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VAX/VMS V1.6

Release Notes

Order No. AA-J039A-TE

VAX11

This document defines the VAX/VMS V1.6
update kit and describes how to install
the kit on a VAX/VMS V1.5 system.
Successful installation of the kit produces
a VAX/VMS V1.6 system.

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The postage-prepaid READER'S COMMENTS form on the last page of this
document requests the user's critical evaluation to assist us in pre-
paring future documentation.

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DATATRIEVE	TRAX	

CONTENTS

1.0 HOW TO INSTALL VAX/VMS V1.6

Version 1.6 of VAX/VMS is distributed as an update kit consisting of
documentation and VAX/VMS patch and replacement files on floppy
diskettes.

When you install the kit, a VAX/VMS V1.6 system is produced, provided
that:

1. The kit is installed on a VAX/VMS V1.5 system

2. You have applied no other patches to the VAX/VMS V1.5 system

3. You install all the updates contained in the kit (all updates
    are mandatory)

1.1 Identifying the VAX/VMS V1.6 Kit

Existing VAX/VMS V1.5 customers receive this kit, which they then use
to update their V1.5 system. Customers who purchase a VAX/VMS license
after V1.6 is released receive the kit as a component of their order.
These new customers must install a VAX/VMS V1.5 system and then
install the V1.6 update kit.

The components of the VAX/VMS V1.6 update kit are:

1. SPD 25.1.4, VAX/VMS Operating System Version 1.6 (Order No.
    AE-C770D-TE).

2. This manual, VAX/VMS V1.6 Release Notes (Order No.
    AA-J039A-TE).

3. The update medium, seven floppy diskettes that contain the
    patches and replacement modules for the VAX/VMS components
    that are changed by this release.

Diskette Label	Part Number
VMSV160A BIN RX01	AS-J062A-BE
VMSV160B BIN RX01	AS-J063A-BE
VMSV160C BIN RX01	AS-J064A-BE
VMSV160D BIN RX01	AS-J065A-BE
VMSV160E BIN RX01	AS-J066A-BE
VMSV160F BIN RX01	AS-J067A-BE
VMSV160G BIN RX01	AS-J068A-BE

4. The manual, RMS-11 User's Guide (Order No.   AA-D538A-TC),
    which replaces the following VAX/VMS documentation:

    Introduction to RMS-11 (Order No. AA-0001A-TC) and RSX-11M
    RMS-11 V1.5 Utilities User's Guide (Order No. AA-D083A-TC).

5. The manual, <u>RMS-11 MACRO-11 Reference Manual</u> (Order No.
    AA-H683A-TC), which replaces the following VAX/VMS
    documentation:

    <u>IAS/RSX-11M RMS-11 MACRO Programmer's Reference Manual</u> (Order
    No. AA-0002A-TC).

1.2 VAX/VMS Optional Software Products

This kit contains updates to VAX/VMS components; it does not contain
updates to any VAX/VMS Optional Product. The following table lists
the names of optional software products currently available for sale
to customers; the versions supported for VAX/VMS V1.5, and the
versions supported for VAX/VMS V1.6.

VAX/VMS Optional Software Products

Product Name	Version Supported by VAX/VMS	
	V1.5	V1.6
DECnet-VAX	1.1	1.2
VAX-11 FORTRAN IV-PLUS	1.2	1.3
VAX-11 BLISS-32	1.0	1.0
VAX-11 COBOL-74	4.0	4.1
VAX-11 2780/3780 PROTOCOL EMULATOR	---	1.0
FORTRAN IV/VAX TO RSX CROSS COMPILER	2.2	2.3
PDP-11 BASIC-PLUS-2/VAX	1.5	1.5
PDP-11 DATATRIEVE/VAX	1.1	1.2
PDP-11 CORAL-66/VAX	3.0	3.0

1.3 Before Installing the Kit

To ensure successful installation of the kit, do the following:

1. Read the <u>VAX-11 Software Installation Guide</u>.

    The Guide is the basic document for understanding how to
    install or update any VAX/VMS component or optional product.

2. Read the <u>VAX/VMS Release Notes</u> for VAX/VMS V1.5.

   The V1.5 Release Notes contain the information required to bring earlier versions of VAX/VMS to the V1.5 support level as well as notes needed for the successful use of V1.5. All customers should read the V1.5 Release Notes, as the V1.6 Release Notes supplement the information in the V1.5 Release Notes.

3. Read this manual, the <u>VAX/VMS V1.6 Release Notes</u>.

   This manual describes how to produce a VAX/VMS V1.6 system from the update kit and a VAX/VMS V1.5 system.

4. Ensure that the VAX11/780 is at the required hardware ECO level.

   There are no hardware or microcode ECOs required for V1.6. However, do ensure that the V1.5 ECOs, as noted in the Release Notes for V1.5, have been made.

1.4 Installing the Kit

The procedures in the <u>VAX-11 Software Installation Guide</u> describe how to install the kit. Refer to Section 6.2, "Updating the System."

When you perform the update procedure, insert the floppy diskettes in this order:

    VMSV160A
    VMSV160B
    VMSV160C
    VMSV160D
    VMSV160E
    VMSV160F
    VMSV160G

1.4.1 Printing Update Descriptions

1.4.1 **Printing Update Descriptions** – Updates are either patches to existing code or module replacements. The application of the updates is controlled by command files on the update distribution medium (the floppy diskettes). These command files contain comments that briefly describe each update. If you want a description of each update printed at the operator's console as the updates are applied, be sure to answer YES to the update procedure question:

   Do you want an explanation of each update' displayed during the update? (Y/N):

1.4.2 Printing Patches Applied by the Update Kit

1.4.2 **Printing Patches Applied by the Update Kit** – As the updates are applied, two outputs are produced: the patched (or replaced) images and journal files of the patches. Journal files contain a record of each patch made during the update process. If you want a listing of the patches produced by the update process, you must print them. The procedure is:

1. Complete the update procedure that installs VAX/VMS V1.6, including rebooting the system to transfer control to V1.6 (as described in the <u>VAX-11 Software Installation Guide</u>).

2. Log in to any account, and issue the following command:

    PRINT SYS$SYSTEM:*.JNL,SYS$LIBRARY:*.JNL

    The journal files for the patches will be submitted to the
    SYS$PRINT queue.

Note that the journal files contain information about patches applied
to native mode images. They do not contain information about modules
which have been replaced during the update process or patched
compatibility mode images.

2.0 DIFFERENCES BETWEEN VAX/VMS V1.5 AND V1.6

This section summarizes the differences between VAX/VMS V1.5 and
VAX/VMS V1.6.   Because V1.6 is an update kit and not a major release
of VAX/VMS, there are few functional changes to the software.   Most
changes are fixes to problems found since .the last version was
released.

2.1 RMS-11 V1.8 Now Supported

This update includes replacement modules that upgrade RMS-11 V1.5 to
RMS-11   V1.8.   RMS-11 V1.8 has added several features of interest to
the VAX-11 RMS programmer and the compatibility mode programmer who
builds and runs RSX-11M task images on a VAX/VMS system.

RMS-11 V1.8 enhancements include:

1. An Indexed File Load (IFL) utility, used as an initial load
    utility to optimize the loading of indexed files. IFL is the
    fastest way to load indexed files in both native and
    compatibility modes.

2. A new RMS-11 User's Guide, containing extensive information
    on file structure, file design, and use of RMS utilities (for
    both native and compatibility mode programmers), as well as
    information on ODL modifications and program optimization
    techniques for the compatibility mode programmer.

3. A mass-insert mode for compatibility mode programs which
    optimizes the loading of a collated series of records into an
    indexed file.

4. Deferred write capability for compatibility mode programs
    that write to indexed files. Now, RMS-11 I/O buffers are
    written only when they must be replaced, eliminating
    (particularly at initial file load time) the equivalent of
    one physical write to a program logical-record write.   Note
    that VAX-11 RMS already has this feature.

5. Changes to the CONVERT utility to take advantage of the new
    mass insert and deferred write features as well as improved
    buffer management. While not as fast as IFL, CONVERT is
    another way to load indexed files in both native and
    compatibility modes.

6. New disk overlay ODL files (both 9KB and 12KB) for optimal
    overlaying of RMS code (compatibility mode only). Included
    is a prototype ODL that users can edit to produce customized
    overlays.

4

The RMS-11 documentation has changed to correspond with the RMS-11 V1.8 release:

> The new manual, RMS-11 User's Guide (Order No. AA-D538A-TC), becomes part of the VAX-VMS documentation kit replacing:

> Introduction to RMS-11 (AA-0001A-TC) and
> RSX-11M RMS-11 V1.5 Utilities User's Guide (AA-D083A-TC).

> The new manual, RMS-11 MACRO-11 Reference Manual (Order No. AA-H683A-TC) becomes part of the VAX/VMS documentation kit, replacing:

> IAS/RSX-11M RMS-11 MACRO Programmer's Reference Manual (AA-0002A-TC).

3.0 PROBLEMS RESOLVED BY THIS RELEASE

The problems resolved by this release are identified in the command files that apply the updates to your system. Follow the instructions in Section 1.4.1 of this document to produce, during the update process, a listing of the problems resolved by VAX/VMS V1.6. Appendix A of this manual contains summaries of the updates in the V1.6 kit.

The following sections identify the problems and restrictions noted in the Release Notes for VAX/VMS V1.5 that have been resolved by V1.6.

3.1 VAX-11 RMS Restriction on Use of UFO Option

The Additional Notes on VAX/VMS V1.5 noted that the user file option (UFO) in the file options field (FOP) of the file access block (FAB) was restricted to use with sequential and relative files.

The restriction is now removed. You can now specify this option on an $OPEN or $CREATE for indexed sequential (ISAM) files.

4.0 CURRENT PROBLEMS

This section lists known problems or restrictions which exist in VAX/VMS V1.6.

NOTE

> Problems and restrictions documented in the V1.5 Release Notes still exist in VAX/VMS V1.6 unless they have been documented as resolved in Section 3.0 of this manual.

4.1 VMSRTL Error Affecting FORTRAN IV-PLUS Programs

There is an error in the Run-Time Library that could cause a FORTRAN program to fail if the program attempts to execute an ENCODE or DECODE statement while another I/O statement is in progress.

The error symptom is the following message (produced when the error OTS$_INDATCOR is signaled):

    %OTS-F-INTDATCOR internal data corrupted in Run-Time Library

A sample program that will produce this problem is the following, where the function ENC is called while processing the I/O element list for the TYPE statement. Function ENC then performs an ENCODE, causing the error to occur.

```
      CHARACTER*10 ENC
      TYPE *,ENC(3)
      END
      CHARACTER*10 FUNCTION ENC(J)
      ENCODE (10,101,ENC) J
101   FORMAT (I10)
      RETURN
      END
```

To avoid the problem, perform ENCODE or DECODE statements outside I/O statements.

4.2 SYSGEN Utility AUTOCONFIGURE Errors

The AUTOCONFIGURE command assumes incorrect CSR addresses for all but the first line printer in a configuration. For example, AUTOCONFIGURE assumes CSR %O174004 and vector %O170 for the second line printer; the correct assignments are CSR %O164004 and vector %O170.

Until the SYSGEN code is changed, you can work around the problem by installing the line printers at the correct CSR assignments and then including appropriate commands in the start-up command file [SYSMGR]SYSTARTUP.COM.

For example, the commands for a second line printer could be:

    $RUN SYS$SYSTEM:SYSGEN
    CONNECT LP80/ADAPTER=3/CSR=%O764004/VECTOR=%O170

If you use the command format AUTOCONFIGURE TR-number, the SYSGEN program should include all devices on that TR in the configuration. Actually, an access violation occurs and no devices on that TR are configured.

4.3 VAX-11 RMS Restrictions

This section contains restrictions caused by problems that exist in VAX/VMS V1.6.

4.3.1 RMS$_BUG_XX2 Status Return in ISAM $PUT and $UPDATE Operations - An RMS$_BUG_XX2 error is now returned as the status for a $PUT or $UPDATE operation on an ISAM file when the lack of record IDs would cause a split of a primary data bucket. Previously, the problem was not recognized and could have caused damage to the file structure.

If you receive the RMS$_BUG_XX2 error, the file structure has not been corrupted. You can continue processing if you reorganize the file by reloading in sequential access mode.

The problem cannot occur when bucket size is defined as one block; is unlikely when bucket sizes are less than four blocks; may occur if large bucket sizes (greater than 16 blocks) are used.

4.3.2 **Packed Decimal Data Strings Not Checked on Record** Operations - Currently VAX-11 RMS does not check packed decimal data strings for validity on record operations. Thus, an invalid packed decimal string may appear to have a higher key value than the highest possible valid packed decimal string produced using the CMPP instruction.

To prevent any problems, validate packed decimal strings that are used as key values in ISAM files.

4.4 **Restriction on Use of UETP Terminal Test**

The UETP terminal test will fail in the following situation:

1. There are two DZll mulitplexers in the configuration.

2. One DZll is interfaced to eight lines, all running at 9600 baud.

3. The other DZll is interfaced to eight lines, all running at 2400 baud.

The symptom is an incorrect UETP test termination message. Instead of a message similar to:

    %UETP-I-ENDED, test of controller TTB ended at 14:38:24:29

a message is started, then interrupted by a vertical tab, then completes without identifying the DZll controller.

The problem occurs when the UETP test generates AST service routines. (See Section 5.5 of this manual.)

To avoid the problem, restrict DZll line speeds to 2400 baud (the default line speed) when there are two DZll's in a configuration. Note that the problem occurs only during the UETP Terminal Test. You do not have to restrict terminal baud rates at any other time.

4.5 **Restrictions on Using SYE**

The current version of the SYE program cannot be run from a command file. Also, to be able to display errors with SYE, the VAX11/780 must have a +1 in the highest byte of the System Identification (SID) Register. The +1 identifies the CPU as an 11/780.

To determine whether the SID contains the correct CPU type code, have field service examine the SID Register, and set the correct CPU type code, if necessary.

4.6 Restrictions to Use of RMSIFL Utility

There are two situations where using RMSIFL could cause problems. See
Section 5.2, "Corrections to RMS-11 User's Guide," for more details.

**4.6.1 Records Containing Duplicate Key Values May Lose Input
Order** - RMS-11 routines maintain a first-in, first-out (FIFO) ordering
of records containing duplicate key values. When RMSIFL sorts
records, this order can change unpredictably, depending on how the
records occur in the sort work files when the work files are merged.

**4.6.2 Large Bucket and Record Sizes Can Cause RMSIFL Command Line
Termination** - RMSIFL does not limit bucket or record sizes for input
or output files. However, unusually large bucket and record sizes may
cause RMSIFL to terminate the command line (especially if RMSIFL must
sort the input file).

4.7 Incorrect Error Message from SET and SHOW Commands

When a DCL SET or SHOW command is used with an ambiguous keyword, for
example, SET P or SHOW P, DCL displays the following incorrect error
message:

        %SYSTEM-W-NORMAL, Normal successful termination

The correct message is the following:

        %DCL-W-ABKEYW, Ambiguous keyword

This error will be corrected in VAX/VMS Version 2.0.

5.0 NOTES TO PUBLISHED DOCUMENTATION

This section contains notes that correct or supplement published
documentation.

5.1 Supplementary Documentation for SYE

This section supplements the documentation for SYE now in the VAX/VMS
Operator's Guide and the VAX/VMS Release Notes for V1.5.

5.1.1 Changes to SYE Prompts and Responses - The SYE prompt for the
input file now defaults to [SYSERR]ERRLOG.OLD. If you have renamed
the current version of ERRLOG.SYS to this file, press carriage return.
If not, type the file specification of the error log file you wish to
define as the input file. The prompt now looks like this:

        _INPUT FILE   [[SYSERR]ERRLOG.OLD] ?

The output file prompt remains as it was in V1.5. However, if the terminal is a CRT and you wish to avoid the top-of-form control for the output file, respond to the output file prompt by typing:

    /NOFORMS

If you are directing the output to the line printer, respond to the output file prompt by typing:

    LP:

The four display options for the options prompt are:

ROLL-UP   Displays a count of errors on devices selected by response to _DEVICE NAME prompt. The display includes a time histogram of when the entries were made, as well as the number of entries for each device type selected.

BRIEF   Displays the error heading and device registers (when applicable) for devices selected. The display includes a time histogram of when the entries were made, as well as the number of entries for each device type selected.

CRYPTK   Displays the device registers for the selected devices. Only entries made as 'device error' are displayed. Note that this option is useful only when the device name selected is a single device type and unit (e.g. DBA1).

STANDARD   Displays a full report of the devices selected and the entry types. The display includes a time histogram of when the entry types were made and the number of entries for each type.

When responding to the _DEVICE NAME prompt, you can divide entries concerning mass storage devices into two categories depending on which qualifier you append to the device name. The qualifiers are:

/ERROR   Scans device error entries.

/CONFIGS   Scans configuration change entries.

You can omit a specific device (or group of devices) from the display by typing a hyphen before the device name in response to the _DEVICE NAME prompt. For example, the reply -DMA0/ERROR would omit all device errors from DMA0.

Note that there are some _DEVICE NAME replies that can be used to enable display of errors not related to devices. For example:

CP   Extracts machine checks and SBI errors.

ME   Extracts main memory errors.

SY   Extracts errors sent to the error log through the system service, Send Message to Error Logger ($SNDERR).

UNKNOWN   Extracts unknown or unsupported entries.

Note that these special device names do not support the /ERROR or /CONFIG qualifiers.

5.2 Corrections to RMS-11 User's Guide (AA-D538A-TC)

The following changes should be made to the RMS-11 User's Guide.

1. Add the following note to Section 9.5.2.

> NOTE
>
> Any records containing duplicate key values can lose their input order. This note applies to:
>
> ● Duplicate Primary Keys where RMSIFL sorts the input file
>
> ● All duplicate Alternate Keys
>
> RMS-11 routines maintain a first-in, first-out (FIFO) ordering of records containing duplicate key values. When RMSIFL sorts records, this order can change unpredictably, depending on how the records occur in the sort work files when the work files are merged.

2. Delete the following block of text from page 9-62:

    "The output file must not have a bucket size greater than five blocks. Otherwise, RMSIFL prints the message:

?IFL -- THERE IS NOT ENOUGH IFL MEMORY FOR THE CURRENT COMMAND LINE"

3. Add the following note to the end of Section 9.5.4.1.

> NOTE
>
> RMSIFL dynamically allocates virtual address space to accommodate the requirements of input and output files. Therefore, the utility does not specifically limit the bucket sizes of input or output files or the sizes of records in either file. However, the combination of unusually large bucket and record sizes, especially if RMSIFL must sort the input file, can cause RMSIFL to terminate execution of the command line.
>
> Normally, the utility terminates after printing the message:

?IFL -- THERE IS NOT ENOUGH IFL MEMORY FOR THE CURRENT COMMAND LINE

RMSIFL also can terminate abnormally with a memory protection or other system-level error.

If either of these situations occurs:

1. Submit a Software Performance Report with all details of the situation including input and output file bucket sizes, input file Maximum Record Size, size of the largest record actually in the input file, and terminal display when RMSIFL aborted.

2. Recover using one of the following methods:

   a. Reduce input file bucket or maximum record size or both, and restart RMSIFL.

   b. Populate the output file using RMSCNV.

5.3 Supplement to RMS-11 User's Guide

One of the new features of RMS-11 is a prototype ODL file that users can edit to produce customized overlays. Following is a brief description of usage.

The file MAKRMSODL.CMD is an MCR command file that you can use indirectly. This file edits its own copy of the prototype RMS11.ODL file after asking you questions about the functions performed by your program. Using this file to produce a customized ODL file prevents you from making an error while editing a renamed copy of the RMS11.ODL. However, the command file uses the same ODL statements describing a 9KB overlay structure. Therefore, the resulting task is not smaller than if you used RMS11S.ODL, RMS11X.ODL or your own version of RMS11.ODL.

Note that to use the MAKRMSODL.CMD on a VAX/VMS system, you must log in using the /CLI=MCR switch.

5.4 Corrections to VAX/VMS Release Notes, V1.5

Section 6.2, "Obtaining a Parameter String from the Command Interpreter," contains an error. Replace the second paragraph in Section 6.2 with the following:

To request return of a command line, the request block must contain the constant 1 in its first byte (this constant has the symbolic name CLI$K_GETCMD). On return from this request, the third and fourth longwords in the request block contain a character string descriptor that describes the parameter string present in the command. Note that the offset within the request block is defined in the constant CLI$Q_RQDESC.

5.5 Supplement to VAX/VMS System Services Reference Manual

This section supplements the information in Section 3.2.5, the AST
Service Routine.

During the exit sequence from an AST service routine, a brief interval
exists   between   the   time   the   system reenables ASTs and the time it
completely removes the AST argument list from the stack.   During   this
interval, four longwords remain on the stack of the access mode
exiting the AST.   If an AST   service   routine calls a   service   that
itself   produces   an   AST,   and   if   the   second AST occurs before the
argument list from the first AST is completely removed, four excess
longwords   are   left   on   the   stack.   If ASTs continue to occur faster
than the system can service them, the stack will overflow.

Therefore, AST service routines that call services which themselves
produce ASTs should be carefully designed to prevent stack overflow.
For example, the AST service routine specified in a $QIO call should
not   contain   another $QIO specifying the same or a different AST
service routine, unless you are certain that ASTs will not be produced
faster than they can be serviced.

6.0 NATIVE MODE ASSEMBLER

Beginning with VAX/VMS Version 1.5, the supported assembler is
MACRO32,   the   native   mode   assembler   that   assembles   native   mode
programs. Be sure that all assembly operations you perform directly
or in command files use the DCL MACRO command, rather than invoking
MAR, the compatibility mode assembler that assembles native mode
programs.   A   particular   instance   of   such   a change is seen in the
VAX/VMS source kit assembly command files.   MAR does not run on
Version 1.5 or later version of VAX/VMS.

APPENDIX A

SUMMARIES OF UPDATES IN VAX/VMS V1.6

This appendix contains summaries of the updates in the VAX/VMS V1.6
kit.

COPY

> EC08   TMH   14-Jul-1979   Module: COPYMAIN
> Fix insufficient working set limit errors when
> copying files to magtape.

DBDRIVER

> EC022   SPR 11-23980   LMK   16-MAY-1979
> MODULE: DBDRIVER
> Fix retriable error recovery branch computation for
> diagnostic function errors.

DCL

Install a new DCL image with following errors corrected:

1.   INQUIRE - Allow ON conditions when an error
              occurs during the read. This will
              permit, for example, the handling
              of a BREAK key in response to the
              INQUIRE. (SPR #11-21973).

              Disable interpretation of # as an indirect
              (command procedure) file specification
              during an INQUIRE. (SPR #11-2363).

              Return the null string on an INQUIRE in BATCH if the
              record begins with $ (i.e. is another
              command).

2.   LOGOUT - Correct several causes of access violations
              in LOGINOUT upon termination of BATCH jobs.
              (SPR'S #11-21913, #11-21726, #11-21616).

3.   Permit expressions to contain valid sequences of operators
              between operands. (e.g. A=B=(-B)).

4.   Correct access violation during the skipping of data in
              SYS$INPUT stream upon CONTROL Y. (SPR #11-24245)

5.   STOP process - Allow lower case characters to be used (within
              quotes) for the process name.

6.   Correct inconsistent reporting of facility code # messages
              to always report SYSTEM. (SPR #11-23831).

ADDITIONAL NOTE:

Before this DCL becomes effective for all users of the system
at least one suitably privileged user must log in specifying
/CLI=DCL/DE and all others must log out and back in again.

Alternatively the system can be rebooted.

Because the DCL of version 1.5 is still active, no attempt
will be made here to purge DCL.EXE. After this version of DCL
has been verified, DCL.EXE may be purged from SYS$SYSTEM.

THIS COMMAND FILE COPIES A NEW COPY OF DTF.EXE TO SYS$SYSTEM.
THIS FIXES THE SLP OUTPUT BUG.

DRDRIVER

> EC003   SPR 11-23982   LMK   16-MAY-1979
> MODULE: DRDRIVER
> Fix retriable error recovery branch computation for
> SEARCH and diagnostic function errors.

ERRFMT

    EC01   KDM2040   12-JUL-1979
          MODULE: ERRFMT
          If unable to write to error log file, create a new file and
          send a message to the operator. Also created two patch areas.

F11AACP

    EC0005 ACG23542   14-May-1999
        MODULE: RWVB
          Check LBN of virtual map against volume size to protect
          against bad data in mapping pointers.

    EC0006 ACG2038   14-May-1979
        MODULE: CLENUP
          Call READ_HEADER with FIB address only if present, to
          prevent system crash under certain virtual I/O failures.

    EC0007 ACG045   6-Jun-1979
        MODULE: TRUNC
          Fix cleanup processing after a truncate that deallocates
          no blocks to prevent a file ID file number check on a
          multi-header file.

F11BACP

    EC0001 ACG23542   14-May-1979
        MODULE: RWVB
          Check LBN of virtual map against volume size to protect
          against bad data in mapping pointers.

    EC0002 ACG2037   14-May-1979
         MODULE: SWITVL
          Range check RVN against volume set size before indexing
          into RVT; also allow RVN 1 on a volume which is not a
          volume set.

    EC0003 ACG2039   16-May-1979
         MODULE: SELVOL
          Fix error exit processing in volume selection routine,
          to prevent ACP from looping on a contiguous allocation
          failure on a volume set.

    EC0004 ACG0045   6-Jun-1979

        MODULE: TRUNC
          Fix cleanup processing after a truncate that deallocates
          no blocks to prevent a file ID file number check on a
          multi-header file.

    EC0005 ACG2046   12-Jul-1979
        MODULE: SHFDIR
          Fix condition handler that handles truncate errors during
          directory shuffling.

    EC0006 ACG2051   12-Jul-1979
        MODULE: RDBLOK
          Enable datacheck for all ACP writes.

JOBCTL

    EC002   SPR 11-23644   RTM   1-June-1979
         MODULE: JBCSTADET
         Make NOSWAP batch queues work.

LINKER

ECO001   TJP0001   7-FEB-79

          Correct false error report when first file specification
                  of the CLUSTER option begins with a directory
                  specification.

          Change the illegal character set for option keywords
                  to produce more appropriate message when they are
                  misspelled.

          Correct the bug in processing CLUSTER options which allowed
                  the buffer in use to overwrite local pointers on
                  the stack.

          All of the above patch applies to module LNK_PROCOPTNS.

          Finally set the Linker version number to V1A.20 where the
                  A indicates the first ECO to Linker version 1.20
                  This applies to modules LNK_MAIN and LNK_MAPROUTINES.

ECO002   BLS0001   16-MAY-79

          Check if current isect descriptor set up before accessing
                  structure (LNK_IMGOUT). This condition arises if
                  user attempts to data into a psect defined in a
                  shareable image or if an object module has a missing
                  set-relocation-base command.

ECO003   BLS0002   16-MAY-79

          Ensure that all universal symbols found in VMSRTL are not
                  suppressed when creating a shareable image
                  (LNK_OBJPASS1).

ECO004   BLS0003   16-MAY-79

          Correct divide by zero error (LNK_OBJPASS2)

ECO005   BLS0004   16-MAY-79

          Clear local variable on routine entry (LNK_VMALLO).

LOGINOUT

     ECO1   KDM0036   24-MAY-1979
             MODULE: LOGINO
             Delete pages mapped as private command interpreter if mapping
             fails to prevent crash.

MACRO32

     ECO1   RN0003   R. Newland
             MODULE: P2ACT1
             Store signed word for not PC-relative, non-optimised
             16-bit displacement and deferred displacement

MCR cli

     ECO1   RN0001 30-June-1979
             Allow ON conditions if .ASK and an I/O error
             occurs (e.g. BREAK key).

             Change return sequence to LOGINOUT image on end of file
             to call MCR$ABORT which makes things look like a LOGOUT
             command was encountered. See also COMMAND and MESSAGE.

Cause an .ASK to receive EOF from RMS if the data
entered began with a $ and was from a process permanent
(i.e. BATCH) file to be consistent with reading of SYS$INPUT.

! in numeric expression is taken as a comment delimiter
if immediately preceded by a blank

Fix return sequence to LOGINOUT image so that it can
use result parsing to obtain the command line even in
the case that we aborted due to some problem (end of
file (MCRCHAR) or hangup pending (MCRCOMD) by adding
a new routine MCR$ABORT to handle aborting the process.

Correct expression syntax errors occuring if 3
operators in sequence.

Allow trailing '.'s in task name.

Perform quote compression on STOP command.

Clear first part done and trace pending bits in
PSL before exiting the rundown image.

Make STATUS=0 display using system facility, not MCR.

Fix bug in MCR$SETQUALVAL which prohibited default qualifier
values on all but parameter parse. Allow default qualifier
values on all but GETOPT parse calls.

Disable indirect recognition during .ASK

Evaluate special symbols during evaluation of
string expressions.

Make <STRLEN> return octal value (as in 11M)

Add <RSX11D> special symbol

SYSTEM PROTECTION

Correct the protection on 1.5 system files.
A bug in COPY gave the WORLD delete access to system files.

REQUEST

ECO1   TMH   1-MAY-1979
        MODULE: REQUEST
        Fix insertion of job name in message when batch jobs
        use the REQUEST command.

RSXSHR

ECO7   TMH   12-Jun-1979   Module: RSXSUBROU
        Fix MRKT$ interpretation of ticks/second.

RUNDET

ECO1   RIH   11-JUN-1979
        MODULE: RUNPRSFIL
        Make image names for RUNDET work correctly if referencing
        known files. Trailing semi-colon for null version number
        must be stripped.

SDA

Update System Dump Analyzer (SDA)

(Print SDA.HLP for partial documentation)

RMS

    ECO01   CDS0001   2-July-1979
            The UFO option in the FOP field of the FAB will
            now work correctly for ISAM files.

    ECO02   CDS0001   2-July-1979
            The allocation of record ID's for SIDR records
            is corrected.

    ECO03   CDS0001   2-July-1979
            $DELETE following $CONNECT for relative files
            returns error code.

    ECO04   CDS0001   2-July-1979
            UIF option on $PUT to ISAM file with extra buffers
            and no alternate key changes works correctly.

    ECO05   CDS0001   2-July-1979
            $GET on ISAM file with KGT option works correctly.

    ECO06   CDS0001   2-July-1979
            Force move mode for indirect openers of process
            permanent files.

    ECO07   CDS0001   2-July-1979
            Return RMS$_OK_DUP status when duplicate records
            encountered in alternate indices (ISAM).

    ECO08   CDS0001   13-July-1979
            Return RMS$_OK_LIM correctly for sequential access
            on alternate keys.

    ECO09   CDS0001   13-July-1979
            Return RMS$_BUG_XX2 instead of incorrectly splitting
            to avoid generation of corrupt files.

    ECO10   JAK0022   23-July-1979
            Fix bug in quoted string syntax checking.

RMS-11 V1.8

    The DFN utility is part of the release of RMS-11, and is on
    this floppy due to lack of space on floppies VMSV1690 - VMSV1690G.
    DFN is a functional subset of the DEF utility, and is provided
    for compatability purposes only.

    COPY A NEW VERSION OF DFN TO THE SYSTEM DISK

SORT32

    V1.01   RAS0001   20-Jun-1979
            MODULE: SCRIO
            Correct problem with extending the work files. Affected
            the subroutine interface when the input file size was not
            specified.

SOS

    ECO03   PHL23630   4-MAY-1979
            MODULE: COPY88
               FIX TRANSFER OF RANGE WITH .=. OR .*. SO THAT
               THE COPY SIDE RECORDS THE VALUES OF THESE AND
               THE DELETE SIDE DOES NOT INTERPRET THEM IN THE
               CONTEXT OF THE FILE AFTER THE COPY HAS BEEN DONE.
               THE DELETE SIDE WAS DELETING BOTH THE SOURCE AND
               DESTINATION LINES.

ECO04 PHL0001   6-JUL-1979
    MODULE: SOSINI
    DISABLE AUTOMATIC /BASIC IF FILE TYPE IS .BAS
    THIS WAS AN UNDOCUMENTED FEATURE FROM RSTS AND
    WILL BE IN THE WAY FOR BASIC PLUS 2.

SYS

ECO32 KDM   23-APR-1979
    MODULE: PAGEFAULT
    Fix demand-zero page table bug.

ECO33 TGD   9-MAY-1979
    MODULE: TTZINTDSP
    Correct character size for parity terminals.

ECO34 RIH23909 13-MAY-1979
    MODULE: SYSEVTSRV
    Fix occasional double setting of event flags.

ECO35 RIHPP15 14-MAY-1979
    MODULE: See actual patch documentation below.
    Performance improvement patch to make MPW_LOLIM an
    inviolable limit and remove priority
    option from MWAIT for OSWPSCHED.

ECO36 ACG23542 14-MAY-1979
    MODULES: SYSACPFDT,IOCIOPOST
    Validate LBN of mapped virtual transfer against volume size.

ECO37 KDM24168 25-MAY-1979
    MODULE: SYSCRMPSC
    Check for RELPAG greater than number of pages in section
    when mapping to a section.

ECO38 RIH24218 4-JUN-1979
    MODULE: WRTMFYPAG
    Make PTESCAN in WRTMFYPAG checks rigorous to avoid bounary
    problems.

ECO39 KDM   12-JUN-1979
    MODULE: IOLOCK
    Add section reference decrement for I/O fault in of CRF page.

ECO40 RIH23254 14-JUN-1979
    MODULE: PROCSTRT
    Make PROCSTRT set WSLAST for new processes.

ECO41 KDM24745 29-JUN-1979
    MODULE: SYSDBGLSC

    Move GSD's for temporary sections to delete pending list.
    Start up modified page writer if there are pages in transition
    for a global section being deleted.

ECO42 MKP   3-July-1979
    MODULE: TTDRIVER
    Fix hangup function modifier (IOSM_HANGUP)
    to pass FDT validation.

SYSGEN

ECO02 NPK0001 29-JUN-1979
    MODULE: AUTOCONFG
    Fix floating vector alignment on a number
    of controllers: PR611,PP611,DX11,DV11 CSR spacing:

ECO03 SPR24718 LMK 29-JUN-1979
    MODULE: AUTOCONFG
    Allow more than 64 DZ-11 lines to work in compatability mode
    by naming the other lines TUxx instead of TTxx.

TMDRIVER

Replace old driver with new driver.

          V0106   CHP0001   Carol Peters   13-July-1979   13:29
                   Removed line of code in read error recovery. Code used
                   to backspace over the record and then space forward over
                   it. Now the code simply backspaces and goes on to retry
                   the read.

          V0105   ACG21614   Andrew C. Goldstein, 18-Jul-1979 15:30
                   Set volume valid when a foreign mounted tape comes on
                   line.

          V01.4 - SPR22662   C. A. MONIA   29-Mar-1979   08:00
                   Defer recognition of attention interrupts on a unit
                   while a rewind is in progress.

          V01.3 - CAM003   C. A. MONIA   22-Mar-1979   15:40
                   Add MASSBUS abort to timeout error recovery procedure.

          V01.2 - CAM002   C. A. MONIA   16-Feb-1979   13:30
                   Delete debugging code from interrupt service routine.

          V01.1 - SPR20998   C. A. MONIA   07-Feb-1979   10:33
                   Eliminate clearing software volume valid for transition
                   offline status so medium offline error will be returned
                   to requestor.

Copy new driver onto system disk. If desired, purge old driver.

          VFY2

          EC0002   ACG23542   21-May-1979
                   MODULE: VFYLOS,VFYSRR
                   Add correct RVN to entries made in [1,3] during lost file scan.

          EC0003   ACG23542   21-May-1979
                   MODULE: VFYSRR
                   Fix bad block file conditional in read check.

VMSLIB

  Replace macro definitions in STARLET.MLB and LIB.MLB

          EC001   RN0401 SPR #11-21466   6-July-1979
                   Save local symbol block when saving psect information
                   in $DEFINI and $OFFSET.

VMSRTL

          EC011   SBL22044   31-JAN-1979.
                   Fix for RMS RSZ errors after a bad READ.
                   (Module FOR$$REC_PROC)

          EC012   SBL0012   02-FEB-1979
                   Fix entry mask and other problems in LIB$CRC,
                   LIB$MATCHC, LIB$SCANC, LIB$SPANC.

          EC013   SBL0013   05-FEB-1979
                   Fix entry mask and other problems in MTH$ANINT,
                   MTH$DNINT, MTH$ININT, MTH$JNINT, MTH$IIDNNT and
                   MTH$JIDNNT.

          EC014   SBL22832   02-MAR-1979
                   Fix zerodivide error with MTH$FSQRT of (0,0).

          EC015   SBL22786   14-MAR-1979
                   Fix FOR$CNV_OUT_G so that FORTRAN G output formatting
                   of values that round up to a power of 10 don't overflow.

ECO16   SBL0016   14-MAR-1979
         Fix error in FORTRAN list-directed output
         COMPLEX editing (Module FORSSUDF_WL).

ECO17   SBL22994   28-MAR-1979
         Prevent FORSCNV_IN_I and FORSCNV_IN_O from accepting
         as input A and B respectively.

ECO18   SBL0018   26-MAR-1979
         Fix obscure rounding bug in FORSCNV_IN_DEFG.

ECO19   SBL24926   13-JUL-1979
         Fix SP location problems in LIBSSIGNAL when user's
         stack is unaligned.

SYE - System error logging.

      Copy new image of SYE.EXE to system disk.
   New features include:

   -New device support.
   -Input file default now works properly.
   -Improved input file error handling.
   -Add switch options to several commands.

   See release notes for details.

RMS-11 V1.80   D

      This floppy contains one-fourth of the new release (V1.8) of RMS-11.
      The entire release is contained on four floppy disks,
      VMSV160D - VMSV160G, of the VMS 1.6 Binary Update Kit.
      ALL FOUR FLOPPIES MUST BE INSTALLED.

      COPY CONVERT, RMS-11 LIBRARY, AND ODL FILES

RMS-11 V1.80   E

      This floppy contains one-fourth of the new release (V1.8) of RMS-11.
      The entire release is contained on four floppy disks,
      VMSV160D - VMSV160G, of the VMS 1.6 Binary Update Kit.
      ALL FOUR FLOPPIES MUST BE INSTALLED.

      COPY RMS PROTOTYPE ODL, MACRO LIBRARY, AND BACKUP UTILITY

RMS-11 V1.80   F

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      The entire release is contained on four floppy disks,
      VMSV160D - VMSV160G, of the VMS 1.6 Binary Update Kit.
      ALL FOUR FLOPPIES MUST BE INSTALLED.

      COPY DEFINE AND DISPLAY UTILITIES

RMS-11 V1.80   G

      This floppy contains one-fourth of the new release (V1.8) of RMS-11.
      The entire release is contained on four floppy disks,
      VMSV160D - VMSV160G, of the VMS 1.6 Binary Update Kit.
      ALL FOUR FLOPPIES MUST BE INSTALLED.

      COPY RESTORE, INDEXED FILE LOAD UTILITIES, AND ODL

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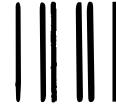
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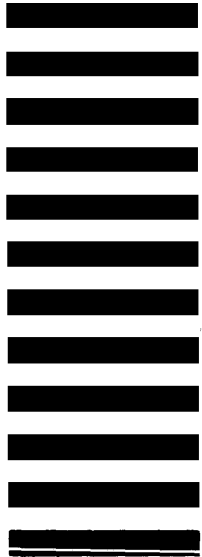   or
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