LENGTH OF PRG 00117

```
                IDENT   UTHNDLR
*****************************************************************************
*                                                                           *
*       THIS PROGRAM PROCESSES ALL INFORMATION THAT IS DISK BUFFERED        *
*       BEFORE BEING SENT TO THE PDP8                                       *
*                                                                           *
*       DEVICES CURRENTLY DOING THAT (01/01/72) ARE 200 UT LINE             *
*       PRINTERS AND THE PDP8#S HIGH SPEED PAPER TAPE PUNCH                 *
*                                                                           *
*       THIS CODE USES MOVEBUFF AND IFHNDLR TO DO MOST OF ITS WORK          *
*                                                                           *
*       ALL QUEUEING OPERATIONS ARE DONE BY MOVEBUFF                        *
*                                                                           *
*       THE CODE CALLS GETMEM TO REQUEST A 64 WORD BLOCK OF MEMORY          *
*       TO PUT THE RECORD IN, AND CALLS MOVEBUFF TO PLACE THE               *
*       RECORD IN THE BLOCK STARTING AT THE SECOND WORD.   IT THEN          *
*       STORES THE NUMBER OF 12 BIT BYTES IN THE FIRST WORD OF              *
*       THE BLOCK AND LINKS IT IN THE PROPER PDP8 OUTPUT Q                  *
*                                                                           *
*                                                                           *
*       COMMENTS ABOUT 200 UT DATA                                          *
*                                                                           *
*       WHENEVER A LP FILE IS UNEQUIPPED AND WE CURRENTLY DO NOT            *
*       HAVE DATA FOR THAT UT A 12 BIT CONTROL BYTE (OBTAINED FROM          *
*       THE CONTROL WORD IN THE MACRO) IS SENT TO THE PDP8 TO TELL          *
*       IT THAT DATA IS AVAILABLE FOR THAT UT.  WHEN THE PDP8               *
*       CAN TAKE THE DATA IT SENDS UP A REQUEST FOR IT IN A REGULAR         *
*       TTY CONTROL BLOCK.  THE NUMBER OF BLOCKS IT HAS ASKED FOR           *
*       IS KEPT IN CTR IN THE CONTROL MACRO.  CTR IS ZEROED ANYTIME         *
*       THERE IS NO MORE INFORMATION FOR A PARTICULAR UT.                   *
*                                                                           *
*       IF MOVEBUFF RETURNS A FILE MARK OR END OF FILE STATUS A             *
*       DUMMY BLOCK IS GENERATED THAT HAS AN 01 IN THE FIRST                *
*       CHARACTER POSITION AND THREE MORE BLANKS TO FORCE THE UT            *
*       TO EJECT A PAGE                                                     *
*                                                                           *
*       AFTER THE END OF THE LAST FILE A BLOCK IS LINKED IN WITH A          *
*       BYTE COUNT OF ZERO  IS SENT TO THE PDP8 TO TELL IT THAT             *
*       NO MORE OUTPUT EXISTS FOR THE DEVICE                                *
*                                                                           *
*       COMMENTS ABOUT HIGH SPEED PUNCH DATA                                *
*                                                                           *
*       DATA IS SENT TO THE PDP8 ONE BLOCK AT A TIME.  AS THE PDP8          *
*       DECIDES IT WANTS MORE DATA IT SENDS UP A REQUEST IN A TTY           *
*       CONTROL BLOCK.                                                      *
*                                                                           *
*       WHENEVER MOVEBUFF RETURNS A FILE MARK OR END OF FILE STATUS A       *
*       BLOCK WITH A BYTE COUNT OF ZERO IS SENT TO THE PDP8.  THIS          *
*       CAUSES IT TO GENERATE ABOUT 1 FOOT OF BLANK TAPE.                   *
*                                                                           *
*****************************************************************************
```

```
                                INCLUDE    ↑SYSMAC
                      SYSMAC    COSY/      03          V4.1        08/17/74  0453

        00023 P                 ENTRY      UTLPCB
        00102 P                 ENTRY      UTLPCKQ
        00072 P                 ENTRY      UTLPDONE
        00000 P                 ENTRY      UTLPINT


                                EXT        BIT17
                                EXT        BIT23
                                EXT        GETMEM
                                EXT        IOBUSY
                                EXT        PDP8CTLX
                                EXT        URBLOK
                                EXT        URBLOKI
                                EXT        URBLOKNX

        00001         X1        EQU        1
        00002         X2        EQU        2
        00003         X3        EQU        3
                      *
        00000         CBI       EQU        0




                                UTLPDEF
                      .*                                                                     *
                      .***********************************************************************
                      .*                                                                     *
                      .*        URBLOCK BLOCK DEFINITIONS                                    *
                      .*                                                                     *
                      .*                                                                     *
        00000         FB        EQU        0                 POINTER TO NEXT FILE BLOCK      *
        00001         BLF       EQU        FB+1              COUNT OF BLOCKS IN THIS FILE    *
        00002         BFBGN     EQU        BLF+1             QUARTER PAGE NUMBER OF CURRENT  *
                      .*                                     512 WORD BLOCK                  *
        00003         BFCPP     ECU        BFBGN+1           POINTER TO NEXT WORD TO BE      *
                      .*                                     LOADED FROM THIS BLOCK.  THIS   *
                      .*                                     POINTER IS RELATIVE TO THE      *
                      .*                                     BEGINNING OF THE CURRENT BLOCK  *
        00004         CALBAK    EQU        BFCPP+1           GO TO THIS ADDRESS WHEN BUFFER  *
                      .*                                     IS DONE AFTER AN INTERRUPT      *
                      .*                                     BIT23 SEZZ CALBAK               *
        00005         IMAD      EQU        CALBAK+1          LOCATION WHERE RECORD IS TO BE  *
                      .*                                     PLACED OR MOVED FROM.           *
        00006         LNIM      EQU        IMAD+1            MAXIMUM ALLOWABLE RECORD SIZE   *
        00007         KILLFLAG  EQU        LNIM+1            STI   *,0                       *
        00010         ENAD      EQU        KILLFLAG+1        ENI   BLOCK,X1                  *
        00011         NJM       EQU        ENAD+1            UJP   IMPURE                    *
        00012         ENIT      EQU        NJM+1             TEMP FOR INDEX 3                *
                      .*                                     IF BIT23 DEVICE MUST BE STARTED *
                      .*                                     BY OPERATOR                     *
                      .*                                     IF BIT22 DO NOT PROCESS FORMS ON*
                      .*                                     THIS DEVICE                     *
                      .*                                     IF BIT21 THEN STOP MACRO        *
                      .*                                     IF BIT20 THEN BUFFER IS UNSAFE  *
                      .*                                     BIT 19 IS A QUEUEING FLAG       *
        00013         DEVBLK    EQU        ENIT+1            PTR TO 4 WORD BLOCK             *
        00014         COUNT     EQU        DEVBLK+1          COUNT OF WORDS IN RECORD        *
        00015         POSI      EQU        COUNT+1           RELATIVE LOCATION IN BUFFER     *
        00016         PFWORD    EQU        POSI+1            CONTENTS OF PF1                 *
        00016         FORMSWRD  EQU        PFWORD                                            *
                      .*                                     BIT19 SEZ WAITING FOR           *
                      .*                                     OPERATOR TO READY DEVICE        *
                      .*                                     BIT20 SEZ WANTS FORMS           *
                      .*                                     BIT21 SEZ HAS FORMS             *
                      .*                                     BIT22 SEZ TAKE FORMS OUT        *
                      .*                                     BIT23 SEZ SAME AS BIT22 BUT     *
                      .*                                     DRIVER IS WAITING TO OUTPUT NEXT*
                      .*                                     FILE                            *
        00017         IDENT     EQU        PFWORD+1          BCD IDENT OF THE DEVICE         *
        00020         URBEXITA  EQU        IDENT+1           ENI   BLOCK,X1                  *
        00021         URBEXIT   EQU        URBEXITA+1        UJP   IMPURE                    *
        00022         QINGLOC   EQU        URBEXIT+1         ADDRESS TO GO TO WHEN FILES     *
                      .*                                     ARE UNEQUIPPED                  *
        00023         QPNT      EQU        QINGLOC+1         POINTER TO NXPTR AND LXPTR      *
        00024         QEMPTY    EQU        QPNT+1            ADDRESS TO TELL DRIVER THAT IT  *
```

```
                .*                                        HAS TO MORE FILES TO OUTPUT     *
00025           STRTLOC   EQU       QEMPTY+1              ADDRESS TO TELL DRIVER TO START *
                .*                                        FILE                            *
                .*                                                                        *
                .**************************************************************************
00026           URWORD    EQU       STRTLOC+1             ADDRSS OF WHERE TO JUMP ON THE  *
                .*                                        NEXT INTERRUPT                  *
00027           QADD      EQU       URWORD+1              POINTER TO THE PDP8 TRANSFER Q  *
00030           NXPTR     EQU       QADD+1                POINTER TO NEXT FILE TO PROCESS *
00031           LXPTR     EQU       NXPTR+1               POINTER TO LAST FILE TO PROCESS *
00032           CONTROL   EQU       LXPTR+1               HAS PDP8 CONTROL BYTE THAT      *
                .*                                        SEZ WE HAVE LF INFORMATION      *
00033           INTLOC    EQU       CONTROL+1             ENI   BLK,X1+C8I ENTER HERE WHEN *
                .*                                        UJP   INTERRUP    PDP8 WANTS DATA *
00035           RETADD    EQU       INTLOC+2              RETURN ADDRESS                  *
                .*                                        IF BIT23 ALLOW INTERRUPT REQUEST*
00036           CTR       EQU       RETADD+1              COUNTER OF INTERRUPT R EQUESTS  *
```

```
00000  20500023        83   UTLPINT  LDA,I    QPNT,X1+CBI      SHOULD WE HONOR THE INTERRUPT
00001  03200115  P     84            AZJ,GE   UJP0X2           EXIT IF NOT
00002  20100036        85            LDA      CTR,X1+CBI       ARE WE ALL READY BUSY
00003  03200113  P     86            AZJ,GE   GOAWAY           EXIT IF WE ARE
00004  15600001        87            INA      1                PREVENT BEING IN HERE TWICE
00005  40100036        88            STA      CTR,X1+CBI
00006  53200000        89            TIA      X2               SAVE THE RETURN ADDRESS
00007  44100035        90            SWA      RETADD,X1+CBI
       00010  P        91   NEXTREC  EQU      *
00010  14300006        92            ENI      6,X3             GET A BLOCK OF MEMORY
00011  00777777  X     93            RTJ      GETMEM
00012  15600002        94            INA      2
00013  44100005        95            SWA      IMAD,X1+CBI      SAVE THE ADDRESS IN THE CONTROL B
       00014  P        96   CALLURB  EQU      *
00014  14300016  P     97            ENI      *+2,X3           ENTER THE RETURN ADDRESS
00015  01500026        98            UJP,I    URWORD,X1+CBI
00016  01500035        99            UJP,I    RETADD,X1+CBI    WILL BE CALLED BACK
00017  13000030       100            SHAQ     24
00020  20100035       101            LDA      RETADD,X1+CBI    LOAD THE RETURN ADDRESS
00021  53700000       102            TAI      X3
00022  13000030       103            SHAQ     24
                      104
       00023  P       105   UTLPCB   EQU      *                COME HERE AFTER A LINE IS MOVED
00023  14777777  X    106            ENQ      URBLOK           CALL THE PROPER MOVEBUFF ROUTINE
00024  41100026       107            STQ      URWORD,X1+CBI
00025  14700000       108            ENQ      0
00026  03300050  P    109            AZJ,LT   NOTDATA          JUMP IF NOT A DATA RECORD
00027  20100014       110            LDA      COUNT,X1+CBI     LOAD THE WORD COUNT
00030  13000006       111            SHAQ     6                BINARY BIT TO BIT00 OF Q
00031  12000010       112            SHA      8                WORD COUNT TO UPPER A
00032  13000013       113            SHAQ     11               BYTE COUNT TO Q11-00
00033  20100005       114   SETADD   LDA      IMAD,X1+CBI      LOAD THE RECORD ADDRESS
00034  53600000       115            TAI      X2
00035  15477775       116   STOREWC  INA,S    -2
00036  45277775       117            STAQ     -2,X2            STORE WORD COUNT AND POINTER
00037  35077777  X    118            SSA      BIT17            LINK INTO THE PROPER OUTPUT QUEUE
00040  40500027       119            STA,I    QADD,X1+CBI
00041  53300000       120            TIA      X3               SAVE THE RETURN ADDRESS
00042  44100035       121            SWA      RETADD,X1+CBI
00043  20100036       122            LDA      CTR,X1+CBI       DOES THE 8 WANT MORE DATA
00044  15477776       123            INA,S    -1
00045  40100036       124            STA      CTR,X1+CBI
00046  03200010  P    125            AZJ,GE   NEXTREC
00047  01300000       126            UJP      0,X3             EXIT
                      127
00050  03100053  P    128   NOTDATA  AZJ,NE   EOFREC           JUMP IF NOT END OF DATA
00051  14600063  P    129            ENA      CHECNEXT         CHECK FOR MORE LP FILES WHEN WE G
00052  44100026       130            SWA      URWORD,X1+CBI    THE NEXT INTERRUPT
       00053  P       131   EOFREC   EQU      *
00053  20100012       132            LDA      ENIT,X1+CBI
00054  03300033  P    133            AZJ,LT   SETADD           JUMP IF A PAPER TAPE PUNCH
00055  21000116  P    134            LDQ      PAGEJECT
00056  20100005       135            LDA      IMAD,X1+CBI      LOAD THE RECORD ADDRESS
00057  53600000       136            TAI      X2
00060  41200000       137            STQ      0,X2
00061  14700002       138            ENQ      2                SAY TWO 12 BIT BYTES
00062  01000035  P    139            UJP      STOREWC
```

```
          00063 P      141      CHECNEXT EQU      *
00063  20100035        142               LDA      RETADD,X1+CBI      LOAD THE RETURN ADDRESS
00064  53600000        143               TAI      X2                 AND PUT INTO THE PROPER INDEX
00065  14677777 X      144               ENA      URBLOKI            NEXT CALL TO MOVEBUFF WILL BE THE
00066  44100026        145               SWA      URWORD,X1+CBI      FOR THE NEXT FILE
00067  14600014 P      146               ENA      CALLURB            CHANGE THE START UP LOCATION
00070  44100025        147               SWA      STRTLOC,X1+CBI
00071  01077777 X      148               UJP      URBLOKNX
                       149
          00072 P      150      UTLPDONE EQU      *
00072  14700000        151               ENQ      0
00073  41100036        152               STQ      CTR,X1+CBI         RESET THE REQUEST COUNTER
00074  41500023        153               STQ,I    QPNT,X1+CBI        CLEAR THE ≠PROCESSING FILE≠ BIT
00075  14600102 P      154               ENA      UTLPCKQ            RESTORE THE START UP LOCATION
00076  44100025        155               SWA      STRTLOC,X1+CBI
00077  53200000        156               TIA      X2
00100  53700000        157               TAI      X3                 PUT THE RETURN ADDRESS IN X3
00101  01000033 P      158               UJP      SETADD
                       159
                       160
          00102 P      161      UTLPCKQ  EQU      *
00102  53300000        161+001           TIA      X3                 GET THE RETURN ADDRESS
00103  53600000        161+002           TAI      X2                 INTO X2 FOR PDP8CTLX
00104  20077777 X      162               LDA      BIT23              REMEMBER WE ARE HERE
00105  34500023        163               RAD,I    QPNT,X1+CBI        SET THE ≠PROCESSING FILE≠ BIT
00106  20100012        164               LDA      ENIT,X1+CBI        IS THIS THE PAPER TAPE PUNCH
00107  03300000 P      165               AZJ,LT   UTLPINT            JUMP IF IT IS
00110  20100032        166               LDA      CONTROL,X1+CBI     OTHERWISE TELL THE PDP8 WE
00111  53500000        167               TAI      X1                 HAVE DATA FOR IT
00112  01077777 X      168               UJP      PDP8CTLX
                       169
          00113 P      170      GOAWAY   EQU      *
00113  15600001        171               INA      1                  INCREMENT THE COUNTER
00114  40100036        172               STA      CTR,X1+CBI         AND STORE IT EACK
00115  01200000        173      UJPOX2   UJP      0,X2               MOVE IF THIS CODE EVER GETS THIS
                       174
00116  01606060        175      PAGEJECT BCD      1,1                PAGE EJECT
                       176               END

    NO LINES WITH ERRORS
```

```
   BFBGN          00002      13      15 00000P
   BFCPP          00003      15      19 00000P
   BIT17     X               63     118 00037P
   BIT23     X               64     162 00104P
   BLF            00001      12      13 00000P
   CALBAK         00004      19      22 00000P
   CALLURB        00014P     96     146 00067P
   CBI            00000      76      83 00000P     85 00002P     88 00005P     90 00007P     95 00013P     98 00015P
                                     99 00016P    101 00020P    107 00024P    110 00027P    114 00033P    119 00040P
                                    121 00042P    122 00043P    124 00045P    130 00052P    132 00053P    135 00056P
                                    142 00063P    145 00066P    147 00070P    152 00073P    153 00074P    155 00076P
                                    163 00105P    164 00106P    166 00110P    172 00114P
   CHECNEXT       00063P    141     129 00051P
   CONTROL        00032     192     194 00000P    166 00110P
   COUNT          00014      37      38 00000P    110 00027P
   CTR            00036     198      85 00002P     88 00005P    122 00043P    124 00045P    152 00073P    172 00114P
   DEVBLK         00013      36      37 00000P
   ENAD           00010      26      27 00000P
   ENIT           00012      28      36 00000P    132 00053P    164 00106P
   EOFREC         00053P    131     128 00050P
   FB             00000      11      12 00000P
 * FORMSWRD       00016      40
   GETMEM    X               65      93 00011P
   GOAWAY         00113P    170      86 00003P
   IDENT          00017      49      50 00000P
   IMAD           00005      22      24 00000P     95 00013P    114 00033P    135 00056P
   INTLOC         00033     194     196 00000P
 * IOBUSY    X               66
   KILLFLAG       00007      25      26 00000P
   LNIM           00006      24      25 00000P
   LXPTR          00031     191     192 00000P
   NEXTREC        00010P     91     125 00046P
   NJM            00011      27      28 00000P
   NOTDATA        00050P    128     109 00026P
   NXPTR          00030     190     191 00000P
   PAGEJECT       00116P    175     134 00055P
   PDP8CTLX  X               67     168 00112P
   PFWORD         00016      39      40 00000P     49 00000P
   POSI           00015      38      39 00000P
   QADD           00027     189     190 00000P    119 00040P
   QEMPTY         00024      55      57 00000P
   QINGLOC        00022      52      54 00000P
   QPNT           00023      54      55 00000P     83 00000P    153 00074P    163 00105P
   RETADD         00035     196     198 00000P     90 00007P     99 00016P    101 00020P    121 00042P    142 00063P
   SETADD         00033P    114     133 00054P    158 00101P
   STOREWC        00035P    116     139 00062P
   STRTLOC        00025      57     187 00000P    147 00070P    155 00076P
   UJP0X2         00115P    173      84 00001P
   URBEXIT        00021      51      52 00000P
   URBEXITA       00020      50      51 00000P
   URBLOK    X               68     106 00023P
   URBLOKI   X               69     144 00065P
   URBLOKNX  X               70     148 00071P
   URWORD         00026     187     189 00000P     98 00015P    107 00024P    130 00052P    145 00066P
   UTLPCB    E    00023P    105      57 00000P
   UTLPCKQ   E    00102P    161      58 00000P    154 00075P
   UTLPDONE  E    00072P    150      59 00000P
   UTLPINT   E    00000P     83      60 00000P    165 00107P
   X1             00001      72      83 00000P     85 00002P     88 00005P     90 00007P     95 00013P     98 00015P
                                     99 00016P    101 00020P    107 00024P    110 00027P    114 00033P    119 00040P
                                    121 00042P    122 00043P    124 00045P    130 00052P    132 00053P    135 00056P
                                    142 00063P    145 00066P    147 00070P    152 00073P    153 00074P    155 00076P
                                    163 00105P    164 00106P    166 00110P    167 00111P    172 00114P
   X2             00002      73      89 00006P    115 00034P    117 00036P    136 00057P    137 00060P    143 00064P
                                    156 00077P  161+2 00103P    173 00115P
   X3             00003      74      92 00010P     97 00014P    102 00021P    120 00041P    126 00047P    157 00100P
                                  161+1 00102P
```