LENGTH OF PRG 05156

```
                                    1                IDENT    UIO
                                    2                INCLUDE  ↑SYSMAC
                                    2+001  SYSMAC    COSY/    03        V4.1      08/17/74  0453
                                    4
00001                               5      DEBUG     EQU      1
                                    6
04671 P                             7                ENTRY    ABORT
00160 P                             8                ENTRY    AOS
05012 P                             9                ENTRY    CMEXIT
00002                              10                ENTRY    CONTROLA
04032 P                            11                ENTRY    EXEC
05151 P                            12                ENTRY    EXECINST
00000 P                            13                ENTRY    IDLEPC
04636 P                            14                ENTRY    IMPURE01
05147 P                            15                ENTRY    IOBUSY
04773 P                            16                ENTRY    IRERROR
00000                              17                ENTRY    LOGREQ
00020                              18                ENTRY    MEMPARTY
00021                              19                ENTRY    OPABORT
00023                              20                ENTRY    OPTERM
00000 P                            21                ENTRY    PURE01
04675 P                            22                ENTRY    QCONTROL
00565 P                            23                ENTRY    READRTN
05100 P                            24                ENTRY    RZ
00003                              25                ENTRY    TIMECUT
04022 P                            26                ENTRY    TRAPPER
02366 P                            27                ENTRY    TVNE
03003 P                            28                ENTRY    TXMP          MEMORY PARITY ERROR
03014 P                            29                ENTRY    TXNE          NORMAL END
03007 P                            30                ENTRY    TXNR          NOT READY
03005 P                            31                ENTRY    TXPV          PROTECT VIOLATION
00024                              32                ENTRY    VANISH
00016                              33                ENTRY    WARN
04174 P                            34                ENTRY    XNSKIP
04266 P                            35                ENTRY    XREQEND
04267 P                            36                ENTRY    XREQERR
                                   37
                                   38
                                   39                EXT      A
                                   40                EXT      B210R822
                                   41                EXT      BIT15
                                   42                EXT      BIT16
                                   43                EXT      BIT17
                                   44                EXT      BIT18
                                   45                EXT      BIT19
                                   46                EXT      BIT20
                                   47                EXT      BIT21
                                   48                EXT      BIT22
                                   49                EXT      BIT23
                                   50                EXT      BUSY
                                   51                EXT      BLANKS
                                   52                EXT      CHAINL
                                   53                EXT      CHARINP
                                   54                EXT      CHAROUTP
                                   55                EXT      CLEARN
                                   56                EXT      CMCODE
                                   57                EXT      CMPAGE1
                                   58                EXT      CMPAGE2
                                   59                EXT      CMPAGE3
                                   60                EXT      CMQSET
                                   61                EXT      CMSYSP
                                   62                EXT      CONWAIT
                                   63                EXT      CR
                                   64                EXT      CRWAIT
                                   65                EXT      DECODE
                                   66                EXT      DLENGTH
                                   67                EXT      F1
                                   68                EXT      F2
                                   69                EXT      F3
                                   70                EXT      F4
                                   71                EXT      F5
                                   72                EXT      F6
                                   73                EXT      F7
                                   74                EXT      FDZAP
                                   75                EXT      FILE
                                   76                EXT      FIX
                                   77                EXT      FLAGS
                                   78                EXT      FLOAT
```

```
                        80          EXT     FORMFLAG
                        81          EXT     FREEBLK
                        82          EXT     FREEFILE
                        83          EXT     FREEMEM
                        84          EXT     GETCORE
                        85          EXT     GETMEM
                        86          EXT     HOUR
                        87          EXT     IO
                        88          EXT     I1
                        89          EXT     I2
                        90          EXT     I3
                        91          EXT     IOBOUND
                        92          EXT     IOCLEAR
                        93          EXT     IOSET
                        94          EXT     INBOUND
                        95          EXT     INTPDL
                        96          EXT     IS
                        97          EXT     LIBMOVE
                        98          EXT     LJA
                        99          EXT     LUNLIST
                        99+001      EXT     MAXDEST
                       100          EXT     MSFREAD
                       101          EXT     MSFWRITE
                       102          EXT     MTLIMIT
                       103          EXT     MTWAIT
                       104          EXT     NBIT17
                       105          EXT     NBIT18
                       106          EXT     NBIT1920
                       107          EXT     NBIT20
                       108          EXT     NBIT21
                       109          EXT     NBIT22
                       110          EXT     NBIT23
                       111          EXT     NQWAIT
                       111+001      EXT     OUTBOUND
                       112          EXT     PAGETABL
                       113          EXT     PC
                       114          EXT     PCHARS
                       114+001      EXT     PDP8CTLX
                       114+002      EXT     PDP8OQ
                       115          EXT     PSABLK
                       116          EXT     Q
                       117          EXT     QTABLE
                       118          EXT     QWAIT
                       119          EXT     RESERVE
                       120          EXT     RETURN
                       121          EXT     REWRITE
                       122          EXT     REWRITEX
                       123          EXT     RMCHAIN
                       124          EXT     RMDONE
                       125          EXT     RMTERM
                       126          EXT     RPSAPTR
                       127          EXT     SCREAM
                       128          EXT     SELBLK
                       129          EXT     SELECT
                       130          EXT     SETN
                       131          EXT     SETUP
                       132          EXT     SFBLKLIM
                       133          EXT     SFBLKMAX
                       134          EXT     SFBLKS
                       135          EXT     SWBIT
                       136          EXT     SYSCM
                       137          EXT     SYSCODE
                       138          EXT     T1
                       139          EXT     T2
                       140          EXT     T3
                       141          EXT     T4
                       142          EXT     T5
                       143          EXT     T6
                       144          EXT     TBKSP
                       145          EXT     TERMINAL
                       146          EXT     TFBLKS
                       147          EXT     TFWSP
                       148          EXT     TPINIT
                       149          EXT     TREAD
                       150          EXT     TREWIND
                       151          EXT     TSBPFM
                       152          EXT     TSFPFM
                       153          EXT     TSTATUS
                       154          EXT     TTCNT
```

```
                                155                 EXT     TVINIT
                                156                 EXT     TVREAD
                                157                 EXT     TVWAIT
                                158                 EXT     TVWRITE
                                159                 EXT     TWFM
                                160                 EXT     TWRITE
                                161                 EXT     TXSTART
                                162                 EXT     TXTOTAL
                                163                 EXT     UDBITS
                                164                 EXT     VMM
                                165                 EXT     VMMGM
                                166                 EXT     VMMSAVE
                                167                 EXT     XFLAG
                                168                 EXT     ZEROPG
                                169                 EXT     ZROPAGE
                                170
07773                           171         DINT    EQU     7773B
07774                           172         EINT    EQU     7774B
00000                           173         IMPURE  EQU     00000B
00040                           174         NPU     EQU     32                  NUMBER OF PAGES PER USER
00000                           175         PFR     EQU     000B
00000                           176         PFW     EQU     000B
00000                           177         JMP     EQU     000B
00550                           178         RIS     EQU     550B
00554                           179         ROS     EQU     554B
                                180
00776                           181         WPFB    EQU     510                 FILE BLOCK SIZE (IN WORDS)
                                182
      X                         183         LPB     EQU     BIT22
      X                         184         NLPB    EQU     NBIT22
      X                         185         EODB    EQU     BIT21
      X                         186         NEODB   EQU     NBIT21
      X                         187         FMB     EQU     BIT20
      X                         188         BRPB    EQU     BIT18
      X                         189         AUB     EQU     BIT17
      X                         190         AEB     EQU     BIT16
      X                         191         SVB     EQU     BIT15
                                192                 FCBDEF
                                 65         .*                                                                  *
                                 66         .*******************************************************************
                                 67         .*                                                                  *
                                 68         .*          FILE CONTROL BLOCK DEFINITIONS                          *
                                 69         .*                                                                  *
                                 70         .*                                                                  *
00000                            71         ACCWORD EQU     0           ACCOUNTING WORD  (MUST BE 0)            *
00001                            72         LP      EQU     1           LOAD POINT BLOCK                        *
00002                            73         COREP   EQU     2           CORE POINTER IF NON-ZERO                *
                                 74         .*                          IF BIT23 = 1, CORE BLOCK HAS            *
                                 75         .*                          BEEN WRITTEN INTO                       *
00003                            76         CBP     EQU     COREP+1     BLOCK NUMBER OF THE CURRENT BLOC*
00004                            77         CPP     EQU     4           CURRENT POSITION POINTER                *
                                 78         .*                          (REL. POSIT. WITHIN BLOCK CBP)          *
                                 79         .*                          BIT23 SEZ READ-ONLY                     *
                                 80         .*                          BIT22 SEZ AT LOAD POINT                 *
                                 81         .*                          BIT21 SEZ END OF DATA                   *
                                 82         .*                          BIT20 SEZ FILE MARK JUST READ           *
                                 83         .*                                                                  *
                                 84         .*                          BIT18 SEZ BINARY RECORD PROCESSE*
                                 85         .*                          BIT17 SEZ ABNORMAL/UNAVAILABLE          *
                                 86         .*                          BIT16 SEZ ADDRESS ERROR                 *
                                 87         .*                          BIT15 SEZ SAVED FILE                    *
00005                            88         BLKR    EQU     5           NUMBER OF BLOCKS BEYOND                 *
                                 89         .*                          THE CURRENT BLOCK                       *
00006                            90         EPP     EQU     6           END POSITION POINTER                    *
                                 91         .*                          BIT22 SEZ THE FILE HAS CHANGED          *
                                 92         .*                          BIT21 SEZ POSITIONER READY              *
                                 93         .*                          BIT20 SEZ DESTRUCTIVE READ              *
                                 94         .*                          FILE DIRECTORY                          *
                                 95         .*                          BITS 15-18 CONTAIN THE HT               *
                                 96         .*                          BITS 00-14 CONTAIN END POSITION         *
00007                            97         TFL     EQU     7           TOTAL LENGTH IN BLOCKS                  *
                                193
                                194
                                195
                                196
00001                           197         X1      EQU     1
00002                           198         X2      EQU     2
00003                           199         X3      EQU     3
00000                           200         CNBLK   EQU     0
```

```
00000                201 CPPX     EQU   0
00000                202 PSA      EQU   0
00022                203 CLOCK    EQU   22B
00036                204 LEVEL    EQU   36B
00004                205 MTMINREC EQU   4                    MINIMUM RECORD LENGTH
00100                206 MTPFAREA EQU   100B                 PAGE FILE AREA FOR MT
00060                207 MSFPF    EQU   060B                 PAGE FILE AREA FOR MSF
00122                208 TVPFAREA EQU   122B                 PAGE FILE AREA FOR TV I/O
00140                209 PS       EQU   140B                 PAGE FILE AREA FOR VIRTUAL MEMORY
00001                210 PFLOC    EQU   001B
04000                211 CORE     EQU   PFLOC*2↑11
                     212
                     213          HTDEF
                     203 .*********************************************************************
                     204 .*                                                                   *
00001                205 HTFILE   EQU   01B                  FILE                         *
00002                206 HTLP     EQU   02B                  LINE PRINTER                 *
00003                207 HTPUN    EQU   03B                  CARD PUNCH                   *
00004                208 HTCR     EQU   04B                  CARD READER                  *
00005                209 HTMT     EQU   05B                  MAGNETIC TAPE                *
00006                210 HTTTY    EQU   06B                  TELETYPE                     *
00007                211 HTPLOT   EQU   07B                  X/Y PLOTTER                  *
00010                212 HTNULL   EQU   10B                  ONLINE INCINERATOR           *
00011                213 HTTV     EQU   11B                  CRT DISPLAY                  *
00012                214 HTRAF    EQU   12B                  RANDOM ACCESS FILE           *
00013                215 HTTASK   EQU   13B                  FUTURE INPUT FOR REMOTE BATCH *
00014                216 HTMSF    EQU   14B                  USER DISKPACK                *
00015                217 HTPTP    EQU   15B                  PAPER TAPE PUNCH             *
00016                218 HTMAX    EQU   16B                  (NUMBR OF HARDWARE TYPES) + 1 *
00017                219 HTMASK   EQU   17B                  MASK FOR THE HARDWARE TYPE   *
                     220 .*                                                                   *
                     221 .*********************************************************************
```

```
                                216   *
            00000 P             217   PURE01    EQU      *              BEGINNING OF PURE REGION 01
            00000 P             218   IDLEPC    EQU      *              THIS IS THE IDLE PROGRAM
 00000  20077777 X              219             LDA      SCREAM         DO WE WANT THE NOISE MAKER
 00001  03000000 P              220             AZJ,EQ   *-1
 00002  14100700                221             ENI      700B,X1
 00003  53530077                221+001         TIM      77B,X1         TRANSFER INDEX 1
 00004  53230077                221+002         TMI      77B,X2          TO INDEX 2
 00005  02600005 P              226             IJD      *,X2
 00006  16477777                227             XOA,S    77777B
 00007  02500003 P              227+001         IJD      *-4,X1         LOOP BACK TO MAKE NOISE
 00010  01000000 P              229             UJP      IDLEPC
                                230
 00011  72777777                231   NFMBRP    OCT      72777777       NOT (FMR+BRP)
            00011 P             232   CLEARCON  EQU      NFMBRP
 00012  14000000                233   FMEODB    OCT      14000000       FMR+EODB
 00013  30000000                234   LPEODB    OCT      30000000       LP+EODB
 00014  40100000                235   FPSV      OCT      40100000       FP+SV BITS
 00015  42377777                236   WRMASK    OCT      42377777       NOT (LP+EOD+FMR+BRP+A/U)
 00016  37700000                237   CRMASK    OCT      37700000
 00017  41077777                238   CRMASKX   OCT      41077777
```

```
                                 243     *****************************************************************************
                                 244     *                                                                           *
                                 245     *        FILE INPUT                                                         *
                                 246     *                                                                           *
                                 247     *        T5          USERS A REGISTER                                       *
                                 248     *        F5          CURRENT ADDRESS REGISTER                               *
                                 249     *        F6          RECORD WORD COUNT                                      *
                                 250     *        T6          USERS Q REGISTER                                       *
                                 251     *                                                                           *
                                 252     *****************************************************************************
                                 253     FINPW   EQU     *
00020  21100004                  254             LDQ     CPP,X1+CNBLK            GET THE STATUS WORD
00021  27077777 X                255             LDL     AUB                     CHECK FOR ABNORMAL/UNAVAILABLE
00022  03104766 P                256             AZJ,NE  IOSMASH                 SMASH THE FINK
00023  27077777 X                257             LDL     EODB                    CHECK FOR END OF DATA
00024  03105003 P                258             AZJ,NE  ZRDEOD                  JUMP IF END OF DATA
00025  27077777 X                259             LDL     NLPB                    CLEAR LOADPOINT, FILE MARK,
00026  37000011 P                260             LPA     NFMBRP                  AND BINARY RECORD PROCESSED
00027  40100004                  261             STA     CPP,X1+CNBLK            BITS AND STORE IT BACK
00030  00705064 P                262             RTJ     SAVE                    SAVE INDEX REGISTERS AND FAULTS
00031  20100002                  263             LDA     COREP,X1+CNBLK          CORE BLOCK POINTER TO A
00032  03100035 P                264             AZJ,NE  *+3                     JUMP IF IN CORE
00033  00777777 X                265             RTJ     FIX                     AND READ THE FILE BLOCK INTO IT
00034  01000036 P                266             UJP     *+2                     ITS ALREADY RESERVED
00035  00777777 X                267             RTJ     RESERVE                 RESERVE THE CORE BLOCK
00036  20100004                  268             LDA     CPP,X1+CNBLK            LOAD THE STATUS WORD
00037  53600000                  269             TAI     X2+CPPX
00040  15200003                  270             INI     3,X2+CPPX               ADJUST FOR THE POINTERS
00041  20203777                  271             LDA     CORE-1,X2+CPPX          LOAD THE INTER RECORD GAP WORD
00042  03300215 P                272             AZJ,LT  FINPW09                 JUMP IF A FILE MARK
00043  03000234 P                273             AZJ,EQ  FINEOD                  JUMP IF THE EOD WORD
00044  37005135 P                274     CRFINPW LPA     BIT16M1                 LEAVE THE RECORD LENGTH
00045  40377777 X                275             STA     F6,X3+PSA               AND STORE IT INTO F6
00046  20077777 X                276             LDA     BRPB                    LOAD THE BINARY RECORD BIT
00047  37203777                  277             LPA     CORE-1,X2+CPPX          AND IT WITH THE RECORD GAP
00050  34100004                  278             RAD     CPP,X1+CNBLK            OR IT INTO THE STATUS WORD
00051  11177777      37777 3     279             ECHA    177777B                 MASK FOR SIXTEEN BITS
00052  37377777 X                280             LPA     T6,X3+PSA               MASK THE USERS Q REGISTER
00053  40300052 X                281             STA     T6,X3+PSA               AND STORE IT BACK
00054  03000170 P                282             AZJ,EQ  FINPW06                 JUMP IF THE WORD COUNT WAS ZERO
00055  21300045 X                283             LDQ     F6,X3+PSA               LOAD THE RECORD LENGTH
00056  03700060 P                284             AQJ,LT  *+2                     JUMP IF THE WORD COUNT IS LESS
                                 285     *                                       THAN THE RECORD LENGTH
00057  13000030                  286             SHAQ    24                      PUT THE SMALLER INTO A
00060  47205150 P                287             STI     TEMP2,X2+CPPX           SAVE THE CURRENT POSITION
00061  14200063 P                288             ENI     *+2,X2                  ENTER THE RETURN ADDRESS
00062  01003212 P                289             UJP     IRCHECKB                CHECK FOR ILLEGAL WRITE
00063  01004771 P                290             UJP     IRERRORA                WE GOT ONE
00064  54205150 P                291             LDI     TEMP2,X2+CPPX           RESTORE THE CURRENT POSITION
00065  20377777 X                292     FINPW01 LDA     CR,X3+PSA               ENTER PROGRAM STATE
00066  77634000                  293             ACR
00067  53430036                  294             TIM     LEVEL,0
00070  01000071 P                295             UJP     *+1
00071  14600073 P                296             ENA     *+2                     SET UP F4 FOR THE RETURNS
00072  40377777 X                297             STA     F4,X3+PSA
                                 298
00073  20377777 X                299             LDA     SELECT,X3+PSA           RESTORE THE CNBLK INDEX
00074  53500000                  300             TAI     X1+CNBLK
00075  20300055 X                301             LDA     F6,X3+PSA               LOAD THE RECORD WORD COUNT
00076  03000210 P                302             AZJ,EQ  FINPW08                 JUMP IF THE RECORD IS FINISHED
00077  13000030                  303             SHAQ    24
00100  20300053 X                304             LDA     T6,X3+PSA               LOAD THE USERS Q REGISTER
00101  03000167 P                305             AZJ,EQ  FINPW06X                HAVE WE MOVED ENOUGH WORDS
00102  03600104 P                306             AQJ,GE  *+2
00103  13000030                  307             SHAQ    24
00104  53200000                  308             TIA     X2+CPPX                 CHECK THE NUMBER OF WORDS LEFT IN
00105  15476777                  309             INA,S   -WPFB-2                 THE FILE BLOCK
00106  03200162 P                310             AZJ,GE  FINPW05                 GET A NEW FILE CORE BLOCK
00107  16477777                  311     FINPW02Z XOA,S  77777B                  IF NEEDED
00110  03600112 P                312             AQJ,GE  *+2
00111  13000030                  313             SHAQ    24
00112  24377777 X                314             LCA     F5,X3+PSA               CHECK THE NUMBER OF WORDS LEFT
00113  17603777                  315             ANA     3777B                   IN THE PAGE
00114  05600001                  316             ASG     1                       SKIP IF NOT WORD 77777B
00115  14600001                  317             ENA     1                       MOVE 1 WORD
00116  03700120 P                318             AQJ,LT  *+2
00117  13000030                  319             SHAQ    24
00120  13077776                  320             SHAQ    -1                      COMPUTE NUMBER OF PAIRS OF WORDS
```

```
00121  53500000          321          TAI       X1                    THAT CAN BE MOVED
00122  02500141 P        322          IJD       FINPW03,X1            JUMP IF WE CAN MOVE ANY PAIRS
                         323
00123  14477776          324          ENA,S     -1
00124  34300075 X        325          RAD       F6,X3+PSA             DECREMENT COUNTER WORDS
00125  34300100 X        326          RAD       T6,X3+PSA
00126  20204000          327          LDA       CORE,X2+CPPX          MOVE ONE WORD INTO THE USER≠S
00127  55400000          328          VFD       A9/ROS                MEMORY
00130  40700112 X        329          STA,I     F5,X3+PSA
00131  55000000          330          VFD       A9/RIS
00132  20300130 X        331          LDA       F5,X3+PSA             LOAD THE ADDRESS REGISTER
00133  15600001          332          INA       1
00134  44300132 X        333          SWA       F5,X3+PSA
00135  05600001          334          ASG       1                     SKIP IF NO BANK CHANGE
00136  00000156          335          VFD       A9/JMP,A15/FINPW04    CHANGE BANKS
00137  15200001          336          INI       1,X2+CPPX
00140  01700072 X        337          UJP,I     F4,X3+PSA             RETURN TO THE PROPER ROUTINE
                         338
               00141 P   339  FINPW03  EQU       *
00141  12000001          340          SHA       1
00142  16477777          341          XOA,S     77777B
00143  34300124 X        342          RAD       F6,X3+PSA             DECREMENT COUNTER WORDS
00144  34300125 X        343          RAD       T6,X3+PSA
               00145 P   344  FINPW03L EQU       *
00145  25204000          345          LDAQ      CORE,X2+CPPX          MOVE TWO WORDS INTO THE USER≠S
00146  55400000          346          VFD       A9/ROS                MEMORY
00147  45700134 X        347          STAQ,I    F5,X3+PSA
00150  55000000          348          VFD       A9/RIS
00151  14600002          349          ENA       2                     UPDATE THE ADDRESS REGISTER
00152  34300147 X        350          RAD       F5,X3+PSA
00153  15200002          351          INI       2,X2+CPPX             UPDATE THE CORE POINTER
00154  02500145 P        352          IJD       FINPW03L,X1
00155  01700140 X        353          UJP,I     F4,X3+PSA             RETURN TO THE PROPER ROUTINE
                         354
00156  77670000          355  FINPW04  OSA                             SWITCH MEMORY BANKS
00157  16600001          356          XOA       1
00160  77660000          357  AOS     AOS                             AND RETURN IN PROGRAM STATE
00161  01004537 P        358          UJP       SKIP                  TO THE INSTRUCTION AFTER THE JMP
                         359
00162  00000163          360  FINPW05  VFD       A9/JMP,A15/*+1
00163  00704644 P        361          RTJ       REWRITEY              PURGE THIS FILE BLOCK
00164  00700033 X        362          RTJ       FIX                   AND READ THE NEXT ONE IN
00165  14200002          363          ENI       2,X2+CPPX             RESET TO THE START OF THE BLOCK
00166  01000065 P        364          UJP       FINPW01
                         365
00167  00000170          366  FINPW06X VFD       A9/JMP,A15/*+1        ENTER MONITOR STATE
00170  31300143 X        367  FINPW06  SBA       F6,X3+PSA             GET THE NEGATIVE OF THE NUMBER
00171  40300144 X        368          STA       T6,X3+PSA             OF WORDS LEFT AND STORE INTO Q
00172  53200000          369          TIA       X2+CPPX
00173  15477776          370          INA,S     -1                    ADJUST SLIGHTLY
00174  17600777          371          ANA       WPFB+1                MASK OFF THE GARBAGE
00175  30300170 X        372          ADA       F6,X3+PSA             ADD IN THE NUMBER OF WORDS LEFT
00176  05400776          373          ASG,S     WPFB                  SKIP IF NOT IN THIS BLOCK
00177  01000232 P        374          UJP       FINPW13
                         375
00200  15477001          376  FINPW07  INA,S     -WPFB                 COUNT IT DOWN BY THE NUMBER OF
                         377  *                                        WORDS PER FILE BLOCK
00201  05400776          378          ASG,S     WPFB                  SKIP IF PAST THE NEXT FILE BLOCK
00202  01000226 P        379          UJP       FINPW10               GO CLEAN UP
00203  40300175 X        380          STA       F6,X3+PSA             SAVE THE REMAINING LENGTH
00204  00704644 P        381          RTJ       REWRITEY              GO DO THE BOOK KEEPING
00205  00700164 X        382          RTJ       FIX                   READ THE BLOCK IN
00206  20300203 X        383          LDA       F6,X3+PSA             LOAD THE REMAINING LENGTH
00207  01000200 P        384          UJP       FINPW07               AND LOOP BACK
                         385
00210  53200000          386  FINPW08  TIA       X2+CPPX               DOES THE NEXT RECORD START IN
00211  05600777          387          ASG       WPFB+1                THIS BLOCK
00212  00000231          388          VFD       A9/JMP,A15/FINPW12    JUMP IF IT DOES
00213  15477000          389          INA,S     -WPFB-1               OTHERWISE IT MUST START IN THE
00214  00000226          390          VFD       A9/JMP,A15/FINPW10    NEXT BLOCK SO FIX THE CPP INDEX
                         391
00215  20077777 X        392  FINPW09  LDA       FMB                   LOAD THE FILE MARK READ BIT
00216  15600001          393          INA       1
00217  34100004          394  FINPW9X  RAD       CPP,X1+CNBLK          OR IT INTO THE STATUS
00220  11177777    37777 3 395          ECHA      177777B
00221  37300171 X        396          LPA       T6,X3+PSA             MASK THE USERS Q REGISTER
00222  40300221 X        397          STA       T6,X3+PSA             STORE IT BACK
00223  05201000          398          ISG       WPFB+2,X2+CPPX        SKIP IF THE NEXT RECORD IS IN
00224  01000564 P        399          UJP       READFX                THE NEXT BLOCK
```

```
00225  14600000          400          ENA      0
00226  44100004          401  FINPW10 SWA      CPP,X1+CNBLK     STORE THE CURRENT POSITION
00227  00704644 P        402          RTJ      REWRITEY         DO THE BOOK KEEPING
00230  01000565 P        403          UJP      READRTN
                         404
00231  15477776          405  FINPW12 INA,S    -1               POINT TO THE NEXT WORD COUNT
00232  44100004          406  FINPW13 SWA      CPP,X1+CNBLK     WORD
00233  01000564 P        407          UJP      READFX
                         408
00234  20000023 X        409  FINEOD  LDA      EODB             SET THE EOD BIT INTO THE STATUS
00235  14200000          410          ENI      0,X2             GO FIX THE USERS G REGISTER AND
00236  01000217 P        411          UJP      FINPW9X          STATUS
```

```
                                    ********************************************************************************
                                    *                                                                              *
                                    *       FOUTW                                                                  *
                                    *                                                                              *
                                    *       FILE OUTPUT ROUTINE                                                    *
                                    *                                                                              *
                                    *       T5          USERS A REGISTER                                           *
                                    *       F5          CURRENT ADDRESS REGISTER                                   *
                                    *       T6          USERS Q REGISTER                                           *
                                    *       F6          COUNT OF WORDS LEFT OT MOVE                                *
                                    *                                                                              *
                                    *                                                                              *
                                    *       OVERCHEC                                                               *
                                    *                                                                              *
                                    *       ROUTINE TO CHECK FOR INSUFFICIENT FILE SPACE                           *
                                    *       ENI         RETURN ADDRESS,X2                                          *
                                    *       UJP         OVERCHEC                                                   *
                                    *       WILL PUT INTO CONTROL MODE IF AN ERROR OCCURS                          *
                                    *                                                                              *
                                    ********************************************************************************

                                    FOUTW   EQU     *
00237  201000006                            LDA     EPP,X1+CNBLK        CHECK FOR DESTRUCTIVE READ
00240  120000003                            SHA     23-20
00241  03304673  P                          AZJ,LT  ZABORT
00242  201000004                            LDA     CPP,X1+CNBLK        CHECK FOR FILE-PROTECTION
00243  03304763  P                          AZJ,LT  FPV                 JUMP IF PROTECT VIOLATION
00244  370000021 X                          LPA     AUB                 CHECK FOR ABNORMAL/UNAVAILABLE
00245  211000007                            LDQ     TFL,X1+CNBLK        LOAD THE FILE LENGTH
00246  045000000                            QSE,S   0                   SKIP IF ZERO LENGTH
00247  03104766  P                          AZJ,NE  IOSMASH             KILL THE FINK
00250  007055064 P                          RTJ     SAVE                SAVE INDEX REGISTERS AND FAULTS
00251  142000266 P                          ENI     FOUTWZ,X2           ENTER THE RETURN ADDRESS

                                    SETUPF5 EQU     *
00252  203777777 X                          LDA     T5,X3+PSA           LOAD THE USERS A REGISTER
00253  443000152 X                          SWA     F5,X3+PSA           SAVE THE LOWER 15 BITS
00254  120000010                            SHA     8                   BANK BIT TO THE SIGN
00255  032000261 P                          AZJ,GE  *+4                 JUMP IF THE SAME 32K BANK
00256  776700000                            OSA
00257  166000001                            XOA     000001B             SWITCH MEMORY BANKS
00260  776600000                            AOS
00261  111777777      37777 3               ECHA    177777B
00262  373000222 X                          LPA     T6,X3+PSA           LEAVE THE WORD COUNT IN A
00263  030050000 P                          AZJ,EQ  ZWCZERO             WC = 0 IS VERY ILLEGAL
00264  403002206 X                          STA     F6,X3+PSA           SAVE THE WORD COUNT
00265  012000000                            UJP     0,X2                RETURN

                                    FOUTWZ  EQU     *
00266  211000004                            LDQ     CPP,X1+CNBLK        LOAD THE CURRENT POSITION POINTER
00267  177777777                            ANQ     77777B              MASK OFF THE STATUS BITS
00270  530400000                            AQA                         ADD IN THE CURRENT POSITION
00271  156000002                            INA     2                   COMPENSATE FOR THE I-R GAP
00272  130777747                            SHAQ    -24                 PREPARE TO DIVIDE
00273  510051360 P                          DVA     KWPFB               DIVIDE BY WORDS PER FILE BLOCK
00274  311000005                            SBA     BLKR,X1+CNBLK       SUBTRACT BLOCKS TO BE FREED
00275  142003360 P                          ENI     OVERCH06,X2         ENTER THE RETURN ADDRESS

                                    OVERCHEC EQU    *
00276  301000007                    472+001 ADA     TFL,X1+CNBLK        COMPUTE ACTUAL LENGTH OF FILE
00277  147777777                    472+002 ENQ     77777B              MAXIMUM LENGTH OF FILE
00300  036003210 P                  472+003 AQJ,GE  OVERCH01            JUMP IF OVER THE MAXIMUM SIZE
00301  311000007                    472+004 SBA     TFL,X1+CNBLK        RETURN A TO AS BEFORE
00302  211000004                    473     LDQ     CPP,X1+CNBLK        LOAD THE STATUS WORD
00303  124777776                    474     SHQ     -1                  SAVE FILE BIT TO BIT 14
00304  057400000                    475     QSG     400000B             SKIP IF A SAVED FILE
00305  153777774                    476     INI     -3,X3+PSA           ADD IN (TFBLKS-SFBLKS)
00306  303777777 X                  477     ADA     SFBLKS,X3+PSA       ADD IN THE TOTAL FILE SPACE
00307  213777777 X                  478     LDQ     SFBLKLIM,X3+PSA     LOAD THE ALLOWABLE NUMBER OF
00310  130000030                    479     SHAQ    24                  FILE BLOCKS
00311  036003300 P                  479+001 AQJ,GE  OVERCH03            JUMP IF ENOUGH ROOM
00312  543777777 X                  481     LDI     RPSAPTR,X3+PSA      RESTORE THE PSA INDEX
00313  203777777 X                  482     LDA     CMCODE,X3+PSA
00314  031003170 P                  482+001 AZJ,NE  *+3                 JUMP IF A REQUEST EXISTS
00315  146000061                    484     ENA     INSFIL              OTHERWISE, PUT THIS CODE INTO
00316  403003130 X                  485     STA     CMCODE,X3+PSA       CMCODE FOR FUTURE REFFERENCE
00317  203777777 X                  486     LDA     SYSCM,X3+PSA        IS THE USER IN CONTROL MODE
00320  033003240 P                  487     AZJ,LT  OVERCH02            CONTROL MODE CANT HAVE ERRORS
00321  P                    487+001 OVERCH01 EQU    *
```

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00321  00705100 P        488                RJ      RZ                      RETURN FROM STATE ZERO
00322  14700006          489                ENQ     INSFIL
00323  01004675 P        490                UJP     QCONTROL
                         491
         00324 P         492     OVERCH02   EQU     *
00324  20100004          492+001            LDA     CPP,X1+CNBLK            LOAD STATUS BITS
00325  12077776          492+002            SHA     -1                      SAVED FILE BIT TO BIT 14
00326  05640000          492+003            ASG     40000B                  SKIP IF FILE IS SAVED
00327  15377774          492+004            INI     -3,X3+PSA               ADD IN (TFBLKS-SFBLKS)
         00330 P         492+005 OVERCH03   EQU     *
00330  41300306 X        493                STQ     SFBLKS,X3+PSA           STORE THE NEW TOTAL VALUE
00331  20377777 X        494                LDA     SFBLKMAX,X3+PSA         LOAD THE MAXIMUM FILE SPACE USED
00332  03600334 P        495                AQJ,GE  *+2                     JUMP IF NOT A NEW MAXIMUM
00333  41300331 X        496                STQ     SFBLKMAX,X3+PSA         REMEMBER THE NEW MAXIMUM VALUE
00334  54300312 X        497                LDI     RPSAPTR,X3+PSA          RESTORE THE PSA INDEX
00335  01200000          498                UJP     0,X2                    RETURN TO THE CALLER
                         499
         00336 P         500     OVERCH06   EQU     *
00336  20077777 X        501                LDA     BIT22                   SET THE CHANGE BIT
00337  35100006          502                SSA     EPP,X1+CNBLK            AND THE WRITE STATUS BIT
00340  40100006          503                STA     EPP,X1+CNBLK            AND STORE THEM AWAY
00341  20300262 X        504                LDA     T6,X3+PSA               LOAD THE USERS Q REGISTER
00342  37000046 X        505                LPA     BRPB                    LEAVE THE BINARY BIT
00343  35300264 X        506                SSA     F6,X3+PSA               OR IN THE WORD COUNT
00344  40300341 X        507                STA     T6,X3+PSA               AND STORE IT BACK
00345  21100004          508                LDQ     CPP,X1+CNBLK            LOAD THE STATUS WORD
00346  27000015 P        509                LDL     WRMASK                  CLEAR A BUNCH OF BITS
00347  35000234 X        510                SSA     EODB                    SET THE END OF DATA BIT
00350  40100004          511                STA     CPP,X1+CNBLK            STORE THE STATUS BACK
00351  20100002          512                LDA     COREP,X1+CNBLK          LOAD THE CORE POINTER
00352  03100374 P        513                AZJ,NE  FOUTWK2                 JUMP IF THE FILE BLOCK IS IN CORE
00353  27000336 X        514                LDL     LPB                     LOAD POINT BIT TO A
00354  03000372 P        515                AZJ,EQ  FOUTWK1                 JUMP IF NOT AT LOAD POINT
00355  00777777 X        516                RTJ     GETCORE                 GET A BLOCK OF CORE
00356  14477777          517                ENA,S   77777B
00357  40004001          518                STA     CORE+1                  SET THE BACKWARD POINTER
00360  21100007          519                LDQ     TFL,X1+CNBLK            LOAD THE LENGTH OF THE FILE
00361  14600001          520                ENA     1                       NO CHANGE NEEDED IF ONLY 1 BLOCK
00362  03400402 P        521                AQJ,EQ  FOUTWK4                 JUMP IF 1 BLOCK LONG
00363  20100001          522                LDA     LP,X1+CNBLK             LOAD THE STARTING BLOCK NUMBER
00364  00777777 X        523                RTJ     FREEFILE                RELEASE THE SPACE
00365  00777777 X        524                RTJ     SELBLK                  GET A FILE BLOCK
00366  40100001          525                STA     LP,X1+CNBLK             STORE THE BLOCK NUMBER INTO THE
00367  40100003          526                STA     CBP,X1+CNBLK            LP AND CBP WORDS
00370  14200400 P        527                ENI     FOUTWK3,X2              ENTER THE RETURN ADDRESS
00371  01077777 X        528                UJP     FDZAP                   TAKE CARE OF THE FILE DIRECTORY
                         529
         00372 P         530     FOUTWK1    EQU     *
00372  00700205 X        531                RTJ     FIX                     READ IN THE FILE BLOCK
00373  01000375 P        532                UJP     *+2
00374  00700035 X        533     FOUTWK2    RTJ     RESERVE                 RESERVE THE CORE BLOCK
00375  20004000          534                LDA     CORE                    LOAD THE FORWARD POINTER
00376  21100005          535                LDQ     BLKR,X1+CNBLK           GET THE NUMBER OF BLOCKS THAT
                         536     *                                          ARE BEYOND THE CURRENT BLOCK
00377  00700364 X        537                RTJ     FREEFILE                RELEASE THE FILE SPACE
00400  24100005          538     FOUTWK3    LCA     BLKR,X1+CNBLK           LOAD -(NUMBER OF BLOCKS FREED)
00401  34100007          539                RAD     TFL,X1+CNBLK            UPDATE THE FILE LENGTH
00402  14700000          540     FOUTWK4    ENQ     0                       BLKR IS ZERO NOW
00403  41100005          541                STQ     BLKR,X1+CNBLK           SO SET IT APPROPRIATELY
00404  20077777 X        542                LDA     BIT23                   INDICATE THAT IT HAS BEEN WRITTEN
00405  40100002          543                STA     COREP,X1+CNBLK          INTO
00406  20100004          544                LDA     CPP,X1+CNBLK            LOAD THE CURRENT POSITION
00407  53600000          545                IAI     X2+CPPX                 PUT IT INTO THE INDEX
00410  15200003          546                INI     3,X2+CPPX               ADJUST THE RELATIVE POSITION
00411  21300344 X        546+001            LDQ     T6,X3+PSA               LOAD WORD COUNT AND BINARY BIT
00412  41203777          546+002            STQ     CORE-1,X2+CPPX          WRITE WORD COUNT INTO THE IR GAP
00413  53430036          549                TIM     LEVEL,0                 GET THE MONITOR INTO PROGRAM
00414  20300065 X        550                LDA     CR,X3+PSA               STATE THE FAST WAY
00415  77634000          551                ACR
00416  01000417 P        552                UJP     *+1                     ENTER PROGRAM STATE
00417  27000342 X        552+001            LDL     BIT18                   BINARY BIT TO A
00420  03100450 P        552+002            AZJ,NE  FOUTW04                 JUMP IF BINARY RECORD
00421  20077777 X        553                LDA     FORMFLAG                CHECK FOR FORMS REQUEST
00422  55400000          554                VFD     A9/ROS
00423  21700253 X        555                LDQ,I   F5,X3+PSA               LOAD THE FIRST WORD OF THE RECORD
00424  55000000          556                VFD     A9/RIS
00425  03400440 P        557                AQJ,EQ  FOUTWX2                 JUMP IF IT IS FORMS
00426  20100006          558                LDA     EPP,X1+CNBLK            GET THE HARDWARE TYPE
00427  12077760          559                SHA     -15
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00430  17600017          560            ANA     HTMASK          JUST THE HARDWARE TYPE
00431  04600013          561            ASE     HTTASK          SKIP IF A TASK
00432  01000450  P       562            UJP     FOUTW04         JUMP IF NOT A TASK
00433  20000404  X       566            LDA     BIT23           LOAD THE CONTROL MODE BIT
00434  12477763          567            SHQ     -12             LOOK AT THE FIRST TWO CHARACTERS
00435  04701717          568            QSE     01717B          SKIP IF A FILE MARK
00436  01000444  P       569            UJP     FOUTW02
00437  02600552  P       570            IJD     FOUTW14,X2+CPPX GO WRITE THE EOD WORD
                         571
       00440  P          572  FOUTWX2   EQU     *
00440  20100006          573            LDA     EPP,X1+CNBLK    GET THE HARDWARE TYPE
00441  35077777  X       574            SSA     BIT19           SET FORMS IN FILE BIT
00442  40100006          575            STA     EPP,X1+CNBLK    SAVE NEW WORD
00443  01000450  P       582            UJP     FOUTW04
                         583
       00444  P          584  FOUTW02   EQU     *
00444  12477771          585            SHQ     -6
00445  04700017          586            QSE     00017B          SKIP IF A CONTROL CARD
00446  01000450  P       587            UJP     FOUTW04         JUMP IF NOT
00447  34203777          588            RAD     CORE-1,X2+CPPX  SET THE CONTROL CARD BIT
00450  14600452  P       589  FOUTW04   ENA     *+2             SET UP F4 FOR THE RETURNS
00451  40300155  X       590            STA     F4,X3+PSA
00452  20300073  X       591            LDA     SELECT,X3+PSA   RESTORE THE CNBLK INDEX
00453  53500000          592            TAI     X1+CNBLK
00454  53200000          593            TIA     X2+CPPX         IS THERE ROOM IN THE FILE CORE
00455  15476777          594            INA,S   -WPFB-2         BLOCK
00456  03000527  P       595            AZJ,EQ  FOUTW10         JUMP IF NOT
00457  16477777          596            XOA,S   -0              GET COUNT OF WORDS LEFT
00460  13077747          597            SHAQ    -24
00461  20300343  X       598            LDA     F6,X3+PSA       HAS THE WHOLE RECORD BEEN MOVED
00462  03000551  P       599            AZJ,EQ  FOUTW12         JUMP IF IT HAS
00463  03600465  P       600  FOUTW05   AQJ,GE  *+2
00464  13000030          601            SHAQ    24
00465  24300423  X       602            LCA     F5,X3+PSA       HOW MANY WORDS ARE LEFT ON THIS
00466  17603777          603            ANA     3777B           PAGE
00467  05600001          604            ASG     1               SKIP IF NOT THE LAST WORD
00470  14600001          605            ENA     1
00471  03700473  P       606            AQJ,LT  *+2
00472  13000030          607            SHAQ    24
00473  13077776          608            SHAQ    -1
00474  53500000          609            TAI     X1              NUMBER OF PAIRS TO INDEX 1
00475  02500513  P       610            IJD     FOUTW06,X1      JUMP IF WE CAN MOVE ANY PAIRS
                         611
00476  14477776          612            ENA,S   -1              FIX THE WORD COUNT
00477  34300461  X       613            RAD     F6,X3+PSA
00500  55400000          614            VFD     A9/ROS
00501  20700465  X       615            LDA,I   F5,X3+PSA       MOVE ONE WORD FROM THE USER=S
00502  55000000          616            VFD     A9/RIS          MEMORY
00503  40204000          617            STA     CORE,X2+CPPX
00504  20300501  X       618            LDA     F5,X3+PSA       INCREMENT THE CURRENT ADDRESS
00505  15600001          619            INA     1               REGISTER
00506  44300504  X       620            SWA     F5,X3+PSA
00507  05600001          621            ASG     1               SKIP IF NO BANK CHANGE
00510  00000156          622            VFD     A9/JMP,A15/FINPW04 SWITCH MEMORY BANKS
00511  15200001          623            INI     1,X2+CPPX
00512  01700451  X       624            UJP,I   F4,X3+PSA       RETURN TO THE PROPER ROUTINE
                         625
       00513  P          626  FOUTW06   EQU     *
00513  12000001          627            SHA     1               SET THE WORD COUNT TO WHAT IT
00514  16477777          628            XOA,S   77777B          WILL BE AFTER THE WORDS ARE
00515  34300477  X       629            RAD     F6,X3+PSA       MOVED
00516  55400000          630  FOUTW08   VFD     A9/ROS
00517  25700506  X       631            LDAQ,I  F5,X3+PSA       MOVE TWO WORDS FROM THE USER=S
00520  55000000          632            VFD     A9/RIS          MEMORY
00521  45204000          633            STAQ    CORE,X2+CPPX
00522  14600002          634            ENA     2               UPDATE THE CURRENT ADDRESS
00523  34300517  X       635            RAD     F5,X3+PSA       REGISTER
00524  15200002          636            INI     2,X2+CPPX       UPDATE THE CORE POINTER
00525  02500516  P       637            IJD     FOUTW08,X1
00526  01700512  X       638            UJP,I   F4,X3+PSA       RETURN TO THE PROPER ROUTINE
                         639
00527  00000530          640  FOUTW10   VFD     A9/JMP,A15/*+1  ENTER MONITOR STATE
00530  14600001          641            ENA     1
00531  34100007          642            RAD     TFL,X1+CNBLK    UPDATE THE LENGTH OF THE FILE
00532  00700365  X       643            RTJ     SELBLK          GET A FILE BLOCK
00533  40004000          644            STA     CORE            WRITE FORWARD POINTER
00534  21100003          645            LDQ     CBP,X1+CNBLK    LOAD THE CURRENT BLOCK NUMBER
00535  41300526  X       646            STQ     F4,X3+PSA       AND SAVE IT IN A TEMPORARY
00536  00777777  X       647            RTJ     REWRITEX        REWRITE THE BLOCK
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00537  00700355 X     648                RTJ     GETCORE          GET ANOTHER BLOCK OF CORE
00540  20300535 X     649                LDA     F4,X3+PSA        LOAD THE PREVIOUS BLOCK NUMBER
00541  40004001       650                STA     CORE+1           WRITE BACK POINTER
00542  20000433 X     651                LDA     BIT23            INDICATE THAT THIS BLOCK HAS
00543  40100002       652                STA     COREP,X1+CNBLK   BEEN WRITTEN INTO
00544  14200002       653                ENI     2,X2+CPPX        SET THE CURRENT POSITION
00545  53430036       654                TIM     LEVEL,0          PUT THE MONITOR INTO PROGRAM
00546  20300414 X     655                LDA     CR,X3+PSA        STATE
00547  77634000       656                ACR
00550  01000450 P     657                UJP     FOUTW04
                      658
00551  20300411 X     659    FOUTW12     LDA     T6,X3+PSA        LOAD WORD COUNT AND BINARY BIT
00552  40204000       660    FOUTW14     STA     CORE,X2+CPPX     WRITE WORD COUNT INTO THE IR GAP
00553  10600777       661                ISD     WPFB+1,X2+CPPX   SKIP IF THE FILE BLOCK IS FULL
00554  00000556       662                VFD     A9/JMP,A15/*+2
00555  00000610       663                VFD     A9/JMP,A15/FOUTW20
00556  14600000       664                ENA     0
00557  40204002       665                STA     CORE+2,X2+CPPX   STORE THE END OF DATA WORD
00560  53200000       666                TIA     X2+CPPX          CURRENT POSITION TO A
00561  44100004       667    FOUTW16     SWA     CPP,X1+CNBLK     SAVE THE CURRENT POSITION
00562  14477777       668    FOUTW18     ENA,S   77777B
00563  40004000       669                STA     CORE             WRITE THE FORWARD POINTER
00564  00777777 X     670    READFX      RTJ     FLOAT            FLOAT THE CURRENT BLOCK
00565  00705072 P     671    READRTN     RTJ     UNSAVE           RESTORE THE USERS REGISTERS
00566  20300551 X     672    FINISH      LDA     T6,X3+PSA        RESTORE THE Q REGISTER
00567  40377777 X     673                STA     Q,X3+PSA
00570  20100004       674    STATUS      LDA     CPP,X1+CNBLK     GET THE STATUS BITS
00571  21100006       675    ASTATUS     LDQ     EPP,X1+CNBLK     LOAD THE HARDWARE TYPE
00572  13000011       676                SHAQ    9                SHIFT INTO POSITION
00573  17577757       676+001            ANQ,S   -20B             AND OFF SDR BIT
00574  17600057       676+002            ANA     HTMASK+40B       SAVE EPP SDR BIT
00575  05600040       676+003            ASG     40B              SKIP IF DESTRUCTIVE READ
00576  01000600 P     676+004            UJP     *+2
00577  16700020       676+005            XOQ     20B              SET SDR BIT FOR USER
00600  17600017       677                ANA     HTMASK           MASK TO THE HARDWARE TYPE
00601  12000011       678                SHA     9
00602  13000047       679                SHAQ    39               COMBINE HT WITH STATUS BITS
00603  40377777 X     680    ASTATUSA    STA     A,X3+PSA         SET A TO THE STATUS
00604  00705107 P     681                RTJ     EXIT
00605  20377777 X     682                LDA     T2,X3+PSA        LOAD INDEX 3
00606  44377777 X     683                SWA     I3,X3+PSA        AND RESTORE IT
00607  01004537 P     684                UJP     SKIP             RETURN
                      685    *                                    THE RECORD EXACTLY FILLED UP THE
                      686    *                                    BLOCK.  REWRITE IT AND GET
                      687    *                                    ANOTHER, WHICH WILL ONLY HAVE THE
                      688    *                                    EOD WORD
00610  14600001       689    FOUTW20     ENA     1
00611  34100007       690                RAD     TFL,X1+CNBLK     UPDATE THE THE FILE LENGTH
00612  00700532 X     691                RTJ     SELBLK           GET A FILE BLOCK
00613  21100003       692                LDQ     CBP,X1+CNBLK     LOAD THE CURRENT POSITION
00614  41300540 X     693                STQ     F4,X3+PSA        SAVE IT IN A TEMPORARY
00615  40004000       694                STA     CORE             WRITE THE FORWARD POINTER
00616  00700536 X     695                RTJ     REWRITEX         REWRITE THE BLOCK
00617  00700537 X     696                RTJ     GETCORE          GET A BLOCK OF CORE
00620  20300614 X     697                LDA     F4,X3+PSA        LOAD THE NUMBER OF THE LAST BLOCK
00621  14700000       698                ENQ     0                ZERO IS THE END OF DATA WORD
00622  45004001       699                STAQ    CORE+1           STORE BACKWARD POINTER AND EOD
00623  20000542 X     700                LDA     BIT23
00624  40100002       701                STA     COREP,X1+CNBLK   THIS BLOCK HAS BEEN WRITTEN INTO.
00625  01000561 P     702                UJP     FOUTW16
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                00626 P         705     FCONTROL EQU     *
00626  20300566 X               706              LDA     T6,X3+PSA       LOAD THE FUNCTION CODE
00627  53600000                 707              TAI     X2              PREPARE TO DECODE
00630  20100006                 708              LDA     EPP,X1+CNBLK    CHECK FOR DESTRUCTIVE READ
00631  35077777 X               709              SSA     NBIT20          LEAVING A NON ZERO IF IT IS NOT
00632  03000650 P               710              AZJ,EQ  FCNTRL3         SET
00633  05200012                 711              ISG     FCNTRL2-FCNTRL1,X2 SKIP IF ILLEGAL
00634  01600636 P               712              UJP,I   FCNTRL1,X2      DECODE THE FUNCTION
00635  01004673 P               713              UJP     ZABORT          ILLEGAL FUNCTION
                                714
00636  00000570 P               715     FCNTRL1  OO      STATUS          00 = STATUS
00637  00000665 P               716              OO      CLEAR           01 = CLEAR STATUS
00640  00001142 P               717              OO      WFM             02 = WRITE FILE MARK
00641  00001277 P               718              OO      RELEASE         03 = RELEASE
00642  00000676 P               719              OO      REWIND          04 = REWIND
00643  00001026 P               720              OO      SFPFM           05 = SEARCH FORWARD PAST FILE MK
00644  00000717 P               721              OO      SBPFM           06 = SEARCH BACKWARD PAST FILE MK
00645  00000716 P               722              OO      BKSPACE         07 = SPACE BACKWARD 1 RECORD
00646  00001025 P               723              OO      FWDSPACE        10 = SPACE FORWARD 1 RECORD
00647  00000670 P               724              OO      SETDESRD        11 = SET DESTRUCTIVE READ, REWIND
                00650 P         725     FCNTRL2  EQU     *
                                726
                00650 P         727     FCNTRL3  EQU     *
00650  04200003                 728              ISE     3,X2            SKIP IF RELEASE
00651  05200002                 729              ISG     2,X2            SKIP IF NOT STATUS OR CLEAR
00652  01600636 P               730              UJP,I   FCNTRL1,X2      DECODE THE FUNCTION
00653  01004673 P               731              UJP     ZABORT
                                732
                                733
                                734
                                735
                00654 P         736     PUNCNTRL EQU     *
                00654 P         737     PRCNTRL  EQU     *
00654  20300626 X               738              LDA     T6,X3+PSA       LOAD THE FUNCTION CODE
00655  53600000                 739              TAI     X2              PREPARE TO DECODE
00656  05600004                 740              ASG     PRCNTRL2-PRCNTRL1 SKIP IF ILLEGAL
00657  01600661 P               741              UJP,I   PRCNTRL1,X2
00660  01004673 P               742              UJP     ZABORT          ILLEGAL FUNCTION

                00661 P         744     PRCNTRL1 EQU     *
00661  00000570 P               745              OO      STATUS          00 = STATUS
00662  00000665 P               746              OO      CLEAR           01 = CLEAR STATUS BITS
00663  00001140 P               747              OO      ACCWFM          02 = WRITE FILE MARK
00664  00001277 P               748              OO      RELEASE         03 = RELEASE
                00665 P         749     PRCNTRL2 EQU     *
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00665  20000011 P      752  CLEAR    LDA      CLEARCON                LOAD THE MASK
00666  37100004        753  CLEARX   LPA      CPP,X1+CNBLK            MASK WITH THE STATUS WORD
00667  01001340 P      754           UJP      RRCP                    STORE THE STATUS BACK AND RETURN
                       755
                       756
            00670 P    757  SETDESRD EQU      *
00670  20100004        758           LDA      CPP,X1+CNBLK
00671  12000010        759           SHA      23-15                   CHECK FOR SAVE FILE
00672  35100004        760           SSA      CPP,X1+CNBLK            AND FILE PROTECT
00673  03300676 P      761           AZJ,LT   REWIND                  PROTECT THE USER
00674  20000215 X      762           LDA      BIT20
00675  34100006        763           RAD      EPP,X1+CNBLK            SET THE BIT INTO THE STATUS
                       764  *                                         REWIND THE FILE FOR FREE
00676  20100001        765  REWIND   LDA      LP,X1+CNBLK             LOAD THE FIRST BLOCK NUMBER
00677  03300570 P      766           AZJ,LT   STATUS                  JUMP IF ZERO LENGTH
00700  21100003        767           LDQ      CBP,X1+CNBLK            LOAD THE CURRENT BLOCK NUMBER
00701  03400706 P      768           AQJ,EQ   REWIND01                JUMP IF IN THE FIRST BLOCK
00702  20100002        769           LDA      COREP,X1+CNBLK          GET THE CORE POINTER
00703  00777777 X      770           RTJ      REWRITE                 AND REWRITE THE BLOCK
00704  21100001        771           LDQ      LP,X1+CNBLK             LOAD THE BEGINNING BLOCK NUMBER
00705  41100003        772           STQ      CBP,X1+CNBLK            AND STORE IT INTO THE CURRENT
                       773  *                                         BLOCK NUMBER
00706  20100004        774  REWIND01 LDA      CPP,X1+CNBLK            LOAD THE STATUS BITS
00707  37000014 P      775           LPA      FPSV                    LEAVE FP AND SV BITS
                       776  *                                         ALSO SET THE CURRENT POSITION = 0
00710  35000353 X      777           SSA      LPB                     SET THE LOAD POINT BIT
00711  40100004        778           STA      CPP,X1+CNBLK            STORE BACK INTO THE CONTROL BLOCK
00712  20100007        779           LDA      TFL,X1+CNBLK            LOAD THE FILE LENGTH
00713  15477776        780           INA,S    -1                      COUNT IT DOWN BY 1
00714  40100005        781           STA      BLKR,X1+CNBLK           AND ADJUST THE NUMBER OF BLOCKS
                       782  *                                         BEYOND THE CURRENT BLOCK
00715  01000566 P      783           UJP      FINISH                  RETURN TO THE USER
```

```
                                *****************************************************************
                                *                                                               *
                                *       BKSPACE -- SBPFM                                        *
                                *                                                               *
                                *       F5      SEARCH FLAG                                     *
                                *               IF F5 =0 SEZ BKSPACE                            *
                                *               IF F5 ≠0 SEZ SBPFM                              *
                                *       F6      NUMBER OF WORDS LEFT IN THE RECORD WE ARE       *
                                *               SPACING PAST                                    *
                                *                                                               *
                                *****************************************************************

00716  14600000                 BKSPACE  ENA      0                    INDICATE BACKSPACE
00717  44300523  X              BACK01   SWA      F5,X3+PSA            SBPFM JUMPS HERE
00720  00705064  P                       RTJ      SAVE                 SAVE INDEX REGISTERS AND FAULTS
00721  77740000                 BACK02   VFD      A12/EINT
00722  21100004                          LDQ      CPP,X1+CNBLK         LOAD THE STATUS WORD
00723  27000244  X                       LDL      AUB                  CHECK FOR ABNORMAL/UNAVAILABLE
00724  03104766  P                       AZJ,NE   IOSMASH              KILL THE FINK
00725  27000710  X                       LDL      LPB                  BRING THE LOAD POINT BIT TO A
00726  77730000                          VFD      A12/DINT
00727  03101021  P                       AZJ,NE   CKSEARCH             DO NOT BACKSPACE PAST LOAD POINT
00730  27077777  X                       LDL      NEOD8                RESET EOD, FM, AND BRP INDICATORS
00731  37000011  P                       LPA      NFM8RP
00732  40100004                          STA      CPP,X1+CNBLK         STORE THE MODIFIED STATUS BACK
00733  20100002                          LDA      COREP,X1+CNBLK       LOAD THE CORE POINTER
00734  03100737  P                       AZJ,NE   *+3                  JUMP IF IN CORE
00735  00700372  X                       RTJ      FIX                  READ THE CURRENT BLOCK INTO CORE
00736  01000740  P                       UJP      *+2
00737  00700374  X                       RTJ      RESERVE              RESERVE THE CORE BLOCK
00740  20100004                          LDA      CPP,X1+CNBLK         LOAD THE CURRENT POSITION
00741  17677777                          ANA      77777B               AND OFF THE STATUS BITS
00742  03100752  P                       AZJ,NE   BACK03               JUMP IF THE INTER RECORD GAP
                                *                                      IS IN THIS BLOCK
00743  20004001                          LDA      CORE+1               LOAD THE BACK POINTER
00744  00700616  X                       RTJ      REWRITEX             REWRITE THE BLOCK
00745  00700735  X                       RTJ      FIX                  READ THE CURRENT BLOCK INTO CORE
00746  14600001                          ENA      1                    THE NUMBER OF BLOCKS PAST THE
00747  34100005                          RAD      BLKR,X1+CNBLK        CURRENT BLOCK HAS INCREASED BY 1
00750  14600775                          ENA      WPFB-1               POSITION IS NOW AT THE END OF
00751  01000753  P                       UJP      *+2                  THE CURRENT BLOCK
00752  15477776                 BACK03   INA,S     -1                   MOVE BACK PAST THE RECORD GAP
00753  44100004                          SWA      CPP,X1+CNBLK         UPDATE THE CURRENT POSITION
00754  53600000                          TAI      X2+CPPX
00755  20204002                          LDA      CORE+2,X2+CPPX       LOAD THE INTER-RECORD GAP WORD
00756  03301001  P                       AZJ,LT   BACK05               JUMP IF IT IS A FILE MARK
00757  37005135  P                       LPA      BIT16M1              MASK TO 16 BITS
00760  40300515  X                       STA      F6,X3+PSA
00761  16477777                          XOA,S    -0
00762  53240000                          AIA      X2+CPPX              ADD IN THE CURRENT POSITION
00763  15477776                          INA,S    -1                   COMPENSATE FOR THE I-R GAP
00764  03201006  P                       AZJ,GE   BACK06               JUMP IF THE END IS IN THIS BLOCK
00765  15600776                 BACK04   INA      WPFB                 UPDATE THE COUNT OF WORDS
00766  40300760  X                       STA      F6,X3+PSA            AND SAVE IT IN F6
00767  20004001                          LDA      CORE+1               LOAD THE BACKWARD POINTER
00770  00700744  X                       RTJ      REWRITEX             REWRITE THE BLOCK
00771  14600001                          ENA      1                    THE NUMBER OF BLOCKS BEYOND THE
00772  34100005                          RAD      BLKR,X1+CNBLK        CURRENT BLOCK HAS INCREASED BY 1
00773  20300766  X                       LDA      F6,X3+PSA            LOAD THE CURRENT POSITION
00774  44100004                          SWA      CPP,X1+CNBLK         PUT IT INTO THE CURRENT POSITION
00775  03201010  P                       AZJ,GE   BACK08               POINTER AND JUMP IF DONE
00776  00700745  X                       RTJ      FIX                  READ IN THE CURRENT BLOCK
00777  20300773  X                       LDA      F6,X3+PSA            LOAD THE CURRENT POSITION
01000  01000765  P                       UJP      BACK04               LOOP BACK


01001  20000674  X              BACK05   LDA      FMB                  LOAD THE FILE MARK READ BIT
01002  34100004                          RAD      CPP,X1+CNBLK         OR IT INTO THE STATUS WORD
01003  14600000                          ENA      0
01004  40300717  X                       STA      F5,X3+PSA            CLEAR THE SEARCH FLAG
01005  01001007  P                       UJP      BACK07               AND GO CLEAN UP
01006  44100004                 BACK06   SWA      CPP,X1+CNBLK         UPDATE THE CURRENT POSITION
01007  00700564  X              BACK07   RTJ      FLOAT                FLOAT THE CURRENT BLOCK
01010  20100003                 BACK08   LDA      CBP,X1+CNBLK         LOAD THE CURRENT BLOCK NUMBER
01011  21100001                          LDQ      LP,X1+CNBLK          COMPARE IT WITH THE LOAD POINT
01012  03501017  P                       AQJ,NE   BACK09               JUMP IF NOT AT THE LOAD POINT
01013  20100004                          LDA      CPP,X1+CNBLK         LOAD THE CURRENT POSITION POINTER
01014  05600001                          ASG      1                    SKIP IF NOT AT THE LOAD POINT
01015  35000725  X                       SSA      LPB                  SET THE LOAD POINT BIT
```

```
01016  40100004          864           STA     CPP,X1+CNBLK        AND STORE IT BACK
01017  14200721 P        865  BACK09   ENI     BACK02,X2           ENTER RETURN ADDRESS
01020  01001103 P        866           UJP     FWOSP09             CHECK FOR COMPLETION
                         867
                         868
01021  20301004 X        869  CKSEARCH LDA     F5,X3+PSA           LOAD THE SEARCH FLAG
01022  03100565 P        870           AZJ,NE  READRTN             CONDITION IS CK IF SEARCHING
01023  00705072 P        871           RTJ     UNSAVE              OTHERWISE, GET MAD
01024  01004673 P        872           UJP     ZABORT
                         873
00717 P                  874  SBPFM    EQU     BACK01              THE A REGISTER MUST BE NON-ZERO
                         875  *                                    AT THIS PCINT
```

```
                                879      *************************************************************************
                                880      *                                                                       *
                                881      *          FWDSPACE -- SFPFM                                            *
                                882      *                                                                       *
                                883      *          F5          SEARCH FLAG                                      *
                                884      *                      IF F5 =0 SEZ FWDSPACE                            *
                                885      *                      IF F5 ≠0 SEZ SFPFM                               *
                                886      *          F6          NUMBER OF WORDS LEFT IN THE RECORD WE ARE        *
                                887      *                      SPACING PAST                                     *
                                888      *                                                                       *
                                889      *************************************************************************
                                890      FWDSPACE  ENA         0                    INDICATE FORWARD SPACE
                                891      FWDSP01   SWA         F5,X3+PSA            SFPFM JUMPS HERE
                                892                RTJ         SAVE                 SAVE INDEX REGISTERS AND FAULTS
                                893      FWDSP02   VFD         A12/EINT
                                894                LDQ         CPP,X1+CNBLK         LOAD THE STATUS WORD
                                895                LDL         AUB                  CHECK FOR ABNORMAL/UNAVAILABLE
                                896                AZJ,NE      IOSMASH              KILL THE FINK
                                897                LDL         EODB                 END OF DATA BIT TO A
                                898                VFD         A12/DINT
                                899                AZJ,NE      CKSEARCH             DO NOT SPACE PAST END OF DATA
                                900                LDL         NLPB                 RESET LP, FM, AND BRP INDICATORS
                                901                LPA         NFMBRP
                                902                STA         CPP,X1+CNBLK         BIT AND STORE IT BACK
                                903                LDA         COREP,X1+CNBLK       LOAD THE CORE POINTER
                                904                AZJ,NE      *+3                  JUMP IF THE BLOCK IS IN CORE
                                905                RTJ         FIX                  READ THE CURRENT BLOCK INTO CORE
                                906                UJP         *+2
                                907                RTJ         RESERVE              RESERVE THE CORE BLOCK
                                908                LDA         CPP,X1+CNBLK         LOAD THE CURRENT POSITION
                                909                TAI         X2+CPPX
                                910                LDA         CORE+2,X2+CPPX       LOAD THE INTER-RECORD GAP WORD
                                911                AZJ,EQ      FWDSP10              JUMP IF END OF DATA
                                912                AZJ,LT      FWDSP05              JUMP IF A FILE MARK
                                913                LPA         BIT16M1              MASK TO SIXTEEN BITS
                                914                LDQ         CPP,X1+CNBLK         LOAD THE CURRENT POSITION
                                915                ANQ         77777B               MASK OFF THE STATUS BITS
                                916                AQA                              ADD THE CURRENT POSITION TO THE
                                917                INA         2                    RECORD LENGTH AND ADD 2
                                918                ASG,S       WPFB                 SKIP IF THE NEXT RECORD DOES NOT
                                919                UJP         FWDSP04              END IN THIS BLOCK
                                920                STA         F6,X3+PSA            SAVE THE MODIFIED RECORD LENGTH
                                921      FWDSP03   LDA         CORE                 LOAD THE FORWARD POINTER
                                922                RTJ         REWRITEX             REWRITE THE BLOCK
                                923                ENA,S       -1                   THERE IS NOW ONE LESS BLOCK
                                924                RAD         BLKR,X1+CNBLK        REMAINING PAST THE CURRENT BLOCK
                                925                LDA         F6,X3+PSA            LOAD THE MODIFIED RECORD LENGTH
                                926                INA,S       -WPFB                COUNT DOWN BY THE NUMBER OF WORDS
                                927                SWA         CPP,X1+CNBLK         PER FILE BLOCK AND STORE IT INTO
                                928      *                                        THE CURRENT POSITION POINTER
                                929                ASG,S       WPFB                 SKIP IF THE RECORD DOES NOT END
                                930      *                                        IN THIS FILE BLOCK
                                931                UJP         FWDSP08
                                932                STA         F6,X3+PSA            SAVE THE MODIFIED RECORD LENGTH
                                933                RTJ         FIX                  AND READ THE CURRENT BLOCK IN
                                934                UJP         FWDSP03              LOOP BACK


                                936      FWDSP04   SWA         CPP,X1+CNBLK         UPDATE THE CURRENT POSITION
                                937                RTJ         FLOAT                FLOAT THE CURRENT BLOCK
                                938      FWDSP08   ENI         FWDSP02,X2           ENTER CONTINUATION ADDRESS
                                939      FWDSP09   LDA         F5,X3+PSA            GET SEARCH/SPACE FLAG
                                940                AZJ,EQ      READRTN              DONE IF NOT SEARCHING
                                941                LDA         CMCODE,X3+PSA        GET CONTROL-A FLAG
                                942                AZJ,EQ      UJP0X2               CONTINUE SEARCH IF NO ERRORS
                                943                RTJ         CMQSET               MAKE AN OFFICAL REQUEST
                                944                ENA         SWBIT                FOR CONTROL MODE AND SET
                                945                SSA         FLAGS                THE SWITCHING BIT SO THAT
                                946                STA         FLAGS                WE WILL JUMP TO GCONTROL
                                947                LDA         T1,X3+PSA            GET USERS PROGRAM COUNTER
                                948                INA,S       -1                   DO NOT ALLOW THE PC TO ADVANCE
                                949                SWA         T1,X3+PSA
                                950                UJP         READRTN              EXIT AS IF OPERATION DONE
```

```
01025  14600000
01026  44301021 X
01027  00705064 P
01030  77740000
01031  21100004
01032  27000723 X
01033  03104766 P
01034  27000347 X
01035  77730000
01036  03101021 P
01037  27000025 X
01040  37000011 P
01041  40100004
01042  20100002
01043  03101046 P
01044  00700776 X
01045  01001047 P
01046  00700737 X
01047  20100004
01050  53600000
01051  20204002
01052  03001135 P
01053  03301117 P
01054  37005135 P
01055  21100004
01056  17777777
01057  53040000
01060  15600002
01061  05400776
01062  01001100 P
01063  40300777 X
01064  20004000
01065  00700770 X
01066  14477776
01067  34100005
01070  20301063 X
01071  15477001
01072  44100004
01073  05400776
01074  01001102 P
01075  40301070 X
01076  00701044 X
01077  01001064 P


01100  44100004
01101  00701007 X
01102  14201030 P
01103  20301026 X
01104  03000565 P
01105  20300316 X
01106  03002441 P
01107  00777777 X
01110  14677777 X
01111  35077777 X
01112  40001111 X
01113  20377777 X
01114  15477776
01115  44301113 X
01116  01000565 P
```

```
01117  20001001 X        952  FWDSP05  LDA     FMB                LOAD A FILE MARK READ BIT
01120  34100004          953           RAD     CPP,X1+CNBLK       OR IT INTO THE STATUS
01121  15200001          954           INI     1,X2+CPPX          ADVANCE TO THE NEXT WORD
01122  53200000          955           TIA     X2+CPPX
01123  44100004          956           SWA     CPP,X1+CNBLK       UPDATE THE CURRENT POSITION
01124  05600776          957           ASG     WPFB               SKIP IF IN THE NEXT BLOCK
01125  01000564 P        958           UJP     READFX
01126  15477001          959           INA,S   -WPFB              DECREMENT THE POINTER
01127  44100004          960           SWA     CPP,X1+CNBLK       AND STORE IT BACK
01130  20004000          961           LDA     CORE               LOAD THE FORWARD POINTER
01131  00701065 X        962           RTJ     REWRITEX           REWRITE THE BLOCK
01132  14477776          963           ENA,S   -1                 THERE IS NOW ONE LESS BLOCK PAST
01133  34100005          964           RAD     BLKR,X1+CNBLK      THE CURRENT FILE BLOCK
01134  01000565 P        965           UJP     READRTN
                         966
01135  20001034 X        967  FWDSP10  LDA     EODB               SET THE EOD BIT INTO THE STATUS
01136  34100004          968           RAD     CPP,X1+CNBLK
01137  01000564 P        969           UJP     READFX
                         970
       01026 P           971  SFPFM    EQU     FWDSP01            THE A REGISTER MUST BE NON-ZERO
                         972  *                                  AT THIS POINT
```

```
01140  14600001          975  ACCWFM  ENA      1                    FILE MARKS COUNT AS 1 RECORD
01141  34100000          976          RAD      ACCWORD,X1+CNBLK     IN THE ACCOUNTING WORD
01142  00705064 P        977  WFM     RTJ      SAVE                 SAVE INDEX REGISTERS AND FAULTS
01143  20100004          978          LDA      CPP,X1+CNBLK         LOAD THE STATUS WORD
01144  03304763 P        979          AZJ,LT   FPV                  JUMP IF PROTECT VIOLATION
01145  37001032 X        980          LPA      AUB                  CHECK FOR ABNORMAL/UNAVAILABLE
01146  21100007          981          LDQ      TFL,X1+CNBLK         LOAD THE FILE LENGTH
01147  04500000          982          QSE,S    0                    SKIP IF ZERO LENGTH
01150  03104766 P        983          AZJ,NE   IOSMASH              KILL THE FINK
01151  20001015 X        984          LDA      BIT22                SET THE CHANGE BIT
01152  35100006          985          SSA      EPP,X1+CNBLK
01153  40100006          986          STA      EPP,X1+CNBLK
01154  20100004          987          LDA      CPP,X1+CNBLK         GET THE CURRENT POSITION POINTER
01155  04600775          988          ASE      WPFB-1               SKIP IF AT THE END OF THE BLOCK
01156  01001220 P        989          UJP      WFM03                THIS IS THE EASY CASE
01157  14600001          990          ENA      1                    THIS WILL ADD 1 FILE BLOCK
01160  31100005          991          SBA      BLKR,X1+CNBLK        SUBTRACT THE BLOCKS REMAINING
01161  14201163 P        992  WFM00   ENI      *+2,X2               ENTER THE RETURN
01162  01000276 P        993          UJP      OVERCHEC             CHECK THE FILE SPACE LIMIT
01163  20100002          994          LDA      COREP,X1+CNBLK       LOAD THE CORE POINTER
01164  03001167 P        995          AZJ,EQ   WFM01                JUMP IF NOT IN CORE
01165  00701046 X        996          RTJ      RESERVE              RESERVE THE CORE
01166  01001172 P        997          UJP      WFM02
                         998
       01167 P           999  WFM01   EQU      *
01167  20100005         1000          LDA      BLKR,X1+CNBLK
01170  03301264 P       1001          AZJ,LT   WFM08                JUMP IF AN EMPTY FILE
01171  00701076 X       1002          RTJ      FIX                  READ THE CURRENT BLOCK INTO IT
01172  20004000         1003  WFM02   LDA      CORE                 LOAD THE NUMBER OF THE NEXT
01173  21100005         1004          LDQ      BLKR,X1+CNBLK        FILE BLOCK AND THE LENGTH
01174  00700377 X       1005          RTJ      FREEFILE             GO FREE IT
01175  24100005         1006          LCA      BLKR,X1+CNBLK        PREPARE TO UPDATE
01176  15600001         1007          INA      1                    ADD ONE BLOCK
01177  34100007         1008          RAD      TFL,X1+CNBLK         UPDATE THE FILE LENGTH
01200  14600000         1009          ENA      0                    CPP AND BLKR WILL BOTH BE ZERO AT
01201  44100004         1010          SWA      CPP,X1+CNBLK         THE END OF THE OPERATION
01202  40100005         1011          STA      BLKR,X1+CNBLK
01203  20000623 X       1012          LDA      BIT23                LOAD THE FILE MARK CODE
01204  40004777         1013          STA      CORE+WPFB+1          WRITE IT INTO THE BLOCK
01205  40100002         1014          STA      COREP,X1+CNBLK       AND STORE THE CORE POINTER BACK
01206  00700612 X       1015          RTJ      SELBLK               GET A FILE BLOCK
01207  21100003         1016          LDQ      CBP,X1+CNBLK         LOAD THE CURRENT BLOCK NUMBER
01210  41300620 X       1017          STQ      F4,X3+PSA            SAVE IT FOR THE BACK POINTER
01211  40004000         1018          STA      CORE                 WRITE THE FORWARD POINTER
01212  00701131 X       1019          RTJ      REWRITEX             REWRITE THE BLOCK
01213  00700617 X       1020          RTJ      GETCORE              GET A BLOCK OF CORE
01214  20301210 X       1021          LDA      F4,X3+PSA            LOAD THE LAST BLOCK NUMBER
01215  14700000         1022          ENQ      0                    ZERO IS THE END OF DATA WORD
01216  45004001         1023          STAQ     CORE+1               WRITE THE BACK POINTER
01217  01001255 P       1024          UJP      WFM07                GO CLEAN UP

01220  24100005         1026  WFM03   LCA      BLKR,X1+CNBLK
01221  03201161 P       1027          AZJ,GE   WFM00
01222  20100002         1028          LDA      COREP,X1+CNBLK       LOAD THE CORE POINTER
01223  03001226 P       1029          AZJ,EQ   WFM04                JUMP IF NOT IN CORE
01224  00701165 X       1030          RTJ      RESERVE              RESERVE THE CORE
01225  01001232 P       1031          UJP      WFM05

       01226 P           1033  WFM04   EQU      *
01226  20100004         1034          LDA      CPP,X1+CNBLK
01227  37001151 X       1035          LPA      LPB
01230  03101264 P       1036          AZJ,NE   WFM08                JUMP IF AT LOAD POINT
01231  00701171 X       1037          RTJ      FIX                  READ THE CURRENT BLOCK INTO IT
01232  20004000         1038  WFM05   LDA      CORE                 LOAD THE FORWARD POINTER
01233  21100005         1039          LDQ      BLKR,X1+CNBLK        LOAD THE NUMBER OF BLOCKS BEYOND
01234  00701174 X       1040          RTJ      FREEFILE             FREE THE FILE SPACE
01235  20100004         1041  WFM06   LDA      CPP,X1+CNBLK         LOAD THE CURRENT POSITION POINTER
01236  15600001         1042          INA      1                    UPDATE IT
01237  44100004         1043          SWA      CPP,X1+CNBLK         STORE THE POSITION BACK
01240  53600000         1044          TAI      X2+CPPX
01241  12077776         1045          SHA      -1
01242  05640000         1046          ASG      40000B               SKIP IF A SAVED FILE
01243  15377774         1047          INI      -3,X3+PSA            BIAS FOR SCRATCH FILES
01244  24100005         1048          LCA      BLKR,X1+CNBLK        KEEP THE TOTALS CURRENT
01245  05400000         1049          ASG,S    0                    IF ZERO LENGTH ACCOUNTING IS DONE
01246  34300330 X       1050          RAD      SFBLKS,X3+PSA        ADJUST TOTAL USER BLOCKS
01247  34100007         1051          RAD      TFL,X1+CNBLK         ADJUST THE TOTAL FILE LENGTH
```

```
01250  14700000          1052            ENQ     0                   CLEAR THE COUNT OF BLOCKS LEFT
01251  41100005          1053            STQ     BLKR,X1+CNBLK       BEYOND THE CURRENT BLOCK
01252  54300334  X       1054            LDI     RPSAPTR,X3+PSA      RESTORE THE PSA INDEX
01253  20001203  X       1055            LDA     BIT23               LOAD THE FILE MARK CODE
01254  45204001          1056            STAQ    CORE+1,X2+CPPX      STORE THE MARK INTO THE BLOCK
01255  20001253  X       1057    WFM07   LDA     BIT23               LOAD THE ALTERED INDICATOR
01256  40100002          1058            STA     COREP,X1+CNBLK      STORE IT BACK
01257  20100004          1059            LDA     CPP,X1+CNBLK        LOAD THE STATUS WORD
01260  37000015  P       1060            LPA     WRMASK              CLEAR A BUNCH OF BITS
01261  35000012  P       1061            SSA     FMEODB              SET FM AND EOD BITS
01262  40100004          1062            STA     CPP,X1+CNBLK        STORE IT BACK
01263  01000562  P       1063            UJP     FOUTW18             RETURN TO THE USER


01264  00701213  X       1065    WFM08   RTJ     GETCORE
01265  14477777          1066            ENA,S   77777B
01266  40004001          1067            STA     CORE+1              SET THE BACKWARD POINTER
01267  20100001          1068            LDA     LP,X1+CNBLK         LOAD THE STARTING BLOCK NUMBER
01270  21100007          1069            LDQ     TFL,X1+CNBLK        LOAD THE FILE LENGTH
01271  00701234  X       1070            RTJ     FREEFILE            RELEASE THE FILE SPACE
01272  00701206  X       1071            RTJ     SELBLK              GET A FILE BLOCK
01273  40100001          1072            STA     LP,X1+CNBLK
01274  40100003          1073            STA     CBP,X1+CNBLK
01275  14201235  P       1074            ENI     WFM06,X2            ENTER THE RETURN ADDRESS
01276  01000371  X       1075            UJP     FDZAP               TAKE CARE OF THE FILE DIRECTORY
```

```
01277  007705064 P        1078  RELEASE  RTJ      SAVE              SAVE INDEX REGISTERS AND FAULTS
01300  201000004          1079           LDA      CPP,X1+CNBLK      LOAD THE STATUS WORD
01301  033047637 P        1080           AZJ,LT   FPV               JUMP IF PROTECT VIOLATION
01302  370777777 X        1081           LPA      SVB
01303  401000004          1082           STA      CPP,X1+CNBLK
01304  030001306 P        1083           AZJ,EQ   *+2
01305  153000003          1084           INI      3,X3+PSA
01306  240012557 X        1085           LCA      BIT23             CLEAR THE ALTERED BIT
01307  371000002          1086           LPA      COREP,X1+CNBLK    IN THE CORE POINTER
01310  007007037 X        1087           RTJ      REWRITE           REWRITE IT
01311  211000007          1088           LDQ      TFL,X1+CNBLK      LOAD THE LENGTH OF THE FILE
01312  201000001          1089           LDA      LP,X1+CNBLK       LOAD THE FIRST BLOCK NUMBER
01313  007012717 X        1090           RTJ      FREEFILE          FREE THE FILE
01314  241000007          1091           LCA      TFL,X1+CNBLK
01315  343777777 X        1092           RAD      TFBLKS,X3+PSA
01316  543012527 X        1093           LDI      RPSAPTR,X3+PSA    RESTORE THE PSA INDEX
01317  146000000          1094           ENA      0
01320  401000000          1095           STA      ACCWORD,X1+CNBLK
01321  401000007          1096           STA      TFL,X1+CNBLK      SET THE TOTAL FILE LENGTH
01322  144777776          1097           ENA,S    -1                THERE ARE NOW -1 BLOCKS REMAINING
01323  401000005          1098           STA      BLKR,X1+CNBLK     BEYOND THE CURRENT BLOCK
01324  144777777          1099           ENA,S    77777B            STARTING BLOCK FOR ZERO LENGTH
01325  401000001          1100           STA      LP,X1+CNBLK       SET THE LOAD POINT WORD
01326  401000003          1101           STA      CBP,X1+CNBLK      STORE THE CURRENT BLOCK POINTER
01327  200012277 X        1102           LDA      BIT22
01330  351000006          1103           SSA      EPP,X1+CNBLK      SET THE CHANGE BIT
01331  370777777 X        1104           LPA      N8IT1920          CLEAR DIST. READ AND FORMS BITS
01332  401000006          1105           STA      EPP,X1+CNBLK      INTO THE EPP WORD
01333  142013357 P        1106           ENI      *+2,X2            ENTER THE RETURN ADDRESS
01334  010012767 X        1107           UJP      FDZAP             TAKE CARE OF THE FILE DIRECTORY
01335  007050727 P        1108           RTJ      UNSAVE            RESTORE INDEX REGISTERS
01336  200000137 P        1109           LDA      LPEODB            FILE IS NOW AT LP AND EOD
01337  351000047          1110  SSCP     SSA      CPP,X1+CNBLK      SET THE BITS INTO THE STATUS
01340  401000047          1111  RRCP     STA      CPP,X1+CNBLK      AND STORE THE STATUS AWAY
01341  010005717 P        1112           UJP      ASTATUS
```

```
                                1116     *                                                                  *
                                1117     *              CARD READER INPUT                                   *
                                1118     *                                                                  *
                                         ********************************************************************
                                1120
                 01342 P        1121     CRINPW    EQU      *
01342  00705064 P               1122               RTJ      SAVE                     SAVE INDEX REGISTERS AND FAULTS
                 01343 P        1123     CRINPW01  EQU      *
01343  21100004                 1124               LDQ      CPP,X1+CNBLK
01344  27001135 X               1125               LDL      EOD3                     HAVE WE SEEN THE EOD WORD
01345  03001353 P               1126               AZJ,EQ   CRINPW02                 JUMP IF NCT
01346  20300317 X               1127               LDA      SYSCM,X3+PSA
01347  03301353 P               1128               AZJ,LT   CRINPW02                 ALLOW CM TO READ AT EOD
01350  00705107 P               1129               RTJ      EXIT
01351  14700004                 1130               ENQ      CCREAD                   INDICATE THE USER IS
01352  01004675 P               1131               UJP      QCONTROL                 READING A CONTROL CARD
                                1132
01353  27001451 P               1133     CRINPW02  LDL      NLPBFMED                 RESET LP, FM, ERF, EOD BITS
01354  40100004                 1134               STA      CPP,X1+CNBLK             BIT AND STORE THE STATUS BACK
01355  20100007                 1135               LDA      TFL,X1+CNBLK             IS THERE INFORMATION IN THE FILE
01356  03001377 P               1136               AZJ,EQ   CRINPW03                 JUMP IF NCT
01357  20100002                 1137               LDA      COREP,X1+CNBLK           LOAD THE CORE PCINTER
01360  03101363 P               1138               AZJ,NE   *+3                      JUMP IF THE BLOCK IS IN CORE
01361  00701231 X               1139               RTJ      FIX                      READ IN THE CURRENT BLOCK
01362  01001364 P               1140               UJP      *+2
01363  00701224 X               1141               RTJ      RESERVE                  RESERVE THE BLOCK OF CORE
01364  20100004                 1142               LDA      CPP,X1+CNBLK             LOAD THE CURRENT POSITION POINTER
01365  53600000                 1143               TAI      X2+CPPX                  LOAD RELATIVE POSITION INDEX
01366  15200003                 1144               INI      3,X2+CPPX                COMPENSATE FOR THE POINTERS
01367  20203777                 1145               LDA      CORE-1,X2+CPPX           LOAD THE INTER-RECORD GAP WORD
01370  03101415 P               1146               AZJ,NE   CRK1                     JUMP IF NOT A FILLER RECORD
01371  44100004                 1147               SWA      CPP,X1+CNBLK             NEW POSITION IS NOW ZERO
                                1148               IF       DEBUG EQ 0, GO TO .DEBUG001
01372  20100005                 1149               LDA      BLKR,X1+CNBLK                           DEBUG
01373  05400000                 1150               ASG,S    0                                       DEBUG
01374  00001374 P               1151               HLT      *                                       DEBUG
                                1152     .DEBUG001
01375  00704644 P               1153               RTJ      REWRITEY                 GO SWIZZEL THE CONTROL BLOCK
01376  01001343 P               1154               UJP      CRINPW01                 GO CHECK FOR MORE DATA
                                1155
                 01377 P        1156     CRINPW03  EQU      *
01377  20100006                 1157               LDA      EPP,X1+CNBLK             IS THE FILE STILL BEING CREATED
01400  05677777 X               1157+001           ASG      MAXDEST                  SKIP IF MACRO POINTER
01401  01001403 P               1157+002           UJP      *+2
01402  01001424 P               1159               UJP      CRIWAITA                 WAIT FOR AWHILE IF SO
01403  20300452 X               1160               LDA      SELECT,X3+PSA
01404  13077755                 1161               SHAQ     6-24                     GET BATCH TERMINAL NUMBER
01405  53500000                 1162               TAI      X1
01406  14600001                 1163               ENA      1
01407  05500000                 1164               QSG,S    0                        SKIP IF QTABLE NEEDS TO BE
01410  01001412 P               1165               UJP      *+2                      INCREMENTED
01411  34177777 X               1166               RAD      QTABLE,X1                MAKE ANOTHER PSA LEGAL
01412  00705107 P               1167               RTJ      EXIT
01413  14700024                 1168               ENQ      VANISH                   TELL CONTROL MODE TO VANISH
01414  01004675 P               1169               UJP      QCONTROL                 PLACE INTO CONTROL MODE
                                1170
                                1171
                 01415 P        1172     CRK1      EQU      *
01415  05600001                 1173               ASG      1                        SKIP IF NCT A FILE MARK
01416  14477775                 1174               ENA,S    -2
01417  53240000                 1175               AIA      X2+CPPX                  COMPUTE WHERE THE RECORD WILL END
01420  05601000                 1176               ASG      WPFB+2                   SKIP IF IT ENDS IN THE NEXT FILE
01421  01001432 P               1177               UJP      CRK2                     BLOCK
01422  20100005                 1178               LDA      BLKR,X1+CNBLK            ARE WE IN THE LAST BLCCK
01423  03101432 P               1179               AZJ,NE   CRK2
01424  00705072 P               1180     CRIWAITA  RTJ      UNSAVE
01425  14677777 X               1181               ENA      CRWAIT                   ENTER THE I/O WAIT BIT
01426  00777777 X               1182     IOWAIT    RTJ      IOSET                    SET THE BIT INTO THE PSA
01427  54301316 X               1183     RZWAIT    LDI      RPSAPTR,X3+PSA           LOAD THE PSA ADDRESS
01430  00705100 P               1184               RTJ      RZ                       EXIT FROM PROGRAM STATE ZERO
01431  01077777 X               1185               UJP      RMDONE                   SCRAM OUT OF HERE
                                1186
                 01432 P        1187     CRK2      EQU      *
01432  11177777      37777 3    1188               ECHA     177777B                  MASK THE WORD COUNT TO 16 BITS
01433  37300654 X               1189               LPA      T6,X3+PSA
01434  40301433 X               1190               STA      T6,X3+PSA
01435  14600001                 1191               ENA      1                        CHARGE FOR READING THE CARD
01436  34100000                 1192               RAD      ACCWORD,X1+CNBLK
```

```
01437  20203777          1193            LDA       CORE-1,X2+CPPX
01440  03200044 P        1194            AZJ,GE    CRFINPW          JUMP IF NOT A CONTROL CARD
01441  37077777 X        1195            LPA       NBIT23           MASK OFF THE CONTROL MODE BIT
01442  03000215 P        1196            AZJ,EQ    FINPW09          JUMP IF ONLY A FILE MARK
01443  21301346 X        1197            LDQ       SYSCM,X3+PSA
01444  05500000          1198            QSG,S     0
01445  01000044 P        1199            UJP       CRFINPW
01446  14477776          1200            ENA,S     -1
01447  34100000          1201            RAD       ACCWORD,X1+CNBLK
01450  01001135 P        1202            UJP       FWDSP10          SET EOD AND RETURN
                         1203
01451  42777777          1204  NLPBFMED  OCT       42777777         NOT (LP BIN FM EOD) BITS
```

```
                01452 P             1207    MSFCNTRL EQU     *
                01452 P             1208    CRCNTRL  EQU     *
01452  20301434 X                   1209             LDA     T6,X3+PSA          LOAD THE USERS Q REGISTER
01453  53600000                     1210             TAI     X2                 FUNCTION CODE TO X2
01454  05200002                     1211             ISG     2,X2               SKIP IF ILLEGAL
01455  01600636 P                   1212             UJP,I   FCNTRL1,X2         DECODE THE REQUEST
01456  01004673 P                   1213             UJP     ZABORT             HAVE NO MERCY ON SINNERS
                                    1214
                                    1215
                                    1216
                01457 P             1217    RAFCNTRL EQU     *
01457  20301452 X                   1218             LDA     T6,X3+PSA          LOAD THE USERS Q REGISTER
01460  53600000                     1219             TAI     X2                 PUT IT INTO THE INDEX
01461  05600006                     1220             ASG     RAFCNTL2-RAFCNTL1  SKIP IF ILLEGAL
01462  01601464 P                   1221             UJP,I   RAFCNTL1,X2        JUMP THROUGH THE TABLE
01463  01004673 P                   1222             UJP     ZABORT             GET SERIOUS
                                    1223
                01464 P             1224    RAFCNTL1 EQU     *
01464  00000570 P                   1225             OCT     STATUS             00 = STATUS
01465  00000665 P                   1226             OCT     CLEAR              01 = CLEAR
01466  00002122 P                   1227             OCT     RAFWFM             02 = WRITE FILE MARK
01467  00002106 P                   1228             OCT     RAFRLS             03 = RELEASE
01470  00001504 P                   1229             OCT     RAFRWND            04 = REWIND
01471  00001477 P                   1230             OCT     RAFSFPFM           05 = SEARCH FORWARD PAST FILE MK
                01472 P             1231    RAFCNTL2 EQU     *
```

```
01472  25300252 X        1234   RAFSEEK  LDAQ     T5,X3+PSA       LOCATE TO A SPECIFIED WORD
01473  05400010          1235            ASG,S    8               SKIP IF TCO LARGE
01474  03201506 P        1236            AZJ,GE   RAFSK01         JUMP IF OK
01475  20077777 X        1237   RAFAE    LDA      AEB             ADDRESS ERROR
01476  01001337 P        1238            UJP      SSCP            SET THE UNIT ABNORMAL
                         1239
01477  20100006          1240   RAFSFPFM LDA      EPP,X1+CNBLK    LOCATE TO THE END OF THE FILE
01500  21100007          1241            LDQ      TFL,X1+CNBLK
01501  15577776          1242            INQ,S    -1
01502  04577776          1243            QSE,S    -1
01503  01001510 P        1244            UJP      RAFSKX
01504  14600000          1245   RAFRWND  ENA      0               LOCATE TO THE START OF THE FILE
01505  14700000          1246            ENQ      0
                         1247
01506  51005136 P        1248   RAFSK01  DVA      KWPFB           DIVIDE BY WORDS PER FILE BLOCK
01507  13000030          1249            SHAQ     24
01510  44100004          1250   RAFSKX   SWA      CPP,X1+CNBLK    SET THE NEW CURRENT POSITION
01511  20100007          1251            LDA      TFL,X1+CNBLK    LOAD THE LENGTH OF THE FILE
01512  15477776          1252            INA,S    -1              DECREMENT IT BY ONE
01513  03201517 P        1253            AZJ,GE   *+4             JUMP IF THE FILE HAS LENGTH
01514  20100004          1254            LDA      CPP,X1+CNBLK    LOAD THE STATUS WORD
01515  37001145 X        1255            LPA      AUB             MASK THE ABNORMAL/UNAVAILABLE BIT
01516  03101475 P        1256            AZJ,NE   RAFAE           ADDRESS ERROR IF A/U
01517  03701475 P        1257            AQJ,LT   RAFAE           JUMP IF ADDRESS ERROR
01520  03501532 P        1258            AQJ,NE   RAFSK02         JUMP IF NOT TO THE LAST BLOCK
01521  20100006          1259            LDA      EPP,X1+CNBLK    LOAD THE END POSITION POINTER
01522  21100004          1260            LDQ      CPP,X1+CNBLK    LOAD THE NEW POSITION
01523  17677777          1261            ANA      77777B          MASK OFF ANY GARBAGE
01524  17777777          1262            ANQ      77777B
01525  03701475 P        1263            AQJ,LT   RAFAE           JUMP IF AN ADDRESS ERROR
01526  20100005          1264            LDA      BLKR,X1+CNBLK
01527  03301544 P        1265            AZJ,LT   RAFSK04         JUMP IF THE FILE IS EMPTY
01530  14600000          1266            ENA      0
01531  01001534 P        1267            UJP      RAFSK03
                         1268
01532  16577777          1269   RAFSK02  XOQ,S    -0
01533  53040000          1270            AQA                      LEAVE THE NEW BLKR IN A
01534  21100005          1271   RAFSK03  LDQ      BLKR,X1+CNBLK   LOAD THE OLD BLKR
01535  03401544 P        1272            AQJ,EQ   RAFSK04         JUMP IF NO BLOCK CHANGE
01536  40100005          1273            STA      BLKR,X1+CNBLK   SAVE THE NEW BLKR
01537  24001344 X        1274            LCA      BIT21           BIT 21 SEZ POSITIONER READY
01540  37100006          1275            LPA      EPP,X1+CNBLK    SO CLEAR IT IN THE EPP WORD
01541  40100006          1276            STA      EPP,X1+CNBLK
01542  25100002          1277            LDAQ     COREP,X1+CNBLK  LOAD THE CORE POINTERS
01543  00701310 X        1278            RTJ      REWRITE         AND REWRITE THE CURRENT BLOCK
01544  14677777          1279   RAFSK04  ENA      77777B          CLEAR ALL BITS IN THE STATUS
01545  35000014 P        1280            SSA      FPSV            EXCEPT READ-ONLY AND SAVED FILE
01546  01000666 P        1281            UJP      CLEARX
```

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01547  007050641 P        1284  RAFREAD  RTJ      SAVE
01550  111777777          1285           ECHA     177777B          ENTER THE SIXTEEN BIT MASK FOR
01551  373014572 X        1286           LPA      T6,X3+PSA        THE USERS Q REGISTER
01552  403015512 X        1287           STA      T6,X3+PSA
01553  030050001 P        1288           AZJ,EQ   ZWCZERO          JUMP IF WCRD CCUNT IS ZERO
01554  142015562 P        1289           ENI      *+2,X2
01555  010032121 P        1290           UJP      IRCHECKB         CHECK FOR ILLEGAL WRITE
01556  010047721 P        1291           UJP      IRERRORB         WE GOT AN ILLEGAL WRITE
01557  146016331 P        1292           ENA      RAFR02           ENTER THE RETURN ADDRESS
                          1293
                          1295  *****************************************************************
                          1296  *                                                               *
                          1297  *     RCUTINE TO PERFORM INITIAL DIRTY WORK FCR RANDCM ACCESS    *
                          1298  *     LOCATES THE CBP PROPERLY IF BIT 21 IN EPP IS NOT SET BY    *
                          1299  *     SEARCHING THROUGH THE MAJOR AND MINOR ACCESS FILE BLOCKS   *
                          1300  *     CORE IS OBTAINED AND THE CBP IS READ INTO IT, IF NECESSARY *
                          1301  *                                                               *
                          1302  *     THE ROUTINE EXITS IN PROGRAM STATE WITH X2 = CPP           *
                          1304  *****************************************************************
01560  403012142 X        1305  RAFX     STA      F4,X3+PSA        SAVE THE RETURN ADDRESS
01561  211000041          1306           LDQ      CPP,X1+CNBLK     LOAD THE STATUS WORD
01562  270015152 X        1307           LDL      AUB              CHECK FOR ABNORMAL/UNAVAILABLE
01563  031047662 P        1308           AZJ,NE   IOSMASH          TERMINATE THE USER IF ABNORMAL
01564  270014752 X        1309           LDL      AEB              CHECK FOR ADDRESS ERROR
01565  031046732 P        1310           AZJ,NE   ZABORT           HAVE NC MERCY CN THEIR SCULS
01566  201000061          1311           LDA      EPP,X1+CNBLK     LOAD THE EPP WORD
01567  370015372 X        1312           LPA      BIT21            LEAVE THE POSITIONER READY BIT
01570  031016172 P        1313           AZJ,NE   RAFX01           JUMP IF PCSITICNER READY
01571  201000071          1314           LDA      TFL,X1+CNBLK     LOAD THE LENGTH OF THE FILE
01572  030005662 P        1315           AZJ,EQ   FINISH           JUMP IF ZERO LENGTH
01573  201000011          1316           LDA      LP,X1+CNBLK      LOAD THE DIRECTORY ADDRESS
01574  401000031          1317           STA      CBP,X1+CNBLK     PREPARE TC READ IT INTO CORE
01575  007013612 X        1318           RTJ      FIX              READ IN THE DIRECTORY BLOCK
01576  201000071          1319           LDA      TFL,X1+CNBLK     LOAD THE LENGTH OF THE FILE
01577  311000051          1320           SBA      BLKR,X1+CNBLK    SUBTRACT BLOCKS REMAINING
01600  154777761          1321           INA,S    -1               LEAVE THE RELATIVE BLOCK NUMBER
01601  403777772 X        1322           STA      T3,X3+PSA
01602  120777661          1323           SHA      -9               SHIFT OFF THE WORD POSITION
01603  536000001          1324           TAI      X2+CPPX          TRANSFER THE SUB DIRECTORY NUMBER
01604  202040001          1325           LDA      CORE,X2+CPPX     LOAD THE SUB DIRECTORY ADDRESS
01605  007012122 X        1326           RTJ      REWRITEX         REWRITE THE DIRECTORY BLOCK
01606  007015752 X        1327           RTJ      FIX              READ THE SUB DIRECTORY BLOCK
01607  203016012 X        1328           LDA      T3,X3+PSA
01610  176007772          1329           ANA      7778
01611  536000001          1330           TAI      X2+CPPX
01612  202040001          1331           LDA      CORE,X2+CPPX     LOAD THE DATA BLOCK ADDRESS
01613  007016052 X        1332           RTJ      REWRITEX         REWRITE THE SUBDIRECTORY BLOCK
01614  200015672 X        1333           LDA      BIT21            LOAD THE POSITIONER READY BIT
01615  341000061          1334           RAD      EPP,X1+CNBLK     SET IT INTO THE EPP WCRD
01616  010016212 P        1335           UJP      RAFX02
                          1336
01617  201000021          1337  RAFX01   LDA      COREP,X1+CNBLK   LOAD THE CORE PCINTER
01620  031016232 P        1338           AZJ,NE   RAFX03           JUMP IF IN CORE
01621  007016062 X        1339  RAFX02   RTJ      FIX              READ IN THE DATA BLOCK
01622  010016242 P        1340           UJP      RAFX04
                          1341
01623  007013632 X        1342  RAFX03   RTJ      RESERVE          RESERVE THE CURRENT BLOCK
01624  201000041          1343  RAFX04   LDA      CPP,X1+CNBLK     LOAD THE CURRENT POSITION
01625  536000001          1344           TAI      X2+CPPX
01626  152000021          1345           INI      2,X2+CPPX
01627  016272 P           1346  RAFX06   EQU      *
01627  534300361          1347           TIM      LEVEL,0          ENTER PROGRAM STATE THE QUICK AND
01630  203005462 X        1348           LDA      CR,X3+PSA        DIRTY WAY
01631  776340001          1349           ACR
01632  017015602 X        1350           UJP,I    F4,X3+PSA        RETURN IN PROGRAM STATE
                          1351
01633  203014032 X        1352  RAFR02   LDA      SELECT,X3+PSA    RESTORE THE CNBLK INDEX
01634  535000001          1353           TAI      X1+CNBLK
01635  213015522 X        1354           LDQ      T6,X3+PSA        LOAD THE WORD CCUNT
01636  055000011          1355           QSG,S    1
01637  010016502 P        1356           UJP      RAFR04           JUMP IF DCNE
01640  201000051          1357           LDA      BLKR,X1+CNBLK    ARE WE IN THE LAST BLOCK
01641  031016542 P        1358           AZJ,NE   RAFR06           JUMP IF NCT
01642  201000061          1359           LDA      EPP,X1+CNBLK
01643  176777771          1360           ANA      777778           ARE WE AT THE END OF DATA
01644  156000021          1361           INA      2
01645  164777771          1362           XOA,S    777778
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01646  53240000          1363              AIA       X2+CPPX
01647  03100107 P        1364              AZJ,NE    FINPW02Z          JUMP IF NOT END OF DATA
01650  53200000          1365     RAFR04   TIA       X2+CPPX           SET THE CURRENT POSITION
01651  15477775          1366              INA,S     -2
01652  44100004          1367              SWA       CPP,X1+CNBLK
01653  00000564          1368              VFD       A9/JMP,A15/REACFX GO CLEAN UP
                         1369     *
01654  53200000          1370     RAFR06   TIA       X2                ARE WE AT THE END OF THE BLOCK
01655  15476777          1371              INA,S     -WPF8-2
01656  03100107 P        1372              AZJ,NE    FINPW02Z          JUMP IF ROOM IN THE CURRENT BLOCK
                         1373
01657  00001660          1374              VFD       A9/JMP,A15/*+1
01660  20004000          1375     RAFR07   LDA       CORE              LOAD THE FORWARD POINTER
01661  00701613 X        1376              RTJ       REWRITEX          AND REWRITE THE BLOCK
01662  00701621 X        1377              RTJ       FIX               READ IN THE NEXT BLOCK
01663  14477776          1378              ENA,S     -1                KEEP THE CONTROL BLOCK CORRECT
01664  34100005          1379              RAD       BLKR,X1+CNBLK
01665  14200002          1380     RAFR08   ENI       2,X2+CPPX         SET THE CURRENT POSITION
01666  01001627 P        1381              UJP       RAFX06
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01667  20100004        1384  RAFWRITE LDA      CPP,X1+CNBLK      LOAD THE STATUS WORD
01670  03304763 P      1385           AZJ,LT     FPV               JUMP IF PROTECT VIOLATION
01671  37001562 X      1386           LPA        AU3               CHECK FOR ABNORMAL
01672  03104766 P      1387           AZJ,NE     IOSMASH           TERMINATE IF ABNORMAL
01673  20100004        1388           LDA        CPP,X1+CNBLK      LOAD THE STATUS WORD
01674  37001564 X      1389           LPA        AE3               LEAVE THE ADDRESS ERROR BIT
01675  03104673 P      1390           AZJ,NE     ZABORT            HAVE NO MERCY ON SINNERS
01676  00705064 P      1391           RTJ        SAVE              SAVE THE USERS REGISTERS
01677  14201701 P      1392           ENI        *+2,X2            ENTER THE RETURN ADDRESS
01700  01000252 P      1393           UJP        SETUPF5
01701  24100004        1394           LCA        CPP,X1+CNBLK      CHECK TO SEE IF THE FILE MUST
01702  53600000        1395           TAI        X2                BE LENGTHENED
01703  20100005        1396           LDA        BLKR,X1+CNBLK
01704  14700202        1397           ENQ        130
01705  03601730 P      1398           AQJ,GE     RAFWZIP
01706  50005136 P      1399           MUA        KWPFB
01707  21100006        1400           LDQ        EPP,X1+CNBLK
01710  17777777        1401           ANQ        777778
01711  53040000        1402           AQA
01712  53240000        1403           AIA        X2
01713  13000030        1404           SHAQ       24
01714  20301075 X      1405           LDA        F6,X3+PSA
01715  03701730 P      1406           AQJ,LT     RAFWZIP           JUMP IF THE FILE DOES NOT NEED
01716  03401730 P      1407           AQJ,EQ     RAFWZIP           TO BE LENGTHENED
01717  16577777        1408           XOQ,S      -0
01720  53040000        1409           AQA
01721  21100006        1410           LDQ        EPP,X1+CNBLK
01722  17777777        1411           ANQ        77777B
01723  53040000        1412           AQA
01724  13077747        1413           SHAQ       -24
01725  51005136 P      1414           DVA        KWPFB             LEAVE THE INCREASE IN A
01726  14201730 P      1415           ENI        *+2,X2            ENTER THE RETURN ADDRESS
01727  01000276 P      1416           UJP        OVERCHEC          CHECK THE FILE SPACE LIMIT
       01730 P         1417  RAFWZIP  EQU        *
01730  20001327 X      1418           LDA        BIT22             LOAD THE ALTERED BIT
01731  35100006        1419           SSA        EPP,X1+CNBLK      SET IT INTO THE EPP WORD
01732  40100006        1420           STA        EPP,X1+CNBLK      AND STORE IT BACK
01733  20100007        1421           LDA        TFL,X1+CNBLK      LOAD THE LENGTH OF THE FILE
01734  03101774 P      1422           AZJ,NE     RAFW02            JUMP IF NOT-ZERO
01735  00701264 X      1423           RTJ        GETCORE           GET A FILE CORE BUFFER
01736  20001306 X      1424           LDA        BIT23             SET THE ALTERED BIT
01737  40100002        1425           STA        COREP,X1+CNBLK    IN THE CORE ACCESS WORD
01740  00701272 X      1426           RTJ        SELBLK            GET A FILE BLOCK
01741  40100001        1427           STA        LP,X1+CNBLK       STORE INTO THE LOAD POINT
01742  40100003        1428           STA        CBP,X1+CNBLK
01743  00701740 X      1429           RTJ        SELBLK            GET ANOTHER BLOCK FOR THE
01744  40004000        1430           STA        CORE              SECOND DIRECTORY LEVEL
01745  00701661 X      1431           RTJ        REWRITEX          AND REWRITE THE 1ST-LEVEL BLOCK.
01746  00701735 X      1432           RTJ        GETCORE           GET A BLOCK OF CORE
01747  20001736 X      1433           LDA        BIT23             SET THE ALTERED BIT
01750  40100002        1434           STA        COREP,X1+CNBLK    IN THE CORE ACCESS WORD
01751  00701743 X      1435           RTJ        SELBLK            GET ANOTHER FILE BLOCK
01752  40004000        1436           STA        CORE              STORE THE BLOCK NUMBER AWAY
01753  00701745 X      1437           RTJ        REWRITEX          REWRITE THE 2ND-LEVEL BLOCK.
01754  00701746 X      1438           RTJ        GETCORE           GET A BLOCK OF CORE
01755  20001747 X      1439           LDA        BIT23             SET THE ALTERED BIT IN THE CORE
01756  40100002        1440           STA        COREP,X1+CNBLK    ACCESS WORD
01757  14477777        1441           ENA,S      777778            SET THE FORWARD AND BACKWARD
01760  40004000        1442           STA        CORE              POINTERS OF THE DATA BLOCK TO
01761  40004001        1443           STA        CORE+1            ALL ONE BITS
01762  14600000        1444           ENA        0
01763  40100005        1445           STA        BLKR,X1+CNBLK     SET BLKR TO ZERO
01764  14600001        1446           ENA        1
01765  40100007        1447           STA        TFL,X1+CNBLK      SET TFL TO ONE
01766  00701101 X      1448           RTJ        FLOAT             FLOAT THE CURRENT BLOCK
01767  20001614 X      1449           LDA        BIT21             SET POSITIONER READY
01770  35100006        1450           SSA        EPP,X1+CNBLK
01771  40100006        1451           STA        EPP,X1+CNBLK
01772  14201774 P      1452           ENI        *+2,X2            ENTER THE RETURN ADDRESS
01773  01001334 X      1453           UJP        FDZAP             TAKE CARE OF THE FILE DIRECTORY
01774  14601776 P      1454  RAFW02   ENA        *+2               ENTER THE RETURN ADDRESS
01775  01001560 P      1455           UJP        RAFX              PERFORM INITIALIZATION
01776  20301633 X      1456           LDA        SELECT,X3+PSA     RESTORE THE CNBLK INDEX
01777  53500000        1457           TAI        X1+CNBLK
02000  20001755 X      1458           LDA        BIT23             SET THE ALTERED BIT IN THE
02001  40100002        1459           STA        COREP,X1+CNBLK    FILE CORE BLOCK
02002  53200000        1460           TIA        X2+CPPX           IS THERE ROOM IN THIS FILE CORE
02003  15476777        1461           INA,S      -WPFB-2           BLOCK
02004  03002027 P      1462           AZJ,EQ     RAFW08            JUMP IF NOT
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02005  16477777          1463              XOA,S   77777B
02006  13000030          1464              SHAQ    24
02007  20301714 X        1465              LDA     F6,X3+PSA           CHECK THE WORD COUNT
02010  03100463 P        1466              AZJ,NE  FOUTW05             JUMP IF NOT FINISHED
02011  15277775          1467              INI     -2,X2+CPPX          ADJUST SLIGHTLY
02012  53200000          1468              TIA     X2+CPPX             CURRENT POSITION INDEX TO (A)
02013  44100004          1469              SWA     CPP,X1+CNBLK        STORE THE CURRENT POSITION
02014  00002015          1470              VFD     A9/JMP,A15/*+1      ENTER MONITOR STATE
02015  20100005          1471              LDA     BLKR,X1+CNBLK       ARE WE AT THE END OF THE FILE
02016  03102024 P        1472              AZJ,NE  WRITERTN            JUMP IF NOT THE LAST BLOCK
02017  53200000          1473              TIA     X2+CPPX             CHECK TO SEE IF THE END
02020  21100005          1474              LDQ     EPP,X1+CNBLK        POSITION SHOULD BE ADVANCED
02021  17777777          1475              ANQ     77777B              WITHIN THE BLOCK
02022  03702024 P        1476              AQJ,LT  WRITERTN            JUMP IF NOT PAST THE CURRENT END
02023  44100006          1477              SWA     EPP,X1+CNBLK        UPDATE THE END POSITION
02024  14600000          1478  WRITERTN    ENA     0                   SET THE USER=S Q  REGISTER TO
02025  40301635 X        1479              STA     T6,X3+PSA           ZERO
02026  01000564 P        1480              UJP     READFX
                         1481  *
02027  00002030          1482  RAFW08      VFD     A9/JMP,A15/*+1
02030  20100005          1483              LDA     BLKR,X1+CNBLK       ARE WE IN THE LAST BLOCK
02031  03101660 P        1484              AZJ,NE  RAFR07              JUMP IF NOT
02032  00701751 X        1485              RTJ     SELBLK              GET A FILE BLOCK
02033  40004000          1486              STA     CORE                STORE THE FORWARD POINTER
02034  21100003          1487              LDQ     CBP,X1+CNBLK        LOAD THE CURRENT BLOCK ADDRESS
02035  45301472 X        1488              STAQ    T5,X3+PSA           SAVE JUNK FOR FUTURE REFERENCE
02036  20100001          1489              LDA     LP,X1+CNBLK         LOAD THE DIRECTORY BLOCK NUMBER
02037  00701753 X        1490              RTJ     REWRITEX            REWRITE THE CURRENT BLOCK
02040  00701662 X        1491              RTJ     FIX                 READ IN THE MAJOR ACCESS BLOCK
02041  20100007          1492              LDA     TFL,X1+CNBLK        LOAD THE TOTAL FILE LENGTH
02042  17600777          1493              ANA     777B                CHECK TO SEE IF MORE MINOR
02043  03102060 P        1494              AZJ,NE  RAFW14              ACCESS BLOCKS ARE NEEDED
02044  00702032 X        1495              RTJ     SELBLK              GET ANOTHER FILE BLOCK FOR THE
02045  13000030          1496              SHAQ    24                  ADDITION OF ANOTHER MINOR
02046  20100007          1497              LDA     TFL,X1+CNBLK        ACCESS BLOCK
02047  12077766          1498              SHA     -9                  STORE THE FILE BLOCK NUMBER OF
02050  53600000          1499              TAI     X2+CPPX             NEW MINOR ACCESS BLOCK INTO THE
02051  41204000          1500              STQ     CORE,X2+CPPX        MAJOR ACCESS BLOCK
02052  20002000 X        1501              LDA     BIT23               SET THE ALTERED BIT IN THE CORE
02053  40100002          1502              STA     COREP,X1+CNBLK      ACCESS WORD
02054  13000030          1503              SHAQ    24
02055  00702037 X        1504              RTJ     REWRITEX            REWRITE THE BLOCK
02056  00701754 X        1505              RTJ     GETCORE             GET A CORE BUFFER
02057  01002066 P        1506              UJP     RAFW16
                         1507
02060  20100007          1508  RAFW14      LDA     TFL,X1+CNBLK        LOAD THE FILE LENGTH
02061  12077766          1509              SHA     -9
02062  53600000          1510              TAI     X2+CPPX
02063  20204000          1511              LDA     CORE,X2+CPPX        LOAD THE ADDRESS OFTHE LOWER
02064  00702055 X        1512              RTJ     REWRITEX
02065  00702040 X        1513              RTJ     FIX                 READ THE BLOCK INTO CORE
02066  20100007          1514  RAFW16      LDA     TFL,X1+CNBLK        LOAD THE FILE LENGTH
02067  53600000          1515              TAI     X2+CPPX             LOAD THE CPPX INDEX
02070  15600001          1516              INA     1                   INCREASE THE LENGTH OF THE FILE
02071  40100007          1517              STA     TFL,X1+CNBLK        AND STORE IT AWAY
02072  17200777          1518              ANI     777B,X2+CPPX        MASK TO THE LOWER NINE BITS
02073  20002052 X        1519              LDA     BIT23               SET THE ALTERED BIT IN THE CORE
02074  40100002          1520              STA     COREP,X1+CNBLK      ACCESS WORD
02075  44100006          1521              SWA     EPP,X1+CNBLK        CLEAR THE END POSITION POINTER
02076  20302035 X        1522              LDA     T5,X3+PSA           STORE THE DATA BLOCK ADDRESS
02077  40204000          1523              STA     CORE,X2+CPPX        INTO THE MINOR ACCESS BLOCK
02100  00702064 X        1524              RTJ     REWRITEX            REWRITE THE MINOR ACCESS BLOCK
02101  00702056 X        1525              RTJ     GETCORE             GET A BLOCK OF CORE
02102  14477777          1526              ENA,S   77777B              ENTER THE NEW FORWARD POINTER
02103  21302025 X        1527              LDQ     T6,X3+PSA           LOAD THE BACKWARD POINTER
02104  45004000          1528              STAQ    CORE                SAVE THEM IN THE FILE BLOCK
02105  01001665 P        1529              UJP     RAFR08
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02106  20100007        1532   RAFRLS  LDA     TFL,X1+CNBLK    RELEASE IS HANDLED BY A SEEK
02107  15477776        1533           INA,S   -1              TO ADDRESS ZERO AND THEN
02110  40100005        1534           STA     BLKR,X1+CNBLK   WRITING A FILE MARK
02111  24001767  X     1535           LCA     BIT21           CLEAR THE POSITIONER READY BIT
02112  37100006        1536           LPA     EPP,X1+CNBLK    IN THE EPP WORD
02113  35001730  X     1537           SSA     BIT22           SET THE CHANGE BIT
02114  40100006        1538           STA     EPP,X1+CNBLK
02115  25100002        1539           LDAQ    COREP,X1+CNBLK  LOAD THE POINTER WORDS
02116  00701543  X     1540           RTJ     REWRITE         AND REWRITE THE CURRENT BLOCK
02117  20000014  P     1541           LDA     FPSV            CLEAR ALL THE BITS IN THE CPP
02120  37100004        1542           LPA     CPP,X1+CNBLK    WORD EXCEPT FOR FILE-PROTECT
02121  40100004        1543           STA     CPP,X1+CNBLK    AND SAVED-FILE
                       1544
02122  20100004        1545   RAFWFM  LDA     CPP,X1+CNBLK    LOAD THE STATUS WORD
02123  03304763  P     1546           AZJ,LT  FPV             JUMP IF FILE PROTECT VIOLATION
02124  00705064  P     1547           RTJ     SAVE            SAVE THE USERS REGISTERS
02125  20100007        1548           LDA     TFL,X1+CNBLK    LOAD THE LENGTH OF THE FILE
02126  03000570  P     1549           AZJ,EQ  STATUS          DONE IF LENGTH EQUALS ZERO
02127  14602131  P     1550           ENA     *+2             ENTER THE RETURN ADDRESS
02130  01001560  P     1551           UJP     RAFX            INITIALIZE FOR FOLLOWING JUNK
02131  14477777        1552           ENA,S   77777B          SET THE FORWARD POINTER TO ALL
02132  40004000        1553           STA     CORE            ONE BITS
02133  20002073  X     1554           LDA     BIT23           SET THE ALTERED STATUS BIT INTO
02134  35100002        1555           SSA     COREP,X1+CNBLK
02135  40100002        1556           STA     COREP,X1+CNBLK  THE STATUS
02136  20100006        1557           LDA     EPP,X1+CNBLK    LOAD THE EPP WORD
02137  35002113  X     1558           SSA     BIT22           SET THE ALTERED BIT
02140  37000730  X     1559           LPA     NBIT21          CLEAR THE POSITIONER READY BIT
02141  40100006        1560           STA     EPP,X1+CNBLK
02142  20100001        1561           LDA     LP,X1+CNBLK     PRESET THE MAJOR ACCESS BLOCK
02143  00002144        1562           VFD     A9/JMP,A15/*+1  JUMP INTO MONITOR STATE
02144  00702100  X     1563           RTJ     REWRITEX        REWRITE THE CURRENT BLOCK
02145  00702065  X     1564           RTJ     FIX             READ IN THE MAJOR ACCESS BLOCK
02146  20100004        1565           LDA     CPP,X1+CNBLK    SET THE END POSITION POINTER
02147  44100006        1566           SWA     EPP,X1+CNBLK    EQUAL TO THE CURRENT POSITION
02150  37001302  X     1567           LPA     SVB             LEAVE THE SAVED FILE BIT
02151  03102153  P     1568           AZJ,NE  *+2             SKIP IF A SAVED FILE
02152  15377774        1569           INI     -3,X3+PSA       BIAS TO THE SCRATCH POSITION
02153  24100005        1570           LCA     BLKR,X1+CNBLK   LOAD   -(BLOCKS REMAINING)
02154  34301246  X     1571           RAD     SFBLKS,X3+PSA   ADJUST THE FILE BLOCK COUNTER
02155  30100007        1572           ADA     TFL,X1+CNBLK    ADD TO THE TOTAL FILE LENGTH
02156  54301427  X     1573           LDI     RPSAPTR,X3+PSA  RESTORE THE PSA INDEX
02157  40100007        1574           STA     TFL,X1+CNBLK    STORE THE NEW TFL AWAY
02160  14202162  P     1575           ENI     *+2,X2          ENTER THE RETURN ADDRESS
02161  01001773  X     1576           UJP     FDZAP           TAKE CARE OF THE FILE DIRECTORY
02162  20100007        1577           LDA     TFL,X1+CNBLK    LOAD THE LENGTH OF THE FILE
02163  40301632  X     1578   RAFE01  STA     F4,X3+PSA       SAVE THE RELATIVE BLOCK NUMBER
02164  12077766        1579           SHA     -9              SHIFT TO A RELATIVE MINOR ACCESS
02165  53600000        1580           TAI     X2+CPPX         BLOCK NUMBER AND SAVE IN CPPX
02166  20100005        1581           LDA     BLKR,X1+CNBLK   LOAD THE BLOCKS REMAINING
02167  03002226  P     1582           AZJ,EQ  RAFE04          JUMP IF DONE
02170  20204000        1583           LDA     CORE,X2+CPPX    LOAD MINOR ACCESS BLOCK ADDRESS
02171  00702144  X     1584           RTJ     REWRITEX
02172  00702145  X     1585           RTJ     FIX             READ IN THE MINOR ACCESS BLOCK
02173  20302163  X     1586           LDA     F4,X3+PSA       LOAD THE RELATIVE BLOCK NUMBER
02174  53700000        1587           TAI     X3              RELATIVE BLOCK NUMBER TO INDEX
02175  17300777        1588           ANI     00777B,X3       X3 AND MASK OFF MAJOR POSITION
02176  14200001        1589           ENI     1,X2            INITIALIZE FOR ONE FILE BLOCK
02177  20100003        1590           LDA     CBP,X1+CNBLK    LOAD MINOR ACCESS BLOCK ADDRESS
02200  05300001        1591           ISG     1,X3            SKIP IF THE MINOR ACCESS BLOCK
02201  00777777  X     1592           RTJ     FREEBLK         IS NEEDED, OTHERWISE, FREE IT
02202  20304000        1593   RAFE02  LDA     CORE,X3         LOAD THE NEXT DATA BLOCK NUMBER
02203  14200001        1594           ENI     1,X2            INITIALIZE FOR ONE FILE BLOCK
02204  00702201  X     1595           RTJ     FREEBLK         FREE THE DATA BLOCK
02205  77740000        1596           VFD     A12/EINT        PREVENT RED LIGHT DISTRICTS
02206  20100005        1597           LDA     BLKR,X1+CNBLK   LOAD THE COUNT OF BLOCKS TO BE
02207  15477776        1598           INA,S   -1              RELEASED AND COUNT IT DOWN BY 1
02210  40100005        1599           STA     BLKR,X1+CNBLK   AND THEN STORE IT BACK
02211  77730000        1600           VFD     A12/DINT        PREVENT INTERFERENCE
02212  03002225  P     1601           AZJ,EQ  RAFE03          JUMP IF NO MORE BLOCKS TO FREE
02213  10300777        1602           ISI     7778,X3         ADVANCE THE MINOR POSITION
02214  01002202  P     1603           UJP     RAFE02          LOOP BACK
02215  54302156  X     1604           LDI     RPSAPTR,X3+PSA  LOAD THE PSA INDEX
02216  20100001        1605           LDA     LP,X1+CNBLK     LOAD MAJOR ACCESS BLOCK ADDRESS
02217  00702171  X     1606           RTJ     REWRITEX
02220  00702172  X     1607           RTJ     FIX             READ IN THE MAJOR ACCESS BLOCK
02221  20302173  X     1608           LDA     F4,X3+PSA       LOAD THE RELATIVE BLOCK NUMBER
02222  17477000        1609           ANA,S   77000B          MASK TO THE MAJOR POSITION
02223  15601000        1610           INA     01000B          INCREMENT THE MAJOR POSITION
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02224  01002163 P          1611                 UJP       RAFE01                LOOP BACK

02225  54302215 X          1613       RAFE03    LDI       RPSAPTR,X3+PSA        LOAD THE PSA INDEX
         02226 P           1614       RAFE04    EQU       *
02226  00702217 X          1615                 RTJ       REWRITEX              REWRITE THE FILE BLOCK
02227  20100004            1616                 LDA       CPP,X1+CNBLK          LOAD THE STATUS WORD
02230  04600000            1617                 ASE       0                     SKIP IF EPP = 000
02231  01000565 P          1618                 UJP       READRTN               RETURN
02232  21100007            1619                 LDQ       TFL,X1+CNBLK          LOAD THE LENGTH OF THE FILE
02233  04500001            1620                 QSE,S     1                     SKIP IF NO DATA IS PRESENT
02234  01000565 P          1621                 UJP       READRTN               RETURN
02235  13077746            1622                 SHAQ      -25                   SAVED-FILE BIT TO BIT 14 OF Q
02236  14600000            1623                 ENA       0                     THE LENGTH OF THE FILE IS ZERO
02237  40100007            1624                 STA       TFL,X1+CNBLK          SO CLEAR THE TFL WORD
02240  14477776            1625                 ENA,S     -1                    THERE ARE -1 BLOCKS REMAINING
02241  40100005            1626                 STA       BLKR,X1+CNBLK         BEYOND THE CURRENT BLOCK
02242  05740000            1627                 QSG       40000B                SKIP IF A SAVED FILE
02243  15377774            1628                 INI       -3,X3+PSA             BIAS TO THE SCRATCH POSITION
02244  34302154 X          1629                 RAD       SFBLKS,X3+PSA         UPDATE THE FILE BLOCK COUNTER
02245  54302225 X          1630                 LDI       RPSAPTR,X3+PSA        RESTORE THE PSA INDEX
02246  14700003            1631                 ENQ       3                     FREE THE MAJOR ACCESS BLOCK,
02247  20100001            1632                 LDA       LP,X1+CNBLK           THE MINOR ACCESS BLOCK, AND THE
02250  00701313 X          1633                 RTJ       FREEFILE              DATA BLOCK
02251  14477777            1634                 ENA,S     77777B                THE MAJOR ACCESS BLOCK DOES NOT
02252  40100001            1635                 STA       LP,X1+CNBLK           EXIST ANYMORE
02253  01000565 P          1636                 UJP       READRTN               RETURN
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                02254 P          1639     TVCNTRL  EQU      *
    02254   20300567 X           1640              LDA      Q,X3+PSA       LOAD THE USERS G REGISTER
    02255   05600001             1641              ASG      1              SKIP IF NOT A STATUS REQUEST
    02256   01002264 P           1642              UJP      TVCNTRL3
    02257   04600001             1643              ASE      1              SKIP IF A CLEAR REQUEST
    02260   01004673 P           1644              UJP      ZABORT
    02261   24001117 X           1645              LCA      FMB            LOAD THE CLEAR MASK
    02262   37301630 X           1646              LPA      CR,X3+PSA      MASK THE SPECIFIED BITS OUT
    02263   40302262 X           1647              STA      CR,X3+PSA
    02264   21302263 X           1648     TVCNTRL3 LDQ      CR,X3+PSA
    02265   27002261 X           1649              LDL      FMB            LEAVE THE FILE MARK READ BIT
    02266   16600011             1650              XOA      HTTV           MERGE IN THE HARDWARE TYPE
    02267   12400004             1651              SHQ      4              SEND BIT TO SIGN OF Q
    02270   05500000             1652              QSG,S    0
    02271   35002137 X           1653              SSA      LPB            SET THE LOAD POINT BIT IF SEND
    02272   01000603 P           1654              UJP      ASTATUSA       SET THE STATUS AND RETURN
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02273 11177777      37777 3   1657   TVINPW   ECHA     177777B
02274 37302254 X              1658            LPA      Q,X3+PSA          MASK THE USERS Q REGISTER TO 16
02275 40302007 X              1659            STA      F6,X3+PSA         BITS AND STORE IT INTO F6
02276 03102315 P              1660            AZJ,NE   TVINPW02          JUMP IF WORD COUNT IS NON-ZERO
02277 20302264 X              1661            LDA      CR,X3+PSA         LOAD THE CONDITION REGISTER
02300 12000004                1662            SHA      4                 SHIFT THE READ-ENABLE BIT TO THE
02301 03202334 P              1663            AZJ,GE   TVDELAY           SIGN AND JUMP IF DELAY NEEDED
      02302 P                 1664   TVINPW01 EQU      *
02302 21302275 X              1665            LDQ      F6,X3+PSA         LOAD THE WORD COUNT
02303 41302274 X              1666            STQ      Q,X3+PSA          SET THE USERS Q REGISTER
02304 24000016 P              1667            LCA      CRMASK
02305 37302277 X              1668            LPA      CR,X3+PSA         CLEAR THE GARBAGE BITS
02306 35000417 X              1669            SSA      BIT18             SET THE WRITE ENABLE BIT
02307 21302305 X              1670            LDQ      CR,X3+PSA
02310 40302307 X              1671            STA      CR,X3+PSA         STORE IT BACK
02311 27002111 X              1672            LDL      BIT21             LOAD THE FILE MARK READY BIT
02312 12077776                1673            SHA      -1                SHIFT TO FILE MARK PROCESSED
02313 34302310 X              1674            RAD      CR,X3+PSA
02314 01002264 P              1675            UJP      TVCNTRL3
                              1676
02315 14700373                1677   TVINPW02 ENQ      251               MAXIMUM WORD COUNT + 1
02316 14202320 P              1678            ENI      *+2,X2            ENTER THE RETURN ADDRESS
02317 01003211 P              1679            UJP      IRCHECK           CHECK FOR ILLEGAL WRITE
02320 01004772 P              1680            UJP      IRERRORB          WE GOT ONE
02321 20302313 X              1681            LDA      CR,X3+PSA         LOAD THE CONDITION REGISTER
02322 12000002                1682            SHA      2                 FILE MARK READY BIT TO THE SIGN
02323 03302302 P              1683            AZJ,LT   TVINPW01          JUMP IF A FILE MARK ON THE SCREEN
02324 14102332 P              1684            ENI      TVINPW05,X1       ENTER THE RETURN ADDRESS
02325 20302321 X              1685            LDA      CR,X3+PSA         LOAD THE CONDITION REGISTER
02326 12000004                1686   TVINPW03 SHA      4                 SHIFT READ-ENABLE BIT TO THE SIGN
02327 03202334 P              1687            AZJ,GE   TVDELAY           JUMP IF A DELAY NEEDED
02330 14205137 P              1688   TVINPWX  ENI      TVBUSY,X2
02331 01002466 P              1689            UJP      QIO
                              1690
02332 14177777 X              1691   TVINPW05 ENI      TVREAD,X1         TELL THE DRIVER TO READ
02333 01002352 P              1692            UJP      TVOUTW03          INITIATE THE I/O OPERATION
                              1693
02334 14677777 X              1694   TVDELAY  ENA      TVWAIT            SET THE TVWAIT BIT AND WAIT
02335 01001426 P              1695            UJP      IOWAIT
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                02336 P       1698  TVOUTW   EQU     *
02336  14202340 P             1699            ENI     *+2,X2          ENTER THE RETURN
02337  01000252 P             1700            UJP     SETUPF5
02340  14700373               1701            ENQ     251             ENTER MAX WORD COUNT
02341  03604775 P             1702            AQJ,GE  ZWCMAX          PREVENT WRAP AROUND
02342  14102351 P             1703            ENI     TVOUTW02,X1     ENTER THE RETURN ADDRESS
02343  20301443 X             1704            LDA     SYSCM,X3+PSA    LOAD THE SYSTEM CONTROL MODE WORD
02344  03302330 P             1705            AZJ,LT  TVINPWX         JUMP IF IN SYSTEM CONTROL MODE
02345  20302325 X             1706            LDA     CR,X3+PSA       LOAD THE CONDITION REGISTER
02346  12000001               1707            SHA     1               OR THE READ AND WRITE ENABLE BITS
02347  35302345 X             1708            SSA     CR,X3+PSA       TOGETHER AND WRITE IF EITHER ONE
02350  01002326 P             1709            UJP     TVINPW03        IS SET
                              1710
02351  14177777 X             1711  TVOUTW02  ENI     TVWRITE,X1      TELL THE DRIVER TO WRITE
                02352 P       1712  TVOUTW03  EQU     *
02352  00705100 P             1713            RTJ     RZ
02353  24000016 P             1714            LCA     CRMASK          LOAD THE MASK
02354  37302347 X             1715            LPA     CR,X3+PSA       CLEAR THE GARBAGE FROM THE CR
02355  04102351 X             1716            ISE     TVWRITE,X1      SKIP IF A WRITE
02356  35002306 X             1717            SSA     BIT18           ELSE SET ENABLE WRITE BIT
02357  40302354 X             1718            STA     CR,X3+PSA       SAVE THE NEW STATUS
02360  14201431 X             1719            ENI     RMDONE,X2       ENTER THE IMMEDIATE RETURN
02361  21302302 X             1720            LDQ     F6,X3+PSA       LOAD THE WORD COUNT
02362  20302076 X             1721            LDA     T5,X3+PSA       LOAD THE FIRST WORD ADDRESS
02363  17603777               1722            ANA     03777B          MASK TO A PAGE POSITION
02364  16610000               1723            VFD     09/166,A4/TVPFAREA  XOA
02365  01077777 X             1724            UJP     TVINIT          CALL THE DRIVER
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02366  20005137 P        1727  TVNE     LDA      TVBUSY          LOAD THE BUSY FLAG
02367  53700000          1728           TAI      X3+PSA          LOAD THE PSA INDEX
02370  20000017 P        1729           LDA      CRMASKX         BITS TO LEAVE IN THE CONDITION
02371  37302357 X        1730           LPA      CR,X3+PSA       REGISTER
02372  40302371 X        1731           STA      CR,X3+PSA
02373  14105137 P        1732           ENI      TVBUSY,X1       ENTER THE QUEUE ADDRESS
02374  14600011          1733           ENA      HTTV            FIX THE USERS STATUS TO SAY TV
02375  14700000          1734           ENQ      0               SET THE LEFT OVER WORD COUNT
02376  45300603 X        1735  SETSTAT  STAQ     A,X3+PSA
02377  20377777 X        1736  TXPCI    LDA      PC,X3+PSA
02400  15600001          1737           INA      1               INCREMENT THE USERS PROGRAM
02401  44302377 X        1738           SWA      PC,X3+PSA       COUNTER
02402  20302221 X        1739  TXEND    LDA      F4,X3+PSA       ARE OTHER USERS WAITING TO DO
02403  53700000          1740           TAI      X3+PSA          TV I/O
02404  04300000          1741           ISE      0,X3+PSA        SKIP IF NOT
02405  00777777 X        1742           RTJ      SETN            FIX THEIR CORE IF SO
02406  20100000          1743           LDA      0,X1            GET THE LINK TO THE NEXT PSA
02407  44005150 P        1744           SWA      TEMP2           AND SAVE IT
02410  53300000          1745           TIA      X3+PSA
02411  44100000          1746           SWA      0,X1            ADVANCE TO THE NEXT USER
02412  54305150 P        1747           LDI      TEMP2,X3+PSA    GET THE LAST USER
02413  14477777 X        1748           ENA,S    NQWAIT          CLEAR THE QUEUE WAIT BIT IN THE
02414  00777777 X        1749           RTJ      IOCLEAR
02415  47377777 X        1750           STI      XFLAG,X3+PSA    RUN THIS USER NEXT IF WE CAN
02416  14601110 X        1751           ENA      SWBIT
02417  35001112 X        1752           SSA      FLAGS
02420  40002417 X        1753           STA      FLAGS
02421  14700000          1754           ENQ      0
02422  20377777 X        1755  TVMRLOOP LDA      VMM,X3+PSA      LOAD A VMM WORD FROM THE PSA
02423  53500000          1756           TAI      X1              ADDRESS TO INDEX 1
02424  03202427 P        1757           AZJ,GE   *+3             JUMP IF NOT PURE CODE
02425  20100000          1758           LDA      0,X1            LOAD THE PAGE ACCESS WORD
02426  53500000          1759           TAI      X1              ADDRESS TO INDEX 1
02427  12077752          1760           SHA      -21             LEAVE THE UPPER THREE BITS
02430  03102435 P        1761           AZJ,NE   *+5             JUMP IF NOT IN CORE
02431  17100177          1762           ANI      1778,X1         MASK TO A PAGE NUMBER
02432  24002133 X        1763           LCA      BIT23           LOAD THE MASK
02433  37177777 X        1764           LPA      PAGETABL,X1     CLEAR THE BIT IN THE PAGETABL
02434  40102433 X        1765           STA      PAGETABL,X1     AND STORE IT BACK
02435  15300001          1766           INI      1,X3+PSA        INCREMENT TO THE NEXT VMM WORD
02436  15700001          1767           INQ      1               INCREMENT THE PAGE COUNTER
02437  05700040          1768           QSG      NPU             SKIP IF DONE
02440  01002422 P        1769           UJP      TVMRLOOP        LOOP BACK
02441  01200000          1770  UJPOX2   UJP      0,X2            RETURN
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02442  14602615 P          1773  MTINPW   ENA      MTZ                 ENTER THE RETURN
02443  14705141 P          1774           ENQ      TX3BUSY             ENTER THE QUEUE ADDRESS
         02444  P          1775  MTINPW01 EQU      *
02444  45377777 X          1776           STAQ     F1,X3+PSA           SAVE THE POINTERS
02445  20100000            1777           LDA      0,X1+CNBLK
02446  03303045 P          1778           AZJ,LT   MTZAP               JUMP IF THE TAPE IS NOT MOUNTED
02447  14600000            1779           ENA      0
02450  40100004            1780           STA      CPP,X1+CNBLK        CLEAR ALL THE STATUS BITS
02451  11177777      37777 3 1781           ECHA     177777B             THE I/O ALLOWS 65K RECORDS
02452  37302303 X          1782           LPA      Q,X3+PSA            MASK WITH THE USERS Q REGISTER
02453  40302361 X          1783           STA      F6,X3+PSA           SAVE THE WORD COUNT
02454  21002150 X          1784           LDQ      BIT15               THE HARDWARE ALLOWS 32K RECORDS
02455  00302457 P          1785           SJ3      *+2
02456  14777777 X          1786           ENQ      MTLIMIT             THERE IS A LIMIT ON MAGNETIC TAPE
02457  14202461 P          1787           ENI      *+2,X2              ENTER THE RETURN
02460  01003211 P          1788           UJP      IRCHECK             CHECK FOR ILLEGAL WRITE
02461  01004772 P          1789           UJP      IRERRORB            WE GOT ONE
02462  25302444 X          1790           LDAQ     F1,X3+PSA           LOAD RETURN AND QUEUE ADDRESS
02463  53500000            1791           TAI      X1                  RETURN TO X1
02464  13000030            1792           SHAQ     24
02465  53600000            1793           TAI      X2                  Q ADDRESS TO X2
02466  24377777 X          1794  QIO      LCA      IOBOUND,X3+PSA      IS THE USER MAKING A SECOND
02467  17677777 X          1795           ANA      QWAIT               REQUEST
02470  03002500 P          1796           AZJ,EQ   QIOZ                JUMP IF A WAITING REQUEST
02471  34302466 X          1797           RAD      IOBOUND,X3+PSA      OTHERWISE SET THE QWAIT BIT
02472  20200000            1798           LDA      0,X2                IS ANYONE ELSE IN THIS QUEUE
02473  44302402 X          1799           SWA      F4,X3+PSA           SAVE THE POINTER
02474  04600000            1800           ASE      0                   SKIP IF NO ONE ELSE IN THIS QUEUE
02475  01002607 P          1801           UJP      QIOWAIT             JUMP IF SOMEONE IS
02476  53300000            1802           TIA      X3+PSA
02477  44200000            1803           SWA      0,X2                TELL THOSE WHO FOLLOW THAT WE ARE
                           1804  *                                     HERE
02500  20200001            1805  QIOZ     LDA      1,X2                GET THE PAGE FILE ADDRESS TO
02501  53600000            1806           TAI      X2                  USE
02502  00705064 P          1807           RTJ      SAVE
02503  20302453 X          1808           LDA      F6,X3+PSA           LOAD THE WORD COUNT
02504  03002604 P          1809           AZJ,EQ   FRZ04               ALL DONE IF ZERO
02505  21302362 X          1810           LDQ      T5,X3+PSA           LOAD THE STARTING WORD ADDRESS
02506  17703777            1811           ANQ      037777B             MASK TO AN INTRA-PAGE POSITION
02507  53040000            1812           AQA                          ADD IN TO THE WORD COUNT
02510  15603777            1813           INA      037778              ROUND PROPERLY
02511  13077757            1814           SHAQ     -11-5               NUMBER OF PAGES TO Q (15 BITS)
02512  24301607 X          1815           LCA      T3,X3+PSA           GET THE I/O INSTRUCTION
02513  12000005            1816           SHA      5                   SET BIT 0 IF A READ INSTRUCTION
02514  13077776            1817           SHAQ     -1                  REMEMBER I/O INSTRUCTION IN Q
02515  77670000            1818           OSA                          MEMORY FIELD TO A
02516  12000017            1819           SHA      15
02517  35301103 X          1820           SSA      F5,X3+PSA           PRODUCE 16 BIT USER ADDRESS
02520  12077764            1821           SHA      -11                 MAKE INTO PAGE NUMBER
02521  13077767            1822           SHAQ     -8                  SHIFT INTO Q THE PAGE NUMBER
         02522  P          1823  FRZ01    EQU      *
02522  05702000            1824           QSG      2000B               SKIP IF NOT FINISHED
02523  01002604 P          1825           UJP      FRZ04
                           1826  *
                           1827  *                 NOW THE Q REGISTER CONTAINS THE FOLLOWING
                           1828  *                 7760 0000   THE PAGE NUMBER BEING FROZEN
                           1829  *                 0010 0000   ONE IF READ, ZERO IF WRITE
                           1830  *                 0007 6000   NUMBER OF PAGES LEFT TO FREEZE
                           1831  *
         02524  P          1832  FRZ02    EQU      *
02524  13000010            1833           SHAQ     8                   PUT PAGE NUMBER INTO A
02525  17600037            1834           ANA      NPU-1               MASK TO A RELATIVE PAGE NUMBER
02526  53740000            1835           IAI      X3+PSA              PSA POINTER + PAGE NUMBER
02527  13077767            1836           SHAQ     -8                  PUT THE PAGE NUMBER BACK INTO Q
02530  20302422 X          1837           LDA      VMM,X3+PSA          LOAD THE VMM WORD
02531  53700000            1838           TAI      X3                  SAVE PAGE NUMBER OR PAW POINTER
02532  03202535 P          1839           AZJ,GE   *+3                 JUMP IF NOT SYSTEM PURE
02533  20300000            1840           LDA      0,X3                GET PAGE ACCESS WORD
02534  53700000            1841           TAI      X3                  GET THE PAGE NUMBER IF IN CORE
02535  12400010            1842           SHQ      8                   PUT READ/WRITE BIT INTO SIGN OF Q
02536  12077766            1843           SHA      -9                  REMOVE PAGE NUMBER BITS
02537  03002570 P          1844           AZJ,EQ   FRZ03               JUMP IF IMPURE PAGE IN CORE
02540  05400002            1845           ASG,S    2                   SKIP IF NOT IN CORE
02541  05500000            1846           QSG,S    0                   SKIP IF WRITE OPERATION
02542  01002544 P          1847           UJP      *+2                 WE MUST GET THE PAGE IF HERE
02543  01002570 P          1848           UJP      FRZ03               WRITE FROM PURE PAGE IF HERE
02544  12400020            1849           SHQ      24-8                RESTORE Q
02545  13000004            1850           SHAQ     4                   GET THE BANK BIT FROM PAGE NUM8.
02546  16600006            1851           XOA      6B
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02547  77660000          1852                AOS                                GET THE CORRECT OPERAND STATE
02550  13000017          1853                SHAQ        15                     GET A 15 BIT ADDRESS
02551  54302245  X       1854                LDI         RPSAPTR,X3+PSA         LOAD THE PSA POINTER
02552  44302517  X       1855                SWA         F5,X3+PSA              SET THE CURRENT ADDRESS REGISTER
02553  13077754          1856                SHAQ        -15-4                  SAVE PAGE NUMBER, ETC. IN Q
02554  53430036          1857                TIM         LEVEL,0                ENTER PROGRAM STATE
02555  20302372  X       1858                LDA         CR,X3+PSA
02556  77634000          1859                ACR
02557  01002560  P       1860                UJP         *+1                    THE FAST WAY
02560  12400010          1861                SHQ         8                      GET THE READ/WRITE BIT
02561  55400000          1862                VFD         A9/ROS
02562  20702552  X       1863                LDA,I       F5,X3+PSA              MAKE A PURE REFFERENCE
02563  05500000          1864                QSG,S       0                      SKIP IF WRITE OPERATION
02564  40702562  X       1865                STA,I       F5,X3+PSA              MAKE AN IMPURE REFFERENCE
02565  55000000          1866                VFD         A9/RIS                 RELOCATE TO OUR OWN MEMORY
02566  12400020          1867                SHQ         24-8                   RESTORE Q
02567  00002524          1868                VFD         A9/JMP,A15/FRZ02       LOOP BACK INTO THE MONITOR
                         1869
         02570  P       1870  FRZ03         EQU         *
02570  17300177          1871                ANI         01778,X3               SAVE JUST THE PAGE BITS
02571  20002432  X       1872                LDA         BIT23                  LOAD THE PERMANENT CORE BIT
02572  35302434  X       1873                SSA         PAGETABL,X3            SET IT INTO THE PAGE TABLE
02573  40302572  X       1874                STA         PAGETABL,X3            AND STORE IT BACK
02574  53300000          1875                TIA         X3+PSA                 PAGE NUMBER TO A
02575  12000002          1876                SHA         2                      CONVERT TO QUARTER PAGE NUMBER
02576  77644000          1877                APF         PFW,X2                 SHOVE IT INTO THE PAGE FILE
02577  12400006          1878                SHQ         24-8-15+5              RESTORE Q AND SHIFT TO RT. END
02600  15700077          1879                INQ         1008-16                INCREMENT PAGE NUMBER,
                         1880  *                                                    DECREMENT NUMBER OF PAGES.
02601  12400012          1881                SHQ         15-5                   MOVE BACK TO HIGH END OF Q
02602  54302551  X       1882                LDI         RPSAPTR,X3+PSA         LOAD THE ADDRESS OF THE PSA
02603  02202522  P       1883                IJI         FRZ01,X2               NEXT PF NUMBER, LOOP BACK
                         1884
02604  00705072  P       1885  FRZ04         RTJ         UNSAVE                 RESTORE THE USERS  REGISTERS
02605  00777777  X       1886                RTJ         CLEARN                 SAY WE ARE NO LONGER DOING I/O
02606  01100000          1887                UJP         0,X1                   RETURN
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02607  53600000          1889  QIOWAIT  TAI   X2                 POINT TO THE LAST USER IN THIS
02610  53300000          1890           TIA   X3+PSA             QUEUE  POINTER TO THE CURRENT USE
02611  21202473 X        1891           LQQ   F4,X2              PUT THE CURRENT USER INTO THE
02612  40202611 X        1892           STA   F4,X2              SECOND POSITICN IN THE QUEUE
02613  41302612 X        1893           STQ   F4,X3+PSA
02614  01001427 P        1894           UJP   RZWAIT

02615  14102630 P        1896  MTZ      ENI   MTFRINPW,X1        ENTER THE RETURN ADDRESS
02616  20301776 X        1897  MTX      LDA   SELECT,X3+PSA      GET THE PROPER CCNTROL BLOCK
02617  53600000          1898           TAI   X2                 ADDRESS
02620  20302505 X        1899           LDA   T5,X3+PSA
02621  13077764          1900           SHAQ  -11
02622  14600100          1901           ENA   MTPFAREA
02623  13077770          1902           SHAQ  -7
         02624 P         1903  MTXX     EQU   *
02624  20200000          1904           LDA   0,X2               LOAD THE UNIT NUMBER
02625  13077771          1905           SHAQ  -6
02626  20302103 X        1906           LDA   T6,X3+PSA          LOAD THE WORD CCUNT
02627  01100000          1907           UJP   0,X1

02630  53500000          1909  MTFRINPW TAI   X1
02631  12000005          1910           SHA   5                  BINARY BIT TC SIGN POSITION
02632  37002571 X        1911           LPA   BIT23              MASK OFF ANY GARBAGE
02633  35200007          1912           SSA   TFL,X2             SET THE DENSITY
02634  14277777 X        1913           ENI   TREAD,X2           ENTER THE READ REQUEST CODE
02635  05100001          1914           ISG   1,X1               TO READ ZERO WORDS IS TO DO A
02636  14277777 X        1915           ENI   TFWSP,X2           FORWARD SPACE
02637  14303024 P        1916           ENI   MIAQLOAD,X3        SET THE RETURN FOR AFTER THE
02640  47305145 P        1917  TXINIT   STI   MIXI,X3            OPERATION
02641  14301427 P        1918           ENI   RZWAIT,X3          ENTER THE IMMEDIATE RETURN
02642  01077777 X        1919           UJP   TPINIT             INITIATE THE TAPE I/O
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02643  14202733 P          1922  MTOUTW   ENI      MTOUTW10,X2          ENTER THE RETURN ADDRESS
02644  14700004            1923           ENQ      MTMINREC             ENTER THE MINIMUM RECORD SIZE
         02645 P           1924  MTOUTW01 EQU      *
02645  20100000            1925           LDA      0,X1+CNBLK
02646  03303045 P          1926           AZJ,LT   MTZAP                JUMP IF NOT MCUNTED
02647  20002356 X          1927           LDA      BRPB                 LOAD THE BINARY BIT
02650  37302626 X          1928           LPA      T6,X3+PSA            MASK WITH THE USERS Q REGISTER
02651  40100004            1929           STA      CPP,X1+CNBLK         STORE IT INTO THE STATUS
02652  47205107 P          1930           STI      EXIT,X2              SAVE THE RETURN ADDRESS
02653  14202655 P          1931           ENI      *+2,X2               ENTER THE RETURN ADDRESS
02654  01000252 P          1932           UJP      SETUPF5
02655  03605107 P          1933           AQJ,GE   EXIT                 JUMP IF NOT PADDING IS NEEDED
02656  14205141 P          1934           ENI      TXBUSY,X2            POINT TO THE PROPER QUEUE
02657  14102661 P          1935           ENI      *+2,X1               SET THE RETURN ADDRESS
02660  01002466 P          1936           UJP      QIO                  GO LINK THIS REQUEST INTO THE Q
02661  00702405 X          1937           RTJ      SETN                 SAY WE ARE DOING I/O
02662  20302650 X          1938           LDA      T6,X3+PSA            GET THE USERS Q REGISTER
02663  53600000            1939           TAI      X2                   RECORD LENGTH TO X2
02664  12000005            1940           SHA      5                    BINARY BIT TO SIGN POSITION
02665  21077777 X          1941           LDQ      BLANKS               FILLER FOR BCD RECORDS
02666  05400000            1942           ASG,S    0                    SKIP IF BCD
02667  14700000            1943           ENQ      0                    FILLER FOR BINARY RECORDS
02670  14100003            1944           ENI      MTMINREC-1,X1
02671  41105152 P          1945           STQ      MTBUFFER,X1          FILL THE BUFFER WITH FILLER
02672  02502671 P          1946           IJD      *-1,X1
02673  53430036            1947           TIM      LEVEL,0              GET INTO PROGRAM STATE THE QUICK
02674  20302555 X          1948           LDA      CR,X3+PSA            AND DIRTY (AND NOW INFAMOUS) WAY
02675  77634000            1949           ACR                           LOAD THE CONDITION REGISTER
02676  01002711 P          1950           UJP      MTOUTW03             JUMP AND SET PROGRAM STATE
                           1951
02677  55400000            1952  MTOUTW02 VFD      A9/ROS               RELOCATE TO THE USERS MEMORY
02700  20702564 X          1953           LDA,I    F5,X3+PSA            LOAD A WORD FROM IT
02701  55000000            1954           VFD      A9/RIS               RELOCATE WITH THE MONITOR AGAIN
02702  40105152 P          1955           STA      MTBUFFER,X1          STORE INTO THE BUFFER
02703  15100001            1956           INI      1,X1                 INCREMENT TO THE NEXT POSITION
02704  20302700 X          1957           LDA      F5,X3+PSA            LOAD THE CURRENT ADDRESS
02705  15600001            1958           INA      1                    INCREMENT BY 1
02706  44302704 X          1959           SWA      F5,X3+PSA            STORE IT BACK
02707  05600001            1960           ASG      1                    SKIP IF THE SAME BANK OF MEMORY
02710  000001156           1961           VFD      A9/JMP,A15/FINPW04   SWITCH BANKS OF MEMORY
02711  02602677 P          1962  MTOUTW03 IJD      MTOUTW02,X2          PROCESS ALL THE WORDS
02712  00002713            1963           VFD      A9/JMP,A15/*+1       EXIT FROM PROGRAM STATE
02713  20302616 X          1964           LDA      SELECT,X3+PSA        LOAD THE ADDRESS OF THE CONTROL
02714  53600000            1965           TAI      X2                   BLOCK AND PUT IT INTO INDEX X2
02715  00705072 P          1966           RTJ      UNSAVE               RESTORE THE USERS REGISTERS
02716  14705152 P          1967           ENQ      MTBUFFER             ENTER THE ADDRESS OF THE BUFFER
02717  12400006            1968           SHQ      6
02720  14102722 P          1969           ENI      *+2,X1               ENTER THE RETURN
02721  01002624 P          1970           UJP      MTXX                 GO SHARE
                           1971
         02722 P           1972  MTOUTW07 EQU      *
02722  53500000            1973           TAI      X1
02723  05100004            1974           ISG      MTMINREC,X1          SKIP IF REASONABLY LARGE
02724  14100004            1975           ENI      MTMINREC,X1
02725  12000005            1976           SHA      5
02726  37002632 X          1977           LPA      BIT23                MASK OFF ANY GARBAGE
02727  35200007            1978           SSA      TFL,X2               SET THE DENSITY
02730  14303031 P          1979           ENI      MTARLOAD,X3          ENTER THE COMPLETION RETURN
02731  14277777 X          1980           ENI      IWRITE,X2
02732  01002640 P          1981           UJP      TXINIT
                           1982
02733  14205141 P          1983  MTOUTW10 ENI      TXBUSY,X2            ENTER THE Q ADDRESS
02734  14102741 P          1984           ENI      MTOUTW12,X1          ENTER THE RETURN
02735  14702456 X          1985  MTOUTW11 ENQ      MTLIMIT              ENTER MAX RECORD SIZE
02736  03604673 P          1986           AQJ,GE   ZABORT               ABORT IF THE RECORD IS TOO LARGE
02737  40302503 X          1987           STA      F6,X3+PSA            SAVE THE RECORD SIZE
02740  01002466 P          1988           UJP      QIO
                           1989
02741  14102722 P          1990  MTOUTW12 ENI      MTOUTW07,X1          ENTER THE RETURN
02742  01002616 P          1991           UJP      MTX
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02743  21002271 X          1994       MTREWIND LDQ      LPB
02744  14277777 X          1995                ENI      TREWIND,X2
02745  41100004            2010       MTFUN    STQ      CPP,X1+CNBLK          STORE THE NEW STATUS
02746  14302760 P          2011                ENI      MTFINISH,X3           ENTER THE RETURN ADDRESS
02747  14602416 X          2012                ENA      SWBIT                 SAY TO SWITCH USERS
02750  35002420 X          2013                SSA      FLAGS
02751  40002750 X          2014                STA      FLAGS
02752  14603012 P          2015                ENA      TXDONE
02753  44005145 P          2016       MTFX     SWA      MTXI
02754  21100000            2017                LDQ      0,X1+CNBLK            LOAD THE UNIT NUMBER
02755  12400022            2018                SHQ      18                    UNIT NUMBER TO LEFT 6 BITS
02756  20100007            2019                LDA      TFL,X1+CNBLK          LOAD THE DENSITY
02757  01002642 X          2020                UJP      TPINIT                INITIATE THE TAPE OPERATION

02760  54302602 X          2022       MTFINISH LDI      RPSAPTR,X3+PSA        LOAD THE PSA INDEX
02761  20302713 X          2023                LDA      SELECT,X3+PSA         LOAD THE ADDRESS OF THE CONTROL
02762  53500000            2024                TAI      X1+CNBLK              BLOCK INTO THE CNBLK INDEX
02763  01000565 P          2025                UJP      READRTN               GO CLEAN UP
                           2026
         02764 P           2026+001   MTSFPFM  EQU      *
02764  14277777 X          2026+002            ENI      TSFPFM,X2             ROUTINE TO CALL
02765  01002777 P          2026+003            UJP      MTDELAY               AND CALL DRIVER TO RETURN LATER
                           2026+004
         02766 P           2026+005   MTSBPFM  EQU      *
02766  14277777 X          2026+006            ENI      TSBPFM,X2             ROUTINE TO PROCESS THE REQUEST
02767  01002777 P          2026+007            UJP      MTDELAY               AND JUMP INTO DRIVER TO DO WORK
                           2026+008
         02770 P           2026+009   MTFWSP   EQU      *
02770  14202636 X          2026+010            ENI      TFWSP,X2              FUNCTION TO CALL
02771  01002777 P          2026+011            UJP      MTDELAY               GO START THE FUNCTION AND WAIT
                           2026+012
         02772 P           2026+013   MTBKSP   EQU      *
02772  14277777 X          2026+014            ENI      TBKSP,X2              PROPER FUNCTION TO CALL
02773  01002777 P          2026+015            UJP      MTDELAY               GO START THE FUNCTION AND WAIT
                           2026+016
02774  14277777 X          2027       MTSTATUS ENI      TSTATUS,X2
02775  01002777 P          2028                UJP      *+2
02776  14277777 X          2029       MTWFM    ENI      TWFM,X2
         02777 P           2029+001   MTDELAY  EQU      *
02777  00705100 P          2030                RTJ      RZ                    RETURN FROM STATE ZERO
03000  14302360 X          2031                ENI      RMOONE,X3
03001  14603031 P          2032                ENA      MTARLOAD
03002  01002753 P          2033                UJP      MTFX
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03003  14600020          2036  TXMP     ENA      MEMPARTY          MEMORY PARITY ERROR ON A WRITE
03004  01003010  P       2037           UJP      TXSMASH
03005  14600007          2038  TXPV     ENA      FPVIOL            TAPE DOES NOT HAVE A RING
03006  01003010  P       2039           UJP      TXSMASH
03007  14600014          2040  TXNR     ENA      DRIVFAIL          TAPE IS NOT READY
03010  54305141  P       2041  TXSMASH  LDI      TXBUSY,X3+PSA
03011  00701107  X       2042           RTJ      CMQSET            PUT THE USER INTO CONTROL MOVE
03012  14105141  P       2043  TXDONE   ENI      TXBUSY,X1         ENTER THE QUEUE ADDRESS
03013  01002402  P       2044           UJP      TXEND             GO PROCESS THE QUEUE

03014  40005146  P       2046  TXNE     STA      TXWC              SAVE THE USERS WORD COUNT
03015  54305141  P       2047           LDI      TXBUSY,X3+PSA     GET THE PROPER PSA POINTER
03016  53020022          2048           TMA      CLOCK             FIGURE THE AMOUNT OF TIME THE
03017  31077777  X       2049           SBA      TXSTART           USER HAD THE TAPE DRIVE
03020  05400000          2050           ASG,S    0
03021  30077777  X       2051           ADA      HOUR
03022  34377777  X       2052           RAD      TXTOTAL,X3+PSA    CHARGE HIM FOR THE TIME
03023  01405145  P       2053           UJP,I    MTXI
03024  20005146  P       2054  MTAQLOAD LDA      TXWC              GET THE NUMBER OF WORDS THE
03025  17677777          2055           ANA      77777B            TAPE DRIVE TRANSFERED

03026  16477777          2057           XOA,S    -0                AND GENERATE THE LEFTOVER WORD
03027  30302737  X       2058           ADA      F6,X3+PSA         COUNT FOR THE USER
03030  40302452  X       2059           STA      Q,X3+PSA
03031  20302761  X       2060  MTARLOAD LDA      SELECT,X3+PSA     GET THE PROPER CONTROL BLOCK
03032  53500000          2061           TAI      X1+CNBLK          POINTER
03033  21005146  P       2062           LDQ      TXWC              SAVE THE STATUS IN THE CONTROL
03034  41100004          2063           STQ      CPP,X1+CNBLK      BLOCK
03035  14600005          2064           ENA      HTMT              TELL THE USER HE HAS A MAGTAPE
03036  13000011          2065           SHAQ     9                 MERGE THE STATUS AND THE
03037  12000017          2066           SHA      15                HARDWARE TYPE AND PUT IT INTO THE
03040  40302376  X       2067           STA      A,X3+PSA          USERS A REGISTER
03041  14105141  P       2068           ENI      TXBUSY,X1         ENTER THE QUEUE ADDRESS
03042  01002377  P       2069           UJP      TXPCI             AND GO CHECK IT FOR OTHER USERS
                         2073
         03043  P       2074  MTCNTRL  EQU      *
03043  20100000          2075           LDA      0,X1+CNBLK        CHECK FOR TAPE MOUNTED
03044  03203047  P       2076           AZJ,GE   MTCNTRLX          JUMP IF THE TAPE IS MOUNTED
03045  14677777  X       2077  MTZAP    ENA      MTWAIT            MAGNETIC TAPE MUST BE MOUNTED
03046  01001426  P       2078           UJP      IOWAIT            ENTER INTO AN I/O WAIT STATE
         03047  P       2079  MTCNTRLX EQU      *
03047  20302662  X       2080           LDA      T6,X3             CHECK THE FUNCTION CODE FOR
03050  14700012          2081           ENQ      MTCNTLMX          LEGALITY
03051  17677777          2081+001       ANA      77777B            MASK TO 15 BIT FUNCTION CODE
03052  03604673  P       2082           AQJ,GE   ZABORT
03053  14600000          2083           ENA      0                 SAY TO TRANSFER ZERO WRODS
03054  40303027  X       2084           STA      F6,X3+PSA
03055  14205141  P       2085           ENI      TXBUSY,X2         POINT TO THE TAPE QUEUE
03056  14103060  P       2086           ENI      *+2,X1            SET THE RETURN
03057  01002466  P       2087           UJP      QIO
03060  20303031  X       2088           LDA      SELECT,X3+PSA     SET UP CNBLOCK TO POINT TO THE
03061  53500000          2089           TAI      X1+CNBLK          CONTROL BLOCK
03062  20303047  X       2090           LDA      T6,X3+PSA         LOAD THE USERS Q REGISTER
03063  53600000          2091           TAI      X2                USE AS A JUMP INDEX
03064  01603065  P       2092           UJP,I    MTCNTRL1,X2

         03065  P       2094  MTCNTRL1 EQU      *
03065  00002774  P       2095           00       MTSTATUS          00 = CHECK DYNAMIC STATUS
03066  00002774  P       2096           00       MTSTATUS          01 = CLEAR STATUS
03067  00002776  P       2097           00       MTWFM             02 = WRITE FILE MARK
03070  00002743  P       2098           00       MTREWIND          03 = RELEASE
03071  00002743  P       2099           00       MTREWIND          04 = REWIND
03072  00002764  P       2100           00       MTSFPFM           05 = SEARCH FORWARD PAST FILE MK
03073  00002766  P       2101           00       MTSBPFM           06 = SEARCH BACKWARD PAST FILE MK
03074  00002772  P       2102           00       MTBKSP            07 = SPACE BACKWARD 1 RECORD
03075  00002770  P       2103           00       MTFWSP            10 = SPACE FORWARD 1 RECORD
03076  00002743  P       2104           00       MTREWIND          11 = SET DESTRUCTIVE READ
         00012           2105  MTCNTLMX EQU      *-MTCNTRL1
```

```
           03077 P            2108      MSFSEEK  EQU      *
03077  20100000               2109               LDA      0,X1+CNBLK        IS THE PACK MOUNTED
03100  03303045 P             2110               AZJ,LT   MTZAP             WAIT IF NOT
03101  20303062 X             2111               LDA      T6,X3+PSA         LOAD THE SEEK ADDRESS
03102  00303104 P             2112               SJ3      *+2
03103  03001475 P             2113               AZJ,EQ   RAFAE             DONT ALLOW LABEL FOOLISHNESS
03104  03301475 P             2114               AZJ,LT   RAFAE
03105  21100007               2115               LDQ      TFL,X1+CNBLK      LOAD MAX SECTOR NUMBER
03106  03601475 P             2116               AQJ,GE   RAFAE
03107  40100003               2117               STA      CBP,X1+CNBLK      REMEMBER THE SEEK
03110  01001544 P             2118               UJP      RAFSK04           GO FIX THE STATUS
                              2119
                              2120
                              2121
                              2122
           03111 P            2123      MSFREADX EQU      *
03111  11177777     37777 3   2124               ECHA     177777B
03112  37303101 X             2125               LPA      T6,X3+PSA
03113  03004673 P             2126               AZJ,EQ   ZABORT            ZERO IS AN ILLEGAL WC
03114  21100004               2127               LDQ      CPP,X1+CNBLK
03115  27001674 X             2128               LDL      AEB               WAS THE LAST SEEK BAD
03116  03104673 P             2129               AZJ,NE   ZABORT
03117  04200074               2130               ISE      74B,X2            IS THIS A READ
03120  01003201 P             2131               UJP      MSFWRITX          IT≠S A WRITE
03121  14603124 P             2132               ENA      MSFR02            ENTER THE RETURN
03122  14705143 P             2133               ENQ      MSFBUSY           ENTER THE QUEUE ADDRESS
03123  01002444 P             2134               UJP      MTINPW01
                              2135
                              2136
           03124 P            2137      MSFR02   EQU      *
03124  14277777 X             2138               ENI      MSFREAD,X2        ENTER THE IO CODE
           03125 P            2139      MSFR04   EQU      *
03125  20303060 X             2140               LDA      SELECT,X3+PSA     LOAD THE CONTROL BLOCK ADDRESS
03126  53500000               2141               TAI      X1+CNBLK
03127  21302620 X             2142               LDQ      T5,X3+PSA         LOAD THE FWA
03130  17703777               2143               ANQ      3777B             CLOBBER THE PAGE BITS
03131  20100000               2144               LDA      0,X1+CNBLK        LOAD THE CONNECT WORD
03132  12077760               2145               SHA      -15
03133  12400006               2146               SHQ      6                 MERGE DEVICE NUMBER AND CORE
03134  13077771               2147               SHAQ     -6                ADDRESS
03135  20100003               2148               LDA      CBP,X1+CNBLK      LOAD THE CURRENT ADDRESS
03136  40005151 P             2149               STA      MSFTEMP           SAVE THE ADDRESS
03137  20303112 X             2150               LDA      T6,X3+PSA         LOAD THE LENGTH
03140  53500000               2151               TAI      X1                PUT IT INTO THE INDEX
03141  20005151 P             2152               LDA      MSFTEMP           RESTORE THE DISK ADDRESS
03142  14303146 P             2153               ENI      MSFDONE,X3        ENTER THE INTERRUPT RETURN
03143  00777777 X             2154               RTJ      FILE              CALL THE DRIVER
03144  01001427 P             2155               UJP      RZWAIT
```

```
03145  01003164 P          2157          UJP     MSFDON10          IR DISK ERROR
03146  14700000            2158  MSFDONE ENQ     0                 SET NO BITS INTO THE STATUS
03147  17677777            2159  MSFDON02 ANA    777776            MASK LEFTOVER WORD COUNT TO 15
03150  40005151 P          2160          STA     MSFTEMP           BITS AND SAVE FOR LATER
03151  53300000            2161          TIA     X3                MOVE RETURN ADDRESS TO INDEX 2
03152  53600000            2162          TAI     X2
03153  54305143 P          2163          LDI     MSFBUSY,X3+PSA    RESTORE THE PSA INDEX
         03154 P           2164  MSFDON04 EQU    *
03154  20303125 X          2165          LDA     SELECT,X3+PSA     LOAD THE CONTROL BLOCK ADDRESS
03155  53500000            2166          TAI     X1+CNBLK
03156  41100004            2167          STQ     CPP,X1+CNBLK      SAVE THE NEW STATUS
03157  16700014            2168          XOQ     HTMSF             MAKE THE USERS STATUS
03160  13000030            2169          SHAQ    24                STATUS TO A
03161  21005151 P          2170          LDQ     MSFTEMP           LOAD THE LEFT OVER WORD COUNT
03162  14105143 P          2171          ENI     MSFBUSY,X1        ENTER THE Q ADDRESS
03163  01002376 P          2172          UJP     SETSTAT           SET THE USERS STATUS AND CONTINUE
                           2173
         03164 P           2174  MSFDON10 EQU    *
03164  17677777            2175          ANA     777776            SAVE THE LEFT OVER WORD COUNT
03165  40005151 P          2176          STA     MSFTEMP
03166  53300000            2177          TIA     X3                MOVE RETURN ADDRESS TO X2
03167  53600000            2178          TAI     X2
03170  54305143 P          2179          LDI     MSFBUSY,X3+PSA    POINT TO THE USER
03171  20077777 X          2180          LDA     BUSY              LOAD COUNT OF CONSOLE MESSAGES
03172  05600012            2181          ASG     10                IF A LARGE AMOUNT OF CONSOLE
03173  01003176 P          2182          UJP     *+3               CONSOLE OUTPUT IS WAITING
03174  14677777 X          2183          ENA     CONWAIT           STOP THIS USER
03175  00701426 X          2184          RTJ     IOSET
03176  21001671 X          2185          LDQ     AUB               SET THE A/U BIT INTO THE STATUS
03177  01003154 P          2186          UJP     MSFDON04
03200  01003147 P          2187          UJP     MSFDON02
                           2188
         03201 P           2189  MSFWRITX EQU    *
03201  14203204 P          2190          ENI     MSFW02,X2         ENTER THE RETURN
03202  14700001            2191          ENQ     1                 SMALLEST ALLOWABLE RECORD
03203  01002645 P          2192          UJP     MTOUTW01          GO SHARE SOME CODE
                           2193
03204  14205143 P          2194  MSFW02  ENI     MSFBUSY,X2        ENTER THE Q ADDRESS
03205  14103207 P          2195          ENI     MSFW04,X1         ENTER THE RETURN
03206  01002735 P          2196          UJP     MTOUTW11
                           2197
03207  14277777 X          2198  MSFW04  ENI     MSFWRITE,X2       ENTER THE IO CODE
03210  01003125 P          2199          UJP     MSFR04
```

```
                                 2203      *****************************************************************************
                                 2204      *                                                                           *
                                 2205      *        IRCHECK                                                            *
                                 2206      *                                                                           *
                                 2207      *        LDA     CURRENT WORD COUNT                                         *
                                 2208      *        ENQ     MAX WORD COUNT                                             *
                                 2209      *        ENI     *+2,X2                                                     *
                                 2210      *        UJP     IRCHECK                                                    *
                                 2211      *        UJP     ILLEGAL WRITE ERROR                                        *
                                 2212      *        NORMAL RETURN                                                      *
                                 2213      *                                                                           *
                                 2214      *****************************************************************************
                                 2215  IRCHECK EQU     *
 03211  036047750 P              2216          AQJ,GE  ZWCMAX          JUMP IF RECORD IS TOO LARGE
                                 2217  IRCHECKB EQU    *
 03212  213031270 X              2218          LDQ     T5,X3+PSA       LOAD THE STARTING ADDRESS
 03213  177037770                2219          ANQ     03777B          LEAVE THE INTRA-PAGE POSITION
 03214  530400000                2220          AQA                     ADD IN THE WORD COUNT
 03215  156037770                2221          INA     03777B          ROUND TO A PAGE NUMBER
 03216  130777450                2222          SHAQ    -26             SHIFT INTO POSITION
 03217  776700000                2223          OSA                     MEMORY FIELD BIT TO RIGHT OF A
 03220  120000170                2224          SHA     15              SHIFT INTO POSITION
 03221  363032120 X              2225          SCA     T5,X3+PSA       CREATE A 16 BIT ABSOLUTE FWA
 03222  120777640                2226          SHA     -11             LEAVE THE PAGE NUMBER
 03223  055010000                2227  IRCHEC02 QSG,S  010000B         SKIP IF MORE PAGES LEFT TO CHECK
 03224  010032400 P              2228          UJP     IRCHEC06        ILLEGAL WRITE IS NOT POSSIBLE
 03225  176000370                2229          ANA     NPU-1           MASK TO A LOGICAL PAGE NUMBER
 03226  537400000                2230          IAI     X3              ADD IT TO THE PSA INDEX
 03227  130777660                2231          SHAQ    -9              SAVE THE PAGE NUMBER IN Q
 03230  203025300 X              2232          LDA     VMM,X3          LOAD THE VMM WORD FROM THE PSA
 03231  543027600 X              2233          LDI     RPSAPTR,X3+PSA
 03232  373026740 X              2234          LPA     CR,X3+PSA       SYS. P.C.P. AND MEMORY PROTECTION
 03233  033024410 P              2235          AZJ,LT  UJP0X2          ERROR IF MEMORY PROTECT IS SET
 03234  155777760                2236          INQ,S   -1              DECREMENT THE PAGE COUNTER
 03235  130000110                2237          SHAQ    9               LOGICAL PAGE NUMBER TO A
 03236  156000010                2238          INA     1               ADVANCE TO THE NEXT PAGE
 03237  010032230 P              2239          UJP     IRCHEC02        LOOP BACK AND CHECK

 03240  203032210 X              2241  IRCHEC06 LDA    T5,X3+PSA       LOAD THE USERS A REGISTER
 03241  443027060 X              2242          SWA     F5,X3+PSA       LOAD THE CURRENT ADDRESS REGISTER
 03242  120000100                2243          SHA     8               SHIFT BANK SPECIFIER TO THE SIGN
 03243  032032470 P              2244          AZJ,GE  *+4             JUMP IF THE SAME BANK
 03244  776700000                2245          OSA
 03245  166000010                2246          XOA     1               SET FOR THE OTHER BANK OF MEMORY
 03246  776600000                2247          AOS                     AND PUT IT INTO THE OSR
 03247  012000010                2248          UJP     1,X2            RETURN
```

```
03250  00705100 P       2251  TTYCNTRL RTJ   RZ
03251  21303030 X       2252           LDQ   Q,X3+PSA
03252  05700001         2253           QSG   000018          SKIP IF NOT STATUS
03253  01003274 P       2254           UJP   TTYSTX
03254  05700002         2255           QSG   000028          SKIP IF NOT CLEAR
03255  01003271 P       2256           UJP   TTYCLEAR
03256  04700002         2257           QSE   00002B          SKIP IF WRITE FILE MARK
03257  01004674 P       2258           UJP   EXCABORT
03260  24000016 P       2259           LCA   CRMASK
03261  37303232 X       2260           LPA   CR,X3+PSA
03262  35002265 X       2261           SSA   FMB
03263  40303261 X       2262           STA   CR,X3+PSA
03264  37000016 P       2263           LPA   CRMASK
03265  16600006         2264           XOA   HTTTY
03266  40303040 X       2265           STA   A,X3+PSA
03267  14600027         2266           ENA   027B            ASCII FOR LOGICAL END OF MEDIA
03270  01004552 P       2267           UJP   TTYWRITE

03271  20303263 X       2269  TTYCLEAR LDA   CR,X3+PSA       LOAD THE STATUS WORD
03272  37000011 P       2270           LPA   CLEARCON        RESET THE STATUS BITS
03273  40303271 X       2271           STA   CR,X3+PSA       STORE THE NEW STATUS AWAY
03274  20303273 X       2272  TTYSTX   LDA   CR,X3+PSA
03275  37000016 P       2273           LPA   CRMASK
03276  16600006         2274           XOA   HTTTY
03277  01004536 P       2275           UJP   STA
```

```
                                 2279      *****************************************************************************
                                 2280      *                                                                           *
                                 2281      *          F1        SHIFT COUNTER                                          *
                                 2282      *          F2        SHIFT REGISTER      WORD CURRENTLY BEING CONVERTED     *
                                 2283      *                                        TO BCD                             *
                                 2284      *          F5        CURRENT ADDRESS REGISTER                               *
                                 2285      *          T5        USER'S A REGISTER                                      *
                                 2286      *          F6        REMAINING WC                                           *
                                 2287      *          T6        USER'S Q REGISTER                                      *
                                 2288      *          F7        FILLER WORD         BLANKS OR ZERO                     *
                                 2289      *                                                                           *
                                 2290      *****************************************************************************
                                 2291      TTYINPW   EQU       *
03300  14603302 P                2292                ENA       *+2                 ENTER THE RETURN ADDRESS
03301  01003443 P                2293                UJP       TTYSHARE
03302  54303231 X                2294                LDI       RPSAPTR,X3+PSA
03303  20002665 X                2295                LDA       BLANKS
03304  40377777 X                2296                STA       F7,X3+PSA           INITAILIZE THE FILLER TO BLANKS
03305  11177777        37777 3   2297                ECHA      177777B
03306  37303137 X                2298                LPA       T6,X3+PSA           MASK THE WORD COUNT TO 16 BITS
03307  40303054 X                2299                STA       F6,X3+PSA
03310  14477776                  2300                ENA,S     -1                  SAY BEFORE THE FIRST CHARACTER
03311  40302462 X                2301      TTYINP01  STA       F1,X3+PSA           SAVE SHIFT COUNTER
03312  77750000                  2302      TTYINP1A  CTI
03313  17600177                  2303                ANA       177B                REMOVE PARITY BIT
03314  05600173                  2304                ASG       173B
03315  05600141                  2305                ASG       141B                SKIP IF LOWER CASE CHARACTER
03316  01003320 P                2306                UJP       *+2
03317  16600040                  2307                XOA       040B                MAKE LOWER CASE INTO UPPER CASE
03320  21303311 X                2308                LDQ       F1,X3+PSA           GET SHIFT COUNT
03321  05600140                  2309                ASG       140B
03322  05600040                  2310                ASG       040B                SKIP IF NOT CONTROL CHARACTER
03323  01003363 P                2311                UJP       TTYINP04            JUMP IF A CONTROL CHARACTER
03324  53700000                  2312                TAI       X3
03325  20303662 P                2313                LDA       CHART-040B,X3       CONVERT TO A BCD CODE
03326  54303302 X                2314                LDI       RPSAPTR,X3+PSA      RESTORE THE PSA POINTER
03327  05500001                  2315                QSG,S     1                   SKIP IF SHIFT REG. IS INITIALIZED
03330  15300005                  2316                INI       5,X3+PSA            CHANGE F2 TO F7 (INITIAL VALUE)
03331  21377777 X                2317                LDQ       F2,X3+PSA           GET THE SHIFT REGISTER
03332  54303326 X                2318                LDI       RPSAPTR,X3+PSA      RESTORE THE PSA POINTER
03333  13000006                  2319                SHAQ      6                   SHIFT IN THE CHARACTER
03334  41303331 X                2320                STQ       F2,X3+PSA           SAVE THE SHIFT REG. FOR LATER
03335  20303320 X                2321                LDA       F1,X3+PSA           GET THE SHIFT COUNTER
03336  03203342 P                2322                AZJ,GE    TTYINP02            JUMP IF NOT THE FIRST CHARACTER
03337  14600001                  2323                ENA       1
03340  40303335 X                2324                STA       F1,X3+PSA           INDICATE A CHARACTER HAS ARRIVED
03341  01003414 P                2325                UJP       TTYINP08            ALLOW US TO GO IOBOUND
03342  15600001                  2326      TTYINP02  INA       1
03343  05600004                  2327                ASG       4                   SKIP IF A FULL WORD
03344  01003311 P                2328                UJP       TTYINP01            GO GET MORE CHARACTERS
03345  20303307 X                2329                LDA       F6,X3+PSA           GET USERS Q
03346  15477776                  2330                INA,S     -1                  SUBTRACT ANOTHER WORD
03347  40303345 X                2331                STA       F6,X3+PSA
03350  03303361 P                2332                AZJ,LT    TTYINP03            JUMP IF WORDCOUNT OVERFLOW
03351  55400000                  2333                VFD       A9/ROS
03352  41703241 X                2334                STQ,I     F5,X3+PSA           STORE THE WORD INTO USER CORE
03353  55000000                  2335                VFD       A9/RIS
03354  20303352 X                2336                LDA       F5,X3+PSA           GET THE CURRENT ADDRESS
03355  15600001                  2337                INA       1
03356  44303354 X                2338                SWA       F5,X3+PSA           UPDATE THE CURRENT ADDRESS
03357  05600001                  2339                ASG       00001B              SKIP IF NOT CHANGING BANKS
03360  00000156                  2340                VFD       A9/JMP,A15/FINPW04
03361  14600000                  2341      TTYINP03  ENA       0                   RESET SHIFT COUNT
03362  01003311 P                2342                UJP       TTYINP01

03363  05500000                  2344      TTYINP04  QSG,S     0                   SKIP IF A PRINTING CHAR. FOUND
03364  01003420 P                2345                UJP       TTYINP09            JUMP IF FIRST CHARACTER
03365  04600015                  2346                ASE       015B                SKIP IF RETURN
03366  01003410 P                2347                UJP       TTYINP07            TEST FOR A LINEFEED
03367  14600012                  2348                ENA       012B
03370  77760000                  2349                CTO                           GENERATE A LINE FEED
03371  25303340 X                2350                LDAQ      F1,X3+PSA           GET COUNT AND SHIFT REGISTERS
03372  03003406 P                2351                AZJ,EQ    TTYINP06            JUMP IF SHIFT REG. EMPTY
03373  15600001                  2352      TTYINP05  INA       1
03374  12400006                  2353                SHQ       6
03375  05600004                  2354                ASG       4                   SKIP IF LEFT JUSTIFIED
```

```
03376  01003373 P        2355              UJP      TTYINP05    SHIFT MORE
03377  20303347 X        2356              LDA      F6,X3+PSA   GET USERS Q
03400  15477776          2357              INA,S    -1          INDICATE ANOTHER WORD READ
03401  40303377 X        2358              STA      F6,X3+PSA
03402  03303406 P        2359              AZJ,LT   TTYINP06    JUMP IF WORDCOUNT OVERFLOW
03403  55400000          2360              VFD      A9/ROS
03404  41703356 X        2361              STQ,I    F5,X3+PSA   UPDATE THE USERS CORE
03405  55000000          2362              VFD      A9/RIS
03406  21303401 X        2363  TTYINP06    LDQ      F6,X3+PSA   GET USERS Q
03407  01003603 P        2364              UJP      TTYOUTW8    RETURN TO USERS PROGRAM

03410  04600012          2366  TTYINP07    ASE      0128        SKIP IF A LINE FEED
03411  01003312 P        2367              UJP      TTYINP1A    IGNORE ALL OTHER CODES
03412  14600215          2368              ENA      2158
03413  77760000          2369              CTO                  GENERATE A CR
03414  20000441 X        2370  TTYINP08    LDA      BIT19       THIS BIT IN THE CONDITION
03415  35303274 X        2371              SSA      CR,X3+PSA   REGISTER WILL CAUSE INBOUND
03416  40303415 X        2372              STA      CR,X3+PSA   TO BE CLEARED BY CR AND LF ONLY
03417  01003312 P        2373              UJP      TTYINP1A

03420  04600027          2375  TTYINP09    ASE      0278        SKIP IF CONTROL-W
03421  01003425 P        2376              UJP      TTYINP10    JUMP IF NOT CONTROL-W
03422  20003262 X        2377              LDA      FMB         GET THE FILE MARK BIT
03423  34303416 X        2378              RAD      CR,X3+PSA   SET IT INTO LUN 100 STATUS
03424  01003406 P        2379              UJP      TTYINP06    RETURN TO USER WITH ORIGINAL Q

03425  04600020          2381  TTYINP10    ASE      0208        SKIP IF CONTROL-P
03426  01003312 P        2382              UJP      TTYINP1A    IGNORE OTHER CODES
03427  14600000          2383              ENA      0
03430  40303304 X        2384              STA      F7,X3+PSA   INDICATE TRAILING ZEROS
03431  20002647 X        2385              LDA      BRPB        GET THE BINARY RECORD BIT
03432  35303423 X        2386              SSA      CR,X3+PSA   SET IT INTO LUN 100 STATUS
03433  40303432 X        2387              STA      CR,X3+PSA
03434  01003312 P        2388              UJP      TTYINP1A    SCAN FOR ANOTHER CHARACTER
```

```
        03435 P    2391       TTYOUTW  EQU      *
03435 21303251 X   2391+001            LDQ      Q,X3+PSA
03436 27005135 P   2391+002            LDL      BIT16M1                 MASK WORD COUNT
03437 03005000 P   2394                AZJ,EQ   ZWCZERO                 ABORT THE USER IF Q = 0
03440 27003414 X   2394+001            LDL      BIT19                   CHECK FOR SPECIAL OUTPUT...
03441 03103611 P   2394+002            AZJ,NE   TTYOW1                  ...AND JUMP IF SO
        03442 P    2394+003   TTYOW2   EQU      *
03442 14603461 P   2395                ENA      TTYOUTWX                ENTER THE RETURN ADDRESS
03443 40302401 X   2396       TTYSHARE STA      PC,X3+PSA               STORE THE RETURN ADDRESS
03444 00702605 X   2397                RTJ      CLEARN
03445 24000016 P   2398                LCA      CRMASK
03446 37303433 X   2399                LPA      CR,X3+PSA
03447 40303446 X   2400                STA      CR,X3+PSA
03450 20303240 X   2401                LDA      T5,X3+PSA               LOAD THE USERS A REGISTER
03451 44303404 X   2402                SWA      F5,X3+PSA
03452 12077760     2403                SHA      -15                     LEAVE THE MOST SIGNIFICANT BIT OF
03453 17600001     2404                ANA      00001B                  THE SIXTEEN BIT ADDRESS
03454 03003460 P   2405                AZJ,EQ   *+4                     JUMP IF THE SAME BANK OF MEMORY
03455 77670000     2406                OSA
03456 16600001     2407                XOA      00001B                  SET FOR THE OTHER BANK OF MEMORY
03457 77660000     2408                AOS
03460 01077777 X   2409                UJP      RETURN                  JUMP TO THE PROCESSING ROUTINE
03461 54303332 X   2410       TTYOUTWX LDI      RPSAPTR,X3+PSA          LOAD THE ADDRESS OF THE PSA
03462 21303306 X   2411                LDQ      T6,X3+PSA               GET THE USERS Q REGISTER
03463 27003431 X   2412                LDL      BRPB                    CHECK THE BINARY BIT
03464 03003470 P   2413                AZJ,EQ   *+4
03465 34303447 X   2414                RAD      CR,X3+PSA
03466 14600220     2415                ENA      220B                    220 INDICATES A BINARY RECORD
03467 77760000     2416                CTO
03470 14600060     2417                ENA      60B                     DEFAULT CARRIAGE CONTROL
03471 40303430 X   2418                STA      F7,X3+PSA               FOR BINARY RECORDS
03472 27005135 P   2419                LDL      BIT16M1                 GET THE WORD COUNT
03473 40303462 X   2420                STA      T6,X3+PSA               SAVE THE WORD COUNT
03474 27003463 X   2421                LDL      BRPB                    GET THE BINARY BIT
03475 55400000     2422                VFD      A9/ROS
03476 21703451 X   2423                LDQ,I    F5,X3+PSA               GET THE FIRST WORD FROM THE
03477 55000000     2424                VFD      A9/RIS                  ...USERS CORE
03500 03103553 P   2425                AZJ,NE   TTYBIN                  JUMP IF BINARY
03501 13000006     2426                SHAQ     6
03502 40303471 X   2427                STA      F7,X3+PSA
03503 53700000     2428                TAI      X3
03504 05600011     2429                ASG      11B
03505 01003511 P   2430                UJP      TTYOUTW3
03506 04600040     2431                ASE      40B
03507 01003517 P   2432                UJP      TTYOUTW4
03510 14300007     2433                ENI      7,X3
03511 16300007     2434       TTYOUTW3 XOI      7,X3
03512 15300001     2435                INI      1,X3
03513 17300007     2436                ANI      7,X3
03514 14600012     2437                ENA      012B                    ASCII FOR LINE FEED
03515 77760000     2438                CTO
03516 02703515 P   2439                IJD      *-1,X3
03517 14600000     2440       TTYOUTW4 ENA      0
03520 13000006     2441                SHAQ     6
03521 53700000     2442                TAI      X3
03522 20303722 P   2443                LDA      CHART,X3
03523 77760000     2444                CTO
03524 14600000     2445                ENA      0
03525 13000006     2446                SHAQ     6
03526 53700000     2447                TAI      X3
03527 20303722 P   2448                LDA      CHART,X3
03530 77760000     2449                CTO
03531 14600000     2450                ENA      0
03532 13000006     2451                SHAQ     6
03533 53700000     2452                TAI      X3
03534 20303722 P   2453                LDA      CHART,X3
03535 77760000     2454                CTO
03536 54303461 X   2455                LDI      RPSAPTR,X3+PSA
03537 20303473 X   2456                LDA      T6,X3+PSA
03540 15477776     2457                INA,S    -1
03541 03003561 P   2458                AZJ,EQ   TTYOUTW5
03542 40303537 X   2459                STA      T6,X3+PSA
03543 20303476 X   2460                LDA      F5,X3+PSA
03544 15600001     2461                INA      1
03545 44303543 X   2462                SWA      F5,X3+PSA
03546 05600001     2463                ASG      00001B
03547 00000156     2464                VFD      A9/JMP,A15/FINPW04  SWITCH MEMORY BANKS
03550 55400000     2465                VFD      A9/ROS
03551 21703545 X   2466                LDQ,I    F5,X3+PSA
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03552  55000000          2467          VFD     A9/RIS
03553  14600000          2468  TTYBIN  ENA     0
03554  13000006          2469          SHAQ    6
03555  53700000          2470          TAI     X3
03556  20303722  P       2471          LDA     CHART,X3
03557  77760000          2472          CTO
03560  01003517  P       2473          UJP     TTYOUTW4

03561  14600215          2475  TTYOUTW5  ENA     215B
03562  77760000          2476          CTO
03563  20303502  X       2477          LDA     F7,X3+PSA
03564  14300000          2478          ENI     0,X3
03565  05600031          2479          ASG     31B
03566  05600021          2480          ASG     21B
03567  01003574  P       2481          UJP     TTYOUTW6
03570  53700000          2482          TAI     X3
03571  16300007          2483          XOI     00007B,X3
03572  15300001          2484          INI     00001B,X3
03573  17300007          2485          ANI     00007B,X3
03574  04600054          2486  TTYOUTW6  ASE     54B             SKIP IF AN ASTERISK
03575  14600331          2487          ENA     331B            USE 012 IF NOT AN ASTERISK
03576  16600323          2488          XOA     323B            USE 377 IF AN ASTERISK
03577  77760000          2489          CTO
03600  02703577  P       2490          IJD     *-1,X3
03601  54303536  X       2491          LDI     RPSAPTR,X3+PSA
03602  14700000          2492  TTYOUTW7  ENQ     0
03603  20300605  X       2493  TTYOUTW8  LDA     T2,X3+PSA
03604  40302512  X       2494          STA     T3,X3+PSA
03605  20000016  P       2495          LDA     CRMASK
03606  37303465  X       2496          LPA     CR,X3+PSA
03607  16600006          2497          XOA     HTTTY
03610  01303604  X       2498          UJP     T3,X3+PSA
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                03611 P          2498+002  TTYOW1   EQU     *
03611 20377777 X                 2498+003           LDA     TERMINAL,X3+PSA
03612 12000011                   2498+004           SHA     9
03613 17600777                   2498+005           ANA     7778                    GET TERMINAL NUMBER
03614 53600000                   2498+006           TAI     X2
03615 20277777 X                 2498+007           LDA     PSABLK,X2               GET TERMINAL STATUS
03616 12000003                   2498+008           SHA     23-20                   HIGH SPEED BIT TO POST
03617 03203442 P                 2498+009           AZJ,GE  TTYOW2                  IGNORE THIS IF NOT HS TERM
03620 14203624 P                 2498+010           ENI     *+4,X2
03621 05700077                   2498+011           QSG     62+1                    SKIP IF TOO MANY CHARS TO OUTPUT
03622 01000252 P                 2498+012           UJP     SETUPF5                 SET UP ADDR,WC, AND OSR
03623 01004775 P                 2498+013           UJP     ZWCMAX                  WORD COUNT TOO LARGE
03624 00705064 P                 2498+014           RTJ     SAVE                    SAVE X1,X2, AND IS
03625 14300006                   2498+015           ENI     6,X3
03626 00777777 X                 2498+016           RTJ     GETMEM                  GET THE 64 WORD BLOCK
03627 54203601 X                 2498+017           LDI     RPSAPTR,X2          *** INTERRUPTS ARE HEREBY OFF***
03630 40202613 X                 2498+018           STA     F4,X2+PSA               SAVE BLOCK ADDRESS
03631 15300002                   2498+019           INI     2,X3                    POINT TO WORD TWO OF BLOCK
03632 25203551 X                 2498+020           LDAQ    F5,X2+PSA
03633 53500000                   2498+021           TAI     X1                      USER CORE ADDR TO X1
03634 53430036                   2498+022           TIM     LEVEL,0
03635 20203606 X                 2498+023           LDA     CR,X2+PSA               GOTO PROGRAM STATE...
03636 77634000                   2498+024           ACR                             ...THE EASY WAY
03637 01003640 P                 2498+025           UJP     *+1
03640 13000030                   2498+026           SHAQ    24                  ***INTERRUPTS BACK ON AGAIN***
03641 53600000                   2498+027           TAI     X2                      WORD COUNT TO X2
03642 15277776                   2498+028           INI     -1,X2
                03643 P          2498+029  TTYOW3   EQU     *
03643 55400000                   2498+030           VFD     09/ROS
03644 20100000                   2498+031           LDA     0,X1                    GET USER WORD
03645 55000000                   2498+032           VFD     09/RIS
03646 40300000                   2498+033           STA     0,X3                    PUT IN 64 WORD BLOCK
03647 15300001                   2498+034           INI     1,X3                    MOVE BLOCK POINTER
03650 53100000                   2498+035           TIA     X1
03651 15600001                   2498+036           INA     1
03652 53500000                   2498+037           TAI     X1                      INCREMENT CORE LOCATION
03653 05600001                   2498+038           ASG     1                       SKIP IF NO BANK CHANGE
03654 00000156                   2498+039           VFD     09/JMP,A15/FINPW04      CHANGE MEMORY BANK
03655 02603643 P                 2498+040           IJD     TTYOW3,X2               COUNT THE LOOP
03656 54303627 X                 2498+041           LDI     RPSAPTR,X3              GET THE PSA POINTER BACK
03657 20303630 X                 2498+042           LDA     F4,X3+PSA
03660 53600000                   2498+043           TAI     X2                      GET 64 WORD BLOCK ADDR
03661 21303406 X                 2498+044           LDQ     F6,X3+PSA
03662 12400001                   2498+045           SHQ     1                       WORDS MOVED TIMES TWO
03663 20303611 X                 2498+046           LDA     TERMINAL,X3+PSA
03664 12000011                   2498+047           SHA     9
03665 17600777                   2498+048           ANA     7778                    GET THE TERMINAL AGAIN
03666 15600001                   2498+049           INA     1                       MAKE DEVICE LABEL
03667 53500000                   2498+050           TAI     X1
03670 12000014                   2498+051           SHA     12
03671 53040000                   2498+052           AQA                             MAKE LABEL FOR 8
03672 40200001                   2498+053           STA     1,X2                    PLACE IN BLOCK
03673 53200000                   2498+054           TIA     X2                      BLOCK ADDR TO A
03674 00003675                   2498+055           VFD     09/JMP,A15/*+1          TO MON STATE WITH INTS OFF
03675 40200000                   2498+056           STA     0,X2                ***INTERRUPTS ARE HEREBY OFF***
03676 35003176 X                 2498+057           SSA     BIT17
03677 40577777 X                 2498+058           STA,I   PDP80Q,X1               LINK INTO OUTPUT LIST
03700 36103677 X                 2498+059           SCA     PDP80Q,X1
03701 03003714 P                 2498+060           AZJ,EQ  TTYOW4                  JUMP IF ONLY ONE IN QUE
03702 15177776                   2498+061           INI     -1,X1                   MAKE TERMINAL NUMBER
03703 14203705 P                 2498+062           ENI     *+2,X2
03704 01077777 X                 2498+063           UJP     PDP8CTLX                TURN HIM OFF
03705 14677777 X                 2498+064           ENA     OUTBOUND
03706 54303656 X                 2498+065           LDI     RPSAPTR,X3
03707 35302471 X                 2498+066           SSA     IOBOUND,X3+PSA          STP HIM
03710 40303707 X                 2498+067           STA     IOBOUND,X3+PSA
03711 14602747 X                 2498+068           ENA     SWBIT
03712 35002751 X                 2498+069           SSA     FLAGS                   TURN THE OSER
03713 40003712 X                 2498+070           STA     FLAGS                   OFF
                03714 P          2498+071  TTYOW4   EQU     *
03714 00705072 P                 2498+072           RTJ     UNSAVE                  RESTORE X1,X2, AND IS
03715 00705100 P                 2498+073           RTJ     RZ                      RETURN FROM LEVEL 0
03716 20000016 P                 2498+074           LDA     CRMASK
03717 37303635 X                 2498+075           LPA     CR,X3+PSA
03720 16600006                   2498+076           XOA     HTTY                    MAKE A STATUS FOR THE USER
03721 01004536 P                 2498+077           UJP     STA                     AND RETURN THE STATUS TO USER
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                03722 P                 2501        CHART   EQU     *                                       CODE CONVERSION TABLE
03722   60000060                        2502                VFD     06/60,010/00,08/060                     240/00
03723   52000261                        2503                VFD     H6/∨,010/000,08/261
03724   36000262                        2504                VFD     H6/¬,010/000,08/262
03725   35000063                        2505                VFD     H6/≥,010/000,08/063
03726   53000264                        2506                VFD     H6/$,010/000,08/264
03727   16000065                        2507                VFD     H6/%,010/000,08/065
03730   15000066                        2508                VFD     H6/≤,010/000,08/066
03731   14000267                        2509                VFD     H6/≠,010/000,08/267
03732   74000270                        2510                VFD     H6/(,010/000,08/270                     250/10
03733   34000071                        2511                VFD     H6/),010/000,08/071
03734   54000072                        2512                VFD     H6/*,010/000,08/072
03735   20000275                        2513                VFD     H6/+,010/000,08/275
03736   73000047                        2514                VFD     06/73,010/00,08/047
03737   40000246                        2515                VFD     H6/-,010/000,08/246
03740   33000245                        2516                VFD     H6/.,010/000,08/245
03741   61000333                        2517                VFD     H6//,010/000,08/333
03742   00000053                        2518                VFD     H6/0,010/000,08/053                     260/20
03743   01000101                        2519                VFD     H6/1,010/000,08/101
03744   02000102                        2520                VFD     H6/2,010/000,08/102
03745   03000303                        2521                VFD     H6/3,010/000,08/303
03746   04000104                        2522                VFD     H6/4,010/000,08/104
03747   05000305                        2523                VFD     H6/5,010/000,08/305
03750   06000306                        2524                VFD     H6/6,010/000,08/306
03751   07000107                        2525                VFD     H6/7,010/000,08/107
03752   10000110                        2526                VFD     H6/8,010/000,08/110                     270/30
03753   11000311                        2527                VFD     H6/9,010/000,08/311
03754   12000074                        2528                VFD     H6/:,010/000,08/074
03755   37000056                        2529                VFD     H6/;,010/000,08/056
03756   32000251                        2530                VFD     H6/<,010/000,08/251
03757   13000243                        2531                VFD     H6/=,010/000,08/243
03760   57000042                        2532                VFD     H6/>,010/000,08/042
03761   77000273                        2533                VFD     H6/^,010/000,08/273
03762   56000055                        2534                VFD     H6/↓,010/000,08/055                     300/40
03763   21000312                        2535                VFD     H6/A,010/000,08/312
03764   22000113                        2536                VFD     H6/B,010/000,08/113
03765   23000314                        2537                VFD     H6/C,010/000,08/314
03766   24000115                        2538                VFD     H6/D,010/000,08/115
03767   25000116                        2539                VFD     H6/E,010/000,08/116
03770   26000317                        2540                VFD     H6/F,010/000,08/317
03771   27000120                        2541                VFD     H6/G,010/000,08/120
03772   30000321                        2542                VFD     H6/H,010/000,08/321                     310/50
03773   31000322                        2543                VFD     H6/I,010/000,08/322
03774   41000041                        2544                VFD     H6/J,010/000,08/041
03775   42000044                        2545                VFD     H6/K,010/000,08/044
03776   43000252                        2546                VFD     H6/L,010/000,08/252
03777   44000336                        2547                VFD     H6/M,010/000,08/336
04000   45000300                        2548                VFD     H6/N,010/000,08/300
04001   46000276                        2549                VFD     H6/O,010/000,08/276
04002   47000240                        2550                VFD     H6/P,010/000,08/240                     320/60
04003   50000257                        2551                VFD     H6/Q,010/000,08/257
04004   51000123                        2552                VFD     H6/R,010/000,08/123
04005   62000324                        2553                VFD     H6/S,010/000,08/324
04006   63000125                        2554                VFD     H6/T,010/000,08/125
04007   64000126                        2555                VFD     H6/U,010/000,08/126
04010   65000327                        2556                VFD     H6/V,010/000,08/327
04011   66000330                        2557                VFD     H6/W,010/000,08/330
04012   67000131                        2558                VFD     H6/X,010/000,08/131                     330/70
04013   70000132                        2559                VFD     H6/Y,010/000,08/132
04014   71000335                        2560                VFD     H6/Z,010/000,08/335
04015   17000254                        2561                VFD     H6/[,010/000,08/254
04016   75000050                        2562                VFD     H6/↵,010/000,08/050
04017   72000134                        2563                VFD     H6/],010/000,08/134
04020   55000137                        2564                VFD     H6/↑,010/000,08/137
04021   76000077                        2565                VFD     H6/Ξ,010/000,08/077
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04022  77740000          2569  TRAPPER  VFD      A12/EINT              ENABLE THE INTERRUPTS
04023  53020036          2570           TMA      LEVEL                 CHECK FOR TRAPPED INSTRUCTIONS
04024  04677777 X        2571           ASE      INTPDL                IN THE MONITOR  THERE SHOULD NOT
04025  00004025 P        2572           HLT      *                     BE ANY   IF SC CALL THE CE=S
04026  77533000          2573           SCIM     30008                 CLEAR THE FAULT MASK BITS
04027  20000010          2574           LDA      00010B                LOAD P+1
04030  15477776          2575           INA,S    -1
04031  44203443 X        2576           SWA      PC,X2
04032  54303706 X        2577  EXEC     LDI      RPSAPTR,X3+PSA        LOAD THE PSA INDEX
04033  77670000          2578           OSA
04034  42024640 P 05150 0 2579           SACH     OSRSAVE               SAVE THE OSR
04035  77674000          2580           ISA
04036  77660000          2581           AOS
04037  55400000          2582           VFD      A9/ROS
04040  21704031 X        2583           LDQ,I    PC,X3+PSA             LOAD THE TRAPPED INSTRUCTION
04041  55000000          2584           VFD      A9/RIS
04042  41005151 P        2585           STQ      EXECINST
04043  22024640 P 05150 0 2586           LACH     OSRSAVE               RESTORE THE OSR
04044  77660000          2587           AOS
04045  22024644 P 05151 0 2588           LACH     EXECINST              LOAD THE OPCODE
04046  03104060 P        2589           AZJ,NE   EXECNHLT              JUMP IF NOT A HALT INSTRUCTION
04047  77674000          2590           ISA
04050  03104674 P        2591           AZJ,NE   EXCABORT              JUMP IF A USER ROUTINE
04051  25377777 X        2592           LDAQ     I1,X3+PSA
04052  53500000          2593           TAI      X1
04053  13000030          2594           SHAQ     24
04054  53600000          2595           TAI      X2
04055  25303266 X        2596           LDAQ     A,X3+PSA
04056  77730000          2597           VFD      A12/DINT
04057  01405151 P        2598           UJP,I    EXECINST

04060  05600071          2600  EXECNHLT ASG      71B                   SKIP IF 71B-77B
04061  01004674 P        2601           UJP      EXCABORT
04062  04600077          2602           ASE      77B                   SKIP IF 77XX XXXX INSTRUCTION
04063  01004201 P        2603           UJP      IO                    JUMP IF 71-76 INSTRUCTION
04064  23024645 P 05151 1 2604           LQCH     EXECINST+1            GET SUB-OPCODE
04065  13000052          2605           SHAQ     18+24                 PUT MASK IN Q, OPCD IN A
04066  14200021          2606           ENI      SDCL,X2               LENGTH OF DECODE TABLE
04067  07104073 P        2607           MTH      SUBDCODE,1            FIND THE RIGHT GROUT
04070  01004556 P        2608           UJP      IRADAR                CHECK FOR A RADAR BREAK POINT
04071  20005151 P        2609           LDA      EXECINST              PICK UP THE INSTRUCTION
04072  01604073 P        2610           UJP,I    SUBDCODE,X2           JUMP TO THE CORRECT ROUTINE
                         2611
04073  52004631 P        2612  SUBDCODE 52       EXECSSIM              7752        SSIM
04074  53004624 P        2613           53       EXECSCIM              7753        SCIM
04075  54004121 P        2614           54       ACI                   7754        ACI
04076  55004674 P        2614+001       55       EXCABORT              7755
04077  56004176 P        2614+002       56       JAA                   7756        JAA
04100  57004674 P        2614+003       57       EXCABORT              7757-7762   INCLUDES SBJP
04101  63004131 P        2616           63       ACR                   7763-77634  ACR, CRA
04102  64004114 P        2617           64       EXAPF                 7764        APF
04103  65004674 P        2618           65       EXCABORT              7765
04104  66004154 P        2619           66       EXECAIS               7766        AIS, AOS
04105  67004674 P        2620           67       EXCABORT              7767-7774
04106  75004520 P        2621           75       ASCIIIN               7775        CTI
04107  76004543 P        2622           76       ASCIIOUT              7776        CTC
04110  77004674 P        2623           77       EXCABORT              7777        UCS
04111  00004565 P        2624           00       JUMP                  7700-7717   JUMP
04112  20004674 P        2625           20       EXCABORT              7720-7727
04113  30004612 P        2626           30       EXECINS               7730-7737   CINS
         00021           2627  SDCL     EQU      *-SUBDCODE

04114  14200037          2629  EXAPF    ENI      NPU-1,X2              APF CAUSES ALL OF USERS VMM
04115  14604000          2630           ENA      40008                 TO BECOME ILLEGAL TO REFERENCE
04116  77644140          2631           APF      PS+PFW,X2             LOAD THE PAGE FILE WORD
04117  02604116 P        2632           IJD      *-1,X2                LOOP BACK
04120  01004537 P        2633           UJP      SKIP                  INCREMENT THE PC AND RETURN

04121  20377777 X        2635  ACI      LDA      TTCNT,X3+PSA
04122  14700120          2636           ENQ      80
04123  03604671 P        2637           AQJ,GE   ABORT
04124  20304055 X        2638           LDA      A,X3+PSA
04125  17600377          2639           ANA      377B
04126  77730000          2640           VFD      A12/DINT              PREVENT INTERFERENCE
04127  00777777 X        2641           RTJ      CHAINL
04130  01004537 P        2642           UJP      SKIP
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04131  20302343 X            2644        ACR      LDA      SYSCM,X3+PSA     GET RFSAVE AREA
04132  03204535 P            2645                 AZJ,GE   EXECCRA          GET THE USERS CONDITION REGISTER
04133  53020042              2646                 TMA      42B              GET IS WORD
04134  40377777 X            2647                 STA      IS,X3+PSA
04135  17600004              2648                 ANA      04B              GET ROS BIT
04136  16600060              2649                 XOA      60B              SET EINT, PROGRAM STATE
04137  44303717 X            2650                 SWA      CR,X3+PSA
04140  53020041              2651                 TMA      41B              GET PC
04141  44304040 X            2652                 SWA      PC,X3+PSA
04142  12077760              2653                 SHA      -15              GET BANK BIT
04143  17600001              2654                 ANA      1
04144  16600006              2655                 XOA      6                FORM INSTRUCTION STATE
04145  77664000              2656                 AIS
04146  16600001              2657                 XOA      1                FORMOPERAND STATE
04147  77660000              2658                 AOS
04150  53020040              2659                 TMA      40B
04151  46377777 X            2660                 SCHA     LJA,X3+PSA       RESTORE THE LAST JUMP ADDRESS
04152  00705012 P            2661                 RTJ      CMEXIT           RESTORE RF AND FREE 16 WORD BL-CK
04153  01003460 X            2662                 UJP      RETURN
                             2663
04154  77674000              2664        EXECAIS  ISA
04155  03004167 P            2664+001             AZJ,EQ   EXECAIS1         JUMP IF FROM SYSTEM ROUTINE
04156  20304131 X            2664+002             LDA      SYSCM,X3+PSA     SEE IF FRCM CCNTRCL MODE
04157  03304163 P            2664+003             AZJ,LT   EXECAIS0         THEN PROCESS IT FCR REQUEST
04160  11177777      37777 3 2664+004             ECHA     177777B          MASK FOR ADDRESS
04161  37304124 X            2664+005             LPA      A,X3+PSA         OBTAIN THE USERS PROGRAM COUNTER
04162  01004565 P            2664+006             UJP      JUMP             MAKE THE PURE STATE JUMP
         04163  P            2664+007 EXECAIS0    EQU      *
04163  20301105 X            2666                 LDA      CMCODE,X3+PSA    GIVE PENDING CONTROL MODE
04164  14700000              2667                 ENQ      0                REQUESTS TO CCNTRCL MCDE NOW
04165  41304163 X            2668                 STQ      CMCODE,X3+PSA    REMOVE THE REQUEST
04166  01004536 P            2669                 UJP      STA
         04167  P            2669+001 EXECAIS1    EQU      *
04167  20301115 X            2670                 LDA      T1,X3+PSA
04170  12000011              2671                 SHA      9
04171  12077766              2672                 SHA      -9
04172  15600001              2673                 INA      1
04173  44304167 X            2674                 SWA      T1,X3+PSA
04174  00705107 P            2675        XNSKIP   RTJ      EXIT             RETURN FROM PROGRAM STATE ZERO
04175  01004153 X            2676                 UJP      RETURN
                             2676+001
         04176  P            2676+002 JAA         EQU      *
04176  11177777      37777 3 2676+003             ECHA     177777B          MASK
04177  37304151 X            2676+004             LPA      LJA,X3+PSA       GET USERS LAST JUMP ADDRESS
04200  01004536 P            2676+005             UJP      STA              PLACE IN USERS A REG
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04201  14100004      2679        IO      ENI     4,X1        INITIALIZE FOR LCOP PREVENTION
04202  13000011      2680        MASKXX  SHAQ    9           INDEX BITS TO RIGHT END OF A
04203  17600003      2681                ANA     000038      LEAVE THE INDEX BITS
04204  03004216 P    2682                AZJ,EQ  IOTA        JUMP IF NO INDEXING
04205  53340000      2683                AIA     X3+PSA
04206  53600000      2684                TAI     X2
04207  20277777 X    2685                LDA     I0,X2       PERFORM INDEXING
04210  12000011      2686                SHA     9           PERFORM SIGN EXTENSIONS
04211  12077766      2687                SHA     -9
04212  12477766      2688                SHQ     -9
04213  53040000      2689                AQA                 ADD INDEX TO ADDRESS
04214  17677777      2690                ANA     77777B      MASK TO FIFTEEN BITS
04215  46005151 P    2691                SCHA    EXECINST    STORE ADDRESS AND ZERC INDEX BITS
04216  20005151 P    2692        IOTA    LDA     EXECINST
04217  12000006      2693                SHA     6
04220  03304307 P    2694                AZJ,LT  INDCHECK    JUMP IF INDIRECTING
04221  17600077      2695                ANA     77B         MASK TC THE CPERATION CODE
04222  14700071      2696                ENQ     71B
04223  03504272 P    2697                AQJ,NE  IOZIP
04224  77674000      2698                ISA
04225  03104230 P    2699                AZJ,NE  *+3
04226  00705107 P    2700                RTJ     EXIT
04227  77740000      2701                VFD     A12/EINT
04230  20304051 X    2702                LDA     I1,X3+PSA
04231  14777777 X    2703                ENQ     DLENGTH
04232  03604671 P    2704                AQJ,GE  ABORT
04233  53600000      2705                TAI     X2
04234  20277777 X    2705+001            LDA     DECODE,X2   GET THE BITS TO DECODE IT
04235  37002743 X    2705+002            LPA     BIT22       CHECK FOR CONTRCL MODE REQUIRED
04236  03004241 P    2705+003            AZJ,EQ  *+3         JUMP IF FCR ANYBCDY
04237  20304156 X    2705+004            LDA     SYSCM,X3+PSA GET CONTROL MCDE BIT
04240  03204671 P    2705+005            AZJ,GE  ABORT       JUMP IF NCT IN CONTROL MODE
04241  20204234 X    2706                LDA     DECODE,X2
04242  03304246 P    2707                AZJ,LT  IOLIST
04243  54205151 P    2708                LDI     EXECINST,X2
04244  53500000      2709                TAI     X1
04245  01100000      2710                UJP     0,X1

04246  53600000      2712        IOLIST  TAI     X2
04247  21005151 P    2713                LDQ     EXECINST
04250  17777777      2714                ANQ     77777B
04251  20304237 X    2715                LDA     SYSCM,X3+PSA
04252  03304255 P    2716                AZJ,LT  IOLIST01
04253  14600143      2717                ENA     99
04254  03704671 P    2718                AQJ,LT  ABORT
04255  20377777 X    2719        IOLIST01 LDA    LUNLIST,X3+PSA
04256  53500000      2720        IOLIST02 TAI    X1
04257  02504261 P    2721                IJD     *+2,X1
04260  01200000      2722        IOLIST03 UJP    0,X2
04261  20100001      2723                LDA     1,X1
04262  12077760      2724                SHA     -15
04263  03404260 P    2725                AQJ,EQ  IOLIST03
04264  20100001      2726                LDA     1,X1
04265  01004256 P    2727                UJP     IOLIST02

04266  14600000      2729        XREQEND ENA     0
04267  54304032 X    2730        XREQERR LDI     RPSAPTR,X3+PSA  POINT TO THE USER
04270  40304230 X    2731                STA     I1,X3+PSA   SAVE THE XREQ ERROR CODE
04271  01004537 P    2732                UJP     SKIP
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04272  77674000          2734   IOZIP   ISA
04273  03004300 P        2735           AZJ,EQ   ZIP
04274  20304141 X        2736           LDA      PC,X3+PSA
04275  21005151 P        2737           LDQ      EXECINST
04276  14104300 P        2738           ENI      *+2,X1          ENTER THE RETURN ADDRESS
04277  01077777 X        2739           UJP      SETUP

04300  20304137 X        2741   ZIP     LDA      CR,X3+PSA       LOAD THE USERS CONDITION REGISTER
04301  17477760          2742           ANA,S    77760B          CLEAR A FEW BITS
04302  40304300 X        2743           STA      CR,X3+PSA       AND STORE IT AWAY
04303  20304255 X        2744           LDA      LUNLIST,X3+PSA  GET THE ADDRESS OF THE FIRST
                         2745   *                                ELEMENT OF THE LUNLIST
04304  21005151 P        2746           LDQ      EXECINST
04305  17777777          2747           ANQ      77777B
04306  01004345 P        2748           UJP      SERCH2

04307  13077752          2750   INDCHECK SHAQ    -21
04310  77674000          2751           ISA
04311  13000004          2752           SHAQ     4
04312  53600000          2753           TAI      X2
04313  77654000          2754           PFA      PFR,X2
04314  04604000          2755           ASE      4000B           SKIP IF NOT IN
04315  02504324 P        2756           IJD      FOLLOW,X1
04316  20304274 X        2757           LDA      PC,X3+PSA
04317  14777777 X        2758           ENQ      RMCHAIN
04320  41304316 X        2759           STQ      PC,X3+PSA
04321  21005151 P        2760           LDQ      EXECINST        INITIATE EFFECTIVE ADDRESS
04322  14104175 X        2761           ENI      RETURN,X1       ENTER THE RETURN ADDRESS
04323  01004277 X        2762           UJP      SETUP
                         2763
04324  20077777 X        2764   FOLLOW  LDA      NBIT17
04325  34005151 P        2765           RAD      EXECINST        CLEAR THE INDIRECT BIT
04326  77674000          2766           ISA
04327  77660000          2767           AOS
04330  55400000          2768           VFD      A9/ROS
04331  21405151 P        2769           LDQ,I    EXECINST        LOAD THE INDIRECTLY ADDRESSED
04332  55000000          2770           VFD      A9/RIS          WORD FROM THE USERS MEMORY
04333  22024644 P  05151 0  2771           LACH     EXECINST        SAVE THE OP CODE
04334  41005151 P        2772           STQ      EXECINST
04335  42024644 P  05151 0  2773           SACH     EXECINST
04336  22024640 P  05150 0  2774           LACH     OSRSAVE         RESTORE THE OSR
04337  77660000          2775           AOS
04340  01004202 P        2776           UJP      MASKXX

04341  20100001          2778   SERCH1  LDA      0+1,X1
04342  12077760          2779           SHA      -15
04343  03404361 P        2780           AQJ,EQ   FOUND
04344  20100001          2781           LDA      0+1,X1
04345  53500000          2782   SERCH2  TAI      X1
04346  02504341 P        2783           IJD      SERCH1,X1
04347  22024644 P  05151 0  2784           LACH     EXECINST
04350  04600072          2785           ASE      00072B          SKIP IF CONTROL
04351  01004355 P        2786           UJP      NONEXIST
04352  20303542 X        2787           LDA      T6,X3+PSA       LOAD THE FUNCTION CODE
04353  17677777          2788           ANA      77777B          GET THE HARDWARE TYPE
04354  03000603 P        2789           AZJ,EQ   ASTATUSA        SET THE STATUS IF UNDEFINED LUN
04355  14600144          2790   NONEXIST ENA     100
04356  03704673 P        2791           AQJ,LT   ZABORT          JUMP IF AN ILLEGAL UNIT NUMBER
04357  14700010          2792           ENQ      LUNUD           LOGICAL UNIT IS UNDEFINED
04360  01004675 P        2793           UJP      QCONTROL
                         2794
04361  77730000          2795   FOUND   VFD      A12/DINT
04362  00702661 X        2796           RTJ      SETN
04363  20100002          2797           LDA      1+1,X1          LOAD THE ADDRESS OF THE BLOCK.
04364  53500000          2798           TAI      X1+CNBLK
04365  12077760          2799           SHA      -15
04366  17600017          2800           ANA      HTMASK
04367  15604375 P        2801           INA      IODECODE
04370  44005107 P        2802           SWA      EXIT            SAVE THE JUMP ADDRESS
04371  22024644 P  05151 0  2803           LACH     EXECINST
04372  53600000          2804           TAI      X2
04373  53100000          2805           TIA      X1+CNBLK
04374  44303154 X        2806           SWA      SELECT,X3+PSA
04375  01005107 P        2807   IODECODE UJP      EXIT            DECODE THE HARDWARE TYPE
          04376 P        2808           ORGR     IODECODE+HTFILE
04376  01204321 P        2809           UJP      FILEIO-728,X2   FILE I/O
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                04377 P          2810                ORGR    IODECODE+HTLP
04377   01204333 P               2811                UJP     PRIO-728,X2     LINE PRINTER I/O
                04400 P          2812                ORGR    IODECODE+HTPUN
04400   01204347 P               2813                UJP     PUNIO-728,X2    CARD PUNCH I/O
                04401 P          2814                ORGR    IODECODE+HTCR
04401   01204361 P               2815                UJP     CRIO-728,X2     CARD READER I/O
                04402 P          2816                ORGR    IODECODE+HTMT
04402   01204366 P               2817                UJP     MTIO-728,X2     MAGNETIC TAPE I/O
                04403 P          2818                ORGR    IODECODE+HTTTY
04403   01204326 P               2819                UJP     TTYIO-728,X2    TELETYPE I/O
                04404 P          2820                ORGR    IODECODE+HTPLOT
04404   01204333 P               2821                UJP     PRIO-728,X2     X/Y PLOTTER I/O
                04405 P          2822                ORGR    IODECODE+HTNULL
04405   01204373 P               2823                UJP     NIO-728,X2      ONLINE INCINERATOR I/O
                04406 P          2824                ORGR    IODECODE+HTTV
04406   01204401 P               2825                UJP     TVIO-728,X2     CRT DISPLAY
                04407 P          2826                ORGR    IODECODE+HTRAF
04407   01204406 P               2827                UJP     RAFIO-728,X2    RANDOM ACCESS FILE I/O
                04410 P          2828                ORGR    IODECODE+HTTASK
04410   01204347 P               2829                UJP     PUNIO-728,X2    TASK OUTPUT
                04411 P          2830                ORGR    IODECODE+HTMSF
04411   01204421 P               2831                UJP     MSFIO-728,X2    USER MASS STORAGE UNIT
                04412 P          2832                ORGR    IODECODE+HTPTP
04412   01204413 P               2833                UJP     PTPIO-728,X2    PAPER TAPE PUNCH OUTPUT
                04413 P          2834                ORGR    IODECODE+HTMAX  ADJUST THE ORIGIN
                                 2835
                                 2836
04413   01000626 P               2837        FILEIO  UJP     FCONTROL        72XX
04414   01004673 P               2838                UJP     ZABORT          73XX
04415   01000020 P               2839                UJP     FINPW           74XX
04416   01004673 P               2840                UJP     ZABORT          75XX
04417   01000237 P               2841                UJP     FOUTW           76XX
                                 2842
04420   01003250 P               2843        TTYIO   UJP     TTYCNTRL        72XX
04421   01004673 P               2844                UJP     ZABORT          73XX
04422   01003300 P               2845                UJP     TTYINPW         74XX
04423   01004673 P               2846                UJP     ZABORT          75XX
04424   01003435 P               2847                UJP     TTYOUTW         76XX
                                 2848
04425   01000654 P               2849        PRIO    UJP     PRCNTRL         72XX
04426   01004673 P               2850                UJP     ZABORT          73XX
04427   01004673 P               2851                UJP     ZABORT          INPUT FROM PRINTER NOT ALLOWED
04430   01004673 P               2852                UJP     ZABORT          75XX
04431   14700043                 2853                ENQ     35              76XX
04432   11177777       37777 3   2854        FCHECKW ECHA    177777B         MAKE A CHECK ON THE RECORD SIZE
04433   37304352 X               2855                LPA     T6,X3+PSA       TO BE CERTAIN IT IS NOT TOO LONG
04434   03604775 P               2856                AQJ,GE  ZWCMAX          WORDCOUNT IS TOO LARGE
04435   03005000 P               2857                AZJ,EQ  ZWCZERO         DONT BILL FOR ILLEGAL WRITES
04436   14600001                 2858                ENA     1
04437   34100000                 2859                RAD     ACCWORD,X1+CNBLK
04440   01000237 P               2860                UJP     FOUTW
                                 2861
04441   01000654 P               2862        PUNIO   UJP     PUNCNTRL        72XX
04442   01004673 P               2863                UJP     ZABORT          73XX
04443   01004673 P               2864                UJP     ZABORT          INPUT FROM PUNCH NOT ALLOWED
04444   01004673 P               2865                UJP     ZABORT          75XX
04445   14700025                 2866                ENQ     21              76XX
04446   20304433 X               2867                LDA     T6,X3+PSA
04447   12000005                 2868                SHA     5               BINARY BIT TO SIGN POSITION
04450   03204432 P               2869                AZJ,GE  FCHECKW         JUMP IF BCD
04451   14700051                 2870                ENQ     41
04452   01004432 P               2871                UJP     FCHECKW
                                 2872
04453   01001452 P               2873        CRIO    UJP     CRCNTRL         72XX
04454   01004673 P               2874                UJP     ZABORT          73XX
04455   01001342 P               2875                UJP     CRINPW          74XX
04456   01004673 P               2876                UJP     ZABORT          75XX
04457   01004673 P               2877                UJP     ZABORT          OUTPUT TO CARD READER NOT ALLOWED
                                 2878
04460   01003043 P               2879        MTIO    UJP     MTCNTRL         72XX
04461   01004673 P               2880                UJP     ZABORT          73XX
04462   01002442 P               2881                UJP     MTINPW          74XX
04463   01004673 P               2882                UJP     ZABORT          75XX
04464   01002643 P               2883                UJP     MTOUTW          76XX
                                 2884
04465   01004471 P               2885        NIO     UJP     *+4             72XX
04466   01004471 P               2886                UJP     *+3             73XX
04467   01004673 P               2887                UJP     ZABORT          74XX
04470   01004673 P               2888                UJP     ZABORT          75XX
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04471  14600010          2889                ENA     HTNULL          76XX
04472  01000603  P       2890                UJP     ASTATUSA
                         2891
04473  01002254  P       2892        TVIO    UJP     TVCNTRL         72XX
04474  01004673  P       2893                UJP     ZABORT          73XX
04475  01002273  P       2894                UJP     TVINPW          74XX
04476  01004673  P       2895                UJP     ZABORT          75XX
04477  01002336  P       2896                UJP     TVOUTW          76XX
                         2897
04500  01001457  P       2898        RAFIO   UJP     RAFCNTRL        72XX
04501  01001472  P       2899                UJP     RAFSEEK         73XX
04502  01001547  P       2900                UJP     RAFREAD         74XX
04503  01004673  P       2901                UJP     ZABORT          75XX
04504  01001667  P       2902                UJP     RAFWRITE        76XX
                         2903
04505  01000654  P       2904        PTPIO   UJP     PUNCNTRL        72XX
04506  01004673  P       2905                UJP     ZABORT          73XX
04507  01004673  P       2906                UJP     ZABORT          INPUT NOT ALLOWED
04510  01004673  P       2907                UJP     ZABORT          75XX
04511  14700077          2908                ENQ     62+1            MAX OUTPUT RECORD SIZE
04512  01004432  P       2909                UJP     FCHECKW
                         2910
04513  01001452  P       2911        MSFIO   UJP     MSFCNTRL        72XX
04514  01003077  P       2912                UJP     MSFSEEK         73XX
04515  01003111  P       2913                UJP     MSFREADX        74XX
04516  01004673  P       2914                UJP     ZABORT          75XX
04517  01003111  P       2915                UJP     MSFREADX        76XX
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04520  14604522 P        2917        ASCIIIN  ENA      *+2                ENTER THE RETURN ADDRESS
04521  01077777 X        2918                 UJP      CHARINP
04522  03004537 P        2919                 AZJ,EQ   SKIP               JUMP IF WE GOT A CHARACTER
04523  20377777 X        2920                 LDA      SYSCODE,X3+PSA     GET TYPE OF SYSTEM
04524  12077755          2921                 SHA      -18
04525  03104674 P        2922                 AZJ,NE   EXCABORT           ABORT IF NOT A TTY
04526  21304251 X        2923                 LDQ      SYSCM,X3+PSA       SET BIT 19 IN THE USERS CR WORD
04527  20304302 X        2924                 LDA      CR,X3+PSA          IF HE IS IN CONTROL MODE
04530  35003440 X        2925                 SSA      BIT19              AND HE HAS NO TTY INPUT STRING.
04531  05500000          2926                 QSG,S    0                  SKIP IF NOT IN CONTROL MODE
04532  40304527 X        2927                 STA      CR,X3+PSA
04533  14677777 X        2928                 ENA      INBOUND            IOBOUND THE USER
04534  01077777 X        2929                 UJP      RMTERM             GO SWAP USERS

04535  20304532 X        2931        EXECCRA  LDA      CR,X3+PSA          GIVE THS USER HIS CR WORD
04536  40304161 X        2932        STA      STA      A,X3+PSA
04537  14600001          2933        SKIP     ENA      1
04540  30304320 X        2934        PCINCR   ADA      PC,X3+PSA
04541  44304540 X        2935                 SWA      PC,X3+PSA
04542  01004322 X        2936                 UJP      RETURN
                         2937
04543  20303663 X        2938        ASCIIOUT LDA      TERMINAL,X3+PSA    GET THE USERS TERMINAL NUMBER
04544  12077760          2939                 SHA      -15
04545  53500000          2940                 TAI      X1
04546  20103615 X        2941                 LDA      PSA8LK,X1          IS HE USING A TTY
04547  12000002          2942                 SHA      2
04550  03204674 P        2943                 AZJ,GE   EXCABORT           ABORT IF NOT
04551  20304536 X        2944                 LDA      A,X3+PSA
04552  14204554 P        2945        TTYWRITE ENI      *+2,X2             ENTER THE RETURN ADDRESS
04553  01077777 X        2946                 UJP      CHAROUTP
04554  03004537 P        2947                 AZJ,EQ   SKIP               JUMP IF EVERYTHING IS OK
04555  01004534 X        2948                 UJP      RMTERM
                         2949
04556  20005151 P        2950        IRADAR   LDA      EXECINST           GET THE TRAPPED INSTRUCTION
04557  12000011          2951                 SHA      9                  GET THE SECURITY BITS
04560  04640774          2952                 ASE      40774B             SKIP IF A 774X XX40 INSTRUCTION
04561  01004674 P        2953                 UJP      EXCABORT           ABORT IF NOT JUST RIGHT
04562  16641160          2953+001             XOA      40774B+164B        CONVERT TO A ≠JUMP≠ INSTRUCTION
04563  12000011          2955                 SHA      9                  THE NEW PC IS IN A
04564  14200000          2955+001             ENI      0,X2               TO SAY NOT REALLY A ≠JUMP≠
                         2956
04565  21304541 X        2957        JUMP     LDQ      PC,X3+PSA          LOAD THE PROGRAM COUNTER
04566  44304565 X        2958                 SWA      PC,X3+PSA
04567  12077760          2959                 SHA      -15
04570  16600007          2960                 XOA      00007B
04571  77660000          2961                 AOS
04572  12400011          2962                 SHQ      9
04573  77674000          2963                 ISA
04574  13000017          2964                 SHAQ     15
04575  04200000          2964+001             ISE      0,X2               SKIP IF A RADAR BREAKPOINT
04576  46304177 X        2965                 SCHA     LJA,X3+PSA         SAVE USERS LAST JUMP ADDRESS
04577  77670000          2966                 OSA
04600  16600001          2967                 XOA      00001B
04601  77664000          2968                 AIS
04602  20304535 X        2969                 LDA      CR,X3+PSA
04603  53010077          2972                 TMQ      77B                LOAD THE USER FILE 77
04604  17577773          2973                 ANQ,S    77773B             CLEAR THE ROS BIT
04605  17600004          2974                 ANA      00004B
04606  04600000          2975                 ASE      0                  SKIP IF RIS
04607  16700004          2976                 XOQ      00004B             SET THE ROS BIT
04610  53410077          2977                 TQM      77B                RESTORE THE WORD
04611  01004542 X        2978                 UJP      RETURN
                         2979
04612  17607400          2980        EXECINS  ANA      07400B
04613  03104616 P        2981                 AZJ,NE   EXECINS1
04614  20304134 X        2982                 LDA      IS,X3+PSA
04615  01004536 P        2983                 UJP      STA
                         2984
04616  37304614 X        2985        EXECINS1 LPA      IS,X3+PSA
04617  03104622 P        2986                 AZJ,NE   EXECINS2
04620  14600002          2987                 ENA      2
04621  01004540 P        2988                 UJP      PCINCR
                         2989
04622  36304616 X        2990        EXECINS2 SCA      IS,X3+PSA
04623  01004634 P        2991                 UJP      EXSSHARE
                         2992
04624  17603000          2993        EXECSCIM ANA      3000B
04625  12000014          2994                 SHA      12
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04626  16477777          2995                XOA,S   777776
04627  37304622  X       2996                LPA     IS,X3+PSA
04630  01004634  P       2997                UJP     EXSSHARE
                         2998
04631  17603000          2999     EXECSSIM   ANA     30008
04632  12000014          3000                SHA     12
04633  35304627  X       3001                SSA     IS,X3+PSA
04634  40304633  X       3002     EXSSHARE   STA     IS,X3+PSA
04635  01004537  P       3003                UJP     SKIP
                         3004
04636  00000000          3005     IMPURE01   VFD     A24/IMPURE          EVEN PARITY WORD FOR REGION 01
                         3006
                         3007
                         3008
         04637  P        3009     REWY01     EQU     *
                         3010                IF      DEBUG EQ 0, GOTO .DEBUG002
04637  20100005          3011                LDA     BLKR,X1+CNBLK                                 DEBUG
04640  03204642  P       3012                AZJ,GE  *+2                                           DEBUG
04641  00004641  P       3013                HLT     *                                             DEBUG
                         3014     .DEBUG002
04642  14477776          3015                ENA,S   -1
04643  34100005          3016                RAD     BLKR,X1+CNBLK       FIX BLOCKS REMAINING
04644  01000000          3017     REWRITEY   UJP     IMPURE
04645  20004000          3018                LDA     CORE                LOAD THE NEXT BLOCK NUMBER
04646  00702226  X       3019                RTJ     REWRITEX            GO SWIZZEL THE CONTROL BLOCK
04647  20100006          3020                LDA     EPP,X1+CNBLK        IS THIS A DESTRUCTIVE READ FILE
04650  12000003          3021                SHA     23-20
04651  03204637  P       3022                AZJ,GE  REWY01              JUMP IF NOT
04652  13000006          3023                SHAQ    24-15+20-23
04653  14477776          3024                ENA,S   -1
04654  17700017          3025                ANQ     HTMASK              DO WE HAVE A CARD READER
04655  04700004          3026                QSE     HTCR                DONT HIT TFBLKS IF SO
04656  34301315  X       3027                RAD     TFBLKS,X3+PSA
04657  34100007          3028                RAD     TFL,X1+CNBLK        THE FILE IS A BLOCK SHORTER
                         3029                IF      DEBUG EQ 0, GOTO .DEBUG003
04660  20100007          3030                LDA     TFL,X1+CNBLK                                  DEBUG
04661  05400000          3031                ASG,S   0                                             DEBUG
04662  00004662  P       3032                HLT     *                                             DEBUG
                         3033     .DEBUG003
04663  14200001          3034                ENI     1,X2                FREE THE LAST BLOCK
04664  20100001          3035                LDA     LP,X1+CNBLK
04665  00702204  X       3036                RTJ     FREEBLK
04666  20100003          3037                LDA     CBP,X1+CNBLK        SET THE NEW LOAD POINT
04667  40100001          3038                STA     LP,X1+CNBLK
04670  01004637  P       3039                UJP     REWY01
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                               ********************************************************************
                        3042   *                                                                  *
                        3043   *          QCONTROL                                                *
                        3044   *                                                                  *
                        3045   *          THIS ROUTINE PERFORMS THE NECESSARY BOOKKEEPING TO PUT A *
                        3046   *          USER INTO CONTROL MODE                                   *
                        3047   *                                                                  *
                        3048   *          ENTER WITH THE ERROR CODE IN Q AND PSA POINTER IN X3     *
                        3049   *                                                                  *
                        3050   *          EXIT WILL BE MADE TO RETURN IN INTSORT                   *
                        3051   *                                                                  *
                               ********************************************************************

04671  77674000         3054          ABORT     ISA
04672  03104674 P       3055                    AZJ,NE    EXCABORT
04673  00705100 P       3056          ZABORT    RTJ       RZ
04674  14700005         3057          EXCABORT  ENQ       ILLINS              ILLEGAL INSTRUCTION
04675  20304526 X       3058          QCONTROL  LDA       SYSCM,X3+PSA        CHECK FOR RE-ENTER
04676  17777777         3059                    ANQ       77777B
04677  37002726 X       3060                    LPA       BIT23               COMBINE SYSCM BIT 23 AND CMCODE
04700  53040000         3061                    AQA
04701  40304165 X       3062                    STA       CMCODE,X3+PSA
04702  03304746 P       3063                    AZJ,LT    CMREQ06             JUMP IF A RE-ENTER
04703  14300004         3064                    ENI       4,X3                ASK FOR A 16 WORD BLOCK
04704  00703626 X       3065                    RTJ       GETMEM
04705  54304267 X       3066                    LDI       RPSAPTR,X3+PSA      RESTORE THE PSA POINTER
04706  35004677 X       3067                    SSA       BIT23               INDICATE IN CONTROL MODE
04707  21304675 X       3068                    LDQ       SYSCM,X3+PSA        GET CM RF 44
04710  40304707 X       3069                    STA       SYSCM,X3+PSA        SAVE ADDRESS OF RF SAVE
04711  53600000         3070                    TAI       X2
04712  14120040         3071                    ENI       20040B,X1           SAVE RF40-RF56
04713  47104714 P       3072                    STI       *+1,X1              QUICK AND DIRTY
04714  53020040         3073                    TMA       40B+IMPURE          GET RF XX
04715  40200000         3073+001                STA       0,X2                SAVE IN RF SAVE AREA
04716  10120057         3073+002                ISI       20057B,X1           SKIP IF DONE
04717  02204713 P       3076                    IJI       *-4,X2              LOOP 17B TIMES
04720  53410044         3077                    TQM       44B                 RESTORE CM RF 44
04721  20304576 X       3090                    LDA       LJA,X3+PSA          GET SYSTEM CODE
04722  53420040         3091                    TAM       40B                 SAVE SYSTEM CODE AND LJA FOR CM
04723  20304566 X       3092          CMREQ04   LDA       PC,X3+PSA           GET USERS PC
04724  13077760         3093                    SHAQ      -15                 PC TO Q
04725  77674000         3094                    ISA                           INSTRUCTION STATE TO A
04726  03104731 P       3095                    AZJ,NE    *+3                 JUMP IF NOT PUSHED
04727  00705100 P       3096                    RTJ       RZ                  POP OUT OF STATE ZERO
04730  01004723 P       3097                    UJP       CMREQ04
                        3098
04731  13000017         3099                    SHAQ      15                  FORM 18 BIT PC IN A
04732  53420041         3100                    TAM       41B                 SAVE PC FOR CM
                        3101
04733  25304634 X       3102                    LDAQ      IS,X3+PSA           GET IS AND CR WORD
04734  17477400         3103                    ANA,S     77400B              LEAVE INT. MASK AND FAULTS
04735  17700004         3104                    ANQ       4B                  LEAVE ROS BIT
04736  53040000         3105                    AQA
04737  53420042         3106                    TAM       42B                 SAVE ROS, IM AND FAULTS FOR C.M.
04740  20304551 X       3107                    LDA       A,X3+PSA            GET USERS A REGISTER
04741  53420043         3108                    TAM       43B                 SAVE A REGISTER FOR CM
04742  15377777 X       3109                    INI       VMMSAVE,X3+PSA      FORM DESTINATION ADDRESS
04743  54204705 X       3110                    LDI       RPSAPTR,X2+PSA      FORM SOURCE ADDRESS
04744  15277777 X       3111                    INI       VMMCM,X2+PSA
04745  00705036 P       3112                    RTJ       MAPMOVE             MOVE 3 PAGES
04746  20304701 X       3113          CMREQ06   LDA       CMCODE,X3+PSA
04747  53420045         3114                    TAM       45B                 PASS THE CM ERROR CODE
04750  14600000         3115                    ENA       0
04751  40304746 X       3116                    STA       CMCODE,X3+PSA       ZERO THE REQUEST CODE
04752  20005151 P       3117                    LDA       EXECINST            GIVE CONTROL MODE THE
04753  53420053         3118                    TAM       53B                 ILLEGAL INSTRUCTION
04754  20303610 X       3119                    LDA       T3,X3+PSA
04755  53420052         3120                    TAM       52B                 ILLEGAL INSTRUCTION-DRIVE FAILURE
04756  20377777 X       3121                    LDA       UDBITS,X3+PSA       GIVE C.M. THE UDFLAGS WORD
04757  53420056         3122                    TAM       56B
04760  14677777 X       3123                    ENA       CMSYSP              ADDRESS OF CM LIBTAB ENTRY
04761  00777777 X       3124                    RTJ       LIBMOVE             MAP CONTROL MODE
04762  01004611 X       3125                    UJP       RETURN              RUN THE USER

                               ********************************************************************
                        3128   *                                                                  *
```

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                                3129     *          CODES PASSED TO CONTROL MODE                                        *
                                3130     *                                                                              *
                                         ********************************************************************************

                00000           3133     LOGREQ    EQU     003          LOGIN ERROR CODE
                00002           3134     CONTROLA  EQU     023          CONTROL-A OR TV ≠
                00003           3135     TIMECUT   EQU     038          TIME CUT
                00004           3136     CCREAD    EQU     043          ATTEMPT TO READ CONTROL CARD
                00005           3137     ILLINS    EQU     053          ILLEGAL INSTRUCTION
                00006           3138     INSFIL    EQU     063          INSUFFICIENT FILE SPACE
                00007           3139     FPVIOL    EQU     073          FILE PROTECT VIOLATION
                00010           3140     LUNUD     EQU     103          LOGICAL UNIT UNDEFINED
                00011           3141     READEOD   EQU     113          READ ATTEMPTED AT END OF DATA
                00012           3142     WCZERO    EQU     123          I/O WITH WORDCOUNT OF ZERO
                00013           3143     WCMAX     EQU     133          I/O WITH WORDCOUNT TOO LARGE
                00014           3144     DRIVFAIL  EQU     143          TAPE DRIVE FAILURE
                00015           3145     ABNIO     EQU     153          ABNORMAL I/O CONDITION
                00016           3146     WARN      EQU     163          WARNING OF SYSTEM ENDING
                00017           3147     MPVIOL    EQU     173          MEMORY PROTECT VIOLATION
                00020           3148     MEMPARTY  EQU     203          MEMORY PARITY ERROR
                00021           3149     OPABORT   EQU     213          OPERATOR ABORT
                00022           3150     LOGOFFR   EQU     223          LOGOFF AT END OF TASK
                00023           3151     OPTERM    EQU     233          OPERATOR TERMINATION
                00024           3152     VANISH    EQU     243          VANISH AT END OF TASK

                                3154
 04763  00705100 P              3155     FPV       RTJ     RZ
 04764  14700007                3156               ENQ     FPVIOL       FILE PROTECT VIOLATION
 04765  01004675 P              3157               UJP     QCONTROL
                                3158
 04766  00705100 P              3159     IOSMASH   RTJ     RZ
 04767  14700015                3160               ENQ     ABNIO        ABNORMAL I/O CONDITION
 04770  01004675 P              3161               UJP     QCONTROL
                                3162
 04771  00701766 X              3163     IRERRORA  RTJ     FLOAT        GIVE UP THE FILE CORE BLOCK
 04772  00705072 P              3164     IRERRORB  RTJ     UNSAVE
 04773  14700017                3165     IRERROR   ENQ     MPVIOL       MEMORY PROTECT VIOLATION
 04774  01004675 P              3166               UJP     QCONTROL
                                3167
 04775  00705100 P              3168     ZWCMAX    RTJ     RZ
 04776  14700013                3169               ENQ     WCMAX        WORDCOUNT TOO LARGE
 04777  01004675 P              3170               UJP     QCONTROL
                                3171
 05000  00705100 P              3172     ZWCZERO   RTJ     RZ
 05001  14700012                3173               ENQ     WCZERO       WORDCOUNT IS ZERO
 05002  01004675 P              3174               UJP     QCONTROL
                                3175
 05003  00705100 P              3176     ZRDEOD    RTJ     RZ
 05004  14700011                3177               ENQ     READEOD      ATTEMPT TO READ PAST END OF DATA
 05005  01004675 P              3178               UJP     QCONTROL


 05006  15304744 X              3180     CMEX04    INI     VMMCM,X3+PSA     DESTINATION
 05007  54204743 X              3181               LDI     RPSAPTR,X2+PSA
 05010  15204742 X              3182               INI     VMMSAVE,X2+PSA
 05011  00705036 P              3183               RTJ     MAPMOVE          MOVE 3 PAGES
 05012  01000000                3184     CMEXIT    UJP     IMPURE
 05013  20304710 X              3185               LDA     SYSCM,X3+PSA     GET ADDRESS OF 16 WORD BLOCK
 05014  14300004                3186               ENI     4,X3             LENGTH
 05015  53600000                3187               TAI     X2               SAVE ADDRESS IN X2
 05016  21200000                3187+001           LDQ     0,X2             GET WORD CLOBBERED BY FREEMEM
 05017  53410040                3187+002           TQM     403              RESTORE RF40
 05020  00777777 X              3188               RTJ     FREEMEM          FREE THE 16 WORD RF SAVE
 05021  53020044                3189               TMA     443              GET RF 44 FOR CONTROL MODE
                                3190
 05022  14310041                3190+001           ENI     10041B,X3
 05023  47305025 P              3192     CMEX02    STI     *+2,X3           RESTORE THE USERS REGISTER FILE
 05024  21200001                3193               LDQ     1,X2             GET A WORD FROM THE BLOCK
 05025  53410040                3194               TQM     40B+IMPURE       TRANSFER IT TO THE REGISTER FILE
 05026  10310057                3194+001           ISI     10057B,X3        SKIP IF DONE
 05027  02205023 P              3196               IJI     CMEX02,X2        LOOP UNTIL DONE
                                3197
 05030  54305007 X              3198               LDI     RPSAPTR,X3+PSA   RESTORE THE PSA INDEX
 05031  37001441 X              3199               LPA     NBIT23           REMOVE BIT 23 FROM RF 44
 05032  40305013 X              3200               STA     SYSCM,X3+PSA     INDICATE USER NOT IN CONTROL MODE
 05033  14277777 X              3201               ENI     CMPAGE3,X2
```

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05034  14605006 P       3202                ENA     CMEX04          RETURN ADDRESS
05035  01077777 X       3203                UJP     ZEROPG          ZERO THE SCRATCH PAGE


05036  01000000         3205    MAPMOVE     UJP     IMPURE          ROUTINE TO MOVE THREE
05037  20200000         3206    MAPM01      LDA     0,X2+PSA        PAGES FROM C(X2) TO C(X3)
05040  21077777 X       3207                LDQ     ZROPAGE         AND INDICATE THAT THE
05041  41200000         3208                STQ     0,X2+PSA        PAGES AT C(X2) ARE ZEROPAGES.
05042  40300000         3209                STA     0,X3+PSA
05043  05402000         3210                ASG,S   2000B
05044  05400000         3211                ASG,S   0B
05045  01005052 P       3212                UJP     MAPM02          JUMP IF NOT IN CORE
05046  17600177         3213                ANA     1778            GET PAGE NUMBER
05047  15602573 X       3214                INA     PAGETABL
05050  44005051 P       3215                SWA     *+1             PAGETABL ADDRESS
05051  47300000         3216                STI     IMPURE,X3       UPDATE PAGETABL POINTER
05052  15200001         3217    MAPM02      INI     1,X2
05053  10005063 P       3218                SSH     THREE           LOOP 3 TIMES
05054  02305037 P       3219                IJI     MAPM01,X3+PSA
05055  14200037         3220                ENI     NPU-1,X2
05056  14604000         3221                ENA     4000B
05057  77644140         3222                APF     140B+PFW,X2     SET ALL USER PAGES TO
05060  02605057 P       3223                IJD     *-1,X2          ILLEGAL TO REFFERENCE
05061  54305030 X       3224                LDI     RPSAPTR,X3+PSA  RESTORE THE PSA POINTER
05062  01005036 P       3225                UJP     MAPMOVE         EXIT
                         3226
05063  11111111         3227    THREE       OCT     11111111+IMPURE
```

```
05064  01000000          3230  SAVE     UJP     IMPURE
05065  25304270  X       3231           LDAQ    I1,X3+PSA          LOAD INDEX 1 AND INDEX 2
05066  45303371  X       3232           STAQ    F1,X3+PSA          SAVE THEM IN F1 AND F2
05067  20304733  X       3233           LDA     IS,X3+PSA          LOAD THE INTERNAL STATUS
05070  40377777  X       3234           STA     F3,X3+PSA          SAVE IT IN F3
05071  01005064  P       3235           UJP     SAVE               RETURN
                         3236
                         3237
05072  01000000          3238  UNSAVE   UJP     IMPURE
05073  25305066  X       3239           LDAQ    F1,X3+PSA
05074  45305065  X       3240           STAQ    I1,X3+PSA          RESTORE INDEX 1 AND INDEX 2
05075  20305070  X       3241           LDA     F3,X3+PSA          RESTORE THE INTERNAL STATUS
05076  40305067  X       3242           STA     IS,X3+PSA
05077  01005072  P       3243           UJP     UNSAVE             RETURN
                         3244
                         3245
05100  01000000          3246  RZ       UJP     IMPURE             RETURN FROM PROGRAM STATE ZERO.
05101  00705107  P       3247           RTJ     EXIT
05102  20303603  X       3248           LDA     T2,X3+PSA
05103  44300606  X       3249           SWA     I3,X3+PSA          RESTORE INDEX 3
05104  25303450  X       3250           LDAQ    T5,X3+PSA
05105  45304740  X       3251           STAQ    A,X3+PSA           RESTORE A AND Q
05106  01005100  P       3252           UJP     RZ
                         3253
                         3254
05107  01000000          3255  EXIT     UJP     IMPURE
05110  20377777  X       3256           LDA     T4,X3+PSA
05111  13077776          3257           SHAQ    -1
05112  77660000          3258           AOS
05113  12077774          3259           SHA     -3
05114  77664000          3260           AIS
                         3261           IF      DEBUG EQ 0, GOTO .DEBUG004
05115  77674000          3262           ISA                                          DEBUG
05116  05600001          3263           ASG     1                                    DEBUG
05117  00005117  P       3264           HLT     *                                    DEBUG
                         3265  .DEBUG004
05120  20304602  X       3266           LDA     CR,X3+PSA          LOAD THE USERS CONDITION REGISTER
05121  12000025          3267           SHA     21
05122  13000001          3268           SHAQ    1                  PUT THE ROS BIT INTO THE REGISTER
05123  12000002          3269           SHA     2                  SHIFT BACK INTO POSITION
05124  17477767          3270           ANA,S   777767B            CLEAR THE PROGRAM STATE JUMP BIT
05125  40305120  X       3271           STA     CR,X3+PSA          STORE IT BACK
05126  20304173  X       3272           LDA     T1,X3+PSA
05127  44304723  X       3273           SWA     PC,X3+PSA
05130  37077777  X       3274           LPA     B210RB22
05131  34305076  X       3275           RAD     IS,X3+PSA
05132  77730000          3276           VFD     A12/DINT           PREVENT INTERFERENCE
05133  00703444  X       3277           RTJ     CLEARN             CLEAR THE NEGATE BIT
05134  01005107  P       3278           UJP     EXIT               RETURN
```

```
05135  00177777                3281        BIT16M1  OCT         00177777
05136  00000776                3282        KWPFB    OO          WPFB
05137  00000000                3283        TVBUSY   VFD         A24/IMPURE,A9/C00,A15/TVPFAREA
05141  00000000                3284        TXBUSY   VFD         A24/IMPURE,A9/000,A15/MTPFAREA
05143  00000000                3285        MSFBUSY  VFD         A24/IMPURE,A9/000,A15/MSFPF
05145  00003012                3286        MTXI     VFD         A6/00,03/0,A15/TXDONE+IMPURE
05146  00000000                3287        TXWC     VFD         A24/IMPURE
05147  00000000                3288        IOBUSY   VFD         A24/IMPURE
05150  00000000                3289        TEMP2    VFD         A6/IMPURE,03/0,A15/IMPURE
          24640 P               3290        OSRSAVE  EQU,C      TEMP2
05151  00000000                3291        EXECINST VFD         A24/IMPURE
          05151 P               3292        MSFTEMP  EQU         EXECINST
05152                          3293        MTBUFFER BSS         MTMINREC
                               3294                 END
```

NO LINES WITH ERRORS

A		X		39	680	00603P	1735	02376P	2067	03040P	2265	03266P	2596	04055P	2638	04124P
					2664+5	04161P	2932	04536P	2944	04551P	3107	04740P	3251	05105P		
ABNIO			00015	3145	3160	04767P										
ABORT	E		04671P	3054	7	00000P	2637	04123P	2704	04232P	2705+5	04240P	2718	04254P		
ACCWFM			01140P	975	747	00663P										
ACCWORD			00000	71	976	01141P	1095	01320P	1192	01436P	1201	01447P	2859	04437P		
ACI			04121P	2635	2614	04075P										
ACR			04131P	2644	2616	04101P										
AEB		X		190	1237	01475P	1309	01564P	1389	01674P	2128	03115P				
AOS	E		00160P	357	8	00000P										
ASCIIIN			04520P	2917	2621	04106P										
ASCIIOUT			04543P	2938	2622	04107P										
ASTATUS			00571P	675	1112	01341P										
ASTATUSA			00603P	680	1654	02272P	2789	04354P	2890	04472P						
AUB		X		189	255	00021P	441	00244P	803	00723P	895	01032P	980	01145P	1255	01515P
					1307	01562P	1386	01671P	2185	03176P						
B210R822		X		40	3274	05130P										
BACK01			00717P	799	874	01025P										
BACK02			00721P	801	865	01017P										
BACK03			00752P	827	818	00742P										
BACK04			00765P	838	849	01000P										
BACK05			01001P	851	831	00756P										
BACK06			01006P	856	837	00764P										
BACK07			01007P	857	855	01005P										
BACK08			01010P	858	846	00775P										
BACK09			01017P	865	860	01012P										
BIT15		X		41	191	00000P	1784	02454P								
BIT16		X		42	190	00000P										
BIT16M1			05135P	3281	274	00044P	832	00757P	913	01054P	2391+2	03436P	2419	03472P		
BIT17		X		43	189	00000P	2498+57	03676P								
BIT18		X		44	188	00000P	552+1	00417P	1669	02306P	1717	02356P				
BIT19		X		45	574	00441P	2370	03414P	2394+1	03440P	2925	04530P				
BIT20		X		46	187	00000P	762	00674P								
BIT21		X		47	185	00000P	1274	01537P	1312	01567P	1333	01614P	1449	01767P	1535	02111P
					1672	02311P										
BIT22		X		48	183	00000P	501	00336P	984	01151P	1102	01327P	1418	01730P	1537	02113P
					1558	02137P	2705+2	04235P								
BIT23		X		49	542	00404P	566	00433P	651	00542P	700	00623P	1012	01203P	1055	01253P
					1057	01255P	1085	01306P	1424	01736P	1433	01747P	1439	01755P	1458	02000P
					1501	02052P	1519	02073P	1554	02133P	1763	02432P	1872	02571P	1911	02632P
					1977	02726P	3060	04677P	3067	04706P						
BKSPACE			00716P	798	722	00645P										
BLANKS		X		51	1941	02665P	2295	03303P								
BLKR			00005	88	469	00274P	535	00376P	538	00400P	541	00403P	781	00714P	824	00747P
					843	00772P	924	01067P	964	01133P	991	01160P	1000	01167P	1004	01173P
					1006	01175P	1011	01202P	1026	01220P	1039	01233P	1048	01244P	1053	01251P
					1098	01323P	1149	01372P	1178	01422P	1264	01526P	1271	01534P	1273	01536P
					1320	01577P	1357	01640P	1379	01664P	1396	01703P	1445	01763P	1471	02015P
					1483	02030P	1534	02110P	1570	02153P	1581	02166P	1597	02206P	1599	02210P
					1626	02241P	3011	04637P	3016	04643P						
BRPB		X		188	276	00046P	505	00342P	1927	02647P	2385	03431P	2412	03463P	2421	03474P
BUSY		X		50	2180	03171P										
CBP			00003	76	526	00367P	645	00534P	692	00613P	767	00700P	772	00705P	858	01010P
					1016	01207P	1073	01274P	1101	01326P	1317	01574P	1428	01742P	1487	02034P
					1590	02177P	2117	03107P	2148	03135P	3037	04666P				
CCREAD			00004	3136	1130	01351P										
CHAINL		X		52	2641	04127P										
CHARINP		X		53	2918	04521P										
CHAROUTP		X		54	2946	04553P										
CHART			03722P	2501	2313	03325P	2443	03522P	2448	03527P	2453	03534P	2471	03556P		
CKSEARCH			01021P	869	807	00727P	899	01036P								
CLEAR			00665P	752	716	00637P	746	00662P	1226	01465P						
CLEARCON			00011P	232	752	00665P	2270	03272P								
CLEARN		X		55	1886	02605P	2397	03444P	3277	05133P						
CLEARX			00666P	753	1281	01546P										
CLOCK			00022	203	2048	03016P										
CMCODE		X		56	482	00313P	485	00316P	941	01105P	2666	04163P	2668	04165P	3062	04701P
					3113	04746P	3116	04751P								
CMEX02			05023P	3192	3196	05027P										
CMEX04			05006P	3180	3202	05034P										
CMEXIT	E		05012P	3184	9	00000P	2661	04152P								
* CMPAGE1		X		57												
* CMPAGE2		X		58												
CMPAGE3		X		59	3201	05033P										
CMQSET		X		60	943	01107P	2042	03011P								
CMREQ04			04723P	3092	3097	04730P										
CMREQ06			04746P	3113	3063	04702P										
CMSYSP		X		61	3123	04760P										
CNBLK			00000	200	254	00020P	261	00027P	263	00031P	268	00036P	278	00050P	300	00074P

394 00217P 401 00226P 406 00232P 436 00237P 439 00242P 442 00245P
463 00266P 469 00274P 472+1 00276P 472+4 00301P 473 00302P 492+1 00324P
502 00337P 503 00340P 508 00345P 511 00350P 512 00351P 519 00360P
522 00363P 525 00366P 526 00367P 535 00376P 538 00400P 539 00401P
541 00403P 543 00405P 544 00406P 558 00426P 573 00440P 575 00442P
592 00453P 642 00531P 645 00534P 652 00543P 667 00561P 674 00570P
675 00571P 690 00611P 692 00613P 701 00624P 708 00630P 753 00666P
758 00670P 760 00672P 763 00675P 765 00676P 767 00700P 769 00702P
771 00704P 772 00705P 774 00706P 778 00711P 779 00712P 781 00714P
802 00722P 810 00732P 811 00733P 816 00740P 824 00747P 828 00753P
843 00772P 845 00774P 852 01002P 856 01006P 858 01010P 859 01011P
861 01013P 864 01016P 894 01031P 902 01041P 903 01042P 908 01047P
914 01055P 924 01067P 927 01072P 936 01100P 953 01120P 956 01123P
960 01127P 964 01133P 968 01136P 976 01141P 978 01143P 981 01146P
985 01152P 986 01153P 987 01154P 991 01160P 994 01163P 1000 01167P
1004 01173P 1006 01175P 1008 01177P 1010 01201P 1011 01202P 1014 01205P
1016 01207P 1026 01220P 1028 01222P 1034 01226P 1039 01233P 1041 01235P
1043 01237P 1048 01244P 1051 01247P 1053 01251P 1058 01256P 1059 01257P
1062 01262P 1068 01267P 1069 01270P 1072 01273P 1073 01274P 1079 01300P
1082 01303P 1086 01307P 1088 01311P 1089 01312P 1091 01314P 1095 01320P
1096 01321P 1098 01323P 1100 01325P 1101 01326P 1103 01330P 1105 01332P
1110 01337P 1111 01340P 1124 01343P 1134 01354P 1135 01355P 1137 01357P
1142 01364P 1147 01371P 1149 01372P 1157 01377P 1178 01422P 1192 01436P
1201 01447P 1240 01477P 1241 01500P 1250 01510P 1251 01511P 1254 01514P
1259 01521P 1260 01522P 1264 01526P 1271 01534P 1273 01536P 1275 01540P
1276 01541P 1277 01542P 1306 01561P 1311 01566P 1314 01571P 1316 01573P
1317 01574P 1319 01576P 1320 01577P 1334 01615P 1337 01617P 1343 01624P
1353 01634P 1357 01640P 1359 01642P 1367 01652P 1379 01664P 1384 01667P
1388 01673P 1394 01701P 1396 01703P 1400 01707P 1410 01721P 1419 01731P
1420 01732P 1421 01733P 1425 01737P 1427 01741P 1428 01742P 1434 01750P
1440 01756P 1445 01763P 1447 01765P 1450 01770P 1451 01771P 1457 01777P
1459 02001P 1469 02013P 1471 02015P 1474 02020P 1477 02023P 1483 02030P
1487 02034P 1489 02036P 1492 02041P 1497 02046P 1502 02053P 1508 02060P
1514 02066P 1517 02071P 1520 02074P 1521 02075P 1532 02106P 1534 02110P
1536 02112P 1538 02114P 1539 02115P 1542 02120P 1543 02121P 1545 02122P
1548 02125P 1555 02134P 1556 02135P 1557 02136P 1560 02141P 1561 02142P
1565 02146P 1566 02147P 1570 02153P 1572 02155P 1574 02157P 1577 02162P
1581 02166P 1590 02177P 1597 02206P 1599 02210P 1605 02216P 1616 02227P
1619 02232P 1624 02237P 1626 02241P 1632 02247P 1635 02252P 1777 02445P
1780 02450P 1925 02645P 1929 02651P 2010 02745P 2017 02754P 2019 02756P
2024 02762P 2061 03032P 2063 03034P 2075 03043P 2089 03061P 2109 03077P
2115 03105P 2117 03107P 2127 03114P 2141 03126P 2144 03131P 2148 03135P
2166 03155P 2167 03156P 2798 04364P 2805 04373P 2859 04437P 3011 04637P
3016 04643P 3020 04647P 3028 04657P 3030 04660P 3035 04664P 3037 04666P
3038 04667P

CONTROLA E	00002	3134	10	00000P
CONWAIT	X		62	2183 03174P
CORE		04000	211	271 00041P 277 00047P 327 00126P 345 00145P 518 00357P 534 00375P
				546+2 00412P 588 00447P 617 00503P 633 00521P 644 00533P 650 00541P
				660 00552P 665 00557P 669 00563P 694 00615P 699 00622P 820 00743P
				830 00755P 840 00767P 910 01051P 921 01064P 961 01130P 1003 01172P
				1013 01204P 1018 01211P 1023 01216P 1038 01232P 1056 01254P 1067 01266P
				1145 01367P 1193 01437P 1325 01604P 1331 01612P 1375 01660P 1430 01744P
				1436 01752P 1442 01760P 1443 01761P 1486 02033P 1500 02051P 1511 02063P
				1523 02077P 1528 02104P 1553 02132P 1583 02170P 1593 02202P 3018 04645P
COREP		00002	73	76 00000P 263 00031P 512 00351P 543 00405P 652 00543P 701 00624P
				769 00702P 811 00733P 903 01042P 994 01163P 1014 01205P 1028 01222P
				1058 01256P 1086 01307P 1137 01357P 1277 01542P 1337 01617P 1425 01737P
				1434 01750P 1440 01756P 1459 02001P 1502 02053P 1520 02074P 1539 02115P
				1555 02134P 1556 02135P
CPP		00004	77	254 00020P 261 00027P 268 00036P 278 00050P 394 00217P 401 00226P
				406 00232P 439 00242P 463 00266P 473 00302P 492+1 00324P 508 00345P
				511 00350P 544 00406P 667 00561P 674 00570P 753 00666P 758 00670P
				760 00672P 774 00706P 778 00711P 802 00722P 810 00732P 816 00740P
				828 00753P 845 00774P 852 01002P 856 01006P 861 01013P 864 01016P
				894 01031P 902 01041P 908 01047P 914 01055P 927 01072P 936 01100P
				953 01120P 956 01123P 960 01127P 968 01136P 978 01143P 987 01154P
				1010 01201P 1034 01226P 1041 01235P 1043 01237P 1059 01257P 1062 01262P
				1079 01300P 1082 01303P 1110 01337P 1111 01340P 1124 01343P 1134 01354P
				1142 01364P 1147 01371P 1250 01510P 1254 01514P 1260 01522P 1306 01561P
				1343 01624P 1367 01652P 1384 01667P 1388 01673P 1394 01701P 1469 02013P
				1542 02120P 1543 02121P 1545 02122P 1565 02146P 1616 02227P 1780 02450P
				1929 02651P 2010 02745P 2063 03034P 2127 03114P 2167 03156P
CPPX		00000	201	269 00037P 270 00040P 271 00041P 277 00047P 287 00060P 291 00064P
				308 00104P 327 00126P 336 00137P 345 00145P 351 00153P 363 00165P
				369 00172P 386 00210P 398 00223P 545 00407P 546 00410P 546+2 00412P
				570 00437P 588 00447P 593 00454P 617 00503P 623 00511P 633 00521P
				636 00524P 653 00544P 660 00552P 661 00553P 665 00557P 666 00560P
				829 00754P 830 00755P 835 00762P 909 01050P 910 01051P 954 01121P

				955	01122P	1044	01240P	1056	01254P	1143	01365P	1144	01366P	1145	01367P
				1175	01417P	1193	01437P	1324	01603P	1325	01604P	1330	01611P	1331	01612P
				1344	01625P	1345	01626P	1363	01646P	1365	01650P	1380	01665P	1460	02002P
				1467	02011P	1468	02012P	1473	02017P	1499	02050P	1500	02051P	1510	02062P
				1511	02063P	1515	02067P	1518	02072P	1523	02077P	1580	02165P	1583	02170P
CR		X	63	292	00065P	550	00414P	655	00546P	1348	01630P	1646	02262P	1647	02263P
				1648	02264P	1661	02277P	1668	02305P	1670	02307P	1671	02310P	1674	02313P
				1681	02321P	1685	02325P	1706	02345P	1708	02347P	1715	02354P	1718	02357P
				1730	02371P	1731	02372P	1858	02555P	1948	02674P	2234	03232P	2260	03261P
				2262	03263P	2269	03271P	2271	03273P	2272	03274P	2371	03415P	2372	03416P
				2378	03423P	2386	03432P	2387	03433P	2399	03446P	2400	03447P	2414	03465P
				2496	03606P	2498+23	03635P	2498+75	03717P	2650	04137P	2741	04300P	2743	04302P
				2924	04527P	2927	04532P	2931	04535P	2969	04602P	3266	05120P	3271	05125P
CRCNTRL			01452P 1208	2873	04453P										
CRFINPW			00044P 274	1194	01440P	1199	01445P								
CRINPW			01342P 1121	2875	04455P										
CRINPW01			01343P 1123	1154	01376P										
CRINPW02			01353P 1133	1126	01345P	1128	01347P								
CRINPW03			01377P 1156	1136	01356P										
CRIO			04453P 2873	2815	04401P										
CRIWAITA			01424P 1180	1159	01402P										
CRK1			01415P 1172	1146	01370P										
CRK2			01432P 1187	1177	01421P	1179	01423P								
CRMASK			00016P 237	1667	02304P	1714	02353P	2259	03260P	2263	03264P	2273	03275P	2398	03445P
				2495	03605P	2498+74	03716P								
CRMASKX			00017P 238	1729	02370P										
CRWAIT		X	64	1181	01425P										
DEBUG			00001 5	1148	01372P	3010	04637P	3029	04660P	3261	05115P				
DECODE		X	65	2705+1	04234P	2706	04241P								
DINT			07773 171	806	00726P	898	01035P	1600	02211P	2597	04056P	2640	04126P	2795	04361P
				3276	05132P										
OLENGTH		X	66	2703	04231P										
DRIVFAIL			00014 3144	2040	03007P										
EINT			07774 172	801	00721P	893	01030P	1596	02205P	2569	04022P	2701	04227P		
ECDB		X	185	257	00023P	409	00234P	510	00347P	897	01034P	967	01135P	1125	01344P
EPP			00006 90	436	00237P	502	00337P	503	00340P	558	00426P	573	00440P	575	00442P
				675	00571P	708	00630P	763	00675P	985	01152P	986	01153P	1103	01330P
				1105	01332P	1157	01377P	1240	01477P	1259	01521P	1275	01540P	1276	01541P
				1311	01566P	1334	01615P	1359	01642P	1400	01707P	1410	01721P	1419	01731P
				1420	01732P	1450	01770P	1451	01771P	1474	02020P	1477	02023P	1521	02075P
				1536	02112P	1538	02114P	1557	02136P	1560	02141P	1566	02147P	3020	04647P
EXAPF			04114P 2629	2617	04102P										
EXCABORT			04674P 3057	2258	03257P	2591	04050P	2601	04061P	2614+1	04076P	2614+3	04100P	2618	04103P
				2620	04105P	2623	04110P	2625	04112P	2922	04525P	2943	04550P	2953	04561P
				3055	04672P										
EXEC		E	04032P 2577	11	00000P										
EXECAIS			04154P 2664	2619	04104P										
EXECAISU			04163P 2664+7	2664+3	04157P										
EXECAIS1			04167P 2669+1	2664+1	04155P										
EXECCRA			04535P 2931	2645	04132P										
EXECINS			04612P 2980	2626	04113P										
EXECINS1			04616P 2985	2981	04613P										
EXECINS2			04622P 2990	2986	04617P										
EXECINST		E	05151P 3291	3292	05152P	12	00000P	2585	04042P	2588	04045P	2598	04057P	2604	04064P
				2609	04071P	2691	04215P	2692	04216P	2708	04243P	2713	04247P	2737	04275P
				2746	04304P	2760	04321P	2765	04325P	2769	04331P	2771	04333P	2772	04334P
				2773	04335P	2784	04347P	2803	04371P	2950	04556P	3117	04752P		
EXECNHLT			04060P 2600	2589	04046P										
EXECSCIM			04624P 2993	2613	04074P										
EXECSSIM			04631P 2999	2612	04073P										
EXIT			05107P 3255	681	00604P	1129	01350P	1167	01412P	1930	02652P	1933	02655P	2675	04174P
				2700	04226P	2802	04370P	2807	04375P	3247	05101P	3278	05134P		
EXSSHARE			04634P 3002	2991	04623P	2997	04630P								
F1		X	67	1776	02444P	1790	02462P	2301	03311P	2308	03320P	2321	03335P	2324	03340P
				2350	03371P	3232	05066P	3239	05073P						
F2		X	68	2317	03331P	2320	03334P								
F3		X	69	3234	05070P	3241	05075P								
F4		X	70	297	00072P	337	00140P	353	00155P	590	00451P	624	00512P	638	00526P
				646	00535P	649	00540P	693	00614P	697	00620P	1017	01210P	1021	01214P
				1305	01560P	1350	01632P	1578	02163P	1586	02173P	1608	02221P	1739	02402P
				1799	02473P	1891	02611P	1892	02612P	1893	02613P	2498+18	03630P	2498+42	03657P
F5		X	71	314	00112P	329	00130P	331	00132P	333	00134P	347	00147P	350	00152P
				450	00253P	555	00423P	602	00465P	615	00501P	618	00504P	620	00506P
				631	00517P	635	00523P	799	00717P	854	01004P	869	01021P	891	01026P
				939	01103P	1820	02517P	1855	02552P	1863	02562P	1865	02564P	1953	02700P
				1957	02704P	1959	02706P	2242	03241P	2334	03352P	2336	03354P	2338	03356P
				2361	03404P	2402	03451P	2423	03476P	2460	03543P	2462	03545P	2466	03551P
				2498+20	03632P										
F6		X	72	275	00045P	283	00055P	301	00075P	325	00124P	342	00143P	367	00170P

				372	00175P	380	00203P	383	00206P	459	00264P	506	00343P	598	00461P
				613	00477P	629	00515P	833	00760P	839	00766P	844	00773P	848	00777P
				920	01063P	925	01070P	932	01075P	1405	01714P	1465	02007P	1659	02275P
				1665	02302P	1720	02361P	1783	02453P	1808	02503P	1987	02737P	2058	03027P
				2084	03054P	2299	03307P	2329	03345P	2331	03347P	2356	03377P	2358	03401P
				2363	03406P	2498+44	03661P								
F7	X		73	2296	03304P	2384	03430P	2418	03471P	2427	03502P	2477	03563P		
FCHECKN		04432P	2854	2869	04450P	2871	04452P	2909	04512P						
FCNTRL1		00636P	715	711	00633P	712	00634P	730	00652P	1212	01455P				
FCNTRL2		00650P	725	711	00633P										
FCNTRL3		00650P	727	710	00632P										
FCONTROL		00626P	705	2837	04413P										
FDZAP	X		74	528	00371P	1075	01276P	1107	01334P	1453	01773P	1576	02161P		
FILE	X		75	2154	03143P										
FILEIO		04413P	2837	2809	04376P										
FINEOD		00234P	409	273	00043P										
FINISH		00566P	672	783	00715P	1315	01572P								
FINPW		00020P	253	2839	04415P										
FINPW01		00065P	292	364	00166P										
FINPW02Z		00107P	311	1364	01647P	1372	01656P								
FINPW03		00141P	339	322	00122P										
FINPW03L		00145P	344	352	00154P										
FINPW04		00156P	355	335	00136P	622	00510P	1961	02710P	2340	03360P	2464	03547P	2498+39	03654P
FINPW05		00162P	360	310	00106P										
FINPW06		00170P	367	282	00054P										
FINPW06X		00167P	366	305	00101P										
FINPW07		00200P	376	384	00207P										
FINPW08		00210P	386	302	00076P										
FINPW09		00215P	392	272	00042P	1196	01442P								
FINPW10		00226P	401	379	00202P	390	00214P								
FINPW12		00231P	405	388	00212P										
FINPW13		00232P	406	374	00177P										
FINPW9X		00217P	394	411	00236P										
FIX	X		76	265	00033P	362	00164P	382	00205P	531	00372P	813	00735P	822	00745P
				847	00776P	905	01044P	933	01076P	1002	01171P	1037	01231P	1139	01361P
				1318	01575P	1327	01606P	1339	01621P	1377	01662P	1491	02040P	1513	02065P
				1564	02145P	1585	02172P	1607	02220P						
FLAGS	X		77	945	01111P	946	01112P	1752	02417P	1753	02420P	2013	02750P	2014	02751P
				2498+69	03712P	2498+70	03713P								
FLOAT	X		78	670	00564P	857	01007P	937	01101P	1448	01766P	3163	04771P		
FMS	X		187	392	00215P	851	01001P	952	01117P	1645	02261P	1649	02265P	2261	03262P
				2377	03422P										
FMEOD8		00012P	233	1061	01261P										
FOLLOW		04324P	2764	2756	04315P										
FORMFLAG	X		80	553	00421P										
FOUND		04361P	2795	2780	04343P										
FOUTW		00237P	435	2841	04417P	2860	04440P								
FOUTW02		00444P	584	569	00436P										
FOUTW04		00450P	589	552+2	00420P	562	00432P	582	00443P	587	00446P	657	00550P		
FOUTW05		00463P	600	1466	02010P										
FOUTW06		00513P	626	610	00475P										
FOUTW08		00516P	630	637	00525P										
FOUTW10		00527P	640	595	00456P										
FOUTW12		00551P	659	599	00462P										
FOUTW14		00552P	660	570	00437P										
FOUTW16		00561P	667	702	00625P										
FOUTW18		00562P	668	1063	01263P										
FOUTW20		00610P	689	663	00555P										
FOUTWK1		00372P	530	515	00354P										
FOUTWK2		00374P	533	513	00352P										
FOUTWK3		00400P	538	527	00370P										
FOUTWK4		00402P	540	521	00362P										
FOUTWX2		00440P	572	557	00425P										
FOUTWZ		00266P	462	446	00251P										
FPSV		00014P	235	775	00707P	1280	01545P	1541	02117P						
FPV		04763P	3155	440	00243P	979	01144P	1080	01301P	1385	01670P	1546	02123P		
FPVIOL		00007	3139	2038	03005P	3156	04764P								
FREE8LK	X		81	1592	02201P	1595	02204P	3036	04665P						
FREEFILE	X		82	523	00364P	537	00377P	1005	01174P	1040	01234P	1070	01271P	1090	01313P
				1633	02250P										
FREEMEM	X		83	3188	05020P										
FRZ01		02522P	1823	1883	02603P										
FRZ02		02524P	1832	1868	02567P										
FRZ03		02570P	1870	1844	02537P	1848	02543P								
FRZ04		02604P	1885	1809	02504P	1825	02523P								
FWDSP01		01026P	891	971	01140P										
FWDSP02		01030P	893	938	01102P										
FWDSP03		01064P	921	934	01077P										
FWDSP04		01100P	936	919	01062P										

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FWDSP05          01117P      952       912 01053P
FWDSP08          01102P      938       931 01074P
FWDSP09          01103P      939       866 01020P
FWDSP10          01135P      967       911 01052P    1202 01450P
FWDSPACE         01025P      890       723 00646P
GETCORE      X                84       516 00355P     648 00537P     696 00617P    1020 01213P    1065 01264P    1423 01735P
                                         1432 01746P    1438 01754P    1505 02056P    1525 02101P
GETMEM       X                85  2498+16 03626P    3065 04704P
HOUR         X                86      2051 03021P
HTCR             00004       208      2814 04401P    3026 04655P
HTFILE           00001       205      2808 04376P
HTLP             00002       206      2810 04377P
HTMASK           00017       219       560 00430P   676+2 00574P     677 00600P    2800 04366P    3025 04654P
HTMAX            00016       218      2834 04413P
HTMSF            00014       216      2830 04411P    2168 03157P
HTMT             00005       209      2816 04402P    2064 03035P
HTNULL           00010       212      2822 04405P    2889 04471P
HTPLOT           00007       211      2820 04404P
HTPTP            00015       217      2832 04412P
HTPUN            00003       207      2812 04400P
HTRAF            00012       214      2826 04407P
HTTASK           00013       215      2828 04410P     561 00431P
HTTTY            00006       210      2818 04403P    2264 03265P    2274 03276P    2497 03607P  2498+76 03720P
HTTV             00011       213      2824 04406P    1650 02266P    1733 02374P
IO           X                87      2685 04207P
I1           X                88      2592 04051P    2702 04230P    2731 04270P    3231 05065P    3240 05074P
*I2          X                89
I3           X                90       683 00606P    3249 05103P
IOLEPC   E       00000P      218        13 00000P     229 00010P
ILLINS           00005      3137      3057 04674P
IMPURE           00000       173      3005 04636P    3017 04644P    3073 04714P    3184 05012P    3194 05025P    3205 05036P
                                         3216 05051P    3227 05063P    3230 05064P    3238 05072P    3246 05100P    3255 05107P
                                         3283 05137P    3284 05141P    3285 05143P    3286 05145P    3287 05146P    3288 05147P
                                         3289 05150P    3289 05150P    3291 05151P
IMPURE01 E       04636P     3005        14 00000P
INBOUND      X                94      2928 04533P
INDCHECK         04307P     2750      2694 04220P
INSFIL           00006      3138       484 00315P     489 00322P
INTPDL       X                95      2571 04024P
IO               04201P     2679      2603 04063P
IOBOUND      X                91      1794 02466P    1797 02471P  2498+66 03707P  2498+67 03710P
IOBUSY   E       05147P     3288        15 00000P
IOCLEAR      X                92      1749 02414P
IODECODE         04375P     2807      2808 04376P    2810 04377P    2812 04400P    2814 04401P    2816 04402P    2818 04403P
                                         2820 04404P    2822 04405P    2824 04406P    2826 04407P    2828 04410P    2830 04411P
                                         2832 04412P    2834 04413P    2801 04367P
IOLIST           04246P     2712      2707 04242P
IOLIST01         04255P     2719      2716 04252P
IOLIST02         04256P     2720      2727 04265P
IOLIST03         04260P     2722      2725 04263P
IOSET        X                93      1182 01426P    2184 03175P
IOSMASH          04766P     3159       256 00022P     444 00247P     804 00724P     896 01033P     983 01150P    1308 01563P
                                         1387 01672P
IOTA             04216P     2692      2682 04204P
IOWAIT           01426P     1182      1695 02335P    2078 03046P
IOZIP            04272P     2734      2697 04223P
IRADAR           04556P     2950      2608 04070P
IRCHEC02         03223P     2227      2239 03237P
IRCHEC06         03240P     2241      2228 03224P
IRCHECK          03211P     2215      1679 02317P    1788 02460P
IRCHECK3         03212P     2217       289 00062P    1290 01555P
IRERROR  E       04773P     3165        16 00000P
IRERRORA         04771P     3163       290 00063P
IRERROR3         04772P     3164      1291 01556P    1680 02320P    1789 02461P
IS           X                96      2647 04134P    2982 04614P    2985 04616P    2990 04622P    2996 04627P    3001 04633P
                                         3002 04634P    3102 04733P    3233 05067P    3242 05076P    3275 05131P
JAA              04176P  2676+2  2614+2 04077P
JMP              00000       177       335 00136P     360 00162P     366 00167P     388 00212P     390 00214P     622 00510P
                                         640 00527P     662 00554P     663 00555P    1368 01653P    1374 01657P    1470 02014P
                                        1482 02027P    1562 02143P    1868 02567P    1961 02710P    1963 02712P    2340 03360P
                                        2464 03547P  2498+39 03654P  2498+55 03674P
JUMP             04565P     2957      2624 04111P  2664+6 04162P
KWPFB            05136P     3282       468 00273P    1248 01506P    1399 01706P    1414 01725P
LEVEL            00036       204       294 00067P     549 00413P     654 00545P    1347 01627P    1857 02554P    1947 02673P
                                     2498+22 03634P    2570 04023P
LIBMOVE      X                97      3124 04761P
LJA          X                98      2660 04151P  2676+4 04177P    2965 04576P    3090 04721P
*LOGOFFR         00022      3150
LOGREQ   E       00000      3133        17 00000P
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    LP              00001       72      522 00363P    525 00366P    765 00676P    771 00704P    859 01011P   1068 01267P
                                          1072 01273P  1089 01312P  1100 01325P  1316 01573P  1427 01741P  1489 02036P
                                          1561 02142P  1605 02216P  1632 02247P  1635 02252P  3035 04664P  3038 04667P
    LPB             X           183      514 00353P   777 00710P   805 00725P   863 01015P  1035 01227P  1653 02271P
                                          1994 02743P
    LPEQDB          00013P      234     1109 01336P
    LUNLIST         X            99     2719 04255P  2744 04303P
    LUNUD           00010      3140     2792 04357P
    MAPM01          05037P     3206     3219 05054P
    MAPM02          05052P     3217     3212 05045P
    MAPMOVE         05036P     3205     3112 04745P  3183 05011P  3225 05062P
    MASKXX          04202P     2680     2776 04340P
    MAXDEST         X            99+1  1157+1 01400P
    MEMPARTY_E      00020      3148       18 00000P  2036 03003P
    MPVIOL          00017      3147     3165 04773P
    MSFBUSY         05143P     3285     2133 03122P  2163 03153P  2171 03162P  2179 03170P  2194 03204P
    MSFCNTRL        01452P     1207     2911 04513P
    MSFDON02        03147P     2159     2187 03200P
    MSFDON04        03154P     2164     2186 03177P
    MSFDON10        03164P     2174     2157 03145P
    MSFDONE         03146P     2158     2153 03142P
    MSFIO           04513P     2911     2831 04411P
    MSFPF           00060       207     3285 05144P
    MSFR02          03124P     2137     2132 03121P
    MSFR04          03125P     2139     2199 03210P
    MSFREAD         X           100     2138 03124P
    MSFREADX        03111P     2123     2913 04515P  2915 04517P
    MSFSEEK         03077P     2108     2912 04514P
    MSFTEMP         05151P     3292     2149 03136P  2152 03141P  2160 03150P  2170 03161P  2176 03165P
    MSFW02          03204P     2194     2190 03201P
    MSFW04          03207P     2198     2195 03205P
    MSFWRITE        X           101     2198 03207P
    MSFWRITX        03201P     2189     2131 03120P
    MTAQLOAD        03024P     2054     1916 02637P
    MTARLOAD        03031P     2060     1979 02730P  2032 03001P
    MTBKSP          02772P   2026+13    2102 03074P
    MTBUFFER        05152P     3293     1945 02671P  1955 02702P  1967 02716P
    MTCNTLMX        00012      2105     2081 03050P
    MTCNTRL         03043P     2074     2879 04460P
    MTCNTRL1        03065P     2094     2105 03077P  2092 03064P
    MTCNTRLX        03047P     2079     2076 03044P
    MTDELAY         02777P   2029+1   2026+3 02765P  2026+7 02767P  2026+11 02771P  2026+15 02773P
    MTFINISH        02760P     2022     2011 02746P
    MTFRINPW        02630P     1909     1896 02615P
*   MTFUN           02745P     2010
    MTFWSP          02770P   2026+9     2103 03075P
    MTFX            02753P     2016     2033 03002P
    MTINPW          02442P     1773     2881 04462P
    MTINPW01        02444P     1775     2134 03123P
    MTIO            04460P     2879     2817 04402P
    MTLIMIT         X           102     1786 02456P  1985 02735P
    MTMINREC        00004       205     3293 05152P  1923 02644P  1944 02670P  1974 02723P  1975 02724P
    MTOUTW          02643P     1922     2883 04464P
    MTOUTW01        02645P     1924     2192 03203P
    MTOUTW02        02677P     1952     1962 02711P
    MTOUTW03        02711P     1962     1950 02676P
    MTOUTW07        02722P     1972     1990 02741P
    MTOUTW10        02733P     1983     1922 02643P
    MTOUTW11        02735P     1985     2196 03206P
    MTOUTW12        02741P     1990     1984 02734P
    MTPFAREA        00100       206     1901 02622P  3284 05142P
    MTREWIND        02743P     1994     2098 03070P  2099 03071P  2104 03076P
    MTS3PFM         02766P   2026+5     2101 03073P
    MTSFPFM         02764P   2026+1     2100 03072P
    MTSTATUS        02774P     2027     2095 03065P  2096 03066P
    MTWAIT          X           103     2077 03045P
    MTWFM           02776P     2029     2097 03067P
    MTX             02616P     1897     1991 02742P
    MTXI            05145P     3286     1917 02640P  2016 02753P  2053 03023P
    MTXX            02624P     1903     1970 02721P
    MTZ             02615P     1896     1773 02442P
    MTZAP           03045P     2077     1778 02446P  1926 02646P  2110 03100P
    NBIT17          X           104     2764 04324P
*   NBIT18          X           105
    NBIT1920        X           106     1104 01331P
    NBIT20          X           107      709 00631P
    NBIT21          X           108      186 00000P  1559 02140P
    NBIT22          X           109      184 00000P
    NBIT23          X           110     1195 01441P  3199 05031P
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   NEODB      X              186        808 00730P
   NFMBRP        00011P      231        232 00012P       260 00026P       809 00731P       901 01040P
   NIO           04465P     2885       2823 04405P
   NLPB       X              184        259 00025P       900 01037P
   NLPBFMED      01451P     1204       1133 01353P
   NONEXIST      04355P     2790       2786 04351P
   NPU           00040       174       1768 02437P      1834 02525P      2229 03225P      2629 04114P      3220 05055P
   NQWAIT     X              111       1748 02413P
   OPABORT    E  00021      3149         19 00000P
   OPTERM     E  00023      3151         20 00000P
   OSRSAVE       05150P     3290       2579 04034P      2586 04043P      2774 04336P
   OUTBOUND   X            111+1    2498+64 03705P
   OVERCH01      00321P    487+1      472+3 00300P
   OVERCH02      00324P      492        487 00320P
   OVERCH03      00330P    492+5      479+1 00311P
   OVERCH06      00336P      500        470 00275P
   OVERCHEC      00276P      472        993 01162P      1416 01727P
   PAGETABL   X              112       1764 02433P      1765 02434P      1873 02572P      1874 02573P      3214 05047P
   PC         X              113       1736 02377P      1738 02401P      2396 03443P      2576 04031P      2583 04040P      2652 04141P
                                       2736 04274P      2757 04316P      2759 04320P      2934 04540P      2935 04541P      2957 04565P
                                       2958 04566P      3092 04723P      3273 05127P
*  PCHARS     X              114
   PCINCR        04540P     2934       2988 04621P
   PDP8CTLX   X            114+1    2498+63 03704P
   PDP8OQ     X            114+2    2498+58 03677P   2498+59 03700P
   PFLOC         00001       210        211 00000P
   PFR           00000       175       2754 04313P
   PFW           00000       176       1877 02576P      2631 04116P      3222 05057P
   PRCNTRL       00654P      737       2849 04425P
   PRCNTRL1      00661P      744        740 00656P       741 00657P
   PRCNTRL2      00665P      749        740 00656P
   PRIO          04425P     2849       2811 04377P      2821 04404P
   PS            00140       209       2631 04116P
   PSA           00000       202        275 00045P       280 00052P       281 00053P       283 00055P       292 00065P       297 00072P
                                        299 00073P       301 00075P       304 00100P       314 00112P       325 00124P       326 00125P
                                        329 00130P       331 00132P       333 00134P       337 00140P       342 00143P       343 00144P
                                        347 00147P       350 00152P       353 00155P       367 00170P       368 00171P       372 00175P
                                        380 00203P       383 00206P       396 00221P       397 00222P       449 00252P       450 00253P
                                        457 00262P       459 00264P       476 00305P       477 00306P       478 00307P       481 00312P
                                        482 00313P       485 00316P       486 00317P     492+4 00327P       493 00330P       494 00331P
                                        496 00333P       497 00334P       504 00341P       506 00343P       507 00344P     546+1 00411P
                                        550 00414P       555 00423P       590 00451P       591 00452P       598 00461P       602 00465P
                                        613 00477P       615 00501P       618 00504P       620 00506P       624 00512P       629 00515P
                                        631 00517P       635 00523P       638 00526P       646 00535P       649 00540P       655 00546P
                                        659 00551P       672 00566P       673 00567P       680 00603P       682 00605P       683 00606P
                                        693 00614P       697 00620P       706 00626P       738 00654P       799 00717P       833 00760P
                                        839 00766P       844 00773P       848 00777P       854 01004P       869 01021P       891 01026P
                                        920 01063P       925 01070P       932 01075P       939 01103P       941 01105P       947 01113P
                                        949 01115P      1017 01210P      1021 01214P      1047 01243P      1050 01246P      1054 01252P
                                       1084 01305P      1092 01315P      1093 01316P      1127 01346P      1160 01403P      1183 01427P
                                       1189 01433P      1190 01434P      1197 01443P      1209 01452P      1218 01457P      1234 01472P
                                       1286 01551P      1287 01552P      1305 01560P      1322 01601P      1328 01607P      1348 01630P
                                       1350 01632P      1352 01633P      1354 01635P      1405 01714P      1456 01776P      1465 02007P
                                       1479 02025P      1488 02035P      1522 02076P      1527 02103P      1569 02152P      1571 02154P
                                       1573 02156P      1578 02163P      1586 02173P      1604 02215P      1608 02221P      1613 02225P
                                       1628 02243P      1629 02244P      1630 02245P      1640 02254P      1646 02262P      1647 02263P
                                       1648 02264P      1658 02274P      1659 02275P      1661 02277P      1665 02302P      1666 02303P
                                       1668 02305P      1670 02307P      1671 02310P      1674 02313P      1681 02321P      1685 02325P
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                                       1721 02362P      1728 02367P      1730 02371P      1731 02372P      1735 02376P      1736 02377P
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                                       1938 02662P      1948 02674P      1953 02700P      1957 02704P      1959 02706P      1964 02713P
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                                       2234 03232P      2241 03240P      2242 03241P      2252 03251P      2260 03261P      2262 03263P
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                                       2298 03306P      2299 03307P      2301 03311P      2308 03320P      2314 03326P      2316 03330P
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                                       2331 03347P      2334 03352P      2336 03354P      2338 03356P      2350 03371P      2356 03377P
                                       2358 03401P      2361 03404P      2363 03406P      2371 03415P      2372 03416P      2378 03423P
                                       2384 03430P      2386 03432P      2387 03433P    2391+1 03435P      2396 03443P      2399 03446P
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                                              2498+20 03632P 2498+23 03635P 2498+42 03657P 2498+44 03661P 2498+46 03663P 2498+66 03707P
                                              2498+67 03710P 2498+75 03717P    2577 04032P    2583 04040P    2592 04051P    2596 04055P
                                                2635 04121P    2638 04124P    2644 04131P    2647 04134P    2650 04137P    2652 04141P
                                                2660 04151P  2664+2 04156P  2664+5 04161P    2666 04163P    2668 04165P    2670 04167P
                                                2674 04173P  2676+4 04177P    2683 04205P    2702 04230P  2705+4 04237P    2715 04251P
                                                2719 04255P    2730 04267P    2731 04270P    2736 04274P    2741 04300P    2743 04302P
                                                2744 04303P    2757 04316P    2759 04320P    2787 04352P    2806 04374P    2855 04433P
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                                                2958 04566P    2965 04576P    2969 04602P    2982 04614P    2985 04616P    2990 04622P
                                                2996 04627P    3001 04633P    3002 04634P    3027 04656P    3058 04675P    3062 04701P
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                                                3107 04740P    3109 04742P    3110 04743P    3111 04744P    3113 04746P    3116 04751P
                                                3119 04754P    3121 04756P    3180 05006P    3181 05007P    3182 05010P    3185 05013P
                                                3198 05030P    3200 05032P    3206 05037P    3208 05041P    3209 05042P    3219 05054P
                                                3224 05061P    3231 05065P    3232 05066P    3233 05067P    3234 05070P    3239 05073P
                                                3240 05074P    3241 05075P    3242 05076P    3248 05102P    3249 05103P    3250 05104P
                                                3251 05105P    3256 05110P    3266 05120P    3271 05125P    3272 05126P    3273 05127P
                                                3275 05131P
PSABLK          X                 115 2498+7 03615P    2941 04546P
PTPIO                04505P    2904    2833 04412P
PUNCNTRL             00654P     736    2862 04441P    2904 04505P
PUNIO                04441P    2862    2813 04400P    2829 04410P
PURE01          E    00000P     217      21 00000P
Q               X                 116     673 00567P    1640 02254P    1658 02274P    1666 02303P    1782 02452P    2059 03030P
                                        2252 03251P  2391+1 03435P
QCONTROL        E    04675P    3058      22 00000P     490 00323P    1131 01352P    1169 01414P    2793 04360P    3157 04765P
                                        3161 04770P    3166 04774P    3170 04777P    3174 05002P    3178 05005P
QIO                  02466P    1794    1689 02331P    1936 02660P    1988 02740P    2087 03057P
QIOWAIT              02607P    1889    1801 02475P
QIOZ                 02500P    1805    1796 02470P
QTABLE          X                 117    1166 01411P
QWAIT           X                 118    1795 02467P
RAFAE                01475P    1237    1256 01516P    1257 01517P    1263 01525P    2113 03103P    2114 03104P    2116 03106P
RAFCNTL1             01464P    1224    1220 01461P    1221 01462P
RAFCNTL2             01472P    1231    1220 01461P
RAFCNTRL             01457P    1217    2898 04500P
RAFE01               02163P    1578    1611 02224P
RAFE02               02202P    1593    1603 02214P
RAFE03               02225P    1613    1601 02212P
RAFE04               02226P    1614    1582 02167P
RAFIO                04500P    2898    2827 04407P
RAFR02               01633P    1352    1292 01557P
RAFR04               01650P    1365    1356 01637P
RAFR06               01654P    1370    1358 01641P
RAFR07               01660P    1375    1484 02031P
RAFR08               01665P    1380    1529 02105P
RAFREAD              01547P    1284    2900 04502P
RAFRLS               02106P    1532    1228 01467P
RAFRWND              01504P    1245    1229 01470P
RAFSEEK              01472P    1234    2899 04501P
RAFSFPFM             01477P    1240    1230 01471P
RAFSK01              01506P    1248    1236 01474P
RAFSK02              01532P    1269    1258 01520P
RAFSK03              01534P    1271    1267 01531P
RAFSK04              01544P    1279    1265 01527P    1272 01535P    2118 03110P
RAFSKX               01510P    1250    1244 01503P
RAFW02               01774P    1454    1422 01734P
RAFW08               02027P    1482    1462 02004P
RAFW14               02060P    1508    1494 02043P
RAFW16               02066P    1514    1506 02057P
RAFWFM               02122P    1545    1227 01466P
RAFWRITE             01667P    1384    2902 04504P
RAFWZIP              01730P    1417    1398 01705P    1406 01715P    1407 01716P
RAFX                 01560P    1305    1455 01775P    1551 02130P
RAFX01               01617P    1337    1313 01570P
RAFX02               01621P    1339    1335 01616P
RAFX03               01623P    1342    1338 01620P
RAFX04               01624P    1343    1340 01622P
RAFX06               01627P    1346    1381 01666P
READEOD              00011     3141    3177 05004P
READFX               00564P     670     399 00224P     407 00233P     958 01125P     969 01137P    1368 01653P    1480 02026P
READRTN         E    00565P     671      23 00000P     403 00230P     870 01022P     940 01104P     950 01116P     965 01134P
                                        1618 02231P    1621 02234P    1636 02253P    2025 02763P
RELEASE              01277P    1078     718 00641P     748 00664P
RESERVE         X                 119     267 00035P     533 00374P     815 00737P     907 01046P     996 01165P    1030 01224P
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					1141	01363P	1342	01623P											
RETURN	X			120	2409	03460P	2662	04153P	2676	04175P	2761	04322P	2936	04542P	2978	04611P			
					3125	04762P													
REWIND		00676P		765	719	00642P	761	00673P											
REWIND01		00706P		774	768	00701P													
REWRITE	X			121	770	00703P	1087	01310P	1278	01543P	1540	02116P							
REWRITEX	X			122	647	00536P	695	00616P	821	00744P	841	00770P	922	01065P	962	01131P			
					1019	01212P	1326	01605P	1332	01613P	1376	01661P	1431	01745P	1437	01753P			
					1490	02037P	1504	02055P	1512	02064P	1524	02100P	1563	02144P	1584	02171P			
					1606	02217P	1615	02226P	3019	04646P									
REWRITEY		04644P		3017	361	00163P	381	00204P	402	00227P	1153	01375P							
REWY01		04637P		3009	3022	04651P	3039	04670P											
RIS		00550		178	330	00131P	348	00150P	556	00424P	616	00502P	632	00520P	1866	02565P			
					1954	02701P	2335	03353P	2362	03405P	2424	03477P	2467	03552P	2498+32	03645P			
					2584	04041P	2770	04332P											
RMCHAIN	X			123	2758	04317P													
RMDONE	X			124	1185	01431P	1719	02360P	2031	03000P									
RMTERM	X			125	2929	04534P	2948	04555P											
ROS		00554		179	328	00127P	346	00146P	554	00422P	614	00500P	630	00516P	1862	02561P			
					1952	02677P	2333	03351P	2360	03403P	2422	03475P	2465	03550P	2498+30	03643P			
					2582	04037P	2768	04330P											
RPSAPTR	X			126	481	00312P	497	00334P	1054	01252P	1093	01316P	1183	01427P	1573	02156P			
					1604	02215P	1613	02225P	1630	02245P	1854	02551P	1882	02602P	2022	02760P			
					2233	03231P	2294	03302P	2314	03326P	2318	03332P	2410	03461P	2455	03536P			
					2491	03601P	2498+17	03627P	2498+41	03656P	2498+65	03706P	2577	04032P	2730	04267P			
					3066	04705P	3110	04743P	3181	05007P	3198	05030P	3224	05061P					
RRCP		01340P		1111	754	00667P													
RZ	E	05100P		3246	24	00000P	488	00321P	1184	01430P	1713	02352P	2030	02777P	2251	03250P			
					2498+73	03715P	3056	04673P	3096	04727P	3155	04763P	3159	04766P	3168	04775P			
					3172	05000P	3176	05003P	3252	05106P									
RZWAIT		01427P		1183	1894	02614P	1918	02641P	2155	03144P									
SAVE		05064P		3230	262	00030P	445	00250P	800	00720P	892	01027P	977	01142P	1078	01277P			
					1122	01342P	1284	01547P	1391	01676P	1547	02124P	1807	02502P	2498+14	03624P			
					3235	05071P													
SBPFM		00717P		874	721	00644P													
SCREAM	X			127	219	00000P													
SDCL		00021		2627	2606	04066P													
SELBLK	X			128	524	00365P	643	00532P	691	00612P	1015	01206P	1071	01272P	1426	01740P			
					1429	01743P	1435	01751P	1485	02032P	1495	02044P							
SELECT	X			129	299	00073P	591	00452P	1160	01403P	1352	01633P	1456	01776P	1897	02616P			
					1964	02713P	2023	02761P	2060	03031P	2088	03060P	2140	03125P	2165	03154P			
					2806	04374P													
SERCH1		04341P		2778	2783	04346P													
SERCH2		04345P		2782	2748	04306P													
SETDESRD		00670P		757	724	00647P													
SETN	X			130	1742	02405P	1937	02661P	2796	04362P									
SETSTAT		02376P		1735	2172	03163P													
SETUP	X			131	2739	04277P	2762	04323P											
SETUPF5		00252P		448	1393	01700P	1700	02337P	1932	02654P	2498+12	03622P							
SFBLKLIM	X			132	478	00307P													
SFBLKMAX	X			133	494	00331P	496	00333P											
SFBLKS	X			134	477	00306P	493	00330P	1050	01246P	1571	02154P	1629	02244P					
SFPFM		01026P		971	720	00643P													
SKIP		04537P		2933	358	00161P	684	00607P	2633	04120P	2642	04130P	2732	04271P	2919	04522P			
					2947	04554P	3003	04635P											
SSCP		01337P		1110	1238	01476P													
STA		04536P		2932	2275	03277P	2498+77	03721P	2669	04166P	2676+5	04200P	2983	04615P					
STATUS		00570P		674	715	00636P	745	00661P	766	00677P	1225	01464P	1549	02126P					
SUBDCODE		04073P		2612	2627	04114P	2607	04067P	2610	04072P									
SVB	X			191	1081	01302P	1567	02150P											
SWBIT	X			135	944	01110P	1751	02416P	2012	02747P	2498+68	03711P							
SYSCM	X			136	486	00317P	1127	01346P	1197	01443P	1704	02343P	2644	04131P	2664+2	04156P			
					2705+4	04237P	2715	04251P	2923	04526P	3058	04675P	3068	04707P	3069	04710P			
					3185	05013P	3200	05032P											
SYSCODE	X			137	2920	04523P													
T1	X			138	947	01113P	949	01115P	2670	04167P	2674	04173P	3272	05126P					
T2	X			139	682	00605P	2493	03603P	3248	05102P									
T3	X			140	1322	01601P	1328	01607P	1815	02512P	2494	03604P	2498	03610P	3119	04754P			
T4	X			141	3256	05110P													
T5	X			142	449	00252P	1234	01472P	1488	02035P	1522	02076P	1721	02362P	1810	02505P			
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					3250	05104P													
T6	X			143	280	00052P	281	00053P	304	00100P	326	00125P	343	00144P	368	00171P			
					396	00221P	397	00222P	457	00262P	504	00341P	507	00344P	546+1	00411P			
					659	00551P	672	00566P	706	00626P	738	00654P	1189	01433P	1190	01434P			
					1209	01452P	1218	01457P	1286	01551P	1287	01552P	1354	01635P	1479	02025P			
					1527	02103P	1906	02626P	1928	02650P	1938	02662P	2080	03047P	2090	03062P			
					2111	03101P	2125	03112P	2150	03137P	2298	03306P	2411	03462P	2420	03473P			
					2456	03537P	2459	03542P	2787	04352P	2855	04433P	2867	04446P					

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    TEMP2            05150P      3289      3290 05151P       287 00060P       291 00064P      1744 02407P      1747 02412P
    TERMINAL       X              145  2498+3  03611P  2498+46 03663P      2938 04543P
    TFBLKS         X              146      1092 01315P      3027 04656P
    TFL              00007         97       442 00245P   472+1  00276P   472+4  00301P       519 00360P       539 00401P       642 00531P
                                            690 00611P       779 00712P       981 01146P      1008 01177P      1051 01247P      1069 01270P
                                           1088 01311P      1091 01314P      1096 01321P      1135 01355P      1241 01500P      1251 01511P
                                           1314 01571P      1319 01576P      1421 01733P      1447 01765P      1492 02041P      1497 02046P
                                           1508 02060P      1514 02066P      1517 02071P      1532 02106P      1548 02125P      1572 02155P
                                           1574 02157P      1577 02162P      1619 02232P      1624 02237P      1912 02633P      1978 02727P
                                           2019 02756P      2115 03105P      3028 04657P      3030 04660P
    TFWSP          X              147      1915 02636P  2026+10 02770P
    THREE            05063P      3227      3218 05053P
    TIMECUT  E       00003      3135        25 00000P
    TPINIT         X              148      1919 02642P      2020 02757P
    TRAPPER  E       04022P      2569        26 00000P
    TREAD          X              149      1913 02634P
    TREWIND        X              150      1995 02744P
    TSBPFM         X              151  2026+6  02766P
    TSFPFM         X              152  2026+2  02764P
    TSTATUS        X              153      2027 02774P
    TTCNT          X              154      2635 04121P
    TTYBIN           03553P      2468      2425 03500P
    TTYCLEAR         03271P      2269      2256 03255P
    TTYCNTRL         03250P      2251      2843 04420P
    TTYINP01         03311P      2301      2328 03344P      2342 03362P
    TTYINP02         03342P      2326      2322 03336P
    TTYINP03         03361P      2341      2332 03350P
    TTYINP04         03363P      2344      2311 03323P
    TTYINP05         03373P      2352      2355 03376P
    TTYINP06         03406P      2363      2351 03372P      2359 03402P      2379 03424P
    TTYINP07         03410P      2366      2347 03366P
    TTYINP08         03414P      2370      2325 03341P
    TTYINP09         03420P      2375      2345 03364P
    TTYINP10         03425P      2381      2376 03421P
    TTYINP1A         03312P      2302      2367 03411P      2373 03417P      2382 03426P      2388 03434P
    TTYINPW          03300P      2291      2845 04422P
    TTYIO            04420P      2843      2819 04403P
    TTYOUTW          03435P      2391      2847 04424P
    TTYOUTW3         03511P      2434      2430 03505P
    TTYOUTW4         03517P      2440      2432 03507P      2473 03560P
    TTYOUTW5         03561P      2475      2458 03541P
    TTYOUTW6         03574P      2486      2481 03567P
*   TTYOUTW7         03602P      2492
    TTYOUTW8         03603P      2493      2364 03407P
    TTYOUTWX         03461P      2410      2395 03442P
    TTYOW1           03611P   2498+2    2394+2 03441P
    TTYOW2           03442P   2394+3    2498+9 03617P
    TTYOW3           03643P  2498+29   2498+40 03655P
    TTYOW4           03714P  2498+71   2498+60 03701P
    TTYSHARE         03443P      2396      2293 03301P
    TTYSTX           03274P      2272      2254 03253P
    TTYWRITE         04552P      2945      2267 03270P
    TVBUSY           05137P      3283      1688 02330P      1727 02366P      1732 02373P
    TVCNTRL          02254P      1639      2892 04473P
    TVCNTRL3         02264P      1648      1642 02256P      1675 02314P
    TVDELAY          02334P      1694      1663 02301P      1687 02327P
    TVINIT         X              155      1724 02365P
    TVINPW           02273P      1657      2894 04475P
    TVINPW01         02302P      1664      1683 02323P
    TVINPW02         02315P      1677      1660 02276P
    TVINPW03         02326P      1686      1709 02350P
    TVINPW05         02332P      1691      1684 02324P
    TVINPWX          02330P      1688      1705 02344P
    TVIO             04473P      2892      2825 04406P
    TVMRLOOP         02422P      1755      1769 02440P
    TVNE     E       02366P      1727        27 00000P
    TVOUTW           02336P      1698      2896 04477P
    TVOUTW02         02351P      1711      1703 02342P
    TVOUTW03         02352P      1712      1692 02333P
    TVPFAREA         00122        208      1723 02364P      3283 05140P
    TVREAD         X              156      1691 02332P
    TVWAIT         X              157      1694 02334P
    TVWRITE        X              158      1711 02351P      1716 02355P
    TWFM           X              159      2029 02776P
    TWRITE         X              160      1980 02731P
    TXBUSY           05141P      3284      1774 02443P      1934 02656P      1983 02733P      2041 03010P      2043 03012P      2047 03015P
                                           2068 03041P      2085 03055P
    TXDONE           03012P      2043      2015 02752P      3286 05145P
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TXMP	E	03003P	2036	28	00000P														
TXNE	E	03014P	2046	29	00000P														
TXNR	E	03007P	2040	30	00000P														
TXPCI		02377P	1736	2069	03042P														
TXPV	E	03005P	2038	31	00000P														
TXSMASH		03010P	2041	2037	03004P	2039	03006P												
TXSTART	X		161	2049	03017P														
TXTOTAL	X		162	2052	03022P														
TXWC		05146P	3287	2046	03014P	2054	03024P	2062	03033P										
UDBITS	X		163	3121	04756P														
UJP0X2		02441P	1770	942	01106P	2235	03233P												
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VANISH	E	00024	3152	32	00000P	1168	01413P												
VMM	X		164	1755	02422P	1837	02530P	2232	03230P										
VMMCM	X		165	3111	04744P	3180	05006P												
VMMSAVE	X		166	3109	04742P	3182	05010P												
WARN	E	00016	3146	33	00000P														
WCMAX		00013	3143	3169	04776P														
WCZERO		00012	3142	3173	05001P														
WFM		01142P	977	717	00640P														
WFM00		01161P	992	1027	01221P														
WFM01		01167P	999	995	01164P														
WFM02		01172P	1003	997	01166P														
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WFM07		01255P	1057	1024	01217P														
WFM08		01264P	1065	1001	01170P	1036	01230P												
WPFB		00776	181	309	00105P	371	00174P	373	00176P	376	00200P	378	00201P	387	00211P				
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WRITERTN		02024P	1478	1472	02016P	1476	02022P												
WRMASK		00015P	236	509	00346P	1060	01260P												
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				268	00036P	278	00050P	300	00074P	321	00121P	322	00122P	352	00154P				
				394	00217P	401	00226P	406	00232P	436	00237P	439	00242P	442	00245P				
				463	00266P	469	00274P	472+1	00276P	472+4	00301P	473	00302P	492+1	00324P				
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				592	00453P	609	00474P	610	00475P	637	00525P	642	00531P	645	00534P				
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				765	00676P	767	00700P	769	00702P	771	00704P	772	00705P	774	00706P				
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				816	00740P	824	00747P	828	00753P	843	00772P	845	00774P	852	01002P				
				856	01006P	858	01010P	859	01011P	861	01013P	864	01016P	894	01031P				
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				936	01100P	953	01120P	956	01123P	960	01127P	964	01133P	968	01136P				
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				1053	01251P	1058	01256P	1059	01257P	1062	01262P	1068	01267P	1069	01270P				
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				1489	02036P	1492	02041P	1497	02046P	1502	02053P	1508	02060P	1514	02066P				
				1517	02071P	1520	02074P	1521	02075P	1532	02106P	1534	02110P	1536	02112P				
				1538	02114P	1539	02115P	1542	02120P	1543	02121P	1545	02122P	1548	02125P				
				1555	02134P	1556	02135P	1557	02136P	1560	02141P	1561	02142P	1565	02146P				
				1566	02147P	1570	02153P	1572	02155P	1574	02157P	1577	02162P	1581	02166P				
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                                                1909 02630P    1914 02635P    1925 02645P    1929 02651P    1935 02657P    1944 02670P
                                                1945 02671P    1946 02672P    1955 02702P    1956 02703P    1969 02720P    1973 02722P
                                                1974 02723P    1975 02724P    1984 02734P    1990 02741P    2010 02745P    2017 02754P
                                                2019 02756P    2024 02762P    2043 03012P    2061 03032P    2063 03034P    2068 03041P
                                                2075 03043P    2086 03056P    2089 03061P    2109 03077P    2115 03105P    2117 03107P
                                                2127 03114P    2141 03126P    2144 03131P    2148 03135P    2151 03140P    2166 03155P
                                                2167 03156P    2171 03162P    2195 03205P  2498+21 03633P  2498+31 03644P  2498+35 03650P
                                              2498+37 03652P  2498+50 03667P  2498+58 03677P  2498+59 03700P  2498+61 03702P    2593 04052P
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                                                2726 04264P    2738 04276P    2756 04315P    2761 04322P    2778 04341P    2781 04344P
                                                2782 04345P    2783 04346P    2797 04363P    2798 04364P    2805 04373P    2859 04437P
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                                                3030 04660P    3035 04664P    3037 04666P    3038 04667P    3071 04712P    3072 04713P
                                              3073+2 04716P
X2              00002           198           221+2 00004P     226 00005P     269 00037P     270 00040P     271 00041P     277 00047P
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                                                345 00145P     351 00153P     363 00165P     369 00172P     386 00210P     398 00223P
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