```
RRRRRRRRRRRR     MMM         MMM     SSSSSSSSSSSS
RRRRRRRRRRRR     MMM         MMM     SSSSSSSSSSSS
RRRRRRRRRRRR     MMM         MMM     SSSSSSSSSSSS
RRR         RRR  MMMMMM   MMMMMM  SSS
RRR         RRR  MMMMMM   MMMMMM  SSS
RRR         RRR  MMMMMM   MMMMMM  SSS
RRR         RRR  MMM   MMM   MMM  SSS
RRR         RRR  MMM   MMM   MMM  SSS
RRR         RRR  MMM   MMM   MMM  SSS
RRRRRRRRRRRR     MMM         MMM     SSSSSSSSS
RRRRRRRRRRRR     MMM         MMM     SSSSSSSSS
RRRRRRRRRRRR     MMM         MMM     SSSSSSSSS
RRR   RRR        MMM         MMM              SSS
RRR   RRR        MMM         MMM              SSS
RRR   RRR        MMM         MMM              SSS
RRR      RRR     MMM         MMM              SSS
RRR      RRR     MMM         MMM              SSS
RRR      RRR     MMM         MMM              SSS
RRR         RRR  MMM         MMM  SSSSSSSSSSSS
RRR         RRR  MMM         MMM  SSSSSSSSSSSS
RRR         RRR  MMM         MMM  SSSSSSSSSSSS
```

```
**FILE**ID**RMOACCESS                                               M  8                                                                              RM
                                                                                                                                                   VO

RRRRRRRR    MM      MM    000000      AAAAAA      CCCCCCCC    CCCCCCCC  EEEEEEEEEE    SSSSSSSS    SSSSSSSS
RRRRRRRR    MM      MM    000000      AAAAAA      CCCCCCCC    CCCCCCCC  EEEEEEEEEE    SSSSSSSS    SSSSSSSS
RR      RR  MMMM  MMMM  00      00  AA      AA  CC          CC          EE          SS          SS
RR      RR  MMMM  MMMM  00      00  AA      AA  CC          CC          EE          SS          SS
RR      RR  MM  MM  MM  00    0000  AA      AA  CC          CC          EE          SS          SS
RR      RR  MM  MM  MM  00    0000  AA      AA  CC          CC          EE          SS          SS
RRRRRRRR    MM      MM  00  00  00  AA      AA  CC          CC          EEEEEEEE      SSSSSS      SSSSSS
RRRRRRRR    MM      MM  00  00  00  AA      AA  CC          CC          EEEEEEEE      SSSSSS      SSSSSS
RR  RR      MM      MM  0000    00  AAAAAAAAAA  CC          CC          EE                  SS          SS
RR  RR      MM      MM  0000    00  AAAAAAAAAA  CC          CC          EE                  SS          SS
RR    RR    MM      MM  00      00  AA      AA  CC          CC          EE                  SS          SS      ....
RR    RR    MM      MM  00      00  AA      AA  CC          CC          EE                  SS          SS      ....
RR      RR  MM      MM    000000    AA      AA    CCCCCCCC    CCCCCCCC  EEEEEEEEEE  SSSSSSSS    SSSSSSSS          ....
RR      RR  MM      MM    000000    AA      AA    CCCCCCCC    CCCCCCCC  EEEEEEEEEE  SSSSSSSS    SSSSSSSS          ....

LL            IIIIII      SSSSSSSS
LL            IIIIII      SSSSSSSS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II        SSSSSS
LL              II        SSSSSS
LL              II              SS
LL              II              SS
LL              II              SS
LL              II              SS
LLLLLLLLLL    IIIIII    SSSSSSSS
LLLLLLLLLL    IIIIII    SSSSSSSS
```

Table of contents

```
0000          $BEGIN  RMOACCESS,001,RM$RMS0,<ACCESS/DEACCESS ROUTINES>
0000
0000    ;
0000    ;****************************************************************************
0000    ;*                                                                          *
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0000    ;*                                                                          *
0000    ;****************************************************************************
0000    ;
```

```
0000    ;++
0000    ; Facility: rms32
0000    ;
0000    ; Abstract:
0000    ;       this module performs the file access and
0000    ;       de-access fcp functions.
0000    ;
0000    ; Environment:
0000    ;               star processor running starlet exec.
0000    ;
0000    ; Author: L F Laverdure,        creation date: 10-MAR-1977
0000    ;
0000    ; Modified By:
0000    ;
0000    ;       V04-001 JWT0196         Jim Teague              14-Sep-1984
0000    ;               Restore V3 behavior of ignoring UPI for relative
0000    ;               and ISAM files.
0000    ;
0000    ;       V03-043 RAS0326         Ron Schaefer            23-Jul1984
0000    ;               Fix RAS0309 to force GET access to be allowed internally
0000    ;               if a valid EXE access is requested.  This makes
0000    ;               execute-only command procedures work.
0000    ;
0000    ;       V03-042 JWT0188         Jim Teague              21-Jul-1984
0000    ;               Don't allow $OPEN with sharing on magtapes.  RMS
0000    ;               was letting this slip through for 512-byte fixed
0000    ;               sequential files.
0000    ;
0000    ;       V03-041 RAS0309         Ron Schaefer            15-Jun-1984
0000    ;               Add support for execute-only images and command files.
0000    ;
0000    ;       V03-040 JWT0179         Jim Teague              23-Apr-1984
0000    ;               Always check for an ATR work area before allocating
0000    ;               one.
0000    ;
0000    ;       V03-039 JWT0175         Jim Teague              12-Apr-1984
0000    ;               Finish access mode ATR implementation.
0000    ;
0000    ;       V03-038 SHZ0005         Stephen H. Zalewski     06-Apr-1984
0000    ;               Back out the second part of shz0004.  Two reasons, first,
0000    ;               global buffers is a connect time option, no open time option.
0000    ;               Second, we would be record locking read only isam files, and
0000    ;               we never did before.
0000    ;
0000    ;       V03-037 JWT0173         Jim Teague               1-Apr-1984
0000    ;               Disable access mode ATRs for now.
0000    ;
0000    ;       V03-036 JWT0172         Jim Teague              28-Mar-1984
0000    ;               Keep exec mode byte at end of ATR work area.
0000    ;
0000    ;       V03-035 SHZ0004         Stephen H. Zalewski,    21-Mar-1984
0000    ;               Do not take out a file lock if UPI was specified in the
0000    ;               SHR field.
0000    ;
0000    ;               If file is READ ONLY, and global buffers specified, turn
0000    ;               on sharing so that global buffers can be used.  Old behavior
0000    ;               was to not use sharing since no locking was necessary, however
```

```
0000     ;               this prevented global buffering from being turned on.
0000     ;
0000     ;       V03-034 RAS0276         Ron Schaefer            20-Mar-1984
0000     ;               Prevent truncate-on-close (TEF FOP option) from being
0000     ;               honored for relative or indexed files.
0000     ;
0000     ;       V03-033 JWT0167         Jim Teague              15-Mar-1984
0000     ;               Allow write access with buffer offset as long as
0000     ;               BIO is set.  Also implement access-mode ATRs.
0000     ;
0000     ;       V03-032 DGB0012         Donald G. Blair         01-Mar-1984
0000     ;               Make changes related to ACP calls as part of the
0000     ;               restructuring necessary to support access mode
0000     ;               protected files.
0000     ;
0000     ;       V03-031 JWT0158         Jim Teague              27-Feb-1984
0000     ;               Adjustment to ANSI buffer offset stuff.  I had placed
0000     ;               the code to request the ATR$C_BUFFER_OFFSET attribute
0000     ;               in a common path for both $OPEN and $CREATE.  It
0000     ;               should only have been in the $OPEN access path.
0000     ;
0000     ;       V03-030 SHZ0003         Stephen H. Zalewski,    27-Feb-1984
0000     ;               Do not bump the available local buffer count in routine
0000     ;               RM$SETEBK as the local buffer it was trying to give back
0000     ;               (used for FWA) no longer exists.
0000     ;
0000     ;       V03-029 SHZ0002         Stephen H. Zalewski,    21-Feb-1984
0000     ;               If user opens file no-sharing, multi-streaming read only,
0000     ;               force locking to occur, otherwise no interlocking occurs,
0000     ;               and stream 2 could try to read from a bucket stream 1 is still
0000     ;               reading into cache.
0000     ;
0000     ;       V03-028 JWT0150         Jim Teague              01-Feb-1984
0000     ;               Implement ANSI buffer offset.
0000     ;
0000     ;       V03-027 JWT0148         Jim Teague              15-Dec-1983
0000     ;               Enforce ONLY_RU for $OPENs.
0000     ;
0000     ;       V03-026 RAS0218         Ron Schaefer             5-Dec-1983
0000     ;               Make node names work as search list elements.
0000     ;
0000     ;       V03-025 DAS0003         David Solomon           13-Sep-1983
0000     ;               Set RJB$V_OPEN before call to RM$MAPJNL.
0000     ;
0000     ;       V03-024 KBT0582         Keith B. Thompson       12-Aug-1983
0000     ;               Clean up some fwa constants
0000     ;
0000     ;       V03-023 DAS0002         David Solomon           20-Jul-1983
0000     ;               IFB$V_RUP moved from IFB$B_JNLFLG to IFB$B_JNLFLG2. Migrate
0000     ;               FAB$B_RCF recovery bits in RM$ACCESS (to catch both opens and
0000     ;               creates).
0000     ;
0000     ;       V03-022 KPL0012         Peter Lieberwirth        1-Jul-1983
0000     ;               Fix bug introduced in V03-020 that caused the PCB address
0000     ;               to be returned as the status code.
0000     ;
0000     ;       V03-021 DAS0001         David Solomon           22-Jun-1983
```

```
0000  ;                       If opening a file for RU recovery, use FIB$V_NOLOCK
0000  ;                       (open regardless).
0000  ;
0000  ;               V03-020 KPL0013         Peter Lieberwirth       21-Jun-1983
0000  ;                       Don't migrate FAB recovery bits unless we're in recovery.
0000  ;
0000  ;               V03-019 KPL0012         Peter Lieberwirth       17-Jun-1983
0000  ;                       Delay writing AT mapjnl entry until OPEN/CREATE is
0000  ;                       complete.
0000  ;
0000  ;               V03-018 TSK0001         Tamar Krichevsky        12-Jun-1983
0000  ;                       Fix broken branches to journaling routines.
0000  ;
0000  ;               V03-017 RAS0148         Ron Schaefer            26-Apr-1983
0000  ;                       Initial support for extended XABPRO.
0000  ;
0000  ;               V03-016 LJA0059         Laurie J. Anderson      16-Feb-1983
0000  ;                       Check for Multi-streaming even if NIL is set in the FAB share
0000  ;                       field.
0000  ;
0000  ;               V03-015 KBT0491         Keith B. Thompson       9-Feb-1983
0000  ;                       Checking for "proper" sharing is now done in rm$init_sfsb
0000  ;
0000  ;               V03-014 TMK0001         Todd M. Katz            01-Feb-1983
0000  ;                       Add support for Recovery Unit Journalling and RU ROLLBACK
0000  ;                       Recovery of ISAM files. Under the following set of conditions
0000  ;                       set the journalling state bit IFB$V_RU_RLK within IFB$B_JNLFLG:
0000  ;
0000  ;                       1. The file is an ISAM file.
0000  ;                       2. The file is Recovery Unit Journallable.
0000  ;                       3. The file has been opened for exclusive access (no sharing).
0000  ;
0000  ;                       Setting of this bit will enable pseudo record locking.
0000  ;
0000  ;               V03-013 LJA0054         Laurie J. Anderson      12-Jan-1983
0000  ;                       Fill in SHR field in IFB from Users FAB in rm$creacc_set1
0000  ;
0000  ;               V03-012 KPL0011         Peter Lieberwirth       17-Jan-1983
0000  ;                       Migrate FAB bits that indicate file is being opened for
0000  ;                       recovery into the IFB.
0000  ;
0000  ;               V03-011 SHZ0001         Stephen H. Zalewski     16-Dec-1982
0000  ;                       Keep disk-structured hbk and ebk in different places in
0000  ;                       ifb than we keep the swapped hbk and ebk.
0000  ;
0000  ;               V03-010 ACG0306         Andrew C. Goldstein,    13-Dec-1982  14:55
0000  ;                       Remove obsolete file header symbols
0000  ;
0000  ;               V03-009 KBT0412         Keith B. Thompson       30-Nov-1982
0000  ;                       Change ifb$w_devbufsiz to ifb$l_devbufsiz
0000  ;
0000  ;               V03-008 JWH0103         Jeffrey W. Horn         20-Sep-1982
0000  ;                       Move the journaling set-up to RM$SETEBK.
0000  ;
0000  ;               V03-007 KBT0335         Keith B. Thompson       10-Sep-1982
0000  ;                       Remove all SO sharing code
0000  ;
```

```
0000    ;       V03-006 JWH0003         Jeffrey W. Horn         31-Aug-1982
0000    ;               Put in support for recovery unit journals.
0000    ;
0000    ;       V03-005 KBT0198         Keith B. Thompson       23-Aug-1982
0000    ;               Reorganize psects
0000    ;
0000    ;       V03-004 KBT0120         Keith B. Thompson       6-Aug-1982
0000    ;               Remove ref. to set_sifb_adr and fix all of the version 3
0000    ;               rev. numbers
0000    ;
0000    ;       V03-003 JWH0002         Jeffrey W. Horn         06-Jul-1982
C000    ;               Add in call to RM$RTVJNL to get journal control bits and
0000    ;               journal names.
0000    ;
0000    ;       V03-002 KPL0010         Peter Liebrwirth        25-Jun-1982
0000    ;               Complete V02-048 by checking for execute-only access
0000    ;               whether or not UFO is set.  Previously, if UFO was not
0000    ;               set, the check for execute-only access was skipped.
0000    ;
0000    ;       V03-001 JWH0001         Jeffrey W. Horn         23-Mar-1982
0000    ;               Add in call to RM$ASSJNL to set up journaling on this
0000    ;               file.
0000    ;
0000    ;       V02-050 KEK0018         K. E. Kinnear           3-Feb-1982
0000    ;               Replace FWA$C_RNSBUFSIZ with the real total size
0000    ;               of the concatenated NAME,TYPE, and VER buffer sizes.
0000    ;
0000    ;       V02-049 CDS0030         C Saether               20-Dec-1981
0000    ;               Allow deferred write for shared files.
0000    ;
0000    ;       V02-048 KPL0009         Peter Lieberwirth       17-Dec-1981
0000    ;               Provide support for execute only command files by having ACP
0000    ;               check for execute protection in SUPER mode as well as EXEC
0000    ;               and KERNEL.
0000    ;
0000    ;       V02-047 CDS0029         C Saether               16-Sep-1981
0000    ;               Allow BIO, BRO with MSE for rel, isam.  (same as pre 040).
0000    ;
0000    ;       V02-046 CDS0028         C Saether               14-Sep-1981
0000    ;               Clear NORECLK before UPI check.
0000    ;
0000    ;       V02-045 CDS0027         C Saether                6-Sep-1981
0000    ;               Init BLB queue header when noreclk is cleared.
0000    ;
0000    ;       V02-044 CDS0026         C Saether                4-Sep-1981
0000    ;               NORECLK now set by fseti - clear if locking.
0000    ;
0000    ;       V02-043 CDS0025         C Saether               31-Aug-1981
0000    ;               Always set noreclk.
0000    ;
0000    ;       V02-042 CDS0024         C Saether               23-Aug-1981
0000    ;               Init queue header and allocate a BLB if sharing.
0000    ;               Fix bug so that SFSB is allocated for 512 fix len.
0000    ;
0000    ;       V02-041 KPL0008         Peter Lieberwirth       15-Jul-1981
0000    ;               Allocate an SFSB in all cases, including sequential.
0000    ;
```

```
0000    ;       V02-040 KPL0007         Peter Lieberwirth       28-Apr-1981
0000    ;               Allocate an SFSB via RM$INIT_SFSB if necessary.
0000    ;
0000    ;       V02-039 CDS0023         C Saether       24-Feb-81       8:30
0000    ;               Check fixed length against RSIZ record attribute (ifb$w_lrl)
0000    ;               instead of max rec size (ifb$w_mrs).
0000    ;
0000    ;       V02-038 CDS0022         C Saether       23-Dec-80       15:10
0000    ;               Reverse order of attributes on stack so that rewriting
0000    ;               record attributes occurs before protection changes.
0000    ;
0000    ;       V02-037 REFORMAT        C Saether       30-Jul-80       20:20
0000    ;
0000
```

```
                  0000          .SBTTL  DECLARATIONS
                  0000
                  0000   ;
                  0000   ; Include Files:
                  0000   ;
                  0000
                  0000   ;
                  0000   ; Macros:
                  0000   ;
                  0000
                  0000          $ARMDEF
                  0000          $ATRDEF
                  0000          $BDBDEF
                  0000          $DEVDEF
                  0000          $FABDEF
                  0000          $FCHDEF
                  0000          $FIBDEF
                  0000          $FWADEF
                  0000          $IFBDEF
                  0000          $IMPDEF
                  0000          $IODEF
                  0000          $PCBDEF
                  0000          $PSLDEF
                  0000          $RJBDEF
                  0000          $RMSDEF
                  0000          $RUCBDEF
                  0000          $XABPRODEF
                  0000          $XABRDTDEF
                  0000
                  0000   ;
                  0000   ; Equated Symbols:
                  0000   ;
                  0000
        00000020  0000          FOP=FAB$L_FOP*8
                  0000
                  0000   ;
                  0000   ; Own Storage:
                  0000   ;
                  0000
```

```
0000            .SBTTL  RM$ACCESS - PERFORM FCP ACCESS FUNCTION
0000
0000     ;++
0000     ;
0000     ; RM$ACCESS - perform file access function
0000     ;
0000     ; This routine sets up the access control word of the fib
0000     ; from the various user specifications, builds the
0000     ; attribute list to read in the record attributes and
0000     ; statistics block, builds the qio parameter list on
0000     ; the stack using the filename descriptor, issues
0000     ; the qio to the acp to perform the access,
0000     ; and finally initializes the ebk and hbk fields of
0000     ; the ifab.
0000     ;
0000     ; Calling sequence:
0000     ;
0000     ;       BSBW    RM$ACCESS
0000     ;
0000     ; Input Parameters:
0000     ;
0000     ;       r11     impure area address
0000     ;       r10     fwa address
0000     ;       r9      ifab addresss
0000     ;       r8      fab address
0000     ;
0000     ; Implicit Inputs:
0000     ;
0000     ;       fwa$t_fibbuf (fid & did set as required, remainder zero)
0000     ;       ifb$v_wrtacc
0000     ;       ifb$b_fac
0000     ;       fab$l_fop
0000     ;       ifb$l_chnl
0000     ;       fwa$l_atrladr
0000     ;       fwa$q_name
0000     ;
0000     ; Output Parameters:
0000     ;
0000     ;       r0      status code
0000     ;       r1-r7,ap destroyed
0000     ;
0000     ;
0000     ; Implicit Outputs:
0000     ;
0000     ;       ifb$v_accessed set
0000     ;       the record attributes area of the ifab is initialized
0000     ;       the record string is set (fwa$q_rns) over-writing
0000     ;               the filename string
0000     ;       ifb$l_ios
0000     ;       fab$v_ctg set if file contiguous, else cleared
0000     ;       fab$l_stv set to system error code on failure
0000     ;
0000     ; Completion Codes:
0000     ;
0000     ;       standard rms including suc, fnf, rer, wer, flk, prv,
0000     ;       and acc.
0000     ;
```

```
        0000   368 ; Side Effects:
        0000   369 ;
        0000   370 ;        may have switched to running at ast level.
        0000   371 ;        all user structures except fab must be reprobed.
        0000   372 ;--
        0000   373
```

```
                            0000 RMS$ACCESS::
                            0000         $TSTPT  ACCESS
        3C 69    03   E0    0006         BBS     #DEV$V_DIR,IFB$L_PRIM_DEV(R9),RMACC ; branch if files-oriented
        04 6A    19   E0    000A         BBS     #FWA$V_NODE,(R10),NTACC ; branch if network function
                            000E         RMSSUC                          ; show success
                      05    0011         RSB                             ; return to caller
                            0012
                            0012 ;++
                            0012 ;
                            0012 ;  perform network access function
                            0012 ;
                            0012 ;--
                            0012
                            0012 NTACC:
        0D 69    3E   E0    0012         BBS     #IFB$V_DAP,(R9),10$     ; branch if network file access
 04 A8  40020000 8F   D3    0016         BITL    #<<FAB$M_KFO>!-         ; disallow kfo and ufo options
                            001E                 <FAB$M_UFO>!-           ;  if task-to-task (to prevent
                            001E                 0>,FAB$L_FOP(R8)        ;  '$run node::"task=abc"'
                 03   13    001E         BEQL    10$                     ; branch if neither bits set
              FFDD'   31    0020         BRW     NT$SUP_FOP              ; return to caller with rms$_sup
              FFDA'   30    0023 10$:    BSBW    NT$ACCESS               ; establish logical link
              03 50   E8    0026         BLBS    R0,60$
               01FF   31    0029         BRW     ERRACCESS               ; branch on failure
        04 68    26   E1    002C 60$:    BBC     #FAB$V_SQO+FOP,(R8),20$ ; branch if sqo not specified
                            0030         SSB     #IFB$V_SQO,(R9)         ; and save bit in ifab
        06 69    3F   E0    0034 20$:    BBS     #IFB$V_NSP,(R9),30$     ; branch if task-to-task oper.
              FFC5'   30    0038         BSBW    NT$OPEN                 ; open file via remote fal
              07 50   E9    003B         BLBC    R0,RET                  ; branch on failure
                            003E 30$:    SSB     #IFB$V_NORECLK,(R9)     ; say no record locking needed
                            0042         RMSSUC                          ; show success
                            0045
                      05    0045 RET:    RSB                             ; return to caller
                            0046
                            0046 RMACC·
                            0046
                            0046 ;
                            0046 ; Migrate FAB recovery bits to the IFB, (don't do so if this process is
                            0046 ; not entitled to do recovery).
                            0046 ;
    51   00000000'9F  D0    0046         MOVL    @#CTL$GL_PCB,R1         ; get PCB address
                 1A   E1    004D         BBC     #PCB$V_RECOVER,-        ; skip if not a recovery process
           26 24 A1         004F                 PCB$L_STS(R1),30$       ;
              4B A8   95    0052         TSTB    FAB$B_RCF(R8)           ; any bits set?
                 21   13    0055         BEQL    30$                     ; if eql no
                 00   E1    0057         BBC     #FAB$V_RU,-             ; branch if not RU recovery
           06 4B A8         0059                 FAB$B_RCF(R8),10$       ;
                            005C         SSB     #IFB$V_RU_RECVR,-       ; translate RU to IFB RU_RECVR
                            005C                 IFB$B_RECVRFLGS(R9)     ;
                 01   E1    0062 10$:    BBC     #FAB$V_AI,-             ; branch if not roll forward
           06 4B A8         0064                 FAB$B_RCF(R8),20$       ;
                            0067         SSB     #IFB$V_AI_RECVR,-       ; translate AI to IFB AI_RECVR
                            0067                 IFB$B_RECVRFLGS(R9)     ;
                 02   E1    006D 20$:    BBC     #FAB$V_BI,-             ; branch if not roll back
           06 4B A8         006F                 FAB$B_RCF(R8),30$       ;
                            0072         SSB     #IFB$V_BI_RECVR,-       ; translate BI to IFB BI_RECVR
                            0072                 IFB$B_RECVRFLGS(R9)     ;
                            0078
```

```
                              0078   432 ;
                              0078   433 ; Set up for the access.
                              0078   434 ;
                              0078   435
                 01B8    30   0078   436 30$:    BSBW    RM$CREACC_SET1          ; perform first part of setups
                C7 50    E9   007B   437         BLBC    R0,RET                  ; quit on error
                              007E   438
                              007E   439 ;
                              007E   440 ; put a user-mode ATR on the list first
                              007E   441 ;
              85   01    B0   007E   442         MOVW    #1,(R5)+                ; length of access mode byte
              85   2D    B0   0081   443         MOVW    #ATR$C_ACCESS_MODE,(R5)+ ; access mode attribute
           85   0A A9    9E   0084   444         MOVAB   IFB$B_MODE(R9),(R5)+    ; access mode for ACP to read
                              0088   445
                FF75'    30   0088   446         BSBW    RM$OPEN_XAB             ; go process rms open xabs
                B7 50    E9   008B   447         BLBC    R0,RET                  ; continue on success
                              008E   448
                              008E   449 ;
                              008E   450 ; now an exec-mode ATR
                              008E   451 ;
                              008E   452
              85   01    B0   008E   453         MOVW    #1,(R5)+                          ; 1 byte length
              85   2D    B0   0091   454         MOVW    #ATR$C_ACCESS_MODE,(R5)+          ; access mode ATR
85    58 AA  000001FC 8F  C1  0094   455         ADDL3   #508,FWA$L_ATR_WORK(R10),(R5)+    ; 1 byte signifying EXEC mode
                              009D   456
           06 69   1C    E1   009D   457         BBC     #DEV$V_RND,IFB$L_PRIM_DEV(R9),8$ ; branch if not disk
                              00A1   458
          00000000'EF    16   00A1   459         JSB     RM$RTVJNL               ; get journal bits, names
                              00A7   460
                 0275    30   00A7   461 8$:     BSBW    RM$CREACC_SET2          ; finish setups
                              00AA   462
                              00AA   463 ;
                              00AA   464 ; set the qio function code and go access the file
                              00AA   465 ;
                              00AA   466
           50    72 8F   9A   00AA   467         MOVZBL  #IO$_ACCESS!IO$M_ACCESS,R0 ; function code
                              00AE   468
                FF4F'    30   00AE   469         BSBW    RM$FCPFNC               ; do the access
                              00B1   470
                03 50    E8   00B1   471         BLBS    R0,RM$SETHBK            ; continue on RM$FCPFNC success
                 0174    31   00B4   472         BRW     ERRACCESS               ; branch on failure
```

```
                            00B7          .SBTTL  RM$SETHBK
                            00B7
                            00B7  ;++
                            00B7  ;
                            00B7  ; RM$SETHBK - entry for "create if" that becomes an open
                            00B7  ;
                            00B7  ; check the file for contiguous and if so set the ctg bit in fop,
                            00B7  ; then pick up highest allocated vbn from the statistics block
                            00B7  ; and copy to ifab, overwriting the hi vbn field of
                            00B7  ; the record attributes. note that the hi-and lo-order words of this vbn
                            00B7  ; are reversed on disk and hence are read in reverse order.
                            00B7  ; rearrange to give an understandable longword hi vbn. do same for
                            00B7  ; eof vbn.
                            00B7  ;
                            00B7  ;  entry point for "create if" turned into an open.
                            00B7  ;
                            00B7  ;  set fop output bits according to file attributes.
                            00B7  ;
                            00B7  ;--
                            00B7
                            00B7  RM$SETHBK::
         04   04    EF      00B7          EXTZV   #IFB$V_ORG,#IFB$S_ORG,-
      51    50 A9           00BA                  IFB$B_RFMORG(R9),R1         ; get org
      23 A9   51    90      00BD          MOVB    R1,IFB$B_ORGCASE(R9)        ; into separate ifab byte
   00B00200 8F      CA      00C1          BICL2   #<FAB$M_CTG!FAB$M_CBT!FAB$M_RCK!FAB$M_WCK>,-
         04 A8              00C7                  FAB$L_FOP(R8)               ; clear fop output bits
              07    E1      00C9          BBC     #FCH$V_CONTIG,-
      04 44 AA              00CB                  FWA$W_UCHAR(R10),10$        ; branch if file not ctg.
                            00CE          SSB     #FAB$V_CTG+FOP,(R8)         ; set the ctg bit
              05    E1      00D2  10$:    BBC     #FCH$V_CONTIGB,-
      04 44 AA              00D4                  FWA$W_UCHAR(R10),20$        ; branch if not ctg best try
                            00D7          SSB     #FAB$V_CBT+FOP,(R8)         ; set ctg best try in fop
              03    E1      00DB  20$:    BBC     #FCH$V_READCHECK,-
      04 44 AA              00DD                  FWA$W_UCHAR(R10),30$        ; branch if no read checking
                            00E0          SSB     #FAB$V_RCK+FOP,(R8)         ; set fop rck bit
              04    E1      00E4  30$:    BBC     #FCH$V_WRITCHECK,-
      04 44 AA              00E6                  FWA$W_UCHAR(R10),40$        ; branch if no write checking
                            00E9          SSB     #FAB$V_WCK+FOP,(R8)         ; set fop wck bit
                            00ED  40$:
   54 A9   01AC CA    D0    00ED          MOVL    FWA$L_HBK(R10),IFB$L_HBK_DISK(R9)      ; move unswapped hbk to ifb
70 A9   54 A9   10    9C    00F3          ROTL    #16,IFB$L_HBK_DISK(R9),IFB$L_HBK(R9) ; swap words of hbk
                            00F9
     09 66    10    E1      00F9          BBC     #FIB$V_EXECUTE,(R6),50$ ; branch if not execute
              01    E1      00FD          BBC     #FIB$V_ALT_GRANTED,-
      04 38 A6              00FF                  FIB$L_STATUS(R6),50$        ; branch if no read access
     16 A8    02    88      0102          BISB2   #FAB$M_GET,FAB$B_FAC(R8); flag read access also permitted
                            0106  50$:
            FEF7'   30      0106          BSBW    RM$OPEN_XAB1                ; finish up xab processing
                            0109
```

```
                          0109            .SBTTL  RM$SETEBK
                          0109
                          0109    ;++
                          0109    ;
                          0109    ; RM$SETEBK - check for shared access
                          0109    ;
                          0109    ;  entry point to swap the words of eof block and set ifab bookeeping bit saying fil
                          0109    ;
                          0109    ;  set up journaling on the file
                          0109    ;
                          0109    ;  if this is not a sequential file, the shared ifab processing
                          0109    ;  is performed, if needed.
                          0109    ;
                          0109    ;  inputs:
                          0109    ;       r11     impure area address
                          0109    ;       r10     fwa address
                          0109    ;       r9      ifab address
                          0109    ;       r8      fab address
                          0109    ;
                          0109    ;  outputs:
                          0109    ;       r0              - status
                          0109    ;       r1-r7, ap       - destroyed
                          0109    ;       ifb$v_accessed  - set
                          0109    ;       ifb$l_ebk       - filled with swapped ebk words form disk
                          0109    ;--
                          0109
                          0109    RM$SETEBK::
                          0109            SSB     #IFB$V_ACCESSED,(R9)            ; declare file accessed
                          010D    ;
                          010D    ; Deallocate the ATR work area -- we're through with it now
                          010D    ;
                 3F   BB  010D            PUSHR   #^M<R0,R1,R2,R3,R4,R5>  ; Save regs
         54   58 AA   D0  010F            MOVL    FWA$L_ATR_WORK(R10),R4  ; Pass address of scratch page
               FEEA'  30  0113            BSBW    RM$RET1PAG              ; Return scratch page
              58 AA   D4  0116            CLRL    FWA$L_ATR_WORK(R10)     ; Indicate no work area now
                 3F   BA  0119            POPR    #^M<R0,R1,R2,R3,R4,R5>  ; Restore regs
                          011B
   74 A9   58 A9   10   9C  011B            ROTL    #16,IFB$L_EBK_DISK(R9),IFB$L_EBK(R9) ; swap words of ebk
                          0121
                          0121    ;
                          0121    ; Make sure user doesn't intend to write access an ANSI
                          0121    ;       buffer offset (b. o.) tape unless BIO is set
                          0121    ;
           00A8 C9   B5  0121            TSTW    IFB$W_BUFFER_OFFSET(R9)         ; is there a non-0 b. o.?
                13   13  0125            BEQLU   5$                              ; if 0, skip next two tests
        09 69   05   E1  0127            BBC     #DEV$V_SQD,IFB$L_PRIM_DEV(R9),4$ ; if not a tape, error
        0B 69   30   E1  012B            BBC     #IFB$V_WRTACC,(R9),5$           ; if no write access, we're cool
     06 16 A8   05   E0  012F            BBS     #FAB$V_BIO,FAB$B_FAC(R8),5$     ; write access is ok with BIO
                          0134    4$:     RMSERR  IFF                             ;  otherwise no write access
                     05  0139            RSB                                     ;     so cease and desist
                          013A
                          013A    ;
                          013A    ; set up journaling on the file
                          013A    ;
                          013A
     00A0 C9   20   8A  013A    5$:     BICB2   #IFB$M_NEVER_RU,IFB$B_JNLFLG(R9) ; Ignoring NEVER_RU, is
          00A0 C9   95  013F            TSTB    IFB$B_JNLFLG(R9)                ; any journaling bit set?
```

```
                 64   13  0143          BEQL    SHRCHK                          ; branch if not
                          0145   ;
                          0145   ; Enforce RU bit settings, specifically ONLY_RU
                          0145   ;
        00A0 C9  03   93  0145          BITB    #IFB$M_RU!IFB$M_ONLY_RU,IFB$B_JNLFLG(R9) ; RU bits set?
                 1B   13  014A          BEQL    20$                             ; If not, go on with jnl stuff
   51   00000000'9F   D0  014C          MOVL    @#CTL$GL_RUF,R1                 ; RUF loaded?
                 05   13  0153          BEQL    10$                             ; No RUF, verify ONLY_RU clear
      0D 11 A1   01   E0  0155          BBS     #RUCB$V_ACTIVE,RUCB$B_CTRL(R1),20$ ; In RU? Then go set up
                          015A   10$:
                 01   93  015A          BITB    #IFB$M_ONLY_RU,-                ; If ONLY_RU clear (RU
            00A0 C9       015C                  IFB$B_JNLFLG(R9)                ;  must be set), and not
                 06   13  015F          BEQL    20$                             ;  in RU then that's ok
                          0161          RMSERR  NRU             ; However, if ONLY_RU set and not in RU: error
                 05       0166          RSB
                          0167
                          0167   20$:
      00000000'EF    16   0167          JSB     RM$ASSJNL                       ; set up journaling
             55 50   E9   016D          BLBC    R0,RETURN                       ; get out on error
           00A0 C9   95   0170          TSTB    IFB$B_JNLFLG(R9)                ; ASSJNL can clear this
                33   13   0174          BEQL    SHRCHK                          ; branch if now clear
                          0176
                          0176   ;
                          0176   ; Turn off AT for this MAPJNL call so the AT info can be  illed in
                          0176   ; during the operation and flushed later.
                          0176   ;
   51   00A4 C9      D0   0176          MOVL    IFB$L_RJB(R9),R1                ; get RJB address
   7E      0A A1     B0   017B          MOVW    RJB$W_FLAGS(R1),-(SP)           ; save current flags
                          017F          CSB     #RJB$V_AT,RJB$W_FLAGS(R1)       ; turn off AT for now
     0A A1   10      A8   0184          BISW2   #RJB$M_OPEN,RJB$W_FLAGS(R1)     ; set flag that this is an open
      00000000'EF    16   0188          JSB     RM$MAPJNL                       ; write out mapping entries
   51   00A4 C9      D0   018E          MOVL    IFB$L_RJB(R9),R1                ; get RJB address again
     0A A1   8E      B0   0193          MOVW    (SP)+,RJB$W_FLAGS(R1)           ; restore original flags
           2B 50     E9   0197          BLBC    R0,RETURN                       ; get out on error
  09 00A2 C9   02    E1   019A          BBC     #IFB$V_RUP,IFB$B_JNLFLG2(R9),SHRCHK ; branch if not in RU
      00000000'EF    16   01A0          JSB     RM$MAPJNL_RU                    ; write out RU mapping entry
           1C 50     E9   01A6          BLBC    R0,RETURN                       ; get out on error
                          01A9
     1D 69   33      E1   01A9   SHRCHK: BBC    #IFB$V_NORECLK,(R9),CHKSHR      ; not set, then check sharing
                          01AD
                          01AD   ;
                          01AD   ; If this is a Recovery Unit Journalable ISAM file which is being
                          01AD   ; opened for exclusive access then set the state bit IFB$V_RU_RLK to
                          01AD   ; enable pseudo record locking.
                          01AD   ;
                          01AD
     23 A9   02      91   01AD   EXIT:  CMPB    #IFB$C_IDX,IFB$B_ORGCASE(R9)    ; return if this is not an
             12      12   01B1          BNEQ    RETURN                          ; access of an index file
                          01B3
   00A0 C9   01      E1   01B3          BBC     #IFB$V_RU,IFB$B_JNLFLG(R9),-    ; return if this ISAM file is
             0C           01B8                  RETURN                          ; not Recovery Unit journallable
                          01B9
     17 A8   1F      93   01B9          BITB    #FAB$M_SHRGET!FAB$M_SHRPUT-     ; return if any form of sharing
                          01BD                  !FAB$M_SHRDEL!FAB$M_SHRUPD-     ; is enabled (inter-process or
                          01BD                  !FAB$M_MSE,FAB$B_SHR(R8)        ; inter-stream) - record locking
             06      12   01BD          BNEQ    RETURN                          ; will already be enahled
                          01BF
                01BF            SSB     #IFB$V_RU_RLK,IFB$B_JNLFLG2(R9) ; permit pseudo record locking
                01C5
            05  01C5    RETURN: RSB
                01C6
                01C6
                01C6    SETNORECLK:
  E3 69   33  E3  01C6          BBCS    #IFB$V_NORECLK,(R9),EXIT ; set NORECLK & exit (always clear)
                01CA
                01CA    CHKSHR:
                01CA
                01CA    ;
                01CA    ; check whether sharing is required
                01CA    ;
                01CA
05 17 A8  05  E1  01CA          BBC     #FAB$V_NIL,FAB$B_SHR(R8),10$    ; If nil spec'd, check MSE
F2 17 A8  04  E1  01CF          BBC     #FAB$V_MSE,FAB$B_SHR(R8),SETNORECLK     ; No locking required
                01D4
                01D4            ASSUME  FAB$C_SEQ       EQ      0
                01D4
     23 A9  95  01D4    10$:    TSTB    IFB$B_ORGCASE(R9)       ; is this sequential org?
        1B  13  01D7            BEQL    CHKSEQSHR               ; special checks for 512 fix len recs.
                01D9
                01D9    SHARE:
     FE24'  30  01D9            BSBW    RM$INIT_SFSB            ; get parent lock for record and
                01DC                                            ; bucket locks.
     0E 50  E9  01DC            BLBC    R0,10$                  ; exit on error.
        5A  DD  01DF            PUSHL   R10                     ; Save FWA address.
     5A 59  D0  01E1            MOVL    R9,R10                  ; ALBLB wants ifab in r10.
     FE19'  30  01E4            BSBW    RM$ALBLB                ; allocate a BLB to go with BDB (FWA).
     5A 8ED0    01E7            POPL    R10                     ; Restore FWA address.
     C0 50  E8  01EA            BLBS    R0,EXIT                 ; finish up
            05  01ED    10$:    RSB
                01EE
                01EE    UPIERR: RMSERR  UPI
            05  01F3            RSB
                01F4
                01F4    CHKSEQSHR:
                01F4
                01F4    ;
                01F4    ; want sharing on sequential file - make a few more checks
                01F4    ;
CD 17 A8  06  E0  01F4          BBS     #FAB$V_UPI,FAB$B_SHR(R8),SETNORECLK     ; Branch if UPI.
   28 69  1C  E1  01F9          BBC     #DEV$V_RND,IFB$L_PRIM_DEV(R9),SHRERR    ; Magtape?!? No way!
16 A8  60 8F  93  01FD          BITB    #FAB$M_BIO!FAB$M_BRO,FAB$B_FAC(R8)      ; any form of block i/o?
        EA  12  0202            BNEQ    UPIERR                          ; UPI must be set for block i/o.
                0204
                0204            ASSUME  FAB$C_SEQ       EQ      0
                0204
   01   50 A9  91  0204         CMPB    IFB$B_RFMORG(R9),#FAB$C_FIX ; only for fixed length recs
        1B  12  0208            BNEQ    SHRERR                  ; neg sorry
0200 8F 52 A9  B1  020A         CMPW    IFB$W_LRL(R9),#512      ; 512 byte records only
        13  12  0210            BNEQ    SHRERR                  ; sorry, can't share
  5E A9   01  90  0212          MOVB    #1,IFB$B_BKS(R9)        ; bucket size is one
                0216
                0216            ASSUME  <IFB$C_SEQ + 1> EQ      IFB$C_REL
                0216
     23 A9  96  0216            INCB    IFB$B_ORGCASE(R9)       ; presto - now you're relative
```

```
RMO
Sym

SHR
TPT
TPT
UPI
XAB
XAB
XAB
XAB
XBC
XBC

PSE
---
.
RM$
$AB

Pha
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Ini
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The
116
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34

Mac
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_$2
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TO1

221

The
```

```
                0080 C9   01  D0  0219   695              MOVL    #1,IFB$L_DVBN(R9)          ; no prologue for seq file
                                  021E   696              SSB     #IFB$V_SEQFIL,(R9)         ; note this is really seq file
                     FFB4     31  0222   697              BRW     SHARE                      ; finish shared open
                                  0225   698 SHRERR:
                                  0225   699              RMSERR  SHR                        ; can't do that
                              05  022A   700              RSB                                ; get back
                                  022B   701
                                  022B   702 ;++
                                  022B   703 ;
                                  022B   704 ;  handle access failure
                                  022B   705 ;
                                  022B   706 ;--
                                  022B   707
                                  022B   708 ERRACCESS:
                                  022B   709              RMSERR  ACC,R1                     ; default error code
                     FDCD'    31  0230   710              BRW     RM$MAPERR                  ; go map error code to rms
                                  0233   711                                                 ; and return to caller
                0233         .SBTTL  RM$CREACC_SET1
                0233
                0233  ;++
                0233  ;
                0233  ; RM$CREACC_SET1 - access, protection, datacheck options fib setup
                0233  ;
                0233  ;  this subroutine initializes the access control word of the fib from
                0233  ;  the various fop options, sets the retrieval window size, and initializes
                0233  ;  r5 to address at which to build a files attributes list
                0233  ;
                0233  ;  inputs:
                0233  ;        r10     fwa address
                0233  ;        r9      ifab address
                0233  ;        r8      fab address
                0233  ;
                0233  ;  outputs:
                0233  ;        r6      fib address
                0233  ;        r5      address for next entry to be added to attribute's list
                0233  ;        r0      success/fail status
                0233  ;
                0233  ;--
                0233
                0233  RM$CREACC_SET1::
56   14 BA   9E 0233         MOVAB   @FWA$Q_FIB+4(R10),R6    ; get fib address
                0237
                0237  ;
                0237  ; initialize the access control word.  it is zero; set desired bits.
                0237  ;
                0237
                0237         ASSUME  FIB$L_ACCTL EQ 0
04 69   30   E1 0237         BBC     #IFB$V_WRTACC,(R9),5$   ; branch if read access only
                023B         SSB     #FIB$V_WRITE,(R6)       ; set write access bit
                023F
                023F  ;
                023F  ;  set sharing as desired and determine whether record locking required.
                023F  ;
                023F  ;  record locking will be required if there is any form of sharing (inter
                023F  ;  or intra process) and there can be any writers of the file.
                023F  ;
                023F
50   17 A8   90 023F  5$:    MOVB    FAB$B_SHR(R8),R0        ; get shr field
4E A9   50   90 0243         MOVB    R0,IFB$B_SHR(R9)        ; Save share field in IFB
04 50   04   E1 0247         BBC     #FAB$V_MSE,R0,10$       ; branch if no multi-streams
                024B         SSB     #IFB$V_MSE,(R9)         ; set mse bit
10 50   05   E0 024F  10$:   BBS     #FAB$V_NIL,R0,20$       ; branch if no sharing
   50   0D   93 0253         BITB    #FAB$M_PUT!FAB$M_UPD!FAB$M_DEL,R0 ; any form of write sharing?
        13   12 0256         BNEQ    30$                     ; branch if yes
   66   01   88 0258         BISB2   #FIB$M_NOWRITE,(R6)     ; disallow other writers
                025B                                         ; at most "get" sharing
08 69   30   E1 025B         BBC     #IFB$V_WRTACC,(R9),25$  ; branch if not write accessed
08 50   01   E0 025F         BBS     #FAB$V_GET,R0,30$       ; branch if allowing other readers
                0263                                         ; default write accessor to nil
                0263  20$:   SSB     #FIB$V_NOREAD,(R6)      ; disallow other readers
1A 50   04   E1 0267  25$:   BBC     #FAB$V_MSE,R0,35$       ; branch if no multi streams
                026B
                026B  ;
                026B  ;  record locking required - unless upi set.  require sharers to specify
```

```
                              026B  ;     rms locking.
                              026B
                              026B  30$:    CSB     #IFB$V_NORECLK, (R9)      ; clear no locking flag.
0098 C9   0098 C9    DE       026F          MOVAL   IFB$L_BLBFLNK(R9), IFB$L_BLBFLNK(R9) ; Init BLB queue header.
009C C9   0098 C9    DE       0276          MOVAL   IFB$L_BLBFLNK(R9), IFB$L_BLBBLNK(R9) ; Init BLB queue header.
     04 50    06     E0       027D          BBS     #FAB$V_UPI,R0,35$         ;
                              0281          SSB     #FIB$V_RMSLOCK,(R6)       ; set fib bit for locking
                              0285
                              0285  ;
                              0285  ;  set deferred write ifab flag as required
                              0285  ;
                              0285
     04 68    25     E1       0285  35$:    BBC     #FAB$V_DFW+FOP,(R8),40$ ; branch if deferred write not
                              0289                                      ; specified
                              0289          SSB     #IFB$V_DFW,(R9)           ; set deferred write flag
                              028D
                              028D  ;
                              028D  ;  set read :hecking, write checking, and seq. operations only flags
                              028D  ;
                              028D
     07 68    29     E1       028D  40$:    BBC     #FAB$V_WCK+FOP,(R8),50$ ; branch if no write-checking
        66    20     88       0291          BISB2   #1@FIB$V_WRITECK,(R6)     ; enable write-checking
     44 AA    10     88       0294          BISB2   #1@FCH$V_WRITCHECK,FWA$W_UCHAR(R10) ; & give file wck attribute
     08 68    37     E1       0298  50$:    BBC     #FAB$V_RCK+FOP,(R8),60$ ; branch if no read-checking
                              029C          SSB     #FIB$V_READCK,(R6)        ; enable read-checking
     44 AA    08     88       02A0          BISB2   #1@FCH$V_READCHECK,FWA$W_UCHAR(R10) ; & give file rck attribute
     08 68    26     E1       02A4  60$:    BBC     #FAB$V_SQO+FOP,(R8),70$ ; branch if sqo not specified
                              02A8          SSB     #FIB$V_SEQONLY,(R6)       ; set sequential only bit
                              02AC          SSB     #IFB$V_SQO,(R9)           ; and save bit in ifab
                              02B0
                              02B0  ;
                              02B0  ; if magtape, check and set positioning flags (rwo, pos, nef)
                              02B0  ;
                              02B0
     0E 69    05     E1       02B0  70$:    BBC     #DEV$V_SQD,IFB$L_PRIM_DEV(R9),80$ ; branch if not magtape
                              02B4          SSB     #FIB$V_PRSRV_ATR,(R6)     ; read rat bits as stored
                              02B8
                              02B8  ;
                              02B8  ; the rms fop bits for magtape positioning are in the same
                              02B8  ; relative position to each other as the corresponding fib bits
                              02B8  ; and additionally have the same polarity - use an extract
                              02B8  ; and insert field to set them appropriately
                              02B8  ; (note:  the wck bit is imbedded - so it gets set or cleared again)
                              02B8  ;
                              02B8
                              02B8          ASSUME  <FAB$V_RWO+1> EQ FAB$V_POS
                              02B8          ASSUME  <FAB$V_POS+1> EQ FAB$V_WCK
                              02B8          ASSUME  <FAB$V_WCK+1> EQ FAB$V_NEF
                              02B8          ASSUME  <FIB$V_REWIND+1> EQ FIB$V_CURPOS
                              02B8          ASSUME  <FIB$V_CURPOS+1> EQ FIB$V_WRITECK
                              02B8          ASSUME  <FIB$V_WRITECK+1> EQ FIB$V_UPDATE
50    68    04    27     EF   02B8          EXTZV   #FAB$V_RWO+FOP,#4,(R8),R0; get the fop bits
66    04    03    50     F0   02BD          INSV    R0,#FIB$V_REWIND,#4,(R6)
                              02C2
                              02C2  ;
                              02C2  ;  if this is ufo set fib$v_notrunc unless trn bit set in fac
                              02C2  ;
```

```
                           02C2
     09 68    31    E1     02C2   80$:     BBC     #FAB$V_UFO+FOP,(R8),90$ ; branch if not ufo
  04 16 A8    04    E0     02C6            BBS     #FAB$V_TRN,FAB$B_FAC(R8),90$ ; branch if trn set
                           02CB            SSB     #FIB$V_NOTRUNC,(R6)      ; don't allow truncates
                           02CF
                           02CF   ;
                           02CF   ;  check for execute protection
                           02CF   ;
                           02CF
  12 16 A8    07    E1     02CF   90$:     BBC     #FAB$V_EXE,FAB$B_FAC(R8),100$ ; branch if not execute access
        0A A9     91       02D4            CMPB    IFB$B_MODE(R9),-         ;
              02           02D7                    #PSL$C_SUPER             ; super (or exec or kernel) mode?
              0C    1A     02D8            BGTRU   100$                     ; branch if not (ignore)
     22 A9    02    88     02DA            BISB2   #FAB$M_GET,IFB$B_FAC(R9); flag read access also permitted
                           02DE            SSB     #FIB$V_EXECUTE,(R6)      ; have acp check on execute access
              01    D0     02E2            MOVL    #ARM$M_READ,-            ; also ask if read access permitted
        3C A6              02E4                    FIB$L_ALT_ACCESS(R6)
                           02E6
                           02E6   ;
                           02E6   ; Set override exclusive access if opening a file for RU recovery.
                           02E6   ;
                           02E6
              00    E1     02E6   100$:    BBC     #IFB$V_RU_RECVR,-        ; skip if not RU recovery.
       00A1 C9             02E8                    IFB$B_RECVRFLGS(R9),-    ;
              0E           02EB                    SETRTV                   ;
   00100000 8F      C8     02EC            BISL2   #FIB$M_NOLOCK,-          ; set nolock (access regardless) flag.
              66           02F2                    FIB$L_ACCTL(R6)
   00000401 8F      CA     02F3            BICL2   #FIB$M_NOREAD!FIB$M_NOWRITE,-
              66           02F9                    FIB$L_ACCTL(R6)          ; noread/nowrite must be clear.
                           02FA
                           02FA   ;
                           02FA   ; set the retrieval window size
                           02FA   ;
                           02FA
  03 A6    1C A8    90     02FA   SETRTV:  MOVB    FAB$B_RTV(R8),FIB$B_WSIZE(R6)
                           02FF
                           02FF   ;
                           02FF   ; the fib is now set up.
                           02FF   ; set the attribute control list address into r5
                           02FF   ;
                           02FF
     55    58 AA    D0     02FF            MOVL    FWA$L_ATR_WORK(R10),R5   ; Do we need one?
              11    12     0303            BNEQ    10$                      ; If not, don't ask for one
                           0305
              0E    BB     0305            PUSHR   #^M<R1,R2,R3>            ; Save regs
           FCF6'    30     0307            BSBW    RM$GET1PAG               ; Grab a scratch page
           11 50    E9     030A            BLBC    R0,20$                   ; Die if none available
     58 AA    53    D0     030D            MOVL    R3,FWA$L_ATR_WORK(R10)   ; Save scratch page address
        55    53    D0     0311            MOVL    R3,R5                    ;  and put it in R5
              0E    BA     0314            POPR    #^M<R1,R2,R3>            ; Restore regs
   01FC C5    01    D0     0316   10$:     MOVL    #PSL$C_EXEC,508(R5)      ; Keep exec mode byte in last lword
        50    01    D0     031B            MOVL    #1,R0                    ; set success
                    05     031F   20$:     RSB
```

```
                         031F          .SBTTL  RM$CREACC_SET2
                         031F
                         031F    ;++
                         031F    ;
                         031F    ; RM$CREACC_SET2 - set up stat block, fall thru to creac_3
                         031F    ;
                         031F    ;  subroutine to finish fcp access & create setups started by rm$creacc_set1
                         031F    ;
                         031F    ;  if this is for an access it puts an entry on the attributes list
                         031F    ;  to cause the statistics block to be read
                         031F    ;
                         031F    ;  it then adds attribute list entries for rms record attributes,
                         031F    ;  user characteristics, and, if device is magtape, block size.
                         031F    ;  it then ends the attributes list and builds p6 thru p2 of the fcp's
                         031F    ;  qio parameter block and returns.
                         031F    ;
                         031F    ;  inputs:
                         031F    ;       r10     fwa address
                         031F    ;       r5      attributes list next entry address
                         031F    ;
                         031F    ;  outputs:
                         031F    ;       p6 thru p2 on stack
                         031F    ;       r0, r5 destroyed
                         031F    ;--
                         031F    ;
                         031F    ;  entry point to finish fcp access setups
                         031F    ;
                         031F    ;--
                         031F
                         031F    RM$CREACC_SET2::
       85   0A    B0     031F          MOVW    #FWA$S_STATBLK,(R5)+     ; specify # of bytes wanted
       85   09    B0     0322          MOVW    #ATR$C_STATBLK,(R5)+     ; read statistics block
  85   01A8 CA    9E     0325          MOVAB   FWA$T_STATBLK(R10),(R5)+ ; address for read
                         032A
                         032A    ;
                         032A    ; If magtape, then inquire about buffer offset -- otherwise proceed to
                         032A    ;   CREACC_3.  Note that this inquiry is not made for $CREATE.
                         032A    ;
                         032A
       69   05    E1     032A          BBC     #DEV$V_SQD,IFB$L_PRIM_DEV(R9),-
            0B           032D                  RM$CREACC_SET3            ; magtape?
       85   02    B0     032E          MOVW    #ATR$S_BUFFER_OFFSET,(R5)+      ; size of b.o. field (2)
       85   30    B0     0331          MOVW    #ATR$C_BUFFER_OFFSET,(R5)+      ; buffer offset item code
  85   00A8 C9    3E     0334          MOVAW   IFB$W_BUFFER_OFFSET(R9),(R5)+   ; directly to/from ifab
                         0339
                         0339    ;++
                         0339    ;
                         0339    ; RM$CREACC_SET3 - set up for record attributes and user characteristics
                         0339    ;
                         0339    ;  entry point to finish create function setup without getting a statistics block
                         0339    ;
                         0339    ;       put in entries to cause record attributes and user characteristics
                         0339    ;       to be read/written
                         0339    ;
                         0339    ;--
                         0339
                         0339    RM$CREACC_SET3::
```

```
         50 8ED0  0339    938          POPL    R0                                 ; save return pc
      85    16  B0  033C    939          MOVW    #<IFB$C_FHAEND-IFB$B_RFMORG>,(R5)+ ; # bytes rec attr to xfer
      85    04  B0  033F    940          MOVW    #ATR$C_RECATTR,(R5)+               ; get rms record attributes
   85    50 A9  DE  0342    941          MOVAL   IFB$B_RFMORG(R9),(R5)+             ; xfer attr's directly to/from ifab
      85    04  B0  0346    942          MOVW    #ATR$S_UCHAR,(R5)+                 ; size of user characteristics
      85    03  B0  0349    943          MOVW    #ATR$C_UCHAR,(R5)+                 ; specify read/write of   ''
   85    44 AA  3E  034C    944          MOVAW   FWA$W_UCHAR(R10),(R5)+             ; addr to read/write      ''
   0A 69    05  E1  0350    945          BBC     #DEV$V_SQD,IFB$L_PRIM_DEV(R9),5$;  branch if not magtape
      85    02  B0  0354    946          MOVW    #ATR$S_BLOCKSIZE,(R5)+             ; specify blocksize size (2)
      85    0B  B0  0357    947          MOVW    #ATR$C_BLOCKSIZE,(R5)+             ; specify read/write of blksiz
   85    48 A9  DE  035A    948          MOVAL   IFB$L_DEVBUFSIZ(R9),(R5)+          ; xfer directly to/from ifab
            65  D4  035E    949 5$:      CLRL    (R5)                               ; flag end of attribute list
                    0360    950
                    0360    951 ;
                    0360    952 ; start building qio argument list on stack
                    0360    953 ;
                    0360    954
            00  DD  0360    955          PUSHL   #0                         ; p6
         58 AA  DD  0362    956          PUSHL   FWA$L_ATR_WORK(R10)        ; p5 = attribute list address
       0188 CA  7F  0365    957 P4_P2:   PUSHAQ  FWA$Q_RNS(R10)             ; p4 = resultant name string descriptor
       0170 CA  DF  0369    958          PUSHAL  FWA$Q_NAME(R10)            ; p3 = address of long word
                    036D    959                                             ; to receive resultant string length
   0000012E 8F  D0  036D    960          MOVL    #FWA$S_NAMEBUF+FWA$S_TYPEBUF+FWA$S_VERBUF,-
       0188 CA      0373    961                  FWA$Q_RNS(R10)             ; length of rns buffer
018C CA  04B6 CA  9E  0376    962          MOVAB   FWA$T_NAMEBUF(R10),FWA$Q_RNS+4(R10) ; overlay input filename
                    037D    963                                             ; with resultant string
       0170 CA  7F  037D    964          PUSHAQ  FWA$Q_NAME(R10)            ; p2 = filename string
            60  17  0381    965          JMP     (R0)                       ; return to caller
                    0383    966
                    0383    967 ;++
                    0383    968 ; RM$FCP_P4_P2 - push p4 thru p2 onto stack
                    0383    969 ;
                    0383    970 ;  entry point to push p4 through p2 onto stack for fcp argument list
                    0383    971 ;  build for the $erase function (delete file)
                    0383    972 ;--
                    0383    973
                    0383    974 RM$FCP_P4_P2::
            01  BA  0383    975          POPR    #^M<R0>                    ; save return pc
            DE  11  0385    976          BRB     P4_P2                      ; go do it
```

```
0387          .SBTTL  RM$DEACCESS - PERFORM FCP DEACCESS FUNCTION
0387
0387  ;++
0387  ;
0387  ; RM$DEACCESS - perform file deaccess function
0387  ;
0387  ; This routine builds an attribute list to cause the record
0387  ; attributes in the ifab to be rewritten to the file
0387  ; header, if the file was write accessed, and
0387  ; calls rm$fcpfnc to perform the deaccess.
0387  ;
0387  ; Calling sequence:
0387  ;
0387  ;       BSBW    RM$DEACCESS
0387  ;
0387  ; Input Parameters:
0387  ;
0387  ;       r11     impure area address
0387  ;       r9      ifab address
0387  ;       r8      fab address
0387  ;
0387  ; Implicit Inputs:
0387  ;
0387  ;       ifb$l_chnl
0387  ;
0387  ; outputs:
0387  ;
0387  ;       r0      status code
0387  ;       r1-r6,ap destroyed
0387  ;
0387  ; Implicit Outputs:
0387  ;
0387  ;       ifb$l_ios
0387  ;
0387  ; Completion Codes:
0387  ;
0387  ;       standard rms, in particular, suc, dac, fno.
0387  ;
0387  ; Side Effects:
0387  ;
0387  ;       on return rms may be running at ast level
0387  ;       requiring a reprobe of any user structures except
0387  ;       the fab.
0387  ;--
0387
```

```
                   0387
                   0387  ;++
                   0387  ;
                   0387  ;  xab processing arguments for close
                   0387  ;
                   0387  ;--
                   0387
                   0387  CLS_XAB_ARGS:
          00'14 1E 0387          .BYTE   XAB$C_RDT,XAB$C_RDTLEN,XBC$C_CLSRDT ; handle rdt xab
          00'10 13 038A          .BYTE   XAB$C_PRO,XAB$C_PROLEN_V3,XBC$C_CLSPRO ; handle pro xab
                00 038D          .BYTE   0
                   038E
                   038E  ;++
                   038E  ;
                   038E  ;  perform network deaccess function
                   038E  ;
                   038E  ;--
                   038E
                   038E          ASSUME  IFB$V_DAP GE 56
                   038E          ASSUME  IFB$V_DAP LE 63
                   038E          ASSUME  IFB$V_NSP GE 56
                   038E          ASSUME  IFB$V_NSP LE 63
          00000007 038E  BKP3    = <56/8>                              ; byte offset to flags byte
          000000C0 038E  NETMASK = <1@<IFB$V_DAP-56>> : <1@<IFB$V_NSP-56>> ; network access-type flags
                   038E
                   038E  NTDAC:
    0A 69   3D  E5 038E          BBCC    #IFB$V_DAP_OPEN,(R9),10$ ; branch if close not necessary
    06 6B   04  E0 0392          BBS     #IMP$V_IORUNDOWN,(R11),10$ ; branch if i/o rundown in progress
         FC67'  30 0396          BSBW    NT$CLOSE                ; yes, close it there
         11 50  E9 0399          BLBC    R0,20$                  ; branch on failure
         FC61'  30 039C  10$:    BSBW    NT$DEACCESS             ; destroy logical link with partner
 07 A9   C0 8F  8A 039F          BICB2   #NETMASK,BKP3(R9)       ; clear network access-type flags
         07 50  E9 03A4          BLBC    R0,30$                  ; branch on failure
         FC56'  30 03A7          BSBW    NT$NWA_FREE             ; discard nwa
                   03AA          RMSSUC                          ; show success
                05 03AD  20$:    RSB                             ; exit to caller
         00A8   31 03AE  30$:    BRW     ERRDAC                  ; branch aid
                   03B1
                   03B1  ;++
                   03B1  ;
                   03B1  ;  entry point for rm$deaccess
                   03B1  ;
                   03B1  ;--
                   03B1
                   03B1  RM$DEACCESS::
                   03B1          $TSTPT  DEACCES
    D3 69   0D  E0 03B7          BBS     #DEV$V_NET,IFB$L_PRIM_DEV(R9),NTDAC ; br if network device
                   03BB          RMSSUC  SUC,R6                  ; indicate success
                   03BE
            00  DD 03BE          PUSHL   #0                      ; signal end of attribute list
    5C   C4 AF  9E 03C0          MOVAB   CLS_XAB_ARGS,AP         ; arg list addr for rm$xab_scan
         FC39'  30 03C4          BSBW    RM$XAB_SCAN             ; process xab chain
      56   50   D0 03C7          MOVL    R0,R6                   ; save status
                   03CA  ;
                   03CA  ; build attribute list on stack to rewrite record attributes
                   03CA  ;
                   03CA
```

```
             1A 69    30    E1  03CA              BBC     #IFB$V_WRTACC,(R9),10$  ; branch if not write accessed
             06 69    38    E1  03CE              BBC     #IFB$V_SEQFIL,(R9),5$   ; skip next few lines if really rel
                                03D2              ASSUME  <IFB$C_SEQ + 1> EQ IFB$C_REL
                23 A9    97     03D2              DECB    IFB$B_ORGCASE(R9)        ; turn back into sequential file
                5E A9    94     03D5              CLRB    IFB$B_BKS(R9)            ; make sure this clear also
                                03D8        5$:
                50 A9    DF     03D8              PUSHAL  IFB$B_RFMORG(R9)         ; write attributes from ifab
          00040016 8F    DD     03DB              PUSHL   #<ATR$C_RECATTR@16>+<IFB$C_FHAEND-IFB$B_RFMORG>
                                03E1                                               ; length & record attriubtes code
                                03E1
                                03E1        ;
                                03E1        ;   put org back into rfmorg byte
                                03E1        ;
                                03E1
   50 A9    04    04    23 A9    F0     03E1              INSV    IFB$B_ORGCASE(R9),#IFB$V_ORG,#IFB$S_ORG,IFB$B_RFMORG(R9)
                                03E8
                                03E8        ;
                                03E8        ;   allocate a fib to handle various options
                                03E8        ;
                                03E8
             52    40 8F    9A  03E8        10$:      MOVZBL  #FIB$C_LENGTH,R2         ; set size of fib
                   FC11'    30  03EC              BSBW    RM$GETSPC1               ; allocate fib
                                03EF                                               ; build fib descriptor on stack
                      51    DD  03EF              PUSHL   R1                       ; addr of fib
             7E    40 8F    9A  03F1              MOVZBL  #FIB$C_LENGTH,-(SP)      ; and length of fib
                                03F5
                                03F5        ;
                                03F5        ;   handle "tef" option (truncate at end of file) if this is a write-accessed
                                03F5        ;   disk file.
                                03F5        ;
                                03F5
                23 A9    95     03F5              TSTB    IFB$B_ORGCASE(R9)                ; check for seq file
                   26    12     03F8              BNEQ    20$                              ; don't do it if not seq
                78 A9    D5     03FA              TSTL    IFB$L_SFSB_PTR(R9)               ; check for shared file
                   21    12     03FD              BNEQ    20$                              ; bypass if shared file
             0C 69    36    E0  03FF              BBS     #IFB$V_TEF,(R9),15$              ; branch if auto extend set flag
             19 68    3C    E1  0403              BBC     #FAB$V_TEF+FOP,(R8),20$          ; branch if option not speced
             15 69    1C    E1  0407              BBC     #DEV$V_RND,IFB$L_PRIM_DEV(R9),20$ ; or if not disk
             11 69    30    E1  040B              BBC     #IFB$V_WRTACC,(R9),20$           ; or if not write accessed
                                040F
                                040F              ASSUME  FIB$V_TRUNC     GE      8
                                040F
             17 A1    01    88  040F        15$:      BISB2   #<FIB$M_TRUNC @-8>,FIB$W_EXCTL+1(R1) ; ask for truncate
       1C A1    74 A9    D0     0413              MOVL    IFB$L_EBK(R9),FIB$L_EXVBN(R1)    ; truncate at eof block
                5C A9    B5     0418              TSTW    IFB$W_FFB(R9)                    ; any bytes used this block?
                   03    13     041B              BEQL    20$                              ; branch if none
                1C A1    D6     041D              INCL    FIB$L_EXVBN(R1)                  ; yes - don't truncate block
                                0420
                                0420        ;
                                0420        ;   check for magtape rewind
                                0420        ;
                                0420
             07 69    05    E1  0420        20$:      BBC     #DEV$V_SQD,IFB$L_PRIM_DEV(R9),40$ ; branch if not magtape
             03 69    27    E1  0424              BBC     #IFB$V_RWC,(R9),40$       ; branch if not speced
                61    08    88  0428              BISB2   #FIB$M_REWIND,FIB$L_ACCTL(R1) ; cause rewind to happen
                                042B
                                042B        ;
```

```
                           042B ;  swap the words of ifb$l_hbk and ifb$l_ebk to match files-11
                           042B ;  on-disk structure
                           042B ;
                           042B
54 A9   70 A9   10    9C   042B 40$:   ROTL    #16,IFB$L_HBK(R9),IFB$L_HBK_DISK(R9)
58 A9   74 A9   10    9C   0431        ROTL    #16,IFB$L_EBK(R9),IFB$L_EBK_DISK(R9)
                           0437
                           0437 ;
                           0437 ;  do the deaccess qio
                           0437 ;
                           0437
             50   34  9A   0437        MOVZBL  #IO$_DEACCESS,R0        ; deaccess function code
                  00  DD   043A        PUSHL   #0                      ; p6 = 0 for qio
               0C AE  DF   043C        PUSHAL  12(SP)                  ; p5 = address of attribute list
               FBBE'  30   043F        BSBW    RM$FCPFNC_P4            ; do the deaccess acp function
                  14  BA   0442        POPR    #^M<R2,R4>              ; get fib len & addr
                  8E  D5   0444 50$:   TSTL    (SP)+                   ; remove attribute list from stack
                  FC  12   0446        BNEQ    50$                     ;        ''
                  50  DD   0448        PUSHL   R0                      ; save status code
               FBB3'  30   044A        BSBW    RM$RETSPC1              ; deallocate the fib
                  01  BA   044D        POPR    #^M<R0>                 ; restore the status code
               07 50  E9   044F        BLBC    R0,ERRDAC               ; branch if error
               03 56  E8   0452        BLBS    R6,60$                  ; branch if no xab error
             50   56  D0   0455        MOVL    R6,R0                   ; report xab error
                      05   0458 60$:   RSB
                           0459
                           0459 ERRDAC:
                           0459        RMSERR  DAC,R1                  ; default error code
               FB9F'  31   045F        BRW     RM$MAPERR               ; go handle error
                           0461
                           0461        .END
```

```
$$.PSECT_EP              = 00000000                 FAB$V_DFW                 = 00000005
$$RMSTEST                = 0000001A                 FAB$V_EXE                 = 00000007
$$RMS_PBUGCHK            = 00000010                 FAB$V_GET                 = 00000001
$$RMS_TBUGCHK            = 00000008                 FAB$V_MSE                 = 00000004
$$RMS_UMODE              = 00000004                 FAB$V_NEF                 = 0000000A
ARM$M_READ               = 00000001                 FAB$V_NIL                 = 00000005
ATR$C_ACCESS_MODE        = 0000002D                 FAB$V_POS                 = 00000008
ATR$C_BLOCKSIZE          = 0000000B                 FAB$V_RCK                 = 00000017
ATR$C_BUFFER_OFFSET      = 00000030                 FAB$V_RU                  = 00000000
ATR$C_RECATTR            = 00000004                 FAB$V_RWO                 = 00000007
ATR$C_STATBLK            = 00000009                 FAB$V_SQO                 = 00000006
ATR$C_UCHAR              = 00000003                 FAB$V_TEF                 = 0000001C
ATR$S_BLOCKSIZE          = 00000002                 FAB$V_TRN                 = 00000004
ATR$S_BUFFER_OFFSET      = 00000002                 FAB$V_UFO                 = 00000011
ATR$S_UCHAR              = 00000004                 FAB$V_UPI                 = 00000006
BKP3                     = 00000007                 FAB$V_WCK                 = 00000009
CHKSEQSHR                  000001F4 R      01       FCH$V_CONTIG              = 00000007
CHKSHR                     000001CA R      01       FCH$V_CONTIGB             = 00000005
CLS_XAB_ARGS               00000387 R      01       FCH$V_READCHECK           = 00000003
CTL$GL_PCB                 ********    X   01       FCH$V_WRITCHECK           = 00000004
CTL$GL_RUF                 ********    X   01       FIB$B_WSIZE               = 00000003
DEV$V_DIR                = 00000003                 FIB$C_LENGTH              = 00000040
DEV$V_NET                = 0000000D                 FIB$L_ACCTL               = 00000000
DEV$V_RND                = 0000001C                 FIB$L_ALT_ACCESS          = 0000003C
DEV$V_SQD                = 00000005                 FIB$L_EXVBN               = 0000001C
ERRACCESS                  0000022B R      01       FIB$L_STATUS              = 00000038
ERRDAC                     00000459 R      01       FIB$M_NOLOCK              = 00100000
EXIT                       000001AD R      01       FIB$M_NOREAD              = 00000400
FAB$B_FAC                = 00000016                 FIB$M_NOWRITE             = 00000001
FAB$B_RCF                = 0000004B                 FIB$M_REWIND              = 00000008
FAB$B_RTV                = 0000001C                 FIB$M_TRUNC               = 00000100
FAB$B_SHR                = 00000017                 FIB$V_ALT_GRANTED         = 00000001
FAB$C_FIX                = 00000001                 FIB$V_CURPOS              = 00000004
FAB$C_SEQ                = 00000000                 FIB$V_EXECUTE             = 00000010
FAB$L_FOP                = 00000004                 FIB$V_NOREAD              = 0000000A
FAB$M_BIO                = 00000020                 FIB$V_NOTRUNC             = 0000000B
FAB$M_BRO                = 00000040                 FIB$V_PRSRV_ATR           = 00000011
FAB$M_CBT                = 00200000                 FIB$V_READCK              = 00000009
FAB$M_CTG                = 00100000                 FIB$V_REWIND              = 00000003
FAB$M_DEL                = 00000004                 FIB$V_RMSLOCK             = 00000012
FAB$M_GET                = 00000002                 FIB$V_SEQONLY             = 00000006
FAB$M_KFO                = 40000000                 FIB$V_TRUNC               = 00000008
FAB$M_MSE                = 00000010                 FIB$V_UPDATE              = 00000006
FAB$M_PUT                = 00000001                 FIB$V_WRITE               = 00000008
FAB$M_RCK                = 00800000                 FIB$V_WRITECK             = 00000005
FAB$M_SHRDEL             = 00000004                 FIB$W_EXCTL               = 00000016
FAB$M_SHRGET             = 00000002                 FOP                       = 00000020
FAB$M_SHRPUT             = 00000001                 FWA$L_ATR_WORK            = 00000058
FAB$M_SHRUPD             = 00000008                 FWA$L_HBK                 = 000001AC
FAB$M_UFO                = 00020000                 FWA$Q_FIB                 = 00000010
FAB$M_UPD                = 00000008                 FWA$Q_NAME                = 00000170
FAB$M_WCK                = 00000200                 FWA$Q_RNS                 = 00000188
FAB$V_AI                 = 00000001                 FWA$S_NAMEBUF             = 00000100
FAB$V_BI                 = 00000002                 FWA$S_STATBLK             = 0000000A
FAB$V_BIO                = 00000005                 FWA$S_TYPEBUF             = 00000028
FAB$V_CBT                = 00000015                 FWA$S_VERBUF              = 00000006
FAB$V_CTG                = 00000014                 FWA$T_NAMEBUF             = 000004B6
```

```
FWA$T_STATBLK                   = 000001A8        NETMASK                 = 000000C0
FWA$V_NODE                      = 00000019        NT$ACCESS                 ********   X   01
FWA$W_UCHAR                     = 00000044        NT$CLOSE                  ********   X   01
IFB$B_BKS                       = 0000005E        NT$DEACCESS               ********   X   01
IFB$B_FAC                       = 00000022        NT$NWA_FREE               ********   X   01
IFB$B_JNLFLG                    = 000000A0        NT$OPEN                   ********   X   01
IFB$B_JNLFLG2                   = 000000A2        NT$SUP_FOP                ********   X   01
IFB$B_MODE                      = 0000000A        NTACC                     00000012 R     01
IFB$B_ORGCASE                   = 00000023        NTDAC                     0000038E R     01
IFB$B_RECVRFLGS                 = 000000A1        P4_P2                     00000365 R     01
IFB$B_RFMORG                    = 00000050        PCB$L_STS               = 00000024
IFB$B_SHR                       = 0000004E        PCB$V_RECOVER           = 0000001A
IFB$C_FHAEND                    = 00000066        PIO$A_TRACE               ********   X   01
IFB$C_IDX                       = 00000002        PSL$C_EXEC              = 00000001
IFB$C_REL                       = 00000001        PSL$C_SUPER             = 00000002
IFB$C_SEQ                       = 00000000        RET                       00000045 R     01
IFB$L_BLBBLNK                   = 0000009C        RETURN                    000001C5 R     01
IFB$L_BLBFLNK                   = 00000098        RJB$M_OPEN              = 00000010
IFB$L_DEVBUFSIZ                 = 00000048        RJB$V_AT                = 00000003
IFB$L_DVBN                      = 000000B0        RJB$W_FLAGS             = 0000000A
IFB$L_EBK                       = 00000074        RM$ACCESS                 00000000 RG    01
IFB$L_EBK_DISK                  = 00000058        RM$ALBLB                  ********   X   01
IFB$L_HBK                       = 00000070        RM$ASSJNL                 ********   X   01
IFB$L_HBK_DISK                  = 00000054        RM$CREACC_SET1            00000233 RG    01
IFB$L_PRIM_DEV                  = 00000000        RM$CREACC_SET2            0000031F RG    01
IFB$L_RJB                       = 000000A4        RM$CREACC_SET3            00000339 RG    01
IFB$L_SFSB_PTR                  = 00000078        RM$DEACCESS               000003B1 RG    01
IFB$M_NEVER_RU                  = 00000020        RM$FCPFNC                 ********   X   01
IFB$M_ONLY_RU                   = 00000001        RM$FCPFNC_P4              ********   X   01
IFB$M_RU                        = 00000002        RM$FCP_P4_P2              00000383 RG    01
IFB$S_ORG                       = 00000004        RM$GETTPAG                ********   X   01
IFB$V_ACCESSED                  = 00000025        RM$GETSPC1                ********   X   01
IFB$V_AI_RECVR                  = 00000001        RM$INIT_SFSB              ********   X   01
IFB$V_BI_RECVR                  = 00000002        RM$MAPERR                 ********   X   01
IFB$V_DAP                       = 0000003E        RM$MAPJNL                 ********   X   01
IFB$V_DAP_OPEN                  = 0000003D        RM$MAPJNL_RU              ********   X   01
IFB$V_DFW                       = 0000002C        RM$OPEN_XAB               ********   X   01
IFB$V_MSE                       = 00000031        RM$OPEN_XAB1              ********   X   01
IFB$V_NORECLK                   = 00000033        RM$RET1PAG                ********   X   01
IFB$V_NSP                       = 0000003F        RM$RETSPC1                ********   X   01
IFB$V_ORG                       = 00000004        RM$RTVJNL                 ********   X   01
IFB$V_RU                        = 00000001        RM$SETEBK                 00000109 RG    01
IFB$V_RUP                       = 00000002        RM$SETHBK                 000000B7 RG    01
IFB$V_RU_RECVR                  - 00000000        RM$XAB_SCAN               ********   X   01
IFB$V_RU_RLK                    = 00000003        RMACC                     00000046 R     01
IFB$V_RWC                       = 00000027        RMS$_ACC                = 0001C002
IFB$V_SEQFIL                    = 00000038        RMS$_DAC                = 0001C012
IFB$V_SQO                       = 0000002D        RMS$_IFF                = 00018804
IFB$V_TEF                       = 00000036        RMS$_NRU                = 000187FC
IFB$V_WRTACC                    = 00000030        RMS$_SHR                = 000186B4
IFB$W_BUFFER_OFFSET             = 000000A8        RMS$_UPI                = 000187AC
IFB$W_FFB                       = 0000005C        RUCB$B_CTRL             = 00000011
IFB$W_LRL                       = 00000052        RUCB$V_ACTIVE           = 00000001
IMP$V_IORUNDOWN                 = 00000004        SETNORECLK                000001C6 R     01
IO$M_ACCESS                     = 00000040        SETRTV                    000002FA R     01
IO$_ACCESS                      = 00000032        SHARE                     000001D9 R     01
IO$_DEACCESS                    = 00000034        SHRCHK                    000001A9 R     01
```

```
SHRERR                             00000225 R     01
TPT$L_ACCESS                       ********   X   01
TPT$L_DEACCES                      ********   X   01
UPIERR                             000001EE R     01
XAB$C_PRO                        = 00000013
XAB$C_PROLEN_V3                  = 00000010
XAB$C_RDT                        = 0000001E
XAB$C_RDTLEN                     = 00000014
XBC$C_CLSPRO                       ********   X   01
XBC$C_CLSRDT                       ********   X   01

                                                    +----------------+
                                                    ! Psect synopsis !
                                                    +----------------+

PSECT name                          Allocation          PSECT No.  Attributes
----------                          ----------          ---------  ----------
.  ABS  .                           00000000  (     0.)  00 (  0.)  NOPIC   USR   CON   ABS   LCL NOSHR NOEXE NORD  NOWRT NOVEC BYTE
RMSRMS0                             00000461  (  1121.)  01 (  1.)    PIC   USR   CON   REL   GBL NOSHR   EXE   RD  NOWRT NOVEC BYTE
$ABS$                               00000000  (     0.)  02 (  2.)  NOPIC   USR   CON   ABS   LCL NOSHR   EXE   RD    WRT NOVEC BYTE

                                                 +------------------------+
                                                 ! Performance indicators !
                                                 +------------------------+

Phase                        Page faults    CPU Time       Elapsed Time
-----                        -----------    --------       ------------
Initialization                       29    00:00:00.06    00:00:01.24
Command processing                  127    00:00:00.69    00:00:05.33
Pass 1                              495    00:00:20.28    00:00:53.79
Symbol table sort                     2    00:00:03.04    00:00:05.93
Pass 2                              206    00:00:04.55    00:00:09.88
Symbol table output                  28    00:00:00.20    00:00:00.30
Psect synopsis output                 1    00:00:00.02    00:00:00.02
Cross-reference output                0    00:00:00.00    00:00:00.00
Assembler run totals                890    00:00:28.84    00:01:16.49

The working set limit was 1800 pages.
116398 bytes (228 pages) of virtual memory were used to buffer the intermediate code.
There were 110 pages of symbol table space allocated to hold 2087 non-local and 70 local symbols.
1168 source lines were read in Pass 1, producing 17 object records in Pass 2.
34 pages of virtual memory were used to define 33 macros.

                                                +--------------------------+
                                                ! Macro library statistics !
                                                +--------------------------+

Macro library name                              Macros defined
------------------                              --------------
_$255$DUA28:[RMS.OBJ]RMS.MLB;1                        15
_$255$DUA28:[SYS.OBJ]LIB.MLB;1                         4
_$255$DUA28:[SYSLIB]STARLET.MLB;2                     10
TOTALS (all libraries)                                29

2213 GETS were required to define 29 macros.

There were no errors, warnings or information messages.
```

```
MACRO/LIS=LIS$:RMOACCESS/OBJ=OBJ$:RMOACCESS MSRC$:RMOACCESS/UPDATE=(ENH$:RMOACCESS)+EXECML$/LIB+LIB$:RMS/LIB
```

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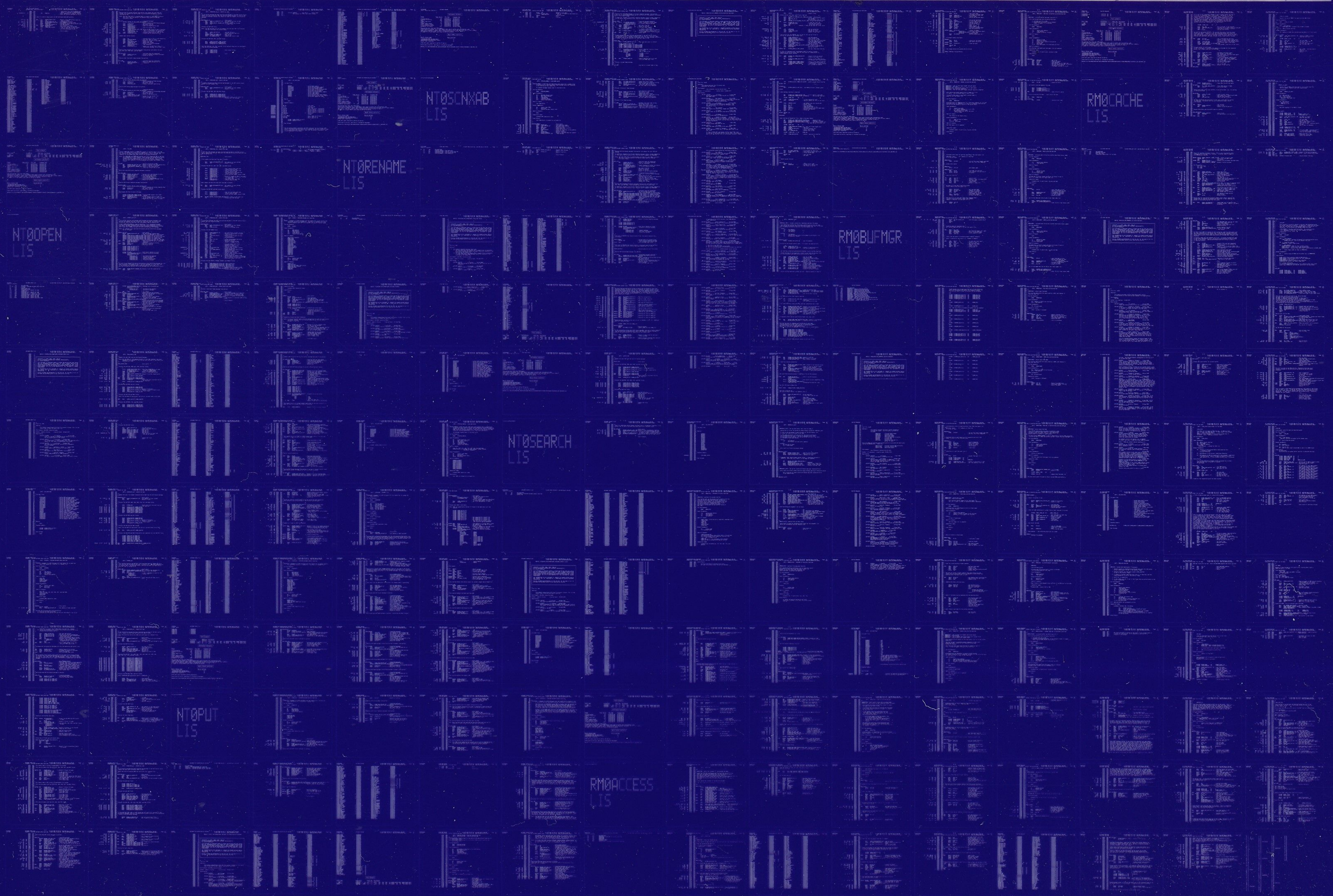

NT0SCNXAB
LIS

RM0CACHE
LIS

NT0RENAME
LIS

NT0OPEN
LIS

RM0BUFMGR
LIS

NT0SEARCH
LIS

NT0PUT
LIS

RM0ACCESS
LIS