```
LENGTH OF  PRG          00265
                              IDENT     PUNHNDLR

                   ************************************************************
                   *                                                          *
                   *          THIS ROUTINE IS THE PUNCH (CDC 415) DRIVER      *
                   *                                                          *
                   *          THIS DRIVER HAS A NUMBER OF ENTRY POINTS WHOSE PURPOSES *
                   *          ARE AS FOLLOWS                                  *
                   *                                                          *
                   *          PNINT     ENTERED FROM INTSORT WHENEVER THERE IS A PUNCH *
                   *                    INTERRUPT                             *
                   *          PNFILE    ENTERED FROM MOVEBUFF WHENEVER A NEW PUNCH FILE *
                   *                    IS STARTED                            *
                   *          PUNCB     ENTERED FROM MOVEBUFF WHENEVER A RECORD REQUEST *
                   *                    IS NOT IMMEDIATLY PROCESSED           *
                   *          PUNCON    INITIAL STORES THE PUNCH CONNECT CODE HERE *
                   *                                                          *
                   *          WHEN PNFILE IS ENTERED IT CHECKS TO SEE IF A BUFFER *
                   *          HAS BEEN ALLOCATED.  IF NOT IT CALLS GETMEM TO GET *
                   *          A 128 WORD BLOCK OF STORAGE TO USE FOR BUFFERS.  IF *
                   *          A LARGE AMOUNT OF PUNCHING IS DONE (IE. THE PUNCH IS *
                   *          BUSY 50% OR MORE OF THE TIME) THE CODE SHOULD BE CHANGED *
                   *          TO USE A BUFFER ALLOCATED BY PUNSTART.  WHENEVER PNINT *
                   *          IS ENTERED AND THERE IS NO MORE DATA TO PUNCH IT CALLS *
                   *          FREEMEM TO FREE THE 128 WORD BLOCK OF STORAGE. *
                   *          THE DEVICE CONTROL MACRO (CALLED PUNBLOC) IS ALLOCATED *
                   *          BY INITIAL AND PUNSTART IF A PUNCH IS PRESENT. *
                   *                                                          *
                   ************************************************************


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

                              MACRO     LAB,,FUNCTION
                              NAME      ISSUE
                   $LAB       ENA       $FUNCTION
                              RTJ       SEL
                              END
          00000 P             ENTRY     PNFILE
          00021 P             ENTRY     PNINT
          00107 P             ENTRY     PUNCB
          00225 P             ENTRY     PUNCON
                              EXT       BLANKS
                              EXT       CONNECT              ROUTINE TO CONNECT TO CONTROLLERS
                              EXT       FREEMEM              STORAGE ALLOCATION ROUTINE
                              EXT       GETMEM               STORAGE ALLOCATION ROUTINE
                              EXT       OPMSGX               CALLED FOR MESSAGE TO OPERATOR
                              EXT       PUNBLOC              ADDRESS OF PUNCH CONTROL MACRO
                              EXT       UNCON                ROUTINE TO RELEASE CHANNEL
                              EXT       URBLOK
                              EXT       URBLOKI
                              EXT       URBLOKNX

          00022    BINFIL     EQU       18                   BINARY BIT IS BIT 18
          00000    IMPURE     EQU       0
          00000    IO         EQU       0
          00000    SELECT     EQU       0
          00000    SENSE      EQU       0
          00001    X1         EQU       1
          00002    X2         EQU       2
          00003    X3         EQU       3
          00000    CBI        EQU       0

                              URBDEF
                   .*                                                        *
                   .**********************************************************
                   .*                                                        *
                   .*         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      EQU       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                               *
                 .*                                                                                      *
                 .***********************************************************************************************
```

```
                                      ************************************************************************
                              67      *                                                                      *
                              68      *          ENTER HERE AT THE BEGINNING OF EACH FILE                    *
                              69      *                                                                      *
                                      ************************************************************************
                              71
              00000 P         72      PNFILE    EQU       *
00000  47100057 P             73                STI       OFLAG,X1            REMEMBER TO OFFSET THE EOJ CARD
00001  54200037 P             74                LDI       STORADD,X2          DO WE HAVE A BUFFER
00002  02677777 X             75                IJD       URBLOKI,X2          JUMP IF WE DO
00003  47300017 P             76                STI       PNFILEEX,X3         SAVE THE RETURN ADDRESS
00004  14300007               77                ENI       7,X3                GET 128 WORDS OF STORAGE
00005  00777777 X             78                RTJ       GETMEM
00006  40100005               79                STA       IMAD,X1+CBI         SAVE THE ADDRESS OF THE STORAGE
00007  15600050               80                INA       40
00010  14700001               81                ENQ       1
00011  45000220 P             82                STAQ      LAST                SAVE ADDRESS OF SECOND BUFFER
00012  15600050               83                INA       40
00013  45000222 P             84                STAQ      PREV
00014  20077777 X             85                LDA       BLANKS              BLANK FILL LAST RECORD
00015  40300000               86                STA       0,X3
00016  47300037 P             87                STI       STORADD,X3          SAVE THE STORAGE ADDRESS
00017  14300000               88      PNFILEEX  ENI       IMPURE,X3           ENTER THE RETURN
00020  01000002 X             89                UJP       URBLOKI
                              90
                                      ************************************************************************
                              92      *                                                                      *
                              93      *          ENTER HERE ON PUNCH INTERRUPTS                              *
                              94      *                                                                      *
                                      ************************************************************************
                              96
00021  47300144 P             97      PNINT     STI       RETURN,X3           SAVE THE RETURN ADDRESS
00022  00700224 P             98                RTJ       PNCON               CONNECT TO PUNCH
00023  77730000               99                DINT                          PREVENT OTHER INTERRUPTS
00024  17302100              100                ANI       2100B,X3            LEAVE COMPARE ERROR STATUS
00025  02700156 P            101                IJD       COMPARE1,X3         BAD NEWS
00026  04000000              102      COMF2     ISE       IMPURE,0            FIRST COMPARE FLAG
00027  01000200 P            103                UJP       COMPARE2            STILL RECOVERING
00030  04000000              104      COMF3     ISE       IMPURE,0            SECOND COMPARE FLAG
00031  47000030 P            105                STI       COMF3,0             RESET LAST FLAG
00032  04000000              106      LCNRFG    ISE       IMPURE,0            SKIP IF NO CARD IMAGE
00033  01000125 P            107                UJP       PUNCH               PUNCH IF PRESENT
00034  47000122 P            108                STI       OKAYT,0             SET OKAY TO PUNCH FLAG
                             109
00035  20100000              110                LDA       FB,X1               ARE WE WORKING ON A FILE
00036  03100044 P            111                AZJ,NE    RLSCN               JUMP IF SO
00037  14600000              112      STORADD   ENA       IMPURE              DO WE CURRENTLY HAVE A BUFFER
00040  03000044 P            113                AZJ,EQ    RLSCN               JUMP IF NOT
00041  14300007              114                ENI       7,X3                FREE IT IF WE DO
00042  00777777 X            115                RTJ       FREEMEM
00043  47000037 P            116                STI       STORADD,0           FORGET ABOUT THE STORAGE
                             117
00044  54200144 P            118      RLSCN     LDI       RETURN,X2           LOAD THE RETURN ADDRESS
00045  01077777 X            119                UJP       UNCON               RELEASE CHANNEL
                             120
                             121
              00046 P        122      TERMF     EQU       *
00046  47000073 P            123                STI       PTRF,0              RESET EOJ FLAG
00047  54200144 P            124                LDI       RETURN,X2           LOAD THE RETURN
00050  01077777 X            125                UJP       URBLOKNX            GET THE NEXT PUNCH FILE
```

```
                                 *****************************************************************
                                 *                                                               *
                                 *         RETURN HERE AFTER CHANNEL INTERRUPT                   *
                                 *                                                               *
                                 *****************************************************************

00051  01000000                  PCHANIN  UJP      IMPURE
00052  54200051 P                         LDI      PCHANIN,X2         LOAD RETURN ADDRESS
00053  47200144 P                         STI      RETURN,X2          SAVE THE RETURN ADDRESS
00054  14177777 X                         ENI      PUNBLOC,CBI+X1     POINT TO THE CONTROL MACRO
00055  14600020                           ISSUE    20B                SELECT INT ON READY AND NOT BUSY
00057  04000007                  OFLAG    ISE      7+IMPURE,0         SKIP IF NO OFFSET
00060  47100125 P                         STI      OFLAGB,X1          SET REAL OFFSET FLAG
00061  54200030 P                         LDI      COMF3,X2           LOAD COMPARE RECOVERY INDICATOR
00062  02600144 P                         IJD      RETURN,X2          DON≠T GET NEW CARD IF RECOVERING
00063  54300222 P                         LDI      PREV,X3            LOAD UNUSED BUFFER ADDRESS
00064  25000220 P                         LDAQ     LAST
00065  45000222 P                         STAQ     PREV               ADVANCE POINTERS
00066  20100005                           LDA      IMAD,X1+CBI        GET ADDRESS OF CARD JUST PUNCHED
00067  21100014                           LDQ      COUNT,X1+CBI       LOAD WORD COUNT ALSO
00070  45000220 P                         STAQ     LAST
00071  53300000                           TIA      X3
00072  40100005                           STA      IMAD,X1+CBI        SAVE ADDRESS FOR THIS TIME
00073  04000000                  PTRF     ISE      IMPURE,0           CHECK FOR LAST CARD
00074  01000046 P                         UJP      TERMF              IT WAS.  GET NEXT FILE

                                 *****************************************************************
                                 *                                                               *
                                 *         SET UP CALL TO MOVEBUFF AND PROCESS RETURN            *
                                 *                                                               *
                                 *****************************************************************

00075  14300077 P                         ENI      *+2,X3             ENTER RETURN ADDRESS
00076  01077777 X                         UJP      URBLOK
00077  01000144 P                         UJP      RETURN             NO CARD IMAGE YET
          00100 P                PNISTA   EQU      *
00100  47300032 P                         STI      LCNRFG,X3          SAY CARD PRESENT
00101  03200122 P                         AZJ,GE   PNCHD              STATUS IN A REG,
                                 *                                    40000000 SEZ FILE MARK,
                                 *                                    -0 SEZ END OF JOB


00102  03000111 P                         AZJ,EQ   TERMGEN            JUMP IF END OF JOB
00103  20000263 P                         LDA      FILMA              LOAD FILE MARK WORD
00104  40500005                           STA,I    IMAD,X1+CBI        PLACE INTO BUFFER
00105  14600001                           ENA      1                  FILE CARDS ARE 1 WORD LONG
00106  01000121 P                         UJP      SETCOUNT



00107  47300144 P                PUNCB    STI      RETURN,X3          SAVE THRE RETURN ADDRESS
00110  01000100 P                         UJP      PNISTA


          00111 P                TERMGEN  EQU      *
00111  14200047                           ENI      40-1,X2            ENTER COUNT FOR LOOP
00112  47200073 P                         STI      PTRF,X2            SAY EOJ BEING PUNCHED
00113  20100005                           LDA      IMAD,X1+CBI        LOAD ADDRESS OF CURRENT BUFFER
00114  44000116 P                         SWA      *+2                SAVE FOR SETTING LOOP
00115  14477777                           ENA,S    -0
00116  40200000                           STA      IMPURE,X2          SET OUTPUT BUFFER
00117  02600116 P                         IJD      *-1,X2
00120  20000264 P                         LDA      BINFCD             TO END OF JOB CARD DESCRIPTOR
00121  40100014                  SETCOUNT STA      COUNT,X1+CBI       SAVE THE WORD COUNT



          00122 P                PNCHD    EQU      *
00122  04000000                  OKAYT    ISE      IMPURE,0           ZERO SEZ OKAY TO PUNCH
00123  01000144 P                         UJP      RETURN             RETURN IF NOT READY
00124  00700224 P                         RTJ      PNCON              CONNECT
          00125 P                PUNCH    EQU      *
00125  14600000                  OFLAGB   ENA      IMPURE             NON-ZERO IF WE SHOULD OFF-SET
00126  03000133 P                         AZJ,EQ   NOOFFSET           THIS IS USED ONLY FOR EOJ CARDS
00127  47000057 P                         STI      OFLAG,0            RESET OFFSET FLAGS
00130  47000125 P                         STI      OFLAGB,0
00131  14600003                           ISSUE    03B                SELECT OFFSET
          00133 P                NOOFFSET EQU      *
00133  20100005                           LDA      IMAD,X1+CBI        LOAD ADDRESS OF PUNCH BUFFER
```

```
00134  44000141 P             SWA        PNOPA+1                  STORE BEGIN ADDRESS
00135  30100014               ADA        COUNT,X1+CBI             GENERATE FINAL ADDRESS FOR
00136  44000140 P             SWA        PNOPA                    PUNCH COMMAND AND STORE IT
00137  00700145 P             RTJ        PUNCH3                   CALL ROUTINE TO DO PUNCH SETUP
00140  76000000     PNOPA     OUTW,INT   IO,IMPURE,IMPURE         OUTPUT FOR PUNCH
00141  00400000
00142  01000140 P             UJP        *-2                      REJECT
00143  47000032 P             STI        LCNRFG,0                 SET NO CARD PRESENT
00144  01000000     RETURN    UJP        IMPURE                   RETURN

00145  01000000     PUNCH3    UJP        IMPURE
00146  13077754               SHAQ       -1-BINFIL                BINARY BIT TO SIGN OF Q
00147  14400002               ENA,S      2                        TO SELECT BCD
00150  05500000               QSG,S      0                        SKIP IF BINARY BIT ZERO (BCD)
00151  14400001               ENA,S      1                        ELSE SELECT BINARY
00152  00700255 P             RTJ        SEL
00153  14407770               ENA,S      07770B
00154  44000122 P             SWA        OKAYT                    RESET OKAY TO PUNCH FLAG
00155  01000145 P             UJP        PUNCH3                   RETURN
```

```
                                  *****************************************************************
                                  *                                                               *
                                  *          ERROR RECOVERY SECTION                               *
                                  *                                                               *
                                  *****************************************************************

            00156 P               COMPARE1 EQU      *
00156  14300222 P                          ENI      PREV,X3              REMEMBER FIRST OFFSET CARD
00157  00700204 P                          RTJ      PUNCHERR             REFUNCH THE BAD CARD
00160  11000730 P    00166 0               ECHA     CPRMSG               ENTER ADDRESS OF MESSAGE
00161  14700050                            ENQ      40                   ENTER COUNT FOR MESSAGE
00162  54200144 P                          LDI      RETURN,X2            LOAD THE RETURN ADDRESS
00163  47200026 P                          STI      COMF2,X2             SET COMPARE ERROR FLAGS
00164  47200030 P                          STI      COMF3,X2
00165  01077777 X                          UJP      OPMSGX               CLUE OPERATOR IN ON WHY THE CARDS
                                  *                                      ARE OFFSET

00166  23215124                   CPRMSG   BCD      10,CARD PUNCH ERROR.  REMOVE OFFSET CARDS.^

            00200 P               COMPARE2 EQU      *
00200  14300220 P                          ENI      LAST,X3              REMEMBER SECOND OFFSET CARD
00201  00700204 P                          RTJ      PUNCHERR             PUNCH THE OFFSET CARD
00202  47000026 P                          STI      COMF2,0              RESET FIRST COMPARE ERROR FLAG
00203  01000144 P                          UJP      RETURN               RETURN

00204  01000000                   PUNCHERR UJP      IMPURE               ROUTINE TO PUNCH OFFSET CARDS
00205  14600003                            ISSUE    033                  SO TRY TO OFFSET THEM
00207  25300000                            LDAQ     0,X3                 LOAD FWA AND LENGTH
00210  44000215 P                          SWA      ERRCARD+1            SAVE THE FWA
00211  53040000                            AQA                           COMPUTE THE LWA
00212  44000214 P                          SWA      ERRCARD              AND SAVE IT ALSO
00213  00700145 P                          RTJ      PUNCH3               SET UP THE PUNCH
00214  76000000                   ERRCARD  OUTW,INT IO,IMPURE,IMPURE
00215  00400000
00216  01000214 P                          UJP      *-2
00217  01000204 P                          UJP      PUNCHERR             RETURN TO CALLER

00220  00000000                   LAST     VFD      A24/IMPURE,A24/IMPURE
00222  00000000                   PREV     VFD      A24/IMPURE,A24/IMPURE
```

```
00224  01000000          268   PNCON   UJP     IMPURE              ROUTINE TO CONNECT TO PUNCH
00225  14100000          269   PUNCON  ENI     IMPURE,X1           CONNECT CODE
00226  14703720          270           ENQ     2000                MAXIMUM TIME
00227  54200144  P       271           LDI     RETURN,X2           LOAD THE RETURN ADDRESS
00230  14300230  P       272           ENI     *,X3
00231  01077777  X       273           UJP     CONNECT             CALL CONNECT ROUTINE
00232  00700051  P       274           RTJ     PCHANIN             CALL ON CHANNEL INTERRUPT
00233  01200000          275           UJP     0,X2                WILL BE INTERRUPTED ON CONNECTED
00234  47200144  P       276           STI     RETURN,X2           SAVE THE RETURN ADDRESS
00235  14100054  X       277           ENI     PUNBLOC,X1+CBI      ENTER ADDRESS OF CONTROL BLOCK
00236  77200000          278           COPY    SENSE
00237  53700000          279           TAI     X3                  SAVE PUNCH STATUS
00240  14600021          280           ISSUE   21B                 RELEASE INT ON READY AND NOT BUSY
00242  77200001          281           EXS     1,SENSE             SKIP IF NOT READY
00243  77200002          282           EXS     2,SENSE             SKIP IF NOT BUSY
00244  01000246  P       283           UJP     *+2                 BUSY OR NOT READY
00245  01000224  P       284           UJP     PNCON               RETURN IF READY
                         285
00246  14600020          286           ISSUE   20B                 SELECT INT ON READY AND NOT BUSY
00250  01000044  P       287           UJP     RLSCN               RELEASE CHANNEL
                         288
                         289
                         290
00251  53010022          291   REJ     TMQ     22B                 GET CLOCK AND
00252  03500260  P       292           AQJ,NE  NEWCLK              SEE IF IT'S COUNTED UP YET
00253  77100000          293   ISUF    SEL     IMPURE,SELECT       ISSUE THE I/O FUNCTION
00254  01000251  P       294           UJP     REJ                 BAD NEWS, REJECTED
00255  01000000          295   SEL     UJP     IMPURE
00256  44000253  P       296           SWA     ISUF                SAVE FUNCTION
00257  14200005          297           ENI     5,X2                TRY FOR 5 MILLISECONDS
00260  53020022          298   NEWCLK  TMA     22B                 GET REFERENCE CLOCK VALUE
00261  02600253  P       299           IJD     ISUF,X2             TRY THE PROPER AMOUNT OF TIME
00262  01000255  P       300           UJP     SEL                 GIVE UP IN EXASPERATION
                         301
                         302
                         303
00263  17176060          304   FILMA   OCT     17176060            DOUBLE FILE MARK
00264  01000050          305   BINFCD  OCT     01000050
                         306
                         307           END
```

NO LINES WITH ERRORS

```
     BFBGN          00002      13      15 00000P
     BFCPP          00003      15      19 00000P
     BINFCD         00264P    305     189 00120P
     BINFIL         00022      54     217 00146P
     BLANKS     X              43      85 00014P
     BLF            00001      12      13 00000P
     CALBAK         00004      19      22 00000F
     CBI            00000      62      79 00006P    136 00054P    145 00066P    146 00067P    149 00072P    171 00104P
                                      184 00113P    190 00121P    205 00133P    207 00135P    277 00235P
     COMF2          00026P    102     238 00163P    249 00202P
     COMF3          00030P    104     105 00031P    140 00061P    239 00164P
     COMPARE1       00156P    232     101 00025P
     COMPARE2       00200P    246     103 00027P
     CONNECT    X              44     273 00231P
     COUNT          00014      37      38 00000P    146 00067P    190 00121P    207 00135P
     CPRMSG         00166P    243     235 00160P
     DEVBLK         00013      36      37 00000P
     ENAD           00010      26      27 00000P
     ENIT           00012      28      36 00000P
     ERRCARD        00214P    260     256 00210P    258 00212P
     FB             00000      11      12 00000F    110 00035P
     FILMA          00263P    304     170 00103P
   * FORMSWRD       00016      40
     FREEMEM    X              45     115 00042P
     GETMEM     X              46      78 00005P
     ICENT          00017      49      50 00000P
     IMAD           00005      22      24 00000P     79 00006P    145 00066P    149 00072P    171 00104P    184 00113P
                                      205 00133P
     IMPURE         00000      55      88 00017P    102 00026P    104 00030P    106 00032P    112 00037P    133 00051P
                                      138 00057P    150 00073P    187 00116P    195 00122P    199 00125P    210 00140P
                                      210 00140P    213 00144P    216 00145P    253 00204P    260 00214P    260 00214P
                                      265 00220P    265 00221P    266 00222P    266 00223P    268 00224P    269 00225P
                                      293 00253P    295 00255P
     IO             00000      56     210 00140P    260 00214P
     ISUF           00253P    293     296 00256P    299 00261P
     KILLFLAG       00007      25      26 00000P
     LAST           00220P    265      82 00011P    143 00064P    147 00070P    247 00200P
     LCNRFG         00032P    106     163 00100P    212 00143P
     LNIM           00006      24      25 00000P
     NEWCLK         00260P    298     292 00252P
     NJM            00011      27      28 00000P
     NOOFFSET       00133P    204     200 00126P
     OFLAG          00057P    138      73 00000P    201 00127P
     OFLAGB         00125P    199     139 00060P    202 00130P
     OKAYT          00122P    195     108 00034P    223 00154P
     OPMSGX     X              47     240 00165P
     PCHANIN        00051P    133     134 00052P    274 00232P
     PFWORD         00016      39      40 00000P     49 00000P
     PNCHD          00122P    194     164 00101P
     PNCON          00224P    268      98 00022P    197 00124P    284 00245P
     PNFILE     E   00000P     72      39 00000P
     PNFILEEX       00017P     88      76 00003P
     PNINT      E   00021P     97      40 00000P
     PNISTA         00100P    162     178 00110P
     PNOPA          00140P    210     206 00134P    208 00136P
     POSI           00015      38      39 00000P
     PREV           00222P    266      84 00013P    142 00063P    144 00065P    233 00156P
     PTRF           00073P    150     123 00046P    183 00112P
     PUNBLOC    X              48     136 00054P    277 00235P
     PUNCB      E   00107P    177      41 00000P
     PUNCH          00125P    198     107 00033P
     PUNCH3         00145P    216     209 00137P    224 00155P    259 00213P
     PUNCHERR       00204P    253     234 00157P    248 00201P    262 00217P
     PUNCON     E   00225P    269      42 00000P
     QEMPTY         00024      55      57 00000P
     QINGLOC        00022      52      54 00000P
     QPNT           00023      54      55 00000P
     REJ            00251P    291     294 00254P
     RETURN         00144P    213      97 00021P    118 00044P    124 00047P    135 00053P    141 00062P    161 00077P
                                      177 00107P    196 00123P    237 00162P    250 00203P    271 00227P    276 00234P
     RLSCN          00044P    118     111 00036P    113 00040P    287 00250P
     SEL            00255P    295      37 00056P     37 00132P    221 00152P     37 00206P     37 00241P     37 00247P
                                      300 00262P
     SELECT         00000      57     293 00253P
     SENSE          00000      58     278 00236P    281 00242P    282 00243P
     SETCOUNT       00121P    190     173 00106P
     STORADD        00037P    112      74 00001P     87 00016P    116 00043P
   * STRTLOC        00025      57
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URBLOK    X           50   160 00076P
URBLOKI   X           51    75 00002P    89 00020P
URBLOKNX  X           52   125 00050P
X1          00001     59    73 00000P    79 00006P   110 00035P   136 00054P   139 00060P   145 00066P
                           146 00067P   149 00072P   171 00104P   184 00113P   190 00121P   205 00133P
                           207 00135P   269 00225P   277 00235P
X2          00002     60    74 00001P    75 00002P   118 00044P   124 00047P   134 00052P   135 00053P
                           140 00061P   141 00062P   182 00111P   183 00112P   187 00116P   188 00117P
                           237 00162P   238 00163P   239 00164P   271 00227P   275 00233P   276 00234P
                           297 00257P   299 00261P
X3          00003     61    76 00003P    77 00004P    86 00015P    87 00016P    88 00017P    97 00021P
                           100 00024P   101 00025P   114 00041P   142 00063P   148 00071P   159 00075P
                           163 00100P   177 00107P   233 00156P   247 00200P   255 00207P   272 00230P
                           279 00237P
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