L 12

```
   SSSSSSSSSSSS  YYY         YYY     SSSSSSSSSSSS
   SSSSSSSSSSSS  YYY         YYY     SSSSSSSSSSSS
   SSSSSSSSSSSS  YYY         YYY     SSSSSSSSSSSS
SSS              YYY         YYY  SSS
SSS              YYY         YYY  SSS
SSS              YYY         YYY  SSS
SSS                 YYY   YYY     SSS
SSS                 YYY   YYY     SSS
SSS                 YYY   YYY     SSS
   SSSSSSSSS           YYY           SSSSSSSSS
   SSSSSSSSS           YYY           SSSSSSSSS
   SSSSSSSSS           YYY           SSSSSSSSS
            SSS        YYY                    SSS
            SSS        YYY                    SSS
            SSS        YYY                    SSS
            SSS        YYY                    SSS
            SSS        YYY                    SSS
            SSS        YYY                    SSS
SSSSSSSSSSSS           YYY        SSSSSSSSSSSS
SSSSSSSSSSSS           YYY        SSSSSSSSSSSS
SSSSSSSSSSSS           YYY        SSSSSSSSSSSS
```

```
_S

Ps
--

YZ

Z$

Z$

Z$

Z$

Z$

Z$

Z$

Z$

Z$

Z$

Z$

Z$
```

```
                                                  I 16
**FILE**ID**SYSBRKTHR




  SSSSSSSS  YY      YY    SSSSSSSS  BBBBBBBB    RRRRRRRR    KK      KK  TTTTTTTTTT  HH      HH  RRRRRRRR
  SSSSSSSS  YY      YY    SSSSSSSS  BBBBBBBB    RRRRRRRR    KK      KK  TTTTTTTTTT  HH      HH  RRRRRRRR
SS          YY      YY  SS          BB      BB  RR      RR  KK      KK      TT      HH      HH  RR      RR
SS          YY      YY  SS          BB      BB  RR      RR  KK      KK      TT      HH      HH  RR      RR
SS            YY  YY    SS          BB      BB  RR      RR  KK    KK        TT      HH      HH  RR      RR
SS            YY  YY    SS          BB      BB  RR      RR  KK    KK        TT      HH      HH  RR      RR
  SSSSSS        YY        SSSSSS    BBBBBBBB    RRRRRRRR    KKKKKK          TT      HHHHHHHHHH  RRRRRRRR
  SSSSSS        YY        SSSSSS    BBBBBBBB    RRRRRRRR    KKKKKK          TT      HHHHHHHHHH  RRRRRRRR
        SS      YY              SS  BB      BB  RR  RR      KK    KK        TT      HH      HH  RR  RR
        SS      YY              SS  BB      BB  RR  RR      KK    KK        TT      HH      HH  RR  RR
        SS      YY              SS  BB      BB  RR    RR    KK      KK      TT      HH      HH  RR    RR          ....
        SS      YY              SS  BB      BB  RR    RR    KK      KK      TT      HH      HH  RR    RR          ....
SSSSSSSS        YY      SSSSSSSS    BBBBBBBB    RR      RR  KK      KK      TT      HH      HH  RR      RR        ....
SSSSSSSS        YY      SSSSSSSS    BBBBBBBB    RR      RR  KK      KK      TT      HH      HH  RR      RR        ....

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            .TITLE  SYSBRKTHR - Write breakthru to terminals
0000            .IDENT  'V04-000'
0000    ;
0000    ;****************************************************************************
0000    ;*                                                                          *
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0000    ;*                                                                          *
0000    ;****************************************************************************
0000    ;
0000    ;
0000    ;++
0000    ;
0000    ; FACILITY:
0000    ;
0000    ;       SYS
0000    ;
0000    ; INCLUDES:
0000    ;       $BRKTHRU system service
0000    ;       $BRDCST system service
0000    ;
0000    ; ABSTRACT:
0000    ;
0000    ;       Write breakthru message to specified terminals and mailboxes.
0000    ;
0000    ; ENVIRONMENT:
0000    ;
0000    ;       Kernel Mode. IPL 0 and 2.
0000    ;
0000    ;--
0000    ;
0000    ; AUTHOR: Jake VanNoy, CREATION DATE: 3-Feb-1983
0000    ;
0000    ; MODIFIED BY:
0000    ;
0000    ;       V03-011 JLV0392         Jake VanNoy             26-JUL-1984
0000    ;               Make check for TRM and SPL at HAVE_UCB.
0000    ;               Do not write message to mailbox if class disabled.
0000    ;
0000    ;       V03-010 JLV0347         Jake VanNoy             8-APR-1984
0000    ;               Skip terminal if NET is set.  Fix problem in
```

```
0000   ;                check for broadcast to same username.
0000   ;                Copy DEVNAME to SENDNAME so that cluster broadcast
0000   ;                to device will work.  Change MOVC of device name
0000   ;                fields to MOVQ's.
0000   ;
0000   ;        V03-009 JLV0339         Jake VanNoy                     9-MAR-1984
0000   ;                Skip terminal if PASSALL is set.  Fix mailbox message
0000   ;                to have just DDC part of device name.  Force timeout
0000   ;                of a cluster breakthru request to 15 seconds on all
0000   ;                nodes except local.  Fix bug that used BRK$L_FLAGS as
0000   ;                scratch.
0000   ;
0000   ;        V03-008 ACG0385         Andrew C. Goldstein,    28-Dec-1983  15:27
0000   ;                Change UAF$S_USERNAME use to JIB$S_USERNAME, due to
0000   ;                pending UAF format changes
0000   ;
0000   ;        V03-007 JLV0308         Jake VanNoy                     22-SEP-1983
0000   ;                Complete work started in JLV0307. Fix check against
0000   ;                username in GET_SENDTO.  Change parameter in call
0000   ;                to IOC$CVT_DEVNAM, since the interface to that routine
0000   ;                has changed.
0000   ;
0000   ;        V03-006 JLV0307         Jake VanNoy                     7-SEP-1983
0000   ;                Fix enhanced privilege bug. Wait until after cluster
0000   ;                broadcast to deallocate BRK. Fix bug in defaulting of
0000   ;                carriage control in $BRDCST. Add use of EXE$SIGTORET
0000   ;                in $BRDCST.
0000   ;
0000   ;        V03-005 JLV0302         Jake VanNoy                     22-AUG-1983
0000   ;                Add MOVC5 to zero entire BRK structure up to where text
0000   ;                is placed. This allowed removing separate CLRx instructions
0000   ;                in initialization. Save register around MOVC in GET_SENDTO.
0000   ;                Change exit path for SS$_NOOPER error code.
0000   ;
0000   ;        V03-004 JLV0300         Jake VanNoy                     30-JUL-1983
0000   ;                Add OPER priv checks. Allow $BRKTHRU to same username
0000   ;                without priv.  Initialize mailbox prefix code. Remove
0000   ;                BRK$ symbols from here and move them to LIB. This
0000   ;                allows cluster broadcast code to use BRK structure.
0000   ;                Add IO$M_CANCTRLO to QIO.  Make use of IOC$CVT_DEVNAM.
0000   ;
0000   ;        V03-003 LJK0213         Lawrence J. Kenah               23-Jun-1983
0000   ;                Unlock data base before calling GET_NEXT_TERMINAL to make
0000   ;                sure that $GETJPI is not called at IPL 2.
0000   ;
0000   ;        V03-002 JLV0269         Jake VanNoy                     27-MAY-1983
0000   ;                Fix bugs in SET_PRIV routine. Add code to use REQID.
0000   ;                Add code to call EXE$CSP_BRKTHRU, the cluster broadcast
0000   ;                routine.
0000   ;
0000   ;        V03-001 JLV0245         Jake VanNoy                     29-APR-1983
0000   ;                First pass cleanup. Include code for EXE$BRDCST here,
0000   ;                this obsoletes the old SYSBRDCST module.
0000   ;
0000   ;**
0000
0000
```

```
            0000          .SBTTL  DECLARATIONS
            0000  ;
            0000  ; INCLUDE FILES:
            0000  ;
            0000          $BRKDEF                         ; Define BRKTHRU interface symbols
            0000          $BRKTDEF                        ; Define BRK block
            0000          $CCBDEF                         ; Define channel control block
            0000          $DDBDEF                         ; Define device data block
            0000          $DEVDEF                         ; Define device symbols
            0000          $DVIDEF                         ; Define GETDVI symbols
            0000          $IODEF                          ; Define I/O request symbols
            0000          $IPLDEF                         ; Define IPL fields
            0000          $JIBDEF                         ; Define Job Information Block
            0000          $JPIDEF                         ; Define GETJPI symbols
            0000          $PCBDEF                         ; Define process control block
            0000          $PHDDEF                         ; Define process header
            0000          $PRVDEF                         ; Define privilege names
            0000          $PSLDEF                         ; Define PSL fields
            0000          $SSDEF                          ; Define status codes
            0000          $TTDEF                          ; Define tt devdepend symbols
            0000          $TT2DEF                         ; Define tt devdepnd2 symbols
            0000          $TTYUCBDEF                      ; terminal ucb extensions
            0000          $UAFDEF                         ; Define user authorization symbols
            0000          $UCBDEF                         ; Define UCB
            0000  ;
            0000  ; MACROS:
            0000  ;
            0000
            0000  ;
            0000  ; EQUATED SYMBOLS:
            0000  ;
            0000
00000004    0000  EFN     = 4
00000008    0000  MSGBUF  = 8
0000000C    0000  SENDTO  = 12
00000010    0000  SENDTYPE = 16
00000014    0000  IOSB    = 20
00000018    0000  CARCON  = 24
0000001C    0000  FLAGS   = 28
00000020    0000  REQID   = 32              ;
00000024    0000  TIMOUT  = 36
00000028    0000  ASTADR  = 40
0000002C    0000  ASTPRM  = 44
            0000
0000001F    0000  BRK_C_JPIEFN    = 31    ; system efn
0000001F    0000  BRK_C_TIMEFN    = 31
0000001F    0000  BRK_C_QIOEFN    = 31
0000001F    0000  BRK_C_DVIEFN    = 31
0000001F    0000  BRK_C_BRDCSTEFN = 31
00000004    0000  BRK_C_MINTIME   = 4     ; minimum time in seconds
00000004    0000  BRK_C_SIMULCAST = 4     ; simultaneous QIO's
00000018    0000  BRK_C_MAXLINES  = 24    ; maximum number of lines allowed to clear in screen write
0000000F    0000  BRK_C_CLUTIMEOUT= 15    ; forced timeout for cluster broadcast
            0000
20000000    0000  PRV$M_BYPASS    = 1@PRV$V_BYPASS        ; define mask
80000000    0000  PRV$M_SHARE     = 1@PRV$V_SHARE         ; define mask
            0000
```

```
0000   ; following assumes for MOVQ's of name buffer's
0000
0000   ASSUME DDB$S_NAME         EQ 16
0000   ASSUME BRK$S_DEVNAME      EQ 16
0000   ASSUME BRK$S_SENDNAME     EQ 16
0000   ASSUME BRK$S_TRMNAME      EQ 16
0000
```

```
                                                0000      ;
                                                0000      ; Local storage offsets for temporary stack allocation
                                                0000      ;
                                                0000
                                                0000      ;
                                                0000      ; getjpi stack items
                                                0000      ;
                                                0000              $DEFINI STK
                                                0000
                                                0000      $DEF    STK$W_USERSIZ   .BLKW
                                                0002      $DEF    STK$W_USERJPI   .BLKW
                                                0004      $DEF    STK$L_USERNAME  .BLKL
                                                0008      $DEF    STK$L_USERLENR  .BLKL
                                                000C
                                                000C      $DEF    STK$W_TERMSIZ   .BLKW
                                                000E      $DEF    STK$W_TERMJPI   .BLKW
                                                0010      $DEF    STK$L_TERMNAME  .BLKL
                                                0014      $DEF    STK$L_TERMLENR  .BLKL
                                                0018
                                                0018      $DEF    STK$L_ENDLIST   .BLKL
                                                001C
                                                001C      $DEF    STK$W_USERLEN   .BLKW
                                                001E      $DEF    STK$T_USERNAME  .BLKB   JIB$S_USERNAME
                                                002A      $DEF    STK$W_TERMLEN   .BLKW
                                                002C
                                                002C      $DEF    STK$C_LEN
                                                002C
                                                002C              $DEFEND STK
                                                0000      ;
                                                0000      ; OWN STORAGE:
                                                0000      ;
                                                0000
                                            00000000      .PSECT  Y$EXEPAGED
                                                0000
                     4B 30 5B 1B 41 31 5B 1B    0000      erase_pat:      .ascii  /[1A[0K/
                                                0008      assume .-erase_pat EQ 8                     ; so quadword access can be done
                                                0008
55 21 5B 1B 37 1B 00000010'010E0000'            0008      screen_ctrstr:  .ascid  /7[!UB;1H[K!AD!AD8/
41 21 44 41 21 4B 5B 1B 48 31 3B 42             0016
                                38 1B 44        0022
                                                0025
```

```
                          0025          .SBTTL  EXE$BRKTHRU - Break though write
                          0025
                          0025  ;++
                          0025  ;
                          0025  ; FUNCTIONAL DESCRIPTION:
                          0025  ;
                          0025  ;
                          0025  ; CALLING SEQUENCE:
                          0025  ;       NONE
                          0025  ;
                          0025  ; INPUT PARAMETERS:
                          0025  ;
                          0025  ;       R4 - PCB
                          0025  ;       AP - argument list
                          0025  ;
                          0025  ; IMPLICIT INPUTS:
                          0025  ;       NONE
                          0025  ;
                          0025  ; OUTPUT PARAMETERS:
                          0025  ;       NONE
                          0025  ;
                          0025  ; IMPLICIT OUTPUTS:
                          0025  ;       NONE
                          0025  ;
                          0025  ; COMPLETION CODES:
                          0025  ;       NONE
                          0025  ;
                          0025  ; SIDE EFFECTS:
                          0025  ;       NONE
                          0025  ;
                          0025  ;--
                          0025
                    0FFC  0025          .ENTRY  EXE$BRKTHRU,^M<R2,R3,R4,R5,R6,R7,R8,R9,R10,R11>
                          0027
                          0027          ;
                          0027          ; Check parameters and do initialization needed
                          0027          ;
              56     D4   0027          CLRL    R6                              ; no buffer yet
                          0029          ;
                          0029          ; Clear Event Flag
                          0029          ;
        53  04 AC    9A   0029          MOVZBL  EFN(AP),R3                      ; Fetch EFN
      00000000'EF    16   002D          JSB     SCH$CLREF                       ; Clear
            4F 50    E9   0033          BLBC    R0,20$                          ; Exit on error
                          0036          ;
                          0036          ; Verify IOSB and clear it
                          0036          ;
        5B  14 AC    D0   0036          MOVL    IOSB(AP),R11                    ; Get address of IOSB
               0B    13   003A          BEQL    10$                             ; Branch if none
                          003C          IFWRT   #8,(R11),5$                     ; Branch if ok
             009F    31   0042          BRW     ACCVIO_EXIT                     ; Error if not writeable
               6B    7C   0045  5$:     CLRQ    (R11)                           ; Clear
                          0047  10$:
        51  08 AC    D0   0047          MOVL    MSGBUF(AP),R1                   ; Message buffer descriptor
      00000000'GF    16   004B          JSB     G^EXE$PROBER_DSC                ; Probe descriptor
            31 50    E9   0051          BLBC    R0,20$                          ; branch if error
                          0054          ;
```

```
                             0054        ; R1 and R2 have length and address, calculate size of buffer
                             0054        ; needed for storage.
                             0054        ;
               51   51   3C  0054        MOVZWL  R1,R1                      ; clear top word
               59   51   7D  0057        MOVQ    R1,R9                      ; save both
           53    8E 8F   9A  005A        MOVZBL  #BRK$C_LENGTH,R3           ; Size of basic block
               53   51   C0  005E        ADDL    R1,R3                      ; For normal data
 58   51   000000D0 8F   C1  0061        ADDL3   #16+<8*BRK_C_MAXLINES>,R1,R8    ; screen overhead and message
               53   58   C0  0069        ADDL    R8,R3                      ; For screen data
               53   03   C0  006C        ADDL    #3,R3                      ; round of to longword by adding and...
               53   03   CA  006F        BICL    #3,R3                      ;       clearing bits
               57   53   D0  0072        MOVL    R3,R7                      ; Save this length
                    04   C5  0075        MULL3   #BRK_C_SIMULCAST,-
               50   0E       0077                #BRK2$C_LENGTH,R0          ; Size of context area
               53   50   C0  0079        ADDL    R0,R3                      ; add to length
                             007C        ;
                             007C        ; Compute pages and allocate region
                             007C        ;
               51   53   D0  007C        MOVL    R3,R1                      ; Number of bytes
           00000000'GF   16  007F        JSB     G^EXE$ALOP1IMAG            ; Allocate memory
                 5F 50   E9  0085  20$:  BLBC    R0,ERROR_EXIT              ; exit on error
                             0088        ;
                             0088        ; Copy remaining paramters into allocated region
                             0088        ;
               56   52   D0  0088        MOVL    R2,R6                      ; Copy Address of block
                    1E   BB  008B        PUSHR   #^M<R1,R2,R3,R4>           ; Save
          00   6E   00   2C  008D        MOVC5   #0,(SP),#0,-
          62   008E 8F       0091                #BRK$C_LENGTH,(R2)         ; Zero entire structure (up to text)
                    1E   BA  0095        POPR    #^M<R1,R2,R3,R4>           ; Restore
                             0097
            08 A6   51   B0  0097        MOVW    R1,BRK$W_SIZE(R6)          ; And size
          60 A6   6647   9E  009B        MOVAB   (R6)[R7],BRK$L_QIOCTX(R6) ; Qio context start address
            68 A6   58   D0  00A0        MOVL    R8,BRK$L_SCRMSGLEN(R6)     ; init
            1C A6   54   D0  00A4        MOVL    R4,BRK$L_PCB(R6)           ; Save PCB
            20 A6   5B   D0  00A8        MOVL    R11,BRK$L_IOSB(R6)         ; Set address
                             00AC        ;
                             00AC        ; Copy main message buffer
                             00AC        ;
          008C C6   59   B0  00AC        MOVW    R9,BRK$W_MSGLEN(R6)        ; Save length
               6A   59   28  00B1        MOVC3   R9,(R10),-
               008E C6       00B4                BRK$T_MSGBUF(R6)           ; Copy message buffer
            6C A6   53   D0  00B7        MOVL    R3,BRK$L_SCRMSG(R6)        ; next byte is where screen message starts
                             00BB        ;
                             00BB        ; Copy send type and "send to:" string (if required)
                             00BB        ;
                  027B   30  00BB        BSBW    GET_SENDTO                 ; handle SENDTO, SENDTYPE
                 26 50   E9  00BE        BLBC    R0,ERROR_EXIT              ; check status
                             00C1        ;
                             00C1        ; Set up time quadword if timeout requested
                             00C1        ;
            50   24 AC   D0  00C1        MOVL    TIMOUT(AP),R0              ; Timeout value
                    12   13  00C5        BEQL    240$                       ; branch if none specified
               50   04   D1  00C7        CMPL    #BRK_C_MINTIME,R0          ; Compare to minimum number of seconds
                    13   14  00CA        BGTR    BADPARAM_EXIT              ; Exit if too small
               50   50   CE  00CC        MNEGL   R0,R0                      ; Get negative value
 00   50   00989680 8F   7A  00CF        EMUL    #10*1000*1000,R0,#0,-
                 2C A6       00D7                BRK$Q_TIMEOUT(R6)          ; Times ten million ticks per second
                 0F   B0 00D9  240$:     MOVW     #BRK_C_CLUTIMEOUT,-
              4E A6        00DB                   BRK$W_SECONDS(R6)              ; set default timeout for cluster
                 10   11   00DD                   BRB      ALL_OK                         ; And continue
                           00DF
                           00DF            ;
                           00DF            ; An error has occured in initial processing...
                           00DF            ;
                           00DF  BADPARAM_EXIT:
           50    14   3C   00DF            MOVZWL   #SS$_BADPARAM,R0               ; set status
                 03   11   00E2            BRB      ERROR_EXIT                     ; exit
                           00E4  ACCVIO_EXIT:
           50    0C   3C   00E4            MOVZWL   #SS$_ACCVIO,R0                 ; Set error
                           00E7  ERROR_EXIT:
                 56   D5   00E7            TSTL     R6                             ; Buffer to delete?
                 03   13   00E9            BEQL     10$                            ; Branch if not
               056E   30   00EB            BSBW     RETURN_MEMORY                  ; return memory
                           00EE  10$:
                      04   00EE            RET                                     ; exit
                           00EF
                           00EF            ;
                           00EF            ; Copy remaining parameters...
                           00EF            ;
                           00EF  ALL_OK:
 50    A0000000 8F    D0   00EF            MOVL     #<PRV$M_BYPASS!PRV$M_SHARE>,R0 ; privileges required
                           00F6            ASSUME   PHD$Q_PRIVMSK EQ 0             ; for indirection
        54   1C A6    D0   00F6            MOVL     BRK$L_PCB(R6),R4               ; Set PCB address
 66     50   6C B4    CB   00FA            BICL3    @PCB$L_PHD(R4),R0,BRK$Q_PRIVS(R6) ; Clear those already set
                           00FF
                           00FF            ASSUME   BRK$W_EFN+2 EQ BRK$B_STS       ; assumes so next instruction
                           00FF            ASSUME   BRK$W_EFN+3 EQ BRK$B_PRVMODE   ; can set efn and zero sts and prvmo
     64 A6   04 AC    3C   00FF            MOVZWL   EFN(AP),BRK$W_EFN(R6)          ; Copy event flag number
        50   20 AC    D0   0104            MOVL     REQID(AP),R0                   ; Requestor ID
           50   3F    D1   0108            CMPL     #63,R0                         ; Check legal (0-63 legal)
                D2    1F   010B            BLSSU    BADPARAM_EXIT                  ; exit if not
     50 A6      50    D0   010D            MOVL     R0,BRK$L_REQID(R6)             ; Save Requestor ID
     38 A6   1C AC    D0   0111            MOVL     FLAGS(AP),BRK$L_FLAGS(R6)      ; Flags
     34 A6   18 AC    D0   0116            MOVL     CARCON(AP),BRK$L_CARCON(R6)    ; Set carriage control
     24 A6   28 AC    D0   011B            MOVL     ASTADR(AP),BRK$L_ASTADR(R6)    ; Ast routine
     28 A6   2C AC    D0   0120            MOVL     ASTPRM(AP),BRK$L_ASTPRM(R6)    ; Ast routine parameter
                           0125            ;
                           0125            ; Other misc. initialization
                           0125            ;
                           0125            ASSUME   BRK$W_STATUS+2 EQ BRK$W_SUCCESSCNT
                           0125            ASSUME   BRK$W_STATUS+4 EQ BRK$W_TIMEOUTCNT
                           0125            ASSUME   BRK$W_STATUS+6 EQ BRK$W_REFUSEDCNT
        70 A6   01    9B   0125            MOVZBW   #SS$_NORMAL,BRK$W_STATUS(R6)   ; Assume final status
 78 A6    0000'8F     B0   0129            MOVW     #MSG$_TRMBRDCST,BRK$W_TRMMSG(R6); set mailbox prefix code
                           012F            ;
                           012F            ; read PSL and save previous mode
                           012F            ;
                50    DC   012F            MOVPSL   R0                             ; fetch PSL
           02   16    EF   0131            EXTZV    #PSL$V_PRVMOD,#PSL$S_PRVMOD,-
           50   50         0134                     R0,R0                          ; extract previous mode
        67 A6   50    90   0136            MOVB     R0,BRK$B_PRVMODE(R6)           ; save
                           013A            ;
                           013A            ; Set up search contexts
                           013A            ;
```

```
   54 A6    01   CE  013A        MNEGL   #1,BRK$L_PIDCTX(R6)             ; wild card pid
                     013E        ASSUME  BRK$L_UCBCTX+4 EQ BRK$L_DDBCTX  ; assume alignment
                     013E        ;
                     013E        ; Format screen message (if SCREEN requested)
                     013E        ;
   57    38 A6   D0  013E        MOVL    BRK$L_FLAGS(R6),R7              ; Flags parameter
   4D 57    08   E1  0142        BBC     #BRK$V_SCREEN,R7,100$           ; Skip if not requested
      50    57   9A  0146        MOVZBL  R7,R0                           ; lines to clear
      50    18   D1  0149        CMPL    #BRK_C_MAXLINES,R0              ; Greater than max?
            91   1F  014C        BLSSU   BADPARAM_EXIT                   ; Branch if yes
      51    50   D0  014E        MOVL    R0,R1                           ; copy
52    51    08   C5  0151        MULL3   #8,R1,R2                        ; bytes of erase pattern
                     0155        ;
                     0155        ; Set up repeating erase line pattern on stack
                     0155        ;
7E    FEA7 CF    7D  0155  10$:  MOVQ    W^ERASE_PAT,-(SP)               ; copy erase pattern
         F8 50   F5  015A        SOBGTR  R0,10$                          ; one for each line
      53    5E   D0  015D        MOVL    SP,R3                           ; address of erase pattern
   04 57    09   E1  0160        BBC     #BRK$V_BOTTOM,R7,20$            ; Branch if message on top of screen
   51    84 8F   9A  0164        MOVZBL  #132,R1                         ; Set "bottom" (note 132 >> 24)
                     0168  20$:
54    008C C6    3C  0168        MOVZWL  BRK$W_MSGLEN(R6),R4             ; Size
55    008E C6    9E  016D        MOVAB   BRK$T_MSGBUF(R6),R5             ; address of data
                     0172        $FAO_S  CTRSTR = SCREEN_CTRSTR,-
                     0172                OUTLEN = BRK$L_SCRMSGLEN(R6),-
                     0172                OUTBUF = BRK$L_SCRMSGLEN(R6),-
                     0172                P1 = R1,-                       ; position top/bottom
                     0172                P2 = R2,-                       ; lines to erase * 8
                     0172                P3 = R3,-                       ; erase pattern address
                     0172                P4 = R4,-                       ; size of msgbuf
                     0172                P5 = R5                         ; msgbuf address
         03 50   E8  018D        BLBS    R0,100$
          FF54   31  0190        BRW     ERROR_EXIT                      ; blew it
                     0193  100$:
                     0193        ;
                     0193        ; Start initial QIO's up. AST's are disabled first so that a
                     0193        ; CPU limit exceeded ast cannot fire between assigning the
                     0193        ; channel and setting the CCB$M_IMGTMP flag. Something that would cause
                     0193        ; image exit to occur before the IMGTMP flag was set cannot be allowed.
                     0193        ; Disabling AST makes synchronization of CHECK_COMPLETE easier as well.
                     0193        ;
                     0193        $SETAST_S ENBFLG = #0                   ; Disable AST's
                     019C        ;
                     019C        ;(At this point, R6 points to BRK structure, all others are scratch)
                     019C        ;
   57    60 A6   D0  019C        MOVL    BRK$L_QIOCTX(R6),R7             ; QIO context area
      58    04   3C  01A0        MOVZWL  #BRK_C_SIMULCAST,R8             ; Number to do at one time
                     01A3  300$:
   67       56   D0  01A3        MOVL    R6,BRK2$L_COMMON(R7)            ; Point back to common region
            4F   10  01A6        BSBB    DO_WRITE                        ; Do the write
         07 50   E9  01A8        BLBC    R0,350$                         ; exit on error
   57    0E A7   9E  01AB        MOVAB   BRK2$C_LENGTH(R7),R7            ; Add size to qio context
         F1 58   F5  01AF        SOBGTR  R8,300$                         ; Continue
                     01B2  350$:
            50   DD  01B2        PUSHL   R0                              ; Save status
                     01B4        ;
                     01B4        ; Before returning to user, see if there is a cluster to send to
```

```
                        01B4   448           ;
              0B   E1   01B4   449           BBC     #BRK$V_CLUSTER,-                 ;
        0E 38 A6        01B6   450                   BRK$L_FLAGS(R6),360$             ; Branch if "cluster" not requested
                        01B9   451           IFNOCLSTR 360$                           ; or if not in cluster
     00000000'GF   16   01C1   452           JSB     G^EXE$CSP_BRKTHRU                ; send message
                        01C7   453 360$:
            044E   30   01C7   454           BSBW    CHECK_COMPLETE                   ; done? Deallocate BRK if so
                        01CA   455           $SETAST_S ENBFLG = #1                    ; Enable AST's
              50 8ED0   01D3   456           POPL    R0                               ; Restore status
   50    2894 8F   B1   01D6   457           CMPW    #SS$_NOOPER,R0                   ; no OPER priv?
              03   12   01DB   458           BNEQ    365$                             ; continue if not
            FF07   31   01DD   459           BRW     ERROR_EXIT                       ; take error exit
                        01E0   460 365$:
         50   01   9A   01E0   461           MOVZBL  #SS$_NORMAL,R0                   ; Set success for everything else
                   04   01E3   462 370$:     RET                                      ; Return to user
                        01E4   463
```

```
                          01E4          .SBTTL  DO_WRITE - Queue a single write request
                          01E4  ;++
                          01E4  ;
                          01E4  ; FUNCTIONAL DESCRIPTION:
                          01E4  ;
                          01E4  ;
                          01E4  ; CALLING SEQUENCE:
                          01E4  ;       BSBW    DO_WRITE
                          01E4  ;
                          01E4  ; INPUT PARAMETERS:
                          01E4  ;
                          01E4  ;       R6 - BRK
                          01E4  ;       R7 - QIO context area
                          01E4  ;
                          01E4  ; IMPLICIT INPUTS:
                          01E4  ;       NONE
                          01E4  ;
                          01E4  ; OUTPUT PARAMETERS:
                          01E4  ;       NONE
                          01E4  ;
                          01E4  ; IMPLICIT OUTPUTS:
                          01E4  ;       NONE
                          01E4  ;
                          01E4  ; COMPLETION CODES:
                          01E4  ;       R0 - status
                          01E4  ;
                          01E4  ;               SS$_NORMAL - all ok or error set in STATUS
                          01E4  ;               SS$_NOMOREPROC - done with all QIO's
                          01E4  ;
                          01E4  ; SIDE EFFECTS:
                          01E4  ;
                          01E4  ;       Destroys R1,R2,R3,R4,R5
                          01E4  ;
                          01E4  ;--
                          01E4
                          01E4  UNLOCK_DB:
               00     E5  01E4          BBCC    #BRK$V_LOCKED,-
         0D 66 A6         01E6                  BRK$B_STS(R6),10$       ; clear locked flag
      54    1C A6     D0  01E9          MOVL    BRK$L_PCB(R6),R4        ; PCB
     00000000'GF      16  01ED          JSB     G^SCH$IOUNLOCK          ; unlock
                          01F3          SETIPL  #0                      ; lower IPL
                      05  01F6  10$:    RSB                             ; Return
                          01F7
                          01F7  DO_WRITE:
                          01F7
                          01F7  10$:
               EB     10  01F7          BSBB    UNLOCK_DB               ; Unlock data base
             01FA     30  01F9          BSBW    GET_NEXT_TERMINAL       ; Get next terminal
                          01FC          ;
                          01FC          ; returns with I/O database locked at IPL 2
                          01FC          ;
            E5 50     E9  01FC          BLBC    R0,UNLOCK_DB    ; branch if done (no more processes)
                          01FF          ;
                          01FF          ; Test for broadcast to mailbox
                          01FF          ;
      55    58 A6     D0  01FF          MOVL    BRK$L_UCBCTX(R6),R5     ; fetch UCB address
               04     E1  0203          BBC     #TT2$V_BRDCSTMBX,-
```

```
        23 48 A5        0205          UCB$L_DEVDEPND2(R5),40$ ; Branch if not allowed
              55    DD  0208          PUSHL   R5                      ; Save ucb address
     55    60 A5    D0  020A          MOVL    UCB$L_AMB(R5),R5        ; Get address of associated mailbox
              18    13  020E          BEQL    30$                     ; Branch if none
                        0210          ;
                        0210          ; Send broadcast to assoicated mailbox
                        0210          ;
   53    008C C6    3C  0210          MOVZWL  BRK$W_MSGLEN(R6),R3     ; Get length of message
        53    16    C0  0215          ADDL2   #<BRK$T_MSGBUF-BRK$W_TRMMSG>,R3 ; Add mailbox prefix overhead
   54      78 A6    9E  0218          MOVAB   BRK$W_TRMMSG(R6),R4     ; Set address of mailbox message
     00000000'GF    16  021C          JSB     G^EXE$WRTMAILBOX        ; Send message
           03 50    E9  0222          BLBC    R0,30$                  ; branch if error sending to mailbox
           72 A6    B6  0225          INCW    BRK$W_SUCCESSCNT(R6)    ; One more successful completion
                        0228     30$:
           55 8ED0      0228          POPL    R5                      ; Restore ucb address
                        022B     40$:
     00020001 8F    D3  022B          BITL    #<TT$M_NOBRDCST!TT$M_PASSALL>,-
              44 A5     0231                  UCB$L_DEVDEPEND(R5)     ; test for NOBROADCAST or PASSALL
                 C2 12  0233          BNEQ    10$                     ; skip if either set
                 AD 10  0235          BSBB    UNLOCK_DB               ; unlock data base
                        0237          ;
                        0237          ; Assign channel (if possible)
                        0237          ;
              66    D5  0237          TSTL    BRK$Q_PRIVS(R6)         ; assumes no privs in high longword
              0F    13  0239          BEQL    42$                     ; privs required non-null
                        023B          $SETPRV_S -                     ;
                        023B                  ENBFLG = #1,-                   ; Enable privs
                        023B                  PRVADR = BRK$Q_PRIVS(R6)        ; Privs to set
                        024A     42$:
        52    7E    7E  024A          MOVAQ   -(SP),R2                ; Allocate descriptor on stack
     62    0C A6    9A  024D          MOVZBL  BRK$T_DEVNAME(R6),(R2)  ; Length
  04 A2    0D A6    9E  0251          MOVAB   BRK$T_DEVNAME+1(R6),4(R2) ; address
                        0256
                        0256          $ASSIGN_S -
                        0256                  DEVNAM = (R2),-         ; device name
                        0256                  CHAN = BRK2$W_CHAN(R7)  ; channel
        5E    08    C0  0264          ADDL    #8,SP                   ; pop descriptor
           19 50    E8  0267          BLBS    R0,50$                  ; branch if ok
           76 A6    B6  026A          INCW    BRK$W_REFUSEDCNT(R6)    ; Refused
     70 A6    50    B0  026D     45$: MOVW    R0,BRK$W_STATUS(R6)     ; record status
                        0271          $SETPRV_S -                     ;
                        0271                  ENBFLG = #0,-                   ; Disable privs
                        0271                  PRVADR = BRK$Q_PRIVS(R6)        ; Privs to disable
            FF74    31  0280          BRW     10$                     ; Try another terminal
                        0283          ;
                        0283          ; modify the CCB so that the channel will be run down at image exit
                        0283          ;
                        0283     50$:
                        0283          $SETPRV_S -                     ;
                        0283                  ENBFLG = #0,-                   ; Disable privs
                        0283                  PRVADR = BRK$Q_PRIVS(R6)        ; Privs to reset
                        0292
     50    0C A7    3C  0292          MOVZWL  BRK2$W_CHAN(R7),R0      ; Channel number
        50    50    CE  0296          MNEGL   R0,R0                   ; Get negative
50   00000000'FF40  9E  0299          MOVAB   @CTL$GL_CCBBASE[R0],R0  ; Get CCB address
              02    88  02A1          BISB    #CCB$M_IMGTMP,-
           08 A0        02A3                  CCB$B_STS(R0)           ; Set image temporary channel
```

```
                          02A5          ;
                          02A5          ; Do QIO
                          02A5          ;
 51   008E C6       9E    02A5          MOVAB   BRK$T_MSGBUF(R6),R1          ; assume standard message
 52   008C C6       3C    02AA          MOVZWL  BRK$W_MSGLEN(R6),R2          ; and length
   53   34 A6       D0    02AF          MOVL    BRK$L_CARCON(R6),R3          ; and carriage control
 54   2270 8F       3C    02B3          MOVZWL  #<IO$_WRITEVBLK!-
                          02B8                  IO$M_REFRESH!-
                          02B8                  IO$M_BREAKTHRU!-
                          02B8                  IO$M_CANCTRLO>,R4            ; I/O function code
           08       E1    02B8          BBC     #BRK$V_SCREEN,-
      11 38 A6            02BA                  BRK$L_FLAGS(R6),70$          ; Branch if screen not requested
           1D       E1    02BD          BBC     #TT2$V_DECCRT,-
      0C 48 A5            02BF                  UCB$L_DEVDEPND2(R5),70$      ; or not dec crt
 51     6C A6       D0    02C2          MOVL    BRK$L_SCRMSG(R6),R1          ; screen message
 52     68 A6       3C    02C6          MOVZWL  BRK$L_SCRMSGLEN(R6),R2       ; and length
           53       D4    02CA          CLRL    R3                           ; no carriage control
           05       11    02CC          BRB     75$                          ; force no refresh for screen write
                          02CE     70$:
           0A       E1    02CE          BBC     #BRK$V_NOREFRESH,-
      05 38 A6            02D0                  BRK$L_FLAGS(R6),77$          ; Branch if not NO REFRESH
 54   2000 8F       AA    02D3     75$: BICW    #IO$M_REFRESH,R4             ; Clear refresh flag
                          02D8     77$:
                          02D8          ;
                          02D8          ; Do the QIO!
                          02D8          ;
                          02D8          $QIO_S  CHAN = BRK2$W_CHAN(R7),-
                          02D8                  EFN  = #BRK_C_QIOEFN,-
                          02D8                  FUNC = R4,-
                          02D8                  IOSB = BRK2$Q_IOSB(R7),-
                          02D8                  ASTADR = QIO_DONE,-
                          02D8                  ASTPRM = R7,-                ; qio context
                          02D8                  P1 = (R1),-                  ; address
                          02D8                  P2 = R2,-                    ; and length
                          02D8                  P4 = R3                      ; Carriage control
        27 50       E9    02FD          BLBC    R0,200$                      ; error from QIO?
        0A A6       B6    0300          INCW    BRK$W_OUTCNT(R6)             ; Increment outstanding count
                          0303          ;
                          0303          ; Set timer for timeout if requested
                          0303          ;
        2C A6       7D    0303          MOVQ    BRK$Q_TIMEOUT(R6),-          ; (Test quad)
        2C A6             0306                  BRK$Q_TIMEOUT(R6)            ; Time out requested?
           19       13    0308          BEQL    80$                          ; Branch if not
                          030A
                          030A          $SETIMR_S -
                          030A                  EFN    = #BRK_C_TIMEFN, -
                          030A                  DAYTIM = BRK$Q_TIMEOUT(R6), -
                          030A                  ASTADR = W^QIO_TIMEOUT, -
                          030A                  REQIDT = R7
                          031C
        04 50       E8    031C          BLBS    R0,80$                       ; branch if ok
 70 A6     50       B0    031F          MOVW    R0,BRK$W_STATUS(R6)          ; Set final status
                          0323     80$:
    50     01       9A    0323          MOVZBL  #SS$_NORMAL,R0               ; exit
                          0326     100$:
           05             0326          RSB
                          0327     ;
```

```
                        0327   ; Error during QIO
                        0327   ;
                        0327   200$:
70 A6    50     B0      0327            MOVW    R0,BRK$W_STATUS(R6)      ; Set final status
                        032B            $DASSGN_S CHAN = BRK2$W_CHAN(R7) ; Deassign channel
      FEBE      31      0336            BRW     10$                      ; Try again with this QIO context
                        0339
```

```
                         0339          .SBTTL  GET_SENDTO - Handle SENDTO and SENDTYPE inputs
                         0339     ;++
                         0339     ;
                         0339     ; FUNCTIONAL DESCRIPTION:
                         0339     ;
                         0339     ;        Handle the SENDTYPE and SENDTO parameters and set up BRK.
                         0339     ;        Privilege is checked for all but BRK$C_DEVICE writes.
                         0339     ;        Writes to same username are allowed without privilege.
                         0339     ;
                         0339     ; CALLING SEQUENCE:
                         0339     ;
                         0339     ;        BSBW    GET_SENDTO
                         0339     ;
                         0339     ; INPUT PARAMETERS:
                         0339     ;
                         0339     ;        R6 - BRK
                         0339     ;        SENDTYPE(AP) - sendtype parameter
                         0339     ;        SENDTO(AP)   - sendto parameter
                         0339     ;
                         0339     ; IMPLICIT INPUTS:
                         0339     ;        NONE
                         0339     ;
                         0339     ; OUTPUT PARAMETERS:
                         0339     ;        NONE
                         0339     ;
                         0339     ; IMPLICIT OUTPUTS:
                         0339     ;        NONE
                         0339     ;
                         0339     ; COMPLETION CODES:
                         0339     ;
                         0339     ;        R0 - success or failure
                         0339     ;
                         0339     ; SIDE EFFECTS:
                         0339     ;
                         0339     ;        R1-R5,R7 are destroyed.
                         0339     ;--
                         0339
                         0339     GET_SENDTO:
                         0339
57    10 AC      D0      0339              MOVL    SENDTYPE(AP),R7         ; fetch Send type
   57    04      D1      033D              CMPL    #BRK$C_MAXSENDTYPE,R7   ; Compare to maximum
         12      1F      0340              BLSSU   5$                      ; branch if error
                         0342
4C A6    57      B0      0342              MOVW    R7,BRK$W_SENDTYPE(R6)   ; Save low order word
                         0346              CASE    R7,-                    ; Case on send type
                         0346                      <5$,-                   ; Invalid
                         0346                      10$,-                   ; send to device name
                         0346                      10$,-                   ; send to username
                         0346                      150$,-                  ; send to all users
                         0346                      150$>,-                 ; send to all terminals
                         0346                      TYPE = W                ; word context
   50    14      3C      0354     5$:      MOVZWL  #SS$_BADPARAM,R0        ; Set status
                 05      0357     7$:      RSB
                         0358              ;
                         0358              ; single device or username requested
                         0358              ;
51    0C AC      D0      0358     10$:     MOVL    SENDTO(AP),R1           ; Get "send to" address
```

```
00000000'GF   16  035C        JSB     G^EXE$PROBER_DSC              ; test for read
      F2 50   E9  0362        BLBC    R0,7$                         ; exit on error
    51   51   3C  0365        MOVZWL  R1,R1                         ; zero high word
         EA   13  0368        BEQL    5$                            ; Must be non-zero
                  036A
    57   01   91  036A        CMPB    #BRK$C_DEVICE,R7              ; device
         28   13  036D        BEQL    40$                           ; Branch if yes
                  036F  ;
                  036F  ; Must be Username
                  036F  ;
    51   0C   B1  036F        CMPW    #JIB$S_USERNAME,R1            ; max user name length
         E0   1F  0372        BLSSU   5$                            ; error if so
 3C A6   51   90  0374        MOVB    R1,BRK$T_SENDNAME(R6)         ; simply copy username ascic string
         51   DD  0378        PUSHL   R1                            ; Save Length
    62   51   28  037A        MOVC3   R1,(R2),-
   3D A6          037D                BRK$T_SENDNAME+1(R6)          ; and copy string
         51 8ED0  037F        POPL    R1                            ; Restore Length
  54   1C A6  D0  0382        MOVL    BRK$L_PCB(R6),R4              ; Fetch PCB address
54   0080 C4  D0  0386        MOVL    PCB$L_JIB(R4),R4              ; Fetch JIB
                  038B  ;
                  038B  ; JIB$T_USERNAME is a 12 byte field, with NO BYTE COUNT!
                  038B  ;
         0C   2D  038B        CMPC5   #JIB$S_USERNAME,-
 20    0C A4      038D                JIB$T_USERNAME(R4),#^A/ /,-
 3D A6   51       0390                R1,BRK$T_SENDNAME+1(R6) ; compare strings, fill with blanks
         51   12  0393        BNEQ    150$                          ; branch if not equal
         4B   11  0395        BRB     50$                           ; names are same, no priv required
                  0397  ;
                  0397  ; Device name, do a GETDVI to translate logical name
                  0397  ;
                  0397  40$:
    54   5E   D0  0397        MOVL    SP,R4                         ; Save SP
    55   7E   DE  039A        MOVAL   -(SP),R5                      ; allocate scratch longword
         7E   D4  039D        CLRL    -(SP)                         ; end of list
         55   DD  039F        PUSHL   R5                            ; just a longword for device name length
   0D A6      9F  03A1        PUSHAB  BRK$T_DEVNAME+1(R6)           ; copy directly into device name area
0020000F 8F   DD  03A4        PUSHL   #<DVI$_DEVNAM@16>!-
                  03AA                <BRK$S_DEVNAME-1>             ; size and getdvi code
    53   5E   D0  03AA        MOVL    SP,R3                         ; save
         52   DD  03AD        PUSHL   R2                            ; address (device descriptor)
         51   DD  03AF        PUSHL   R1                            ; length
    51   5E   D0  03B1        MOVL    SP,R1                         ; save
                  03B4        $GETDVIW_S -
                  03B4                EFN = #BRK_C_DVIEFN,-         ; event flag number
                  03B4                DEVNAM = (R1),-               ; get device name (and wait)
                  03B4                ITMLST = (R3)                 ; item list
 0C A6   65   90  03CA        MOVB    (R5),BRK$T_DEVNAME(R6)        ; Copy length
    5E   54   D0  03CE        MOVL    R4,SP                         ; Restore SP
   0C A6      7D  03D1        MOVQ    BRK$T_DEVNAME(R6),-
   3C A6          03D4                BRK$T_SENDNAME(R6)            ; copy in case of cluster broadcast
   14 A6      7D  03D6        MOVQ    BRK$T_DEVNAME+8(R6),-
   44 A6          03D9                BRK$T_SENDNAME+8(R6)          ; copy in case of cluster broadcast
   07 50      E9  03DB        BLBC    R0,110$                       ; check status
      04      88  03DE        BISB    #BRK$M_CHKPRIV,-
   66 A6          03E0                BRK$B_STS(R6)                 ; Set "check priv later" bit
                  03E2  50$:
    50   01   3C  03E2        MOVZWL  #SS$_NORMAL,R0                ; set ok
```

```
                 05  03E5  110$:   RSB
                     03E6          ;
                     03E6          ;  Check for OPER priv before allowing request
                     03E6          ;
  54    1C A6    D0  03E6  150$:   MOVL    BRK$L_PCB(R6),R4            ; Fetch PCB address
                     03EA          IFPRIV  OPER,50$                    ; If priv ok, continue
50    2894 8F    3C  03F0          MOVZWL  #SS$_NOOPER,R0              ; Set status
                 05  03F5          RSB                                 ; exit
                     03F6
```

```
                        03F6            .SBTTL  GET_NEXT_TERMINAL - return next terminal
                        03F6    ;++
                        03F6    ;
                        03F6    ; FUNCTIONAL DESCRIPTION:
                        03F6    ;
                        03F6    ;       Given context in BRK, determine next terminal to send message to.
                        03F6    ;
                        03F6    ; CALLING SEQUENCE:
                        03F6    ;
                        03F6    ;       BSBW    GET_NEXT_TERMINAL
                        03F6    ;
                        03F6    ; INPUT PARAMETERS:
                        03F6    ;
                        03F6    ;       R6 - BRK
                        03F6    ;       R7 - QIO context
                        03F6    ;
                        03F6    ; IMPLICIT INPUTS:
                        03F6    ;       NONE
                        03F6    ;
                        03F6    ; OUTPUT PARAMETERS:
                        03F6    ;       NONE
                        03F6    ;
                        03F6    ; IMPLICIT OUTPUTS:
                        03F6    ;
                        03F6    ;       If R0 = success, then BRK$T_DEVNAME is filled in,
                        03F6    ;                       and BRK$L_UCBCTX has UCB address.
                        03F6    ;
                        03F6    ; COMPLETION CODES:
                        03F6    ;
                        03F6    ;       R0 -    SS$_NORMAL
                        03F6    ;               SS$_NOMOREPROC
                        03F6    ;       other errors returned in BRK$W_STATUS
                        03F6    ;
                        03F6    ; SIDE EFFECTS:
                        03F6    ;
                        03F6    ;       Destroys R1,R2,R3,R4,R5
                        03F6    ;
                        03F6    ;--
                        03F6
                        03F6    GET_NEXT_TERMINAL:
                        03F6
50    09A8 8F      3C   03F6            MOVZWL  #SS$_NOMOREPROC,R0      ; assume no more processes to send to
           01      E1   03FB            BBC     #BRK$V_DONE,-
     01 66 A6           03FD                    BRK$B_STS(R6),5$        ; If not done, lookup next terminal
                   05   0400            RSB                             ; Return all done once again
                        0401    5$:
                        0401            CASE    BRK$W_SENDTYPE(R6),-    ; Case on send type
                        0401                    <10$,-                  ; Invalid
                        0401                    100$,-                  ; send to device name
                        0401                    200$,-                  ; send to username
                        0401                    ALL_TERMS,-             ; send to all users
                        0401                    ALL_TERMS>,-            ; send to all terminals
                        0401                    TYPE = W                ; word context
                        0410
     50    14      3C   0410    10$:    MOVZWL  #SS$_BADPARAM,R0        ; bad parameter
         0085      31   0413            BRW     NEXT_TERM_ERROR         ; error
                        0416
```

```
                                 0416          ;
                                 0416          ; Send to one device
                                 0416          ;
                                 0416     100$:
        66 A6   02     88        0416              BISB    #BRK$M_DONE,BRK$B_STS(R6) ; set done
              008C     31        041A              BRW     HAVE_NAME                 ; and go
                                 041D          ;
                                 041D          ; map username into terminal name
                                 041D          ;
                                 041D     200$:
           5E   2C     C2        041D              SUBL2   #STK$C_LEN,SP              ; Allocate some work space
           52   5E     D0        0420              MOVL    SP,R2                      ; copy pointer
                                 0423          ;
                                 0423          ; Initialize area for GETJPI call
                                 0423          ;
                                 0423     210$:
           51   52     D0        0423              MOVL    R2,R1                      ; copy pointer
                                 0426
   81   0202000C 8F    D0        0426              MOVL    #<JPI$_USERNAME@16>!-
                                 042D                      <JIB$S_USERNAME>,(R1)+    ; username size and code
        81   1E A2     9E        042D              MOVAB   STK$T_USERNAME(R2),(R1)+; username address
        81   1C A2     9E        0431              MOVAB   STK$W_USERLEN(R2),(R1)+  ; username length to return
                                 0435
   81   031D000F 8F    D0        0435              MOVL    #<JPI$_TERMINAL@16>!-
                                 043C                      <BRK$S_DEVNAME-1>,(R1)+  ; terminal name size
        81   0D A6     9E        043C              MOVAB   BRK$T_DEVNAME+1(R6),(R1)+; terminal name address
        81   2A A2     9E        0440              MOVAB   STK$W_TERMLEN(R2),(R1)+  ; terminal name length to return
                61     D4        0444              CLRL    (R1)                       ; End of list
                                 0446
                                 0446              $GETJPI_S -
                                 0446                      EFN    = #BRK_C_JPIEFN,-     ; efn
                                 0446                      PIDADR = BRK$L_PIDCTX(R6),-  ; pid context
                                 0446                      ITMLST = (R2)                ; item list
           11   50     E8        045A              BLBS    R0,220$                    ; Branch if ok
        50      24     B1        045D              CMPW    #SS$_NOPRIV,R0             ; no priv ?
                C1     13        0460              BEQL    210$                       ; yes, try again
                                 0462
           5E   2C     C0        0462              ADDL2   #STK$C_LEN,SP              ; Deallocate work space
     50    09A8 8F     B1        0465              CMPW    #SS$_NOMOREPROC,R0         ; no more processes?
                38     13        046A              BEQL    NO_MORE_TERM               ; yes, done
                2D     11        046C              BRB     NEXT_TERM_ERROR            ; No, unexpected error
                                 046E     220$:
           2A A2       B5        046E              TSTW    STK$W_TERMLEN(R2)          ; Interactive?
                B0     13        0471              BEQL    210$                       ; If zero, no, try again
                                 0473
                0C     BB        0473              PUSHR   #^M<R2,R3>                 ; Save
        50   3C A6     9A        0475              MOVZBL  BRK$T_SENDNAME(R6),R0      ; length
             1C A2     2D        0479              CMPC5   STK$W_USERLEN(R2),-        ; length
             1E A2               047C                      STK$T_USERNAME(R2),-       ; address of name returned
   3D A6     50 20               047E                      #^A/ /,R0,-                ; fill and length
                                 0482                      BRK$T_SENDNAME+1(R6)       ; requested name
                0C     BA        0482              POPR    #^M<R2,R3>                 ; restore, (does not affect CC)
                9D     12        0484              BNEQ    210$                       ; not equal, loop
             2A A2     90        0486              MOVB    STK$W_TERMLEN(R2),-
             0C A6               0489                      BRK$T_DEVNAME(R6)          ; Length
           5E   2C     C0        048B              ADDL2   #STK$C_LEN,SP              ; Deallocate work space
                                 048E          ;
```

```
                         048E          ; Username match found, scan device name for unit number
                         048E          ;
            19     11    048E          BRB     HAVE_NAME                       ; exit
                         0490          ;
                         0490          ; Send to all terminals/users
                         0490          ;
                         0490 ALL_TERMS:
          00DE     30    0490          BSBW    LOCKDB                          ; lock database
          00EB     30    0493          BSBW    FIND_NEXT_TERM                  ; Find next terminal
         30 50     E8    0496          BLBS    R0,HAVE_UCB                     ; Continue if OK
            04     11    0499          BRB     TERM_DONE                       ; Return proper status
                         049B
                         049B NEXT_TERM_ERROR:
      70 A6 50     B0    049B          MOVW    R0,BRK$W_STATUS(R6)             ; Set final status
                         049F
                         049F TERM_DONE:
   50  09A8 8F     3C    049F          MOVZWL  #SS$_NOMOREPROC,R0              ; no more processes to send to
                         04A4
                         04A4 NO_MORE_TERM:
      66 A6 02     88    04A4          BISB    #BRK$M_DONE,BRK$B_STS(R6) ; set done
            05           04A8          RSB
                         04A9
                         04A9 HAVE_NAME:
                         04A9
          00C5     30    04A9          BSBW    LOCKDB                          ; lock database
                         04AC          ;
                         04AC          ; Map name into UCB address of this terminal
                         04AC          ;
         0D A6     9F    04AC          PUSHAB  BRK$T_DEVNAME+1(R6)             ; address of device name
      7E 0C A6     9A    04AF          MOVZBL  BRK$T_DEVNAME(R6),-(SP)         ; Length
         51 5E     D0    04B3          MOVL    SP,R1                           ; Address of descriptor
      54 1C A6     D0    04B6          MOVL    BRK$L_PCB(R6),R4                ; Set PCB address
                         04BA
   00000000'GF     16    04BA          JSB     G^IOC$SEARCHDEV                 ; find the UCB (puts addr in R1)
         5E 08     C0    04C0          ADDL    #8,SP                           ; pop descriptor
         D5 50     E9    04C3          BLBC    R0,NEXT_TERM_ERROR              ; error
         55 51     D0    04C6          MOVL    R1,R5                           ; UCB address
                         04C9
                         04C9 HAVE_UCB:
                         04C9          ;
                         04C9          ; Check availability, access and privilege
                         04C9          ;
            02     E1    04C9          BBC     #DEV$V_TRM,-
      28 38 A5           04CB                  UCB$L_DEVCHAR(R5),3$        ; skip if not terminal
            12     E1    04CE          BBC     #DEV$V_AVL,-
      23 38 A5           04D0                  UCB$L_DEVCHAR(R5),3$        ; skip terminal if not available
       2040 8F     B3    04D3          BITW    #<DEV$M_NET!DEV$M_SPL>,-
         38 A5           04D7                  UCB$L_DEVCHAR(R5)           ; skip terminal if DECnet device
            1B     12    04D9          BNEQ    3$                              ; or spooled
            01     E0    04DB          BBS     #DEV$V_DET,-
      16 3C A5           04DD                  UCB$L_DEVCHAR2(R5),3$       ; skip terminal if detached
         50 A6     E0    04E0          BBS     BRK$L_REQID(R6),-
    0F 00A8 C5           04E3                  UCB$Q_TL_BRKTHRU(R5),3$ ; Or specific class disabled
            04     E0    04E7          BBS     #TT2$V_BRDCSTMBX,-
      0D 48 A5           04E9                  UCB$L_DEVDEPND2(R5),5$ ; must try this term if BRDCSTMBX
   00020001 8F     D3    04EC          BITL    #<TT$M_NOBRDCST!TT$M_PASSALL>,-
         44 A5           04F2                  UCB$L_DEVDEPEND(R5)         ; test for NOBROADCAST or PASSALL
```

```
               03    13  04F4          BEQL    5$                          ; try terminal if neither set
                         04F6          ;
                         04F6          ; For some reason, this device is not acceptable
                         04F6          ;
             004F    31  04F6  3$:     BRW     40$                         ; skip to next terminal
                         04F9
               02    E1  04F9  5$:     BBC     #BRK$V_CHKPRIV,-
         2E 66 A6        04FB                  BRK$B_STS(R6),30$           ; Branch if priv check not required
                         04FE          ;
                         04FE          ; Search up process tree to see if owner
                         04FE          ;
     51    1C A6     D0  04FE          MOVL    BRK$L_PCB(R6),R1            ; PCB address
     52    2C A5     D0  0502          MOVL    UCB$L_PID(R5),R2            ; Owner PID
     52    60 A1     D1  0506  10$:    CMPL    PCB$L_PID(R1),R2            ; compare PIDs
               20    13  050A          BEQL    30$                         ; branch if OK
     51    1C A1     3C  050C          MOVZWL  PCB$L_OWNER(R1),R1          ; Get index of owner
               0A    13  0510          BEQL    20$                         ; If equal then none, must have priv
 51   00000000'FF41  D0  0512          MOVL    @L^SCH$GL_PCBVEC[R1],R1     ; Get Owner PCB address
               EA    11  051A          BRB     10$                         ; Loop
                         051C  20$:
     54    1C A6     D0  051C          MOVL    BRK$L_PCB(R6),R4            ; PCB address
                         0520          IFPRIV  OPER,30$                    ; If privilege, ok to send message
   50    2894 8F     3C  0526          MOVZWL  #SS$_NOOPER,R0              ; set error
                     05  052B          RSB                                 ; exit
                         052C          ;
                         052C          ; Set up name and unit number
                         052C          ;
                         052C  30$:
               57    DD  052C          PUSHL   R7                          ; Save R7
        50     0F    9A  052E          MOVZBL  #BRK$S_DEVNAME-1,R0         ; Size of buffer
     57    0C A6     9E  0531          MOVAB   BRK$T_DEVNAME(R6),R7        ; Address of buffer
     51    01 A7     9E  0535          MOVAB   1(R7),R1                    ; Address past byte count
        54     01    CE  0539          MNEGL   #1,R4                       ; Standard device name
    00000000'GF      16  053C          JSB     G^IOC$CVT_DEVNAM            ; convert to regular device name
             57    8ED0  0542          POPL    R7                          ; Restore R7
            09 50    E8  0545          BLBS    R0,50$                      ; skip this device if error
                         0548          ;
                         0548          ; This terminal failed, reset and loop
                         0548          ;
                         0548  40$:
             FC99    30  0548          BSBW    UNLOCK_DB                   ; unlock database
            76 A6    B6  054B          INCW    BRK$W_REFUSEDCNT(R6)        ; Increment
             FEA5    31  054E          BRW     GET_NEXT_TERMINAL           ; Loop
                         0551  50$:
         0C A6   51  90  0551          MOVB    R1,BRK$T_DEVNAME(R6)        ; Length of string
         58 A6   55  D0  0555          MOVL    R5,BRK$L_UCBCTX(R6)         ; save UCB address
                         0559          ;
                         0559          ; set up TRMNAME for mailbox message
                         0559          ;
            54 A5    B0  0559          MOVW    UCB$W_UNIT(R5),-
            7A A6        055C                  BRK$W_TRMUNIT(R6)           ; unit number
     50    28 A5     D0  055E          MOVL    UCB$L_DDB(R5),R0            ; Fetch DDB
           14 A0     7D  0562          MOVQ    DDB$T_NAME(R0),-
           7C A6         0565                  BRK$T_TRMNAME(R6)           ; set TRMNAME (first half)
           1C A0     7D  0567          MOVQ    DDB$T_NAME+8(R0),-
         0084 C6         056A                  BRK$T_TRMNAME+8(R6)         ; set TRMNAME (second half)
        50     01    9A  056D          MOVZBL  #SS$_NORMAL,R0              ; set success
```

```
                 05  0570    996          RSB
                     0571    997
                     0571    998 LOCKDB:
             00  E2  0571    999          BBSS     #BRK$V_LOCKED,-
       0A 66 A6      0573   1000                   BRK$B_STS(R6),10$        ; set locked flag
     54   1C A6  D0  0576   1001          MOVL     BRK$L_PCB(R6),R4         ; Set PCB address
     00000000'GF 16  057A   1002          JSB      G^SCH$IOLOCKR            ; lock I/O database for read access
                 05  0580   1003 10$:     RSB
                     0581   1004
```

```
                              0581          .SBTTL  FIND_NEXT_TERM - Search I/O database
                              0581   ;++
                              0581   ;
                              0581   ; FUNCTIONAL DESCRIPTION:
                              0581   ;
                              0581   ;       Given the UCB context of the last terminal, find the next
                              0581   ;       terminal that qualifies. Terminal must be online.
                              0581   ;
                              0581   ;       If looking for all terminals, an unowned terminal is skipped
                              0581   ;       if autobauding.
                              0581   ;
                              0581   ; CALLING SEQUENCE:
                              0581   ;
                              0581   ;       BSBW    FIND_NEXT_TERM
                              0581   ;
                              0581   ; INPUT PARAMETERS:
                              0581   ;
                              0581   ;       R6 - BRK
                              0581   ;
                              0581   ; IMPLICIT INPUTS:
                              0581   ;       NONE
                              0581   ;
                              0581   ; OUTPUT PARAMETERS:
                              0581   ;
                              0581   ;       R5 - points to UCB
                              0581   ;
                              0581   ; COMPLETION CODES:
                              0581   ;
                              0581   ;       R0 = 1, R5 is UCB
                              0581   ;       R0 = 0, no more terminals
                              0581   ;
                              0581   ;       All other registers preserved.
                              0581   ;
                              0581   ; SIDE EFFECTS:
                              0581   ;       NONE
                              0581   ;
                              0581   ;--
                              0581
                              0581   FIND_NEXT_TERM:
                              0581
           0C00 8F        BB  0581          PUSHR   #^M<R10,R11>            ; Save
      5A     58 A6        7D  0585          MOVQ    BRK$L_UCBCTX(R6),R10    ; ucb and ddb pair
                              0589
                0C        13  0589          BEQL    20$                     ; *** TEMP
                50        D4  058B          CLRL    R0                      ; *** TEMP
30 AA   FFFFFFFF 8F       D1  058D          CMPL    #-1,UCB$L_LINK(R10)     ; *** TEMP until SCAN_IODB enhanced
                2F        13  0595          BEQL    40$                     ; *** TEMP  to handle missing UCBs
                              0597   20$:
      00000000'GF         16  0597          JSB     G^IOC$SCAN_IODB         ; Fetch next UCB
             26 50        E9  059D          BLBC    R0,40$                  ; branch if done
                              05A0   ;
                              05A0   ; Have valid UCB, see if it's a terminal
                              05A0   ;
                02        E1  05A0          BBC     #DEV$V_TRM,-
          F2 38 AA            05A2                  UCB$L_DEVCHAR(R10),20$  ; Get next if not terminal
                04        E1  05A5          BBC     #UCB$V_ONLINE,-
          ED 64 AA            05A7                  UCB$W_STS(R10),20$      ; next ucb if offline
      5C AA   B5  05AA              TSTW    UCB$W_REFC(R10)                 ; terminal allocated?
         10   12  05AD              BNEQ    30$                             ; yes, do write
         04   B1  05AF              CMPW    #BRK$C_ALLTERMS,-
      4C A6       05B1                      BRK$W_SENDTYPE(R6)              ; for all terminals?
         E2   12  05B3              BNEQ    20$                             ; no, try next
         01   E1  05B5              BBC     #TT2$V_AUTOBAUD,-
   05 48 AA       05B7                      UCB$L_DEVDEPND2(R10),30$ ; branch if not autobaud
      76 A6   B6  05BA              INCW    BRK$W_REFUSEDCNT(R6)            ; Refused due to autobaud
         D8   11  05BD              BRB     20$                             ; try again
                  05BF
      55 5A   D0  05BF      30$:    MOVL    R10,R5                          ; Set output
   58 A6 5A   7D  05C2              MOVQ    R10,BRK$L_UCBCTX(R6)            ; save ucb and ddb pair
                  05C6
    0C00 8F   BA  05C6      40$:    POPR    #^M<R10,R11>                    ; Restore
              05  05CA              RSB                                     ; Return (assumes R0 unmodified from
                  05CB                                                      ;         call above)
                  05CB
                  05CB
```

```
                        05CB            .SBTTL  QIO_DONE - process qio completion
                        05CB
                        05CB    ;++
                        05CB    ;
                        05CB    ; FUNCTIONAL DESCRIPTION:
                        05CB    ;
                        05CB    ;       Completion AST routine for QIO to terminal.
                        05CB    ;
                        05CB    ; CALLING SEQUENCE:
                        05CB    ;
                        05CB    ;       CALLG (as an AST)
                        05CB    ;
                        05CB    ; INPUT PARAMETERS:
                        05CB    ;
                        05CB    ;       4(AP) - Address of per QIO context within BRK
                        05CB    ;
                        05CB    ; IMPLICIT INPUTS:
                        05CB    ;       NONE
                        05CB    ;
                        05CB    ; OUTPUT PARAMETERS:
                        05CB    ;       NONE
                        05CB    ;
                        05CB    ; IMPLICIT OUTPUTS:
                        05CB    ;       NONE
                        05CB    ;
                        05CB    ; COMPLETION CODES:
                        05CB    ;       NONE
                        05CB    ;
                        05CB    ; SIDE EFFECTS:
                        05CB    ;
                        05CB    ;       May result in another QIO being performed or
                        05CB    ;       completion of service.
                        05CB    ;
                        05CB    ;--
                        05CB
                 0FFC   05CB    QIO_DONE:       .WORD   ^M<R2,R3,R4,R5,R6,R7,R8,R9,R10,R11>
                        05CD
   57   04 AC     D0    05CD            MOVL    4(AP),R7                ; QIO context
      56   67     D0    05D1            MOVL    BRK2$L_COMMON(R7),R6    ; BRK common area
                        05D4
        2C A6     7D    05D4            MOVQ    BRK$Q_TIMEOUT(R6),-
        2C A6           05D7                    BRK$Q_TIMEOUT(R6)       ; Time out specified?
           0B     13    05D9            BEQL    20$                     ; branch if no
                        05DB            $CANTIM_S REQIDT = R7           ; Cancel timer
                        05E6    20$:
                        05E6            $DASSGN_S CHAN = BRK2$W_CHAN(R7) ; Deassign channel
                        05F1            ;
                        05F1            ; check IOSB
                        05F1            ;
   50   04 A7     3C    05F1            MOVZWL  BRK2$Q_IOSB(R7),R0      ; Fetch status
        11 50     E8    05F5            BLBS    R0,30$                  ; branch if no error
 50   0830 8F     B1    05F8            CMPW    #SS$_CANCEL,R0          ; Make sure it was cancel (from timecut)
           0D     13    05FD            BEQL    40$                     ;
      50   2C     B1    05FF            CMPW    #SS$_ABORT,R0           ; Make sure it was cancel (from timeout)
           08     13    0602            BEQL    40$                     ;
        76 A6     B6    0604            INCW    BRK$W_REFUSEDCNT(R6)    ; One more non-successful completion
           03     11    0607            BRB     40$                     ; continue
```

```
                    0609  1139 30$:
     72 A6     B6   0609  1140           INCW    BRK$W_SUCCESSCNT(R6)      ; One more successful completion
                    060C  1141 40$:
     0A A6     B7   060C  1142           DECW    BRK$W_OUTCNT(R6)          ; One less outstanding
      FBE5     30   060F  1143           BSBW    DO_WRITE                  ; Do next write with this context
     02 50     E8   0612  1144           BLBS    R0,100$                   ; branch if success
                    0615  1145
        01     10   0615  1146           BSBB    CHECK_COMPLETE            ; check for completion
               04   0617  1147 100$:     RET                               ; exit ast
```

```
                  0618                 .SBTTL  CHECK_COMPLETE - Check completion criterion
                  0618       ;++
                  0618       ;
                  0618       ; FUNCTIONAL DESCRIPTION:
                  0618       ;
                  0618       ;         See if service is done with all it's duties and
                  0618       ;         complete if so.
                  0618       ;
                  0618       ; CALLING SEQUENCE:
                  0618       ;
                  0618       ;         BSBW    CHECK_COMPLETE
                  0618       ;
                  0618       ; INPUT PARAMETERS:
                  0618       ;
                  0618       ;         R6 - BRK
                  0618       ;
                  0618       ; IMPLICIT INPUTS:
                  0618       ;         NONE
                  0618       ;
                  0618       ; OUTPUT PARAMETERS:
                  0618       ;         NONE
                  0618       ;
                  0618       ; IMPLICIT OUTPUTS:
                  0618       ;         NONE
                  0618       ;
                  0618       ; COMPLETION CODES:
                  0618       ;         NONE
                  0618       ;
                  0618       ; SIDE EFFECTS:
                  0618       ;
                  0618       ;         R0, R1 destroyed
                  0618       ;
                  0618       ;--
                  0618
                  0618       CHECK_COMPLETE:
      0A A6   B5  0618                 TSTW    BRK$W_OUTCNT(R6)           ; I/O still outstanding?
         01   13  061B                 BEQL    10$                        ; branch if done
              05  061D                 RSB                                ; otherwise, exit
                  061E                 ;
                  061E                 ; Return status and complete service
                  061E                 ;
                  061E       10$:
51    20 A6   D0  061E                 MOVL    BRK$L_IOSB(R6),R1          ; return IOSB
         13   13  0622                 BEQL    30$                        ; Branch if none
   0B 70 A6   E9  0624                 BLBC    BRK$W_STATUS(R6),20$       ; Branch if other error occurred
      72 A6   B5  0628                 TSTW    BRK$W_SUCCESSCNT(R6)       ; any messages sent?
         06   12  062B                 BNEQ    20$                        ; branch if yes
    0084 8F   B0  062D                 MOVW    #SS$_DEVOFFLINE,-
      70 A6       0631                         BRK$W_STATUS(R6)           ; set device off line
61    70 A6   7D  0633       20$:      MOVQ    BRK$W_STATUS(R6),(R1)      ; Return status and counts
                  0637                 ;
                  0637                 ; Deliver AST if necessary
                  0637                 ;
                  0637       30$:
51    24 A6   D0  0637                 MOVL    BRK$L_ASTADR(R6),R1        ; Fetch address
         12   13  063B                 BEQL    40$                        ; Branch if no AST
50    67 A6   9A  063D                 MOVZBL  BRK$B_PRVMODE(R6),R0       ; Set previous mode
```

```
                        0641
                        0641      ; DESIGN NOTE: *** Should AST quota be taken at initiation of service?
                        0641      ;               If so - must use SCH$QAST here (to return quota).
                        0641      ;               Does this imply non-paged pool for ACB? Could be a problem.
                        0641      ;
                        0641                      $DCLAST_S -
                        0641                              ASTADR = (R1),-                     ; AST routine
                        0641                              ASTPRM = BRK$L_ASTPRM(R6),-         ; AST parameter
                        0641                              ACMODE = R0                         ; access mode of caller
                        064F                      ;
                        064F                      ; Set Event Flag Number
                        064F                      ;
                        064F      40$:
   51    64 A6     3C   064F                      MOVZWL  BRK$W_EFN(R6),R1            ; Fetch number
                        0653                      $SETEF_S EFN = R1                   ; Set efn
                        065C                      ;
                        065C                      ; Return storage
                        065C                      ;
                        065C
                        065C      ; R6 - BRK
                        065C
                        065C      RETURN_MEMORY:
                        065C
           50      DD   065C                      PUSHL   R0                                  ; Save
      50   56      D0   065E                      MOVL    R6,R0                               ; Address of block
   51    08 A6     3C   0661                      MOVZWL  BRK$W_SIZE(R6),R1                   ; Size
  00000000'GF      16   0665                      JSB     G^EXE$DEAP1                         ; Deallocate
           50    8ED0   066B                      POPL    R0                                  ; Restore
                   05   066E                      RSB                                         ; Return
```

```
SYS
Sym

CAN
CCB
CCB
CCB
CCB
CHA
COD
DC$
DDT
DEV
DEV
DYN
EXE
EXE
EXE
EXE
EXE
IO$
IOC
IOC
IPL
IPL
IRP
IRP
IRP
IRP
IRP
IRP
IRP
IRP
IRP
IRP
IRP
IRP
IRP
NAR
PCB
PCB
PCB
PCB
PCB
PCB
PMS
PR$
PR$
RSN
RSN
SCH
SS$
SS$
SS$
SS$
UCB
UCB
UCB
UCB
UCB
```

```
                           066F          .SBTTL  QIO_TIMEOUT - process qio timeout
                           066F
                           066F  ;++
                           066F  ;
                           066F  ; FUNCTIONAL DESCRIPTION:
                           066F  ;
                           066F  ;
                           066F  ; CALLING SEQUENCE:
                           066F  ;         NONE
                           066F  ;
                           066F  ; INPUT PARAMETERS:
                           066F  ;
                           066F  ;         4(AP) - QIO context address
                           066F  ;
                           066F  ; IMPLICIT INPUTS:
                           066F  ;         NONE
                           066F  ;
                           066F  ; OUTPUT PARAMETERS:
                           066F  ;         NONE
                           066F  ;
                           066F  ; IMPLICIT OUTPUTS:
                           066F  ;         NONE
                           066F  ;
                           066F  ; COMPLETION CODES:
                           066F  ;         NONE
                           066F  ;
                           066F  ; SIDE EFFECTS:
                           066F  ;         NONE
                           066F  ;
                           066F  ;--
                           066F
                     0040  066F  QIO_TIMEOUT:    .WORD   ^M<R6>
                           0671
     50   04 AC    D0      0671          MOVL    4(AP),R0                ; Fetch context
       56    60    D0      0675          MOVL    BRK2$L_COMMON(R0),R6    ; fetch common area address
          74 A6    B6      0678          INCW    BRK$W_TIMEOUTCNT(R6)    ; increment time out count ???
                           067B          $CANCEL_S BRK2$W_CHAN(R0)       ; Cancel I/O, wait for qio_done ast
                   04      0686          RET
                           0687
```

```
SYS
Pse

PSE
---
.
. B
$AB

Pha
---
Ini
Com
Pas
Sym
Pas
Sym
Pse
Cro
Ass

The
110
The
241
28

Mac
---
_$2
_$2
TOT

239

The

MAC
```

```
                            0687
                      007C  0687        .ENTRY  EXE$BRDCST, ^M<R2,R3,R4,R5,R6>  ; OLD SYS$BRDCST...
                            0689
  6D   00000000'GF     9E   0689        MOVAB   G^EXE$SIGTORET,(FP)        ; Set condition handler
                            0690
         51   04 AC    D0   0690        MOVL    4(AP),R1                   ; Get message address
                            0694        ;
                            0694        ; Figure out send type
                            0694        ;
         53     04     9A   0694        MOVZBL  #BRK$C_ALLTERMS,R3         ; Assume all terminals
        52   08 AC     D0   0697        MOVL    8(AP),R2                   ; Fetch descriptor address
                0A     13   069B        BEQL    20$                        ; Branch if all terminals
         53     03     9A   069D        MOVZBL  #BRK$C_ALLUSERS,R3         ; Assume all users
                62     D5   06A0        TSTL    (R2)                       ; Check length
                03     13   06A2        BEQL    20$                        ; Branch if zero
         53     01     9A   06A4        MOVZBL  #BRK$C_DEVICE,R3           ; Must be terminal name
                            06A7  20$:
                54     D4   06A7        CLRL    R4                         ; Clear R4 - no flags
         55     20     9A   06A9        MOVZBL  #^A/ /,R5                  ; Default carcon if only 2 parameters
         6C     04     D1   06AC        CMPL    #4,(AP)                    ; More parameters?
                04     12   06AF        BNEQ    30$                        ; Branch if no
        54   0C AC     7D   06B1        MOVQ    12(AP),R4                  ; Flags and carcon
                            06B5  30$:
         56     7E     7E   06B5        MOVAQ   -(SP),R6                   ; allocate IOSB on stack
                            06B8        $BRKTHRUW_S          -             ; Call breakthru and wait
                            06B8                EFN    = #BRK_C_BRDCSTEFN,-
                            06B8                MSGBUF = (R1),-
                            06B8                SENDTO = (R2),-
                            06B8                SNDTYP = R3,-
                            06B8                FLAGS  = R4,-
                            06B8                CARCON = R5,-
                            06B8                TIMOUT = #10,-             ; *** SYSGEN PARAMETER ???
                            06B8                IOSB   = (R6)
          03 50        E9   06D3        BLBC    R0,60$                     ; Branch if error
         50     66     3C   06D6        MOVZWL  (R6),R0                    ; Use IOSB status
                            06D9  60$:
  50   00002894 8F     D1   06D9        CMPL    #SS$_NOOPER,R0             ; new status?
                03     12   06E0        BNEQU   70$                        ; nope, exit
         50     24     3C   06E2        MOVZWL  #SS$_NOPRIV,R0             ; set status
                       04   06E5  70$:  RET                                ; EXIT
                            06E6
                            06E6  .END
```

```
$$T1                             = 00000000                 BRK$W_TRMUNIT                    = 0000007A
$$T2                             = 00000008                 BRK2$C_LENGTH                    = 0000000E
ACCVIO_EXIT                        000000E4 R      02       BRK2$L_COMMON                    = 00000000
ALL_OK                             000000EF R      02       BRK2$Q_IOSB                      = 00000004
ALL_TERMS                          00000490 R      02       BRK2$W_CHAN                      = 0000000C
ASTADR                           = 00000028                 BRK_C_BRDCSTEFN                  = 0000001F
ASTPRM                           = 0000002C                 BRK_C_CLUTIMEOUT                 = 0000000F
BADPARAM_EXIT                      000000DF R      02       BRK_C_DVIEFN                     = 0000001F
BRK$B_PRVMODE                    = 00000067                 BRK_C_JPIEFN                     = 0000001F
BRK$B_STS                        = 00000066                 BRK_C_MAXLINES                   = 00000018
BRK$C_ALLTERMS                   = 00000004                 BRK_C_MINTIME                    = 00000004
BRK$C_ALLUSERS                   = 00000003                 BRK_C_QIOEFN                     = 0000001F
BRK$C_DEVICE                     = 00000001                 BRK_C_SIMULCAST                  = 00000004
BRK$C_LENGTH                     = 0000008E                 BRK_C_TIMEFN                     = 0000001F
BRK$C_MAXSENDTYPE                = 00000004                 CARCON                           = 00000018
BRK$L_ASTADR                     = 00000024                 CCB$B_STS                        = 00000008
BRK$L_ASTPRM                     = 00000028                 CCB$M_IMGTMP                     = 00000002
BRK$L_CARCON                     = 00000034                 CHECK_COMPLETE                     00000618 R      02
BRK$L_DDBCTX                     = 0000005C                 CLU$GL_CLUB                        ********    X   02
BRK$L_FLAGS                      = 00000038                 CTL$GL_CCBBASE                     ********    X   02
BRK$L_IOSB                       = 00000020                 DDB$S_NAME                       = 00000010
BRK$L_PCB                        = 0000001C                 DDB$T_NAME                       = 00000014
BRK$L_PIDCTX                     = 00000054                 DEV$M_NET                        = 00002000
BRK$L_QIOCTX                     = 00000060                 DEV$M_SPL                        = 00000040
BRK$L_REQID                      = 00000050                 DEV$V_AVL                        = 00000012
BRK$L_SCRMSG                     = 0000006C                 DEV$V_DET                        = 00000001
BRK$L_SCRMSGLEN                  = 00000068                 DEV$V_TRM                        = 00000002
BRK$L_UCBCTX                     = 00000058                 DO_WRITE                           000001F7 R      02
BRK$M_CHKPRIV                    = 00000004                 DVI$_DEVNAM                      = 00000020
BRK$M_DONE                       = 00000002                 EFN                              = 00000004
BRK$Q_PRIVS                      = 00000000                 ERASE_PAT                          00000000 R      02
BRK$Q_TIMEOUT                    = 0000002C                 ERROR_EXIT                         000000E7 R      02
BRK$S_DEVNAME                    = 00000010                 EXE$ALOP1IMAG                      ********    X   02
BRK$S_SENDNAME                   = 00000010                 EXE$BRDCST                         00000687 RG     02
BRK$S_TRMNAME                    = 00000010                 EXE$BRKTHRU                        00000025 RG     02
BRK$T_DEVNAME                    = 0000000C                 EXE$CSP_BRKTHRU                    ********    X   02
BRK$T_MSGBUF                     = 0000008E                 EXE$DEAP1                          ********    X   02
BRK$T_SENDNAME                   = 0000003C                 EXE$PROBER_DSC                     ********    X   02
BRK$T_TRMNAME                    = 0000007C                 EXE$SIGTORET                       ********    X   02
BRK$V_BOTTOM                     = 00000009                 EXE$WRTMAILBOX                     ********    X   02
BRK$V_CHKPRIV                    = 00000002                 FIND_NEXT_TERM                     00000581 R      02
BRK$V_CLUSTER                    = 0000000B                 FLAGS                            = 0000001C
BRK$V_DONE                       = 00000001                 GET_NEXT_TERMINAL                  000003F6 R      02
BRK$V_LOCKED                     = 00000000                 GET_SENDTO                         00000339 R      02
BRK$V_NOREFRESH                  = 0000000A                 HAVE_NAME                          000004A9 R      02
BRK$V_SCREEN                     = 00000008                 HAVE_UCB                           000004C9 R      02
BRK$W_EFN                        = 00000064                 IO$M_BREAKTHRU                   = 00000200
BRK$W_MSGLEN                     = 0000008C                 IO$M_CANCTRLO                    = 00000040
BRK$W_OUTCNT                     = 0000000A                 IO$M_REFRESH                     = 00002000
BRK$W_REFUSEDCNT                 = 00000076                 IO$_WRITEVBLK                    = 00000030
BRK$W_SECONDS                    = 0000004E                 IOC$CVT_DEVNAM                     ********    X   02
BRK$W_SENDTYPE                   = 0000004C                 IOC$SCAN_IODB                      ********    X   02
BRK$W_SIZE                       = 00000008                 IOC$SEARCHDEV                      ********    X   02
BRK$W_STATUS                     = 00000070                 IOSB                             = 00000014
BRK$W_SUCCESSCNT                 = 00000072                 JIB$S_USERNAME                   = 0000000C
BRK$W_TIMEOUTCNT                 = 00000074                 JIB$T_USERNAME                   = 0000000C
BRK$W_TRMMSG                     = 00000078                 JPI$_TERMINAL                    = 0000031D
```

```
JPI$_USERNAME                  = 00000202                      SYS$DASSGN                       ********   GX    02
LOCKDB                           00000571 R        02          SYS$DCLAST                       ********   GX    02
MSG$_TRMBRDCST                   ********    X     02          SYS$FAO                          ********    X    02
MSGBUF                         = 00000008                      SYS$GETDVIW                      ********   GX    02
NEXT_TERM_ERROR                  0000049B R        02          SYS$GETJPI                       ********   GX    02
NO_MORE_TERM                     000004A4 R        02          SYS$QIO                          ********   GX    02
PCB$L_JIB                      = 00000080                      SYS$SETAST                       ********   GX    02
PCB$L_OWNER                    = 0000001C                      SYS$SETEF                        ********   GX    02
PCB$L_PHD                      = 0000006C                      SYS$SETIMR                       ********   GX    02
PCB$L_PID                      = 00000060                      SYS$SETPRV                       ********   GX    02
PCB$Q_PRIV                     = 00000084                      TERM_DONE                        0000049F R       02
PHD$Q_PRIVMSK                  = 00000000                      TIMOUT                         = 00000024
PR$_IPL                          ********    X     02          TT$M_NOBRDCST                  = 00020000
PRV$M_BYPASS                   = 20000000                      TT$M_PASSALL                   = 00000001
PRV$M_SHARE                    = 80000000                      TT2$V_AUTOBAUD                 = 00000001
PRV$V_BYPASS                   = 0000001D                      TT2$V_BRDCSTMBX                = 00000004
PRV$V_OPER                     = 00000012                      TT2$V_DECCRT                   = 0000001D
PRV$V_SHARE                    = 0000001F                      UCB$L_AMB                      = 00000060
PSL$S_PRVMOD                   = 00000002                      UCB$L_DDB                      = 00000028
PSL$V_PRVMOD                   = 00000016                      UCB$L_DEVCHAR                  = 00000038
QIO_DONE                         000005CB R        02          UCB$L_DEVCHAR2                 = 0000003C
QIO_TIMEOUT                      0000066F R        02          UCB$L_DEVDEPEND                = 00000044
REQID                          = 00000020                      UCB$L_DEVDEPND2                = 00000048
RETURN_MEMORY                    0000065C R        02          UCB$L_LINK                     = 00000030
SCH$CLREF                        ********    X     02          UCB$L_PID                      = 0000002C
SCH$GL_PCBVEC                    ********    X     02          UCB$Q_TL_BRKTHRU               = 000000A8
SCH$IOLOCKR                      ********    X     02          UCB$V_ONLINE                   = 00000004
SCH$IOUNLOCK                     ********    X     02          UCB$W_REFC                     = 0000005C
SCREEN_CTRSTR                    00000008 R        02          UCB$W_STS                      = 00000064
SENDTO                         = 0000000C                      UCB$W_UNIT                     = 00000054
SENDTYPE                       = 00000010                      UNLOCK_DB                        000001E4 R       02
SS$_ABORT                      = 0000002C
SS$_ACCVIO                     = 0000000C
SS$_BADPARAM                   = 00000014
SS$_CANCEL                     = 00000830
SS$_DEVOFFLINE                 = 00000084
SS$_NOMOREPROC                 = 000009A8
SS$_NOOPER                     = 00002894
SS$_NOPRIV                     = 00000024
SS$_NORMAL                     = 00000001
STK$C_LEN                        0000002C
STK$L_ENDLIST                    00000018
STK$L_TERMLENR                   00000014
STK$L_TERMNAME                   00000010
STK$L_USERLENR                   00000008
STK$L_USERNAME                   00000004
STK$T_USERNAME                   0000001E
STK$W_TERMJPI                    0000000E
STK$W_TERMLEN                    0000002A
STK$W_TERMSIZ                    0000000C
STK$W_USERJPI                    00000002
STK$W_USERLEN                    0000001C
STK$W_USERSIZ                    00000000
SYS$ASSIGN                       ********   GX     02
SYS$BRKTHRUW                     ********   GX     02
SYS$CANCEL                       ********   GX     02
SYS$CANTIM                       ********   GX     02
```

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

PSECT name                 Allocation            PSECT No.  Attributes
----------                 ----------            ---------  ----------
.  ABS  .                  00000000  (     0.)   00 (  0.)  NOPIC   USR   CON   ABS   LCL NOSHR NOEXE NORD   NOWRT NOVEC BYTE
$ABS$                      0000002C  (    44.)   01 (  1.)  NOPIC   USR   CON   ABS   LCL NOSHR   EXE   RD     WRT NOVEC BYTE
Y$EXEPAGED                 000006E6  (  1766.)   02 (  2.)  NOPIC   USR   CON   REL   LCL NOSHR   EXE   RD     WRT NOVEC BYTE

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

Phase                    Page faults    CPU Time       Elapsed Time
-----                    -----------    --------       ------------
Initialization                   29     00:00:00.07    00:00:01.77
Command processing              112     00:00:00.50    00:00:04.76
Pass 1                          623     00:00:27.10    00:01:22.88
Symbol table sort                 0     00:00:04.50    00:00:12.69
Pass 2                          220     00:00:05.39    00:00:20.48
Symbol table output              24     00:00:00.21    00:00:00.42
Psect synopsis output             2     00:00:00.03    00:00:00.22
Cross-reference output            0     00:00:00.00    00:00:00.00
Assembler run totals           1012     00:00:37.82    00:02:03.24

The working set limit was 2100 pages.
155190 bytes (304 pages) of virtual memory were used to buffer the intermediate code.
There were 150 pages of symbol table space allocated to hold 2771 non-local and 66 local symbols.
1317 source lines were read in Pass 1, producing 24 object records in Pass 2.
53 pages of virtual memory were used to define 51 macros.

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

Macro library name                          Macros defined
------------------                          --------------
_$255$DUA28:[SYS.OBJ]LIB.MLB;1                       15
_$255$DUA28:[SYSLIB]STARLET.MLB;2                    32
TOTALS (all libraries)                               47

3023 GETS were required to define 47 macros.

There were no errors, warnings or information messages.

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

0381 AH-BT13A-SE
VAX/VMS V4.0

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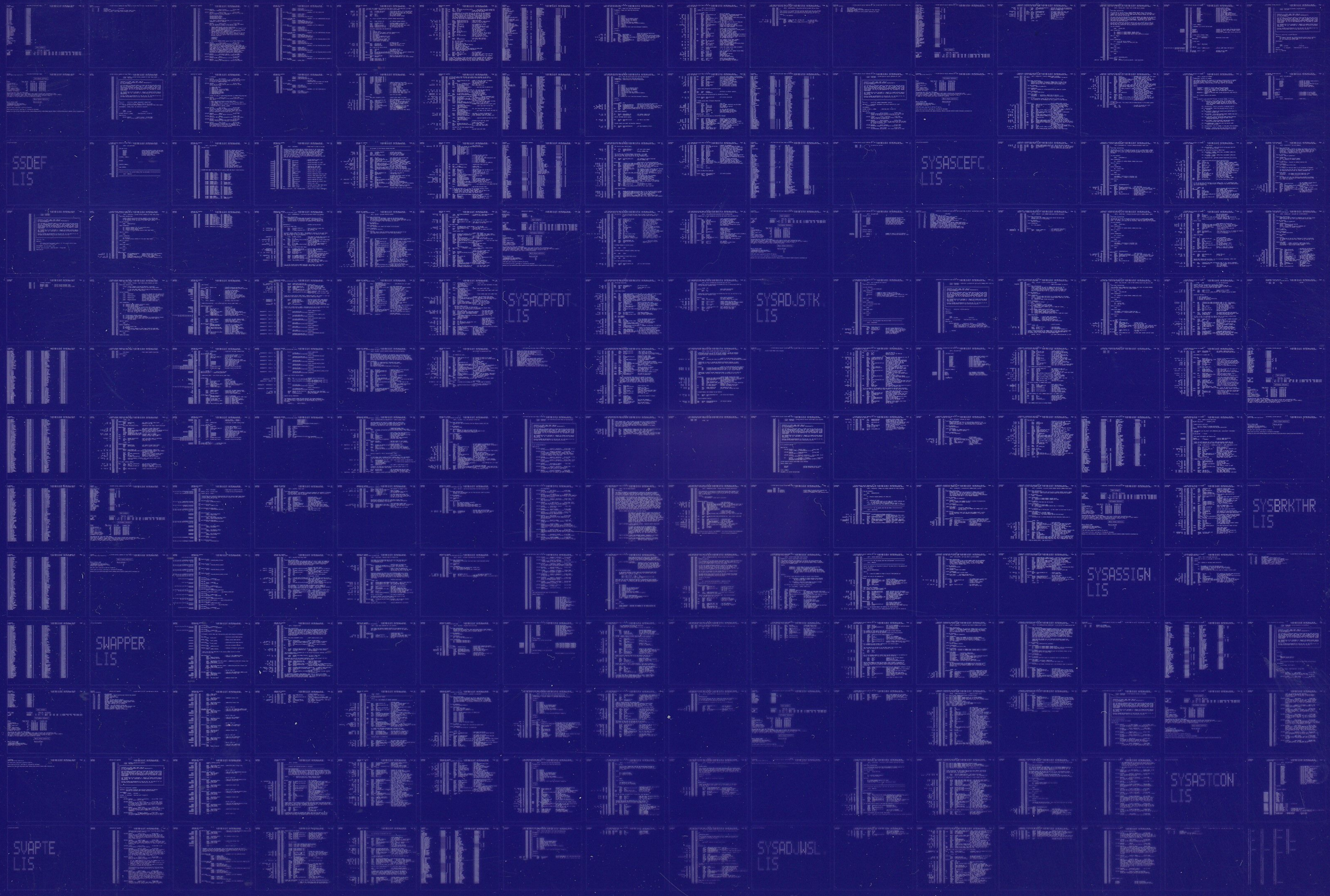

SSDEF
LIS

SYSASCEFC
LIS

SYSACPFDT
LIS

SYSADJSTK
LIS

SYSBRKTHR
LIS

SYSASSIGN
LIS

SWAPPER
LIS

SYSASTCON
LIS

SVAPTE
LIS

SYSADJWSL
LIS

0382 AH-BT13A-SE
VAX/VMS V4.0

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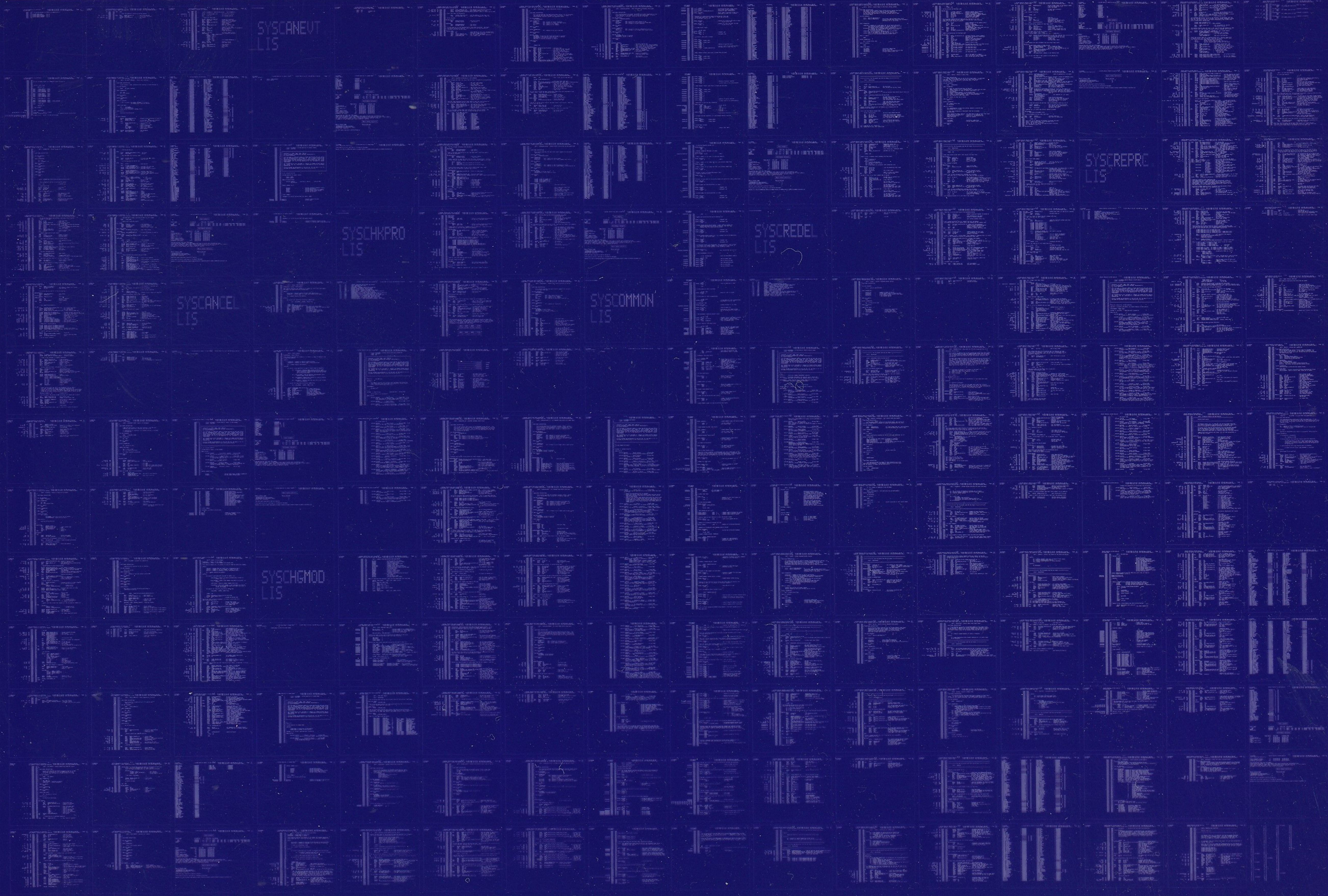

SYSCANEVT
LIS

SYSCREPRC
LIS

SYSCHKPRO
LIS

SYSCREDEL
LIS

SYSCANCEL
LIS

SYSCOMMON
LIS

SYSCHGMOD
LIS