused the symptom as described in the SR.

Solution: L.REL was changed to keep the largest MSEG size.

2.10 (92078A) RTE-A Virtual Code+ (VC+)

Problem: The CO command in CI allows recursive copying of subdirectories. This would eventually fail when the path name became too long or the disc filled up. This feature is documented in the RTE-A User's Manual (92077-90002).

Solution: A routine was developed which takes the name of a source directory and a destination directory and determines if the destination directory is a subdirectory of the source. If it is then the destination directory is not created and a message is printed describing the problem.

Problem: FmpCopy saves the protection and create time of duplicate files when replacing them with the 'D' option.

Solution: Do not save those values. Special code to implement the above feature was removed. Thus the algorithm for determining the protection is the same as for any other file copy (use the protection of the directory the file is going in). The algorithm for create time is also the same (create time for this file is when it is copied).

Problem: FMPPARSENAME parsed ABC>DE::FG as name = ABC, ds = >DE, truncating the DS part at the colon. This caused a serious malfunction in FMPPARSEPATH which calls FMPPARSENAME and depends on the fact the the ds part is always at the end of the string.

Solution: A new routine, NONDSLEN, has be written, which is now called by both FMPPARSENAME and FMPPARSEPATH so that the ds part is parsed correctly in all cases. This involved an extensive rewrite of FMPPARSENAME in &FMP2, the addition of NONDSLEN to &FMP2, and a minor change to

FMPPARSEPATH in &FCONV.

Problem: CHANGEBITS (in &DLIB) calculated the range of bits to be changed incorrectly when the number of blocks per bit was greater than 2 and the starting block was not a multiple of the number of blocks per bit.

Solution: The code in CHANGEBITS that calculates the bit range from the specified block range has been rewritten.

Problem: Program A may try to schedule Program B by calling FMPRPPROGRAM to RP it, specifying the temporary clone option, and then making an EXEC schedule call. If Program C also schedules Program B, for instance via FMPRUNPROGRAM, it may run the temporary clone of Program B that Program A created. When Program B terminates, its ID segment is flushed since it is temporary. Consequently Program A's EXEC call fails with an SC05 error. (Note that Program C must schedule Program B which must run and terminate in between the two steps Program A takes to run Program B.)

Solution: FMPRPPROGRAM checks for an ID segment for the desired program already existing. If it does, it does not create another one (subject to several restrictions not of concern here). The new FMPRPPROGRAM creates another ID segment unless the existing one is permanent.

Problem: (KPR# 2200-006338) If FmpBuildPath is given a 'dirpath' (global and sub-directories) in which the global directory is exactly 16 characters long, all the sub- directories will be lost when the file descriptor is built.

Solution: FmpBuildPath was not allowing a big enough internal buffer to hold the global directory. This would cause it to miss seeing the '/' that indicated that there are sub-directories also. This internal buffer has been increased.

Problem: (KPR# 2200-006429) The FmpPurge subroutine does not purge a type zero file even though it returns with no error. This affects the CI PU command also (since it uses FmpPurge): when an attempt is made to purge a type zero file, CI responds with an '[ok]' even though the file has not been purged.

Solution: FmpPurge now returns a -16 error when attempting to purge a type zero file (the error is generated by D.RTR).

Problem: (KPR# 2200-006478) The FmpUniqueName function begins repeating names after sometime in the second week of September. That is, the names it generates are no longer really unique.

Solution: The calculations were changed to divide the year in half so that the internal numbers are a little smaller. This means that the names that FmpUniqueName comes up with will repeat every six months, rather than every year as they (theoretically) did before.

Enhancement: FmpRunProgram has been modified to allow up to 256 characters to be passed to the program it schedules. The RU command help file has been updated to reflect this.

Enhancement: The "clear backup bit" option has been added to the CO command. Specifying a 'c' in the option string will cause the backup bit on the source to be cleared after the file has been successfully copied.

Enhancement: CI has been enhanced with new features, including: a 100-line command stack; command stack is saved in a file bewtween sessions; command stack file may be retrieved from different directories (option to the WD command); LI has been separated into a separate program so users may use their own file-listing program if desired. To obtain these new features, CI has been split into two separate programs: CI and CIX. CIX is scheduled by CI to handle some file-oriented commands such as CO, MO, PU, etc. The entire command interpreter now consists of four programs: CI, CIX, DL, and LI.

2.11 (92084A) RTE-6/VM

Problem: During heavy two way traffic between the host and a slave node, the host will occasionally lose a block of data. This occurs when DVR07 clears the state byte in EQT17 and uses the card idle timeout command to restart the driver.

Solution: DVR07 no longer clears the state byte or uses the card idle timeout command to restart the driver.

Problem: When DVR07 is queuing a request onto an inactive EQT, it was possible for the I/O card to generate an interrupt which would destroy the request.

Solution: DVR07 now takes a continuation return rather than a completion return. This prevents the interrupt from occurring during the queuing process.

Problem: (KPR# 2200-051664) (SSB# 5166) Attempting to output data to a disconnected 2608A line printer would cause DVB12 to crash the system when the printer was reconnected and UP'ed.

Solution: The driver was not cleaning up its command mode flag left in temporary storage in the EQT and would erroneously interpret a counter as an address. This flag bit is now cleared on every entry into the initiator.

Problem: (KPR# 2200-051292) (SSB# 5129 & 5573) An attempt to do a buffered read (REIO, Class I/O) of the 2608A character set could cause SAM corruption and subsequent operating system necrosis. This was most commonly accomplished by typing 'LI,6' when meaning to type 'LL,6'.

Solution: DVB12 would furnish one more word of data than was requested by the read call (the character set I.D.). Although this feature was documented, the SAM allocation done by the operating system assumes exact word counts; the extra word returned could overlay the link pointer of some other data block in SAM, unlinking the list. The driver was changed to return the proper number of data items requested.

Problem: (KPR# 2200-055731) Packed character set reads from a 2608A could corrupt one to eight words following the end of the input buffer.

Solution: DVB12 was using the input buffer as temporary storage while byte packing character cell data. This could cause overwrite problems when an inexact number of bytes was requested. The driver was changed to return as many character cell pairs as could be completely contained in the defined buffer.

Problem: DDV63 was moved to $DVTN device table from $DVTB.

Solution: Add DDV63 from $DVTN.

Problem: DDV63 was moved to its own device table and no longer needed in $DVTB.

Solution: Remove DDV63 from $DVTB.

Problem: (KPR# 2200-023283) If a read were issued to a terminal with the echo bit off, and the user responds with cntl-D, then the status returned did not have the EOT bit set as is documented in the DDV05 driver manual.

Solution: This problem was caused by an extra linefeed being sent to the terminal to advance the cursor to the next line when the echo bit is off. This extra write would cause the status to get updated, thus wiping out the previous status that had the EOT bit set when the cntl-D was entered. The solution was to save the status and restore it upon return from doing extra linefeed write.

Problem: The following are problems with DVC12: 1- Paper jam causes device type in EQT to increment 2- Does not auto-up as documented

Solution: Changes have been made to DVC12 to fix the above problems.

Note: The new formula for the EQT extension is 20 + 7 * (number of devices on the HP-IB bus)

Problem: In RTE-4B, a control request with a subfunction code of 20B could not be used to add an alarm program for an SRQing device. Only a call to the subroutine SRQ could be used.

Solution: As was originally possible with the RTE-6/VM version of the driver, it is now possible to execute this EXEC control request. It is also possible now to use a special form of an EXEC write request to achieve this same result of configuring an alarm program to run when a device SRQs.

Problem: (KPR# 2200-052282) Spooling, which uses class I/O,

conflicted with HP-IB secondary addressing parameters. This meant that when spooling output to an HP-IB printer, output could be garbage.

Solution: As was originally incorporated into the RTE-6/VM version of the driver, there are now different subfunction codes for the EXEC I/O calls to distinguish Class I/O from secondary addressing calls. Please consult the manual, "RTE Driver DVA37 For HP 59310B Interface Bus". Please also note the following. This problem was a conflict between spooling and HP-IB. Although it has been resolved on the HP-IB side, it is still a spooling problem. For future HP-IB applications, please use the new subfunction codes, although at this time spooling to HP-IB devices will still not work.

Problem: (KPR# 2200-056119) If an SRQ occurred while I/O was in progress, the CPU could go interrupt bound.

Solution: The new version of the HP-IB driver for RTE-6/VM and RTE-4B resolves this problem by incorporating the code for the patch originally described in the SSB.

Problem: (KPR# 2200-054734) If an SRQ occurred while a read is pending on the bus, the driver would loop on the SRQ until the read completes. Thus, the entire system would hang in this situation.

Solution: The new version of the HP-IB driver for RTE-6/VM and RTE-4B resolves this problem, using the following logic. First, SRQs are temporarily disabled. The driver remembers which device SRQed. Once the read completes, SRQs are reenabled, and the one that occurred while I/O was in progress is handled.

Problem: (KPR# 2200-056400) A serial poll disable command is not sent if the serial poll fails.

Solution: Now a serial poll disable is sent before scheduling the HP-IB bus alarm program.

Problem: (KPR# 2200-055319) The entire bus is down'ed if the driver encounters a down device when SRQ is asserted.

Solution: Now the HP-IB bus alarm program is scheduled when this event occurs. The HP-IB bus alarm program is documented

in the DVA37 Programming and Operating Manual.

Enhancement: A new EXEC control request has been added to the HP-IB driver. It is used to set the number of TBG ticks (tens of milliseconds) between attempts to schedule an HP-IB alarm program when an SRQ occurs. This value cannot be greater than 377B. Negative numbers are converted to their additive inverse. If zero is passed as a parameter, the default of 100 TBG ticks is used.

Problem: (KPR# 2200-051409) DVR32 and its clone, DVP32, do not correctly handle abort and controller unlock requests in a multi-cpu configuration. This problem causes D.RTR to hang on a resource number, and also degrades system performance.

Solution: Modify the abort and unlock decoding in DVR32(92084-16711) and DVP32(92084-16710) to correctly function in a multi cpu enviroment.

Problem: (KPR# 2200-051409) DVA32 and its clone, DVC32, cannot support the 9121 microfloppy.

Solution: Modify the interface cleanup section of DVA32(92084-16708) and DVC32(92084-16709) to properly cleanup the HPIB on request termination.

Enhancement: EXT is a program that scans a relocatable file and produces a list of external references. FLAG is a program that searches a program source file for occurrences of any of the words in a patterns file. It is used primarily to scan for external call names. AVL2 is a subroutine called by EXT. FPORT is a utility program that transports program source files and FMP data files between an HP 1000 RTE-4B/6 and the HP-UX/AMP environment on the HP 9000. SEP.6 is a canned list of RTE-6 entry points, modifiable by the user, for input to the FLAG program.

Problem: (KPR# 2200-032359) FC reported a FMGR -32 error when it encountered a new-filesystem cartridge in the cartridge list while searching for a file on an unspecified cartridge.

Solution: The routine get_next_cartridge in &FCCA2 has been changed to skip cartridges that have a zero CRN (new-filesystem

cartridges).

Problem: (KPR# 2200-028225) FC omitted trailing backslashes from file names and CRNs when displaying the names of the files being copied on the terminal.

Solution: The new routine form_string_backslash_not_special has been added to &FCFRM and [FCFRM. Log_current_file in &FCMIS and form_int_or_ascii in &FCFRM now call this new routine.

Problem: (KPR# 2200-055863) FC always read the entire tape on a restore even when only a few files were selected.

Solution: FC now stops reading the tape after the last selected file has been restored. This required adding a new global to [FCGLB (last_source_file_num_selected_during_pre_scan), and adding one line of code each to scan_dir_chunk_for_matches_and_update_size_and_alloc_info in &FCDAS and get_source_volume in &FCTDH.

Problem: (KPR# 2200-002253) FC did not do a form-feed at the end of a listing.

Solution: FC now does an FMP end-of-file control function before closing the list file (in reset_list in &FCOUT). This causes a form-feed on the printer, a write-file-mark on magnetic tape, etc., when FC exits or when another LL command is entered.

Problem: (KPR# 2200-029330) FC reported tape format error -14 and would not restore a tape if it contained files with an illegal name, negative type, or negative type 2 record length. The latter two caused problems because FC does not check these things when writing or verifying a tape. Therefore FC would backup and verify files with negative types or record lengths, indicating no error, but would not be able to restore any files from a tape containing even one such file.

Solution: The checks for illegal name, negative type, and negative record length were removed from get_info_from_subdir_for_source_file in &FCSBD. FC now restores such files without reporting any errors. Restoring such files causes no problems except possibly to programs trying to access them, and even that will work in many cases.

Problem: FC did not log the offending tape discfile entry to go with a tape format error -14 report, because the calls to log the two pieces of information were done in the wrong order. The first call raised an exception, preventing the second from being executed.

Solution: The order of the tape_format_error and octal_dump calls were reversed in get_info_from_subdir_for_source_file in &FCSBD.

Problem: FC occasionally reported "disc directory read failed" or "disc directory read required retries" for no valid reason. This was seen on disc-to-disc or disc-to-tape copies with verify selected in the open-files (as opposed to lock-cartridges) mode, when other programs were accessing the same cartridge as FC.

Solution: Remove the feature of verifying directory reads by reading the same data twice from the code in read_direc in &FCDIG. This has practically no impact on verify integrity since the directory is only a small fraction of the data transferred and bad directory info would usually result in other errrors being detected anyway.

Problem: The call to DSCPR in &FCMIS omitted the third parameter, a required status parameter which is modified by DSCPR. Also, the array parameter in which DSCPR returns information requires 10 words, but only 9 words were passed. No known malfunctions resulted from these errors.

Solution: The status parameter has been added to the DSCPR calling sequence in &FCMIS, and the 9-word array has been changed to 10 words. The status value returned is checked. If it indicates an error, FC reports an internal error, since no error from DSCPR should be possible as it is used by FC. Changing the array parameter to 10 words requried declaring a new data type 'array10' in the FC global include file [FCGLB.

Enhancement: The comment in #FCA has been corrected to say 'LINK command file' rather than 'LOADR command file'.

Problem: (KPR# 2200-004036) TF attempted to back up its own scratch file if it matched the mask used to select the files being backed up. Since TF modified this file during the backup,

this resulted in inappropriate verify errors being reported.

Solution: TF has been changed so that it no longer backs up any files that have their temporary bit set. This includes TF's own scratch file, and other scratch files. This required changes to &TFBAK.

Enhancement: TF can now read tapes in the FC format. Restore and DL operations on FC tapes are now possible. This required changes to &TF, &TFRES, &TFTIO, and [TFCND, and the addition of two new files &TFRFC and [TFRFC. To prevent inappropriate reporting of file marks read on FC tapes, additional changes were required in &TFTIO, &TF, &TFRES, and &TFBAK.

Enhancement: TF now allows specification of a disc lu in the destination parameter, for both local and remote restores. When the copy destination parameter specifies a disc lu, TF restores all files to the same name and directory as the source (the same as leaving the destination parameter blank), but creates any directories on the specified disc lu when possible. No errors are reported if a directory can not be created on that lu or if the directory already exists on another lu. This required changes in &TFRES.

Enhancement: TF now allows files to be restored to a remote system to their original directories and file names by specifying a zero before the ds location, as in "tf co 8 0[account]>node". There was previouly no way to do this. The corresponding command for a local restore was simply "tf co 8". The command "tf co 8 [account]>node" would not work because the [or > is not treated as a ds delimiter if it is the first character in the file specifier. The use of zero in the syntax as a way to allow this function is consistent with the syntax for specifying the disc lu but leaving the file names unchanged, as in "tf co 8 DISCLU[account]>node". Using zero instead of a disc lu still leaves the file names unchanged, but does not override the disc lu. This required changes in &TFRES.

Enhancement: The I option has been added to the TF restore and DL operations. This option prevents TF from terminating the command if the tape header is corrupt (and therefore not recognized as a TF tape). It also prevents TF from terminating when an EOF mark is read, for related reasons.

This required changes to &TFTIO, [TFTIO, &TFCMD, [TFCMD, &TFRES, and &TFBAK. Some of these changes were not obviously related to the I option, but had to do with how the expected magtape record length is set on the first valid record read, and other related changes to the design of the tape buffering read/write routines. These other changes were needed to facilitate implementing the I option, and were also desirable to clean up the tape buffering design.

Enhancement: The N option (previously implemented but not documented) is now supported. This option makes it possible to restore binary files from UNIX TAR tapes using TF. A few changes to &TFRES and &TFMIS were necessary to make this option fully functional. The routine fix_dest_name has been added to &TFMIS and is now called from &TFRES. This routine allows the destination file type and record length to be specified in the destination parameter. Without this capability, binary files restored from a UNIX TAR tape could not be accessed correctly by FMP. The correct FMP file type can not be determined from the information on a UNIX TAR tape and must be specified in the TF command. Also, &TFRES has been changed to get the destination file type (variable fmp_type) from the destination file fmpopen call rather than from the source file type. (Previously the destination file type was always the same as the source file type.)

Note: The command summary information displayed by the TF ? command has been updated to include the new I and N options. This affected the file &TFCMD.

Enhancement: TF now correctly interprets lists of file masks in braces which contain blanks after the left brace or before the right brace. Example: { file1 file2 } now works the same as {file1 file2} in spite of the fact that the former gets converted into {,file1,file2,} by the command preprocessing which converts spaces to commas. Implementing this required skipping blank items in the list of file masks, except when the entire list was blank. This change was made in &TFCMD.

Enhancement: TF now checks each file backed up, when applicable, to make sure the number of words of data indicated in the directory entry (also known as the pointer to the end-of-file) seems valid. Files for which this value is

not correct may not be backed up and restored correctly. TF previously detected no error when this happened. TF now attempts to detect this condition when the file is backed up, so that the problem can be corrected and the backup restarted, if desired. TF does this by checking the last word of data saved to tape for each file (determined from the eof pointer in the directory entry) to make sure it is an EOF mark (equal to minus one). This check is not made for FMGR files, which have no indication in the directory entry of the number of words in the file, and therefore can not have this problem. The check is also not made for type 1, 2, and 6 files, because such files contain no eof marks in the data. If the check is made, and an error is detected, TF reports that the file was not saved correctly because the eof mark is missing or the eof pointer is wrong. This error is reported on the backup pass only, not the verify pass. This enhancement required changes in &TFBAK.

Problem: TF did not correctly determine the disc lu from which remote files were saved, so that the feature of restoring files to the same lu when possible did not work for remote files.

Solution: The call to the fmp routine dsdcbword in &TFMIS has been corrected to reflect the current calling sequence. This also required adding an error code parameter to disc_lu_of_file, defined in &TFMIS and called in &TFBAK.

Enhancement: TF's handling of inadequate EMA size has been improved. TF now detects when its EMA size is below the minimum allowable value and distinguishes this condition from when the EMA size is just not adequate for the size of the current copy group. The error messages reported are now much clearer. This required changes in &TFEML.

Note: &TFLIB has been updated to change the rev and date codes which appear in the library header and which are displayed by TF when it is run interactively, and $TFLIB has been rebuilt.

Note: A version of $TFLIB consisting of two separate relocatables has been created for use on this PCO only. The two pieces are $TFLB1 and $TFLB2, with headers &TFLB1 and &TFLB2. This is a temporary measure to allow the library to be distributed on 264x mini-cassettes, since

READR/SAVER does not allow files to be split across cassettes. Customers who receive updates on mini-cassettes will MERGE $TFLB1 and $TFLB2 and LINDX the result to create the file $TFLIB needed by the link command file #TF. Production Engineering will provide a solution to the mini-cassette problem by the next PCO, at which point $TFLB1, $TFLB2, &TFLB1, and &TFLB2 will be obsoleted.

Problem: BSS after BREAK generates incorrect relocatable record.

Solution: The software was corrected.

Problem: The run string of macro was limited to 80 characters. This disallowed long names to be passed.

Solution: The run string buffer was increased to 256 characters.

Problem: Macro was forcing the swap and intermediate files to be on a FMGR disc.

Solution: Added call to FmpOpenScratch in &Macr0 for these files

Problem: The 'work=' directive would only allow two character directories or numeric directories to be specifed.

Solution: Fixed &macr0 to accept this.

Problem: (KPR# 2200-030254) (SSB# 5824) AUTOR won't compile with FTN4.

Solution: FTN4X construct was removed.

Enhancement: EDIT was updated on RTE-6 to be able to access files under the CI file system. EDIT on RTE-6 is now essentially the same as EDIT on RTE-A.

Enhancement: The CI file system that was added to RTE-A in revision 2326 (B.83) has now been added to RTE-6/VM. The Command Interpreter subsystem (CI, CIX, DL, LI) has been added to RTE-6, along with all the supporting utilities: FVERI, FREES, FPACK, FOWN, FSCON, CLOSE, and the TF file backup utility. RTE-6 utilities that have been upgraded to

access CI files include: EDIT, MACRO, LINK, MERGE, and SCOM. Other products that can be used on RTE-6 to access CI files include FTN7X and DEBUG/1000.

Note: Many of the FMP routines in %BMPG3 were replaced with the RTE-A versions. This was done for CI file system support, and to make as many routines as possible be common between the two operating systems for easier support.

Enhancement: CI has been updated for RTE-6 to add some system-dependent features. New features include: added RTE-6 system commands (AG, CU, etc.); added WH and HE commands; added FMGR's SL (without spooling) and CN commands. CI may also be selected (using ACCTS) as the program to be scheduled at log-on, and, in this case, CI will log the user off at the end of the session.

Note: Help files were added to RTE-6 for CI. Some of the files are identical to those on RTE-A, and some RTE-6 specific files were created also.

Note: The FMGR commands CL, ME, SM have been modified to use the two entry points in the system that contain the accounts file security code and disc LU.

Enhancement: (KPR# 2200-002501) Adding feature to FMGR: the RN command can now change the security code and file type of a file with the following exceptions: (1) can't change file types 0 or 2 to any other type, (2) file types 1 and 6 can be interchanged, but can't be changed to any other type. All other file types (3-5 and 7-32767), may be interchanged with no restrictions. Attempting to change a file's type outside of these restrictions results in a -16 error (new use for this error). Also, the second name may be the same as the first as long as either the sec.code or type is being changed (otherwise, get a -2 error). And the second name may be defaulted to the first name.

Enhancement: (KPR# 2200-002816) Adding feature to FMGR: If, when executing the MC command, a FMGR 012 error occurs, FMGR will print the duplicate CRN it found before the FMGR 012 message. For example:

```
:MC,15,P
 CRN = XX
```

FMGR 012

Problem: (KPR# 2200-027805) The error numbers printed using the ?? command in FMGR are not consistent with the numbers as they appear in the HELP file.

Solution: The ?? command has been changed to print negative error numbers with one or two digits as: "FMGR-0nn" rather than: "FMGR-nn" to be consistent with the HELP file.

Problem: (KPR# 2200-031005) Can't do an "MR" command with a new relocatable record file. You get a FMGR-007 error when you try to MR the file. The MR command was only reading 64 words per record of the relocatable file, but the new format allows up to 128 words. Also, it was checking for an END record to terminate a module, so it's been updated to also check for an XEND record.

Solution: The MR command was fixed to expect up to 128 words per record in the relocatable file, instead of 64 words. Also, it was corrected to look for an XEND record as well as an END record.

Problem: (KPR# 2200-031120) Under an MTM system the VL command does not work. VL,xx or VL,-LU where xx is a cartridge reference number and LU is an LU number both generate FMGR-056 error. VL by itself will reset $SCRN to 0.

Solution: The command has been updated to allow a non-session disc to be specified only if session has not been enabled on the system. A system disc is allowed whether in session or non-session.

Problem: (KPR# 2200-055459) When logged on as MANAGER.SYS, if the IN command is used to change some characteristic of a cartridge (such as the number of directory tracks), and the CRN is not changed, a FMGR 012 error occurs.

Solution: Because Manager.Sys can modify any cartridge FMGR checks the entire cartridge list to see if the new CRN specified in the IN command already exists anywhere on the system. If the old and new CRN's in the IN command are the same, FMGR will now not give the duplicate error. If the -LU is given instead of the old CRN, FMGR still scans the cartridge list to find a duplicate CRN. When it finds a

matching CRN, if the LU is the same as that given in the IN command, FMGR will now not give a duplicate label error. This means that if there really is a duplicate CRN existing higher in the cartridge list, FMGR will catch that and issue an error.

Problem: (KPR# 2200-058008) If FMGR command "LO" is used with a file name instead of an LU number, FMGR sometimes aborts with an IO12.

Solution: Two checks are now made in LO..: if the parameter is ascii, an error 56 is issued; if the LU given is not in the SST, an error 43 is given.

Problem: (KPR# 2200-058099) FMGR is inconsistent in its treatment of the command 'CLA'.

Solution: To be consistent with the 'extended command' design in FMGR, 'CLA' should pass as a form of the 'CL' command. However, FMGR should see 'CLA' as an extended 'CL' and treat it the same as the 'CLAL' command. FMGR has been changed to do this.

Enhancement: (for compatibility with CI) When the EX command is executed, before FMGR attempts to log the user off, it not only checks that its name is FMGxx (where xx is the session ID), but it now also checks that it has no father waiting (was not scheduled by another program). Previously, FMGR checked only its name. Now, if FMGR has been scheduled by another program (e.g., CI), it will not log the user off when it terminates.

Enhancement: FMGR has been modified to schedule the program SWPD. at boot-up time. This program swaps out the old D.RTR and swaps in the new one. This causes the new D.RTR to be in place before the WELCOM file gets executed.

Problem: (KPR# 2200-029686) If a file has a security code and none is provided in the OPEN call, the truncate option in the CLOSE fails with no error being returned.

Solution: Now, if the caller attempts to truncate the file, and he does not have write access to the file, CLOSE will generate a FMGR-007 error. After CLOSE discovers the -7 error, it will attempt to close the file anyway without

truncating. If the close is successful, the -7 error will be passed on to inform the caller that the truncate was not successful. If the close is unsuccessful, the appropriate error will be returned (i.e., the close error will take precedence over the truncate error). Therefore, if a -7 error is returned from CLOSE, then the file has been closed successfully, but not truncated.

Problem: (KPR# 2200-015958) If an attempt is made to create a file on the top-mounted FMGR cartridge, and that cartridge is LU 2 or 3, a FMGR-19 error is returned (RTE-IVB would skip LU 2 or 3 and go to the next cartridge).

Solution: This problem was fixed with the new revision of D.RTR.

Problem: (KPR# 2200-001503) When IDDUP is building an ID segment that requires an ID extension, it will build part of the ID segment before it checks to see if there are any ID extensions available. If there are none available, IDDUP will terminate, but it will leave the ID segment partially built. If the program is executed, it will probably abort with a DM violation.

Solution: The check for ID extension availability is now done before the ID segment is built.

Problem: In the XQPRG and CLONE routines, the intrinsic routine PCOUNT was typed as an integer. A bug in FTN7X caused this to not be compiled correctly.

Solution: XQPRG and CLONE has been corrected to not type PCOUNT, and let it default to the defined type.

Note: As part of the effort to put the CI file system onto RTE-6/VM, the system independent libraries $MLIB1 and $MLIB2 have been replaced with a new set of system independent libraries. These are:

$FLIB - general purpose routines, such as formatter
$MATH - math routines and intrinsic functions
$FOLDF - Fortran file I/O routines - for FMGR files only
$FNEWF - Fortran file I/O routines - for FMGR files and CI files

The first three of these libraries must be generated into the system in place of $MLIB1 and $MLIB2. The fourth library ($FNEWF) is used when loading user programs

on-line.

Problem: Because of the size increases in FTN7X, and the large buffer sizes declared in $6FCLB, FTN7X could not compile very large programs due to the decreased amount of working area in the compiler.

Solution: The DCB buffers in $6FCLB used by FTN7X were reduced from 1024 words each to 256 words each. This gives the compiler more work space to compile larger programs (the user may see a small decrease in compilation speed due to smaller DCB sizes).

Note: Some typographical errors were corrected and text clarifications were made to the EDIT help file.

Enhancement: The largest possible runstring size that RHPAR can handle has been increased from 80 to 256 characters.

Problem: (KPR# 2200-017640) An INQUIRE command that accesses a file at the local node from a FTN7X program with directive $FILES(1,1,DS) causes the file to be left open to RFAM. The same program with files directive $FILES (1,1) will not leave the file open.

Solution: The library routines now generate the correct internal calling sequences to the DS file closing routine.

Problem: (KPR# 2200-028951) When outputting a zero value using In.0 format, the result is 5 blanks and a '0', instead of 6 blanks. This problem did not exist prior to rev 2226.

Solution: The software has been corrected.

Problem: The listing generated by LUPRN for session vs. system lus was incorrect.

Solution: Correct LUPRN to generate correct listing.

Enhancement: Make changes to LUPRN for easier readability.

Problem: LUPRN had an un-documented include file.

Solution: Add include file code to LUPRN.

Enhancement: SCOM now accepts hierarchical files for input/output. Added the following options:

option	default	meaning
AO	OFF	append to the output file.
NH	OFF	do not output the header lines.
NT	OFF	do not output the trailing lines.
NF	OFF	do not output a form feed at the end.

Changed the output code so only 6 columns are used for the line numbers (on the left of the page). Allowed defaults for the second file to be compared and for the 'difference' file. (see utilities manual for details) Added link/loadr command file.

Problem: (KPR# 2200-028555) LINDX cannot create snapshot file for large systems.

Solution: The old limit of 2500 entry points was increased to approximately 3200 by segmenting LINDX. The actual limit may be somewhat less depending on the length of the symbols being indexed.

Enhancement: LINDX will now index hierarchical files as well as FMGR files. Note - link/loadr command file was added to RTE-6VM.

Problem: MERGE would always create the destination file to be 256 blocks this would create unwanted extents for large files.

Solution: MERGE now uses the size as specified if creating the file. If the size is not given, MERGE will use the the following algorithm. First try 1024 blocks if that fails (ie. -33) Try 512 blocks if that fails try 256 blocks if that fails give up and report error. Also the file will be truncated to the actual size used if it was created.

Enhancement: MERGE now allows two additional options in the run-string. -d = remove debug records (updates checksum of checksums) -l = do not echo files in the command file. These options must be in the 3rd parameter and start with the minus(-) sign. Any combination of 'd' or 'l' may then be specified. (eg. -dl)

Enhancement: MERGE now has a loadr/link command file for RTE-6VM.

Problem: (KPR# 2200-024588) LINK was ignoring the WS,xx command.

Solution: The software was corrected.

Enhancement: (KPR# 2200-023895) LINK now accepts a relative size command. From run-string use '+sz:+x' where x is the relative size Interactively use 'sz,+x' where x is the relative size

Enhancement: LINK was changed at 2340 to be able to talk to hierarchical files.

Enhancement: (KPR# 2200-031427) LINK now accepts a 'don't clone' option. From run-string use '+dc', Interactively use 'dc' Note - LINK now has a loadr/link command file.

Problem: (KPR# 2200-31666) Calls to JSCOM would fail for the ASCII range of 173B to 176B.

Solution: The software was corrected.

Enhancement: (KPR# 2200-1792) The following routines now use the firmware instructions for improved performance: SMOVE, SFILL, SPUT, and SGET.

Enhancement: The ACCTS program will now allow you to change the primary program to be CI or FMGR. The HELLO file must also be of the same type (CI or FMGR).

Enhancement: WHZAT will now give the partition priority when the PA option is requested. This will be the same as the program priority if aging is not turned on.0 (See AG command in the termianl users ref. mnl.)

Problem: (KPR# 2200-057265) Any module which called ATACH could not be placed in the memory resident area in a session system because ATACH calls LUSES which is a type 7 module and a gen err 15 results.

Solution: ATACH was changed from type 6 to type 7.

Problem: (KPR# 2200-058206) If two programs use shareable EMA, accessing the last page of the EMA space may cause one of the programs to abort with an EM82 error.

Solution: Changed code in EMA to initialize the 'last page+1' flag in the PTE before call to SWP to do it.

Problem: (KPR# 2200-032516) If some number of words not a multiple of 128 is to be transfered to a type 1 file, and rounding up the transfer size causes the crossing of a page boundary, then not enough pages will be mapped for the EXEC call. This is only a problem if the logical page which did not get mapped points to hyperspace (177777B in map register is common), in which case an IO04 error occurs.

Solution: The software was corrected.

Problem: (KPR# 2200-056531) VWRIT did not handle writing large arrays to a type 1 file. If no starting record is specified then the complete array is written to the file starting at the current record. If a starting record is specified then only part of the array is written starting at the correct record. Bug was in record positioning on type 1 file where more than one mseg size is transfered at once. Problem was that one each READF or WRITF call, the record number was left unmodified, so that each read/write occured at the same position in the file.

Solution: Fix is to change record # desired to zero after the first read/write, so that subsequent reads/writes will occur sequentially from the new position.

Problem: (KPR# 2200-023242) If EMA size is smaller than MSEG size, then VREAD/VRITE will not let you make transfers longer than (# of pages of EMA) - 1.

Solution: Fixed to enhanced the buffer size/position requirements. Now if the buffer can be mapped in, in (MSEG+1) pages or within the bounds of defined EMA (as opposed to the size of EMA in pages - 1), then the transfer is allowed.

Problem: (KPR# 2200-056564) For type 2 files the "Data length

requested" parameter (IDL) was supposed to be ignored. It wasn't and would cause DM violations.

Solution: Now we get the record length out of the DCB and use it as the transfer length, since FMP seems to always read/ write one record regardless of length specified.

Problem: If the routine calling XREIO immediately followed XREIO the TDB could overlay an internal buffer in XREIO

Solution: Modified XREIO to move the XRQ buffer up from the end of the routine in case the calling routine's buffer follows immediately after this routine.

Problem: (KPR# 2200-057141) This bug was erroneusly logged against the LOADR. The problem was in the generator as the SR stated. The generator should not allow more than 64 ID extensions.

Solution: &RT6G5 was modified to allow a maximum of 64 ID extensions.

Problem: (KPR# 2200-056648) The boot extension was being placed at 76011B instead of 77400B. This limited the system size unnecessarily. In addition the generator would not catch this as an error and would produce a bad system file.

Solution: Moved the boot extension up to 77400B to where it belonged and changed the code to catch memory overflow if CS80 disc.

Enhancement: Modified the break-flag check routine to ask the user if he wants to continue with the generation. Need: Update the header module for the generator.

Problem: The generator built his own type 0 file DCB to talk to LU's. Since the DCB format changed for the CI file system this caused the generator to not echo on input from the log or error device.

Solution: Changed code to call OPENF and remove the internal set up of a type 0 DCB.

Enhancement: Added call to UPASC to upshift inputs.

Enhancement: Changed the order of checking for HP-IB and CS-80 discs to accomodate a change in the table structure in the generator.

Enhancement: Changed the header module &SWSHD to reflect the new revision.

Enhancement: (KPR# 2200-023903) Added code to halt the cpu if the host system was overlayed by the switch.

Enhancement: Added call to UPASC to upshift all responses from the user.

Enhancement: Added loader command file for SWTCH.

Problem: (KPR# 2200-002824) With only 1 ID-Extension genned into a system the configurator would corrupt the system if doing a permanent reconfiguration.

Solution: The software was changed to transfer the correct number of words to disc if only 1 ID-extension is present. Need: The header module was changed to reflect the current revision.

Enhancement: LOGON, LGOFF, and RPN were enhanced to handle different primary programs (progenitors). This allowed the primary program to be CI or FMGR. Need: The header module was changed to reflect the current revision.

Problem: RTE-6 checks the validity of all read/write requests to LU 2 & 3. Some 'illegal' read requests (ie. negative track or sector values) instruct the driver to do various diagnostic operations. The OS was not allowing these 'illegal' requests to to be passed on to the driver and issuing an I005 errors.

Solution: RTIOQ was modified to allow these 'illegal' read requests to be passed to the driver.

Problem: (KPR# 2200-019265) When there is no RT partition available (e.g., all reserved) and there is a RT-program to be

scheduled this program will take the largest partition available. If, for example, a mother partition is available, the program would occupy this partition, blocking the subpartitions.

Solution: DISP6 was corrected.

Problem: The snapshot of missed TBG tics was being put in the wrong buffer

Solution: RTIM6 was corrected. Need: The header module was changed to reflect the current revision.

Problem: When debuging with symbolic debug and the user routine set the no-abort bit on an EXEC, LURQ, ect. type call, and the the 'abort' path was to be taken, the operating system would not return control to the users routine but would schedule debug indicating an 'error' had occurred.

Solution: $ERMG in EXEC6 was corrected.

Enhancement: RTE-6VM has been enhanced to accept AN 'ID' parameter in the 'OF' system command (ie. OF,PROG,8 is equivalent to OF,PROG,ID). This provides more compatibility with the RTE-A operating system.

Enhancement: The header module was changed to reflect the current revision.

Enhancement: $DATC needed to be updated to reflect the current revision (2340).

Problem: (KPR# 2200-001693) When a father program schedules a son program and afterwards the father program wants to terminate the son with EXEC (6, 'son-name', 1) the son program does not go dormant at all.

Solution: &OS3SC was corrected to make the proper call to list processer.

Problem: (KPR# 2200-055202) Undocumented 'SC' errors occur. In the particular case mentioned in this SR the system was trying to give an SC08 or SC09 error. However, these errors were

not printed correctly and garbage would be printed.

Solution: &OS3SC was corrected.

Problem: &OS6SN was modified to make the RTE CU command work properly with the Specials 93768B Clock and TBG. With this card the first TBG is not 10 milliseconds. Setting control for this card does not reset the current time counters but only allows the card to interrupt. This means its first TBG tick is some random value between 0 and ten milliseconds.

Solution: To correct this, the ISZ loop used to callibrate the CPU execution speed for the CU command uses the time interval between the first and second TBG interrupts as its 10 millisecond time period. Need: The header module was changed to reflect the current revision.

Problem: (KPR# 2200-023846) Spooling failed outside of session for LU's greater than 63.

Solution: &SMP was corrected.

Problem: SMP built a DCB on his own not using OPENF or any of the other supported file calls. Since the new file system changed the DCB format this caused spooling to not function properly.

Solution: Changed the DCB in SMP to be compatible with the new format. Need: The header module was changed to reflect the current revision.

Problem: (KPR# 2200-055129) The loader library routine L.REL was incorrectly processing MSEG records. It was trying to keep track of the largest MSEG size it encountered but instead kept the last MSEG size it encountered. This caused the symptom as described in the SR.

Solution: L.REL was changed to keep the largest MSEG size. Need: The header module was changed to reflect the current revision.

Problem: (KPR# 2200-055749) The loader library routine L.REL was incorrectly processing MSEG records. It was trying to keep track of the largest MSEG size it encountered but

instead kept the last MSEG size it encountered. This caused the symptom as described in the SR.

Solution: L.REL was changed to keep the largest MSEG size.

Problem: The Readr,Saver,Disc formatting ,and Backup utilities loadr command files did not work with Link.

Solution: Modify the loadr command files to work with Link.

Enhancement: The RTE-6 answer files were modified in several areas.

i) Remove obsoleted $MLIB1, and $MLIB2
Replace them with $MATH, $FOLDF, $FLIB

ii) Removed $IB6A (HPIB LIBRARY)
Removed $DSCLB (IDC/MAC disc util/lib)

iii) Added driver %DVC12 to the gen. This is to allow use of the standard 2608S printer. This driver is now LU 6, EQT 6.

iv) Memory size has been increased to 256KW

v) Removed one of the two dummy drivers from the gen (This gives more base page links).

vi) The number of ID segments for each of the following was increased by five:
Long ID segments, Short ID segments,
ID extensions.

vii) Memory was repartitioned to take into account the extra memory,and give large partitions for Link, and D.RTR.

viii) Modified DS DVA65 direct connect to point to an odd subchannel (LU 99 in gen).

Problem: KEYS and KYDMP would not link. This was because they were originally compiled on an old compiler which did not put size information into the relocatable. Link would look for this information and think the program was too large to load.

Solution: Re-compile and oldrec the two relocatable files.

Problem: The Dummy drivers DVY77 and DVZ77 did not return when entered through the initiator or continuator. They were initially created only to take up a driver partition on the primary. This driver could then be overlayed by the on_line driver replacement utility. The problem occured when the auto- restart routine would enter the driver in an attempt to up the driver. Since the driver had no real code it would fall through and never return.

Solution: Modify the Dummy driver so that it would return from an entry into either the initiator, or the continuator. The number of base page links reserved were also reduced to 12.

Enhancement: Modify the RTE-6 primary build files for the new file system (load D.RTR, specify primary program load lindx, load link, create snap.6 file, link some programs instead of loading them).

Problem: Some of the RTE-6 build files and transfer files start with a '/' (ie. /MLLDR). Edit does not recognized these as valid file names, but instead thinks they are the start of a path name. Names starting with '\' will also be changed for consistancy.

Solution: Change RTE-6 build files that start with a '/' to start with a '(', and files that start with a '\' to a ')'. Also change two transfer files to call the new name (*RESET, *T6CMC).

Enhancement: Update the default year in *STIME and add another parameter allowing the user to input the year.

Enhancement: Add a line to the system managers start up menu, to inform him about LUPRN.

Enhancement: Update the software numbering catalog for RTE-6 relocatables, and the build file relocatables.

Enhancement: Modify the RTE-6 build transfer file #EDIT to increase the size to 28 pages. This extra room allows edit to execute faster.

Problem: (KPR# 2200-050443) (SSB #5044) Function codes to arm and disarm an alarm program were processed incorrectly. Redundant calls to arm or disarm would actually perform the opposite function.

Solution: This was fixed in the driver at revision 2101, but never documented. Make an entry in the next SUN and close the SSB.

Problem: (KPR# 2200-050450) (SSB #5045) Programming and operating manual states that after an alarm is defined, it must be armed. Actually the program is armed automatically when it is defined.

Solution: Change the description of these function codes in the manual.

Problem: (KPR# 2200-051029) (SSB #5102) The section of the driver that configures the I/O instructions for the correct select code handles one instruction incorrectly. Thus DVM72 would not support multiple interfaces.

Solution: Fix the section of code to configure all i/o instructions correctly.

Problem: (KPR# 2200-051110) (SSB #5111) DMA output is set up the same way as DMA input. Output is not correct and will not work.

Solution: Change this section of code to set the flag on the card to assert SRQ at the beginning of an output request, instead of setting control and clearing the flag on the card as is done to initiate an input request.

Problem: (KPR# 2200-052555) (SSB #5255) The function code to define an alarm program would not work from a large background program. The driver needs access to table area II to find the id segment.

Solution: Determine whether the user or system map is enabled in the driver. If the user map is enabled, do cross loads to get access to table area II. Note, this function will still not always work from an RTE-6/VM extended background program. The buffer that passes the name of the alarm program to the driver may be in a memory page that gets remapped by the operating system before entering the

driver. To protect against this would involve extensive changes to the driver, and it was decided instead to document the exception in the programming and operating manual.

Problem: (KPR# 2200-055225) (SSB #5522) Normally if an error occurs on a write operation, the driver will retry the operation up to 75 times before an error is reported. However, if the error occurs at EOF, it will only allow 1 retry (the driver will only allow EOT to be sensed twice). If the write is unsuccessful, the tape unit is downed and ionr error is issued. Since the EOT has been sensed, the disk backup utilities (WRITT, LSAVE, USAVE, !DISK, etc.) will issue the "mount next tape" message as soon as the mag tape EQT is upped. However, the last record has not been successfully written and the backup will not restore properly.

Solution: DVR23 has been modified to allow up to 75 retries if an error occurs during a write operation and EOT is encountered.

Problem: (KPR# 2200-051979) (SSB # 5197) ANSI STANDARD X3.22-1973(for 800 BPI NRZI) and X3.39-1973 (for 1600 CPI) states that the usable recording area on a mag tape is from 'BOT' to 10 feet after the 'EOT'. DVR23 does not adhere to this standard and will not allow any data to be written after the EOT.

Solution: DVR23 has been changed to allow for tranparent read, write, and control requests. This allows for processing of ANSI standard tapes beyond EOT. The transparent bit has been defined as bit 10 of the control word. When the transparency bit is set, DVR23 will sense EOT, but will no longer disallow requests. The user must check for EOT condition to insure that tape runoff does not occur.

2.12 (92833A) Pascal/1000 (RTE-6/VM, RTE-A)

Problem: Pascal's (PCL's) main needs to be smaller, and Segment 0 needs to use fewer base page links in order to fit on the 2340 RTE-6 primary.

Solution: The routine "new_node" was moved from the main into the segments, and the modules in Segment 0 were rearranged to use fewer base page links.

Problem: The routines used in RTE-A for scheduling do not work the same on RTE-6.

Solution: Instead of using FmpRPProgram and XQPRG Pascal now uses FmpRunProgram to schedule Pascomp, Macro, and the cross referencer.

Problem: When the third parameter to Pascal was 0, Pascal was generating code and scheduling Macro (no relocatable file was generated, however).

Solution: Pascal now does not generate code, nor schedule Macro when the third parameter is missing or is '0'.

Problem: Individual elements of large byte arrays in EMA are not always accessed properly. This could cause the wrong data to be accessed or Memory Protect violations.

Solution: Code generated now accesses byte arrays correctly.

2.13 (92834A) Fortran-4X

Problem: (KPR# 2200-026591) Using a hollerith constant in a DATA statement does not work.

Solution: Fixed in revision 2303.

2.14 (92836A) Fortran-77

Problem: (KPR# 2200-003004) If a two or more dimensioned array in EMA is passed to a subroutine, the program may abort with an EM82 error if the program is loaded with the CDS option.

Solution: FTN7X was building a table wrong for the .IMAP call. This has been corrected.

Problem: (KPR# 2200-031914) A six character Hollerith constant assigned to a REAL*6 variable is not assigned correctly. The sixth character is a null.

Solution: The software has been fixed to correctly place all 6 characters into the REAL*6 variable.

Problem: When a character-type function was used in an assignment statement, the program could abort with a MP error.

Solution: FTN7X has been corrected.

Problem: (KPR# 2200-026948) A user cannot put his sources on one CRN, relocatables on another, etc, using the default ('-') option.

Solution: The software has been corrected.

Note: The FTN7X configuration guide ("FTN7X) has been updated to be clearer in its description of libraries needed for loading the compiler and user programs. Also, a discussion was added concerning base page links.

Note: Because the released FTN7X, loaded with the released LIB-$6FCLB, would not compile programs with more than 400 lines, an off cycle FTN7X pco was issued to update the customers with a modified LIB-$6FCLB. Since a workable version of LIB-$6FCLB is being shipped with the operating systems, the LIB-$6FCLB is now deleted from product 92836A.

2.15 (92843X) Graphics/1000-II Device Handlers

Enhancement: Added the polygon and color functionality that was added to 92841A (DGL product) during the 2301 PCO cycle. Also made changes to reflect the bug fixes that were made to 92841A.

2.16 (92860A) Symbolic Debug/1000

Problem: (KPR# 2200-03939) Debug would not display real arrays (as characters) as expected. DOSUBSCRIPT in &GETVL would set the size of an element to 1, rather than to the size passed to it, when the type of the element was some kind of string.

Solution: Fixed C.83

Problem: (KPR# 2200-03822) Debug failed to pass on the rmpar parms to a son when scheduled programmatically.

Solution: Fixed C.83

Problem: (KPR# 2200-02972) Debug could not list source for some entry points in a large segmented program. Debug lost its internal file name table info so that it could not find the starting line of the source for the particular entry point.

Solution: Fixed C.83

Problem: (KPR# 2200-03806) Debug could not pass parameters to a son when debugging a program with wait (EXEC 23). passed to him.

Solution: Fixed C.83

Problem: (KPR# 2200-03574) SEGLD was not passing the proper information to debug.

Solution: SEGLD rev.2340 passes the correct information.

Problem: When trying to debug a program without cloning (DEBUG,MYPRG:IH) the Debug symbol file gets its security code changed to IH. CLONEUSER never checked if the ":IH" was present.

Solution: Fixed C.83

Problem: (KPR# 2200-00281) Debug mishandled no abort return from an exec call. SSTEP was ignoring the info field.

Solution: Fixed C.83

Problem: Could not modify Fortran strings to be shorter than their original length. Debug was overwriting the end of the LCASE buffer and clobbering the LNUM global.

Solution: Fixed C.83.

Problem: The Help message in overview mode was wrong.

Solution: The text was corrected at C.83

Problem: (KPR# 2200-04192) Debug did not allow inhibit cloning in RTE-A (RU,MYPRG:IH). The "security code" passed to CloneUser was never assigned by INITD.

Solution: Fixed CloneUser to call FmpParseName and deleted the parameter at C.83

Problem: (KPR# 2200-04325) Debug ignored no-abort return in an exec call. SSTEP failed to check the info field.

Solution: Fixed C.83

Enhancement: One could not tell Debug the name of the source file if it changed since it was compiled. Debug now asks for a name if the one it its symbol table can't be found. However, at this time, the symbol table is NOT updated, and the user must re-enter the name.

Enhancement: Debug needed a command to find a string in the source so that one need not repeatedly enter the L command. The FIND command was added. "5f/abc" will search for the string "abc" starting from line 5 of the source currently on the screen.

Enhancement: We needed a way to tell Debug to not parse the run string into the RMPAR parameters like FMP does when a program is scheduled from a terminal. This would be handy

when debugging programs that scheduled programmatically, where the parent handled the chores. A new option: "+P", when inserted between DEBUG, and the name of the user program being debugged, will cause Debug to not alter the RMPAR parameters passed to him.

Enhancement: Debug did not allow any order of run string options when there were more than one of them. Any ordering of such options is now allowed.

Enhancement: Needed a way to have "non-meaningful" information included in source files, eg. comment lines.

Any line beginning with a star ("*"), will be ignored by debug either as a command entered interactively or when read from an include source file via the I command.

Enhancement: Backslash ("\") prefix. "D \abc" will display the ADDRESS of abc, in octal.

Problem: Debug is too slow when building the symbol table for large programs. The amount of free space available needs to be greater.

Solution: Put BILDS into a separate program, scheduled by Debug, that has between 19 and 21 pages of free space (depending on system configuration). This speeded up symbol table initialization by a factor of 3 to 4.

Problem: Debug would not load on M-series because of the lack of FFP firmware. Insufficient memory was available when the software equivalents of the FFP firmware (using $MATH and $FLIB) are searched.

Solution: Resegmented DEBUG to a total of 10 segments.

CURRENT SOFTWARE REVISIONS & CHANGES — CHAPTER 3

This chapter lists the current revision codes for each software product, and notes any changes that have occurred to the product in this update cycle.

Those products that have been changed in this update cycle are marked with a '+' to the left of the product number. If a product has been updated, the listing will also include:

a) Manuals and,

b) Software (and firmware) media

that have been updated (or added) in this update cycle, and are being distributed with the subscription services for this product.

If software has been updated for the product, then those modules that have been changed/added/deleted are marked with a '*' to the left of the file name, and the type of update is shown to the right of the current revision code: updated files show the new revision code; added or deleted files are marked as 'New' or 'Deleted' (respectively). New files previously grouped at the bottom of the list are now within the alphabetized body of the revisions. This change is a result of an on-going effort to automate production of the SUN.

Note that updated products may have only manual changes or only software changes. This is noted in the manual or media lists.

3.1 (12824A) Vector Instruction Set

File	Module	Part Number	Rev
$VLIB1	WADD	12824-12001	2026
$VLIB2	VADD	12824-12002	2026
%VISOD	VISOD	12824-16002	2026

3.2 (12829A) VIS for RTE-6

File	Module	Part Number	Rev
$VLB6A		12829-12001	2226
$VLB6B		12829-12002	2213
%VIS06		12829-16001	2226

3.3 (24396A-F) Offline Diagnostics (M, E, F-Series)

File	Module	Part Number	Rev
!IODG		24318-16001	2326

3.4 (24398A/B) Offline Peripheral Diagnostics (L, A-Series)

File	Module	Part Number	Rev
%OPER		24398-16016	2226
A24398		24398-17999	2301
DIAG		24398-16003	2113
DISCZ		24398-16007	2113
ERT		24398-16005	2113
EXR1		24398-16010	2226
MTVER		24398-16001	2150
OPER		24398-16016	2226
TAPE		24398-16014	2301
TESTM		24398-16034	2301

3.5 (24600A) L, A-Series I/F Diagnostics

File	Module	Part Number	Rev
!PSI		24600-16001	2026
A24600		24600-18999	
BOOTEX		24998-16013	2041
PSI		24600-16002	2026

3.6 + (24612A) Offline Diagnostics (A-Series)

	File	Module	Part Number	Rev	Change
	!AIMXD		24613-16001	2301	
	!AOUTD		24613-16002	2301	
	!ASIC		24612-16035	2301	
	!BCM		24612-16042	2326	
	!BCMCT		24612-16043	2326	
	!CDSBI		24612-16048	2326	
	!CDSPC		24612-16050	2326	
	!CPU		24612-16015	2301	
	!CSIC		24612-16051	2326	
	!CTDVR		24612-16002	2301	
	!DCDVR		24612-16004	2326	
*	!DID		24612-16052	2326	--> 2327
*	!DIDVR		24612-16056	2326	--> 2327
	!DIGIO		24613-16003	2301	
	!DSDVR		24612-16006	2326	
	!EIG		24612-16027	2301	
	!FDL		24612-16041	2213	
	!FPD		24612-16025	2301	
*	!HPIB		24612-16036	2301	--> 2340
	!IOM		24612-16019	2326	
	!LIS		24612-16029	2326	
*	!MAD		24612-16021	2326	--> 2340
*	!MCD		24612-16023	2326	--> 2340
	!MCDXL		24612-16046	2326	
*	!MTDVR		24612-16054	2326	--> 2330
	!MUX		24612-16040	2301	
	!PIC		24612-16037	2326	
	!PROM		24612-16038	2301	
	!PSI		24612-16039	2213	
	!RMDVR		24612-16008	2301	

	!SFD	24612-16017	2301	
	!SIS	24612-16031	2301	
	!WCS	24612-16032	2213	
	#AUTO	24612-18013	2326	
*	%CDSBI	24612-16047	2326	--> 2340
	%CDSPC	24612-16049	2326	
	%CPU	24612-16014	2301	
	%CTDVR	24612-16001	2301	
	%DCDVR	24612-16003	2326	
*	%DDL	24612-16010	2326	--> 2340
	%DEBUG	24612-16011	2301	
*	%DIDVR	24612-16055	2326	--> 2327
	%DSDVR	24612-16005	2326	
	%EIG	24612-16026	2301	
	%FPD	24612-16024	2326	
	%IOM	24612-16018	2326	
	%LIS	24612-16028	2326	
	%LPDVR	24612-16012	2213	
*	%MAD	24612-16020	2301	--> 2340
	%MADMG	24612-16045	2301	
	%MAPS	24612-16009	2301	
*	%MCD	24612-16022	2326	--> 2340
	%MSGS	24612-16033	2301	
*	%MTDVR	24612-16053	2326	--> 2330
	%PFCON	24612-16034	2213	
	%RMDVR	24612-16007	2301	
	%SFD	24612-16016	2326	
	%SIS	24612-16030	2326	
*	A24612	24612-17999	2326	--> 2340
	BCMDC	24612-16044	2326	
*	BCMDI	24612-16057	2326	--> 2327
*	BCMMT	24612-16058	2326	--> 2340

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
24612-13312	020
24612-13313	020
24612-13314	020
24612-13315	020
24612-13316	020
24612-13317	020
24612-13319	021
24612-13320	021
24612-13321	021

24612-13322	021
24612-13323	021
24612-13324	021
24612-13311	022
24612-13401	041
24612-13406	042
24612-13407	042
24612-13408	042
24612-13409	044
24612-13410	044
24612-13411	044
24612-13412	044
24612-13501	051

3.7 (24613A) Measurement & Control Diagnostics (A-Series)

File	Module	Part Number	Rev

(see 24612A Offline Diagnostics A-Series)

3.8 (91711B) On-Line Diagnostics (M, E, F-Series)

File	Module	Part Number	Rev
!CS801		91711-16351	2226
!ICD01		91711-16350	2201
!MUXST		12792-16007	2301
#TESTM		91711-17025	2301
#TXDS0		91711-17007	2201
#TXIB0		91711-17008	2201
#TXMT0		91711-17009	2201
#TXMV0		91711-17006	2201
#TXMV1		91711-17016	2201
#TXPF0		91711-17005	2201
#TXPF1		91711-17017	2201
#TXPF2		91711-17018	2201
#TXPF3		91711-17019	2201
#TXPF4		91711-17020	2201
#TXPM0		91711-17001	2201
#TXPM1		91711-17002	2201
#TXPM2		91711-17003	2201
#TXPM3		91711-17004	2201
#TXTD0		91711-17014	2201
#TXTD1		91711-17015	2201

#TXTR0		91711-17013	2201
#TXTT0		91711-17011	2201
#TXTT1		91711-17012	2201
#TXWL0		91711-17010	2201
#VIS06		91711-17022	2201
#VMACK		91711-17021	2201
$XXTD1	XXTD1	91711-12031	2201
%CFTML	CFTML	91711-16252	2201
%DISVF	DISVF	91711-16238	2201
%EXR1		91711-16285	2226
%FFPVF	FFPVF	91711-16234	2201
%HFPVF	HFPVF	91711-16235	2201
%IMPTM	IMPTM	91711-16254	2201
%IWRZZ	IWRZZ	91711-16253	2201
%JENTS		91711-16370	2301
%MORFE	MORFE	91711-16233	2201
%MUXST		12792-16006	2301
%NPART	NPART	91711-16228	2226
%RODFK	RODFK	91711-16226	2201
%RODSK	RODSK	91711-16256	2201
%RODTK	RODTK	91711-16257	2201
%RPTBL	RPTBL	91711-16232	2201
%SISVF	SISVF	91711-16236	2201
%TAPE		91711-16287	2301
%TESTM		91711-16369	2301
%TXDS0	TXDS0	91711-16241	2201
%TXIB0	TXIB0	91711-16242	2201
%TXMT0	TXMT0	91711-16243	2201
%TXMV0	TXMV0	91711-16240	2226
%TXMV1	TXMV1	91711-16266	2201
%TXPF0	TXPF0	91711-16231	2201
%TXPF1	TXPF1	91711-16258	2201
%TXPF2	TXPF2	91711-16259	2201
%TXPF3	TXPF3	91711-16260	2201
%TXPF4	TXPF4	91711-16261	2201
%TXPM0	TXPM0	91711-16225	2201
%TXPM1	TXPM1	91711-16227	2226
%TXPM2	TXPM2	91711-16229	2201
%TXPM3	TXPM3	91711-16230	2201
%TXTD0	TXTD0	91711-16248	2201
%TXTD1	TXTD1	91711-16249	2201
%TXTD2	TXTD2	91711-16250	2201
%TXTD3	TXTD3	91711-16251	2201
%TXTR0	TXTR0	91711-16247	2201
%TXTT0	TXTT0	91711-16245	2201
%TXTT1	TXTT1	91711-16246	2201
%TXWL0	TXWL0	91711-16263	2201
%VIS06	VIS06	12829-16006	2201
%VISVF	VISVF	91711-16239	2201
%VMACK	VMACK	92084-16423	2201

%VMAVF	VMAVF	91711-16237	2201
DIAG		91711-16327	2201
DISCZ		91711-16329	2201
ERT		91711-16328	2201
EXR1		91711-16330	2226
FORM		91711-16326	2201
TAPE		91711-16332	2301

3.9 (91730A) Multipoint

File	Module	Part Number	Rev
%AUTO7	AUTOR	91730-16009	2140
%DLFT	DLFT	91730-16011	2140
%DSPMP	DSPMP	91730-16003	2140
%DVR07	DVR07	91730-16001	2140
%EXMP	EXMP	91730-16002	2140
%MPLIB	MPLIB	91730-12001	2140

3.10 (91731A) Multiplexer

File	Module	Part Number	Rev
%DVS0N	DVS00	91731-16001	1926
%DVS0Z	DVS00	91731-16004	1926
%LD5AN	LDVR5	91731-16002	1926
%LD5AZ	LDVR5	91731-16003	1926
%LD5BN	LDVR5	91731-16005	1926
%LD5BZ	LDVR5	91731-16006	1926

3.11 (91740A/B) DS/1000

File	Module	Part Number	Rev
!665AD		29005-60001	1636
!773AD		29024-60001	1636
$DSDB	$DSDB	92069-12007	2040
%2APLD	APLDR	91740-16017	1840
%3APLD	APLDR	91740-16018	1840
%DLIS1	DLIST	91740-16009	2001
%DLIS2	DLIST	91740-16010	2001

%DLIS3	DLIST	91740-16011	1740
%DSLB1	DSLB1	91740-12001	2326
%DSLB2	DSLB2	91740-12002	2001
%DSLB3	DSLB3	91740-12003	1740
%DSML1	DSML1	91740-12004	1913
%DSML2	DSML2	91740-12005	1913
%DVA65	DVA65	91740-16071	2026
%EDITD	EDITR	91740-16022	2026
%EXECM	EXECM	91740-16005	1840
%EXECW	EXECW	91740-16008	1740
%GRPM	GRPM	91740-16014	2001
%LGLIB	DCMCC	91740-12007	1926
%LOADD	LOADR	91740-16019	1913
%LSTEN	LSTEN	91740-16001	1913
%LSTNS	LSTEN	91740-16072	1913
%NDTGN	NDTGN	91740-16021	1805
%OPERM	OPERM	91740-16006	2026
%PROGL	PROGL	91740-16012	1913
%PTOPM	PTOPM	91740-16007	1913
%QCLM	QCLM	91740-16016	2001
%QUEUE	QUEUE	91740-16013	2026
%RD.TB	RD.TB	92069-16257	2040
%RDBAM	RDBAM	92069-16258	1912
%RDBAP	BAPHD	92069-16259	1912
%REDIT	REDIT	91740-16023	1740
%REMAT	REMAT	91740-16024	2026
%RFAM1	RFAM	91740-16003	1740
%RFAM2	RFAM	91740-16004	2213
%RMTIO	RMTIO	91740-16037	1913
%RTMLG	RTMLG	91740-12006	2013
%RTRY	RTRY	91740-16015	2026
%SGPRP	SGPRP	91740-16070	1805
%UPLIN	UPLIN	91740-16002	1840

3.12 (91741A) DS/1000-3000

File	Module	Part Number	Rev
%D3KL2	D3KL2	91741-12002	1913
%D3KLB	D3KLB	91741-12001	2026
%DVG67	DVG67	91741-16001	2126
%QUEX	QUEX	91741-16003	2013
%QUEZ	QUEZ	91741-16002	1740
%RMOTE	RMOTE	91741-16007	2013
%RPCNV	RPCNV	91741-16005	2026
%RQCNV	RQCNV	91741-16004	1913

3.13 (91745A) Datasafe/1000

File	Module	Part Number	Rev
#RPAIR		91745-17002	2218
#VPAIR		91745-17003	2218
$RECAP		91745-12001	2218
%..DS		91745-16007	2218
%ALARM		91745-16005	2218
%ALRMX		91745-16020	2218
%CNREQ		91745-16006	2218
%DPAIR		91745-16002	2218
%DSCPR		91745-16022	2218
%DVI30		91745-16001	2218
%LPAIR		91745-16004	2218
%RPAIR		91745-16003	2218
%VPAIR		91745-16019	2218
&ALRMX		91745-18020	2218
A91745		91745-17999	2301

3.14 (91747A) Datashare/1000

File	Module	Part Number	Rev
#DCONV		91747-17001	2218
$DSHAR		91747-12004	2326
%BMPG1		91747-12001	2218
%BMPG2		91747-12002	2301
%BMPG3		91747-12003	2326
%DCONV		91747-16001	2218
%DMALL		91747-16002	2218
A91747		91747-17999	2326

3.15 + (91750A) DS/1000-IV

	File	Module	Part Number	Rev	Change
*	!COPY3		91750-16213	2301	--> 2340
	#DSLIN		91750-17001	2301	
*	#RMOT1		91750-17003	New	--> 2340

*	#RMOTE		91750-17002	New	--> 2340
	$D3KBB	D3KBB	91750-12019	2201	
	$D3KL2	D3KL2	91750-12016	2201	
*	$D3KLB	D3KLB	91750-12017	2326	--> 2340
	$D3KMB	D3KMB	91750-12021	2201	
	$D3KRB	D3KRB	91750-12018	2201	
*	$DSA1L		91750-12024	2301	--> Deleted
*	$DSAL		91750-12027	New	--> 2340
*	$DSDB	$DSDB	91750-12020	2013	--> Deleted
	$DSLB1	DSLB1	91750-12001	2326	
	$DSLB2	DSLB2	91750-12002	2326	
*	$DSLB3	DSLB3	91750-12003	2201	--> 2340
	$DSLCL	DSLCL	91750-12007	2326	
*	$DSLSM	DSLSM	91750-12015	2326	--> 2340
*	$DSLXL	DSLXL	91750-12022	2326	--> 2340
*	$DSMA	DSMA	91750-12008	2301	--> 2340
*	$DSML1	DSML1	91750-12004	2326	--> 2340
	$DSML2	DSML2	91750-12005	2113	
*	$DSMX4		91750-12025	2326	--> 2340
*	$DSMX6	DSMX6	91750-12023	2326	--> 2340
	$DSNMA	DSNMA	91750-12010	2013	
	$DSNRR	DSNRR	91750-12011	2013	
*	$DSNSM	DSNSM	91750-12012	2113	--> 2340
	$DSRR	DSRR	91750-12013	2226	
*	$DSSM	DSSM	91750-12014	2326	--> 2341
	%#SEND	#SEND	91750-16208	2140	
	%#SPLU	#SPLU	91750-16221	2013	
	%$MWB	$MWB	91750-16233	2113	
	%3APLD	APLDR	91750-16042	2301	
*	%ADV00		91750-16286	New	--> 2326
	%APLDL	APLDR	91750-16040	2113	
	%APLDX	APLDX	91750-16223	2013	
*	%CNSLM	CNSLM	91750-16048	2301	--> 2340
	%COMND	COMND	91750-16049	2013	
	%CSV66		91750-16268	2326	
	%CXL66		91750-16269	2326	
	%D$N25		91750-16266	2201	
	%D$X25		91750-16262	2201	
*	%DDA66		91750-16107	New	--> 2340
*	%DINIS	DINIT	91750-16069	2326	--> 2340
*	%DINIT	DINIT	91750-16068	2326	--> 2340
	%DLIS1	DLIST	91750-16072	2326	
	%DLIS2	DLIST	91750-16073	2326	
	%DSIN2	DLIST	91750-16078	2326	
	%DSINF	DSINF	91750-16077	2326	
	%DSINL	DSINF	91750-16079	2326	
	%DSLIM		91750-16265	2301	
	%DSLIN		91750-16263	2326	
	%DSMOD	DSMOD	91750-16092	2326	
	%DSTES	DSTES	91750-16100	2013	

	%DSVCP	DSVCP	91750-16102	2301	
	%DVA65	DVA65	91750-16105	2301	
	%DVA66	DVA66	91750-16107	2326	
	%DVG67	DVG67	91750-16108	2201	
	%DVS64	DVS64	91750-16241	2140	
	%EDI6D	EDITR	91750-16240	2140	
	%EDITD	EDITR	91740-16022	2140	
	%EXECM	EXECM	91750-16111	2301	
	%EXECW	EXECW	91750-16112	2226	
	%FCL7	FCL7	91750-16243	2140	
	%GRPM	GRPM	91750-16124	2326	
*	%ID.66	ID.66	91750-16126	2326	--> 2340
	%IDS64	IDS64	91750-16242	2326	
*	%INCNV	INCNV	91750-16129	2301	--> 2340
*	%IOMAP	IOMAP	91750-16130	2301	--> 2340
	%LGLIB	DCMCC	91740-12007	1926	
	%LOG3K	LOG3K	91750-16132	2113	
	%LUMAP	LUMAP	91750-16133	2326	
	%LUQUE	LUQUE	91750-16134	2201	
	%MATIC	MATIC	91750-16136	2301	
*	%MDFCL		91750-16293	New	--> 2340
	%MDV00	DVV00	91750-16109	2201	
	%MSPLU	#SPLU	91750-16222	2013	
	%MVCP3	MVCP3	91750-16212	2013	
*	%OPERL	OPERM	91750-16142	2326	--> 2340
	%OPERM	OPERM	91750-16143	2140	
	%OTCNV	OTCNV	91750-16144	2226	
*	%PLOG	PLOG	91750-16147	2201	--> 2340
*	%PROGL	PROGL	91750-16150	2326	--> 2340
*	%PROGZ	PROGL	91750-16226	2326	--> 2340
*	%PTOPM	PTOPM	91750-16151	2326	--> 2340
	%QCLM	QCLM	91750-16152	2326	
	%QUEUE	QUEUE	91750-16153	2201	
*	%QUEX	QUEX	91750-16154	2326	--> 2340
	%QUEX1	QUEX	91750-16155	2326	
	%QUEZ	QUEZ	91750-16156	2201	
	%QUEZ1	QUEZ	91750-16157	2326	
*	%RD.TB	RD.TB	91750-16205	2013	--> Deleted
*	%RDBAM	RDBAM	91750-16024	2226	--> Deleted
*	%RDBAP	RDBAP	91750-16182	2326	--> Deleted
	%REDIT	REDIT	91740-16023	1740	
*	%REMAN	REMAT	91750-16159	2301	--> 2340
*	%REMAZ	REMAT	91750-16160	2301	--> 2340
*	%RESA		91750-16283	New	--> 2326
	%RESL	RESL	91750-16161	2326	
	%RESM	RESM	91750-16162	2326	
	%RESSM	RESSM	91750-16163	2326	
	%RESXL	RESXL	91750-16228	2326	
*	%RFAM1	RFAM	91750-16164	2201	--> 2340
*	%RFAM2	RFAM	91750-16165	2326	--> 2340

*	%RMOT1	RMOTE	91750-16168	2326	--> 2340
*	%RMOTE	RMOTE	91750-16167	2326	--> 2340
	%RMTIO	RMTIO	91750-16169	2013	
	%RPCNV	RPCNV	91750-16170	2326	
	%RPRTL	RPRTL	91750-16224	2013	
*	%RQCNV	RQCNV	91750-16171	2326	--> 2340
*	%RSM	RSM	91750-16172	2301	--> 2340
	%RTMLG	RTMLG	91740-12006	2013	
	%RTRY	RTRY	91750-16173	2301	
	%SGPRP	SGPRP	91740-16070	1805	
	%SGXL		91750-16234	2201	
	%SLCIN	SLCIN	91750-16176	2113	
	%SYSAT	SYSAT	91750-16202	2140	
	%TLOG	TLOG	91750-16177	2326	
	%TRC3K	TRC3K	91750-16178	2301	
	%UPLIN	UPLIN	91750-16179	2326	
	%VCPMN	VCPMN	91750-16180	2226	
*	%WHZ6D	WHZAT	91750-16527	2301	--> 2340
	%WHZDS	WHZAT	91750-16217	2013	
	%XDV00	XDV00	91750-16181	2140	
*	A91750		91750-18999	2326	--> 2340

Manual Part#	Title	Type of Update
91750-90002	DS/1000-IV User's Manual	Update 7
91750-90010	DS/1000-IV Network Manager's Manual, Vol. I	Update 4
91750-90011	DS/1000-IV Network Manager's Manual, Vol. II	Update 3
91750-90006	DS/1000-IV Communication Bootstrap Loader ROM Installation Manual	Edition 2
91750-90005	DS/1000-IV Quick Reference Guide	Update 6
91750-90004	Getting Started with DS/1000-IV	Update 4

Media Part#	Media Option
91750-13301	020
91750-13302	020
91750-13303	020
91750-13304	020
91750-13305	020
91750-13306	020
91750-13307	020
91750-13308	020
91750-13309	020
91750-13311	020
91750-13312	020
91750-13310	022

91750-13401	041
91750-13402	041
91750-13403	042
91750-13404	042
91750-13405	042
91750-13406	042
91750-13407	044
91750-13408	044
91750-13409	044
91750-13410	044
91750-13501	050
91750-13502	051

3.16 (91751A) DSN/X.25 1000

File	Module	Part Number	Rev
#LGNA1		91751-18705	2226
#LGNEF		91751-18701	2201
#LGNXL		91751-18703	2326
#LLAA1		91751-18685	2226
#LLAEF		91751-18681	2201
#LLAXL		91751-18683	2326
#LXFA1		91751-18625	2226
#LXFEF		91751-18621	2201
#LXFXL		91751-18623	2326
#LXIA1		91751-18548	2226
#LXIEF		91751-18541	2201
#LXIXL		91751-18546	2326
#LXMA1		91751-18565	2226
#LXMEF		91751-18561	2201
#LXMXL		91751-18563	2326
#LXNA1		91751-18525	2226
#LXNEF		91751-18521	2201
#LXNXL		91751-18523	2326
#LXPA1		91751-18585	2226
#LXPEF		91751-18581	2201
#LXPXL		91751-18583	2326
#LXRA1		91751-18645	2226
#LXREF		91751-18641	2201
#LXRXL		91751-18643	2326
#LXTA1		91751-18605	2226
#LXTEF		91751-18601	2201
#LXTXL		91751-18603	2326
#LXWA1		91751-18665	2226
#LXWEF		91751-18661	2201
#LXWXL		91751-18663	2326

$X25LB	91751-12001	2326
%#X25T	91751-16003	2201
%#XCOM	91751-16007	2201
%$CSTB	91751-16006	2201
%DD.60	91751-16005	2326
%DDX00	91751-16004	2326
%DDX60	91751-16002	2201
%DVX00	91751-16001	2301
%GENPK	91751-16200	2226
%LAPBV	91751-16180	2226
%XFOEF	91751-16010	2201
%XFOXL	91751-16011	2326
%XINEF	91751-16008	2226
%XINIT	91751-16040	2326
%XINXL	91751-16009	2326
%XMOD	91751-16060	2326
%XNET	91751-16020	2326
%XNFEF	91751-16120	2226
%XNFXL	91751-16121	2326
%XPLOG	91751-16080	2201
%XREAD	91751-16140	2226
%XTLOG	91751-16100	2226
%XWRIT	91751-16160	2226
&$CSTB	91751-18006	2201
&DLOEF	91751-18513	2201
&DLOXL	91751-18514	2201
&XLOEF	91751-18511	2201
&XLOXL	91751-18512	2201
*LGNXL	91751-18702	2326
*LLAXL	91751-18682	2326
*LXFXL	91751-18622	2326
*LXIXL	91751-18545	2326
*LXMXL	91751-18562	2326
*LXNXL	91751-18522	2326
*LXPXL	91751-18582	2326
*LXRXL	91751-18642	2326
*LXTXL	91751-18602	2326
*LXWXL	91751-18662	2326
/LGNA1	91751-18704	2226
/LGNEF	91751-18700	2201
/LLAA1	91751-18684	2226
/LLAEF	91751-18680	2201
/LXFA1	91751-18624	2226
/LXFEF	91751-18620	2201
/LXIA1	91751-18547	2226
/LXIEF	91751-18540	2201
/LXMA1	91751-18564	2226
/LXMEF	91751-18560	2201
/LXNA1	91751-18524	2226
/LXNEF	91751-18520	2201

/LXPA1	91751-18584	2226
/LXPEF	91751-18580	2201
/LXRA1	91751-18644	2226
/LXREF	91751-18640	2201
/LXTA1	91751-18604	2226
/LXTEF	91751-18600	2201
/LXWA1	91751-18664	2226
/LXWEF	91751-18660	2201
A91751	91751-18510	2326

3.17 (91780A) DSN/RJE 1000

File	Module	Part Number	Rev
#TDP		91780-17002	2201
#TRCE		91780-17001	2201
%#BSC	#BSC	91780-16013	2201
%#COMN	#COMN	91780-16012	1840
%#DIAL	#DIAL	91780-16014	1840
%#TDMP	TDUMP	91780-16017	1940
%#TRAC	TRACE	91780-16016	1940
%DVR50	DVR50	91780-16015	2201
%RJE	RJE	91780-16011	2201
A91780		91780-18999	2201

3.18 + (91782A) DSN/MRJE 1000

	File	Module	Part Number	Rev	Change
*	!MLB00		91782-17002		--> 2340
*	$MRJL6		91782-12002	2326	--> 2340
*	$MRJLA		91782-12003	2326	--> 2340
*	$MRJLB		91782-12001	2326	--> 2340
*	%$DVTB		91782-16052		--> Deleted
*	%$DVTN		91782-16041		--> Deleted
*	%DCCMD		91782-16003	2326	--> 2340
*	%DCTF1		91782-16004	2326	--> 2340
*	%DD.63		91782-16010	2326	--> 2340
*	%DDV63		91782-16009		--> 2340
*	%DVN00		12792-16008		--> 2301
*	%FMTRA		91782-16007		--> 2340
*	%MLTAB		91782-16008		--> 2340
*	%MLTRA		91782-16006		--> 2340
*	%MRFIL		91782-16005	2326	--> 2340

Current Revisions(91782A)

*	%MRJE	91782-16001	2326	--> 2340
*	%POI	91782-16002	2326	--> 2340
*	*MRJE	91782-17001		--> 2340
*	?MRJE	91782-17003		--> 2305
*	A91782	91782-17999	2326	--> 2340

Manual Part#	Title	Type of Update
91782-90001	DSN/MRJE for the HP1000: Programmer's Referenece Manual	Update 2
91782-90005	DSN/MRJE for the HP1000: Quick Reference Guide	Update 1

Media Part#	Media Option
91782-13301	020
91782-13302	020
91782-13303	020
91782-13304	022
91782-13401	041
91782-13402	042
91782-13403	044
91782-13501	050
91782-13502	051

3.19 (92001B) RTE-II

File	Module	Part Number	Rev
!2GN00		92001-16013	1631
!2GN05		92001-16026	1631
!2GNFH		92001-16018	1631
!DSKUP		92060-16044	1805
!S4L07		02607-16004	1538
!S4L67		29100-60022	A
!S4LP		29100-60017	A
!S4MT1		12970-16004	1550
!S4MT2		29100-60023	A
!S4MT3		29100-60049	A
!S4PHR		29100-60019	A
!S4PUN		29100-60020	A
!S4SYD		29100-60018	A
!S4TER		29100-60050	A
%$CMD2	$$CMD	92001-16029	1710
%0DV05	DVR05	92001-16028	2140

%0FTN4	F4.0	92060-16094	2026
%1DV10	DVR10	72008-60001	A
%1DV37	DVR37	59310-16002	2126
%1FTN	FTN	20875-60001	E
%1FTN4	F4.1	92060-16095	2001
%2DP43	DVP43	92001-16004	1926
%2DV10	DVR10	72009-60001	A
%2DV37	DVR37	59310-16003	2126
%2DV47	DVA47	92900-16002	1913
%2FTN	FTN01	20875-60002	E
%2FTN4	F4.2	92060-16096	2026
%2SP01	$SPOL	92002-12002	2001
%3DV47	DVA47	92900-16003	1913
%3FTN	FTN02	20875-60003	E
%3FTN4	F4.3	92060-16097	1913
%4DV05	DVR05	92001-16027	2140
%4FTN	FTN03	20875-60004	E
%4FTN4	F4.4	92060-16098	2026
%5FTN	FTN04	20875-60005	E
%5FTN4	F4.5	92060-16101	1913
%ALGL1	ALGL1	24129-60002	C
%ALGOL	ALGOL	24129-60001	1643
%ASMB	ASMB	92060-12004	1639
%AUTOR	AUTOR	92001-16014	1631
%BMLIB	$BALB	92002-16006	2001
%BMPG1	$BMON	92002-12001	2001
%CAL10	DVR10	20808-60001	B
%CALIB	PLOT	20810-60001	C
%CLIB	$CLIB	92060-12005	2140
%COPY	COPY	92060-16042	1704
%CR2SY	$CRSY	92001-16012	1926
%DBKLB	DBKLB	92060-16043	1901
%DECAR	SADD	24306-60001	2026
%DVA05	DVA05	92001-16035	2140
%DVA12	DVA12	92001-16020	1826
%DVA13	DVA13	91200-16001	1648
%DVR00	DVR00	29029-60001	2301
%DVR11	DVR11	29030-60001	1710
%DVR12	DVR12	29028-60002	1805
%DVR15	DVR15	09601-16021	1901
%DVR23	DVR23	92202-16001	2226
%DVR24	DVR24	25117-60499	1805
%DVR30	DVR30	20747-60001	C
%DVR31	DVR31	29013-60001	1710
%DVR32	DVR32	92060-16031	2013
%DVR33	DVR33	12732-16001	1805
%EDITR	EDITR	92002-16010	2140
%FF.N	FF.C	24153-60001	C
%FF4.N	FF4.A	24998-16002	1926
%FFTN4	SEG.F	92060-16093	1913

%FTN4	FTN4	92060-16092	2026
%IB4A	IB4A	59310-12001	2026
%KEYS	KEYS	92060-16052	1707
%KYDMP	KYDMP	92060-16053	1707
%LDR2	LOADR	92001-16002	1732
%LP31	LPCON	92062-16003	1805
%MSAFD	SAFD	92064-16086	2001
%MTM	PRMPT	92001-16003	B
%RDNAM	RDNAM	92060-16045	1926
%RESTR	RSTOR	92060-16040	2001
%RLIB1	RLIB1	24998-16001	1926
%RLIB2	RLIB2	24998-16009	1926
%RLIB3	RLIB3	24998-16011	1926
%RT2G1	RT2GN	92001-16031	1926
%SAVE	SAVE	92060-16039	1901
%SRQ.P	SRQ.P	59310-16005	1805
%SWTCH	SWTCH	92060-16038	1826
%SYLIB	$YSLB	92001-16005	1926
%TVLIB	CHARS	91200-16002	1648
%TVVER	TVERF	91200-16004	1648
%VERFY	VERFY	92060-16041	1704
%WHZT2	WHZAT	92001-16030	1726
%XREF	XREF	92060-16028	A
&AN2F0		92001-18033	
&AN2F5		92001-18034	
&AUTOR		92001-18014	1631
&PKDIS		92060-18047	1631
&UPDAT		92060-18046	1926

3.20 (92045A) A700 Microprogramming Package

File	Module	Part Number	Rev
#MPARA		92045-17001	2220
#WLOAD		92045-17003	2220
$WLIB		92045-12002	2220
%ID.41		92045-16002	2326
%MPARA		92045-12001	2220
%WLOAD		92045-16001	2220
A92045		92045-17999	2326

3.21 (92060B) RTE-III

File	Module	Part Number	Rev
!2GN00		92001-16013	1631
!2GN05		92001-16026	1631
!2GNFH		92001-16018	1631
!DSKUP		92060-16044	1805
!S4L07		02607-16004	1538
!S4L67		29100-60022	A
!S4LP		29100-60017	A
!S4MT1		12970-16004	1550
!S4MT2		29100-60023	A
!S4MT3		29100-60049	A
!S4PHR		29100-60019	A
!S4PUN		29100-60020	A
!S4SYD		29100-60018	A
!S4TER		29100-60050	A
%$CMD2	$$CMD	92001-16029	1710
%0DV05	DVR05	92001-16028	2140
%0FTN4	F4.0	92060-16094	2026
%1DV10	DVR10	72008-60001	A
%1DV37	DVR37	59310-16002	2126
%1FTN	FTN	20875-60001	E
%1FTN4	F4.1	92060-16095	2001
%2DP43	DVP43	92001-16004	1926
%2DV10	DVR10	72009-60001	A
%2DV37	DVR37	59310-16003	2126
%2DV47	DVA47	92900-16002	1913
%2FTN	FTN01	20875-60002	E
%2FTN4	F4.2	92060-16096	2026
%2SP01	$SPOL	92002-12002	2001
%3DV47	DVA47	92900-16003	1913
%3FTN	FTN02	20875-60003	E
%3FTN4	F4.3	92060-16097	1913
%4DV05	DVR05	92001-16027	2140
%4FTN	FTN03	20875-60004	E
%4FTN4	F4.4	92060-16098	2026
%5FTN	FTN04	20875-60005	E
%5FTN4	F4.5	92060-16101	1913
%ALGL1	ALGL1	24129-60002	C
%ALGOL	ALGOL	24129-60001	1643
%ASMB	ASMB	92060-12004	1639
%AUTOR	AUTOR	92001-16014	1631
%BMLIB	$BALB	92002-16006	2001
%BMPG1	$BMON	92002-12001	2001

%CAL10	DVR10	20808-60001	B
%CALIB	PLOT	20810-60001	C
%CLIB	$CLIB	92060-12005	2140
%COPY	COPY	92060-16042	1704
%CR2SY	$CRSY	92001-16012	1926
%DBKLB	DBKLB	92060-16043	1901
%DECAR	SADD	24306-60001	2026
%DVA05	DVA05	92001-16035	2140
%DVA12	DVA12	92001-16020	1826
%DVA13	DVA13	91200-16001	1648
%DVR00	DVR00	29029-60001	2140
%DVR11	DVR11	29030-60001	1710
%DVR12	DVR12	29028-60002	1805
%DVR15	DVR15	09601-16021	1901
%DVR23	DVR23	92202-16001	2140
%DVR24	DVR24	25117-60499	1805
%DVR30	DVR30	20747-60001	C
%DVR31	DVR31	29013-60001	1710
%DVR32	DVR32	92060-16031	2013
%DVR33	DVR33	12732-16001	1805
%EDITR	EDITR	92002-16010	2140
%FF.N	FF.C	24153-60001	C
%FF4.N	FF4.A	24998-16002	1926
%FFTN4	SEG.F	92060-16093	1913
%FTN4	FTN4	92060-16092	2026
%IB4A	IB4A	59310-12001	2026
%KEYS	KEYS	92060-16052	1707
%KYDMP	KYDMP	92060-16053	1707
%LDR2	LOADR	92001-16002	1732
%LP31	LPCON	92062-16003	1805
%MSAFD	SAFD	92064-16086	2001
%MTM	PRMPT	92001-16003	B
%RDNAM	RDNAM	92060-16045	1926
%RESTR	RSTOR	92060-16040	2001
%RLIB1	RLIB1	24998-16001	1926
%RLIB2	RLIB2	24998-16009	1926
%RLIB3	RLIB3	24998-16011	1926
%RT2G1	RT2GN	92001-16031	1926
%SAVE	SAVE	92060-16039	1901
%SRQ.P	SRQ.P	59310-16005	1805
%SWTCH	SWTCH	92060-16038	1826
%SYLIB	$YSLB	92001-16005	1926
%TVLIB	CHARS	91200-16002	1648
%TVVER	TVERF	91200-16004	1648
%VERFY	VERFY	92060-16041	1704
%WHZT2	WHZAT	92001-16030	1726
%XREF	XREF	92060-16028	A
&AN2F0		92001-18033	
&AN2F5		92001-18034	
&AUTOR		92001-18014	1631

&PKDIS	92060-18047	1631
&UPDAT	92060-18046	1926

3.22 (92061A) Microprogramming

File	Module	Part Number	Rev
%MDEP	MDEP	92061-16004	1634
%MDES	MDES	92061-16005	1926
%MICRO	MICRO	92061-16001	2013
%MXREF	MXREF	92061-16002	2013
%PTGEN	PTGEN	92061-16003	1813
%WLOAD	WLOAD	13197-16003	1813

3.23 (92063A) Image/1000

File	Module	Part Number	Rev
%BORL	BORL	92063-16009	1621
%DBBLD	DBBLD	92063-16003	1913
%DBDS1	DBDS	92063-16002	1840
%DBLIB	DBOPN	92063-12001	2126
%DBLOD	DBLOD	92063-16007	1940
%DBRST	DBRST	92063-16005	1840
%DBSPA	DBSPA	92063-16014	1913
%DBSTR	DBSTR	92063-16004	1645
%DBULD	DBULD	92063-16006	1805
%QS001	QUERY	92063-16011	1940
%QS003	QS12	92063-16012	1940
%RECOV	RECOV	92063-16013	1645
&HELP		92063-18010	1623

3.24 (92064A) RTE-M

File	Module	Part Number	Rev
!MCGEN		92064-16033	1901
!MFGEN		92064-16075	1901
%$PVMP	$PVMP	92060-16035	A
%ODV05	DVR05	92001-16028	2140
%OFTN4	F4.0	92060-16094	2026

%1DV10	DVR10	72008-60001	A
%1DV37	DVR37	59310-16002	2126
%1FTN4	F4.1	92060-16095	2001
%2DV10	DVR10	72009-60001	A
%2DV37	DVR37	59310-16003	2126
%2DV47	DVA47	92900-16002	1913
%2FTN4	F4.2	92060-16096	2026
%3DV47	DVA47	92900-16003	1913
%3FTN4	F4.3	92060-16097	1913
%4DV05	DVR05	92001-16027	2140
%4FTN4	F4.4	92060-16098	2026
%5FTN4	F4.5	92060-16101	1913
%CAL10	DVR10	20808-60001	B
%CALIB	PLOT	20810-60001	C
%CLIBM	$CLIB	92064-12007	2140
%DECAR	SADD	24306-60001	2026
%DIRD	$DIRD	92064-16054	1650
%DRC	D.RCR	92064-16018	1650
%DRC1	$D.RC	92064-16021	1650
%DRF	D.RFP	92064-16056	1650
%DRF1	D.RFP	92064-16060	1650
%DSCHD	DSCHD	09580-16126	A
%DVA05	DVA05	92001-16035	2140
%DVA12	DVA12	92001-16020	1826
%DVA13	DVA13	91200-16001	1648
%DVB12	DVB12	92062-16004	2013
%DVM72	DVM72	09580-16079	2101
%DVR00	DVR00	29029-60001	2301
%DVR11	DVR11	29030-60001	1710
%DVR12	DVR12	29028-60002	1805
%DVR15	DVR15	09601-16021	1901
%DVR23	DVR23	92202-16001	2226
%DVR33	DVR33	12732-16001	1805
%FF.N	FF.C	24153-60001	C
%FF4.N	FF4.A	24998-16002	1926
%FFTN4	SEG.F	92060-16093	1913
%FMGC0	MFMGC	92064-16017	1805
%FMGF0	MFMGF	92064-16055	1805
%FMPC	MFMPC	92064-12005	1805
%FMPF	MFMPF	92064-12006	1805
%FTN4	FTN4	92060-16092	2026
%IB4A	IB4A	59310-12001	2026
%KEYS	KEYS	92060-16052	1707
%KYDMP	KYDMP	92060-16053	1707
%LP31	LPCON	92062-16003	1805
%MAP	APLDR	92064-16012	2013
%MAP3	APLDR	92064-16016	2013
%MASM0	ASMB	92064-16040	2001
%MASM1	ASMB1	92064-16041	1650
%MASM2	ASMB2	92064-16042	1650

%MASM3	ASMB3	92064-16043	1650
%MASM4	ASMB4	92064-16044	1650
%MASM5	ASMBD	92064-16050	1650
%MASM6	XRFSG	92064-16026	2001
%MAUTO	AUTOR	92064-16030	2026
%MBU	$MBU	92064-16005	1650
%MCL	$MCL	92064-16011	1808
%MCL3	$MCL3	92064-16015	1808
%MDMLB	$MDTI	92064-16013	1740
%MEDIT	EDITM	92064-16025	1813
%MFTN0	FTN	92064-16045	1650
%MFTN1	FTN1	92064-16046	1650
%MFTN2	FTN2	92064-16047	1650
%MMP	$MMP	92064-16006	1940
%MOP	$MOP	92064-16010	1650
%MPF	DVP43	92064-16027	2001
%MPF3	DVP43	92064-16029	2001
%MPRMP	PRMPT	92064-16035	1650
%MRN	$MRN	92064-16031	1650
%MRSPN	RPN	92064-16036	1650
%MSAFD	SAFD	92064-16086	2001
%MSY1	MSY1R	92064-16001	1940
%MSY2	MSY2R	92064-16002	2026
%MSY3	MSY3R	92064-16003	2026
%MSYLB	MSYLB	92064-16081	2013
%MTI	$MTI	92064-16008	1650
%MTS	$MTS	92064-16009	1901
%MXRF0	XREF	92064-16051	1650
%ONMTM	ONMTM	92064-16032	1650
%RLIB1	RLIB1	24993-16001	1926
%RLIB2	RLIB2	24993-16009	1926
%RLIB3	RLIB3	24993-16011	1926
%RTMGN	RTMGN	92064-16022	2026
%RTMLD	RTMLD	92064-16023	1740
%RTMSC	RTRLC	92064-16024	1805
%SGPRP	SGPRP	92064-16034	1650
%SRQ.P	SRQ.P	59310-16005	1805
%STRTM	STRTM	92064-16080	1709
%TBLCR	$TBLCR	92064-16019	1650
%TBLFP	$TBLFP	92064-16057	1709
%TVLIB	CHARS	91200-16002	1648
%TVVER	TVERF	91200-16004	1648
&MAUTO		92064-18141	2026
&MHELP		92064-18126	1650
&TBLCR		92064-18059	1650
&TBLFP		92064-18171	1709

3.25 (92065A) Basic/1000M

File	Module	Part Number	Rev
$BAMLM		92065-12003	2213
%694BS	A6940	29102-16003	C
%A2313	A2313	29102-60016	B
%ACFIL	ACFIL	92065-16008	1726
%ALARM	ALARM	92413-16007	B
%BASLB	BASLB	92101-12003	2213
%DTRAP	TRAP	92065-16005	1650
%DUFIL	DUFIL	92065-16009	1726
%MBASC	MBASR	92065-12002	2001
%MBTG	RTMTG	92065-12001	1901
%MESCD	CODGA	92065-16003	1650
%MESGA	MESGA	92065-16002	2001
%TSKSC	SCHD	92101-16013	A

3.26 (92066A) Measurement & Control

File	Module	Part Number	Rev
!2313		09611-16014	1926
!RMCKT		09610-16001	A
%!2313	!2313	02313-16002	1926
%2DV62	DVR62	29009-60001	C
%3DV62	DVR62D	02313-16001	A
%4DV62	DVR62F	02313-16004	2140
%D2313	D2313	29011-60004	A
%DVA72	DVA72	09611-16005	1826
%P2313	P2313	29011-60002	A
%R2313	R2313	29011-60001	E
%SENSE	SENSE	09611-16007	A
%T6940	T6940	09611-16006	A
%T694S	SERCH	09611-16015	A

3.27 (92067A) RTE-IVA

File	Module	Part Number	Rev
!DSKUP		92060-16044	1805
%#EMA	#EMA	92067-16013	1805
%$CNFX	$CNFX	92067-16006	1926
%0DV05	DVR05	92001-16028	2140
%0FTN4	F4.0	92060-16094	2026
%1DV10	DVR10	72008-60001	A
%1DV37	DVR37	59310-16002	2126
%1FTN4	F4.1	92060-16095	2001
%2DV10	DVR10	72009-60001	A
%2DV37	DVR37	59310-16003	2126
%2DV47	DVA47	92900-16002	1913
%2FTN4	F4.2	92060-16096	2026
%3DV47	DVA47	92900-16003	1913
%3FTN4	F4.3	92060-16097	1913
%4ASB0	ASMB0	92067-16070	1940
%4ASB1	ASMB1	92067-16071	1940
%4ASB2	ASMB2	92067-16072	1940
%4ASB3	ASMB3	92067-16073	1940
%4ASB4	ASMB4	92067-16074	1940
%4ASMB	ASMB	92067-16011	2013
%4AUTR	AUTOR	92067-16005	1805
%4DP43	DVP43	92067-16004	1926
%4DV05	DVR05	92001-16027	2140
%4FTN4	F4.4	92060-16098	2026
%4LDR	LOADR	92067-16002	2013
%4MTM	PRMPT	92067-16003	2101
%4PVMP	PVMP4	92067-16001	1805
%4SPO1	GASP	92067-16028	2013
%4SWTH	SWTCH	92067-16010	1926
%4SYLB	$YSLB	92067-16035	2013
%4WHZT	WHZAT	92067-16007	1926
%4XREF	XREF	92067-16012	2001
%5FTN4	F4.5	92060-16101	1913
%BMLIB	$BALB	92002-16006	2001
%BMPG1	$BMON	92002-12001	2001
%CAL10	DVR10	20808-60001	B
%CALIB	PLOT	20810-60001	C
%CLIB	$CLIB	92060-12005	2140
%COPY	COPY	92060-16042	1704
%CR4S1	$CSY4	92067-16014	2001
%DBKLB	DBKLB	92060-16043	1901
%DBUGR	DBUGR	92067-16075	2013

%DECAR	SADD	24306-60001	2026
%DSCHD	DSCHD	09580-16126	A
%DVA05	DVA05	92001-16035	2140
%DVA12	DVA12	92001-16020	1826
%DVA13	DVA13	91200-16001	1648
%DVB12	DVB12	92062-16004	2013
%DVM72	DVM72	09580-16079	2101
%DVR00	DVR00	29029-60001	2301
%DVR11	DVR11	29030-60001	1710
%DVR12	DVR12	29028-60002	1805
%DVR15	DVR15	09601-16021	1901
%DVR23	DVR23	92202-16001	2226
%DVR31	DVR31	29013-60001	1710
%DVR32	DVR32	92060-16031	2013
%DVR33	DVR33	12732-16001	1805
%EDITR	EDITR	92002-16010	2140
%FF4.N	FF4.A	24998-16002	1926
%FFTN4	SEG.F	92060-16093	1913
%FTN4	FTN4	92060-16092	2026
%HPIB	HPIB	59310-16004	1926
%IB4A	IB4A	59310-12001	2026
%KEYS	KEYS	92060-16052	1707
%KYDMP	KYDMP	92060-16053	1707
%LGTAT	LGTAT	92067-16008	2101
%LP31	LPCON	92062-16003	1805
%MESS	MESS	59310-16011	1926
%MSAFD	SAFD	92064-16086	2001
%RDNAM	RDNAM	92060-16045	1926
%RESTR	RSTOR	92060-16040	2001
%RLIB1	RLIB1	24998-16001	1926
%RLIB2	RLIB2	24998-16009	1926
%RLIB3	RLIB3	24998-16011	1926
%RT4G1	RT4GN	92067-16009	1926
%SAVE	SAVE	92060-16039	1901
%SRQ.P	SRQ.P	59310-16005	1805
%TVLIB	CHARS	91200-16002	1648
%TVVER	TVERF	91200-16004	1648
%VERFY	VERFY	92060-16041	1704
&4AUTR		92067-18005	1805
&AN4F0		92067-18033	1940
&AN4F5		92067-18034	1940
&PKDIS		92060-18047	1631
&UPDAT		92060-18046	1926

3.28 + (92068A) RTE-IVB

	File	Module	Part Number	Rev	Change
	!DISK		92067-16348	2026	
	!DSKUP		92067-16340	2013	
	!MTLDR		92067-16512	2126	
*	"EDIT.		92074-17004	2213	--> 2340
	"FCHLP		92084-17150	2226	
	"HELP		92067-18122	2140	
	"HELPA		92067-18489	2140	
	"HELPB		92067-18490	2140	
	#ED1K4		92074-17001	2213	
*	#FC4		92068-17001	2226	--> 2302
*	#OLDRE		92059-17002	New	--> 2213
*	$ACCLB		92068-12018	2301	--> 2340
	$DKULB	DKULB	92067-12003	2026	
	$DSCLB	DSCLB	92084-12062	2226	
*	$ED1K4	ED1K4	92074-12003	2213	--> 2340
*	$FDSLB	FDSLB	24998-12004	2226	--> 2340
*	$FLIB		24998-12008	New	--> 2340
	$FNDLB	FNDLB	24998-12005	2226	
*	$FOLDF		24998-12009	New	--> 2340
*	$IB6A		92081-12036	New	--> 2340
	$LDRLB	LDRLB	92067-16470	2026	
	$LIB4E	LIB4E	92068-12003	2103	
*	$MATH		24998-12007	New	--> 2326
*	$MLIB1	MLIB1	24998-12001	2301	--> Deleted
*	$MLIB2	MLIB2	24998-12001	2301	--> Deleted
	$PLIB	$PLIB	92832-16700	2101	
	$RSLIB	RSMER	92068-12006	2240	
	$SHSLB	SHSLB	92832-16701	2101	
	$VMCLB		92068-12017	2301	
	%#EMA		92067-16013	1805	
*	%$CNFX	$CNFX	92067-16516	2301	--> 2340
*	%$DVTB	$DVTB	12792-16005	2226	--> 2340
	%$TA32	$TA32	92067-16507	2001	
	%$TB32	$TB32	92067-16509	2001	
	%0DV05	DVR05	92001-16028	2140	
	%0FTN4	F4.0	92060-16094	2026	
*	%1DV37	DVR37	59310-16002	2126	--> Deleted
	%1FTN4	F4.1	92060-16095	2001	
*	%2DV37	DVR37	59310-16003	2126	--> Deleted
	%2DV47	DVA47	92900-16002	1913	
	%2FTN4	F4.2	92060-16096	2026	
	%3DV47	DVA47	92900-16003	1913	
	%3FTN4	F4.3	92060-16097	1913	

	%4ASB0	ASMB0	92067-16070	1940	
	%4ASB1	ASMB1	92067-16071	1940	
	%4ASB2	ASMB2	92067-16072	1940	
	%4ASB3	ASMB3	92067-16073	1940	
	%4ASB4	ASMB4	92067-16074	1940	
	%4ASMB	ASMB	92067-16011	2013	
*	%4AUTR	AUTOR	92067-16118	1903	--> 2340
	%4DP43	DVP43	92067-16004	1926	
	%4DV05	DVR05	92001-16027	2140	
	%4FTN4	F4.4	92060-16098	2026	
	%4LDR	LOADR	92067-16471	2040	
	%4MTM	PRMPT	92067-16003	2101	
	%4PVMP	PVMP4	92067-16001	1805	
*	%4SYLB	SYSLB	92067-16268	2301	--> 2340
	%4XREF	XREF	92067-16012	2001	
	%5FTN4	F4.5	92060-16101	1913	
*	%6DA37		92084-16593	New	--> 2340
*	%6DV37		92084-16592	New	--> 2340
*	%ACCTS	ACCTS	92067-16361	2301	--> 2340
	%APL4D	APLDR	92068-16066	2103	
	%APL4E	APLDR	92068-16065	2103	
*	%ATRAN		92059-16013	New	--> 2226
	%BMPG1	$BMON	92067-16185	2226	
	%BMPG2	D.RTR	92067-16124	2226	
	%BMPG3	$BALB	92067-16125	2308	
	%CLIB	$CLIB	92067-12001	2226	
	%CLOAD	CLOAD	92067-16358	2101	
	%CNF4E	CNF4E	92068-12001	2103	
	%CNV4E	CONVM	92068-16062	2103	
	%COMPL	COMPL	92067-16359	2101	
	%COPY	COPY	92067-16338	1903	
	%CR4S1	$CSY4	92067-16102	2301	
	%CR4S2	$TRN4	92067-16103	2301	
	%D.BUF	D.BUF	92067-16587	2101	
	%D.R4E	D.RTR	92068-16064	2103	
	%DBKLB	DBKLB	92067-16339	2140	
	%DBUGR	DBUGR	92067-16075	2013	
*	%DDV05	DDV05	12792-16003	2301	--> 2340
	%DDV12	DDV12	12792-16004	2140	
*	%DECAR	SADD	24306-60001	2026	--> 2340
	%DSCHD	DSCHD	09580-16126	A	
	%DVA05	DVA05	92001-16035	2140	
	%DVA12	DVA12	92001-16020	1826	
	%DVA13	DVA13	91200-16001	1648	
*	%DVA32	DVA32	92084-16708	2226	--> 2340
*	%DVB12	DVB12	92062-16004	2013	--> 2340
*	%DVC12		92068-16110	2226	--> 2340
*	%DVC32	DVC32	92084-16709	2226	--> 2340
	%DVM00	DVM00	12792-16002	2301	
*	%DVM72	DVM72	09580-16079	2101	--> 2340

*	%DVP32	DVP32	92084-16710	2301	--> 2340
	%DVR00	DVR00	29029-60001	2301	
	%DVR11	DVR11	29030-60001	1710	
	%DVR12	DVR12	29028-60002	1805	
	%DVR15	DVR15	09601-16021	1901	
*	%DVR23	DVR23	92202-16001	2226	--> 2340
	%DVR31	DVR31	92084-16712	2121	
*	%DVR32	DVR32	92084-16711	2301	--> 2340
	%DVR33	DVR33	92067-16467	1903	
*	%EDITA	EDITA	92074-12001	2213	--> 2340
*	%EDITB	EDITB	92074-12002	2213	--> 2340
	%EDITR	EDITR	92002-16010	2140	
	%FFTN4	SEG.F	92060-16093	1913	
	%FMG4E	FMG4E	92068-12002	2103	
	%FORMT	FORMT	92067-16554	2040	
	%FTN4	FTN4	92060-16092	2026	
	%HELP	HELP	92067-16121	1903	
*	%IB4A	IB4A	59310-16001	2026	--> Deleted
*	%KEYS	KEYS	92060-16052	1707	--> 2340
*	%KYDMP	KYDMP	92060-16053	1707	--> 2340
	%LCOPY	LCOPY	92067-16347	2013	
	%LGTAT	LGTAT	92067-16008	2101	
	%LP31	LPCON	92062-16003	1805	
	%LSAVE	LSAVE	92067-16344	2026	
*	%LUPRN		92068-16125	New	--> 2326
*	%LUPRN		92084-16125	2301	--> Deleted
	%MERGE	MERGE	92067-16334	2301	
	%MLD4E	MLOAD	92068-16063	2226	
	%MSAFD	SAFD	92064-16086	2001	
	%NSESN	NSESN	92067-16456	2101	
*	%OLDRE		92059-16010	New	--> 2226
	%PVM00	PVM00	12792-16001	2032	
	%RDNAM	RDNAM	92060-16045	1926	
	%READR	READR	92068-16054	2240	
	%READT	READT	92067-16332	2026	
	%RESTR	RESTR	92067-16346	2026	
	%RSTOR	RSTOR	92067-16336	1903	
	%RT4GN	RT4GN	92067-16315	2101	
	%SAVE	SAVE	92067-16335	2013	
	%SAVER	SAVER	92068-16053	2240	
	%SMON1	SMON1	92067-16260	2301	
	%SMON2	SMON2	92067-16261	2001	
	%SPO1B	GASPH	92067-16425	2226	
	%SPO2B	SPOLH	92067-16350	2226	
	%SRQ.P	SRQ.P	59310-16005	1805	
	%SSTCH	SWTCH	92067-16513	2001	
	%T5IDM	T5IDM	92067-16469	2226	
	%TVLIB	CHARS	91200-16002	1648	
	%TVVER	TVERF	91200-16004	1648	
	%USAVE	USAVE	92067-16345	2026	

	%UTLIB	UTLIB	92067-16104	2301	
	%VERFY	VERFY	92067-16337	1903	
	%WHZAT	WHZAT	92067-16501	2226	
	%WRITT	WRITT	92067-16333	2301	
	%XCNTL	XCNTL	92068-16080	2103	
	&$CMND		92067-18457	1940	
	&$TA32		92067-18507	2001	
	&$TB32		92067-18509	2001	
*	&4AUTR		92067-18456	1903	--> 2340
*	&AN4E		92068-18103	2140	--> Deleted
*	&AN4F0		92067-18342	2101	--> Deleted
	&C.TAB		92067-18201	2026	
	&D.BUF		92067-18587	2101	
	&PKDIS		92060-18047	1631	
	&UPDAT		92060-18046	1926	
*	=AVL2		92084-16943	New	--> 2340
*	=EXT		92084-16941	New	--> 2340
*	=FC0		92068-12010	2226	--> 2340
*	=FC1		92068-12011	2226	--> 2340
*	=FC2		92068-12012	2226	--> 2340
*	=FC3		92068-12013	2226	--> 2340
*	=FC4		92068-12014	2226	--> 2340
*	=FC5		92068-12015	2226	--> 2340
*	=FC6		92068-12016	2226	--> 2340
*	=FCL1		92068-12019	New	--> 2340
*	=FCL2		92068-12020	New	--> 2340
*	=FCLIB		92068-12008	2226	--> Deleted
*	=FCM6		92068-12009	2301	--> 2340
*	=FLAG		92084-16942	New	--> 2340
*	=FPORT		92084-16944	New	--> 2340
*	=PLIB		92833-16051	2226	--> 2326
	=PRERS		92833-16053	2226	
*	=SHSLB		92833-16052	2226	--> 2326
*	A92068		92068-18999	2308	--> 2340
*	SEP.6		92084-17205	New	--> 2340

Manual Part#	Title	Type of Update
92068-90002	RTE-IVB Terminal User's Reference	Update 8
92068-90004	RTE-IVB Programmer's Reference Manual	Update 8
92068-90010	RTE-IVB Utility Programs Reference	Update 7
09580-93027	RTE Driver DVM72 RTE Universal Interface Driver Programming and Operating Manual	Update 1
59310-90064	HP-IB In HP 1000 Computer Systems User's Manual	Edition 7
92062-90004	2608A Line Printer Driver DVB12	Edition 4
92074-90001	EDIT/1000 User's Guide	Update 4
92200-93005	RTE Operating System Driver Writing Manual	Edition 6

Media Part#	Media Option
92068-13002	031
92068-13006	032
92068-13003	033
92068-13004	036
92068-13007	037
92068-13005	038
92068-13517	052
92068-13518	053
92068-13519	054
92068-13520	055
92068-13521	056
92068-13522	057
92068-13523	058
92068-13524	059

3.29 + (92069A) Image/1000

	File	Module	Part Number	Rev	Change
*	#DBBLD		92069-18309	New	--> 2340
*	#DBDS		92069-18308	New	--> 2340
*	#DBMS1		92069-18304	New	--> 2340
*	#DBMS2		92069-18305	New	--> 2340
*	#DBMS3		92069-18306	New	--> 2340
*	#IMAGE		92069-18288	2101	--> 2340
*	#IMAGL		92069-18289	2213	--> 2340
*	#QUERY		92069-18307	New	--> 2340
*	$DBBLL		92069-12009	2213	--> 2340
	$DBDSL		92069-12010	2213	
*	$DSDB		92069-12007	New	--> 2340
*	$QRYXL		92069-12008	2213	--> 2340
	%BAIMX	BAIMG	92069-16255	2026	
*	%DBBLX	BDHDR	92069-16001	2226	--> 2340
	%DBCOP	DBCOP	92069-16256	1912	
*	%DBDRT		92069-16310	New	--> 2340
*	%DBDSX	DBHDR	92069-16015	2213	--> 2340
	%DBLOX	DBLOD	92069-16128	2226	
*	%DBMS	DBMS	92069-12002	2226	--> 2340
*	%DBRED		92069-16160	New	--> 2340
	%DBRSX	DBRST	92069-16126	2140	
	%DBSPX	DBSPA	92069-16133	2140	
	%DBSTX	DBSTR	92069-16125	2140	
	%DBULX	DBULD	92069-16127	2140	

*	%LOCAL	LOCAL	92069-12006	2213 --> 2340
*	%NO/DS	NO/DS	92069-12005	2040 --> 2340
*	%QURYX	QYHDR	92069-16060	2226 --> 2340
*	%RDBA	RDBA	92069-12003	2213 --> 2340
*	%RDBAM		92069-16258	New --> 2340
*	%RDBAP		92069-16259	New --> 2340
	%RECVX	RECOV	92069-16134	2140
*	%REMOT	REMOT	92069-12004	2213 --> 2340
*	*DBUP	DBUPH	92069-12001	2140 --> 2340
*	*IMAGA		92069-18230	2213 --> 2340
*	*IMAGE		92069-18287	2226 --> 2340
*	*IMAGX		92069-18303	New --> 2340
*	A92069		92069-18999	2226 --> 2340
*	A92073		92073-18999	2213 --> Deleted
	QSHELP		92069-16122	1912

Manual Part#	Title	Type of Update
92069-90001	IMAGE/1000 Database Management System: Reference Manual	Update 5
92069-90003	IMAGE/1000 Database Management System: System Configuration Guide	Edition 6

Media Part#	Media Option
92069-13301	020
92069-13302	020
92069-13303	020
92069-13304	020
92069-13305	020
92069-13306	020
92069-13309	022
92069-13401	040
92069-13404	041
92069-13402	042
92069-13403	042
92069-13405	044
92069-13406	044
92069-13501	050
92069-13502	051

3.30 + (92070A) RTE-L Operating System

	File	Module	Part Number	Rev	Change
	$CLIBL	$CLIB	92070-12009	2140	
	$CMDLB	CMDLB	92070-12004	1941	
	$DKLIB	DKLIB	92070-12013	2040	
*	$FDSLB	FDSLB	24998-12004	2326	--> 2340
	$FMP	FMP	92070-12003	2011	
	$FNDLB	FNDLB	24998-12005	2226	
	$HPIB	$HPIB	92070-12005	2026	
	$LDRLB	LDRLB	92067-16470	2026	
	$LDRLN	LDRLN	92084-12005	2140	
*	$MLIB1	MLIB1	24998-12001	2303	--> 2340
*	$MLIB2	MLIB2	24998-12001	2301	--> 2340
	$MXLB	MXLB	92070-12002	2101	
	$PLIB	$PLIB	92832-16700	2101	
	$SYS..	SYS..	92070-12001	2040	
	$SYSLB	SYSLB	92070-12012	2140	
	%4XREF	XREF	92067-16012	2001	
	%AB2MI	AB2MI	92070-16241	2026	
	%ASMBC	ASMBC	92070-16279	2040	
	%AUTOR	AUTOR	92070-16252	1941	
	%CLASS	CLASS	92070-16093	1941	
	%COMND	COMND	92070-16076	1941	
	%COPYL	COPYL	92070-16336	2326	
	%D.RTR	D.RTR	92070-16037	2001	
	%DD.00	DD.00	92070-16083	1941	
	%DD.12	DD.12	92070-16086	2001	
	%DD.20	DD.20	92070-16084	1941	
	%DD.30	DD.30	92070-16085	1941	
	%DD.36	DD.36	92070-16298	2326	
*	%DECAR	SADD	24306-60001	2026	--> 2340
	%EDITR	EDITR	92070-16135	1941	
	%ERLOG	ERLOG	92070-16147	1941	
	%EXEC	EXEC	92070-16136	2040	
	%FMGR	FMGR	92070-16310	2014	
	%FORMT	FORMT	92070-16337	2213	
	%FTN4L	FTN4L	92070-16287	2026	
	%HPIBM	HPIBM	92070-16242	2026	
	%ID.00	ID.00	92070-16082	1941	
	%ID.36	ID.36	92070-16299	1941	
	%ID.37	ID.37	92070-16095	2040	
	%ID.43	ID.43	92070-16096	1941	
	%ID.50	ID.50	92070-16097	1941	
*	%IDM00		12040-16002	2326	--> 2340

*	%IDS00		24997-16003	2326	--> 2340
	%INSTL	INSTL	92070-16090	1941	
	%LOAD	LOAD	92070-16156	1941	
	%LOADR	LOADR	92070-16108	2026	
	%LOADX		92070-16339	2140	
	%LOCK	LOCK	92070-16145	1941	
	%MERGE	MERGE	92067-16334	2301	
	%MI2AB	MI2AB	92070-16276	2001	
	%OPMSG	OPMSG	92070-16151	1941	
	%PFORM	PFORM	92070-16288	2001	
	%RTIOL	RTIOL	92070-16092	1941	
	%RTLGN	RTLGN	92070-16077	2026	
	%SAM	SAM	92070-16137	1941	
	%SCHED	SCHED	92070-16141	1941	
	%START	START	92070-16160	1941	
	%STAT	STAT	92070-16154	1941	
	%STRNG	STRNG	92070-16143	1941	
	%SWAP	SWAP	92070-16158	1941	
	%SYCOM	SYCOM	92070-16149	1941	
	%TIME	TIME	92070-16139	1941	
	%XCMND	XCMND	92070-16152	1941	
	&AUTOR		92070-18252	1941	
	&LHELP		92070-18236	1941	
	&START		92070-18160	1941	
*	A92070		92070-18999	2326	--> 2340
	BOOTEX		02145-16001	2001	

Manual Part#	Title	Type of Update
59310-90064	HP-IB In HP 1000 Computer Systems User's Guide	Edition 7
92070-90011	RTE-L/XL Driver Reference Manual	Update 4
92070-90042	RTE-L/XL Generation Requirements for Drivers	Update 4

Media Part#	Media Option
92070-13401	041
92070-13501	050
92070-13502	051

3.31 + (92070B) RTE-L Operating System (Execute only)

	File	Module	Part Number	Rev	Change
	$CMDLB	CMDLB	92070-12004	1941	
	$DKLIB	DKLIB	92070-12013	2040	
*	$FDSLB	FDSLB	24998-12004	2326	--> 2340
	$FMP	FMP	92070-12003	2011	
	$FNDLB	FNDLB	24998-12005	2226	
	$HPIB	$HPIB	92070-12005	2026	
	$LDRLB	LDRLB	92067-16470	2026	
	$LDRLN	LDRLN	92084-12005	2140	
*	$MLIB1	MLIB1	24998-12001	2303	--> 2340
*	$MLIB2	MLIB2	24998-12001	2301	--> 2340
	$MXLB	MXLB	92070-12002	2101	
	$PLIB	$PLIB	92832-16700	2101	
	$SYS..	SYS..	92070-12001	2040	
*	$SYSLB	SYSLB	92070-12012	2140	--> 2340
	%AB2MI	AB2MI	92070-16241	2026	
	%AUTOR	AUTOR	92070-16252	1941	
	%CLASS	CLASS	92070-16093	1941	
	%COMND	COMND	92070-16076	1941	
	%COPYL	COPYL	92070-16336	2326	
	%D.RTR	D.RTR	92070-16037	2001	
	%DD.00	DD.00	92070-16083	1941	
	%DD.12	DD.12	92070-16086	2001	
	%DD.20	DD.20	92070-16084	1941	
	%DD.30	DD.30	92070-16085	1941	
	%DD.36	DD.36	92070-16298	2326	
*	%DECAR	SADD	24306-60001	2026	--> 2340
	%EDITR	EDITR	92070-16135	1941	
	%ERLOG	ERLOG	92070-16147	1941	
	%EXEC	EXEC	92070-16136	2040	
	%FMGR	FMGR	92070-16310	2014	
	%FORMT	FORMT	92070-16337	2213	
	%ID.00	ID.00	92070-16082	1941	
	%ID.36	ID.36	92070-16299	1941	
	%ID.37	ID.37	92070-16095	2040	
	%ID.43	ID.43	92070-16096	1941	
	%ID.50	ID.50	92070-16097	1941	
*	%IDM00		12040-16002	2326	--> 2340
*	%IDS00		24997-16003	2326	--> 2340
	%INSTL	INSTL	92070-16090	1941	
	%LOAD	LOAD	92070-16156	1941	
	%LOADR	LOADR	92070-16108	2026	
	%LOADX		92070-16339	2140	

Current Revisions(92070B)

	%LOCK	LOCK	92070-16145	1941
	%MERGE	MERGE	92067-16334	2301
	%MI2AB	MI2AB	92070-16276	2001
	%OPMSG	OPMSG	92070-16151	1941
	%PFORM	PFORM	92070-16288	2001
	%RTIOL	RTIOL	92070-16092	1941
	%RTLGN	RTLGN	92070-16077	2026
	%SAM	SAM	92070-16137	1941
	%SCHED	SCHED	92070-16141	1941
	%START	START	92070-16160	1941
	%STAT	STAT	92070-16154	1941
	%STRNG	STRNG	92070-16143	1941
	%SWAP	SWAP	92070-16158	1941
	%SYCOM	SYCOM	92070-16149	1941
	%TIME	TIME	92070-16139	1941
	%XCMND	XCMND	92070-16152	1941
	&AUTOR		92070-18252	1941
	&LHELP		92070-18236	1941
	&START		92070-18160	1941
*	B92070		92070-18997	2326 --> 2340
*	BOOTEX		02142-16001	2110 --> Deleted
	BOOTEX		02145-16001	2001
*	BOOTEX		02142-16001	New --> 2110

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
92070-13409	041
92070-13406	042
92070-13408	042
92070-13507	050
92070-13508	051

3.32 + (92071A) RTE-XL Operating System

	File	Module	Part Number	Rev	Change
*	"EDIT.		92074-17004	2213	--> 2340
	"FCHLP		92084-17150	2226	
	"M.ERR		92059-18011	2226	
	"MACLB		92059-18012	2301	
	#ED1KL		92074-17002	2213	
	#FCL		92071-17001	2302	
	$CMDLB	CMDLB	92071-12004	2041	
	$DKLIB	DKLIB	92070-12013	2040	
	$DTCLB		92071-12015	2226	
*	$ED1KL	ED1KL	92074-12004	2213	--> 2340
*	$FCL1		92084-12067	2302	--> 2340
*	$FCL2		92084-12068	2302	--> 2340
*	$FCLBL		92071-12016	2301	--> 2340
*	$FDSLB		24998-12004	2326	--> 2340
	$FMP	FMP	92071-12003	2226	
	$FNDLB	FNDLB	24998-12005	2226	
	$HPIB	$HPIB	92071-12005	2213	
	$LDRLB	LDRLB	92067-16470	2026	
	$LDRLN	LDRLN	92084-12005	2140	
*	$MLIB1	MLIB1	24998-12001	2303	--> 2340
*	$MLIB2	MLIB2	24998-12001	2301	--> 2340
	$MXLB	MXLB	92071-12002	2140	
	$PLIB		92854-16003	2144	
	$SHSLB		92854-16004	2144	
	$SYS..	SYS..	92071-12001	2213	
	$SYSLB	SYSLB	92071-12012	2226	
	%AB2MI	AB2MI	92071-16241	2041	
	%ATRAN	ATRAN	92059-16013	2226	
	%AUTOR	AUTOR	92070-16252	1941	
	%BUILD	BUILD	92071-16336	2150	
	%CLASS	CLASS	92071-16093	2213	
	%COMND	COMND	92070-16076	1941	
	%COPYL	COPYL	92070-16336	2326	
	%CSYS		92071-16405	2226	
	%D.RTR	D.RTR	92071-16037	2041	
*	%DD.00	DD.00	92071-16083	2326	--> 2340
	%DD.12	DD.12	92071-16086	2326	
	%DD.20	DD.20	92071-16084	2326	
*	%DD.23	DD.23	92071-16312	2326	--> 2340
	%DD.30	DD.30	92071-16085	2326	
*	%DD.33		92071-16394	2326	--> 2340
	%DD.36	DD.36	92070-16298	2326	

*	%DECAR	SADD	24306-60001	2026	--> 2340
*	%EDITA	EDITA	92074-12001	2213	--> 2340
*	%EDITB	EDITB	92074-12002	2213	--> 2340
	%EDITR	EDITR	92070-16135	1941	
	%ERLOG	ERLOG	92071-16147	2041	
	%EXEC	EXEC	92071-16136	2226	
*	%FC0		92084-12056	2226	--> 2340
*	%FC1		92084-12057	2226	--> 2340
*	%FC2		92084-12058	2226	--> 2340
*	%FC3		92084-12059	2226	--> 2340
*	%FC4		92084-12060	2302	--> 2340
*	%FC5		92084-12065	2226	--> 2340
*	%FC6		92084-12066	2226	--> 2340
*	%FCML		92071-12013	2302	--> 2340
	%FMGR	FMGR	92071-16310	2226	
	%FORMC		92084-16827	2302	
	%FORMT	FORMT	92070-16337	2213	
	%FTEST		02145-16009	2301	
	%HPIBM	HPIBM	92071-16242	2213	
	%ID.00	ID.00	92071-16082	2326	
	%ID.36	ID.36	92071-16299	2326	
	%ID.37	ID.37	92071-16408	2326	
	%ID.43	ID.43	92071-16096	2240	
	%ID.50	ID.50	92071-16097	2326	
	%ID.52	ID.52	92071-16365	2326	
*	%IDM00		12040-16002	2326	--> 2340
*	%IDS00		24997-16003	2326	--> 2340
	%INSTL	INSTL	92071-16090	2213	
	%LIF		24998-12006	2301	
	%LOAD	LOAD	92071-16156	2140	
	%LOADR	LOADR	92071-16108	2140	
	%LOCK	LOCK	92071-16145	2041	
*	%MACR0	MACR0	92059-16002	2226	--> 2340
*	%MACR1	MACR1	92059-16003	2226	--> 2340
*	%MACR2	MACR2	92059-16004	2226	--> 2340
*	%MACR3	MACR3	92059-16005	2226	--> 2340
*	%MACR4	MACR4	92059-16006	2226	--> 2340
*	%MACR5	MACR5	92059-16007	2226	--> 2340
*	%MACR6	MACR6	92059-16008	2226	--> 2340
*	%MACR7	MACR7	92059-16009	2226	--> 2340
*	%MACRO	MACRO	92059-16001	2226	--> 2340
	%MERGE	MERGE	92067-16334	2301	
	%MI2AB	MI2AB	92071-16276	2213	
	%OLDRE	OLDRE	92059-16010	2226	
	%OPMSG	OPMSG	92071-16151	2041	
	%PFORM	PFORM	92071-16288	2150	
	%RTIOL	RTIOL	92071-16092	2226	
	%RTLGN	RTLGN	92071-16077	2301	
	%SAM	SAM	92071-16137	2041	
	%SCHED	SCHED	92071-16141	2041	

	%STAT	STAT	92071-16154	2041
	%STRNG	STRNG	92071-16143	2041
	%SWAP	SWAP	92071-16158	2101
	%SYCOM	SYCOM	92071-16149	2041
	%TIME	TIME	92071-16139	2041
	%XCMND	XCMND	92071-16152	2041
	&AUTOR		92070-18252	1941
	&LHELP		92070-18236	1941
	=PLIB		92833-16051	2326
	=PRERS		92833-16053	2226
	=SHSLB		92833-16052	2326
*	A92071		92071-18999	2326 --> 2340
	BOOTEX		92071-16409	2213

Manual Part#	Title	Type of Update
59310-90064	HP-IB In HP 1000 Computer Systems User's Guide	Edition 7
92059-90001	MACRO/1000 Reference Manual	Update 4
92070-90011	RTE-L/XL Driver Reference Manual	Update 4
92070-90042	RTE-L/XL Generation Requirements for Drivers	Update 4
92074-90001	Edit/1000 User's Guide	Edition 2

Media Part#	Media Option
92071-13303	022
92071-13401	041
92071-13415	041
92071-13406	042
92071-13408	042
92071-13413	042
92071-13414	042
92071-13416	042
92071-13425	042
92071-13427	042
92071-13501	050
92071-13511	050
92071-13502	051
92071-13512	051

3.33 + (92073A) Image/1000L

	File	Module	Part Number	Rev	Change
*	#DBBLD		92069-18309	New	--> 2340
*	#DBDS		92069-18308	New	--> 2340
*	#DBMS1		92069-18304	New	--> 2340
*	#DBMS2		92069-18305	New	--> 2340
*	#DBMS3		92069-18306	New	--> 2340
*	#IMAGE		92069-18288	2101	--> 2340
*	#IMAGL		92069-18289	2213	--> 2340
*	$DBBLL		92069-12009	2213	--> 2340
	$DBDSL		92069-12010	2213	
	%BAIMX	BAIMG	92069-16255	2026	
*	%DBBLX	BDHDR	92069-16001	2226	--> 2340
	%DBCOP	DBCOP	92069-16256	1912	
*	%DBDRT		92069-16310	New	--> 2340
*	%DBDSX	DBHDR	92069-16015	2213	--> 2340
	%DBLOX	DBLOD	92069-16128	2226	
*	%DBMS	DBMS	92069-12002	2226	--> 2340
*	%DBRED		92069-16160	New	--> 2340
	%DBRSX	DBRST	92069-16126	2140	
	%DBSPX	DBSPA	92069-16133	2140	
	%DBSTX	DBSTR	92069-16125	2140	
	%DBULX	DBULD	92069-16127	2140	
*	%LOCAL	LOCAL	92069-12006	2213	--> 2340
*	%NO/DS	NO/DS	92069-12005	2040	--> 2340
*	%QURYX	QYHDR	92069-16060	2226	--> Deleted
*	%RDBA	RDBA	92069-12003	2213	--> 2340
*	%RDBAM		92069-16258	New	--> 2340
*	%RDBAP		92069-16259	New	--> 2340
	%RECVX	RECOV	92069-16134	2140	
*	%REMOT	REMOT	92069-12004	2213	--> 2340
*	*DBUP	DBUPH	92069-12001	2140	--> 2340
*	*IMAGA		92069-18230	2213	--> 2340
*	*IMAGE		92069-18287	2226	--> 2340
*	*IMAGX		92069-18303	New	--> 2340
*	A92069		92069-18999	2226	--> Deleted
*	A92073		92073-18999	2213	--> 2340

Manual Part#	Title	Type of Update
92069-90001	IMAGE/1000 Database Management System: Reference Manual	Update 5
92069-90003	IMAGE/1000 Database Management System: System Configuration Guide	Edition 6

Media Part#	Media Option
92069-13304	020
92069-13305	020
92069-13306	020
92073-13301	020
92073-13302	022
92073-13401	041
92069-13402	042
92073-13501	050
92073-13502	051

3.34 (92076A) Basic/1000-L

File	Module	Part Number	Rev
$ABLIB	ABLIB	92076-12002	2213
$BSLBL	BSLBL	92076-12001	2226
%BASIC	BASIC	92076-16001	2326
%BATBL	BATBL	92076-16002	2040
%SRV.L	SRV.L	92076-16004	2040
*BASIC		92076-18027	2001
*BATBL		92076-18028	2040
*TBFIL		92076-18029	2001
A92076		92076-18999	2326

3.35 + (92077A) RTE-A Operating System

	File	Module	Part Number	Rev	Change
*	!ARSTM		92077-16662	New	--> 2340
	!ARSTR		92077-16639	2326	
	!PBV		92077-16416	2302	
*	!PBVM		92077-16661	New	--> 2340
	"CDSLB		92059-18027	2326	
*	"EDIT.		92074-17004	New	--> 2340
*	"EDIT.		92074-17006	2326	--> Deleted
	"FCHLP		92084-17150	2226	
	"M.ERR		92059-18025	2326	
	"MACLB		92059-18026	2326	
	#AB2MI		92077-17030	2326	

Current Revisions(92077A)

	#ARSTR	92077-17101	2326	
	#ASAVE	92077-17100	2326	
*	#AUTOR	92077-17042	2326	--> 2340
	#BIGLB	92077-17046	2326	
	#BUILD	92077-17036	2326	
*	#CI	92077-17026	2326	--> Deleted
*	#CIA	92077-17026	New	--> 2340
*	#CIX	92077-17105	New	--> 2340
	#CLSDS	92077-17019	2326	
	#COMND	92077-17043	2326	
	#COPYL	92077-17038	2326	
	#CSYS	92077-17035	2326	
	#D.RTR	92077-17016	2326	
*	#DL	92077-17028	2326	--> 2340
	#DSRTR	92077-17018	2326	
	#ED1KA	92074-17005	2326	
*	#FCA	92077-17008	2302	--> 2340
	#FMGR	92077-17032	2326	
	#FORMC	92077-17034	2326	
	#FORMF	92077-17104	2326	
	#FORMT	92077-17041	2326	
	#FOWN	92077-17029	2326	
	#FPACK	92077-17012	2326	
	#FPUT	92077-17013	2326	
	#FREES	92077-17011	2326	
	#FSCON	92077-17014	2326	
	#FTEST	92077-17037	2326	
	#FVERI	92077-17015	2326	
	#INSTL	92077-17039	2326	
	#IO	92077-17027	2326	
*	#LI	92077-17108	New	--> 2340
	#LIF	92077-17033	2326	
	#LINDX	92077-17021	2326	
	#LINK	92077-17020	2326	
*	#MACRO	92059-17004	2326	--> 2340
	#MERGE	92077-17023	2326	
	#MI2AB	92077-17031	2326	
	#OLDRE	92059-17002	2213	
	#PBV	92077-17010	2302	
	#PRINO	92077-17025	2326	
	#PRINT	92077-17024	2326	
	#RTAGN	92077-17040	2326	
	#TF	92077-17102	2326	
	#TRFAS	92077-17017	2326	
	#WH	92077-17022	2326	
*	$BIGLB	92077-12006	2326	--> 2340
	$CMDLB	92077-12004	2326	
*	$CRLIB	92077-12025	New	--> 2340
	$DKLIB	92077-12024	2326	
	$DSLDR	92077-12015	2326	

	$DTCLB		92071-12015	2226	
*	$ED1KA		92074-12011	2326	--> 2340
	$EMCLB		92077-12007	2213	
	$FCDS		24998-12011	2326	
*	$FCL1		92084-12067	2302	--> 2340
*	$FCL2		92084-12068	2302	--> 2340
	$FCLBA		92077-12023	2326	
*	$FDSLB	FDSLB	24998-12004	2326	--> 2340
*	$FLIB		24998-12008	2326	--> 2340
	$FMGR		92077-12005	2326	
*	$FMP	FMP	92077-12003	2326	--> 2340
*	$FMPC		92077-12018	2326	--> 2340
	$FNDLB	FNDLB	24998-12005	2226	
	$FNEWF		24998-12010	2326	
*	$FOLDF		24998-12009	New	--> 2340
	$HPIB		92077-12021	2326	
*	$LDRLN		92084-12038	2226	--> 2340
	$MATH		24998-12007	2326	
	$PBULB		92077-12019	2326	
	$PLIB		92833-16005	2326	
	$PLIBN		92833-16054	2326	
	$PRINT		92077-12008	2213	
	$SHSLB		92833-16006	2326	
	$SYSA		92077-12001	2326	
*	$SYSLB	SYSLB	92077-12012	2326	--> 2340
*	$TFLIB		92077-12020	2326	--> 2340
	$VLB6B		12829-12002	2213	
	$VLBA1		92077-12014	2226	
	$WFCLB		92077-12022	2326	
	%$MWB1		92077-16097	2226	
	%AB2MI		92077-16433	2326	
	%ARSTR		92077-16587	2326	
	%ASAVE		92077-16586	2326	
	%ATRAN	ATRAN	92059-16013	2226	
*	%AUTOR		92077-16385	2326	--> 2340
*	%BIGHD		92077-16073	2326	--> 2328
	%BUILD	BUILD	92077-16336	2326	
*	%CI		92077-16445	2326	--> 2340
*	%CISUB		92077-16535	2326	--> 2340
*	%CIX		92077-16651	New	--> 2340
*	%CLASS		92077-16442	2326	--> 2340
	%CLSDS		92077-16463	2326	
	%CMPBF		92077-16415	2302	
	%COMND		92077-16076	2213	
	%COPYL		92070-16336	2326	
*	%CROUT		92077-16498	2326	--> Deleted
	%CSYS		92077-16636	2326	
*	%D.RTR		92077-16455	2326	--> 2340
*	%DD.00	DD.00	92071-16083	2326	--> 2340
	%DD.12		92071-16086	2326	

Current Revisions(92077A)

	%DD.20	92071-16084	2326	
*	%DD.23	92071-16312	2326	--> 2340
	%DD.30	92071-16085	2326	
*	%DD.33	92071-16394	2326	--> 2340
	%DD.36	92070-16298	2326	
	%DDC12	92077-16386	2326	
*	%DECAR	24306-60001	2026	--> 2340
*	%DL	92077-16447	2326	--> 2340
*	%DSRTR	92077-16462	2326	--> 2340
*	%EDITA	92074-12001	New	--> 2340
*	%EDITA	92074-12007	2326	--> Deleted
*	%EDITB	92074-12002	New	--> 2340
*	%EDITB	92074-12006	2326	--> Deleted
*	%ERLOG	92077-16147	2326	--> 2340
*	%EXEC	92077-16136	2326	--> 2340
*	%FC0	92084-12056	2226	--> 2340
*	%FC1	92084-12057	2226	--> 2340
*	%FC2	92084-12058	2226	--> 2340
*	%FC3	92084-12059	2226	--> 2340
*	%FC4	92084-12060	2302	--> 2340
*	%FC5	92084-12065	2226	--> 2340
*	%FC6	92084-12066	2226	--> 2340
*	%FCMA	92077-12016	2302	--> 2340
	%FFL	92077-16067	2213	
	%FMGR	92077-16310	2326	
*	%FNDBT	92077-16659	New	--> 2340
	%FORMC	92084-16827	2302	
	%FORMF	92077-16393	2326	
	%FORMT	92070-16337	2213	
	%FOWN	92077-16449	2326	
	%FPACK	92077-16451	2326	
	%FPUT	92077-16452	2326	
	%FREES	92077-16450	2326	
	%FSCON	92077-16453	2326	
	%FTEST	92077-16637	2326	
*	%FVERI	92077-16454	2326	--> 2340
	%GEN27	92077-16629	2326	
	%ID.00	92071-16082	2326	
	%ID.01	92077-16390	2326	
*	%ID.27	92077-16628	2326	--> 2340
	%ID.36	92071-16299	2326	
	%ID.37	92071-16408	2326	
*	%ID.43	92077-16096	2326	--> 2340
	%ID.50	92071-16097	2326	
	%ID.52	92071-16365	2326	
*	%IDM00	12040-16002	2326	--> 2340
*	%IDS00	24997-16003	2326	--> 2340
*	%INSTL	92077-16090	2326	--> 2340
	%IO	92077-16446	2326	
*	%IOMOD	92077-16471	2326	--> 2340

Current Revisions(92077A)

*	%LI		92077-16646	New	--> 2340
	%LIF		92077-16638	2326	
*	%LINDX		92077-12026	New	--> 2340
*	%LINDX		92077-16559	2326	--> Deleted
*	%LINKA		92077-16464	2326	--> 2340
*	%LINKB		92077-16466	2326	--> 2340
	%LOAD		92077-16156	2326	
	%LOCK		92077-16484	2326	
*	%LTEST		02145-16020	New	--> 2340
*	%MACR0	MACR0	92059-16015	2326	--> 2340
*	%MACR1	MACR1	92059-16016	2326	--> 2340
*	%MACR2	MACR2	92059-16017	2326	--> 2340
*	%MACR3	MACR3	92059-16018	2326	--> 2340
*	%MACR4	MACR4	92059-16019	2326	--> 2340
*	%MACR5	MACR5	92059-16020	2326	--> 2340
*	%MACR6	MACR6	92059-16021	2326	--> 2340
*	%MACR7	MACR7	92059-16022	2326	--> 2340
*	%MACRO	MACRO	92059-16014	2326	--> 2340
*	%MDMLB		92077-16392	2326	--> 2340
*	%MEMRY		92077-16469	2326	--> 2340
*	%MERGE		92077-16431	2326	--> 2340
	%MI2AB		92077-16432	2326	
*	%MODEM		92077-16391	2326	--> 2340
	%MSGS		92077-16474	2326	
*	%MUXUP		92077-16660	New	--> 2340
	%OLDRE	OLDRE	92059-16010	2226	
	%OPMSG		92077-16151	2326	
	%PBV		92077-16414	2302	
	%PERR		92077-16472	2326	
	%PRERS		92833-16007	2226	
	%PRIN0		92077-16054	2326	
	%PRINT		92077-16009	2326	
	%RPL60		92077-16475	2326	
	%RPL61		92077-16476	2326	
	%RPL70		92077-16477	2326	
	%RPL71		92077-16478	2326	
	%RPL90		92077-16479	2326	
	%RTAGN		92077-16077	2326	
*	%RTIOA		92077-16470	2326	--> 2340
	%SAM		92077-16443	2326	
	%SCHED		92077-16141	2326	
	%STAT		92077-16154	2326	
	%STRNG		92077-16444	2326	
	%SYCOM	SYCOM	92077-16149	2326	
*	%TF		92077-16598	2326	--> 2340
	%TIME		92077-16438	2326	
	%TRFAS		92077-16461	2326	
*	%VCTR		92077-16473	2326	--> 2340
	%VISOA		92077-16383	2301	
	%WH		92077-16110	2326	

	%WHSUB		92077-16111	2326	
	%XCMND	XCMND	92077-16152	2326	
*	&AUTOR		92077-18385	2326	--> 2340
	&FFL		92077-18067	2213	
	=PLIB		92833-16051	2326	
	=PRERS		92833-16053	2226	
	=SHSLB		92833-16052	2326	
	???		92077-17099	2326	
	?AS		92077-17048	2326	
	?AT		92077-17049	2326	
	?BR		92077-17050	2326	
	?CD		92077-17051	2326	
	?CI		92077-17045	2326	
	?CL		92077-17052	2326	
	?CN		92077-17053	2326	
*	?CO		92077-17054	2326	--> 2340
	?CR		92077-17055	2326	
	?CRDIR		92077-17056	2326	
	?DC		92077-17057	2326	
*	?DL		92077-17058	2326	--> 2340
	?DT		92077-17059	2326	
	?ERROR		92077-17060	2326	
	?EX		92077-17061	2326	
	?FOWN		92077-17063	2326	
	?FPACK		92077-17065	2326	
	?FREES		92077-17062	2326	
	?FVERI		92077-17064	2326	
	?GO		92077-17066	2326	
	?IN		92077-17067	2326	
	?IO		92077-17068	2326	
	?LI		92077-17069	2326	
	?LINDX		92077-17070	2326	
	?LINK		92077-17044	2326	
	?MACRO		92059-17003	2326	
	?MASK		92077-17071	2326	
	?MC		92077-17072	2326	
*	?MERGE		92077-17073	2326	--> 2340
	?MO		92077-17074	2326	
	?OF		92077-17075	2326	
	?OWNER		92077-17076	2326	
	?PR		92077-17077	2326	
	?PRINT		92077-17079	2326	
	?PROT		92077-17080	2326	
	?PU		92077-17081	2326	
	?RN		92077-17082	2326	
	?RP		92077-17083	2326	
*	?RU		92077-17084	2326	--> 2340
	?SS		92077-17086	2326	
	?SZ		92077-17087	2326	
	?TM		92077-17088	2326	

	?TO	92077-17089	2326	
	?TR	92077-17090	2326	
	?UL	92077-17091	2326	
	?UNPU	92077-17092	2326	
	?UP	92077-17093	2326	
	?VS	92077-17094	2326	
*	?WD	92077-17095	2326	--> 2340
	?WH	92077-17096	2326	
	?WS	92077-17097	2326	
*	?XQ	92077-17098	2326	--> 2340
*	A92077	92077-18999	2326	--> 2340
*	BOOTEX	92077-16364	2326	--> 2340

Manual Part#	Title	Type of Update
59310-90064	HP-IB In HP 1000 Computer Systems User's Manual	Edition 7
92059-90001	MACRO/1000 Reference Manual	Update 4
92074-90001	EDIT/1000 User's Guide	Update 4
92077-90002	RTE-A User's Manual	Update 1
92077-90004	RTE-A Utilities Manual	Update 1
92077-90007	RTE-A Programmer's Reference Manual	Update 1
92077-90011	RTE-A Driver Reference Manual	Update 1
92077-90020	RTE-A Quick Reference Guide	Update 1
92077-90034	RTE-A System Generation and Installation Manual	Update 2
92077-90037	Relocatable Libraries Reference Manual RTE-A / RTE-6/VM	Edition 2
92077-90038	RTE-A Primary System Software Installation Manual	Edition 2
92077-90039	Getting Started With RTE-A	Update 1
92077-90048	FCO Utility Manual	Edition 1

Media Part#	Media Option
92077-13305	022
92077-13311	022
92077-13401	041
92077-13402	041
92077-13403	041
92077-13404	041
92077-13405	041
92077-13406	041
92077-13407	041
92077-13408	041
92077-13409	041
92077-13410	041
92077-13411	041

Current Revisions(92077A)

92077-13412	041
92077-13413	041
92077-13414	042
92077-13415	042
92077-13416	042
92077-13417	042
92077-13418	042
92077-13419	042
92077-13420	042
92077-13421	042
92077-13422	042
92077-13423	042
92077-13424	042
92077-13425	042
92077-13426	042
92077-13427	042
92077-13428	042
92077-13429	042
92077-13430	042
92077-13431	042
92077-13432	042
92077-13433	042
92077-13434	042
92077-13435	042
92077-13436	042
92077-13437	042
92077-13438	042
92077-13439	042
92077-13440	042
92077-13441	042
92077-13442	042
92077-13443	042
92077-13444	042
92077-13445	042
92077-13446	042
92077-13447	042
92077-13448	042
92077-13449	042
92077-13450	044
92077-13451	044
92077-13452	044
92077-13453	044
92077-13454	044
92077-13455	044
92077-13456	044
92077-13457	044
92077-13458	044
92077-13459	044
92077-13460	044
92077-13461	044

92077-13462	044
92077-13463	044
92077-13464	044
92077-13465	044
92077-13466	044
92077-13467	044
92077-13468	044
92077-13469	044
92077-13470	044
92077-13471	044
92077-13472	044
92077-13473	044
92077-13474	044
92077-13475	044
92077-13476	044
92077-13477	044
92077-13478	044
92077-13479	044
92077-13480	044
92077-13481	044
92077-13482	044
92077-13483	044
92077-13484	044
92077-13485	044
92077-13486	044
92077-13487	044
92077-13511	050
92077-13512	051
92077-13519	061
92077-13520	061

3.36 + (92078A) RTE-A Virtual Code+ (VC+)

	File	Module	Part Number	Rev	Change
*	#CICDS		92078-17010	New	--> 2340
*	#CIXC		92078-17013	New	--> 2340
*	#LOGON		92078-17005	New	--> 2326
*	#OUTPT		92078-17003	New	--> 2326
*	#PROMT		92078-17007	New	--> 2326
*	#SMP		92078-17004	New	--> 2326
*	#SP		92078-17001	New	--> 2326
*	#SPGET		92078-17002	New	--> 2326
*	#USERS		92078-17006	New	--> 2326
*	$CDS		92078-12001	New	--> 2340
*	$CRCDS		92078-12002	New	--> 2340
*	%CDSFH		92078-16001	New	--> 2326

* %CICDS	92078-16016	New	--> 2340
* %CIXC	92077-16652	New	--> 2340
* %LOGON	92078-16013	New	--> 2326
* %OUTPT	92078-16005	New	--> 2326
* %PROMT	92078-16015	New	--> 2326
* %RPL62	92078-16008	New	--> 2326
* %RPL63	92078-16009	New	--> 2326
* %RPL72	92078-16010	New	--> 2326
* %RPL73	92078-16011	New	--> 2326
* %RPL91	92078-16012	New	--> 2326
* %SMP	92078-16007	New	--> 2326
* %SP	92078-16002	New	--> 2326
* %SPGET	92078-16004	New	--> 2326
* %SPOOL	92078-16003	New	--> 2326
* %SPRT	92078-16006	New	--> 2326
* %USERS	92078-16014	New	--> 2326
* ?SP	92078-17011	New	--> 2326
* ?USERS	92078-17009	New	--> 2326
* A92078	92078-17999	New	--> 2340

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
92078-13301	022
92078-13401	041
92078-13406	042
92078-13407	042
92078-13416	044
92078-13417	044
92078-13501	050
92078-13502	051

3.37 (92080A) Datacap/1000-II

File	Module	Part Number	Rev
#DCIML		92080-18591	2140
#DCMON		92080-18212	2140
#DCRCV		92080-18590	2140
#RT4GN		92080-17003	2226
#RT6GN		92080-17004	2226
#TGP		92080-18321	2140

#TIME		92080-18209	2140
#TMPGN		92080-18412	2140
#TMSL4		92080-18604	2140
#TMSL6		92080-18605	2140
$GPLB4	GPLB4	92080-12001	2226
$TGPLB	TGPLB	92080-12300	2226
$TMGL1	TMGL1	92080-12401	2140
$TMGLB	TMGLB	92080-12400	2226
$TMSL1	TMSL1	92080-12101	2140
$TMSL4	TMSLB	92080-12002	2226
$TMSL6	TMSL6	92080-12003	2226
$TMSLB	TMSLX	92080-12100	2226
%DBMS	DBMS	92069-12002	2213
%DCIMX		92080-16608	2226
%DCMNS	DCMNS	92080-16200	2226
%DCRCV	DCRCV	92080-16584	2226
%IOM70	IOM70	92080-16560	2226
%IOM75	IOM75	92080-16570	2226
%IOM82		92080-16607	2226
%LOCAL	LOCAL	92069-12006	2213
%OFLPO	OFLPO	92080-16580	2140
%R2140	R2140	92080-16582	2140
%STORA	STORA	92080-16540	2140
%STORB	STORB	92080-16550	2140
%TG10S	TG10S	92080-16307	2140
%TG11S	TG11S	92080-16308	2140
%TG12S	TG12S	92080-16309	2226
%TG13S	TG13S	92080-16310	2140
%TG14A	TGPI4	92080-16391	2226
%TGP	TGP	92080-16350	2226
%TGP0A	TGP0	92080-16351	2140
%TGP1S	TGP1S	92080-16301	2226
%TGP2S	TGP2S	92080-16302	2140
%TGP3A	TGP3	92080-16358	2140
%TGP4A	TGP4	92080-16359	2140
%TGP5S	TGP5S	92080-16303	2226
%TGP6S	TGP6S	92080-16304	2140
%TGP7S	TGP7S	92080-16311	2140
%TGP8S	TGP8S	92080-16305	2140
%TGP9S	TGP9S	92080-16306	2140
%TIME	TIME	92080-16213	2140
%TMG0A	TMPG0	92080-16452	2226
%TMG1A	TMPG1	92080-16453	2226
%TMG2A	TMPG2	92080-16454	2140
%TMG3A	TMPG3	92080-16455	2226
%TMG4A	TMPG4	92080-16456	2140
%TMG5A	TMPG5	92080-16457	2226
%TMPGN	TMPGN	92080-16451	2226
%TSE	TSE	92080-16520	2226
%TSMG	TSMG	92080-16530	2140

%XMLIM	XMLIM	92080-16594	2140
%ZTMP	ZTMP	92080-16510	2226
*DATCA		92080-18204	2140
*DCMTL		92080-18583	2140
*TYPE0		92080-18203	2140
/TGP		92080-18319	2140
/TMPGN		92080-18410	2140
A92080		92080-18210	2226
\TGP		92080-18320	2140
\TMPGN		92080-18413	2140

3.38 + (92081A) Image/1000-II

	File	Module	Part Number	Rev	Change
*	%DBMS		92081-12001	New	--> 2330
*	%LOCAL		92081-12002	New	--> 2330
*	%RDBA		92081-12003	New	--> 2330
*	%REMOT		92081-12004	New	--> 2330
*	$NO\DS		92081-12005	New	--> 2330
*	$DSDB		92081-12006	New	--> 2330
*	%DBBLL		92081-12007	New	--> 2330
*	%DBDSL		92081-12008	New	--> 2330
*	$DMONL		92081-12009	New	--> 2330
*	$DBEMA		92081-12010	New	--> 2401
*	$DBULL		92081-12011	New	--> 2330
*	$QRYXL		92081-12012	New	--> 2330
*	%DBBLD		92081-16013	New	--> 2330
*	%DBDS		92081-16014	New	--> 2330
*	%DBMON		92081-16015	New	--> 2330
*	%DBRBR		92081-16016	New	--> 2330
*	%DBRFR		92081-16017	New	--> 2330
*	%DBUTL		92081-16018	New	--> 2330
*	%QUERY		92081-16019	New	--> 2330
*	%RDBAP		92081-16020	New	--> 2330
*	%SAMAI		92081-16021	New	--> 2321
*	%SAM6I		92081-16022	New	--> 2321
*	&OVRD		92081-16281	New	--> 2330
*	&RDTB		92081-16410	New	--> 2330
*	&RFLL		92081-16560	New	--> 2330
*	%USNUM		92081-16577	New	--> 2321
*	%DBARC		92081-16630	New	--> 2330
*	%DBLOD		92081-16670	New	--> 2330
*	%DBRST		92081-16760	New	--> 2330
*	%DBSTR		92081-16765	New	--> 2330
*	%DBSPA		92081-16770	New	--> 2330
*	%DBSPL		92081-16775	New	--> 2330

*	%DBULD	92081-16780	New	--> 2330
*	%DEMON	92081-16830	New	--> 2330
*	%RDBAM	92081-16880	New	--> 2330
*	*IMAGE	92081-17001	New	--> 2321
*	*IMAGA	92081-17002	New	--> 2321
*	*IMAGX	92081-17003	New	--> 2321
*	#DBARC	92081-17004	New	--> 2321
*	#DBBLD	92081-17005	New	--> 2321
*	#DBDS	92081-17006	New	--> 2321
*	#DBLOD	92081-17007	New	--> 2321
*	#DBMON	92081-17008	New	--> 2330
*	#DBRBR	92081-17009	New	--> 2321
*	#DBRFR	92081-17010	New	--> 2321
*	#DBRST	92081-17011	New	--> 2321
*	#DBSPA	92081-17012	New	--> 2321
*	#DBSPL	92081-17013	New	--> 2321
*	#DBSTR	92081-17014	New	--> 2321
*	#DBULD	92081-17015	New	--> 2321
*	#DBUTL	92081-17016	New	--> 2321
*	#DEMON	92081-17017	New	--> 2321
*	#QUERY	92081-17018	New	--> 2321
*	#DBMS1	92081-17021	New	--> 2321
*	#DBMS2	92081-17022	New	--> 2321
*	#DBMS3	92081-17023	New	--> 2321
*	QSHELP	92081-17024	New	--> 2321
*	"DBUTL	92081-17025	New	--> 2321
*	#DB6S1	92081-17027	New	--> 2321
*	#DB6S2	92081-17028	New	--> 2321
*	#DB6S3	92081-17029	New	--> 2321
*	&ADD	92081-18831	New	--> 2340
*	&SLOB	92081-18832	New	--> 2340
*	&CCRSH	92081-18833	New	--> 2340
*	&TRADE	92081-18834	New	--> 2340
*	&LOGGR	92081-18835	New	--> 2340
*	&CRASH	92081-18836	New	--> 2340
*	CMDZOO	92081-18837	New	--> 2340
*	ZOOBLD	92081-18838	New	--> 2340
*	ZOORT	92081-18839	New	--> 2340

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
92081-13301	022
92081-13401	044
92081-13402	044
92081-13404	044
92081-13405	044
92081-13501	050
92081-13502	051

3.39 (92082A) Accel/1000

File	Module	Part Number	Rev
$PRLIB	PRLIB	92082-12001	2001
%CPLOT	CPLOT	92082-16009	2001
%CTRAC	CTRAC	92082-16001	2001
%DVR36	DVR36	13197-16001	1605
%MDEP	MDEP	92061-16004	1634
%MDES	MDES	92061-16005	1926
%MICRO	MICRO	92061-16001	2013
%MONTR	DBUGR	92082-16008	2001
%MXREF	MXREF	92061-16002	2013
%PTGEN	PTGEN	92061-16003	1813
%WLOAD	WLOAD	13197-16003	1813
A92082		92082-18999	2026

3.40 (92083A) Profile Monitor

File	Module	Part Number	Rev
$PRLIB	PRLIB	92082-12001	2001
%APLOT		92083-16002	2226
%ATRAC		92083-16001	2226
%CPLOT	CPLOT	92082-16009	2001
%CTRAC	CTRAC	92082-16001	2001
%MONTR	DBUGR	92082-16008	2001
A92083		92083-18999	2226

3.41 + (92084A) RTE-6/VM

	File	Module	Part Number	Rev	Change
	!BCK10		92084-16736	2302	
	!BCK11		92084-16736	2302	
	!BCK12		92084-16736	2302	
	!BCK13		92084-16736	2302	
	!BCK14		92084-16736	2302	
	!BCKO1		92084-16736	2302	
	!BCKO2		92084-16736	2302	
	!BCKO3		92084-16736	2302	
	!BCKO4		92084-16736	2302	
	!BCKO5		92084-16736	2302	
	!BCKO6		92084-16736	2302	
	!BCKO7		92084-16736	2302	
	!BCKO8		92084-16736	2302	
	!BCKO9		92084-16736	2302	
	!MTLDR		92067-16512	2126	
	"CMD		92084-17004	2301	
*	"EDIT.		92074-17004	2213	--> 2340
	"FCHLP		92084-17150	2226	
*	"HELP		92084-17001	2301	--> 2340
*	"M.ERR		92059-18011	2226	--> Deleted
*	"M.ERR		92059-18025	New	--> 2326
*	"MACLB		92059-18012	2301	--> Deleted
*	"MACLB		92059-18026	New	--> 2326
*	#CI6		92084-17207	New	--> 2340
*	#CIX		92084-17260	New	--> 2340
*	#CLSDS		92084-17254	New	--> 2340
*	#D.RTR		92084-17211	New	--> 2340
*	#DL		92077-17028	New	--> 2340
*	#DSRTR		92084-17212	New	--> 2340
*	#ED1K6		92074-17003	2213	--> 2340
	#FC6		92084-17151	2302	
*	#FORMC		92084-17125	New	--> 2340
*	#FORMT		92084-17029	New	--> 2340
*	#FOWN		92084-17255	New	--> 2340
*	#FPACK		92084-17256	New	--> 2340
*	#FREES		92084-17257	New	--> 2340
*	#FSCON		92084-17258	New	--> 2340
*	#FVERI		92084-17259	New	--> 2340
*	#LI		92077-17108	New	--> 2340
*	#LINDX		92084-17209	New	--> 2340
*	#LINK		92084-17210	New	--> 2340
*	#MACRO		92059-17001	2140	--> Deleted

*	#MACRO		92059-17004	New	--> 2340
*	#MERGE		92084-17208	New	--> 2340
	#MLLD6		92084-17189	2226	
	#OLDRE		92059-17002	2213	
*	#PCOPY		92084-17152	2212	--> 2340
*	#PRSTR		92084-17154	2212	--> 2340
*	#PSAVE		92084-17153	2212	--> 2340
*	#PSPAR		92084-17155	2121	--> 2340
*	#READR		92084-17005	2121	--> 2340
*	#SAVER		92084-17006	2121	--> 2340
*	#SCOM		92084-17036	New	--> 2340
	#SGMTR		92084-17106	2121	
*	#SWTCH		92084-17039	New	--> 2340
*	#TF		92077-17102	New	--> 2326
*	#TRFAS		92084-17253	New	--> 2340
*	$6FCLB		92084-12035	2301	--> 2340
*	$6SYLB		92084-12001	2301	--> 2340
*	$ACCLB		92068-12018	2301	--> 2340
*	$BCKUP		92084-12050	2301	--> 2302
	$BEGGT		92084-12051	2302	
*	$CRLIB		92077-12025	New	--> 2340
	$DSCLB		92084-12062	2226	
	$DTCLB		92084-12053	2226	
*	$ED1K6		92074-12005	2213	--> 2340
	$EMCLB		92084-12002	2121	
*	$FCL1		92084-12067	2302	--> 2340
*	$FCL2		92084-12068	2302	--> 2340
*	$FCLBA		92077-12023	New	--> 2326
*	$FDSLB	FDSLB	24998-12004	2226	--> 2340
*	$FLIB		24998-12008	New	--> 2340
*	$FMP6		92084-12071	New	--> 2340
*	$FMPC		92077-12018	New	--> 2340
	$FNDLB	FNDLB	24998-12005	2226	
*	$FNEWF		24998-12010	New	--> 2326
*	$FOLDF		24998-12009	New	--> 2340
*	$IB6A		92084-12036	2201	--> 2340
*	$LDRLN		92084-12038	2226	--> 2340
*	$MATH		24998-12007	New	--> 2326
*	$MLIB1	MLIB1	24998-12001	2303	--> Deleted
*	$MLIB2	MLIB2	24998-12001	2301	--> Deleted
	$MLSLB		92084-12015	2121	
	$ONLIN		92084-12061	2121	
*	$PLIB		92833-16005	2226	--> 2326
*	$PLIBN		92833-16054	New	--> 2326
	$RBLIB		92084-12018	2121	
	$RSLIB		92068-12006	2240	
*	$SHSLB		92833-16006	2226	--> 2326
*	$TFLIB		92077-12020	New	--> 2340
	$UTLIB		92084-12033	2301	
	$VCLIB		92084-12016	2226	

Current Revisions(92084A)

*	%$CNFG		92084-12011	2301	--> 2340
*	%$DVTB		12792-16005	2226	--> 2340
*	%$DVTN		12792-16009	2301	--> 2340
	%$LDR		92084-12013	2226	
	%$TA32		92067-16507	2001	
	%$TB32		92067-16509	2001	
	%$TM33		92084-16652	2301	
	%0DV05		92001-16028	2140	
*	%4AUTR		92067-16118	1903	--> 2340
	%4DP43		92067-16004	1926	
	%4PVMP		92067-16001	1805	
*	%6DA37		92084-16593	2201	--> 2340
*	%6DV37		92084-16592	2201	--> 2340
	%6MTM		92084-12029	2121	
*	%ACCTS		92067-16361	2301	--> 2340
	%ATRAN	ATRAN	92059-16013	2226	
*	%BMPG1		92084-12003	2226	--> 2340
*	%BMPG2		92084-12014	2301	--> 2340
*	%BMPG3		92084-12004	2310	--> 2340
*	%CI		92077-16445	New	--> 2340
*	%CISU6		92084-16945	New	--> 2340
*	%CIX		92077-16651	New	--> 2340
	%CLOAD		92084-16525	2121	
*	%CLSDS		92077-16463	New	--> 2326
	%CMD		92084-12030	2121	
	%COMM		92084-16915	2212	
	%COMPL		92084-16524	2121	
*	%CR6S1		92084-12024	2301	--> 2340
*	%CR6S2		92084-12025	2301	--> 2340
*	%CR6S3		92084-12026	2301	--> 2340
	%CSERR		92084-12054	2121	
*	%D.RTR		92077-16455	New	--> 2340
	%DBUGR		92084-12019	2121	
*	%DDV05		12792-16003	2301	--> 2340
	%DDV12		12792-16004	2140	
*	%DECAR		24306-60001	2026	--> 2340
*	%DL		92077-16447	New	--> 2340
	%DRREL		92084-12009	2226	
	%DRRPL		92084-12010	2121	
	%DSCHD		09580-16126	A	
*	%DSRTR		92077-16462	New	--> 2340
	%DVA05		92084-16607	2121	
	%DVA12		92001-16020	1826	
	%DVA13		91200-16001	1648	
*	%DVA32		92084-16708	2226	--> 2340
*	%DVB12		92062-16004	2013	--> 2340
*	%DVC12		92068-16110	2226	--> 2340
*	%DVC32		92084-16709	2226	--> 2340
	%DVM00		12792-16002	2301	
	%DVM33		92084-16650	2302	

*	%DVM72		09580-16079	2101	--> 2340
	%DVN00		12792-16008	2301	
	%DVN33		92084-16651	2302	
*	%DVP32		92084-16710	2301	--> 2340
	%DVR00		92084-16637	2301	
	%DVR12		29028-60002	1805	
*	%DVR23	DVR23	92202-16001	2226	--> 2340
	%DVR31		92084-16712	2121	
*	%DVR32		92084-16711	2301	--> 2340
	%DVR33		92084-16713	2121	
*	%E.FFP		92084-16951	New	--> 2340
	%EDI6R		92084-16395	2140	
*	%EDITA		92074-12001	2213	--> 2340
*	%EDITB		92074-12002	2213	--> 2340
*	%F.FFP		92084-16952	New	--> 2340
*	%F.FPB		92084-16953	New	--> 2340
*	%F.SIS		92084-16954	New	--> 2340
*	%F.VIS		92084-16955	New	--> 2340
*	%FC0		92084-12056	2226	--> 2340
*	%FC1		92084-12057	2226	--> 2340
*	%FC2		92084-12058	2226	--> 2340
*	%FC3		92084-12059	2226	--> 2340
*	%FC4		92084-12060	2302	--> 2340
*	%FC5		92084-12065	2226	--> 2340
*	%FC6		92084-12066	2226	--> 2340
*	%FCM6		92084-12055	2302	--> 2340
	%FORMC		92084-16827	2302	
	%FORMT		92067-16554	2040	
*	%FOWN		92077-16449	New	--> 2326
*	%FPACK		92077-16451	New	--> 2326
*	%FREES		92077-16450	New	--> 2326
*	%FSCON		92077-16453	New	--> 2326
*	%FVERI		92077-16454	New	--> 2340
	%GENIX		92084-12031	2121	
	%HELP		92084-12032	2121	
	%INDXR		92084-12006	2121	
*	%KEYS		92060-16052	1707	--> 2340
*	%KYDMP		92060-16053	1707	--> 2340
	%LGTAT		92084-16166	2301	
*	%LI		92077-16646	New	--> 2340
	%LIF		24998-12006	2301	
*	%LINDX		92077-12026	New	--> 2340
*	%LINDX		92077-16008	2226	--> Deleted
*	%LINKA		92077-16001	2226	--> Deleted
*	%LINKA		92084-12070	New	--> 2340
*	%LINKB		92077-16002	2240	--> Deleted
*	%LINKB		92084-16946	New	--> 2340
*	%LINKC		92077-16003	2240	--> Deleted
*	%LINKC		92084-16947	New	--> 2340
*	%LINKD		92077-16004	2240	--> Deleted

*	%LINKD		92084-16948	New	--> 2340
*	%LINKE		92084-16949	New	--> 2340
*	%LNKD6		92077-16113	2226	--> Deleted
*	%LNKDA		92077-16112	2226	--> Deleted
*	%LNKR6		92077-16108	2226	--> Deleted
*	%LNKRA		92077-16107	2226	--> Deleted
	%LP31		92062-16003	1805	
*	%LUPRN		92068-16125	2240	--> 2326
*	%M.FFP		92084-16950	New	--> 2340
	%M.LIB		92084-16362	2226	
*	%MACR0	MACR0	92059-16002	2226	--> Deleted
*	%MACR0		92059-16015	New	--> 2340
*	%MACR1	MACR1	92059-16003	2226	--> Deleted
*	%MACR1		92059-16016	New	--> 2340
*	%MACR2	MACR2	92059-16004	2226	--> Deleted
*	%MACR2		92059-16017	New	--> 2340
*	%MACR3	MACR3	92059-16005	2226	--> Deleted
*	%MACR3		92059-16018	New	--> 2340
*	%MACR4	MACR4	92059-16006	2226	--> Deleted
*	%MACR4		92059-16019	New	--> 2340
*	%MACR5	MACR5	92059-16007	2226	--> Deleted
*	%MACR5		92059-16020	New	--> 2340
*	%MACR6	MACR6	92059-16008	2226	--> Deleted
*	%MACR6		92059-16021	New	--> 2340
*	%MACR7	MACR7	92059-16009	2226	--> Deleted
*	%MACR7		92059-16022	New	--> 2340
*	%MACRO	MACRO	92059-16001	2226	--> Deleted
*	%MACRO		92059-16014	New	--> 2340
*	%MERGE		92077-16431	New	--> 2340
*	%MERGE		92084-16433	2301	--> Deleted
	%MLLDA		92084-12064	2226	
	%MLLDB		92084-12063	2226	
	%MLLDR		92084-16361	2226	
	%MSAFD		92064-16086	2001	
	%NSESN		92084-12023	2121	
	%OLDRE	OLDRE	92059-16010	2226	
	%PCOPY		92084-16655	2121	
	%PRSTR		92084-16657	2302	
	%PSAVE		92084-16656	2302	
	%PSPAR		92084-16700	2301	
	%PVM00		12792-16001	2032	
	%READR		92068-16054	2240	
	%READT		92084-16568	2226	
*	%RT6GN		92084-12007	2301	--> 2340
*	%RT6OS		92084-16957	New	--> 2340
*	%RT6VM		92084-16956	New	--> 2340
	%SAVER		92068-16053	2240	
*	%SCOM		92084-16432	2301	--> 2340
	%SGMTR		92084-12034	2121	
*	%SMON1		92084-12021	2301	--> 2340

	%SMON2	92084-12022	2121	
	%SPOL1	92084-12027	2121	
*	%SPOL2	92084-12028	2121	--> 2340
	%SRQ.P	59310-16005	1805	
*	%SSTCH	92084-12008	2301	--> 2340
	%SXREF	92084-12017	2121	
	%T5IDM	92084-16528	2208	
*	%TF	92077-16598	New	--> 2340
*	%TRFAS	92077-16461	New	--> 2326
	%TVLIB	91200-16002	1648	
	%TVVER	91200-16004	1648	
	%VMACK	92084-16423	2121	
*	%WHZAT	92084-16526	2301	--> 2340
	%WRITT	92084-16569	2301	
	&$CMND	92084-18463	2121	
	&$TA32	92067-18507	2001	
	&$TB32	92067-18509	2001	
	&$TM33	92084-18652	2301	
*	&4AUTR	92067-18456	1903	--> 2340
*	&C*TAB	92084-18135	New	--> 2340
*	&C.TAB	92084-18135	2121	--> Deleted
	&D.BUF	92084-18394	2121	
	*BCKCT	92084-17158	2212	
	*BCKMT	92084-17156	2212	
*	*COHLP	92084-17263	New	--> 2340
*	*INCI	92084-17262	New	--> 2340
*	*LODCI	92084-17261	New	--> 2340
	*PBULD	92084-17157	2121	
*	=AVL2	92084-16943	New	--> 2340
*	=EXT	92084-16941	New	--> 2340
*	=FLAG	92084-16942	New	--> 2340
*	=FPORT	92084-16944	New	--> 2340
*	=PLIB	92833-16051	2226	--> 2326
	=PRERS	92833-16053	2226	
*	=SHSLB	92833-16052	2226	--> 2326
*	???	92077-17099	New	--> 2326
*	?AG	92084-17213	New	--> 2340
*	?AS	92084-17214	New	--> 2340
*	?BL	92084-17215	New	--> 2340
*	?BR	92084-17216	New	--> 2340
*	?CI	92077-17045	New	--> 2326
*	?CL	92077-17052	New	--> 2326
*	?CN	92084-17217	New	--> 2340
*	?CO	92077-17054	New	--> 2340
*	?CR	92077-17055	New	--> 2326
*	?CRDIR	92077-17056	New	--> 2326
*	?CU	92084-17218	New	--> 2340
*	?DC	92077-17057	New	--> 2326
*	?DL	92077-17058	New	--> 2340
*	?DN	92084-17219	New	--> 2340

* ?EQ	92084-17220	New	--> 2340
* ?ERROR	92084-17221	New	--> 2340
* ?EX	92084-17222	New	--> 2340
* ?FOWN	92077-17063	New	--> 2326
* ?FPACK	92084-17223	New	--> 2340
* ?FREES	92077-17062	New	--> 2326
* ?FVERI	92077-17064	New	--> 2326
* ?GO	92084-17224	New	--> 2340
* ?HE	92084-17225	New	--> 2340
* ?IN	92084-17226	New	--> 2340
* ?IT	92084-17227	New	--> 2340
* ?LI	92077-17069	New	--> 2326
* ?LINDX	92084-17228	New	--> 2340
* ?LINK	92084-17229	New	--> 2340
* ?LU	92084-17230	New	--> 2340
* ?MACRO	92059-17003	New	--> 2326
* ?MASK	92084-17231	New	--> 2340
* ?MC	92084-17232	New	--> 2340
* ?MERGE	92077-17073	New	--> 2340
* ?MO	92077-17074	New	--> 2326
* ?OF	92084-17233	New	--> 2340
* ?ON	92084-17234	New	--> 2340
* ?OWNER	92084-17235	New	--> 2340
* ?PR	92084-17236	New	--> 2340
* ?PROT	92084-17237	New	--> 2340
* ?PU	92077-17081	New	--> 2326
* ?QU	92084-17238	New	--> 2340
* ?RN	92077-17082	New	--> 2326
* ?RP	92084-17239	New	--> 2340
* ?RU	92084-17240	New	--> 2340
* ?SL	92084-17241	New	--> 2340
* ?SS	92084-17242	New	--> 2340
* ?ST	92084-17243	New	--> 2340
* ?SZ	92084-17244	New	--> 2340
* ?TI	92084-17245	New	--> 2340
* ?TM	92084-17246	New	--> 2340
* ?TO	92084-17247	New	--> 2340
* ?TR	92077-17090	New	--> 2326
* ?UL	92084-17248	New	--> 2340
* ?UNPU	92077-17092	New	--> 2326
* ?UP	92084-17249	New	--> 2340
* ?UR	92084-17250	New	--> 2340
* ?VS	92077-17094	New	--> 2326
* ?WD	92077-17095	New	--> 2340
* ?WH	92084-17251	New	--> 2340
* ?WS	92084-17252	New	--> 2340
* ?XQ	92077-17098	New	--> 2340
* A92084	92084-17999	2310	--> 2340
* FORMT	92084-16737	2301	--> 2302
* PCOPY	92084-16740	2301	--> 2302

* PRSTR	92084-16739	2301	--> 2302
* PSAVE	92084-16741	2301	--> 2302
* PSPAR	92084-16738	2301	--> 2302
* SEP.6	92084-17205	New	--> 2340

Manual Part#	Title	Type of Update
92068-90002	RTE-IVB Terminal User's Reference	Update 8
92068-90004	RTE-IVB Programmer's Reference Manual	Update 8
92068-90010	RTE-IVB Utility Programs Reference	Update 7
09580-93027	RTE Driver DVM72 RTE Universal Interface Driver Programming and Operating Manual	Update 1
59310-90064	HP-IB In HP 1000 Computer Systems User's Manual	Edition 7
92077-90037	Relocatable Library Reference Manual RTE-A / RTE-6/VM	Edition 2
92062-90004	2608A Line Printer Driver DVB12	Edition 4
92074-90001	EDIT/1000 User's Guide	Update 4
92200-93005	RTE Operating System Driver Writing	Edition 6

Media Part#	Media Option
92084-13301	022
92084-13001	031
92084-13002	032
92084-13003	033
92084-13004	036
92084-13005	037
92084-13006	038
92084-13527	050
92084-13528	051
92084-13503	052
92084-13504	053
92084-13505	054
92084-13516	054
92084-13506	055
92084-13517	055
92084-13507	056
92084-13508	057
92084-13509	058
92084-13518	058
92084-13510	059
92084-13519	059
92084-13511	060
92084-13512	061

3.42 (92091A) HPSPICE

File	Module	Part Number	Rev
#SIMIN		92091-17007	2201
#SIMSP		92091-17001	2326
#SPICE		92091-17002	2201
#SPIIN		92091-17008	2201
#SYNIN		92091-17009	2201
#SYNTX		92091-17003	2201
%ACAN		92091-16007	2201
%COMMS		92091-16012	2201
%DCOP		92091-16006	2201
%DCTR1		92091-16005	2201
%DCTR2		92091-16022	2201
%ERRCD		92091-16014	2201
%ERRCK		92091-16003	2201
%GRAPH		92091-16016	2201
%HELPR		92091-16015	2201
%HPUTL		92091-16021	2201
%OVTPT		92091-16008	2201
%PARSR		92091-16013	2240
%READN		92091-16002	2201
%SETUP		92091-16004	2201
%SIMSP		92091-16001	2201
%SPICE		92091-16011	2326
%SYNTX		92091-16020	2201
%SYSTM		92091-16019	2240
%UTIL1		92091-16017	2201
%UTIL2		92091-16018	2201
%UTILA		92091-16010	2201
%UTILF		92091-16009	2201
*SPICE		92091-17010	2011
A92091		92091-17999	2326
EMITR		92091-17006	2201
TTL		92091-17005	2201
VERIF		92091-17004	2201

3.43 (92101A) Basic/1000D

File	Module	Part Number	Rev
#BASIC		92101-17001	2140
#RTETG		92101-17002	2140
%694BS	A6940	29102-16003	C
%A2313	A2313	29102-60016	B
%ALARM	ALARM	92413-16007	B
%BAIN1	BASIC	92101-12001	2213
%BAIN2	BASIC	92101-12001	2213
%BAIN3	BASIC	92101-12001	2213
%BAMLB	TRAP	92101-12002	2140
%BASLB	BASLB	92101-12003	2213
%BATG3	T.TRF	92101-16024	2013
%BATG4	T.TRF	92101-16023	2013
%BATGN	RTETG	92101-16008	2013
%BBUFF	BUFF	92101-16034	2140
%DTRAP	DTRAP	92101-16035	2140
%TSKSC	SCHD	92101-16013	A
&BBUFF		92101-18034	2140

3.44 (92400A) DAS Utility Library

File	Module	Part Number	Rev
%BMEP	EX.BT	09610-60025	B
%CDCOV	ASCBC	92404-60001	A
%CURFT	CRVFT	92405-60001	A
%HSRP	R2240	92400-16001	2001
%HUMID	RHBLB	92402-60001	A
%INGRA	STRTA	92407-60001	A
%INTER	FRSTU	92406-60001	A
%STANA	HISTI	92403-60001	A
%THLIN	CRALM	92401-60001	A
&BMEP		09610-80025	
&CDCOV		92404-80001	
&CURFT		92405-80001	
&HSRP		92400-18001	
&HUMID		92402-80001	
&INGRA		92407-80001	
&INTER		92406-80001	
&STANA		92403-80001	
&THLIN		92401-80001	

3.45 (92425C) MIIS (ATS/1000)

File	Module	Part Number	Rev
$TRPL5	TRPLB	92425-12001	2001
%ALLO5	ALLOC	92425-16059	2001
%CNFG5	CNFGD	92425-16063	2001
%DALO5	DALOC	92425-16060	2001
%DRTX5	DRTX5	92425-16062	2001
%DTSX5	DTSXX	92425-16045	2001
%ERROR	ERROR	09580-16021	A
%GTCX5	GTCXX	92425-16049	2001
%IBCF5	IBCFE	92425-16056	2001
%IBLU5	IBLU5	92425-16050	2001
%ISN5	ISN5	92425-16043	2001
%LU2S5	LU2S5	92425-16052	2001
%LUDV5	LUDV5	92425-16051	2001
%STAR5	START	92425-16047	2001
%TIM5	TIM5	92425-16064	2001
&DRTX5		92425-18062	2001
&DVIN5		92425-18061	2001
&TRTB5		92425-18069	2001
*BUIL5		92425-18053	2001
/DIR		92425-18071	2001
C92425		92425-18999	2001

3.46 (92427A) Device Subroutine Library

File	Module	Part Number	Rev
$F2A2F	F2A2F	92427-12001	2140
%AAASC	AAASC	09580-16501	2126
%AARED	AARED	09580-16500	2126
%AASRC	AASRC	09580-16497	2126
%AASRM	AASRM	09580-16499	2126
%AASWP	AASWP	09580-16498	2126
%AC1	AC1	09580-16043	1840
%ACP	ACP	09580-16011	2001
%ACPS1	ACPS1	09580-16430	2126
%ACSEN	ACSEN	09580-16429	2001
%ACVSD	ACVSD	09580-16030	1840
%ADCSU	ADCSU	09580-16009	2026

%ANAGN	ANAGN	09580-16465	2026
%ANAME	ANAME	09580-16467	2026
%ANARD	ANARD	09580-16468	2026
%ANASU	ANASU	09580-16464	2026
%ANASW	ANASW	09580-16466	2026
%ARMF	ARMF	09580-16017	2140
%ATTN		09580-16564	2226
%C45HF	C45HF	09580-16460	2026
%C45IM	C45IM	09580-16413	2001
%C45MF	C45MF	09580-16463	2026
%C45OF	C45OF	09580-16462	2026
%C45RD	C45RD	09580-16290	2026
%C45SU	C45SU	09580-16289	2026
%CDDL		09580-16578	2240
%CDPS		09580-16591	2240
%CDRY		09580-16577	2240
%CDSM		09580-16579	2240
%CDTU	CDTU	09580-16139	1840
%CHANC		09580-16291	1840
%CHNAB		09580-16016	2140
%CTREP	CTREP	09580-16128	1840
%CTRIM	CTRIM	09580-16129	2126
%CTRLF		09580-16013	2140
%CTRMU		09580-16282	1840
%CTRRE	CTRRE	09580-16130	2126
%CTRST	CTRST	09580-16131	2013
%CTRSU		09580-16281	1840
%DACIN		09580-16576	2226
%DAOUT		09580-16574	2226
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%DCCDA		09580-16286	1840
%DCOPL	DCOPL	09580-16134	2001
%DCPSV		09580-16163	1840
%DCV	DCV	09580-16040	2001
%DCVDA		09580-16285	1840
%DCVOT	DCVOT	09580-16440	2001
%DCVSH	DCVSH	09580-16038	2001
%DCVSL	DCVSL	09580-16039	2001
%DCWDA		09580-16538	2226
%DGNLD	DGNLD	09580-16450	2001
%DGTST	DGTST	09570-16482	1830
%DIGIN	DIGIN	09580-16427	1926
%DIGOT		09580-16287	1840
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%DMMCL		09580-16523	2140
%DMMMU		09580-16526	2140
%DMMSA		09580-16525	2140
%DMMSU		09580-16524	2140
%DSERR	DSERR	09570-16484	1830
%DSVMU	DSVMU	09580-16137	2001

%DSVSU	DSVSU	09580-16136	2001
%DTUTO	DTUTO	09580-16150	1840
%DVMEP		09580-16297	1840
%DVMMU	DVMMU	09580-16041	1840
%DVMRE	DVMRE	09580-16132	1840
%DVMST	DVMST	09580-16133	1926
%DVMSU	DVMSU	09580-16042	1840
%DVSTS	DVSTS	09580-16442	2013
%ERRNM	ERRNM	09570-16487	1830
%FAMC		09580-16293	1840
%FPREF	FPREF	09580-16145	1840
%FPSUP	FPSUP	09580-16152	1840
%FPSWL	FPSWL	09580-16146	1840
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%GPRIO	GPRIO	09580-16316	2013
%GRTST	GRTST	09580-16010	2001
%GTRNG	GTRNG	09580-16036	1840
%HFGMY	HFGMY	09580-16370	1926
%HFGSU	HFGSU	09580-16369	1926
%IBGSC	IBGSC	09580-16452	2001
%INIT	INIT	09580-16141	1840
%ISWRP	ISWRP	09580-16014	2126
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%LCRBS		09580-16518	2140
%LCRED		09580-16521	2240
%LCRFR		09580-16519	2140
%LCRMD		09580-16520	2140
%LCRMP		09580-16516	2140
%LCRSW		09580-16517	2140
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%MODAN	MODAN	09580-16481	2126
%MODAS	MODAS	09580-16515	2126
%MODES		09580-16015	2140
%MODSW		09580-16046	1840
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%MPGSC		09580-16288	1840
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%MSAS		09580-16563	2226
%MSCAL		09580-16553	2226
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%MSTG		09580-16560	2226
%MSTXT		09580-16551	2226
%MSVI		09580-16557	2226
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%MSVP		09580-16556	2226
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%PGNSR	PGNSR	09580-16034	1840
%PGNSS	PGNSS	09580-16035	1840
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%PMFLG	PMFLG	09580-16059	2126
%PPGIM	PPGIM	09580-16305	1926
%PPGMY	PPGMY	09580-16304	1926
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%PPGSS	PPGSS	09580-16307	1926
%PROEN		09580-16566	2226
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%PROID		09580-16568	2226
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%PSP	PSP	09580-16031	1840
%PSPRG	PSPRG	09580-16319	1926
%PULSE	PULSE	09580-16148	1840
%PWMMU		09580-16235	1840
%PWMSU		09580-16234	1840
%RASW	RASW	09580-16368	2001
%RCONF	RCONF	09580-16149	1840
%RESIS	RESIS	09580-16470	2101
%RFMOD		09580-16278	1840
%RFOSM		09580-16280	1840
%RFOSO	RFOSO	09580-16279	2001
%RFSU	RFSU	09580-16277	1926
%RLCDM		09580-16276	1840
%RLCMU	RLCMU	09580-16268	2101
%RLCSU		09580-16267	1840

%RLCTM		095E0-16275	1840
%RMSSU	RMSSU	095E0-16294	2026
%RRFFT	RRFFT	095E0-16469	2101
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%RTX1		095E0-16164	1840
%S3330		095E0-16269	1840
%SCANC		095E0-16055	1840
%SCAND		095E0-16054	1840
%SCNSU	SCNSU	095E0-16359	2001
%SDLY	SDLY	095E0-16140	1840
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%SETLU	SETLU	09570-16528	1830
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%SFFUN	SFFUN	095E0-16314	2126
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%SFMWC	SFMWC	095E0-16449	2001
%SGNBU		095E0-16302	1840
%SGNLS	SGNLS	095E0-16299	1926
%SGNMD	SGNMD	095E0-16300	1926
%SGNMY		095E0-16301	1840
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%SLAMP		095E0-16570	2240
%SLFRQ		095E0-16569	2240
%SLFUN		095E0-16573	2240
%SLSTR		095E0-16572	2240
%SLSWP		095E0-16571	2240
%SSGAS	SSGAS	095E0-16508	2126
%SSGFA	SSGFA	095E0-16502	2126
%SSGMD	SSGMD	095E0-16504	2126
%SSGMK	SSGMK	095E0-16506	2126
%SSGOF	SSGOF	095E0-16503	2126
%SSGSW	SSGSW	095E0-16505	2126
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%STREF	STREF	095E0-16143	1840
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%SWCID	SWCID	095E0-16048	2126
%SWCON	SWCON	095E0-16056	2126
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%SWSET	SWSET	095E0-16144	1840
%SWTST	SWTST	095E0-16051	2126
%SWVHF		095E0-16575	2240
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%TIMRS	TIMRS	095E0-16321	1926
%TIPRB		095E0-16292	1840
%TRIGF		095E0-16018	2140
%TSASU	TSASU	095E0-16323	2013

%TSYCL	TSYCL	09580-16458	2001
%TSYFM	TSYFM	09580-16453	2026
%TSYOM	TSYOM	09580-16456	2026
%TSYSD	TSYSD	09580-16457	2001
%TSYSM	TSYSM	09580-16454	2001
%TSYTL	TSYTL	09580-16459	2001
%TSYTM	TSYTM	09580-16455	2001
%UCDSP		09580-16529	2140
%UCFUN		09580-16537	2140
%UCGAT		09580-16530	2226
%UCINP		09580-16531	2140
%UCMAT		09580-16532	2140
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%UCSPC		09580-16534	2226
%UCSTT		09580-16535	2140
%UCTRG		09580-16536	2140
%VARPG	VARPG	09580-16308	1926
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%WTKLS		09580-16233	1840
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%XPREF	XPREF	09570-16555	1830
%XPSUP	XPSUP	09570-16556	1830
%XPSWL	XPSWL	09570-16557	1830
%XSCTL	XSCTL	09570-16559	1830
%XSERN	XSERN	09570-16560	2001
%XSTAT	XSTAT	09570-16562	1830
%XTREF	XTREF	09570-16563	1830
%XTUTO	XTUTO	09570-16568	1830
%XULSE	XULSE	09570-16569	1830
%XWSET	XWSET	09570-16572	1830
&AAASC		09580-18501	2126
&AARED		09580-18500	2126
&AASRC		09580-18497	2126
&AASRM		09580-18499	2126
&AASWP		09580-18498	2126
&AC1		09580-18043	1840
&ACPS1		09580-18430	2126
&ACSEN		09580-18429	2001
&ACVSD		09580-18030	1840
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&ANAME		09580-18467	2026
&ANARD		09580-18468	2026

&ANASU	09580-18464	2026
&ANASW	09580-18466	2026
&ARMF	09580-18017	2140
&ATTN	09580-18564	2226
&C45HF	09580-18460	2026
&C45IM	09580-18413	2001
&C45MF	09580-18463	2026
&C45OF	09580-18462	2026
&C45RD	09580-18290	2026
&C45SU	09580-18289	2026
&CDDL	09580-18578	2240
&CDPS	09580-18591	2240
&CDRY	09580-18577	2240
&CDSM	09580-18579	2240
&CDTU	09580-18139	1840
&CHANC	09580-18291	1840
&CHNAB	09580-18016	2140
&CTREP	09580-18128	1840
&CTRIM	09580-18129	2126
&CTRLF	09580-18013	2140
&CTRMU	09580-18282	1840
&CTRRE	09580-18130	1840
&CTRST	09580-18131	2013
&CTRSU	09580-18281	1840
&DACIN	09580-18576	2226
&DAOUT	09580-18574	2226
&DCAV	09580-18441	2001
&DCCDA	09580-18286	1840
&DCOPL	09580-18134	2001
&DCPSV	09580-18163	1840
&DCV	09580-18040	2001
&DCVDA	09580-18285	1840
&DCVOT	09580-18440	2001
&DCVSH	09580-18038	2001
&DCVSL	09580-18039	2001
&DCWDA	09580-18538	2226
&DGNLD	09580-18450	2001
&DGTST	09570-18482	B
&DIGIN	09580-18427	1926
&DIGOT	09580-18287	1840
&DMMAS	09580-18528	2140
&DMMCL	09580-18523	2140
&DMMMU	09580-18526	2140
&DMMSA	09580-18525	2140
&DMMSU	09580-18524	2140
&DSERR	09570-18484	*
&DSVMU	09580-18137	2001
&DSVSU	09580-18136	2001
&DTUTO	09580-18150	1840
&DVMEP	09580-18297	1840

&DVMMU	09580-18041	1926
&DVMRE	09580-18132	1840
&DVMST	09580-18133	1926
&DVMSU	09580-18042	1840
&DVSTS	09580-18442	2013
&ERRNM	09570-18487	A
&F2A2F	92427-18001	2140
&FAMC	09580-18293	1840
&FPREF	09580-18145	1840
&FPSUP	09580-18152	1840
&FPSWL	09580-18146	1840
&GENTM	09580-18320	1926
&GFMRD	09580-18012	2001
&GPRIO	09580-18316	2013
&GRTST	09580-18010	2001
&GTRNG	09580-18036	1840
&HFGMY	09580-18370	1926
&HFGSU	09580-18369	1926
&IBGSC	09580-18452	2001
&INIT	09580-18141	1840
&ISWRP	09580-18014	2126
&LCRAS	09580-18522	2140
&LCRBS	09580-18518	2140
&LCRED	09580-18521	2240
&LCRFR	09580-18519	2140
&LCRMD	09580-18520	2140
&LCRMP	09580-18516	2140
&LCRSW	09580-18517	2140
&LETED	09580-18037	1840
&MATSW	09580-18052	1840
&MODAN	09580-18481	2126
&MODAS	09580-18515	2126
&MODES	09580-18015	2140
&MODSW	09580-18046	1840
&MOUTP	09580-18019	2140
&MPGSC	09580-18288	1840
&MSADV	09580-18554	2226
&MSAS	09580-18563	2226
&MSCAL	09580-18553	2226
&MSCTL	09580-18561	2226
&MSDGA	09580-18581	2226
&MSDGC	09580-18583	2226
&MSDGD	09580-18584	2226
&MSDGF	09580-18580	2226
&MSDGI	09580-18589	2226
&MSDGO	09580-18588	2226
&MSDGP	09580-18582	2226
&MSDGR	09580-18590	2226
&MSDGS	09580-18586	2226
&MSDGV	09580-18587	2226

&MSDGX	09580-18585	2226
&MSDL	09580-18548	2226
&MSDLT	09580-18562	2226
&MSHP	09580-18546	2226
&MSIN	09580-18544	2226
&MSINT	09580-18550	2226
&MSKEY	09580-18552	2226
&MSMD	09580-18549	2226
&MSRD	09580-18547	2226
&MSST	09580-18545	2226
&MSSWP	09580-18555	2226
&MSTF	09580-18559	2226
&MSTG	09580-18560	2226
&MSTXT	09580-18551	2226
&MSVI	09580-18557	2226
&MSVM	09580-18558	2226
&MSVP	09580-18556	2226
&MUXSW	09580-18053	1840
&NASU	09580-18270	1926
&PGNSA	09580-18032	1840
&PGNSD	09580-18033	1840
&PGNSR	09580-18034	1840
&PGNSS	09580-18035	1840
&PINIT	09580-18153	1840
&PMFLG	09580-18059	2126
&PPGIM	09580-18305	1926
&PPGMY	09580-18304	1926
&PPGOM	09580-18306	1926
&PPGSS	09580-18307	1926
&PROEN	09580-18566	2226
&PROIC	09580-18567	2226
&PROID	09580-18568	2226
&PSCTL	09580-18412	1926
&PSP	09580-18031	1840
&PSPRG	09580-18319	1926
&PULSE	09580-18148	1840
&PWMMU	09580-18235	1840
&PWMSU	09580-18234	1840
&RASW	09580-18368	2001
&RCONF	09580-18149	1840
&RESIS	09580-18470	2101
&RFMOD	09580-18278	1840
&RFOSM	09580-18280	1840
&RFOSO	09580-18279	2001
&RFSU	09580-18277	1926
&RLCDM	09580-18276	1840
&RLCMU	09580-18268	2101
&RLCSU	09580-18267	1840
&RLCTM	09580-18275	1840
&RMSSU	09580-18294	2026

&RRFFT	09580-18469	2101
&RSTAT	09580-18142	1840
&RTX1	09580-18164	1840
&S3330	09580-18269	1840
&SCANC	09580-18055	1840
&SCAND	09580-18054	1840
&SCNSU	09580-18359	2001
&SDLY	09580-18140	1840
&SETHI	09580-18151	1840
&SETLU	09570-18528	
&SFAMP	09580-18311	2001
&SFFUN	09580-18314	2126
&SFGEN	09580-18310	2226
&SFGMD	09580-18312	1926
&SFGMY	09580-18309	2101
&SFMWC	09580-18449	2001
&SGNBU	09580-18302	1840
&SGNLS	09580-18299	1926
&SGNMD	09580-18300	1926
&SGNMY	09580-18301	1840
&SGNSU	09580-18298	2126
&SGNSW	09580-18303	1840
&SLAMP	09580-18570	2240
&SLFRQ	09580-18569	2240
&SLFUN	09580-18573	2240
&SLSTR	09580-18572	2240
&SLSWP	09580-18571	2240
&SSGAS	09580-18508	2126
&SSGFA	09580-18502	2126
&SSGMD	09580-18504	2126
&SSGMK	09580-18506	2126
&SSGOF	09580-18503	2126
&SSGSW	09580-18505	2126
&STGET	09580-18443	2013
&STREF	09580-18143	1840
&SWAID	09580-18050	2126
&SWCID	09580-18048	2126
&SWCON	09580-18056	2126
&SWFRQ	09580-18426	1926
&SWMAP	09580-18049	2126
&SWSET	09580-18144	1840
&SWTST	09580-18051	2126
&SWVHF	09580-18575	2240
&TIMRD	09580-18322	1926
&TIMRS	09580-18321	1926
&TIPRB	09580-18292	1840
&TRIGF	09580-18018	2140
&TSASU	09580-18323	2013
&TSYCL	09580-18458	2001
&TSYFM	09580-18453	2026

&TSYOM	09580-18456	2026
&TSYSD	09580-18457	2001
&TSYSM	09580-18454	2001
&TSYTL	09580-18459	2001
&TSYTM	09580-18455	2001
&UCDSP	09580-18529	2140
&UCFUN	09580-18537	2140
&UCGAT	09580-18530	2226
&UCINP	09580-18531	2140
&UCMAT	09580-18532	2140
&UCRED	09580-18533	2226
&UCSPC	09580-18534	2226
&UCSTT	09580-18535	2140
&UCTRG	09580-18536	2140
&VARPG	09580-18308	1926
&VHFSW	09580-18047	1840
&VVM	09580-18272	1840
&WAVSA	09580-18318	2001
&WAVSU	09580-18317	2101
&WTEK	09580-18232	1840
&WTKLS	09580-18233	1840
&XCONF	09570-18547	A
&XDLY	09570-18548	B
&XDTU	09570-18549	B
&XNIT	09570-18551	A
&XPREF	09570-18555	A
&XPSUP	09570-18556	A
&XPSWL	09570-18557	A
&XSCTL	09570-18559	A
&XSERN	09570-18560	D
&XSTAT	09570-18562	A
&XTREF	09570-18563	1826
&XTUTO	09570-18568	A
&XULSE	09570-18569	B
&XWSET	09570-18572	A
A92427	92427-18999	2240

3.47 (92832A) Pascal/1000 (RTE-IVB)

File	Module	Part Number	Rev
"PERRS		92832-18511	2101
#PASCL		92832-18503	2101
#PCLF		92832-18505	2101
#PCLM		92832-18507	2101
#XREF1		92832-18513	2101
#XREF2		92832-18515	2101
$PLIB	$PLIB	92832-16700	2101
$SHSLB	SHSLB	92832-16701	2101
%..GER	..GER	92832-16302	2101
%FFRC	FFORC	92832-16603	2101
%MAN	PCL.S	92832-16602	2101
%MFRC	MFORC	92832-16604	2101
%MSC01	%ULB	92832-16601	2101
%PASCL	PASCL	92832-16070	2101
%PRERS	PRERS	92832-16301	2101
%PSG01	HSSZ	92832-16600	2101
%TRACA	TRACA	92832-16305	2101
%TRACB	TRACB	92832-16310	2101
%TRACC	TRACC	92832-16315	2101
%XREF1	XREF1	92832-16800	2101
%XREF2	XREF2	92832-16810	2101
**MSC		92832-18522	2101
**PSG		92832-18521	2101
*LDPAS		92832-18502	2101
*LDXF1		92832-18512	2101
*LDXF2		92832-18514	2101
*LOAD		92832-18501	2101
*OFPCL		92832-18510	2101
*OFXRF		92832-18518	2101
*PCLF		92832-18504	2101
*PCLM		92832-18506	2101
*PUPCL		92832-18509	2101
*PUXRF		92832-18517	2101
*SPPCL		92832-18508	2101
*SPXRF		92832-18516	2101
*UNL.C		92832-18519	2101
*UNL.T		92832-18520	2101
*UNLOA		92832-18500	2015
A92832		92832-18999	2101

3.48 + (92833A) Pascal/1000 (RTE-6/VM, RTE-A)

	File	Module	Part Number	Rev	Change
	"PERRS		92833-17018	2144	
*	#PCL		92833-17005	2326	--> 2340
	$ALB		92833-16059	2326	
	$FMP		92833-16056	2326	
	$NFS		92833-16057	2326	
	$PLIB		92833-16005	2326	
	$PLIBN		92833-16054	2326	
	$SHSLB		92833-16006	2326	
	$THUNK		92833-16060	2326	
	$ULB		92833-16055	2326	
	%ALTER		92833-16002	2144	
	%CAT		92833-16013	2326	
	%DCL		92833-16036	2326	
	%ERR		92833-16034	2326	
	%EV1		92833-16044	2326	
	%EV2		92833-16045	2326	
	%EV3		92833-16046	2326	
	%EXP		92833-16041	2326	
*	%FORCE		92833-16015	2326	--> 2340
	%INT		92833-16035	2326	
	%LOCK		92833-16016	2144	
*	%MAN		92833-16012	2326	--> 2340
	%OPT		92833-16032	2326	
	%PASCL		92833-16001	2326	
*	%PASN		92833-16058	2326	--> 2340
	%PRERS		92833-16007	2226	
	%PRG		92833-16038	2326	
	%SCN		92833-16033	2326	
	%SEGA1		92833-16050	2144	
	%SG00P		92833-16021	2326	
	%SG01P		92833-16022	2326	
	%SG02P		92833-16023	2326	
	%SG03P		92833-16024	2326	
	%SG04P		92833-16025	2326	
	%SG05P		92833-16026	2326	
	%SG06P		92833-16027	2326	
	%SG07P		92833-16028	2326	
	%SG08P		92833-16029	2326	
	%SG09P		92833-16030	2326	
	%SG10P		92833-16031	2326	
	%STD		92833-16042	2326	
	%STM		92833-16040	2326	
	%SWAP		92833-16017	2144	

	%TRACA	92833-16008	2144	
	%TRACB	92833-16009	2144	
	%TRACC	92833-16010	2144	
	%UNT	92833-16037	2326	
	%UTL	92833-16039	2326	
	%VMSEG	92833-16014	2144	
*	%XFM	92833-16043	2326	--> 2340
	%XREF1	92833-16003	2144	
	%XREF2	92833-16004	2144	
	)ALTER	92833-17019	2326	
	*LOAD	92833-17001	2326	
	*LOADF	92833-17020	2326	
	=PLIB	92833-16051	2326	
	=PRERS	92833-16053	2226	
	=SHSLB	92833-16052	2326	
*	A92833	92833-17999	2326	--> 2340

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
92833-13302	020
92833-13307	020
92833-13311	020
92833-13301	022
92833-13401	041
92833-13402	042
92833-13411	042
92833-13406	044
92833-13410	044
92833-13501	050
92833-13502	051

3.49 + (92834A) Fortran-4X

	File	Module	Part Number	Rev	Change
*	"FTN4X		92834-17001	2140	--> 2226
*	#FTN4X		92834-17002	2140	--> 2226
*	$F4XCS	F4XCS	92834-12001	2226	--> 2303
	%F4X1	F4X1	92834-16002	2226	
*	%F4X2	F4X2	92834-16003	2226	--> 2303
*	A92834		92834-17999	2226	--> 2303

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
92834-13301	020
92834-13302	020
92834-13304	022
92834-13401	041
92834-13402	042
92834-13501	050
92834-13502	051

3.50 (92835A) Signal/1000

File	Module	Part Number	Rev
$HPFFT		92835-12001	
&CFFT		92835-18002	
&CFFT1		92835-18003	
&FFTRP		92835-18004	
&RFFT		92835-18001	
&S0.1		92835-18007	2140
&S0.2		92835-18008	2140
&S0.3		92835-18009	2140
&S0.4		92835-18010	
&S1.1		92835-18011	
&S1.2		92835-18012	2140
&S1.3		92835-18013	
&S1.4		92835-18014	2140
&S1.5		92835-18015	
&S1.5S		92835-18016	
&S1.6		92835-18017	
&S1.7		92835-18018	2140
&S1.8		92835-18019	
&S1.9E		92835-18021	
&S1.9M		92835-18020	
&S1.9S		92835-18022	
&S2.1		92835-18023	2140
&S2.2		92835-18024	2140
&S2.3		92835-18025	2140
&S3.1		92835-18027	2140

&S3.1T	92835-18026	
&S4.1	92835-18028	2140
&S4.2	92835-18029	
&S4.3	92835-18030	2140
&S5.1	92835-18031	2140
&S5.2	92835-18032	
&S5.3	92835-18033	2140
&S5.4	92835-18034	2140
&S6.1	92835-18035	
&S6.11	92835-18036	2140
&S6.12	92835-18037	2140
&S6.13	92835-18038	2140
&S6.14	92835-18039	2140
&S6.15	92835-18040	2140
&S6.1S	92835-18041	2140
&S6.2	92835-18042	2140
&S6.3	92835-18043	2140
&S6.4	92835-18044	
&S7.1	92835-18045	
&S7.2	92835-18046	
&S8.1	92835-18047	
&S8.2	92835-18048	2140
&S8.3	92835-18049	
&SDIAG	92835-18006	
&SGCAL	92835-18005	
*L1.1	92835-17002	2140
*L1.2	92835-17003	2140
*L1.3	92835-17004	2140
*L1.4	92835-17005	2140
*L1.5	92835-17006	2140
*L1.6	92835-17007	2140
*L1.7	92835-17008	2140
*L1.8	92835-17009	2140
*L1.9E	92835-17011	2140
*L1.9M	92835-17010	2140
*L2.1	92835-17012	2140
*L2.2	92835-17013	2140
*L2.3	92835-17014	2140
*L3.1	92835-17015	2140
*L3.1T	92835-17016	2140
*L4.1	92835-17017	2140
*L4.2	92835-17018	2140
*L4.3	92835-17019	2140
*L5.1	92835-17020	2140
*L5.2	92835-17021	2140
*L5.3	92835-17022	2140
*L5.4	92835-17023	2140
*L6.1	92835-17024	2140
*L6.2	92835-17025	2140
*L6.3	92835-17026	2140

*L6.4	92835-17027	2140
*L7.1	92835-17028	2140
*L7.2	92835-17029	2140
*L8.1	92835-17030	2140
*L8.2	92835-17031	2140
*L8.3	92835-17032	2140
*LDIAG	92835-17001	2140
DIREC	92835-18050	2140
@D1.3	92835-18051	
@D1.6	92835-18052	
@D1.7	92835-18053	
@D1.9M	92835-18054	
@D2.1	92835-18055	
@D2.2	92835-18056	
@D2.3	92835-18057	
@D3.1	92835-18058	
@D3.11	92835-18059	
@D5.1	92835-18060	
@D5.2	92835-18061	
@D5.3	92835-18062	
@D5.4	92835-18063	
@D6.11	92835-18064	
@D6.12	92835-18065	
@D6.13	92835-18066	
@D6.14	92835-18067	
@D6.15	92835-18068	
@D6.2	92835-18069	
@D6.3	92835-18070	
@D6.4	92835-18071	
@D8.1	92835-18072	
@D8.2	92835-18073	
@D8.3	92835-18074	

3.51 + (92836A) Fortran-77

File	Module	Part Number	Rev	Change
* "FTN7X		92836-17001	2326	--> 2340
* #FTN7X		92836-17002	2326	--> 2340
* $F7XCS		92836-12001	2326	--> 2340
* %F7X1		92836-16002	2326	--> 2340
* %F7X2		92836-16003	2326	--> 2340
%FRPLS		92836-16004	2326	
&FRPLS		92836-18004	2326	
* A92836		92836-17999	2326	--> 2340

Current Revisions(92836A)

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
92836-13301	020
92836-13302	020
92836-13304	020
92836-13303	022
92836-13401	041
92836-13402	042
92836-13403	044
92836-13501	050
92836-13502	051

3.52 (92840A) Graphics/1000

File	Module	Part Number	Rev
%DCT02	DCT02	92840-16005	1940
%DCT03	DCT03	92840-16006	1913
%DCT08	DCT08	92840-16009	1913
%DCT23	DCT23	92840-16020	1940
%DVG01	DVG01	92840-16003	2001
%DVG02	DVG02	92840-16004	1940
%DVG04	DVG04	92840-16010	2213
%DVG05	DVG05	92840-16011	2213
%DVG06	DVG06	92840-16008	2013
%DVG07	DVG07	92840-16007	1913
%DVZ12	DVZ12	92840-16012	2213
%GCBIM	GCBIM	92840-16002	2013
%GPSC1	GPS78	92840-16001	2213
%GPSC2	GFONT	92840-16021	2013
&DLTBL		92840-18136	2001
&GPSBM		92840-18137	2213
A92840		92840-18114	2226
FONT1		92840-16013	
FONT2		92840-16014	
FONT3		92840-16015	
FONT4		92840-16016	
FONT5		92840-16017	
FONT6		92840-16018	

3.53 (92841A) Graphics/1000-II DGL

File	Module	Part Number	Rev
#RTRAN		92841-18536	2140
$A0001	A0001	92841-12003	2301
$A0017	A0017	92841-12032	2140
$B0001	B0001	92841-12004	2301
$B0004	B0004	92841-12013	2140
$B0017	B0017	92841-12033	2140
$D0001	D0001	92841-12002	2326
$D0002	D0002	92841-12009	2301
$D0003	D0003	92841-12012	2301
$D0006	D0006	92841-12019	2301
$D0007	D0007	92841-12022	2301
$D0008	D0008	92841-12023	2301
$D0009	D0009	92841-12024	2301
$D0010	D0010	92841-12025	2301
$D0015	D0015	92841-12026	2301
$D0016	D0016	92841-12027	2301
$D0018		92841-12044	2301
$D0019	D0019	92841-12028	2326
$D0021		92841-12045	2301
$D0026	D0026	92841-12038	2301
$D0027		92841-12048	2301
$D0028		92841-12049	2301
$D0029		92841-12050	2301
$D0030		92841-12051	2301
$D0031		92841-12053	2301
$D0032		92841-12055	2301
$D0036		92841-12058	2326
$DIDD1	DIDD	92841-12057	2326
$DIDD2		92841-12047	2326
$K0001	K0001	92841-12005	2301
$K0017	K0017	92841-12034	2140
$L0001	L0001	92841-12006	2301
$L0002	L0002	92841-12010	2226
$L0004	L0004	92841-12014	2226
$L0005	L0005	92841-12017	2301
$L0006	L0006	92841-12020	2226
$L0017	L0017	92841-12035	2140
$L0018		92841-12046	2226
$L0019	L0019	92841-12029	2301
$L0027		92841-12052	2226
$L0031		92841-12054	2226
$L0032		92841-12056	2226

$P0001	P0001	92841-12007	2301
$P0002	P0002	92841-12011	2226
$P0004	P0004	92841-12015	2226
$P0005	P0005	92841-12018	2226
$P0006	P0006	92841-12021	2226
$P0017	P0017	92841-12036	2140
$P0019	P0019	92841-12030	2301
$RTRB1	RTRB1	92841-12039	2301
$RTRB2	RTRB2	92841-12041	2301
$RTRB3	RTRB3	92841-12042	2301
$RTRBN	RTRBN	92841-12040	2301
$V0001	V0001	92841-12008	2301
$V0004	V0004	92841-12016	2226
$V0017	V0017	92841-12037	2140
$V0019	V0019	92841-12031	2301
%COLDM		92841-12059	2301
%MOCOM	MOCOM	92841-16161	2326
%PGNDM		92841-16702	2301
%RMAIN	RMAIN	92841-12043	2140
%RTRA1	RTRA1	92841-16461	2140
%RTRA2	RTRA2	92841-16462	2140
%RTRA3	RTRA3	92841-16463	2140
&CHRT1		24998-18468	2040
&CHRT2		24998-18469	2040
&GRAF1		24998-18466	2040
&GRAF2		24998-18467	2040
&M1NAM		92841-18535	2140
&T1INT		92841-18707	2301
&Z0BFR		92841-18343	2040
&Z1CTB		92841-18790	2301
&Z1PTB		92841-18743	2301
*CART		92841-18358	2301
*CTRNS		24998-18465	2040
*DIDD		92841-18690	2213
*FLOP		92841-18357	2301
*FTRNS		24998-18474	2040
*MDGL		92841-18689	2213
*MFLOP		92841-18313	2301
*MFTRN		24998-18479	2126
*MTRNS		24998-18475	2040
*RTRAN		92841-18537	2140
*TAPE		92841-18356	2301
A92841		92841-18999	2326
[PDGL1		92841-18344	2301
[PDGL2		92841-18345	2301

3.54 (92842A) Graphics/1000-II AGP

File	Module	Part Number	Rev
$UPLI1	UPLI1	92842-12003	2301
$UPLI2	UPLI2	92842-12004	2326
$UPLI3	UPLI3	92842-12005	2301
$WSPL1	WSPL1	92842-12006	2301
$WSPL2	WSPL2	92842-12007	2301
%COM	COM	92842-12008	2301
%SDUM	SDUM	92842-12009	2301
%WPGDM		92842-12011	2301
%WSP	WSP	92842-16349	2040
%ZMNTL	ZMNTR	92842-12002	2326
%ZMNTR	ZMNTR	92842-12001	2301
&CHRT3		24998-13547	2301
&CHRT4		24998-13548	2301
&HOUSE		24998-18463	2040
&HOUSP		24998-18464	2301
&KONTB		92842-18454	2140
&KOPAG		92842-18376	2040
&KOSDF		92842-18377	2040
&K1FIL		92842-18464	2301
&VIEW		24998-18462	2140
&WSP		92842-18349	2040
*CTUS		24998-18459	2301
*FLOPY		92842-18436	2301
*FLP		24998-18460	2301
*MAG		92842-18435	2301
*MAGP3		92842-18458	2213
*MFLP		24998-18478	2301
*MFLPY		92842-18446	2301
*MINI		92842-18434	2301
*MT		24998-18458	2301
*UPLIB		92842-18442	2040
*WSPLB		92842-18441	2040
A92842		92842-18999	2326
FONT1		92842-16428	2040
FONT2		92842-16429	2040
FONT3		92842-16430	2040
FONT4		92842-16431	2040
FONT5		92842-16432	2040
FONT6		92842-16433	2040
[PAGP1		92842-18447	2301
[PAGP2		92842-18448	2301
[PAGP3		92842-18449	2301

3.55 + (92843X) Graphics/1000-II Device Handlers

File	Module	Part Number	Rev	Change
* "SPINE		92843-18001		--> 2340
* #ALPHA		92843-18113		--> 2126
* #BUTTN		92843-18114		--> 2126
* #DISPL		92843-18115		--> 2340
* #DTEMP		92843-18116		--> 2126
* #KEYBD		92843-18117		--> 2126
* #LOCTR		92843-18118		--> 2126
* #PICK		92843-18119		--> 2126
* #VALU		92843-18120		--> 2126
* %TDPAT		92843-16139	New	--> 2340
* %TDRED		92843-16142	New	--> 2340
* %TFILL		92843-16140	New	--> 2340
* %TPGCP		92843-16143	New	--> 2340
* %ZPGDI		92843-16141	New	--> 2340
* &M0IXX		92843-18002		--> 2340
* &MIDXX		92843-18003		--> 2340
* &TBEGE		92843-18004		--> 2340
* &TCMAP		92843-18122	New	--> 2340
* &TECHO		92843-18005		--> 2340
* &TEDRW		92843-18006		--> 2126
* &TENDE		92843-18007		--> 2126
* &THCLP		92843-18008		--> 2126
* &TICTB		92843-18123	New	--> 2340
* &Z0ACD		92843-18009		--> 2126
* &Z0ADV		92843-18010		--> 2126
* &Z0AIN		92843-18011		--> 2126
* &Z0BCD		92843-18012		--> 2126
* &Z0BDV		92843-18013		--> 2126
* &Z0BIN		92843-18014		--> 2126
* &Z0CTB		92843-18124	New	--> 2340
* &Z0DCD		92843-18015		--> 2340
* &Z0DCT		92843-18125	New	--> 2340
* &Z0DDV		92843-18016		--> 2126
* &Z0DIN		92843-18017		--> 2340
* &Z0DLM		92843-18018		--> 2126
* &Z0ESC		92843-18059		--> Deleted
* &Z0EXT		92843-18126	New	--> 2340
* &Z0IXX		92843-18019		--> 2340
* &Z0KCD		92843-18020		--> 2126
* &Z0KDV		92843-18021		--> 2126
* &Z0KIN		92843-18022		--> 2126
* &Z0LCD		92843-18023		--> 2340

* &ZOLDV	92843-18024		--> 2126
* &ZOLIN	92843-18025		--> 2126
* &ZOLLM	92843-18026		--> 2340
* &ZONAT	92843-18027		--> 2340
* &ZONCA	92843-18127	New	--> 2340
* &ZONPA	92843-18128	New	--> 2340
* &ZOPCD	92843-18028		--> 2340
* &ZOPDV	92843-18029		--> 2126
* &ZOPIN	92843-18030		--> 2126
* &ZOPLM	92843-18031		--> 2126
* &ZOVCD	92843-18032		--> 2126
* &ZOVDV	92843-18033		--> 2126
* &ZOVIN	92843-18034		--> 2126
* &ZAEND	92843-18035		--> 2126
* &ZAINT	92843-18036		--> 2340
* &ZALPH	92843-18037		--> 2340
* &ZBEND	92843-18038		--> 2126
* &ZBINT	92843-18039		--> 2340
* &ZBUTN	92843-18040		--> 2340
* &ZCOLR	92843-18041		--> 2340
* &ZCSIZ	92843-18042		--> 2340
* &ZDCOL	92843-18129	New	--> 2340
* &ZDEND	92843-18043		--> 2340
* &ZDINT	92843-18044	2213	--> 2340
* &ZDRAW	92843-18045		--> 2340
* &ZHIGH	92843-18046		--> 2126
* &ZIACS	92843-18047	2213	--> 2340
* &ZICOL	92843-18130	New	--> 2340
* &ZIESC	92843-18048		--> 2340
* &ZKEND	92843-18049		--> 2126
* &ZKEND	92843-18050		--> Deleted
* &ZKINT	92843-18050	New	--> 2340
* &ZKYBD	92843-18051		--> 2340
* &ZLEND	92843-18052		--> 2126
* &ZLINT	92843-18053		--> 2340
* &ZLSTL	92843-18054		--> 2340
* &ZLWID	92843-18055		--> 2340
* &ZMARK	92843-18056	2213	--> 2340
* &ZMOVE	92843-18057		--> 2126
* &ZNEWF	92843-18058		--> 2340
* &ZOESC	92843-18059	New	--> 2340
* &ZPEND	92843-18060		--> 2126
* &ZPGDD	92843-18131	New	--> 2340
* &ZPICK	92843-18061		--> 2340
* &ZPINT	92843-18062		--> 2340
* &ZPOLY	92843-18063		--> 2126
* &ZSLOC	92843-18064		--> 2340
* &ZSVAL	92843-18065		--> 2340
* &ZTEXT	92843-18066		--> 2126
* &ZVEND	92843-18067		--> 2126

* &ZVINT	92843-18068		--> 2340
* &ZWLOC	92843-18069		--> 2340
* &ZWVAL	92843-18070		--> 2340
* *ALPHA	92843-18071		--> 2126
* *BUTTN	92843-18072		--> 2126
* *DISPL	92843-18073		--> 2340
* *KEYBD	92843-18074		--> 2126
* *LOCTR	92843-18075		--> 2126
* *PICK	92843-18076		--> 2126
* *VALU	92843-18077		--> 2126
* A92843	92843-18999	2213	--> 2340
* [ALIAS	92843-18121	New	--> 2340
* [MOIOT	92843-18078		--> 2126
* [MOIXX	92843-18079		--> 2126
* [ZOACD	92843-18080		--> 2126
* [ZOADV	92843-18081		--> 2126
* [ZOAIN	92843-18082		--> 2126
* [ZOBCD	92843-18083		--> 2126
* [ZOBDV	92843-18084		--> 2126
* [ZOBFI	92843-18085		--> 2126
* [ZOBIN	92843-18086		--> 2126
* [ZOBUF	92843-18087		--> 2126
* [ZOCAT	92843-18088		--> 2126
* [ZOCON	92843-18089		--> 2126
* [ZOCOR	92843-18090		--> 2126
* [ZOCPA	92843-18132	New	--> 2340
* [ZOCTB	92843-18133	New	--> 2340
* [ZODCD	92843-18091		--> 2340
* [ZODCT	92843-18134	New	--> 2340
* [ZODDV	92843-18092		--> 2126
* [ZODIN	92843-18093		--> 2340
* [ZODLM	92843-18094		--> 2126
* [ZOEXT	92843-18135	New	--> 2340
* [ZOIXX	92843-18095		--> 2126
* [ZOKCD	92843-18096		--> 2126
* [ZOKDV	92843-18097		--> 2126
* [ZOKIN	92843-18098		--> 2126
* [ZOLCD	92843-18099		--> 2340
* [ZOLDV	92843-18100		--> 2126
* [ZOLIN	92843-18101		--> 2126
* [ZOLLM	92843-18102		--> 2126
* [ZONAT	92843-18103		--> 2340
* [ZONCA	92843-18137	New	--> 2340
* [ZONPA	92843-18138	New	--> 2340
* [ZOPCD	92843-18104		--> 2340
* [ZOPDV	92843-18105		--> 2126
* [ZOPIN	92843-18106		--> 2126
* [ZOPLM	92843-18107		--> 2126
* [ZOPTB	92843-18136	New	--> 2340
* [ZOSYS	92843-18108		--> 2340

Current Revisions(92843X)

* [Z0VCD	92843-18109	New	--> 2126
* [Z0VDC	92843-18109		--> Deleted
* [Z0VDV	92843-18110		--> 2126
* [Z0VIN	92843-18111		--> 2126
* [Z0WRK	92843-18112		--> 2126

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
92843-13301	022
92843-13501	050
92843-13502	051

3.56 (92857A) Basic/1000C

File	Module	Part Number	Rev
"BERRS		92857-17009	
#BAS.6		92857-17002	
#BAS.A		92857-17001	2326
#BBMG		92857-17003	
#BDAT		92857-17018	
#CBA.6		92857-17013	
#CBA.A		92857-17014	2326
#LNK.E		92857-17015	2326
#LNK.L		92857-17016	2326
#LNK.V		92857-17017	2326
#MERGC		92857-17021	
#MRBAS		92857-17011	
#MRRBX		92857-17012	
#RBX.6		92857-17006	
#RBX.A		92857-17005	2326
#RINTR		92857-17004	
$ALIB		92857-12012	2326
$BASCL		92857-12013	2326
$BCALL		92857-16132	
$BLIB1		92857-12006	2326
$BLIB2		92857-12007	2326
$LBMGL		92857-12002	2326
$RLIB1		92857-12008	2326
$RLIB2		92857-12009	2326
$RLIB3		92857-12001	2326

%B$T12	92857-16131	
%B.EIO	92857-16291	
%B.EMA	92857-16249	
%B.VMA	92857-16250	
%BDAT	92857-16239	
%BEXEC	92857-16215	
%BMSKL	92857-12003	2326
%BSSKL	92857-12004	2326
%CBA.1	92857-12010	2326
%CBA.2	92857-12011	2326
%F.EMA	92857-16240	
%FOX.6	92857-16144	
%FOX.A	92857-16145	2326
%IB.XX	92857-16241	
%L.EMA	92857-16242	
%LINKA	92077-16001	
%LINKB	92077-16002	
%LINKC	92077-16003	
%LINKD	92077-16004	
%LNKD6	92077-16113	2226
%LNKDA	92077-16112	2226
%LNKR6	92077-16108	2226
%LNKRA	92077-16107	2226
%MMGT2	92857-16243	
%RINTR	92857-16128	
%RT.6M	92857-16244	
%RT.AM	92857-16245	
%RXSKL	92857-12005	2326
%S.EMA	92857-16246	
%SAM.6	92857-16151	
%SAM.A	92857-16152	
%SAM6C	92857-16248	
%SAMAC	92857-16247	
&IB.XX	92857-18241	
&S.EMA	92857-18246	
*B.MLE	92857-17022	
*B.MLV	92857-17023	
*BAS.6	92857-17008	2326
*BAS.A	92857-17007	2326
*CBA.6	92857-17019	
*CBA.A	92857-17020	
A92857	92857-17999	2326

3.57 + (92860A) Symbolic Debug/1000

	File	Module	Part Number	Rev	Change
*	"DEBUG		92860-17003	New	--> 2340
*	#BLDN6		92860-17006	New	--> 2340
*	#BLDNA		92860-17007	New	--> 2340
*	#DEBN6		92860-17001	New	--> 2340
*	#DEBNA		92860-17005	2326	--> 2340
*	#DEBUG		92860-17001	2326	--> Deleted
*	%BDLIB		92860-16045	New	--> 2340
*	%BLDDB		92860-16040	New	--> 2340
*	%BLOCK		92860-16041	New	--> 2340
*	%BUIL0		92860-16042	New	--> 2340
*	%BUIL1		92860-16043	New	--> 2340
*	%BUIL2		92860-16044	New	--> 2340
*	%CONT		92860-16038	New	--> 2340
*	%DEBU0		92860-16009	2326	--> 2340
*	%DEBU1		92860-16015	2326	--> 2340
*	%DEBU2		92860-16019	2326	--> 2340
*	%DEBU3		92860-16013	2326	--> 2340
*	%DEBU4		92860-16020	2326	--> 2340
*	%DEBU5		92860-16033	New	--> 2340
*	%DEBU6		92860-16034	New	--> 2340
*	%DEBU7		92860-16035	New	--> 2340
*	%DEBU8		92860-16036	New	--> 2340
*	%DEBU9		92860-16037	New	--> 2340
*	%DEBUG		92860-16002	2326	--> 2340
*	%DEST6		92860-16003	2326	--> 2340
*	%DESTL		92860-16022	2326	--> 2340
*	%DPACK		92860-16018	2326	--> 2340
*	%FLNEW		92860-16028	2326	--> 2340
*	%FLOLD		92860-16029	2326	--> 2340
*	%GETVL		92860-16007	2326	--> 2340
*	%GKLIB		92860-16008	2326	--> 2340
*	%GKNEW		92860-16026	2326	--> 2340
*	%GKOLD		92860-16027	2326	--> 2340
*	%GSORT		92860-16021	2326	--> 2340
*	%INIT6		92860-16012	2326	--> 2340
*	%INITL		92860-16023	2326	--> 2340
*	%INITS		92860-16014	2326	--> 2340
*	%MDATA		92860-16001	2326	--> 2340
*	%OFMP		92860-16032	New	--> 2340
*	%POKE6		92860-16004	2326	--> 2340
*	%POKEA		92860-16030	2326	--> 2340
*	%POKEL		92860-16025	2326	--> 2340

Current Revisions(92860A)

* %PREP6	92860-16011	2326	--> 2340
* %PREPL	92860-16024	2326	--> 2340
* %RDVAL	92860-16017	2326	--> 2340
* %RMOVD	92860-16010	2326	--> 2340
* %SETB	92860-16039	New	--> 2340
* %SINIT	92860-16046	New	--> 2340
* %SWAPI	92860-16005	2326	--> 2340
* %SWICH	92860-16006	2326	--> 2340
* %WRVAL	92860-16016	2326	--> 2340
* A92860	92860-17999	2326	--> 2340

Manual Part#	Title	Type of Update
(no manual changes)		

Media Part#	Media Option
92860-13302	020
92860-13303	020
92860-13304	020
92860-13305	020
92860-13306	020
92860-13307	020
92860-13301	022
92860-13401	041
92860-13402	042
92860-13403	042
92860-13404	044
92860-13405	044
92860-13501	050
92860-13502	051

3.58 Current Firmware Revisions

A-Series Firmware History

(updated 1 January 1984)

A600 CPU FIRMWARE
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12101-60001		
12101-80002	(U0706)	
12101-80003	(U0806)	
12101-80004	(U1006)	Revision 4000
12101-80005	(U0506)	Original Release
12101-80006	(U0606)	
12101-80007	(U1106)	# These parts are bundled in with
12101-80008	(U0906)	the 12101-60001 processor board.
12101-80009	(U0305)	The 12101-60002 assembly no
12101-80010	(U0505)	longer includes these PROMs.
12101-80011	(U0605)#	
12101-80012	(U0705)#	
12101-80013	(U0805)#	
12101-80014	(U1005)#	

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12101-60001		
12101-80002	(U0706)	
12101-80003	(U0806)	
12101-80021	(U1006)*	* Changed to fix bug. .FDIV with
12101-80005	(U0506)	E-Register set returns incorrect
12101-80006	(U0606)	results.
12101-80007	(U1106)	(See S/N 12101A-01)
12101-80008	(U0906)	
12101-80009	(U0305)	Revision 4000
12101-80010	(U0505)	

CURRENT REVISIONS (FIRMWARE)

12101-80011 (U0605)#
12101-80012 (U0705)#
12101-80013 (U0805)#
12101-80014 (U1005)#

These parts are bundled in with the 12101-60001 processor board. The 12101-60002 assembly no longer includes these PROMs.

CURRENT REVISIONS (FIRMWARE)

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12101-60002
12101-80024 (U0706)*
12101-80025 (U0806)*
12101-80027 (U1006)*
12101-80022 (U0506)*
12101-80023 (U0606)*
12101-80028 (U1106)*
12101-80026 (U0906)*
12101-80029 (U0305)*
12101-80030 (U0505)*
12101-80031 (U0605)*
12101-80032 (U0705)*
12101-80033 (U0805)*
12101-80013 (U1005)*

* Update 12101-60001 to 12101-60002 by removing four socketed mapping PROMs (12101-80011, 80012,80013, and 80014). Firmware adds Data2 map instructions.

REQUIRED TO RUN RTE-A.

Revision 401

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12101-60002
12101-80024 (U0706)
12101-80025 (U0806)
12101-80027 (U1006)
12101-80022 (U0506)
12101-80023 (U0606)
12101-80028 (U1106)
12101-80026 (U0906)
12101-80034 (U0305)*
12101-80035 (U0505)*
12101-80031 (U0605)
12101-80032 (U0705)
12101-80033 (U0805)
12101-80013 (U1005)

* Changed to fix bug. .PWR2 causes Unimplemented Instruction Trap Interrupt

(See S/N 2106AK-01)

Revision 401

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12101-60002
12101-80037 (U0706)*
12101-80025 (U0806)
12101-80027 (U1006)
12101-80022 (U0506)
12101-80036 (U0606)*
12101-80028 (U1106)
12101-80026 (U0906)
12101-80034 (U0305)
12101-80035 (U0505)
12101-80031 (U0605)
12101-80032 (U0705)
12101-80033 (U0805)
12101-80013 (U1005)

* Changed to fix bug. Power Fail routine is not executed at power fail.

(See S/N 2106AK-01)

Revision 401

CURRENT REVISIONS (FIRMWARE)

==========

12101-60002	
12101-80040 (U0706)*	
12101-80041 (U0806)*	
12101-80043 (U1006)*	* .FDV produces incorrect results for certain operands.
12101-80038 (U0506)*	
12101-80039 (U0606)*	
12101-80044 (U1106)*	(See S/N 2106AK-04)
12101-80042 (U0906)*	
12101-80034 (U0305)	This firmware is included in
12101-80035 (U0505)	upgrade kits 12101-60045 and
12101-80031 (U0605)	12101-60046.
12101-80032 (U0705)	
12101-80033 (U0805)	Revision 1001
12101-80013 (U1005)	

CURRENT REVISIONS (FIRMWARE)

A600+ CPU FIRMWARE

12105-80002 (U0405)	
12105-80003 (U0505)	
12105-80004 (U0605)	Original Release
12105-80005 (U0705)	
12105-80006 (U0805)	
12105-80007 (U0905)	
12105-80008 (U1005)	
12105-80009 (U0308)	
12105-80010 (U0808)	

CURRENT REVISIONS (FIRMWARE)

==========

A600/A600+ VCP HISTORY
==========

5180-0173 (U606) 5180-0174 (U706)	Original Release Revision 4

==========

5180-0189 (U606)* 5180-0190 (U706)*	* Changed to fix bugs. Two power fails in quick succession may result in an incorrect auto-restart. Booting remotely over FDL causes system to hang. Erroneous parity error message if memory is lost. Also several inconveniences are fixed and enhancements added. Revision 6 (See S/N 12102A-01)

==========

12102-80003 (U606)* 12102-80004 (U706)*	* Changed to run with VC+. Also adds boot loaders for 1600 BPI Mag Tape, 3.5" Micro Floppy, and 10 MB mini-winchester disc. VCP size is 8K and resides in EPROM. Included in 12107A A600+ Upgrade Kit. (See S/N 2106AK-3) Revision 4001

==========

5180-4253 (U606)* 5180-4254 (U706)*	* Changed to fix bug. If system disc and CPU are powered up simultaneously the CPU will not auto boot. (See S/N 2106AK-6A) Revision level 4004

CURRENT REVISIONS (FIRMWARE)

A700 BASE SET HISTORY

12152-80011 (U91) 12152-80012 (U101) 12152-80013 (U111) 12152-80014 (U121)	Original Release
12152-80031 (U91)* 12152-80032 (U101)* 12152-80033 (U111)* 12152-80034 (U121)*	* Changed to fix bug. DDS will skip incorrectly.
12152-80035 (U91)* 12152-80036 (U101)* 12152-80037 (U111)* 12152-80038 (U121)*	* Add Code and Data Separation Instructions. Also several bugs were fixed. .LWD1 and .LWD2 are not priviledged instructions. Any instruction in the A/B registers which causes an MP violation freezes the computer. REQUIRED TO RUN VC+ (See S/N 2107AK-01) This firmware is included in upgrade kit 12152-60043.

CURRENT REVISIONS (FIRMWARE)

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A700 FLOATING POINT HISTORY
==========

12156-80005
12156-80006
12156-80007
12156-80008

==========

12156-80013
12156-80014
12156-80015
12156-80016

==========

12156-80017
12156-80018
12156-80019
12156-80020

==========

12156-80025
12156-80026
12156-80027
12156-80028

==========

12156-80029
12156-80030
12156-80031
12156-80032

==========

12156-80033
12156-80034 (See S/N 2107AK-1)
12156-80035
12156-80036

CURRENT REVISIONS (FIRMWARE)

A700 VCP HISTORY

5180-0173 (U15) 5180-0174 (U35)	Original Release Revision 4
5180-0189 (U15)* 5180-0190 (U35)*	* Changed to fix bugs. Two power fails in quick succession may result in an incorrect auto-restart. Booting remotely over FDL causes system to hang. Erroneous parity error message if memory is lost. Also several inconveniences are fixed and enhancements added. Revision 6 (See S/N 12102A-01)
12152-80039 (U15)* 12152-80040 (U35)* 12152-80041 (U55)* 12152-80042 (U65)*	* Changed to run with VC+. Also adds boot loaders for 1600 BPI Mag Tape, 3.5" Micro Floppy, and 10 MB mini-winchester disc. Revision 4001 (See S/N 2107AK-01)
12152-80043 (U15)* 12152-80044 (U35)* 12152-80045 (U55)* 12152-80046 (U65)*	* Changed to fix bug. If system disc and CPU are powered up simultaneously, the CPU will not auto boot. Included in Upgrade Kit 12152-60043. Revision 4004 (See S/N 2107AK-2A)

CURRENT REVISIONS (FIRMWARE)

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A900 FIRMWARE HISTORY
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12201-80003 (U0803)
12201-80004 (U0802)
12201-80005 (U0801)
12201-80006 (U1103)
12201-80007 (U1102)
12201-80008 (U1101)
12201-80009 (U0703)
12201-80010 (U0702)
12201-80011 (U0701)
12201-80012 (U1003)
12201-80013 (U1002)
12201-80014 (U1001)
12201-80015 (U0603)
12201-80016 (U0602)
12201-80017 (U0601)
12201-80018 (U0903)
12201-80019 (U0902)
12201-80020 (U0901)
12201-80021 (U1407)
12201-80022 (U1607)

Original Release

==========

12201-80024 (U0803)*
12201-80025 (U0802)*
12201-80026 (U0801)*
12201-80027 (U1103)*
12201-80028 (U1102)*
12201-80029 (U1101)*
12201-80030 (U0703)*
12201-80031 (U0702)*
12201-80032 (U0701)*
12201-80033 (U1003)*
12201-80034 (U1002)*
12201-80035 (U1001)*
12201-80036 (U0603)*
12201-80037 (U0602)*
12201-80038 (U0601)*
12201-80039 (U0903)*
12201-80040 (U0902)*
12201-80041 (U0901)*
12201-80042 (U1407)*
12201-80043 (U1607)*

* Rewrite firmware to execute Code and Data Separation Instructions. Firmware change must be accompanied by a new Cache Control Board: 12203-60004.

REQUIRED TO RUN RTE-A AND VC+.

This firmware is included in the 12203A Opt 001 Retrofit Kit.

CURRENT REVISIONS (FIRMWARE)

==========

12201-80024 (U080?)
12201-80044 (U080?)*
12201-80026 (U080?)
12201-80027 (U110?)
12201-80028 (U110?)
12201-80029 (U110?)
12201-80030 (U070?)
12201-80031 (U070?)
12201-80032 (U070?)
12201-80033 (U100?)
12201-80034 (U100?)
12201-80035 (U100?)
12201-80036 (U060?)
12201-80037 (U060?)
12201-80038 (U060?)
12201-80039 (U090?)
12201-80040 (U090?)
12201-80041 (U090?)
12201-80042 (U1407)
12201-80043 (U1607)

* Computer does not Power Fail Auto restart. When power is restored, the computer comes up in VCP mode.

(See S/N 2139A-01)

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12201-80045 (U0803)*
12201-80046 (U0802)*
12201-80047 (U080L)*
12201-80048 (U1103)*
12201-80049 (U1102)*
12201-80050 (U110L)*
12201-80030 (U0703)
12201-80031 (U0702)
12201-80032 (U070L)
12201-80033 (U1003)
12201-80034 (U1002)
12201-80035 (U100L)
12201-80036 (U0603)
12201-80037 (U0602)
12201-80038 (U060L)
12201-80039 (U0903)
12201-80040 (U0902)
12201-80041 (U090L)
12201-80042 (U1407)
12201-80043 (U1607)

* If negative indicies for EMA arrays are used, incorrect addresses are generated. This may appear as a Memory Protect error.

(See S/N 2139A-2)

CURRENT REVISIONS (FIRMWARE)

==========

12201-80052 (U0803)*
12201-80053 (U0802)*
12201-80054 (U0801)*
12201-80055 (U1103)*
12201-80056 (U1102)*
12201-80057 (U1101)*
12201-80030 (U0703)
12201-80031 (U0702)
12201-80032 (U0701)
12201-80033 (U1003)
12201-80034 (U1002)
12201-80035 (U1001)
12201-80036 (U0603)
12201-80037 (U0602)
12201-80038 (U0601)
12201-80039 (U0903)
12201-80040 (U0902)
12201-80041 (U0901)
12201-80042 (U1407)
12201-80043 (U1607)

* Changed to fix bug. Computers with battery backup will not auto restart. Also, a compare byte instruction (CBT) incorrectly clears the X-register.

(See S/N 2139a-2)

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12201-80060 (U0803)*
12201-80053 (U0802)
12201-80054 (U0801)
12201-80055 (U1103)
12201-80061 (U1102)*
12201-80062 (U1101)*
12201-80030 (U0703)
12201-80031 (U0702)
12201-80032 (U0701)
12201-80033 (U1003)
12201-80034 (U1002)
12201-80035 (U1001)
12201-80036 (U0603)
12201-80037 (U0602)
12201-80038 (U0601)
12201-80039 (U0903)
12201-80040 (U0902)
12201-80041 (U0901)
12201-80042 (U1407)
12201-80043 (U1607)

* A900 TBG runs too slow. The TBG loses approximately 24 seconds per day due to a firmware bug.

(See S/N 2139A-4)

This firmware is included in Upgrade Kit 12201-60051.

Revision 11

CURRENT REVISIONS (FIRMWARE)

A900 VCP FIRMWARE HISTORY

12203-80002 (U0908) 12203-80003 (U1208)	Original Release
12203-80005 (U0908)* 12203-80006 (U1208)*	* REQUIRED TO RUN RTE-A AND VC+ Included in the 12203A Opt. 001 Retrofit Kit.
12203-80007 (U0908)* 12203-80008 (U1208)*	* Add boot loaders for 1600 BPI Mag Tape, 3.5" Microfloppy, and 10MB mini-winchester disc. VCP is now in 8K eproms. (See S/N 2139A-3)
12203-80009 (U0908)* 12203-80010 (U1208)*	* Changed to fix bug. If system disc and CPU are powered up simultaneously, the CPU will not auto boot. Revision 4004 (See S/N 2139A-2)

GENERATION & INSTALLATION CONSIDERATIONS — CHAPTER 4

This chapter discusses both software and firmware considerations for generation and installation that have been introduced by the C.83 software update.

4.1 Software Consideration

The following are products that require changes to the generation or loading procedures. For detailed descriptions refer to the appropriate manuals for the product.

4.1.1 (92077A) RTE-A

The DD.00 device driver now requires a 57 word DVT extension for eight-channel multiplexer ports. This is an increase from the previous 45 word DVT extension default.

Refer to the RTE-A System Generation and Installation Manual (92077-90034) for more detailed information.

4.1.2 (92084A) RTE-6/VM

As detailed in Chapter 2, there were major additions to the file system in RTE-6. It is now essentially the same file system that is on RTE-A systems. The following is an overview of the installation procedures for the new file system. Refer to the RTE-6/VM System Manager's Manual (92084-90009) and the RTE-6/VM Online Generator Reference Manual (92084-90010) for more information.

RTE-6/VM GENERATION PROCEDURES

Adding the new file system to your existing RTE-6 system is actually much easier than it might seem. Transfer files have been provided to do most of the work involved.

IMPORTANT NOTE: Datashare/1000 (91747A) users cannot use the new file system because there is no cooresponding data structure in the new file system to allow files to be shared between processors. Datashare/1000 users should not install the C.83 update. We will be contacting you in the future regarding update procedures.

Here is a step by step procedure for generating a C.83 RTE-6/VM system and then installing the new file system.

(1) Create a Physical Backup of the Current System

It is important to back-up your system before converting, in case you ever wish to return to your old system. A physical backup is the only way to backup system areas as well as files.

(2) Use FC to Back up all your Files

FC can be used to back up any files which are to be transported to your new system. FC has the advantage that FC tapes can later be read by TF, a new utility. TF can restore files to new file system volumes as well as FMGR cartridges. Type 6 files can usually be transported to the new system.

Of course, if the destination of these files is a FMGR cartridge, WRITT or SAVER may also be used.

(3) Generate the new system

Refer to the RTE-6/VM Online Generator Reference Manual (92084-90010) for additional information on generation. In addition, you should remember the following.

- Remove $MLIB1 and $MLIB2 from the generator answer file and replace them with $MATH, $FOLDF, AND $FLIB

- Load the generator (LOADR). DO NOT LINK THE GENERATOR. If you try to link RT6GN, it will appear to link correctly and will in fact run for about an hour before it will abort - you must use LOADR.

- Generate your system as usual - using the updated relocatables.

  Note: if you modify the C.TAB table for FMGR and include your own version in your generation, you should note the folllowing: The source file has been renamed to &C*TAB (to remove the "."). When you recompile this source, you need to be sure to NOT name it %C*TAB. THe generator treats everything after a "*" as a comment, so it will read the name as %C.

The new file system can be used selectively on different disc LU'S. Some LU's can be old FMGR cartridges while others can be new file system volumes.

If you decide to change the layout of your disc LU's, you should carefully consider the file space needed, and how you wish to lay it out, particularly which files you will want on the new file system and which on the old. Some subsystems, notably DS and IMAGE require FMGR cartridges (Fortran, Macro, Pascal, Link, and Edit all can use either FMGR or new file system volumes).

One thing you should keep in mind: at the A.84 update, many subsystems will be upgraded to use the new files system. Many of these subsystems will require that your system have at least one new file system volume.

We recommend that you plan for at least one new file system volume. This will allow you the use of CI, the improved help facility, and the new file system itself.

(4) Switch in the new system

Load SWTCH (note that there is now a load command file, #SWTCH) and switch in the new system.

You should also initialize any disc subchannels that are planned to be used as CI volumes. This can be done from SWTCH for the system disc. Any auxillary discs will have to be initialized with a formatting utility (such as FORMT).

After the switch, if you have an LU 3, you will have to initialize it, as before. Up to this point, this generation and switch have been as before. If you intend to bring up the new file system and its related utilities (CI, etc.), then proceed to step (5). If you do not intend to bring up the new file system at this time, you still need to load the new version of D.RTR (after switching you will be running an "old" version of D.RTR; utilities such as EDIT, LINK, and the compilers, will not run with the old D.RTR). The following is the procedure for loading the new D.RTR.

(4.1) Loading the new D.RTR separately

1. Load D.RTR with LOADR (do not use LINK) using the loader command file #D.RTR. This will load a permanent, second copy of D.RTR called "..RTR".

2. Run the program SWPD. like this:

   ```
   :RU,SWPD.,NEW
   ```

   This exchanges the 2 copies of D.RTR: the new one just loaded will now be named "D.RTR" and the old one will be named "..RTR" (Note: Do NOT purge the copy named "..RTR". This copy must remain for D.RTR to be available at boot-up).

   This exchange procedure can also be done by re-booting - FMGR automatically schedules SWPD. at boot-up.

The new D.RTR is now loaded and ready. All utilities that have been upgraded for the new file system will now run properly. If you wish to install the new file system at a later time, you can come back and follow step (5) below. Be sure to edit *LODCI to remove the command to load D.RTR, since that's already been done. Proceed to step (6) below to finish installing your system.

One more note: Until the above procedure is done to load the new D.RTR, at every boot-up the following message will be displayed.

Warning! The supported file system D.RTR needs to be loaded!

This message will go away once the new D.RTR has been loaded.

(5) Transfer to the start up files.

There are new files with this release of RTE-6 that must be available after the new system has been switched in:

*LODCI - A FMGR transfer file to load CI, switch in the new D.RTR, and do various other functions.

*INCI - A CI transfer file to continue the above process. This file sets up the necessary system directories.

*COHLP - This file copies the help files to the directory /HELP

It is very important that you read the transfer files very carefully. You should print copies of each (especially *LODCI) and have them with you when you start to install CI and the new file system.

What follows is a synopsis of the process and some things to watch out for.

The *LODCI transfer file operates in three steps: First it will load D.RTR and the CI utility. Second (using the CI command file *INCI), it will create the standard file system directories. Third (still using *INCI), it will load up the CI file system related utilities. In the process, it will also copy all the help files to the /HELP directory.

*LODCI transfer file expects the global parameters to be set up as follows:

1G = the partition number to which D.RTR is to be assigned (32 page background partition (BG) required).
2G = the disc LU to be initialized as a CI file system volume (see System Manager's Manual for recommended size).
3G = the CRN that contains all the relocatable files and command files needed by this transfer file (0 allowed).
4G,5G = the security code and CRN for the type 6 files of LINK LINDX; these are used for the current type 6 files as well as for the new ones to be created.

For example, if the following were a description of your system,

- D.RTR will run in partition 1,
- LU 15 is to be the CI file system volume,
- cartridge RT has the relocatable and command files,
- and LINK and LINDX are on cartridge PR with security code 12456,

you need to transfer to *LODCI like this:

```
:TR,*LODCI,1,15,RT,12456,PR
```

You will need a 32 page background partition (BG) for D.RTR (the old D.RTR can use this partition too). For best performance, you should reconfigure memory to reserve this partition for D.RTR, and then pass this partition number to this transfer file so D.RTR can be assigned to it.

Assumptions made by the *LODCI transfer file:

1) The user is running under the MANAGER.SYS account. This means that there is a working session system. The ACCTS program does NOT have to be the current revision; if it's not, you will want to load it separately later.

2) A version of LINK and LINDX are available on the system. These need NOT be the current revision; this transfer file will use whatever is loaded and will later load the new versions, placing the type 6 files on the CRN specified in the global parameters (4G and 5G).

NOTE: The transfer files assume also that there is sufficient scratch file space available to link LINK and LINDX. On a newly generated system, the scratch space will typically be put on LU 2. What this means is that either you need to have scratch space available on LU 2 (this is not typical) or you will need to have a scratch cartridge available. If you mount a scratch cartridge, you will need to modify *INCI lines 68 and 72 from:

```
68  -  LINK #LINDX::$3 LINDX:$4:$5
72  -  LINK #LINK::$3 LINKN:$4:$5
```

to:

```
68  -  LINK #LINDX::$3 LINDX:$4:$5 +CR:cr
72  -  LINK #LINK::$3 LINKN:$4:$5 +CR:cr
```

where "cr" is the CRN of the scratch cartridge.

If you do not have enough scratch space, the link will abort. *INCI will then purge the old LINK file and try to rename LINKN to LINK - LINKN doesn't exist because the link aborted. What this means is that you may want to keep an extra copy of the LINK and LINDX type 6 files somewhere on your system in case you run out of scratch space.

3) The newly generated system has been indexed using LINDX. The transfer file will re-index the system later (in command file *INCI) including the $FMP6 file. If you want to include your own libraries, either edit the command file *INCI to change the LINDX run string, or re-index the system after the installation is complete.

The *LODCI transfer file will take the following actions:

1) Load the new D.RTR and install it. LOADR will load D.RTR as ..RTR (this is expected - duplicate program name). The program SWPD. renames ..RTR to D.RTR and D.RTR to ..RTR - it knows which one to change.

2) Load the CI utility permanently (along with the auxiliary CIX program).

3) Use CI to continue initialization (using the command file *INCI) as follows:

1) Initialize the disc LU given in the global parameter (2G).
2) Create the standard system directories:
   /SYSTEM
   /PROGRAMS
   /LIBRARIES
   /HELP
   /SCRATCH
3) Copy the $FMP6 library to the /LIBRARIES directory.
4) Load LINK and LINDX, placing the type 6 files on the CRN specified in the global parameter (4G and 5G). See the note above about scratch space.
5) Index the system using LINDX, including the file $FMP6 from the /LIBRARIES directory.
6) Load the CI-related utilities, placing the type 6 files on the /PROGRAMS directory:
   DL
   LI
   FVERI
   FREES
   FOWN
   FSCON
   TF
7) Copy the help files to the /HELP directory using the command file *COHLP.

(6) Remount/Initialize Remaining Cartidges

After CI has been initialized, you should mount any remaining disc LU's that you planned to mount (you can still have pool LU's and they can be mounted as either FMGR cartridges or new file system volumes). Remember that you should mount FMGR cartridges from FMGR. New CI volumes should be initialized with the CI IN command. CI volumes should also have been initialized during SWTCH (see above).

(7) Restore Files

Any files that need to be moved to a CI volume can now be read from your FC file backup by the new program TF (see the RTE-6/VM Utilities Reference Manual (92084-90007) for more information on TF).

You should consider the following when moving or restoring files:

The files restored to your FMGR cartridge may contain characters that are illegal in a file name in the enhanced file system (such as: /,.,@,[,],>) and thus can not be accessed from CI. These files should be renamed to a legal CI name using the FMGR 'RN' command.

The following are rules concerning special characters in filenames for files that reside on a CI file volume.

/ - may not appear in the name
. - may not appear in the name if a type extension is to be used also; if it does appear, everything after the '.' will be treated as a type extension
@ - not recommended: '@' is a reserved character for file maski?? and will make the file difficult to manipulate
[- may appear only as the first character of a name
] - may appear only as the first character of a name
> - may appear only as the first character of a name

Note that these rules also apply to files on a FMGR cartridge if they are to be accessed by upgraded utilities such as EDIT or compilers.

For example, if a file named /COMPL was restored from my old system to a FMGR cartridge in the new system, this file could be accessed from FMGR as before, but in order to access this file from CI or any of the RTE-6 programs (for example by EDIT), the file would need to be renamed so that it did not contain the '/' .

The user can convert a FMGR transfer file to a CI transfer file with certain restrictions. First, to modify the file to conform to the syntax of CI, the colons ':' preceding each line must be removed. This can be done with EDIT by exchanging all colons that are the first characters on a line with nulls, '1$X/^://'.

Secondly, there are several features of FMGR transfer files that are not available under CI. For example, conditional or unconditional skips, the setting of severity codes or nesting of command files are not allowed in CI command files. Also, access of globals has changed. FMGR transfer files dependent on any of these features probably should be left as FMGR types and executed from a FMGR cartridge.

Utilities that have been upgraded to the new file system will still use the working directory (if set) whether the utility is run from CI or FMGR (FMGR itself does not recognize the working directory). Therefore, if the user is to run strictly in a FMGR environment, it is best to make sure the working directory is set to zero (CI command "wd 0") to force utilities to use FMGR cartridges when no CRN has been specifically given for files.

The FSCON utility described in the RTE-6/VM Utility Manual (92084-90007) may be used at this time to convert a FMGR cartridge to a CI volume. FSCON will automatically rename any illegal file names containing the characters '/' or '.' and will replace these characters with a '|' or '~' (vertical bar or tilda) respectively. Files containing the characters @,[,], or > in the file name should

be manually converted so that these files will work correctly with the enhanced file system.

-- After installing your new system, the user will need to consider the new file system and how it impacts the programmer:

THE IMPACT OF THE NEW SYSTEM ON USERS

This section is a summary of the changes to RTE-6/VM at the C.83 update. The following areas of the RTE-6/VM operating system will be discussed along with the impact each feature has on the RTE-6/VM user.

1. Hierarchical File System & CI
2. Memory Requirements
3. Subsystems
4. Session Monitor (ACCTS)

1. Hierarchical File System and Command Interpreter (CI)

RTE-6 contains an hierarchical file system which contains such features as: sixteen character file names, multiple directories per LU, directory ownership, file protection, time stamps, and type extensions.

* Interactive Impact - The user interface to the hierachical file system in RTE-6 is the utility CI (Command Interpreter). CI replaces FMGR in most cases. FMGR is still supported and can be run from CI. Most of the commands are the same between FMGR and CI. FMGR can be run to execute commands which may be necessary and are not implemented in CI (such as MC, DC, or IN on a FMGR cartridge).

  Either FMGR or CI may be the user start-up program. This will be discussed below.

* Programmatic Impact - Approximately 60 new FMP calls were added to support the enhanced file system. The new FMP calls work with files on both FMGR cartridges and CI volumes. Existing programs which use the old FMP calls will still run correctly, but can only access files on FMGR disc LUs. The RTE-6/VM CI User's Manual (92084-90036) contains a guide on how to convert the old FMP calls to the new FMP calls so that these programs can access files on both FMGR cartridges and CI volumes.

2. Memory Requirement Differences

The enhancements in RTE-6 will in most cases expand the memory requirements of a typical system. In RTE-6 the operating system grew larger by 10 - 11 pages. Many system programs also grew larger. Some of the differences are:

	Old	New
FMGR	11 pgs.	12 pgs.
D.RTR	13 pgs.	32 pgs.
CI	N/A	32 pgs.
CIX	N/A	32 pgs.

Systems may or may not see significant increases in memory requirements, depending on the use of new features.

3. Subsystems

Some of the subsystems will not initially support the enhanced file system. These subsystems will require the use of a FMGR cartridge. The subsystems which DO support the new file system at initial release are: FTN7X, Pascal, MACRO, LINK, MERGE, SCOM, LINDX, Symbolic Debug, EDIT, and TF. The DS Transparency Feature has been added in order to access new files on another DS node. Additional subsystems will be updated to support the new file system in the near future. The subsystems which do not support the new file system can still be run from CI, even though their data structures reside on a FMGR cartridge.

4. Session Monitor (ACCTS)

There are only two main changes for Session users when using CI. First is the primary program and second is the HELLO file.

An additional question is asked now when creating a new account or changing an existing account with the ACCTS program. The question is

USER'S PRIMARY PROGRAM?(FMGR OR CI)

When a user logs on, they can have either CI or FMGR as their first program. Users with CI as their primary program will typically want to have a working directory set. This is because under CI there is no equivalent to a private cartridge. The initial setting of the working directory should be done in a user HELLO file.

There are two ways to set a HELLO file for a user. For FMGR user's, the HELLO file can be entered in ACCTS as ffffff::cc where "ffffff" is the filename and "cc" is the CRN. This can also be used for CI user's. However, CI users will typically want a CI file for their HELLO file. Because ACCTS is still limited to the "ffffff::cc" format mentioned above, a little 'trick' is required.

Create a global directory named "/HI". Then create files of six characters or less under this directory as HELLO files. An example would probably help here.

Let's say there is a user whose account name is JERRY.LAB. We would create a file named /HI/JERRY as Jerry's hello file. In accts, we would enter CI as the primary program and for the user hello file we would enter "JERRY::HI" (this is an alternate representation for "/HI/JERRY"). In JERRY::HI we would probably have something like this.

```
wd /JERRY
* Hi Jerry   (this is a comment)
```

If Jerry later decided to add something to his hello file, he would edit /HI/JERRY and add whatever lines he wanted. Note that a user name TYRANOSAURUS.REX would have to forgo having his first name as the filename. While /HI/TYRANOSAURUS is a perfectly legal file name, because of the ACCTS limitation mentioned above he would probably have to settle for HELLO file named /HI/TREX .

Note that while CI users can have their HELLO files on either a CI volume or a FMGR cartridge, FMGR users must have their HELLO files on FMGR cartridges.

Note also that CI users HELLO files must be CI transfer files. This means that there are none of the following commands: SV,CA,IF,DP, and others (see above discussion of transfer files). All transfer file commands will be echoed to the user's terminal (no SV command). To simulate the DP command use a comment - a star ("*") in column one. The transfer file limitations of CI are only temporary - a much more sophisticated transfer file system will be available to CI users at a future release.

4.1.3 (92833A) Pascal/1000

-- Because of the addition of the new file system to RTE-6/VM the Pascal library for that operating system has changed.

Please use the following table to identify the correct versions of the Pascal libraries for each operating system. Then, see the 92833A/92832A Configuration Manuals to determine the appropriate library for your environment.

Operating System	Pascal Library Name	Part Number	Revision
92077A	$PLIBN	92833-16054	2326
92084A	$PLIBN	92833-16054	2326
92068A	=PLIB	92833-16051	2326
	$PLIB	92832-16700	2101
92071A	=PLIB	92833-16051	2326
	$PLIB	92854-16003	2144
92070A/B	$PLIB	92832-16700	2101

4.1.4 (92860A) Symbolic Debug/1000

In order to speed Debug's building of the symbol table, a new program, BLDDB, has been added. This program must be present in order to use Debug. The following loadr/link command files are available.

File	For...
#DEB06	DEBUG on RTE-6 with old file system
#DEBN6	DEBUG on RTE-6 with new file system
#DEBNA	DEBUG on RTE-A with new file system
#BLD06	BLDDB on RTE-6 with old file system
#BLDN6	BLDDB on RTE-6 with new file system
#BLDNA	BLDDB on RTE-A with new file system

Debug will now start up faster. See chapter two for additional changes and enhancement made to Debug.

4.2 RP LIST FOR FIRMWARE

This section will list the RP's for the HP/1000 M-Series, HP/1000 E-Series and the HP/1000 F-Series, and will specify which RP's are Operating System dependent. The following conventions have been chosen:

^ = Applies only to RTE-IVB and RTE-6/VM Op-Systems; it indicates that the specified RP does not need to be included in the Generation Answer File because it is part of the module RPLIB in the system library.

+ = Applies only to RTE-6/VM Op-System.

- = Applies only to RTE-IVB Op-System.

4.2.1 RP's for the HP/1000 M-Series

```
**********************************************
*                                            *
*           ENTRY POINT CHANGES              *
*           FOR THE HP/1000 M-Series         *
*                                            *
**********************************************
*
*     ***** INTEGER ARITHMETIC ENTRY POINTS *****
*
.MPY,RP, 100200^     * INTEGER MULTIPLY
.DIV,RP, 100400^     * INTEGER DIVIDE
.DLD,RP, 104200^     * DOUBLE LOAD
.DST,RP, 104400^     * DOUBLE STORE
*
*     ***** EAU AND HFP ENTRY POINTS *****
*
.FAD,RP, 105000^     * FLOATING POINT ADD
.FSB,RP, 105020^     * FLOATING POINT SUBTRACT
.FMP,RP, 105040^     * FLOATING POINT MULTIPLY
.FDV,RP, 105060^     * FLOATING POINT DIVIDE
IFIX, RP,105100^     * REAL TO INTEGER FIX
FLOAT,RP,105120^     * INTEGER TO REAL FLOAT
*
*    ***** MOVE & COMPARE WORDS ******
*
.MVW,RP, 105777^     * MOVE WORDS
.CMW,RP, 105776^     * COMPARE WORDS
*
*    ***** BIT & BYTE INSTRUCTIONS *****
*
.CBT,RP, 105766^     * COMPARE BYTES
.LBT,RP, 105763^     * LOAD BYTE
.SBT,RP, 105764^     * STORE BYTE
.MBT,RP, 105765^     * MOVE BYTES
.SFB,RP, 105767^     * SCAN FOR BYTE
.CBS,RP, 105774^     * CLEAR BITS
.SBS,RP, 105773^     * SET BITS
.TBS,RP, 105775^     * TEST BITS
*
```

```
*    *****   MISCELLANEOUS   ******
*
*     CLRIO IS GENERATED BY THE COMPILER, BUT IS NOT USED IN
*     RTE.  THEREFORE THIS ENTRY POINT IS MERELY AN RSS
*     (UNCONDITIONAL SKIP).
*
CLRIO,RP,2001       * NOTE: THE CLRIO ROUTINE IS USED BY QUERY
*                   *   SO COMMENT OUT THE RP IF USING 92063A IMAGE
*
*      Z$INT AND Z$LPP ARE ENTRY POINTS USED BY FTN4X COMPILER.
*
Z$INT,RP,1          * INTEGERS ARE STORED IN 1 WORD (DEFAULT=1)
Z$LPP,RP,73         *   OF LINES/PAGE (DEFAULT=73 OCTAL/59 DECIMAL)
*
*      Z$DBL IS AN ENTRY POINT USED BY THE FTN4 COMPILER (REV 1901
*        OR LATER)
*      IF IT CONTAINS 3, DOUBLE PRECISION VALUES WILL BE 3 WORDS
*      IF IT CONTAINS 4, DOUBLE PRECISION VALUES WILL BE 4 WORDS
*
Z$DBL,RP, 3
*
*      FOR RP'S NEEDED BY THE FTN7X COMPILER, USE %FRPLS
*      (92836-16004)
*
*
*     ***** FFP ENTRY POINTS *****
*
DBLE, RP,105201      * CONVERT REAL TO EXTENDED REAL
SNGL, RP,105202      * CONVERT EXTENDED REAL TO REAL
.DFER,RP,105205      * 3 WORD MOVE (EXTENDED REAL TRANSFER)
.XPAK,RP,105206      * NORMALIZE, ROUND AND PACK WITH EXPONENT
*                    *   AN EXTENDED REAL MANTISSA
.XCOM,RP,105215      * COMPLEMENT AN EXTENDED REAL UNPACKED
*                    *   MANTISSA IN PLACE
..DCM,RP,105216      * COMPLEMENT AN EXTENDED REAL
DDINT,RP,105217      * TRUNCATE AN EXTENDED REAL
.XFER,RP,105220      * 3 WORD MOVE (EXTENDED REAL TRANSFER)
.GOTO,RP,105221      * TRANSFER CONTROL TO LOCATION
..MAP,RP,105222      * CAL THE ADR OF A 2 OR 3D ARRAY ELEMENT
.ENTR,RP,105223      * TRANSFER THE TRUE ADDRESS OF PARAMETERS
*                    *   USED IN A SUBROUTINE CALL
.ENTP,RP,105224      * SAME AS .ENTR, EXCEPT MUST BE THIRD
*                    *   INSTRUCTION AFTER THE ENTRY POINT
.PWR2,RP,105225      * CALCULATE REAL X AND INTEGER N, Y=X*2**N
.FLUN,RP,105226      * UNPACK REAL (EXPONENT IN A, LOWER PART OF
*                    *   MANTISSA IN B)
*
$SETP,RP,105227      * SET UP A LIST OF POINTERS
*                    * NOTE: $SETP REPLACES .SETP AS OF 1913
```

```
*
.PACK,RP,105230       * CONVERT SIGNED MANTISSA OF REAL INTO
*                     *   NORMALIZE REAL FORMAT
.XADD,RP,105213       * EXTENTED REAL ADDITION
*                     *   (IN E AND M SERIES ONLY)
.XSUB,RP,105214       * EXTENDED REAL SUBTRACTION
*                     *   (IN E AND M SERIES ONLY)
.XMPY,RP,105203       * EXTENDED REAL MULTIPLY
*                     *   (IN E AND M SERIES ONLY)
.XDIV,RP,105204       * EXTENDED REAL DIVIDE
*                     *   (IN E AND M SERIES ONLY)
*
*********************************************************************
*
*     XADD, XSUB, XMPY AND XDIV ARE USED FOR FTN INTERFACES
*
XADD,RP,105207       * EXTENDED REAL ADDITION
*                    *   (IN E AND M SERIES ONLY)
XSUB,RP,105210       * EXTENDED REAL SUBTRACTION
*                    *   (IN E AND M SERIES ONLY)
XMPY,RP,105211       * EXTENDED REAL MULTIPLICATION
*                    *   (IN E AND M SERIES ONLY)
XDIV,RP,105212       * EXTENDED REAL DIVISION
*                    *   (IN E AND M SERIES ONLY)
*
*********************************************************************
```

4.2.2 RP's for the HP/1000 E-Series

```
*************************************************
*                                               *
*          ENTRY POINT CHANGES                  *
*          FOR THE HP/1000 E-Series             *
*                                               *
*************************************************
*
*     The RP's in an E-Series CPU are Op-System dependent.
*     Conforming to the conventions specified at the beginning
*     of this section:
*                       "+"  indicates RTE-6/VM,  and
*                       "-"  indicates RTE-IVB.
*
*     ***** INTEGER ARITHMETIC ENTRY POINTS *****
*
.MPY, RP,100200^     * INTEGER MULTIPLY
.DIV, RP,100400^     * INTEGER DIVIDE
.DLD, RP,104200^     * DOUBLE LOAD
.DST, RP,104400^     * DOUBLE STORE
*
*     ***** EAU ENTRY POINTS *****
*
.FAD, RP,105000^     * FLOATING POINT ADD
.FSB, RP,105020^     * FLOATING POINT SUBTRACT
.FMP, RP,105040^     * FLOATING POINT MULTIPLY
.FDV, RP,105060^     * FLOATING POINT DIVIDE
IFIX, RP,105100^     * REAL TO INTEGER FIX
FLOAT,RP,105120^     * INTEGER TO REAL FLOAT
*
*    ***** MOVE & COMPARE WORDS ******
*
.MVW, RP,105777^     * MOVE WORDS
.CMW, RP,105776^     * COMPARE WORDS
*
*    ***** BIT & BYTE INSTRUCTIONS *****
*
.CBT,RP, 105766^     * COMPARE BYTES
.LBT,RP, 105763^     * LOAD BYTE
.SBT,RP, 105764^     * STORE BYTE
.MBT,RP, 105765^     * MOVE BYTES
.SFB,RP, 105767^     * SCAN FOR BYTE
.CBS,RP, 105774^     * CLEAR BITS
.SBS,RP, 105773^     * SET BITS
.TBS,RP, 105775^     * TEST BITS
*
*
```

```
*      *****   MISCELLANEOUS   ******
*
*      CLRIO IS GENERATED BY THE COMPILER, BUT IS NOT USED IN
*      RTE.  THEREFORE THIS ENTRY POINT IS MERELY AN RSS
*      (UNCONDITIONAL SKIP).
*
CLRIO,RP,2001        * NOTE: THE CLRIO ROUTINE IS USED BY QUERY
*                    *   SO COMMENT OUT THE RP IF USING 92063A IMAGE
*
*       Z$INT AND Z$LPP ARE ENTRY POINTS USED BY FTN4X COMPILER.
*
Z$INT,RP,1           * INTEGERS ARE STORED IN 1 WORD (DEFAULT=1)
Z$LPP,RP,73          *   OF LINES/PAGE (DEFAULT=73 OCTAL/59 DECIMAL)
*
*       Z$DBL IS AN ENTRY POINT USED BY THE FTN4 COMPILER (REV
*         1901 OR LATER)
*       IF IT CONTAINS 3, DOUBLE PRECISION VALUES WILL BE 3 WORDS
*       IF IT CONTAINS 4, DOUBLE PRECISION VALUES WILL BE 4 WORDS
*
Z$DBL,RP,3           * DOUBLE PRECISION VALUES ARE STORED ON 3
*                    *   WORDS.
*
*       FOR RP'S NEEDED BY THE FTN7X COMPILER, USE %FRPLS
*       (92836-16004)
*
*
*      ***** FFP ENTRY POINTS *****
*
DBLE, RP,105201      * CONVERT REAL TO EXTENDED REAL
SNGL, RP,105202      * CONVERT EXTENDED REAL TO REAL
.DFER,RP,105205      * 3 WORD MOVE (EXTENDED REAL TRANSFER)
.XPAK,RP,105206      * NORMALIZE, ROUND AND PACK WITH EXPONENT
*                    *   AN EXTENDED REAL MANTISSA
.XCOM,RP,105215      * COMPLEMENT AN EXTENDED REAL UNPACKED
*                    *   MANTISSA IN PLACE
..DCM,RP,105216      * COMPLEMENT AN EXTENDED REAL
DDINT,RP,105217      * TRUNCATE AN EXTENDED REAL
.XFER,RP,105220      * 3 WORD MOVE (EXTENDED REAL TRANSFER)
.GOTO,RP,105221      * TRANSFER CONTROL TO LOCATION
..MAP,RP,105222      * CAL THE ADR OF A 2 OR 3D ARRAY ELEMENT
.ENTR,RP,105223      * TRANSFER THE TRUE ADDRESS OF PARAMETERS
*                    *   USED IN A SUBROUTINE CALL
.ENTP,RP,105224      * SAME AS .ENTR, EXCEPT MUST BE THIRD
*                    *   INSTRUCTION AFTER THE ENTRY POINT
.PWR2,RP,105225      * CALCULATE REAL X AND INTEGER N, Y=X*2**N
.FLUN,RP,105226      * UNPACK REAL (EXPONENT IN A, LOWER PART OF
*                    *   MANTISSA IN B)
*
$SETP,RP,105227      * SET UP A LIST OF POINTERS
*                    * NOTE: $SETP REPLACES .SETP AS OF 1913
```

```
*
.PACK,RP,105230      * CONVERT SIGNED MANTISSA OF REAL INTO
*                    *   NORMALIZE REAL FORMAT
.CFER,RP,105231      * MOVE 4 WORDS (COMPLEX TRANSFER)
.XADD,RP,105213      * EXTENDED REAL ADDITION
*                    *   (IN E AND M SERIES ONLY)
.XSUB,RP,105214      * EXTENDED REAL SUBTRACTION
*                    *   (IN E AND M SERIES ONLY)
.XMPY,RP,105203      * EXTENDED REAL MULTIPLY
*                    *   (IN E AND M SERIES ONLY)
.XDIV,RP,105204      * EXTENDED REAL DIVIDE
*                    *   (IN E AND M SERIES ONLY)
*
*********************************************************************
*
*     XADD, XSUB, XMPY AND XDIV ARE USED FOR FTN INTERFACES
*
XADD,RP,105207       * EXTENDED REAL ADDITION
*                    *   (IN E AND M SERIES ONLY)
XSUB,RP,105210       * EXTENDED REAL SUBTRACTION
*                    *   (IN E AND M SERIES ONLY)
XMPY,RP,105211       * EXTENDED REAL MULTIPLICATION
*                    *   (IN E AND M SERIES ONLY)
XDIV,RP,105212       * EXTENDED REAL DIVISION
*                    *   (IN E AND M SERIES ONLY)
*
*********************************************************************
*
*
*  ***** EMA ENTRY POINTS (F AND E SERIES IN RTE-IVB ONLY) *****
*
.EMAP,RP,105257-     * RESOLVE REFERENCES TO EMA ELEMENTS
.EMIO,RP,105240-     * USED FOR I/O FROM EMA ARRAYS
MMAP, RP,105241-     * MAPS PHYSICAL PAGES INTO LOGICAL ADR SPACE
*
*
*********************************************************************
*
*  **** VMA/EMA ENTRY POINTS (F AND E SERIES IN RTE-6/VM ONLY) **
*
.PMAP,RP,105240+     * MAP EMA/VMA PAGE IN MAP REGISTER
$LOC ,RP,105241+     * MEMORY RESIDENT NODES LOAD ON CALL
.IMAP,RP,105250+     * SINGLE INT FTN4X ARRAY CALC + MAP
.IMAR,RP,105251+     * SINGLE INT SUBSCRIPT ARRAY CALC.
.JMAP,RP,105252+     * DOUBLE INT FTN4X ARRAY CALC. + MAP
.JMAR,RP,105253+     * DOUBLE INT SUBSCRIPT ARRAY CALC.
.LPXR,RP,105254+     * TWO DEF POINTER ADD & MAP
.LPX ,RP,105255+     * A&BREG POINTER + DEF OFFSET & MAP
.LBPR,RP,105256+     * ONE DEF POINTER & MAP
.LBP ,RP,105257+     * MAP POINTER IN A&BREG
```

```
*
*   **** USER CALLABLE OP SYS ENTRY POINTS
*        (F AND E SERIES IN RTE-6/VM ONLY)    ******
*
$LIBR,RP,105340+     * EMULATE SYSTEM ENTRY $LIBR
$LIBX,RP,105341+     * EMULATE SYSTEM ENTRY $LIBX
*$SIP ,RP,0    +     * USE $SIP,RP,0 ONLY IF THE SYSTEM
*                    *   IS PRIVILEGED OR A MICROINSTRUCTION
*                    *   IS STORED IN A TRAP CELL
.FNW ,RP,105345+     * FIND WORD WITH USER INCREMENT
.LLS ,RP,105347+     * LINKED LIST SEARCH
.CPM ,RP,105352+     * COMPARE WORDS IN MEMORY
.ENTN,RP,105354+     * ENTRY POINT RESOLVER
.ENTC,RP,105356+     * ENTRY POINT RESOLVER
*********************************************************************
```

4.2.3 RP's for the HP/1000 F-Series

```
*************************************************
*                                               *
*           ENTRY POINT CHANGES                 *
*           FOR THE HP/1000 F-Series            *
*                                               *
*************************************************
*
*     The RP's in an F-series CPU are Op-System dependent.
*     Conforming to the conventions specified at the beginning
*     of this chapter:
*                       "+"  indicates RTE-6/VM,  and
*                       "-"  indicates RTE-IVB.
*
*     ***** INTEGER ARITHMETIC ENTRY POINTS *****
*
.MPY, RP,100200^      * INTEGER MULTIPLY
.DIV, RP,100400^      * INTEGER DIVIDE
.DLD, RP,104200^      * DOUBLE LOAD
.DST, RP,104400^      * DOUBLE STORE
*
*     ***** EAU AND HFP ENTRY POINTS *****
*
.FAD, RP,105000^      * FLOATING POINT ADD
.FSB, RP,105020^      * FLOATING POINT SUBTRACT
.FMP, RP,105040^      * FLOATING POINT MULTIPLY
.FMP, RP,105040^      * FLOATING POINT MULTIPLY
.FDV, RP,105060^      * FLOATING POINT DIVIDE
IFIX, RP,105100^      * REAL TO INTEGER FIX
FLOAT,RP,105120^      * INTEGER TO REAL FLOAT
.FIXD,RP,105104       * REAL TO DOUBLE INTEGER FIX
*                     *  (IN F SERIES ONLY)
.FLTD,RP,105124       * REAL TO DOUBLE INTEGER FLOAT
*                     *  (IN F SERIES ONLY)
*
*    ***** MOVE & COMPARE WORDS ******
*
.MVW,RP, 105777^      * MOVE WORDS
.CMW,RP, 105776^      * COMPARE WORDS
*
*    ***** BIT & BYTE INSTRUCTIONS *****
*
.CBT,RP, 105766^      * COMPARE BYTES
.LBT,RP, 105763^      * LOAD BYTE
.SBT,RP, 105764^      * STORE BYTE
.MBT,RP, 105765^      * MOVE BYTES
.SFB,RP, 105767^      * SCAN FOR BYTE
```

```
.CBS,RP, 105774^      * CLEAR BITS
.SBS,RP, 105773^      * SET BITS
.TBS,RP, 105775^      * TEST BITS
*
*    *****   MISCELLANEOUS   **********
*
*     CLRIO IS GENERATED BY THE COMPILER, BUT IS NOT USED IN
*     RTE.  THEREFORE THIS ENTRY POINT IS MERELY AN RSS
*     (UNCONDITIONAL SKIP).
*
CLRIO,RP,2001         * NOTE: THE CLRIO ROUTINE IS USED BY QUERY
*                     *   SO COMMENT OUT THE RP IF USING 92063A IMAGE
*
*      Z$INT AND Z$LPP ARE ENTRY POINTS USED BY FTN4X COMPILER.
*
Z$INT,RP,1            * INTEGERS ARE STORED IN 1 WORD (DEFAULT=1)
Z$LPP,RP,73           *   OF LINES/PAGE (DEFAULT=73 OCTAL/59 DECIMAL)
*
*      Z$DBL IS AN ENTRY POINT USED BY THE FTN4 COMPILER (REV 1901
*        OR LATER).
*      IF IT CONTAINS 3, DOUBLE PRECISION VALUES WILL BE 3 WORDS
*      IF IT CONTAINS 4, DOUBLE PRECISION VALUES WILL BE 4 WORDS
*
Z$DBL,RP,3
*
*      FOR RP'S NEEDED BY THE FTN7X COMPILER, USE %FRPLS
*      (92836-16004)
*
*
*     ***** FFP ENTRY POINTS *****
*
DBLE, RP,105201       * CONVERT REAL TO EXTENDED REAL
SNGL, RP,105202       * CONVERT EXTENDED REAL TO REAL
.DFER,RP,105205       * 3 WORD MOVE (EXTENDED REAL TRANSFER)
.XPAK,RP,105206       * NORMALIZE, ROUND AND PACK WITH EXPONENT
*                     *   AN EXTENDED REAL MANTISSA
.XCOM,RP,105215       * COMPLEMENT AN EXTENDED REAL UNPACKED
*                     *   MANTISSA IN PLACE
..DCM,RP,105216       * COMPLEMENT AN EXTENDED REAL
DDINT,RP,105217       * TRUNCATE AN EXTENDED REAL
.XFER,RP,105220       * 3 WORD MOVE (EXTENDED REAL TRANSFER)
.GOTO,RP,105221       * TRANSFER CONTROL TO LOCATION
..MAP,RP,105222       * CAL THE ADR OF A 2 OR 3D ARRAY ELEMENT
.ENTR,RP,105223       * TRANSFER THE TRUE ADDRESS OF PARAMETERS
*                     *   USED IN A SUBROUTINE CALL
.ENTP,RP,105224       * SAME AS .ENTR, EXCEPT MUST BE THIRD
*                     *   INSTRUCTION AFTER THE ENTRY POINT
.PWR2,RP,105225       * CALCULATE REAL X AND INTEGER N, Y=X*2**N
.FLUN,RP,105226       * UNPACK REAL (EXPONENT IN A, LOWER PART OF
*                     *   MANTISSA IN B)
```

```
*
$SETP,RP,105227     * SET UP A LIST OF POINTERS
*                   * NOTE: $SETP REPLACES .SETP AS OF 1913
*
.PACK,RP,105230     * CONVERT SIGNED MANTISSA OF REAL INTO
*                   *   NORMALIZE REAL FORMAT
.CFER,RP,105231     * MOVE 4 WORDS (COMPLEX TRANSFER)
*
*                   * ..FCM, ..TCM, .BLE, AND .NGL ARE AS OF REV 1926
*
..FCM,RP,105232     * COMPLEMENT A REAL
*                   *   (IN F SERIES ONLY)
..TCM,RP,105233     * NEGATE A DOUBLE REAL
*                   *   (IN F SERIES ONLY)
.BLE, RP,105207     * CONVERT REAL TO DOUBLE REAL
*                   *   (IN F SERIES ONLY)
.NGL, RP,105214     * CONVERT DOUBLE REAL TO REAL
*                   *   (IN F SERIES ONLY)
*
*
*     ***** 3-WORD ENTRY POINTS (IN F SERIES ONLY) *****
*
.XADD,RP,105001     * EXTENDED REAL ADDITION
.XSUB,RP,105021     * EXTENDED REAL SUBTRACTION
.XMPY,RP,105041     * EXTENDED REAL MULTIPLICATION
.XDIV,RP,105061     * EXTENDED REAL DIVISION
.XFXS,RP,105101     * EXTENDED REAL TO INTEGER FIX
.DINT,RP,105101     * EXTENDED REAL TO INTEGER FIX (NOTE .DINT FOR
*                   *   FTN INTERFACE, SAME ENTRY POINT AS .XFXS
.XFXD,RP,105105     * EXTENDED REAL TO DOUBLE INTEGER FIX
.XFTS,RP,105121     * INTEGER TO EXTENDED REAL FLOAT
.IDBL,RP,105121     * INTEGER TO EXTENDED REAL FLOAT  (NOTE: FTN
*                   *   INTERFACE SAME ENTRY POINT AS .XFTS)
.XFTD,RP,105125     * DOUBLE INTEGER TO EXTENDED REAL FLOAT
*
*     ***** 4-WORD ENTRY POINTS (IN F SERIES ONLY) *****
*
.TADD,RP,105002     * DOUBLE REAL ADDITION
.TSUB,RP,105022     * DOUBLE REAL SUBTRACTION
.TMPY,RP,105042     * DOUBLE REAL MULTIPLY
.TDIV,RP,105062     * DOUBLE REAL DIVIDE
.TFXS,RP,105102     * DOUBLE REAL TO INTEGER FIX
.TINT,RP,105102     * DOUBLE REAL TO INTEGER FIX  (NOTE: FTN
*                   *   INTERFACE SAME ENTRY POINT AS .TFXS)
.TFXD,RP,105106     * DOUBLE REAL TO DOUBLE INTEGER FIX
.TFTS,RP,105122     * INTEGER TO DOUBLE REAL FLOAT
.ITBL,RP,105122     * INTEGER TO DOUBLE REAL FLOAT (NOTE: FTN
*                   *   INTERFACE SAME ENTRY POINT AS .TFTS)
.TFTD,RP,105126     * DOUBLE INTEGER TO DOUBLE REAL FLOAT
*
```

```
* **** DOUBLE INTEGER ENTRY POINTS (FFP) (IN F SERIES ONLY) *****
*
.DAD ,RP,105014     * DOUBLE INTEGER ADDITION
.DSB ,RP,105034     * DOUBLE INTEGER SUBTRACTION
.DMP ,RP,105054     * DOUBLE INTEGER MULTIPLICATION
.DDI ,RP,105074     * DOUBLE INTEGER DIVISION
.DSBR,RP,105114     * DOUBLE INTEGER SUBTRACTION (REVERSED)
.DDIR,RP,105134     * DOUBLE INTEGER DIVISION (REVERSED)
.DNG ,RP,105203     * DOUBLE INTEGER NEGATE
.DIN ,RP,105210     * DOUBLE INTEGER INCREMENT
.DDE ,RP,105211     * DOUBLE INTEGER DECREMENT
.DIS ,RP,105212     * DOUBLE INTEGER INCREMENT AND SKIP IF 0
.DDS ,RP,105213     * DOUBLE INTEGER DECREMENT AND SKIP IF 0
.DCO ,RP,105204     * DOUBLE INTEGER COMPARE
*
*     ***** SIS ENTRY POINTS (IN F SERIES ONLY) *****
*
TAN  ,RP,105320     * TANGENT
SQRT ,RP,105321     * SQUARE ROOT
ALOG ,RP,105322     * NATURAL LOGARITHM LN(X)
ATAN ,RP,105323     * ARCTANGENT
COS  ,RP,105324     * COSINE
SIN  ,RP,105325     * SINE
EXP  ,RP,105326     * EXPONENTIAL E**X
ALOGT,RP,105327     * LOGARITHM LOG10(X)
TANH ,RP,105330     * HYPERBOLIC TANGENT
*
TRNL ,RP,105331     * EVALUATE THE QUOTIENT OF 2 POLYNOMIALS IN
*                   * DOUBLE PRECISION
DPOLY,RP,105331     * EVALUATE THE QUOTIENT OF 2 POLYNOMIALS IN
*                   * DOUBLE PRECISION
*                   * NOTE: DPOLY REPLACES TRNL AS OF 1926 (SAME
*                   *       ROUTINE DPOLY IS USED IN OTHER SUB-
*                   *       ROUTINES SUCH AS DCOS AND DSIN)
*
*                   * /CMRT, /ATLG, .FPWR, AND .TPWR ARE AS OF
*                   *   REV 1926
*
/CMRT,RP,105332     * RANGE REDUCTION FUNCTION
/ATLG,RP,105333     * COMPUTE (1-X)/(1+X) IN DOUBLE PRECISION
.FPWR,RP,105334     * COMPUTE X**I FOR REAL X AND UNSIGNED INTEGER I
.TPWR,RP,105335     * COMPUTE X**I FOR DOUBLE REAL X AND UNSIGNED
*                   *   INTEGER I
*
*************************************************************************
*
*     ***** VIS ENTRY POINTS (F SERIES IN RTE-IVB ONLY) *****
*
.VECT,RP,101460-    * FIRST OF TWO WORDS (USED BY SOFTWARE IN %VLIB
*                   *   TO GET TO TWO WORD OPCODES)
```

```
VPIV ,RP,101461-    * PIVOT ROUTINE
VABS ,RP,101462-    * ABSOLUTE VALUE ROUTINE
VSUM ,RP,101463-    * SUM THE ARRAY ELEMENTS
VNRM ,RP,101464-    * SUM THE ABSOLUTE VALUE OF THE ELEMENTS
VDOT ,RP,101465-    * DOT PRODUCT ROUTINE
VMAX ,RP,101466-    * FIND THE LARGEST  ARRAY ELEMENT
VMAB ,RP,101467-    * FIND THE LARGEST  ARRAY ELEMENT(ABSOLUTE VALUE)
VMIN ,RP,101470-    * FIND THE SMALLEST ARRAY ELEMENT
VMIB ,RP,101471-    * FIND THE SMALLEST ARRAY ELEMENT(ABSOLUTE VALUE)
VMOV ,RP,101472-    * COPY AN ARRAY INTO AN OTHER ARRAY
VSWP ,RP,101473-    * EXCHANGE ELEMENTS OF TWO ARRAYS
.ERES,RP,101474-    * CAL 2 WORD OFFSET FOR EMA ARRAY ELEMENTS
.VSET,RP,101476-    * CAL MAP TABLE FORM .ERES INFORMATION
.ESEG,RP,101475-    * PERFORM THE MAPPING FROM THE MAP TABLE
*                   *   FOUND WITH .VSET
.DVCT,RP,105460-    * FIRST OF TWO WORDS (USED BY SOFTWARE IN %VLIB
*                   *   TO GET TO TWO WORD OPCODES)
DVPIV,RP,105461-    * PIVOT ROUTINE FOR DOUBLE REAL ARRAYS
DVABS,RP,105462-    * ABSOLUTE VALUE ROUTINE FOR DOUBLE REAL ARRAYS
DVSUM,RP,105463-    * SUM THE ARRAY ELEMENTS FOR DOUBLE REAL ARRAYS
DVNRM,RP,105464-    * SUM THE ABSOLUTE VALUE OF THE ELEMENTS IN A
*                   *   DOUBLE REAL ARRAY
DVDOT,RP,105465-    * DOT PRODUCT ROUTINE FOR DOUBLE REAL ARRAYS
DVMAX,RP,105466-    * FIND THE LARGEST ARRAY ELEMENT IN A DOUBLE
*                   *   REAL ARRAY
DVMAB,RP,105467-    * FIND THE LARGEST ARRAY ELEMENT IN A DOUBLE
*                   *   REAL ARRAY (ABSOLUTE VALUE)
DVMIN,RP,105470-    * FIND THE SMALLEST ARRAY ELEMENT IN A DOUBLE
*                   *   REAL ARRAY
DVMIB,RP,105471-    * FIND THE SMALLEST ARRAY ELEMENT IN A DOUBLE
*                   *   REAL ARRAY (ABSOLUTE VALUE)
DVMOV,RP,105472-    * COPY A DOUBLE REAL ARRAY INTO ANOTHER DOUBLE
*                   *   REAL ARRAY
DVSWP,RP,105473-    * EXCHANGE ELEMENTS OF TWO DOUBLE REAL ARRAYS
*
*
*   **** EMA ENTRY POINTS (F AND E SERIES IN RTE-IVB ONLY) ****
*
*
.EMAP,RP,105257-    * RESOLVE REFERENCES TO EMA ELEMENTS
.EMIO,RP,105240-    * USED FOR I/O FROM EMA ARRAYS
MMAP, RP,105241-    * MAPS PHYSICAL PAGES INTO LOGICAL ADR SPACE
*
*****************************************************************
*
*   ***** VIS ENTRY POINTS (F SERIES IN RTE-6/VM ONLY) *****
*
.VECT,RP,101460+    * FIRST OF TWO WORDS (USED BY SOFTWARE IN %VLIB)
*                   *   TO GET TO TWO WORD OPCODES
VPIV ,RP,101461+    * PIVOT ROUTINE
```

```
VABS, RP,101462+     * ABSOLUTE VALUE ROUTINE
VSUM ,RP,101463+     * SUM THE ARRAY ELEMENTS
VNRM ,RP,101464+     * SUM THE ABSOLUTE VALUE OF THE ELEMENTS
VDOT ,RP,101465+     * DOT PRODUCT ROUTINE
VMAX ,RP,101466+     * FIND THE LARGEST  ARRAY ELEMENT
VMAB ,RP,101467+     * FIND THE LARGEST  ARRAY ELEMENT(ABSOLUTE VALUE)
VMIN ,RP,101470+     * FIND THE SMALLEST ARRAY ELEMENT
VMIB ,RP,101471+     * FIND THE SMALLEST ARRAY ELEMENT(ABSOLUTE VALUE)
VMOV ,RP,101472+     * COPY AN ARRAY INTO AN OTHER ARRAY
VSWP ,RP,101473+     * EXCHANGE ELEMENTS OF TWO ARRAYS
.DVCT,RP,105460+     * FIRST OF TWO WORDS (USED BY SOFTWARE IN %VLIB
*                    *   TO GET TO TWO WORD OPCODES)
DVPIV,RP,105461+     * PIVOT ROUTINE FOR DOUBLE REAL ARRAYS
DVABS,RP,105462+     * ABSOLUTE VALUE ROUTINE FOR DOUBLE REAL ARRAYS
DVSUM,RP,105463+     * SUM THE ARRAY ELEMENTS FOR DOUBLE REAL ARRAYS
DVNRM,RP,105464+     * SUM THE ABSOLUTE VALUE OF THE ELEMENTS IN A
*                    *   DOUBLE REAL ARRAY
DVDOT,RP,105465+     * DOT PRODUCT ROUTINE FOR DOUBLE REAL ARRAYS
DVMAX,RP,105466+     * FIND THE LARGEST  ARRAY ELEMENT IN A DOUBLE
*                    *   REAL ARRAY
DVMAB,RP,105467+     * FIND THE LARGEST  ARRAY ELEMENT IN A DOUBLE
*                    *   REAL ARRAY (ABSOLUTE VALUE)
DVMIN,RP,105470+     * FIND THE SMALLEST ARRAY ELEMENT IN A DOUBLE
*                    *   REAL ARRAY
DVMIB,RP,105471+     * FIND THE SMALLEST ARRAY ELEMENT IN A DOUBLE
*                    *   REAL ARRAY (ABSOLUTE VALUE)
DVMOV,RP,105472+     * COPY A DOUBLE REAL ARRAY INTO ANOTHER DOUBLE
*                    *   REAL ARRAY
DVSWP,RP,105473+     * EXCHANGE ELEMENTS OF TWO DOUBLE REAL ARRAYS
*
*
*   ***  VMA/EMA ENTRY POINTS (F SERIES IN RTE-6/VM ONLY)  ****
*
*
.PMAP,RP,105240+     * MAP EMA/VMA PAGE IN MAP REGISTER
$LOC ,RP,105241+     * MEMORY RESIDENT NODES LOAD ON CALL
.IMAP,RP,105250+     * SINGLE INT FTN4X ARRAY CALC. + MAP
.IMAR,RP,105251+     * SINGLE INT SUBSCRIPT ARRAY CALC.
.JMAP,RP,105252+     * DOUBLE INT FTN4X ARRAY CALC. + MAP
.JMAR,RP,105253+     * DOUBLE INT SUBSCRIPT ARRAY CALC.
.LPXR,RP,105254+     * TWO DEF POINTER ADD & MAP
.LPX ,RP,105255+     * A&BREG POINTER + DEF OFFSET & MAP
.LBPR,RP,105256+     * ONE DEF POINTER & MAP
.LBP ,RP,105257+     * MAP POINTER IN A&BREG
*
*       *** USER CALLABLE OP SYS ENTRY POINTS
*           (F AND E SERIES IN RTE-6/VM ONLY)  *****
*
$LIBR,RP,105340+     * EMULATE SYSTEM ENTRY $LIBR
$LIBX,RP,105341+     * EMULATE SYSTEM ENTRY $LIBX
```

```
*$SIP ,RP,0    +     * USE $SIP,RP,0 ONLY IF THE SYSTEM IS
*                    *   PRIVILEGED OR A MICROINSTRUCTION
*                    *   IS STORED IN A TRAP CELL
.FNW ,RP,105345+     * FIND WORD WITH USER INCREMENT
.LLS ,RP,105347+     * LINKED LIST SEARCH
.CPM ,RP,105352+     * COMPARE WORDS IN MEMORY
.ENTN,RP,105354+     * ENTRY POINT RESOLVER
.ENTC,RP,105356+     * ENTRY POINT RESOLVER
*********************************************************************
```

UPDATE PROCEDURES — CHAPTER 5

Customers on Support Services, CSS/SSS, will receive updates to software on paper tape, minicartridges, mag tape, flexible discs or CTDs, depending on the options they have ordered. This chapter contains information concerning the format of update media and suggested procedures for updating software from this media.

5.1 General Information

To update your software:

1. BACK UP YOUR DISC BEFORE PROCEEDING. This will insure that you can always return to your original system and start over.

2. VERIFY YOUR BACKUP COPY. It is suggested that you make two copies and verify them both.

3. The typical procedure for updating your system is to replace the existing files on your system with the files supplied on the media. You may, when it's possible, want to store the new file to disc on a different CRN. Then, when you're sure it has transferred correctly, purge your old copy. This is just to ensure that you get a good copy of the new file before you destroy your old one.

After you have updated your software:

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

2. Check the revision codes of your software as they appear in the generation map against those listed in the software numbering catalog or file, and make sure you have not left out any modules.

3. Boot, initialize and use your newly generated system to make sure that it works correctly.

4. Make backup copies of your newly generated system. Use a new tape to backup your system. Keep the old copy until it's time to update once again, and then use it to backup the next 'new' system. This way you will keep at least two revisions backed-up by rotating your media.

5. Keep the update media together with your old backup media. If you discover problems later, you will always be able to get back to where you started and go through the update procedure again.

NOTE: If Operating System software has not changed and there are no changes affecting your generation (i.e., generated-in libraries), then regeneration is not necessary and on-line reloading will be sufficient. Otherwise regeneration is necessary before reloading on-line.

5.2 Media Content

All the updates to the software for a product are distributed on the media requested by the customer. Depending on the product, there will be differences in what software is included on the media. The following table provides an overview of the different configurations possible with respect to software content and format:

Media Option		Format	Operating Systems	Subsystems
010	Paper Tape	FMGR 'ST'	(A)	(A)
020	Minicartridge	READR/SAVER	(A)	(B)
		FMGR 'ST'	(A)	(B)
022	CS/80 CTD	FC	(C)	(C)
		VCP Bootable	-	(B)*
041	Floppy Disc	Mountable FMP CRN	(B)	(B)
042	Mini-Floppy	Mountable FMP CRN	(B)	(B)
044	Micro-Floppy	Mountable FMP CRN	(B)	(B)
050	Mag Tape 800	READR/SAVER	(C)	(C)
		FC	(C)	(C)
		FMGR 'ST'	(A)	(B)
051	Mag Tape 1600	READR/SAVER	(C)	(C)
		FC	(C)	(C)
		FMGR 'ST'	(A)	(B)

(A) Only the files that have changed will be included on the media.

(B) Each individual media part no. (i.e. one minicartridge, one disc, one mag tape) contains a certain subset of the files belonging to a product. If one or more of these files change, the entire media part containing that file or files will be shipped. For example, suppose the following media part numbers for a product contain the following files:

9xxxx-1xx01 - File A, File B, File C
9xxxx-1xx02 - File D, File E
9xxxx-1xx03 - File F, File G, File H

If file B, file F, and file H are updated, the customer receiving this option would receive the media part numbers 9xxxx-1xx01 and 9xxxx-1xx03. Notice that the customer would also get files A, C, and G even though these files haven't changed.

(C) All the files belonging to the product will be sent.

* Restored Off-line

5.3 Update Procedures

Updated software may be stored on media in one of several formats. The above table shows the formats currently being used for different media types. Note that each physical media carries a label identifying the part number of the media, a description and a revision code.

5.3.1 Paper Tape

- A single file is stored on the tape in FMGR 'ST' format.
- The file type of this file must be determined from the specific Software Numbering Catalog, Configuration Guide or Reference Manual for the product.
- The file is restored by using the FMGR 'ST' command (ex. :ST,4,FILEA:RT:32767::-1,BR).

5.3.2 Minicartridge in FMGR 'ST' format

- Two or more files are stored on a minicartridge; the first file is a directory of all the files on the media with an entry of 128 words for each file:

```
words 1-3: file name
        4: type      S - AS (ASCII)
                     R - BR (relocatable)
                     A - BA (binary absolute)
                     D - BN (data)
        5: blank
        6-128: description.
```

All the files, including the directory, are stored on tape in FMGR 'ST' format in the order in which they appear in the directory.

- Files may be restored by the '&UPDAT' FMGR transfer file (in an RTE-II, IVA and IVB environment only); this utility is described in the RTE Utility Programs Reference Manual.

  Basically &UPDAT works as follows:

  . the directory is stored into a file called &DRCTY,
  . RDNAM is loaded from the relocatable %RDNAM::32767,
  . RDNAM reads &DRCTY and passes to &UPDAT the file names,
  . &UPDAT purges these files (it expects the files on CRN 32767 with security code RT),
  . &UPDAT uses the transfer file &PKDIS to pack CRN 32767,
  . &UPDAT stores each file off the minicartridge to disc.

  Note that &UPDAT and &PKDIS expect the minicartridge to be on LU 5 and all files to be stored onto CRN 32767 with security code RT.

  To use a different LU:

  . edit &UPDAT to modify all references to LU 5, or
  . do an LU switch (system LU command or session SL command) to point LU 5 to the desired device EQT and subchannel before executing &UPDAT.

  To use a different CRN or Security Code:

  . edit &UPDAT and &PKDIS to provide the correct CRN and security code for the existing files as follows:

    - in &UPDAT, edit the line at the beginning of the transfer file that sets global 1G to RT and/or global 2G to 32767 (globals referenced throughout &UPDAT);
    - in &PKDIS, edit the PK command to pack the appropriate CRN.

- It is also possible (necessary for users in an RTE-L, XL, A and 6 environment) for the user to read the directory (it is an ASCII file) and store the files by hand onto disc with FMGR 'ST' commands, giving the disc files the file names specified in the directory. When creating the disc files, use the file type according to the type given in the directory. Also, it's recommended that a file size of -1 be specified so FMGR can make the file as big as it needs.

For example:

Directory Entry	FMGR Command
FILEA S	:ST,5,FILEA:RT:32767::-1,AS
FILEB R	:ST,5,FILEB:RT:32767::-1,BR
FILEC A	:ST,5,FILEC:RT:32767::-1,BA
FILED D	:ST,5,FILED:RT:32767::-1,BN

Remember, when restoring the tape individually, either purge the existing copy of the file before storing the new one to disc, or store the file to a different CRN and purge the old file after the transfer is successful.

5.3.3 Minicartridge in READR/SAVER format

- SAVER stores the software on to the tape file-by-file in a packed format.

- The tape can only be read using the READR utility; refer to the READR/SAVER Utility Reference Manual for detailed information on how to update your files. The recommended procedure is to use the UPdate function of READR to replace existing files on the system with new files from tape.

- With this update there are two library files for RTE-6/VM which cannot fit on a single minicartridge. The files each have been split into two parts. The files and their parts are

  The file: ...has been split into:

  $TFLIB ---> $TFLB1, $TFLB2 $FMP6 ---> $FMP6X, &FMP6Y

  It will be necessary for customers receiving updates in this format to use the MERGE utility (refer to the RTE-6/VM Utilities Reference Manual (92084-90007) to merge the pieces back into the original libraries.

5.3.4 CS/80 CTD in 'FC' format

- Consult the Utilities Reference Manual on how to use the 'FC' utility.
- A CTD tape contains one or more products, each product being identified by a CRN (Graphics may have more than one CRN).
- The comment file created by FC on the CTD identifies which subsystems are stored on tape, what files belong to each subsystem, their revision code, their file type and their CRN. To list the comment file do:

```
:RU,FC
FC:LL,list device LU
FC:LC,CTD LU
FC:EX
```

- Example on how to use 'FC':

```
:RU,FC
FC:CO,-LU{::XX},::YY,V
```

where
- -LU = negative LU of the CTD
- XX = CRN identifying the files for a given product on CTD (reported by the "LC" command under "FC").
- YY = CRN on your disc.
- V = verify

This will copy all the files from CTD with reference to CRN 'XX' onto the disc on CRN 'YY' and will verify each transfer. Files with duplicate name will not be copied and FMGR-002 errors will occur.

- This update will also include the addition of customized CTD's where each tape will include multiple subsystem updates. Information on updating, in addition to appearing here, is included in the FC comment file along with the CRN's and the customer order number.

Each customized tape may contain files from one or more CRNs. In order to remove these, do the following:

```
:RU,FC

FC: CL,-xx                          Command to list CRNs stored on FC
                                    tape, where xx is the source tape
                                    lu (e.g. CL,-13 if CS80 tape lu
                                    is 13).

FC: GR
FC: CO,-xx{::nnnnn},ddddd,VF        Commands to move CRNs from tape
    .     .     .     .             to destination disc cartridge.
    .     .     .     .             (e.g. CO,-13{::32754},30,VF
    .     .     .     .             moves CRN 32754 from tape to
    .     .     .     .             disc CRN 30). Use a CO command
FC: CO,-xx{::nnnnn},ddddd,VF        for each CRN that is to be
FC: EG                              removed from tape.
```

"nnnnn" is the CRN on tape that you wish to move to disc, and "ddddd" is the destination disc CRN or LU on which the information will be stored (refer to Utilities Reference manual for more information on the FC program).

5.3.5 CS/80 CTD in "VCP BOOTABLE" format

- Consult the appropriate Diagnostic Manual.
- "VCP BOOTABLE" means that these files are loaded directly from tape into memory, then executed by following the instructions in the appropriate diagnostic manual. The CTD media update in this format replaces the older version of the media.

5.3.6 Diskettes in "MOUNTABLE FMP CRN" format

- Mount the floppy with the FMGR 'MC' command.

5.3.7 Mag Tape in FMGR 'ST' format

- See above section "Minicartridge in FMGR 'ST' format".

- &UPDAT was designed with minicartridges specifically in mind, but it can also be used on mag tapes if:

  . LU 5 is the mag tape LU, or
  . LU 5 is switched to point to the mag tape EQT, or
  . the user edits &UPDAT.

- The user can also store the files off the tape individually using the file names and types given in the directory.

- Note that some products may have a transfer file or other means for storing files off mag tape. See the appropriate Configuration Guide or Reference Manual for specific information.

5.3.8 Mag Tape in 'FC' format

- Consult the Utility Programs Reference Manual on how to use the 'FC' utility.

- A Mag Tape contains only one product.

- Example on how to use 'FC':

```
:RU,FC
FC:CO,-8,-disc LU,V
```

  This will copy all the files for the product from the MT to the disc LU (or CRN) and will verify each transfer. Note that if files exist on that disc LU with identical names, those files will not be copied from the tape and FMGR-002 errors will occur.