STORAGE ALLOCATION.

ADDRESS	LENGTH	BINARY CONTROL CARDS.	
0	2774	IDENT	DSKINT
2774		END	

ENTRY POINTS.

I.DISKP	=	0	DSKPNT	=	727	DISKREQ	=	752	DISKSF	=	766
I.DISKA	=	441	DISKMGT	=	730	DISKRSP	=	753			
I.DISKT	=	452	DISKADR	=	741	DISKSLT	=	764			
DSKINTO	=	726	DISKBUF	=	754	DISKUF	=	765			

EXTERNAL SYMBOLS.

INTSCR	HANG1	DISASTR	DISKRB2	DISKWB1	I.LOCK
DISKROF	DINTQ	DISKRB0	DISKRB3	DISKWB2	I.WAIT
E.ECS	EVENT1	DISKRB1	DISKWB0	DISKWB3	

```
                IDENT   DSKINT
*
*
*
                EXT     INTSCR
                EXT     DISKROC
                EXT     E.ECS,HANG1,DINTQ,EVENT1
                EXT     DISASTR
                EXT     DISKRB0,DISKRB1,DISKRB2,DISKRB3
                EXT     DISKWB0,DISKWB1,DISKWB2,DISKWB3
```

```
*
*                       ECS  MACROS
*
RECS    MACRO   CNT
        RE      CNT
        RJ      E.ECS
        ENDM
*
WECS    MACRO   CNT
        WE      CNT
        RJ      F.ECS
        ENDM
```

```
                                *
                                *                       MAIN LOOP
                                *
                                        ENTRY   I.DISKP
                                *
                                        EXT     I.LOCK
                                        EXT     I.WAIT
                                *
0  5110000000 x                 I.DISKP SA1     I.LOCK
                                        BX6     X1
1  5160000000 x                         SA6     I.WAIT
                                        NZ      X1,0
2  0100000115 +                         RJ      SCANPPS
3  0100000005 +                         RJ      EVENTS
4  0400000000                           JP      0
```

```
                                *
                                *                       HANDLE EVENTS SENT TO DISK
                                *
  5                             EVENTS    BSSZ    1
  6  5110000726 +               EVENTSI   SA1     DSKINTQ
               0100000000 X               RJ      DINTQ
  7  0302000005 +                         ZR      X2,EVENTS NO EVENTS TO HANDLE
                 10052                    BX0     X2
 10  5100000716 +                         SA6     PROCESS
 11  0110000010                           RECS    BSIZE       READ IN THE PSEUDO PROCESS
 12  5110000725 +                         SA1     DATAWD
               0331000036 +               NG      X1,NEWREQ A NEW REQUEST HAS ARIVED
 13  0600000014 +                         JP      NEWRDBUF
                                *
                                *
                                *
 14  63110                     NEWRDBUF    SB1     X1          PPU INDEX
           20152                          LX1     60-18       GET SIZE
                 43052                    MX0     60-2
                      15210               BX2     -X0*X1
 15  10422                                BX4     X2          SAVE SZX
           10622                          BX6     X2
                 5716000701 +             SA6     SZX
 16  20202                                LX2     2
           10322                          BX3     X2          4 * SIZEX
                 20201                    LX2     1           8 * SIZEX
                      36323               IX3     X2+X3       COMPUTE 12 * SIZE X
 17  43064                                MX4     60-8
           5116000793 +                   SA1     EVENTWD2    GET BUFFER INDEX
                      15110               BX1     -X0*X1      BUFFER INDEX ONLY IN X1
 20  20411                                LX4     9           FORM SZX * 1000B
           36114                          IX1     X1+X4       FORM BUFX + SZX * 1000B
                 20140                    LX1     60-12       PLACE IN HIGH END OF WORD
                      53230               SB2     X3          SHIFT COUNT
 21  23121                                AX1     B2,X1       POSITION NEW BUFFER INDEX
           6121000685 +                   SA2     RDBUFS+B1
                      53220               SA2     X2          PICK UP READ BUFFER CONTROL WORD
 22  5140000701 +                         SA4     SZX
                 5534000202 +             SA3     BFMSK+X4
 23  15623                                BX6     -X3*X2
               0316000030 +               NZ      X6,NEWRDBF1         IMMEDIATE READ BUFFER EXISTS
                      12621               BX6     X2+X1       INSERT NEW READ BUFFER
 24  54620                                SA6     A2          RE STORE IT
           7611O                          SX1     B1          GO GET ANOTHER BUFFER FOR WAITING BUFFERS
                 20162                    LX1     2
                      36314               IX3     X1+X4       PSEUDO PROC INDEX
 25  5213000730 +                         SA1     DISKMQT+X3
                 5524000754 +             SA2     DISKRB+X4
 26  5233000741 +                         SA3     DISKADR+X3
                 6170000006 +             SB7     EVENTSI
 27  0200000000 X                         JP      HANG1
                                *
                                *
```

```
30  5121000663 +            NEWRDBF1  SA2     RDBUFSW+BT          JUST PLACE IN WAITING POOL
              53230                   SA2     X2
                   12621              BX6     X2+X1
31  54620                              SA6     A2
        5110000721 +                   SA1     SZX
                   20101               LX1     1           SZX*2
32  73111                              SX1     X1+B1       SZX*2 + PPUINDEX
        7211000726 +                   SX1     X1+RDREQFS
                   76600               SX6     B0
33  53610                              SA6     X1          SIGNAL THAT PSEUDO PROC NOT HUNG
        15623                          BX6     -X3*X2
                   0304000006 +        ZR      X6,EVENTST
34  0100000000 X                       RJ      DISASTR     BUFFER ALREADY EXISTS
35  0200000006 +                       JP      EVENTST1
                          *
                          *
                          *
36  5110000723 +            NEWREQ    SA1     EVENTWD2    PICK UP REQUEST
              43063                   MX0     60-9
                   15210              BX2     -X0*X1      GET REQUEST SLOT INDEX
37  11601                              BX6     X0*X1       CLEAR SLOT INDEX FIELD
        5160000672 +                   SA6     TEMP1
40  5130000467 +                       SA3     REQSLOT
              34063                    IX6     X2+X3       COMPUTE ECS ADDRS OF SLOT
41  5100000672 +                       SA0     TEMP1
42  0120000001                         WECS    1           WRITE REQUEST TO ECS
43  20106                              LX1     60-54
              43065                    MX0     60-5
                   15170              BX1     -X0*X1      COMPUTE HEAD AND STACK BIT
44  5130000466 +                       SA3     HEADCHN
              34073                    IX3     X1+X3       COMPUTE ECS ADDRS OF HEAD CHAIN
                   10033              BX0     X3
45  5100000672 +                       SA0     TEMP1
46  0110000001                         RECS    1
47  5140000672 +                       SA4     TEMP1       PICK UP HEAD CHAIN
              0304000064 +             ZR      X4,NEWREQT          CHAIN WAS EMPTY
                          *
50  43052                              MX0     60-18
        11604                          BX6     X0*X4       PREPARE NEW CHAIN CONTROL
                   12642               BX6     X6+X2
51  5160000672 +                       SA6     TEMP1
                   10033               BX0     X3
52  5100000672 +                       SA0     TEMP1
53  0120000001                         WECS    1           WRITE NEW CHAIN TO ECS
54  73440                              SX4     X4          COMPUTE OLD LAST
        5150000447 +                   SA5     REQSLOT
                   36454               IX4     X5+X4
55  10044                              BX0     X4
        5100000672 +                   SA0     TEMP1
56  0110000001                         RECS    1
57  5150000672 +                       SA5     TEMP1       OLD LAST REQUEST
              43063                    MX0     60-9
                   11605               BX6     X0*X5
```

```
 60  12626                          BX6     X2+X6
           5160000672 +              SA6     TEMP1
                10044                BX0     X4
 61  5100000672 +                   SA0     TEMP1
 62  0120000001                     WECS    1           CHAIN OLD LAST REQUEST TO NEW LAST
 63  0200000112 +                   JP      NEWREQX     EXIT
                                *
 64  7160000001              NEWREQ1 SX6     1           FORM A NEW HEAD CHAIN
               20652                LX6     18
                    20622           LX6     1A
 65  12662                          BX6     X6+X2
          20622                     LX6     18
              12442                 BX6     X6+X2
 66  5160000672 +                   SA6     TEMP1
               54000                SA0     A6
                    10033           BX0     X3
 67  0120000001                     WECS    1           WRITE NEW HEAD CHAIN TO ECS
 70  5120000653 +                   SA2     IDLEFLAG
               0316000104 +         NZ      X2,NEWREQ4          DISK WAS IDLE
                                *
 71  5120000703 +                   SA2     DIR
               0336000076 +         NG      X2,NEWREQ5
                                *
 72  5120000704 +                   SA2     THISPOS     POS MOVING ARM
               37221                IX2     X2-X1
 73  0322000112 +                   PL      X2,NEWREQX          NO NEW NEXT
               5120000705 +         SA2     NEXTPOS
 74  37212                          IX2     X1-X2
          0322000112 +              PL      X2,NEWREQX          NO NEW REQUEST
 75  0400000101 +                   JP      NEWREQ3
                                *
 76  5120000704 +           NEWREQ5 SA2     THISPOS     NEG MOVING ARM
               37212                IX2     X1-X2
 77  0322000112 +                   PL      X2,NEWREQX          NO NEW NEXT
               5120000705 +         SA2     NEXTPOS
100  37221                          IX2     X2-X1
          0322000112 +              PL      X2,NEWREQX          NO NEW NEXT
                                *
101  10611                     NEWREQ3 BX6     X1
           5160000705 +              SA6     NEXTPOS
102  0100000432 +                   RJ      SETUTHIS    SET USER THIS
103  0200000112 +                   JP      NEWREQX
                                *
104  10611                     NEWREQ4 BX6     X1          DISK WAS IDLE
           5160000704 +              SA6     THISPOS
105  5160000705 +                   SA6     NEXTPOS
               63310                SB3     X1
106  5110000654 +                   SA1     IDLEPSU
               63110                SB1     X1
107  0100000327 +                   RJ      NEWHEAD     START ACTION ON NEW HEAD POSITION
110  76000                          SX0     B0
           5160000653 +              SA6     IDLEFLAG
111  0100000432 +                   RJ      SETUTHIS    SET USER THIS
```

```
                                *
112  5110000740 +               NEWREQX  SA1     DREQMOT   REHANG PSEUDO PROC ON REQUEST FC
                5120000752 +             SA2     DISKREQ
113  5130000751 +                        SA3     DREQADR
                6170000006 +             SB7     EVENTS1
114  0200000000 X                        JP      HANG1
```

```
                                *
                                *                       SCAN PPUS LOOKING FOR REQUESTS
                                *
115                             SCANPPS   BSSZ    1
116   6110777776                          SB1     -1
                                *
117   6111000001                PPULP     SB1     B1+1
                  6120000002              SB2     2
120   0412000115 +                        EQ      B1,B2,SCANPPS
                  5111000657 +            SA1     REQWDS+B1
121   53110                               SA1     X1          PICK UP PPU REQUEST WD
            43060                         MX0     60-12
                  15110                   BX1     -X0*X1
122   0301000117 +                        ZR      X1,PPULP    NO REQUEST THIS PPU
                  76610                   SX6     B1
123   5160000650 +                        SA6     PPUX        SAVE PPU INDEX
                  6120777776              SB2     -1          INITIALIZE BIT INDEX
124   6130000006                          SB3     NBITS
                  0200000130 +            JP      NEXTBITL    SCAN REQUEST BITS
                                *
                                *
125   5110000650 +              NEXTBIT   SA1     PPUX
                  6310                    SB1     X1
126   5110000651 +                        SA1     BITX
                  6320                    SB2     X1
127   5110000652 +                        SA1     PPUREG
                  6130000006              SB3     NBITS
                                *
                                *
130   6122000001                NEXTBITL  SB2     B2+1
                  0620000134 +            EQ      B2,B3,NEXTBITN          ALL DONE ON THIS PPU
131   20173                               LK1     60-1
            0321000130 +                  PL      X1,NEXTBITL         BIT NOT ON
                        10611             BK6     X1
132   5160000652 +                        SA6     PPUREG      SAVE SHIFTED REQUEST BITS
                  76620                   SX6     B2
133   5160000651 +                        SA6     BITX        SAVE BIT X
                  0220000136 +            JP      BITJP+B2
                                *
                                *
134   76600                     NEXTBITN  SX6     B0
            5111000657 +                  SA1     REQWDS+B1
                        53610             SA6     X1          INDICATE COMPLETION OF REQUEST
135   0200000117 +                        JP      PPULP
                                *
                                *
136   0200000144 +              BITJP     JP      ECSCM
137   0200000156 +              +         JP      CMECS
140   0200000163 +              +         JP      RDRSPNS
141   0200000206 +              +         JP      WRRSPNS
142   0200000222 +              +         JP      POSHEAD
143   0200000241 +              +         JP      INIT
                                *
```

```
144                     6       NBITS   BSS     0
                                        EQU     *-BITJP
```

```
                                *
                                *                       MOVE ECS TO CM CODE
                                *                            PPU INDEX IN B1
                                *
144  0100000260 +       ECSCM   RJ      COPY1
145  5221000471 +               SA2     SECTB+X1
                 42043             MX0     60-9
                     15720         BX7     -X0*X2      GET REQUEST SLOT INDEX
146  5120000467 +               SA2     REQSLOT
                 34057             IX2     X2+X7
147  5100000672 +               SA1     TEMP1
150  0110000001                 RECS    1
151  5120000672 +               SA2     TEMP1       GET REQUEST
                 20243             LX2     60-9
                     43064         MX0     60-8
152  15620                      BX6     -X0*X2      GET BUFFER INDEX
          5161000667 +          SA6     WRBUFS+B1   SAVE IT
153  0100000255 +               RJ      COPY2
154  0112000000                 RECS    B2
155  0200000125 +               JP      NEXTBIT
```

```
                                *
                                *                       MOVE CM TO ECS CODE
                                *                               PPU INDEX IN B1
                                *
  156  46002                    CMECS     NO      2              TURN ON TRACE
       01000002R0 +                       RJ      COPY1
  157  5141000555 +                       SA4     RDBUFS+B1
                 594440                   SA4     X4
                     43064                MX0     60-8
  160  15640                              BX6     -X0*X4
       01000002R5 +                       RJ      COPY2
  161  0122000000                         WECS    B2
  162  46001                              NO      1              TURN OFF TRACE
       02000001R5 +                       JP      NEXTBIT
```

```
                                *
                                *                       READ RESPONSE CODE
                                *                               B1 HOLDS PPU INDEX
                                *
163  5111000665 +               RDRSPNS   SA1     A1+RDBUFS
               5771 0                     SA1     X1
                    43064                 MX0     60-8
164  15110                                 BX1     -X0*X7          COMPUTE READ BUFFER INDEX
          0100006242 +                    RJ      RSPNS           SEND RESPONSE, RELEASE OLD SLOT, MAKE
                                *                                 NEW SECTOR REQUEST
165  5110000650 +                          SA1     PPUX            PICK UP PPU INDEX
               6771 0                     SB1     X1
166  5111000655 +                          SA1     A1+RDBUFS
               5771 0                     SA1     X1
                    21111                 AX7     9
167  43072                                 MX0     60-2
          15310                           BX3     -X0*X7          COMPUTE SIZE OF BUFFER FROM TOP 2 BITS
               5777000655 +               SA1     A1+RDBUFS
170  53210                                 SA2     X1
          5243006262 +                    SA4     RFMSK+X3
                    11642                 BX6     X4*X2           CLEAR READ BUFFER POINTERS
171  5111000663 +                          SA1     A1+RDBUFSW
               5771 0                     SA1     X1              PICK UP WAITING BUFFERS
                    15714                 BX7     -X4*X7
172  12667                                 BX6     X6+X7           PLACE WAITING BUFFER ( IF ANY )
          54620                           SA6     A2              IN PPU BUFFER WORD
               1776 1                     BX6     X4*X1           CLEAR WAITING BUFFER
                    54610                 SA6     A1
                                *
173  73130                                 SX1     X3              SZX
          20161                           LX1     1               SZX*2
               7771 1                     SX1     X1+B1           SZX*2 + PPUINDEX
174  7211000706 +                          SX1     X1+RDREQFS
               5771 0                     SA2     X1
175  0312000125 +                          NZ      X2,NEXTBIT              PSEUDO PROC ALREADY HUNG
               7766000001                 SX6     1
176  53610                                 SA6     X1              INDICATE THAT PSEUDO PROC IS HUNG
                                *
               7611 0                     SX1     B1              REQUEST NEW BUFFER
                    2011 2                LX1     2
                         36413            IX4     X1+X3           COMPUTE PSEUDO PROC INDEX
177  5214000730 +                          SA1     DISKMOT+X4
               5224000754 +               SA2     DISKRB+X3
200  5234000741 +                          SA3     DISKADR+X4
               6176000125 +               SB7     NEXTBIT
201  0200000000 X                          JP      HANG1
                                *
                                *
202  0000777777777770000       BFMSK     DATA    0000777777777770000B
203  7777000077777770000                 DATA    7777000077777770000B
204  7777777000077770000                 DATA    7777777000077770000B
205  7777777777760000000                 DATA    7777777777700000000B
```

```
                                *
                                *
                                *                       WRITE RESPONSE CODE
                                *                               B1 HOLDS PPU INDEX
                                *
206  76100                      WRRSPNS  SX1     B0
           0100000272 +                 RJ      RSPNS       SEND RESPONSE ETC.
207  5110000760 +                       SA1     TERMIND     PICK UP TERMINATION IDICATION
                 0311000125 +           NZ      X1,NEXTBIT          DO NOT RELEASE W BUFFER ON ERROR
                                *
210  5110000640 +                       SA1     PPUX
                 631110                 SB1     X1
211  5111000667 +                       SA1     WRBUFS+B1           PICK UP WRITE BUFFER INDEX
                 100671                 BX6     X1
212  5160000677 +                       SA6     BUFX
                 5120000465 +           SA2     BUFPNTS
213  36012                              IX0     X1+X2
           5100000672 +                 SA0     TEMP1
214  0110000001                         RECS    1
215  5130000672 +                       SA3     TEMP1
                 20362                  LX3     60-18
                      73330             SX3     X3          GET BUFFER SIZE
216  10766                              BX7     X6
           5150000740 +                 SA5     DREQMOT     RELEASE BUFFER
                      10655             BX6     X5
217  5213000760 +                       SA1     DISKWR+X3
                 6166777776             SB6     -1
220  6110000000 X                       SB1     INTSCR
                 6170000125 +           SB7     NEXTBIT
221  0200000000 X                       JP      EVENTI
```

```
                                *
                                *                       FIND A NEW HEAD POSITION OR GO IDLE
                                *
  222  5110000705 +             POSHEAD   SA1     NEXTPOS
                   10671                    BX6     X1
  223  5160000702 +                        SA6     PNT
                   0100000414 +             RJ      HEADSCN
  224  0326000231 +                        PL      X6,POSHEAD1
                                *
                   5771A000704 +            SA1     THISPOS   NO REQUESTS WAITING
  225  10611                               BX6     X1
                        5160000705 +       SA6     NEXTPOS
  226  7160000001                          SX6     1
                   5761A000653 +           SA6     IDLEFLAG
  227  76610                               SX6     B1
                        5160000654 +       SA6     IDLEPDU
  230  0400000237 +                        JP      POSHEAD2
                                *
  231  5160000704 +             POSHEAD1  SA6     THISPOS   FOUND ONE
                   5761A000702 +           SA6     PNT
  232  5160000705 +                        SA6     NEXTPOS
                   63340                   SB3     X6
  233  5110000650 +                        SA1     PPUX
                   63770                   SB1     X1
  234  0100000327 +                        RJ      NEWHEAD   SET IT UP
  235  0100000414 +                        RJ      HEADSCN   LOOK FOR A NEXT
  236  0336000237 +                        NG      X6,POSHEAD2
                   5761A000705 +           SA6     NEXTPOS
                                *
  237  0100000432 +             POSHEAD2  RJ      SETUTHIS
  240  0200000125 +                        JP      NEXTBIT
```

```
                                *
                                *                       INITIALIZE INTERRUPT CODE
                                *
  241  5110000245 +             INIT        SA1         INITFLG
                 0311000245 +               NZ          X1,STOP     IGNORE IF ALREADY DONE
  242  7160000001                 .         SX6         1
                 5160000245 +               SA6         INITFLG
  243  0100001774 +               .         RJ          INITCODE
  244  0200000125 +               .         JP          NEXTBIT
                                *
  245                           INITFLG     BSSZ        1
                                *
                                *
  246  0000000000               STOP        PS
  247  0200000246 +               .         JP          STOP
```

```
                                *
                                *                FIRST PART OF PREPARATION FOR ECS XFER
                                *                ENTER WITH PPU INDEX IN B1
                                *                EXITS WITH SECTOR NUMBER IN X1, REQUEST SIZE IN X3.
                                *
250                             COPY1   BSSZ     1
251  5111000657 +                       SA1      REQWDS+B1
           53110                        SA1      X1
                20160                   LX1      60-12
252  43060                              MX0      60-12
          15110                         BX1      -X0*X1      GET SECTOR NUMBER
               5131000657 +             SA3      REQWDS+B1
253  53330                              SA3      X3
          20330                         LX3      60-36
               43040                    MX0      60-12
                    15330               BX3      -X0*X3
254  0200000250 +                       JP       COPY1
```

```
                                *
                                *                 2ND PART OF PREPARATION FOR ECS XFER
                                *                 ENTER WITH BUFFER INDEX IN X6
                                *                        PPU INDEX IN B1
                                *                        REQUEST SIZE IN X3
                                *                 SETS UP X0, A0 AND COUNT IN B2
                                *
255                             COPY2   BSSZ    1
256  5110000465 +                       SA1     BUFPNTS
                    340076              IX0     X1+X6
257  5100000672 +                       SA0     TEMP1
260  0110000001                         RECS    1
261  5110000672 +                       SA1     TEMP1       GET FILE ADDRESS OF BUFFER
                    731170              SX1     X1          BOTTOM 18 BITS ONLY
262  5120000463 +                       SA2     USERFIL
                    340172              IX0     X1+X2       GET ECS ADRRS OF BUFFER
263  5111000661 +                       SA1     PPUBUFS+B1
                    530170              SA0     X1          GET CM ADDRES OF BUFFER
264  5213000266 +                       SA1     SIZES+X3
                    632170              SB2     X1          COUNT
265  0200000255 +                       JP      COPY2
                                *
266  000000000000006000100      SIZES   DATA    64,128,256,512
```

```
                                *
                                *                THIS ROUTINE FORMS A RESPONSE AND SENDS IT TO USER.
                                *                   ALSO RELEASES OLD REQUEST SLOT AND PREPARES A
                                *                   NEW SECTOR REQUEST, IF ANY.
                                *
                                ********************************************************************
                                *                THIS PROGRAM NO LONGER RELEASES SLOTS, NO MATTER WHAT OTHER
                                *                COMMENTS MAY SAY, INCLUDING THE ABOVE.
                                *                THIS IS TO ALLOW USER TO RETURN SLOTS
                                *                11 JULY 1970
                                *
                                ********************************************************************
                                *
                                *
                                *                ENTER WITH
                                *                   X1 HOLDING BUFFER INDEX OR 0
                                *                   B1 HOLDING PPU INDEX
                                *
272                             RSPNS   BSSZ    1
273  5121000657 +                       SA2     REQWDS+B1
               53250                    SA2     X2          PICK UP REQUEST WORD
                    20250               LX2     60-12
274  43060                              MX0     60-12
          15720                         BX7     -X0*X2      GET SECTOR NUMBER OF THIS REQUEST
               63270                    SB2     X7          AND PLACE IN B2
275  5132000471 +                       SA3     B2+SECTB    PICK UP SECTOR REQUEST WORD
               43643                    MX6     60-9
                    15736               BX7     -X6*X3      GET REQUEST SLOT INDEX
276  63370                              SB3     X7          AND PLACE IN B3
          5140000447 +                  SA4     REQSLOT
                    36047               IX4     B4+X7
277  5100000672 +                       SA0     TEMP1
300  0110000001                         RECS    1
301  5140000472 +                       SA4     TEMP1       PICK UP ORIGINAL REQUEST
               15746                    BX7     -X6*X4      GET NEXT REQUEST SLOT INDEX
                    63470               SB4     X7          AND PLACE IN B4
                                *
302  20230                              LX2     12+60-48    BEGIN FORMING RESPONSE
          43060                         MX0     60-12
               15630                    BX6     -X0*X2      PLACE STATUS WD 1 IN RESPONSE
                                *
                    20230               LX2     48+60-24-60
303  43070                              MX6     60-4
          15720                         BX7     -X0*X2
               5170000700 +             SA7     TERMIND     SAVE TERMINATION INDISCATION
304  20604                              LX6     4
          12667                         BX6     X6+X7       PLACE TERMINATION INDICATION IN RESPONSE
                                *
               20340                    LX3     60-12
                    43071               MX0     60-3
305  15730                              BX7     -X0*X3
          20603                         LX6     3
               12667                    BX6     X6+X7       PLACE FINAL VALUE OF RETRY COUNT IN RESPONSE
```

```
                                *
                     20453              LX4     60-17
306  43047                              MX0     60-20-1
          15740                         BX7     -X0*X4
               20625                    LX6     20+1
                    12667               BX6     X6+X7       PLACE RW BIT AND USER INDEX IN RESPONSE
                                *
307  43064                              MX0     60-8
          15710                         BX7     -X0*X1
               20610                    LX6     8
                    12667               BX6     X6+X7       PLACE BUFFER INDEX DATA IN RESP
                                *
310  76730                              SX7     B3
          20611                         LX6     9
               12647                    BX6     X6+X7       PLACE REQUEST SLOT INDEX IN RESP
                                *
311  5160000675 +                       SA6     RESP        SAVE RESPONSE TO SEND TO USER
               5171A0000676 +           SA7     SLOT        SAVE SLOT INDEX TO RELEASE
                                *
312  76700                              SX7     B0
          5172006471 +                  SA7     SECTB+B2    ZERO OUT SECTOR REQUEST WORD
313  0404000315 +                       EQ      B0,B4,RSPNS1        IF NO NEXT REQUEST , SKIP
               5111A0000467 +           SA1     REQSLOT
314  76240                              SX2     B4
          66520                         SB5     B2
               0101A0000402 +           RJ      NEWSECT     PREPARE NEXT SECTOR REQUEST
                                *
315  5110000763 +               RSPNS1  SA1     DISKRSP     SEND RESPONSE TO USER
               5115A0000740 +           SA5     DREQMOT
316  10655                              BX6     X5
          6146077777776                 SB6     -1
317  6110000000 X                       SB1     INTSCR
               6117A0000272 +           SB7     RSPNS
320  5120000675 +                       SA2     RESP
               10752                    BX7     X2
321  0200000000 X                       JP      EVENTI
                                *
                                *                   THE FOLLOWING CODE NO LONGER USED
                                *                   WILL BE REMOVED LATER
                                *               DUE TO HAVING USER RETURN SLOTS
                                *
322  5110000764 +               RSPNS2  SA1     DISKSLT     RELEASE OLD SLOT
               5115A0000740 +           SA5     DREQMOT
323  10655                              BX6     X5
          6146077777776                 SB6     -1
324  6110000000 X                       SB1     INTSCR
               6117A0000272 +           SB7     RSPNS
325  5120000676 +                       SA2     SLOT
               10752                    BX7     X2
326  0200000000 X                       JP      EVENTI
```

```
                                *
                                *                       THIS SUBROUTINE PREPARES A NEW HEAD POSITION.
                                *                          IT FORMS SECTOR CHAINS AND A NEW SCAN TABLE STATE WD.
                                *
                                *                       ENTERED WITH
                                *                         B1  INDEX OF REQUESTING PPU
                                *                         B3  NEW HEAD POSITION
                                *
                                *                       ON EXIT
                                *                         X6 IS NEGATIVE IF HEAD POSITION WAS EMPTY
                                *                         ALL REGISTERS DESTROYED
                                *
327                             NEWHEAD   BSSZ    1
330  5111000661 +                         SA1     PPUBUFS+B1
               631710                    SB1     X1          B1 POINTS TO REQUESTING PPU BUFFER
331  5140000143                           SB4     99
               76660                     SX6     B0
332  5164000471 +               NEWHEAD1  SA6     SECTB+B4    ZERO OUT SECTOR REQUESTS
               54474                     SA6     B1+B4       ZERO OUT CM BUFFER ALSO
333  6144777776                           SB4     B4-1
               0444000332 +              GE      B4,B0,NEWHEAD1
                                *
334  5110000466 +                         SA1     HEADCHN
               74230                     SX2     B3
                    36012                IX0     X1+X2
335  5100000672 +                         SA0     TEMP1
336  0110000001                           RECS    1           GET CHAIN FOR THIS HEAD POSITION
337  36012                                IX6     X1+X2
          5100000471 +                   SA0     ZERO
340  0120000001                           WECS    1           SET CHAIN TO ZERO
341  5120000472 +                         SA2     TEMP1
               7346777776                SX6     -1
342  0302000327 +                         ZR      X2,NEWHEAD          EXIT IF CHAIN WAS EMPTY
               27622                     AX2     18
                    73220                SX2     X2          X2 NOW POINTS TO FIRST REQUEST IN CHAIN
343  66400                                SB4     B0          B4 WILL BE A COUNT OF REQUESTS
          5110000447 +                   SA1     REQSLOT     X1 NOW POINTS TO REQUEST SLOTS
                    43363                MX3     60-9        X3 CONTAINS MASK FOR REQUEST SLOT INDEX
344  43465                                MX4     60-7        X4 CONTAINS MASK FOR SECTOR INDEX
                                *
                                *
345  0302000364 +               NEWHEAD2  ZR      X2,NEWHEAD5         EXIT FROM FIRST LOOP IF NO MORE
               6144000001                SB4     B4+1        ADVANCE COUNT
346  36012                                IX0     X1+X2
          5100000672 +                   SA0     TEMP1
347  0110000001                           RECS    1
350  5150000672 +                         SA5     TEMP1       GET THE NEXT REQUEST
               10665                     BX6     X5          SAVE REQUEST IN X6
                    20521                LX5     60-43
351  15754                                BX7     -X4*X5      GET SECTOR INDEX
          6 3570                         SB5     X7          SAVE IT IN B5
               6165777633                SB6     B5-100
352  0760000353 +               +         LT      B6,B0,*+1
```

```
                  64560                    SB5     B0          TREAT ALL SECTOR ADDRESSES AS 100 AS 0
  353  15763                         +     BX7     -X3*X6      GET NEXT SLOT INDEX
                  63670                    SB6     X7          SAVE IT IN B6
                        5155000471  +      SA5     SECTB+B5
  354  0315000356  +                       NZ      X5,NEWHEAD3         NOT FIRST REQUEST FOR THIS SECTOR
                                     *
                  7777001000               SX7     X2+1000B
  355  54750                               SA7     A5          MARK 1ST REQUEST OF THIS SECTOR
                  0200000342  +            JP      NEWHEAD4
                                     *
  356  56515                         NEWHEAD3  SA5     B1+B5       PICK UP PREVIOUS REQUEST FOR THIS SECTOR
                  15053                    BX0     -X3*X5      COMPUTE ITS REQUEST SLOT INDEX, SAVE IN X0
                        11775              BX7     X3*X5
                              12772        BX7     X7+X2       FIX PREVIOUS REQUEST TO POINT TO THIS ONE
  357  5170000672  +                       SA7     TEMP1
                        34670              IX0     X1+X0
  360  5100000672  +                       SA0     TEMP1
  361  0120000001                          WECS    1           WRITE PREVIOUS REQUEST BACK TO PCS
                                     *
  362  11436                         NEWHEAD4  BX6     X3*X6       FIX THIS REQUEST TO POINT TO SELF
                  12662                    BX6     X6+X2           AND SAVE IT IN PPU BUFFER AREA
                        54675              SA6     B1+B5
                                     *
                              76260        SX2     B6
  363  0200000345  +                       JP      NEWHEAD2
                                     *
  364  6150000143                         SB5     99
                                     *
  365  0750000375  +                 NEWHEAD6  LT      B5,B0,NEWHEAD7
                        5155000471  +      SA5     SECTB+B5
  366  0305000374  +                       ZR      X5,NEWHEAD8         NO REQUESTS FOR THIS SECTOR
                        54675              SA5     B1+B5
                              15753        BX7     -X3*X5
  367  11435                               BX6     X3*X5       FIX LAST REQUEST TO POINT TO ZERO
                        5100000672  +      SA6     TEMP1
                              36017        IX0     X1+X7
  370  5100000672  +                       SA0     TEMP1
  371  0120000001                          WECS    1
  372  5155000471  +                       SA5     SECTB+B5
                              7777776777   SX2     X5-1000B    RECOMPUTE SLOT INDEX OF FIRST
  373  0100000402  +                       RJ      NEWSECT     FIX UP SECTOR REQUEST FOR PPU
                                     *
  374  6155777776                    NEWHEAD8  SB5     B5-1
                        0200000365  +      JP      NEWHEAD6
                                     *
                                     *
  375  76530                         NEWHEAD7  SX5     B3          BEGIN FORMING NEW SCAN TABLE CONTROL WORD
                  43473                    MX4     60-1
                        16454              BX6     -X4*X5      STACK BIT
                              20604        LX6     4           POSITION CORRECTLY
                                     *
  376  43467                               MX4     60-5
                  20573                    LX5     60-1
```

```
                  15754          BX7     -X4*X5
                      20614      LX6     12
377 12667                        BX6     X6+X7     ADD IN ARM POS
                                 *
            76740                SX7     B4
                20614            LX6     12
                    12667        BX6     X6+X7     ADD IN REQUEST COUNT
                                 *
400 20630                        LX6     12+12     2 ZERO BYTES
          5160006470 +           SA6     SCANCNT
                    76600        SX6     B0
401 0200000327 +                 JP      NEWHEAD   EXIT WITH X6 = 0
```

```
                                *
                                *                       FORM A NEW SECTOR TABLE ENTRY
                                *                          SECTOR INDEX IN B5
                                *                          SLOT INDEX IN X2
                                *                          SLOT ADDRESS BASE IN X1
                                *
                                *                       SAVES A1, X1, A2, X2, A3, X3
                                *                             B1, B2, B3, B4, B5, B6, B7
                                *
402                             NEWSECT BSSZ    1
403  36012                              IX0     X1+X2
          5100000472 +                  SA0     TEMP1
404  0110000001                         REC5    1
405  5150000472 +                       SA5     TEMP1
                                *
               20512                    LX5     60-50
                    43467               MX4     60-5
406  15654                              BX6     -X4*X5          GET HEAD GD AND STACK BIT
                                *
               20515                    LX5     50+60-37=60
                    43473               MX4     60-1
                         15754          BX7     -X4*X5
407  20614                              LX6     12
          12667                         BX6     X6+X7           ADD IN SW BIT
                                *
               20570                    LX5     37+50-41
                    43472               MX4     60-2
410  15754                              BX7     -X4*X5
          7277000001                    SX7     X7+1
                         20614          LX6     12
411  12667                              BX6     X6+X7           ADD IN SIZE
                                *
               20503                    LX5     41+60-38=60
                    43471               MX4     60-3
                         15754          BX7     -X4*X5
412  20614                              LX6     12
          12667                         BX6     X6+X7           ADD IN RETRY COUNT
                                *
               20574                    LX6     12
                    12662               BX6     X6+X2           ADD IN REQ INDEX
                                *
413  5165000471 +                       SA6     SECTB+B5
               020A000402 +             JP      NEWSECT
```

```
                                *
                                *                       THIS ROUTINE SCANS FOR A NON EMPTY
                                *                          HEAD POSITION
                                *
                                *                       INITIAL DIRECTION IS GIVEN BY CELL  DIR
                                *                       INITIAL POINT IS GIVEN BY CELL  PNT
                                *                            ( PNT IS EXAMINED )
                                *                       RETURNS WITH NEW PNT IN CELL PNT AND X6
                                *                                 OR -1 IN X6 IF NO NEWW POINT FOUND
                                *
414                             HEADSCN   BSSZ    1
415  6110000003                           SB1     3          COUNT OF DIRECTIONS TO SCAN
                 5013000466 +             SA3     HEADCHN
                                *
416  6111777776                 HEADLP    SB1     B1=1
                 7716777776               SX6     -1
417  0401000414 +                         EQ      B1,B0,HEADSCN        SCAN COMPLETED, NO RESULT
                 5011000702 +             SA1     PNT
420  5120000703 +                         SA2     DIR
                                *
421  36013                      HEADLP1   IX0     X1+X3
                 5100000672 +             SA0     TEMP1
422  0110000001                           RECS    1
423  5140000672 +                         SA4     TEMP1
                 0301000430 +             NZ      X4,HEADEND
424  36112                                IX1     X1+X2          STEP POINTER
                 0301000426 +             NG      X1,HEADLP2
425  7241777677                           SX4     X1-64
                 0934000421 +             NG      X4,HEADLP1
                                *
426  14622                      HEADLP2   BX6     -X2
                 5160000703 +             SA6     DIR            CHANGE DIRECTIONS
427  0200000416 +                         JP      HEADLP
                                *
430  10611                      HEADEND   BX6     X1             FOUND A HEAD POSITION
                 5160000702 +             SA6     PNT
431  0200000414 +                         JP      HEADSCN
```

```
                                *
                                *                       THIS ROUTINE SETS UP USER THIS IN ECS
                                *
 432                            SETUTHIS  BSSZ    1
 433  5110000700 +                       SA1     DIR
                 4000001                  MX0     1
                      11601               BX6     X0*X1
 434  5110000700 +                       SA1     NEXTPOS
                 2000002                  LX1     18
                      12661               BX6     X6+X1
 435  5160000672 +                       SA6     TEMP1
                 5000000464 +             SA1     USERTHS
 436  10011                              BX6     X1
           5100000672 +                  SA2     TEMP1
 437  0120000001                         WECS    1
 440  0200000432 +                       JP      SETUTHIS
```

```
                                    *
                                    *                TABLE OF POINTERS FOR PPU INITIALIZATION
                                    *
                                    *
                                           ENTRY     I.DISK0,I.DISK1
                                    *
                                    *
                                    *
441  0000000000000000000470  +     DSKPNT0  VFD       60/SCANCNT          FIRST PPU
442  0000000000000000000471  +              VFD       60/SECTB
443  0000000000000000000643  +              VFD       60/STATES
444  0000000000000000000636  +              VFD       60/RDBUF1
445  0000000000000000000635  +              VFD       60/PPCLK1
446  0000000000000000000637  +              VFD       60/REQWD1
447  0000000000000000000772  +              VFD       60/PPUBUF1
450  0000000000000000000640  +              VFD       60/PPCLK2
451  0000000000000000000767  +              VFD       60/COUNTS
                                    *
452  0000000000000000000470  +     DSKPNT1  VFD       60/SCANCNT          2ND PPU
453  0000000000000000000471  +              VFD       60/SECTB
454  0000000000000000000643  +              VFD       60/STATES
455  0000000000000000000641  +              VFD       60/RDBUF2
456  0000000000000000000640  +              VFD       60/PPCLK2
457  0000000000000000000642  +              VFD       60/REQWD2
460  0000000000000000001773  +              VFD       60/PPUBUF2
461  0000000000000000000635  +              VFD       60/PPCLK1
462  0000000000000000000767  +              VFD       60/COUNTS
                                    *
                                    *
                          441   +  I.DISK0  EQU       DSKPNT0
                          452   +  I.DISK1  EQU       DSKPNT1
```

```
                                *
                                *                       DATA AREAS
                                *
463                             USERFIL   BSSZ    1             ECS ADDRS OF USER FILE
464                             USERTHS   BSSZ    1             ECS ADDRS OF USER NEXT THIS ETC.
465                             BUFPNTS   BSSZ    1             ECS ADDRS OF BUFFER POINTERS
466                             HEADCHN   BSSZ    1             ECS ADDRS OF HEAD POS CHAIN
467                             REQSLOT   BSSZ    1             ECS ADDRS OF REQUEST SLOTS
                                *
470                             SCANCNT   BSSZ    1             SECTOR TABLE SCAN CONTROL WORD
471                             SECTB     BSSZ    100           SECTOR TABLE
                                *
635                             PPCLK1    BSSZ    1             CONTAINS PHASE CLOCK FOR PPU 1
636                             RDBUF1    BSSZ    1             INDEXES FOR READ BUFFERS FOR PPU 1
637                             REQWD1    BSSZ    1             REQUEST WORD FOR PPU1
                                *
640                             PPCLK2    BSSZ    1
641                             RDBUF2    BSSZ    1
642                             REQWD2    BSSZ    1
                                *
643                             STATES    BSSZ    5             PPU STATE CONTROL WORDS
                                *
650                             PPUX      BSSZ    1             PPU BEING SCANNED ( 0 OR 1 )
651                             BITX      BSSZ    1             BIT BEING SCANNED
652                             PPUREQ    BSSZ    1             SHIFTED PPU REQUEST WORD
653                             IDLEFLAG  BSSZ    1             IDLE FLAG
654                             IDLEPPU   BSSZ    1             PPU REQUESTING NEW HEAD POS WHEN NOTHING
                                *
655  0000000000000000000636  +  RDBUFS    VFD     60/RDBUF1,60/RDBUF2
656  0000000000000000000641  +
657  0000000000000000000637  +  REQWDS    VFD     60/REQWD1,60/REQWD2
660  0000000000000000000642  +
661  0000000000000000000772  +  PPUBUFS   VFD     60/PPUBUF1,60/PPUBUF2
662  0000000000000000001773  +
                                *
663  0000000000000000000665  +  RDBUFSW   VFD     60/RDBUFW1,60/RDBUFW2
664  0000000000000000000666  +
665                             RDBUFW1   BSSZ    1             WAITING READ BUFFERS
666                             RDBUFW2   BSSZ    1             SO NO DELAY IN SUPPLYING TO PPU
                                *
667                             WRBUFS    BSSZ    2
                                *
671  0000000000000000000000     ZERO      DATA    0
672                             TEMP1     BSSZ    1
673                             TEMP2     BSSZ    1
674                             TEMP3     BSSZ    1
                                *
675                             RESP      BSSZ    1             RESPONSE TO SEND TO USER
676                             SLOT      BSSZ    1             SOT TO BE RELEASED
677                             BUFX      BSSZ    1             SAVED BUFFER INDEX
700                             TERMIND   BSSZ    1             TERMINATION DATA
701                             SZX       BSSZ    1             HOLD SIZEX DURING READ BUFFER HANDLING
                                *
```

4300
471
477

```
                        PNT     BSSZ    1
                        DIR     BSSZ    1
                        THISPOS BSSZ    1
                        NEXTPOS BSSZ    1
                        *
                        RDREQFS BSSZ    8       FLAGS TO INDICATE THAT PSEUDO PROCS ARE HUNG
                        *
                        *                       PSEUDO PROCESS STORAGE AREA
                        *
                        PROCESS BSSZ    1
                        CHAINWD BSSZ    1
                        ZWD     BSSZ    1
                        CONTWD  BSSZ    1
                        EVENTWD1 BSSZ   1
                        EVENTWD2 BSSZ   1
                        *
                        PMOT    BSSZ    1
                        DATAWD  BSSZ    1
                        *
                 10     PSIZE   EQU     *-PROCESS
                        *
                        *
                        ENTRY   DSKINTQ,DSKPNT
                        *
                        *
                        DSKINTQ BSSZ    1
                        DSKPNT  BSSZ    1
                        *
                        *                       PSEUDO PROCESS ADDRESSES
                        *
                        ENTRY   DISKMOT,DISKADR
                        *
                        *
                        DISKMOT BSSZ    8
                        DREQMOT BSSZ    1
                        *
                        DISKADR BSSZ    8
                        DREQADR BSSZ    1
                        *
                        *                       EVENT CHANNELS
                        *
                        ENTRY   DISKBUF,DISKREQ,DISKRSP
                        ENTRY   DISKSLT
                        *
                        *
                        DISKREQ BSSZ    1
                        DISKRSP BSSZ    1
                        *
                 754 *  DISKBUF EQU     *
                        *
                        DISKRB  BSSZ    4
                        DISKWB  BSSZ    4
                        *
```

```
764                     DISKSLT BSSZ    1
                        *
                        *
                                ENTRY   DISKUF,DISKSF
                        *
                        *
765                     DISKUF  BSSZ    1
766                     DISKSF  BSSZ    1
                        *
                        *
                        *               ERROR COUNTS FROM PPUS
                        *
767                     COUNTS  BSSZ    1       REPOSITION COUNT
770                             BSSZ    1       FINAL FAIL COUNT
771                             BSSZ    1       COUNT OF RETRYS THAT WORKED
```

4300 767 526

```
                                *
                                *                       THE PPU BUFFERS ARE PLACED HERE. THE 2ND BUFFER
                                *                            CONTAINS THE INITIALIZATION CODE
                                *
 772                            PPUBUF1  BSSZ    513
1773                            PPUBUF2  BSSZ    1
                                *
                                *
                                *
                                DOBUFS   MACRO   SZX,COUNT,RW
                                         SB1     SZX
                                         SB2     COUNT
                                         SB4     RW
                                         RJ      INITBUF
                                         ENDM
                                *
                                *
                                *
1774                            INITCOF  BSSZ    1
1775  7160000001                         SX6     1
                  5176000703 +           SA6     DIR
1776  5110000765 +                       SA1     DISKUF
                  1077                  BX6     X1
1777  5160000463 +                       SA6     USERFIL
                  5176000464 +          SA4     USERTHS
2000  5110000766 +                       SA1     DISKSF
                  1077                  BX6     X1
2001  5160000465 +                       SA6     BUFPNTS
                  7117000400            SX1     256
2002  36616                           IX6     X1+X6
                  5176000466 +          SA4     HEADCHN
2003  7110000100                        SX7     64
                  36677                 IX6     X1+X6
2004  5160000467 +                    SA6     REQSLOT
                                *
                  6177000000            DOBUFS  0,DISKRB0,0
2007  6110000000                        DOBUFS  0,DISKWB0,4
2011  6110000001                        DOBUFS  1,DISKRB1,0
2013  6110000001                        DOBUFS  1,DISKWB1,4
2015  6110000002                        DOBUFS  2,DISKRB2,0
2017  6110000002                        DOBUFS  2,DISKWB2,4
2021  6110000003                        DOBUFS  3,DISKRB3,0
2023  6110000003                        DOBUFS  3,DISKWB3,4
                                *
2025  7160000007                        SX6     7
                  5176000672 +          SA6     TEMP1
2026  7160000003                        SX6     3
                  5176000673 +          SA6     TEMP2
                                *
2027  5140000672 +              INITCD10 SA4     TEMP1
                  5136000673 +          SA3     TEMP2
2030  5214000730 +                       SA1     DISKMOT+X4              REQUEST
                  5223000754 +          SA2     DISKRB+X3                  READ
```

```
2031  5234000741 +                          SA3     DISKADR+X4              BUFFERS
2032  6170002033 +              +           SB7     *+1
                  0200000000 X              JP      HANG1
                                *
2033  5110000672 +                          SA1     TEMP1
                  7577777776                SX7     X1-1
2034  5170000672 +                          SA7     TEMP1
                  5111000673 +              SA1     TEMP2
2035  7261777776                            SX6     X1-1
                  5176000673 +              SA6     TEMP2
2036  0326002027 +                          PL      X6,INITCD10
                                *
                  7176000003                SX6     3
2037  5160000673 +                          SA6     TEMP2
                  0327002027 +              PL      X7,INITCD10
                                *
2040  7160000000 X                          SX6     DISKROC
                  7155001000                SX5     1000B
2041  37565                                 IX5     X6-X5
                    0325002046 +            PL      X5,INITCDE5         DISKROC MUST BE LESS THAN 1000B
2042  5160000672 +                          SA6     TEMP1
                  5176000672 +              SA6     TEMP1       COUNT OF REQUEST SLOTS
2043  7160000001                            SX6     1
                  5176000673 +              SA6     TEMP2       NEXT ONE TO RELEASE
                                *
2044  5110000673 +              INITCDE1    SA1     TEMP2       RELEASE REQUEST SLOTS
                    1077T1                  BX7     X1
2045  7261000001                            SX6     X1+1
                  5176000673 +              SA6     TEMP2
2046  5150000740 +                          SA5     DREQMOT
                    100655                  BX6     X5
2047  5110000744 +                          SA1     DISKSLT
                  6166777776                SB6     -1
2050  6110000000 X                          SB1     INISCB
                  6170002052 +              SB7     INITCDE2
2051  0200000000 X                          JP      EVENT1
                                *
2052  5110000672 +              INITCDE2    SA1     TEMP1
                  7567777776                SX6     X1-1
2053  5160000672 +                          SA6     TEMP1
                  0331A002044 +             NZ      X6,INITCDE1
                                *
2054  76600                                 SX6     B0
                    5160000764 +            SA6     THISPOS
2055  5160000705 +                          SA6     NEXTPOS
                                *
                  5111A000740 +             SA1     DREQMOT     HANG P PROC ON REQ EC
2056  5120000752 +                          SA2     DISKREQ
                  5131A000751 +             SA3     DREQADR
2057  6170002060 +                          SB7     INITCDE3
                  0200000000 X              JP      HANG1
                                *
2060  7110000100                INITCDE3    SX1     64
```

```
                  5120000466 +                SA2     HEADCHN
2061  76600                                   SX6     B0
            5160000672 +                      SA6     TEMP1
                                    *
2062  7211777776                  INITCDE4    SX1     X1-1        CLEAT OUT HEAAD CHAINS
                  0331001774 +                NG      X1,INITCDE
2063  36012                                   IX0     X1+X2
            5100000672 +                      SA0     TEMP1
2064  0120000001                              WECS    1
2065  0400002062 +                            JP      INITCDE4
                                    *
2066  0000000000                  INITCDE5    PS      0           TOO MANY REQ SLOTS
2067  0400002066 +                            JP      INITCDE5
```

```
                                *
                                *                       INITIALIZE  A SIZE GROUP OF BUFFERS
                                *
                                *
                                *                       B1  SIZE INDEX
                                *                       B2  NUMBER TO SET UP  ( MUST BE AT LEAST 2 )
                                *                       B4  0 FOR READ BUFFERS, 4 FOR WRITE BUFFERS
                                *
                                *
2070                            INITBUF   BSSZ  1
2071  5110002122 +                       SA1   NEXTBFP     START FROM LAST BUF PNT FOR WRITE BUFFERS
                 5121000266 +             SA2   SIZES+B1
2072  5130000463 +                       SA3   USERFIL
                 5140000465 +             SA4   BUFPNTS
2073  36313                              IX3   X1+X3        INITIALIZE POINTER ADDRESSES
           36414                          IX4   X1+X4
                 66320                    SB3   B2
2074  5150002121 +                       SA5   BUFPNT
                 74610                    SX6   B1
                      20622               LX6   18
2075  73550                              SX6   X5          WIPE OLD SFX
           12665                          BX6   X6+X5       ADD IN SZX TO BUFFER POINTER
                 5160002121 +             SA6   BUFPNT
2076  7170000001                         SX7   1
                                *
2077  10033                        INITBUF1  BX0   X3          SET UP BUFFER POINTER ADDRESSES
           54050                          SA0   A5
2100  0120000001                         WECS  1
2101  10044                              BX0   X4
           54050                          SA0   A5
2102  0120000001                         WECS  1
2103  36626                              IX6   X2+X6
           36737                          IX3   X3+X7
                 34447                    IX4   X4+X7
                      54650               SA6   A5
2104  6133777776                         SB3   B3-1
                 0636002077 +             NE    B3,B0,INITBUF1
                                *
2105  7111000764 +                       SX1   DISKBUF*B1
                 54114                    SA1   X1+B4
                      10611               BX6   X1
2106  5160000674 +                       SA6   TEMP3       EVENT CHAN FOR BUFFERS
                 5116002122 +             SA1   NEXTBFP
2107  10711                              BX7   X1
           66320                          SB3   B2
                                *
2110  5170000672 +             INITBUF2  SA7   TEMP1       BUFFER INDEXED TO BE RELEASED
                 74640                    SX6   B3
2111  5160000673 +                       SA6   TEMP2       COUNT LEFT
                 5156000740 +             SA5   DREQMOT
2112  10655                              BX6   X5
           5110000674 +                   SA1   TEMP3
2113  6160777776                         SB6   -1
                 6110000000 X             SB1   INTSCR
```

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2114  6170002115 +                        SB7     INITBUF3
                  0200000000 X            JP      EVENTI
                                *
2115  5110000672 +              INITBUF3   SA1     TEMP1
                  7277000001              SX7     X1+1
2116  5110000673 +                        SA1     TEMP2
                  6231777776              SB3     X1-1
2117  0530002110 +                        NE      B3,B0,INITBUF2
                                *
2120  5170002122 +              INITBUF4   SA7     NEXTBFP
                  0200002070 +            JP      INITBUF
                                *
                                *
2121  0000000000000000400      BUFFPNT    DATA    400B        NEXT BUFFER ASSIGNMENT ADDRESS
2122  0000000000000000001      NEXTBFP    DATA    1           NEXT BUFFER POINTER FILE ADDRESS
                                *
                                *
                                *
2123                                      BSSZ    413-*+PPUBUF2       FINISH UP 2ND BUFFER
2774                                      END

                    35362   STORAGE USED          1217 STATEMENTS      152 SYMBOLS
                            6600 ASSEMBLY         5.784 SECONDS        538 REFERENCES
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SYMBOLIC REFERENCE TABLE.

BFMSK	202	PROGRAM*	5/39		13/20		13/49	L							
BITJP	136	PROGRAM*	9/38		9/47	L	10/02								
BITX	651	PROGRAM*	9/24		9/37	S	28/24	L							
BUFPNT	2121	PROGRAM*	34/17		34/22	S	35/14	L							
BUFPNTS	465	PROGRAM*	14/16		18/09		28/06	L	31/28	S	34/13				
BUFX	677	PROGRAM*	14/15	S	28/50	L									
CHAINWD	717	PROGRAM*	29/11	L											
CMECS	156	PROGRAM*	9/48		12/05	L									
CONTWD	721	PROGRAM*	29/13	L											
COPY1	259	PROGRAM*	11/05		12/06		17/06	L	17/17						
COPY2	255	PROGRAM*	11/18		12/11		18/00	L	18/21						
COUNTS	747	PROGRAM*	27/17		27/27		30/13	L							
DATAWD	725	PROGRAM*	5/11		29/18	L									
DINTQ	0	EXTERNAL*	5/06												
DIR	703	PROGRAM*	7/21		25/19		25/32	S	26/05		29/02	L	31/21	S	
DISASTR	0	EXTERNAL*	6/13												
DISKADR	741	PROGRAM*	5/49		13/44		29/31	E	29/37	L	32/01				
DISKBUF	754	PROGRAM*	29/42	E	29/49	D	34/30								
DISKMOT	730	PROGRAM*	5/47		13/42		29/31	E	29/34	L	31/52				
DISKRB	764	PROGRAM*	5/48		13/43		29/51	L	31/53						
DISKRB0	0	EXTERNAL*	31/37												
DISKRB1	0	EXTERNAL*	31/39												
DISKRB2	0	EXTERNAL*	31/41												
DISKRB3	0	EXTERNAL*	31/43												
DISKREQ	752	PROGRAM*	6/03		29/42	E	29/46	L	32/48						
DISKRQC	0	EXTERNAL*	32/17												
DISKRSP	753	PROGRAM*	20/28		29/42	E	29/47	L							
DISKSF	755	PROGRAM*	30/04	E	30/08	L	31/26								
DISKSLT	764	PROGRAM*	20/42		29/43	E	30/01	L	32/35						
DISKUF	765	PROGRAM*	30/04	E	30/07	L	31/29								
DISKWB	760	PROGRAM*	14/26		29/52	L									
DISKWB0	0	EXTERNAL*	31/38												
DISKWB1	0	EXTERNAL*	31/40												
DISKWB2	0	EXTERNAL*	31/42												
DISKWB3	0	EXTERNAL*	31/44												
DREQADR	751	PROGRAM*	8/54		29/38	L	32/39								
DREQMOT	740	PROGRAM*	8/02		14/24		20/29		20/43		29/35	L	32/36	32/47	34/40
DSKINTQ	726	PROGRAM*	5/05		29/23	E	29/26	L							
DSKPNT	727	PROGRAM*	29/23	E	29/27	L									
DSKPNTQ	441	PROGRAM*	27/29	L	27/30										
DSKPNT1	452	PROGRAM*	27/19	L	27/31										
ECSCM	144	PROGRAM*	9/47		11/05	L									
EVENTS	5	PROGRAM*	4/14		5/04	L	5/07								
EVENTS1	6	PROGRAM*	5/05	L	5/50		6/12		6/14		8/05				
EVENTWD1	722	PROGRAM*	29/14	L											
EVENTWD2	723	PROGRAM*	5/29		6/18		29/15	L							
EVENTI	0	EXTERNAL*	14/30		20/36		20/50		32/34		35/02				
E.ECS	0	EXTERNAL*	5/11		6/45		7/10		12/13		19/34		21/47	24/14	33/10
			6/27		6/51		11/13		14/20		21/28		22/19	25/24	34/28
			6/35		7/06		11/20		18/13		21/31		22/39	26/16	34/31
HANGI	0	EXTERNAL*	5/51		8/06		13/46		32/03		32/51				
HEADCHN	466	PROGRAM*	6/30		21/23		25/13		28/07	L	31/31	S	33/01		
HEADFND	430	PROGRAM*	25/25		25/35	L									

SYMBOLIC REFERENCE TABLE.

HEADLP	416	PROGRAM*	25/15	L	25/33									
HEADLP1	421	PROGRAM*	25/31	L	25/29									
HEADLP2	426	PROGRAM*	25/27		25/31	L								
HEADSCN	414	PROGRAM*	15/07		15/26		25/11	L	25/17		25/37			
IDLEFLAG	653	PROGRAM*	7/18		7/52	S	15/14	S	28/26	L				
IDLEPRU	654	PROGRAM*	7/28		15/16	S	28/27	L						
INIT	241	PROGRAM*	9/52		16/04	L								
INITBUF	2070	PROGRAM*	31/37		31/39		31/41		31/43		34/09	L		
			31/38		31/40		31/42		31/46		35/11			
INITBUF1	2077	PROGRAM*	34/35	L	34/36									
INITBUF2	2110	PROGRAM*	34/46	L	35/08									
INITBUF3	2115	PROGRAM*	35/01		35/04	L								
INITBUF4	2120	PROGRAM*	35/10	L										
INITCDE	1774	PROGRAM*	16/08		31/19	L	33/06							
INITCDE1	2044	PROGRAM*	32/26	L	32/41									
INITCDE2	2052	PROGRAM*	32/35		32/38	L								
INITCDE3	2060	PROGRAM*	32/50		32/53	L								
INITCDE4	2062	PROGRAM*	33/05	L	33/10									
INITCDE5	2066	PROGRAM*	32/20		33/12	L	33/13							
INITCD10	2027	PROGRAM*	31/50	L	32/11		32/15							
INITFLG	245	PROGRAM*	16/04		16/07	S	16/11	L						
INTSCR	0	EXTERNAL*	14/38		20/32		20/46		32/34		34/53			
I.DISKP	0	PROGRAM*	4/04	E	4/09	L								
I.DISK0	441	PROGRAM*	27/05	E	27/30	D								
I.DISK1	452	PROGRAM*	27/05	E	27/31	D								
I.LOCK	0	EXTERNAL*	4/09											
I.WAIT	0	EXTERNAL*	4/11	S										
NBITS	6		9/18		9/27		10/02	D						
NEWHEAD	327	PROGRAM*	7/50		15/25		21/13	L	21/33		23/12			
NEWHEAD1	332	PROGRAM*	21/18	L	21/21									
NEWHEAD2	343	PROGRAM*	21/42	L	22/25									
NEWHEAD3	356	PROGRAM*	22/05		22/11	L								
NEWHEAD4	362	PROGRAM*	22/09		22/20	L								
NEWHEAD5	364	PROGRAM*	21/42		22/27	L								
NEWHEAD6	365	PROGRAM*	22/29	L	22/44									
NEWHEAD7	375	PROGRAM*	22/29		22/47	L								
NEWHEAD8	374	PROGRAM*	22/31		22/43	L								
NEWRDBF1	30	PROGRAM*	5/41		6/01	L								
NEWRDBUF	14	PROGRAM*	5/13		5/17	L								
NEWREQ	36	PROGRAM*	5/12		6/18	L								
NEWREQX	112	PROGRAM*	7/06		7/26		7/29		7/34		7/37		7/42	8/02 L
NEWREQ1	64	PROGRAM*	6/36		7/08	L								
NEWREQ2	76	PROGRAM*	7/22		7/32	L								
NEWREQ3	101	PROGRAM*	7/30		7/39	L								
NEWREQ4	104	PROGRAM*	7/19		7/44	L								
NEWSECT	402	PROGRAM*	20/26		22/41		24/10	L	24/43					
NEXTBFP	2122	PROGRAM*	34/10		34/42		35/10	S	35/15	L				
NEXTBIT	125	PROGRAM*	9/22	L	12/14		13/45		14/29		16/09			
			11/20		13/35		14/09		15/31					
NEXTBITL	130	PROGRAM*	9/19		9/30	L	9/33							
NEXTBITN	134	PROGRAM*	9/31		9/41	L								
NEXTPOS	705	PROGRAM*	7/27		7/40	S	15/04		15/21	S	26/08		32/45 S	
			7/35		7/46	S	15/12	S	15/28	S	29/04 L			

SYMBOLIC REFERENCE TABLE.

PMOT	724	PROGRAM*	29/17	L															
PNT	702	PROGRAM*	15/06	S	15/20	S	25/18		25/34	S	29/01	L							
POSHEAD	222	PROGRAM*	9/51		15/04	L													
POSHEAD1	231	PROGRAM*	15/08		15/19	L													
POSHEAD2	237	PROGRAM*	15/17		15/27		15/30	L											
PPCLK1	635	PROGRAM*	27/13		27/26		28/13	L											
PPCLK2	640	PROGRAM*	27/16		27/23		28/17	L											
PPUBUFS	661	PROGRAM*	18/17		21/14		28/33	L											
PPUBUF1	772	PROGRAM*	27/15		28/33		31/05	L											
PPUBUF2	1773	PROGRAM*	27/25		28/34		31/06	L	35/19										
PPULP	117	PROGRAM*	9/07	L	9/14		9/44												
PPUREQ	652	PROGRAM*	9/26		9/35	S	28/25	L											
PPUX	650	PROGRAM*	9/16	S	9/22		13/11		14/11		15/23		28/23	L					
PROCESS	716	PROGRAM*	5/09		29/10	L	29/20												
PSIZE	10		5/10		29/20	D													
RDBUFS	655	PROGRAM*	5/06		12/07		13/05		13/14		13/18		28/28	L					
RDBUFSW	663	PROGRAM*	6/01		13/22		28/36	L											
RDBUFW1	665	PROGRAM*	28/36		28/38	L													
RDBUFW2	666	PROGRAM*	28/37		28/39	L													
RDBUF1	636	PROGRAM*	27/12		28/14	L	28/29												
RDBUF2	641	PROGRAM*	27/22		28/18	L	28/30												
RDREQFS	706	PROGRAM*	6/08		13/33		29/09	L											
RDRSPNS	163	PROGRAM*	9/49		13/05	L													
REQSLOT	447	PROGRAM*	6/23		6/46		11/09		19/30		20/23		21/37		28/08	L	31/34	S	
REQWDS	657	PROGRAM*	9/10		9/42		17/07		17/12		19/20		28/31	L					
REQWD1	637	PROGRAM*	27/14		28/15	L	28/31												
REQWD2	642	PROGRAM*	27/24		28/19	L	28/32												
RESP	675	PROGRAM*	20/17	S	20/34		25/49	L											
RSPNS	272	PROGRAM*	13/09		14/07		19/19	L	20/33		20/47								
RSPNS1	315	PROGRAM*	20/22		20/28	L													
RSPNS2	322	PROGRAM*	20/42	L															
SCANCNT	470	PROGRAM*	23/10	S	27/09		27/19		28/16	L									
SCANPPS	115	PROGRAM*	4/13		9/04	L	9/09												
SECTB	471	PROGRAM*	11/06		20/21	S	22/04		22/39		27/10		28/11	L					
			19/26		21/18	S	22/30		24/42	S	27/20								
SETUTHIS	432	PROGRAM*	7/41		7/53		15/30		26/04	L	26/16								
SIZES	266	PROGRAM*	16/19		16/23	L	34/11												
SLOT	676	PROGRAM*	20/18	S	20/48		28/49	L											
STATES	643	PROGRAM*	27/11		27/21		28/21	L											
STOP	245	PROGRAM*	16/05		16/14	L	16/15												
SZX	701	PROGRAM*	5/23	S	5/36		6/05		28/32	L									
TEMP1	672	PROGRAM*	6/22	S	6/49		11/13		19/34		22/17		25/24		32/05		33/03	S	
			6/25		6/51		14/18		21/26		22/35	S	26/11	S	32/07	S	33/08		
			6/33		7/02	S	14/20		21/31		22/37		26/14		32/21	S	34/46	S	
			6/35		7/04		18/11		21/45		24/12		28/44	L	32/22	S	35/04		
			6/41	S	7/14	S	18/13		21/47		24/14		31/46	S	32/38				
			6/43		11/11		19/32		22/15	S	25/22		31/50		32/40	S			
TEMP2	673	PROGRAM*	28/45	L	31/51		32/10	S	32/24	S	32/29	S	35/04						
			31/48	S	32/08		32/14	S	32/26		34/48	S							
TEMP3	674	PROGRAM*	28/46	L	34/41	S	34/51												
TERMIND	700	PROGRAM*	14/08		19/45	S	28/51	L											
THISPOS	704	PROGRAM*	7/24		7/32		7/45	S	15/10		15/19	S	29/03	L	32/44	S			
USERFIL	463	PROGRAM*	18/15		28/04	L	31/24	S	34/12										

SYMBOLIC REFERENCE TABLE.

USERTHS	464	PROGRAM*	26/12	28/05 L	31/25 $	
WRBUFS	667	PROGRAM*	11/17 S	14/13	28/41 I	
WRRSPNS	206	PROGRAM*	9/60	14/06 L		
ZERO	671	PROGRAM*	21/29	28/43 L		
ZWD	720	PROGRAM*	29/12 L			