```
0005            .LS
0010 ;      SYMDOS MON/BAS/RAE INTERFACE
0015
0020 ;      RESIDENT $9000 $9770
0025 ;      CHECKSUM $99F0
0030
0035 ;      COPYRIGHT 1982
0040 ;      SYM USERS' GROUP
0045
0050 ;      V1.0  -  24 JUNE 1982
0055
0060 ;      SET $0200 $4FFD $5000 $5FFD
0065
0070 ;  Note: ":" following a label indicates that the
0075 ;  label is not referenced, but used for info only
0080
0085
0090 ;        BAS PAGE ZERO
0095
0100 PROGST      .DE $7B
0105 PROGEN      .DE $7D
0110 MEMLIM      .DE $87
0115
0120 ;        RAE PAGE ZERO
0125
0130 TXPRES      .DE $D3
0135 DCMVEC:     .DE $EC
0140 INPFLG      .DE $EE        ;$00 = TAPE, ELSE DISK
0145 OUTFLG:     .DE $EF
0150 ENTVEC      .DE $F0
0155 LODVEC      .DE $F2
0160 PUTVEC:     .DE $F4
0165 GETVEC      .DE $F6
0170
0175 ;        FDC PAGE ZERO
0180
0185 XREG        .DE $EE
0190 YREG        .DE $EF
0195 TEMP        .DE $F8
0200 ASCPT       .DE $FA
0205 WORKPT      .DE $FC
0210 NMPNT       .DE $FC
0215 FROMPT      .DE $FC
0220 BUFPT       .DE $FE
0225 TOPT        .DE $FE
0230 DIRPT       .DE $FE
0235
0240 ;        FDC PAGE THREE
0245
0250 BUFFER      .DE $0300      ;DEFAULT FOR 1 K SYM!
0255
0260 ;        RAE PAGE ONE
0265
0270 TXST        .DE $0100
0275 TXEN        .DE $0102
0280 FILENO      .DE $0110
0285 RAEBUF      .DE $0135      ;(80 BYTES)
```

```
0290
0295 ;          SUPERMON ROUTINES
0300
0305 USRENT       .DE $8035
0310 ERMSG        .DE $8171
0315 PSHOVE       .DE $8208
0320 PARM         .DE $8220
0325 OUTBYT       .DE $82FA
0330 SPACE        .DE $8342
0335 CRLF         .DE $834D
0340 RIN          .DE $887E     ;MIGHT BE IN INVEC.........
0345 INCHR        .DE $8A1B
0350 OUTCHR       .DE $8A47
0355 ACCESS       .DE $8B86
0360
0365 ;          SYSTEM RAM
0370                    A420
0375 SCPBUF       .DE $A600     ;SEE BELOW FOR USAGE
0380
0385 FXBFLG       .DE $A624     ;WAS JUMP ENTRY 2 (NEWDEV)
0390 INSAVE       .DE $A625     ;SAVES INVEC (THREE BYTES)
0395 WRKBUF       .DE $A62A     ;DEFAULTS TO BUFST
0400 DOSEXT       .DE $A62C     ;DEFAULTS TO RSTXY
0405 URCNEW       .DE $A62E     ;DEFAULTS TO ERMSG
0410 SCR6         .DE $A636
0415 SCR7         .DE $A637
0420 SCRA         .DE $A63A     ;MIGHT BE SAVING INVEC.........
0425 SCRB:        .DE $A63B     ;  "    "     "       "
0430 RAESAVEY     .DE $A646
0435 PARNR        .DE $A649
0440 P3L          .DE $A64A
0445 P3H          .DE $A64B
0450 P2L          .DE $A64C
0455 P2H          .DE $A64D
0460 P1L          .DE $A64E
0465 P1H          .DE $A64F
0470 TECHO        .DE $A653
0475 LSTCOM       .DE $A657
0480 INVEC        .DE $A660
0485 URCVEC       .DE $A66C
0490
0495 ;          RAE ROUTINES
0500
0505 ERROR        .DE $B00E
0510 RAEHOT       .DE $B05E
0515 MVNEXT       .DE $B4FF     ;SKIPS PAST BLANKS, INCREMENTS [Y]
0520 ;                          ;[Y] = 80 MEANS END OF RAE BUFFER
0525
0530 ;          WORKSPACE DEFINITIONS
0535
0540 WORKSP       .DE Ø
0545 NAMBUF       .DE WORKSP+ØØ
0550 DIRSEC       .DE WORKSP+16
0555 DSXTOT       .DE WORKSP+17
0560 DIRTRK       .DE WORKSP+18
0565 DTXTOT       .DE WORKSP+19
0570 DRNTRY       .DE WORKSP+2Ø
0575 DIRCNT       .DE WORKSP+22
```

A46A
A46B
A470
A472
A474
A460 –
A461 –
A464 –
A465 –
A466 –

```
                0580 SIDNUM     .DE WORKSP+23
                0585 DTASEC     .DE WORKSP+24
                0590 DMXTDT     .DE WORKSP+25
                0595 DTATRK     .DE WORKSP+26
                0600 MAXTRK     .DE WORKSP+27
                0605 VRFLAG     .DE WORKSP+28
                0610 DIRCT2     .DE WORKSP+29
                0615
                0620 ;        DIRECTORY DEFINITIONS
                0625
                0630 DIRECT     .DE Ø
                0635 FILNAM     .DE DIRECT+ØØ
                0640 FILSAH     .DE DIRECT+1Ø
                0645 FILEAH:    .DE DIRECT+12
                0650 FILTRK     .DE DIRECT+14
                0655 FILSEC     .DE DIRECT+15
                0660
                0665                $A680
                0670 BUFST      .DE $ØE8Ø     ;DEFAULT FOR A 4K SYSTEM
                0675
                0680 DISKIO     .DE $98ØØ
                0685
                0690            .BA SCPBUF
                0695
A6ØØ-           0700 IDISK      .DS 1         ;ZEROED UPON ENTRY
A6Ø1-           0705 ITRACK     .DS 1         ;ZEROED UPON ENTRY
A6Ø2-           0710 ISECT      .DS 1
A6Ø3-           0715 IADDR      .DS 2         ;INITIALIZED TO $Ø3ØØ FOR 1 K SYM!
A6Ø5-           0720 IFLAGS     .DS 1
                0725
                0730 ;        IFLAGS DEFINITIONS
                0735
                0740 MTRFLAG    .DE $8Ø
                0745 SELFLAG    .DE $4Ø
                0750 VERFLAG    .DE $2Ø
                0755
 5Ø6-           0760 DRØDSB     .DS 3
 6Ø9-           0765 DR1DSB     .DS 3
A6ØC-           0770 DFLAGS     .DS 1
                0775
                0780 ;        DFLAGS DEFINITIONS
                0785
                0790 DENFLAG    .DE $8Ø
                0795 SIDFLAG    .DE $4Ø
                0800 AVAIL      .DE $2Ø
                0805 SECLEN     .DE $Ø3
                0810
A6ØD-           0815 CURTRK:    .DS 1
A6ØE-           0820 NOSECS     .DS 1
A6ØF-           0825 UCMDVC:    .DS 2
A611-           0830 STEPRT:    .DS 1
A612-           0835 FFLAGS:    .DS 1
A613-           0840 DRASAV:    .DS 1
A614-           0845 NOTRKS     .DS 1
                0850
                0855            .BA $9ØØØ
                0860            .OS
                0865
```

```
9000- 4C 37 97   0870 BASENTRY:  JMP BASLINK
                 0875 ;
9003- 4C 1C 97   0880 RAEENTRY:  JMP RAELINK
                 0885 ;
9006- 20 86 BB   0890 MONENTRY   JSR ACCESS
9009- AD 6E A6   0895            LDA URCVEC+2
900C- 8D 2F A6   0900            STA URCNEW+1
900F- AD 6D A6   0905            LDA URCVEC+1
9012- 8D 2E A6   0910            STA URCNEW
9015- A9 90      0915            LDA #H,MONLINK
9017- 8D 6E A6   0920            STA URCVEC+2
901A- A9 78      0925            LDA #L,MONLINK
901C- 8D 6D A6   0930            STA URCVEC+1
901F- A9 01      0935            LDA #$01      ;ANY NON-ZERO VALUE OK
9021- 85 EE      0940            STA *INPFLG
9023- A2 05      0945 DFLTLOAD:  LDX #6-1      ;MOVE SIX ITEMS
9025- BD 6F 90   0950 DFLTLOOP   LDA DFLTBLOK,X
9028- 9D 2A A6   0955            STA WRKBUF,X
902B- CA         0960            DEX
902C- 10 F7      0965            BPL DFLTLOOP
902E- A9 4C      0970            LDA #$4C      ;JMP OPCODE
9030- 8D 25 A6   0975            STA INSAVE
9033- A9 03      0980 DISKPARMS: LDA #H,BUFFER
9035- 8D 04 A6   0985            STA IADDR+1
9038- A9 00      0990            LDA #$00      ;INITIALIZATION VALUE
903A- 8D 24 A6   0995            STA FXBFLG
903D- 8D 03 A6   1000            STA IADDR
9040- 8D 00 A6   1005            STA IDISK
9043- 8D 01 A6   1010            STA ITRACK
9046- 20 00 98   1015            JSR DISKIO    ;WITH [A] = Ø - INITIALIZE COMMAND
9049- B0 23      1020            BCS NODISK
904B- A9 20      1025            LDA #VERFLAG
904D- 8D 05 A6   1030            STA IFLAGS
9050- A9 01      1035            LDA #$01      ;SET TO SECTOR 1
9052- 8D 02 A6   1040            STA ISECT
9055- 20 00 98   1045            JSR DISKIO    ;WITH [A] = 1 - RESTORE COMMAN
9058- AD 61 A6   1050            LDA INVEC+1
905B- 8D 26 A6   1055            STA INSAVE+1
905E- AD 62 A6   1060            LDA INVEC+2
9061- 8D 27 A6   1065            STA INSAVE+2
9064- AD 2B A6   1070 POINTNAM   LDA WRKBUF+1
9067- 85 FD      1075            STA *NMPNT+1
9069- AD 2A A6   1080            LDA WRKBUF
906C- 85 FC      1085            STA *NMPNT
906E- 60         1090 NODISK     RTS
                 1095 ;
906F- 80 0E      1100 DFLTBLOK   .SE BUFST
9071- 59 95      1105            .SI RSTXY
9073- 71 81      1110            .SE ERMSG
                 1115 ;
9075- 4C CA 92   1120 TESTS3     JMP S3CHECK
                 1125 ;
9078- C9 14      1130 MONLINK    CMP #$14      ;HASH CODE FOR L3 (LOAD)
907A- D0 F9      1135            BNE TESTS3
907C- 20 1F 92   1140            JSR GETDTA
907F- B0 34      1145            BCS RESER
9081- AD 49 A6   1150            LDA PARNR
9084- F0 18      1155            BEQ LOADIT
```

```
9086- C9 02     1160          CMP #2        ;CHECK FOR TWO PARMS
9088- B0 03     1165          BCS AR2
908A- 20 08 82  1170          JSR PSHOVE
908D- AD 4C A6  1175 AR2      LDA P2L
9090- 20 BF 90  1180          JSR USET
9093- 20 99 90  1185          JSR LOADX
9096- B0 1D     1190          BCS RESER
9098- 60        1195 RETURN1  RTS
                1200 ;
9099- 20 F2 96  1205 LOADX    JSR SETPARMS
909C- B0 FA     1210          BCS RETURN1
909E- 20 E5 90  1215 LOADIT   JSR DIRSRCH
90A1- B0 F5     1220          BCS RETURN1
90A3- C9 80     1225          CMP #$80      ;CHECK FOR NAME FOUND
90A5- D0 08     1230          BNE OKNAME
90A7- 20 F2 96  1235          JSR SETPARMS
90AA- A9 53     1240          LDA #$53      ;NAME NOT FOUND ERROR CODE
90AC- 38        1245          SEC
90AD- B0 E9     1250          BCS RETURN1   ;(ALWAYS)
                1255 ;
90AF- 20 6A 92  1260 OKNAME   JSR MOVEADDRS
90B2- 4C 35 92  1265          JMP DOLOAD
                1270 ;
90B5- 08        1275 RESER    PHP
90B6- 48        1280          PHA
90B7- 20 F2 96  1285          JSR SETPARMS
90BA- 68        1290          PLA
90BB- 28        1295          PLP
90BC- 4C 71 81  1300          JMP ERMSG
                1305 ;
90BF- 48        1310 USET     PHA
90C0- 18        1315          CLC
90C1- 29 06     1320          AND #$06      ;NEED ONLY THESE TWO BITS
90C3- 6A        1325          ROR A
90C4- 6A        1330          ROR A         ;SIDE INTO CARRY
90C5- 6A        1335          ROR A         ;SIDE INTO MSB
90C6- A0 17     1340          LDY #SIDNUM
90C8- 91 FC     1345          STA (WORKPT),Y
90CA- 68        1350          PLA
90CB- 29 01     1355          AND #$01      ;NEED ONLY LSB
90CD- 8D 00 A6  1360          STA IDISK
90D0- A9 00     1365          LDA #$00      ;CLEAR REGISTER
90D2- 6A        1370          ROR A
90D3- A0 1C     1375          LDY #VRFLAG
90D5- 91 FC     1380          STA (WORKPT),Y
90D7- 60        1385          RTS
                1390 ;
90D8- A9 02     1395 DRINIT   LDA #$02      ;INITIALIZE SECTOR
90DA- A0 10     1400          LDY #DIRSEC
90DC- 91 FC     1405          STA (WORKPT),Y
90DE- A9 00     1410          LDA #$00      ;INITIALIZE TRACK
90E0- A0 12     1415          LDY #DIRTRK
90E2- 91 FC     1420          STA (WORKPT),Y
90E4- 60        1425          RTS
                1430 ;
90E5- 20 D8 90  1435 DIRSRCH  JSR DRINIT
90E8- 20 D8 93  1440 MORTRKS  JSR DIRPARMS
90EB- 20 B6 91  1445          JSR FIXPTR
```

```
90EE- A9 E0      1450             LDA #MTRFLAG+SELFLAG+VERFLAG
90F0- 20 00 95   1455             JSR DOREAD
90F3- 90 01      1460             BCC SECSRCH
90F5- 60         1465             RTS
                 1470 ;
90F6- 20 FD 91   1475 SECSRCH     JSR SECCNT
90F9- 20 A5 91   1480             JSR DSKPTR
90FC- A2 0A      1485 NTCHECK     LDX #10         ;TEN CHARS TO BE COMPARED
90FE- A0 00      1490             LDY #FILNAM
9100- B1 FE      1495             LDA (DIRPT),Y
9102- F0 1D      1500             BEQ FIRST00
9104- AD 57 A6   1505             LDA LSTCOM
9107- C9 18      1510             CMP #$18        ;HASH CODE FOR L7 (DIRECTORY)
9109- D0 06      1515             BNE KPSRCH
910B- 20 4E 97   1520             JSR LISTIT
910E- 4C 16 91   1525             JMP NXTONE
                 1530 ;
9111- 20 4E 91   1535 KPSRCH      JSR CMPSUB
9114- F0 19      1540             BEQ FOUND
9116- 20 33 91   1545 NXTONE      JSR DECREMENT
9119- F0 28      1550             BEQ NXTSEC
911B- 20 8D 93   1555             JSR NXNTRY
911E- 4C FC 90   1560             JMP NTCHECK
                 1565 ;
9121- AD 57 A6   1570 FIRST00     LDA LSTCOM
9124- C9 18      1575             CMP #$18        ;HASH CODE FOR L7 (DIRECTORY)
9126- D0 03      1580             BNE PWRON
9128- 20 F2 96   1585             JSR SETPARMS
912B- A9 80      1590 PWRON       LDA #$80        ;****
912D- 18         1595             CLC
912E- 60         1600             RTS
                 1605 ;
912F- A9 00      1610 FOUND       LDA #$00        ;ZERO INDICATES FOUND
9131- 18         1615             CLC
9132- 60         1620             RTS
                 1625 ;
9133- A0 16      1630 DECREMENT   LDY #DIRCNT
9135- B1 FC      1635             LDA (WORKPT),Y
9137- 38         1640             SEC
9138- E9 01      1645             SBC #1          ;DECREMENT COUNT
913A- 91 FC      1650             STA (WORKPT),Y
913C- A0 1D      1655             LDY #DIRCT2
913E- 91 FC      1660             STA (WORKPT),Y
9140- C9 00      1665             CMP #$00        ;CHECK FOR END OF SECTOR
9142- 60         1670             RTS
                 1675 ;
9143- 20 E7 95   1680 NXTSEC      JSR BMPDIR
9146- B0 03      1685             BCS DISKERR2
9148- 4C E8 90   1690             JMP MORTRKS
                 1695 ;
914B- A9 51      1700 DISKERR2    LDA #$51        ;OUT OF SECTORS ERROR CODE
914D- 60         1705             RTS
                 1710 ;
914E- 88         1715 CMPSUB      DEY
914F- E8         1720             INX
9150- C8         1725 CPLOOP      INY
9151- CA         1730             DEX
9152- F0 06      1735             BEQ CMPRET
```

```
9154- B1 FC      1740            LDA (FROMPT),Y
9156- D1 FE      1745            CMP (TOPT),Y
9158- F0 F6      1750            BEQ CPLOOP
915A- 60         1755 CMPRET     RTS
                 1760 ;
915B- 20 64 90   1765 GETNAM     JSR POINTNAM
915E- 20 99 91   1770            JSR NMBLANK
9161- A0 00      1775            LDY #FILNAM
9163- 20 1B 8A   1780 ASCLP      JSR INCHR
9166- 48         1785            PHA
9167- 20 64 90   1790            JSR POINTNAM
916A- 68         1795            PLA
916B- 20 4A 95   1800            JSR DELIMITERS
916E- F0 11      1805            BEQ GOTNAM
9170- 91 FC      1810            STA (WORKPT),Y
9172- C9 7F      1815            CMP #$7F        ;DELETE COD
9174- F0 0D      1820            BEQ BAKSP
9176- C9 5F      1825            CMP #'_
9178- F0 09      1830            BEQ BAKSP
917A- C8         1835            INY
917B- C0 0B      1840 TESTY      CPY #10+1       ;ACCEPT ONLY 10 CHARS
917D- B0 03      1845            BCS EOFASC
917F- 90 E2      1850            BCC ASCLP       ;(ALWAYS)
                 1855 ;
9181- 18         1860 GOTNAM     CLC
9182- 60         1865 EOFASC     RTS
                 1870 ;
9183- A9 5C      1875 BAKSP      LDA #'\
9185- 20 47 8A   1880            JSR OUTCHR
9188- 20 64 90   1885            JSR POINTNAM
918B- A9 20      1890            LDA #'
918D- 91 FC      1895            STA (WORKPT),Y
918F- 88         1900            DEY
9190- C0 FF      1905            CPY #$FF        ;BACKSPACED TOO FAR
9192- F0 02      1910            BEQ NOPRM
9194- D0 E5      1915            BNE TESTY
9196- C8         1920 NOPRM      INY
9197- F0 E9      1925            BEQ EOFASC
9199- A9 20      1930 NMBLANK    LDA #'
919B- A0 00      1935            LDY #NAMBUF
919D- 91 FC      1940 BLLP       STA (NMPNT),Y
919F- C8         1945            INY
91A0- C0 0A      1950            CPY #10         ;ENTER TEN "BLANKS"
91A2- 90 F9      1955            BCC BLLP
91A4- 60         1960            RTS
                 1965 ;
91A5- AD 2A A6   1970 DSKPTR     LDA WRKBUF
91A8- 18         1975            CLC
91A9- 69 80      1980            ADC #128        ;BYPASS NAME BUFFER AND WORKSPACE
91AB- 85 FE      1985            STA *BUFPT
91AD- AD 2B A6   1990            LDA WRKBUF+1
91B0- 69 00      1995            ADC #0          ;COMPLETE TWO BYTE ADDITION
91B2- 85 FF      2000            STA *BUFPT+1
91B4- 18         2005            CLC
91B5- 60         2010            RTS
                 2015 ;
91B6- 20 A5 91   2020 FIXPTR     JSR DSKPTR
91B9- A5 FE      2025            LDA *BUFPT
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```
91BB- 8D 03 A6  2030            STA IADDR
91BE- A5 FF     2035            LDA *BUFPT+1
91C0- 8D 04 A6  2040            STA IADDR+1
91C3- 60        2045            RTS
                2050 ;
91C4- A9 01     2055 ASCPTR     LDA #H,RAEBUF
91C6- 85 FB     2060            STA *ASCPT+1
91C8- A9 35     2065            LDA #L,RAEBUF
91CA- 85 FA     2070            STA *ASCPT
91CC- 60        2075            RTS
                2080 ;
91CD- A0 14     2085 PTNTRY     LDY #DRNTRY
91CF- B1 FC     2090            LDA (WORKPT),Y
91D1- 85 FE     2095            STA *BUFPT
91D3- C8        2100            INY
91D4- B1 FC     2105            LDA (WORKPT),Y
91D6- 85 FF     2110            STA *BUFPT+1
91D8- 60        2115            RTS
                2120 ;
91D9- 20 FD 91  2125 ADJCNT     JSR SECCNT
91DC- 4A        2130            LSR A
91DD- 4A        2135            LSR A
91DE- 4A        2140            LSR A
91DF- AA        2145            TAX
91E0- 18        2150 SIZADJUST  CLC
91E1- AD 4A A6  2155            LDA P3L
91E4- 69 80     2160            ADC #$80        ;****
91E6- 8D 4A A6  2165            STA P3L
91E9- AD 4B A6  2170            LDA P3H
91EC- 69 00     2175            ADC #0          ;ADD CARRY
91EE- 8D 4B A6  2180            STA P3H
91F1- CA        2185            DEX
91F2- D0 EC     2190            BNE SIZADJUST
91F4- 60        2195            RTS
                2200 ;
91F5- 20 D9 91  2205 BMPNTR     JSR ADJCNT
91F8- A0 18     2210            LDY #DTASEC
91FA- 4C EC 95  2215            JMP BMPDR1
                2220 ;
91FD- AD 0C A6  2225 SECCNT     LDA DFLAGS
9200- 29 03     2230            AND #SECLEN
9202- AA        2235            TAX
9203- A9 04     2240            LDA #5-1        ;SHIFT FIVE
9205- 0A        2245 SHIFT      ASL A
9206- CA        2250            DEX
9207- 10 FC     2255            BPL SHIFT
9209- A0 16     2260            LDY #DIRCNT
920B- 91 FC     2265            STA (WORKPT),Y
920D- 60        2270            RTS
                2275 ;
920E- AD 4A A6  2280 INTPRM     LDA P3L
9211- 8D 03 A6  2285            STA IADDR
9214- AD 4B A6  2290            LDA P3H
9217- 8D 04 A6  2295            STA IADDR+1
921A- A9 18     2300            LDA #DTASEC
921C- 4C DA 93  2305            JMP DIRPARMS+2
                2310 ;
921F- 20 64 90  2315 GETDTA     JSR POINTNAM
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9222- 20 4D 83  2320              JSR CRLF
9225- 20 5B 91  2325              JSR GETNAM
9228- B0 07     2330              BCS BUFFERERR
922A- 20 20 82  2335              JSR PARM
922D- D0 02     2340              BNE BUFFERERR
922F- 18        2345              CLC
9230- 60        2350              RTS
                2355 ;
9231- A9 54     2360 BUFFERERR    LDA #$54      ;BUFFER INPUT ERROR CODE
9233- 38        2365              SEC
9234- 60        2370 DISKERR1     RTS
                2375 ;
9235- 20 0E 92  2380 DOLOAD       JSR INTPRM
9238- 20 03 95  2385              JSR DOREAD2
923B- B0 F7     2390              BCS DISKERR1
923D- 20 F5 91  2395              JSR BMPNTR
9240- B0 F2     2400              BCS DISKERR1
9242- 20 50 92  2405              JSR DIFFP2TOP3
9245- 30 EE     2410              BMI DOLOAD
9247- 20 F2 96  2415              JSR SETPARMS
924A- B0 E8     2420              BCS DISKERR1
924C- A9 00     2425              LDA #$00      ;CLEAR [A] IF OK
924E- 18        2430              CLC
924F- 60        2435              RTS
                2440 ;
9250- 38        2445 DIFFP2TOP3   SEC
9251- AD 4A A6  2450              LDA P3L
9254- ED 4C A6  2455              SBC P2L
9257- AD 4B A6  2460              LDA P3H
925A- ED 4D A6  2465              SBC P2H
925D- 60        2470              RTS
                2475 ;
925E- A0 14     2480 STOPTR       LDY #DRNTRY
9260- A5 FE     2485              LDA *BUFPT
9262- 91 FC     2490              STA (WORKPT),Y
9264- A5 FF     2495              LDA *BUFPT+1
9266- C8        2500              INY
9267- 91 FC     2505              STA (WORKPT),Y
9269- 60        2510              RTS
                2515 ;
926A- A0 0A     2520 MOVEADDRS    LDY #FILSAH
926C- A2 03     2525              LDX #4-1      ;MOVE FOUR BYTES
926E- B1 FE     2530 MOVADLOOP    LDA (DIRPT),Y
9270- 9D 4C A6  2535              STA P2L,X
9273- C8        2540              INY
9274- CA        2545              DEX
9275- 10 F7     2550              BPL MOVADLOOP
9277- AD 49 A6  2555              LDA PARNR
927A- C9 02     2560              CMP #2        ;CHECK FOR TWO PARMS
927C- D0 2C     2565              BNE NORELOCAT
927E- 38        2570              SEC
927F- AD 4C A6  2575              LDA P2L
9282- ED 4E A6  2580              SBC P1L
9285- 8D 36 A6  2585              STA SCR6
9288- AD 4D A6  2590              LDA P2H
928B- ED 4F A6  2595              SBC P1H
928E- 8D 37 A6  2600              STA SCR7
9291- 20 08 82  2605              JSR PSHOVE
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9294- 20 08 82  2610              JSR PSHOVE
9297- AD 4E A6  2615              LDA P1L
929A- 18        2620              CLC
929B- 6D 36 A6  2625              ADC SCR6
929E- 8D 4C A6  2630              STA P2L
92A1- AD 4F A6  2635              LDA P1H
92A4- 6D 37 A6  2640              ADC SCR7
92A7- 8D 4D A6  2645              STA P2H
92AA- 20 EE 92  2650 NORELOCAT    JSR DUPP1INP3
92AD- A0 0E     2655              LDY #FILTRK
92AF- B1 FE     2660              LDA (DIRPT),Y
92B1- A0 1A     2665              LDY #DTATRK
92B3- 91 FC     2670              STA (WORKPT),Y
92B5- A0 0F     2675              LDY #FILSEC
92B7- B1 FE     2680              LDA (DIRPT),Y
92B9- A0 18     2685              LDY #DTASEC
92BB- 91 FC     2690              STA (WORKPT),Y
92BD- 60        2695              RTS
                2700 ;
92BE- 4C 35 94  2705 TESTS9       JMP S9CHECK
                2710 ;
92C1- 38        2715 DATAERR1     SEC
92C2- A9 50     2720 DATAERR3     LDA #$50      ;DATA ENTRY ERROR ERROR CODE
92C4- 4C 71 81  2725 DATAERR2     JMP ERMSG
                2730 ;
92C7- 4C B5 90  2735 DATAERR5     JMP RESER
                2740 ;
92CA- C9 1F     2745 S3CHECK      CMP #$1F      ;HASH CODE FOR S3 (SAVE)
92CC- D0 F0     2750              BNE TESTS9
92CE- 20 1F 92  2755              JSR GETDTA
92D1- B0 EF     2760              BCS DATAERR3
92D3- AD 49 A6  2765              LDA PARNR
92D6- C9 03     2770              CMP #3        ;CHECK FOR THREE PARMS
92D8- D0 E7     2775              BNE DATAERR1
92DA- AD 4E A6  2780              LDA P1L
92DD- 20 BF 90  2785              JSR USET
92E0- 20 F2 96  2790              JSR SETPARMS
92E3- B0 DF     2795              BCS DATAERR2
92E5- 20 08 82  2800              JSR PSHOVE
92E8- 20 FB 92  2805              JSR RBNTRY
92EB- B0 DA     2810              BCS DATAERR5
92ED- 60        2815              RTS
                2820 ;
92EE- AD 4F A6  2825 DUPP1INP3    LDA P1H
92F1- 8D 4B A6  2830              STA P3H
92F4- AD 4E A6  2835              LDA P1L
92F7- 8D 4A A6  2840              STA P3L
92FA- 60        2845              RTS
                2850 ;
92FB- 20 EE 92  2855 RBNTRY       JSR DUPP1INP3
92FE- A0 00     2860              LDY #$00      ;START AT BEGINNING
9300- 20 E5 90  2865              JSR DIRSRCH
9303- B0 16     2870 BACK         BCS DATAERR4
9305- A0 00     2875              LDY #$00      ;START AT BEGINNING
9307- B1 FE     2880              LDA (DIRPT),Y
9309- F0 11     2885              BEQ GDSPOT
930B- 2C 24 A6  2890              BIT FXBFLG
930E- D0 0C     2895              BNE GDSPOT
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9310- 20 81 93  2900            JSR SMUDGE
9313- B0 06     2905            BCS DATAERR4
9315- 20 E8 90  2910            JSR MORTRKS
9318- 4C 03 93  2915            JMP BACK
                2920 ;
931B- 60        2925 DATAERR4   RTS
                2930 ;
931C- A0 0E     2935 GDSPOT     LDY #FILTRK
931E- B1 FE     2940            LDA (DIRPT),Y
9320- A0 1A     2945            LDY #DTATRK
9322- 91 FC     2950            STA (WORKPT),Y
9324- A0 0F     2955            LDY #FILSEC
9326- B1 FE     2960            LDA (DIRPT),Y
9328- A0 18     2965            LDY #DTASEC
932A- 91 FC     2970            STA (WORKPT),Y
932C- 20 5E 92  2975            JSR STOPTR
932F- 20 0E 92  2980 DOSTORE    JSR INTPRM
9332- 20 EC 94  2985            JSR DOWRITE2
9335- B0 6D     2990            BCS BADVERIFY
9337- A0 1C     2995            LDY #VRFLAG
9339- B1 FC     3000            LDA (WORKPT),Y
933B- 10 05     3005            BPL NOVER
933D- 20 99 93  3010            JSR READVERIFY
9340- B0 D9     3015            BCS DATAERR4
9342- 20 F5 91  3020 NOVER      JSR BMPNTR
9345- B0 2F     3025            BCS RETURN2
9347- 20 50 92  3030            JSR DIFFP2TOP3
934A- 30 E3     3035            BMI DOSTORE
934C- 20 B6 91  3040            JSR FIXPTR
934F- 20 D8 93  3045            JSR DIRPARMS
9352- 20 03 95  3050            JSR DOREAD2
9355- B0 1F     3055            BCS RETURN2
9357- 20 CD 91  3060            JSR PTNTRY
935A- 20 60 93  3065            JSR MOVPARMS
935D- 4C EC 93  3070            JMP DTAPNT
                3075 ;
9360- A0 0A     3080 MOVPARMS   LDY #10         ;GET ABOVE NAME FOR PARMS
9362- A2 03     3085            LDX #4-1        ;MOVE FOUR BYTES
9364- BD 4C A6  3090 MVPLOOP    LDA P2L,X
9367- 91 FE     3095            STA (BUFPT),Y
9369- C8        3100            INY
936A- CA        3105            DEX
936B- 10 F7     3110            BPL MVPLOOP
936D- A0 09     3115 WRTNAM     LDY #10-1       ;TEN CHARS PER NAME
936F- B1 FC     3120 XFER       LDA (NMPNT),Y
9371- 91 FE     3125            STA (BUFPT),Y
9373- 88        3130            DEY
9374- 10 F9     3135            BPL XFER
9376- 60        3140 RETURN2    RTS
                3145 ;
9377- C2        3150 BADSEGMES  .BY $C2         ;ASCII FOR B WITH MSB SET HIGH
9378- 41 44 3F  3155            .BY 'AD?SEGMNT'
937B- 53 45 47
937E- 4D 4E 54
                3160 ;
9381- A0 00     3165 SMUDGE     LDY #$00        ;GET FIRST CHAR
9383- B1 FE     3170            LDA (BUFPT),Y
9385- 09 80     3175            ORA #$80        ;SET MSB HIGH
```

```
9387- 91 FE      3180              STA (BUFPT),Y
9389- 20 EC 94   3185              JSR DOWRITE2
938C- 60         3190              RTS
                 3195 ;
938D- A5 FE      3200 NXNTRY       LDA *BUFPT
938F- 18         3205              CLC
9390- 69 10      3210              ADC #16        ;MOVE UP 16 BYTES
9392- 85 FE      3215              STA *BUFPT
9394- 90 02      3220              BCC NTDUN
9396- E6 FF      3225              INC *BUFPT+1
9398- 60         3230 NTDUN        RTS
                 3235 ;
9399- 20 B6 91   3240 READVERIFY   JSR FIXPTR
939C- A9 C0      3245              LDA #MTRFLAG+SELFLAG
939E- 20 00 95   3250              JSR DOREAD
93A1- B0 01      3255              BCS BADVERIFY
93A3- 60         3260              RTS
                 3265 ;
93A4- 85 F7      3270 BADVERIFY    STA *GETVEC+1
93A6- 20 B6 91   3275              JSR FIXPTR
93A9- 20 D8 93   3280              JSR DIRPARMS
93AC- 20 03 95   3285              JSR DOREAD2
93AF- 20 CD 91   3290              JSR PTNTRY
93B2- A9 77      3295              LDA #L.BADSEGMES
93B4- 85 FC      3300              STA *WORKPT
93B6- A9 93      3305              LDA #H.BADSEGMES
93B8- 85 FD      3310              STA *WORKPT+1
93BA- AD 4B A6   3315              LDA P3H
93BD- 8D 4D A6   3320              STA P2H
93C0- AD 4A A6   3325              LDA P3L
93C3- 8D 4C A6   3330              STA P2L
93C6- 20 60 93   3335              JSR MOVPARMS
93C9- 20 B6 91   3340              JSR FIXPTR
93CC- A9 20      3345              LDA #VERFLAG          ;THIS LINE NOT REQUIRED
93CE- 20 EC 94   3350              JSR DOWRITE2
93D1- 20 EC 93   3355              JSR DTAPNT
93D4- A5 F7      3360              LDA *GETVEC+1
93D6- 38         3365              SEC
93D7- 60         3370              RTS
                 3375 ;
93D8- A9 10      3380 DIRPARMS     LDA #DIRSEC
93DA- A8         3385              TAY
93DB- B1 FC      3390              LDA (WORKPT),Y
93DD- 8D 02 A6   3395              STA ISECT
93E0- C8         3400              INY
93E1- C8         3405              INY
93E2- B1 FC      3410              LDA (WORKPT),Y
93E4- A0 17      3415              LDY #SIDNUM
93E6- 11 FC      3420              ORA (WORKPT),Y
93E8- 8D 01 A6   3425              STA ITRACK
93EB- 60         3430 DISKERR5     RTS
                 3435 ;
93EC- 20 B6 91   3440 DTAPNT       JSR FIXPTR
93EF- A9 20      3445              LDA #VERFLAG
93F1- 20 E9 94   3450              JSR DOWRITE
93F4- B0 F5      3455              BCS DISKERR5
93F6- AD 24 A6   3460              LDA FXBFLG
93F9- D0 F0      3465              BNE DISKERR5
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93FB- 20 CD 91   3470            JSR PTNTRY
93FE- A0 1D      3475            LDY #DIRCT2
9400- B1 FC      3480            LDA (WORKPT),Y
9402- C9 01      3485            CMP #$01      ;SEE IF ROOM LEFT IN THIS SECTOR
9404- D0 0C      3490            BNE SAMSEC
9406- 20 E7 95   3495            JSR BMPDIR
9409- 20 D8 93   3500            JSR DIRPARMS
940C- 20 B6 91   3505            JSR FIXPTR
940F- 4C 15 94   3510            JMP FNLSTR
                 3515 ;
9412- 20 8D 93   3520 SAMSEC     JSR NXNTRY
9415- A0 1A      3525 FNLSTR     LDY #DTATRK
9417- B1 FC      3530            LDA (WORKPT),Y
9419- A0 0E      3535            LDY #FILTRK
941B- 91 FE      3540            STA (DIRPT),Y
941D- A0 18      3545            LDY #DTASEC
941F- B1 FC      3550            LDA (WORKPT),Y
9421- A0 0F      3555            LDY #FILSEC
9423- 91 FE      3560            STA (DIRPT),Y
9425- A9 00      3565            LDA #$00      ;MARK END OF DIRECTORY
9427- A8         3570            TAY
9428- 91 FE      3575            STA (DIRPT),Y
942A- A9 20      3580            LDA #VERFLAG
942C- 4C E9 94   3585            JMP DOWRITE
                 3590 ;                 URCVEC
942F- 6C 2E A6   3595 USERQ      JMP (URCNEW)
                 3600 ;
9432- 4C C1 92   3605 BUFFERERR2 JMP DATAERR1
                 3610 ;
9435- C9 15      3615 S9CHECK    CMP #$15      ;HASH CODE FOR S9 (FORMAT)
9437- F0 15      3620            BEQ FORMAT
9439- C9 18      3625            CMP #$18      ;HASH CODE FOR L7 (DIRECTORY)
943B- D0 F2      3630            BNE USERQ
943D- AD 4A A6   3635            LDA P3L
9440- 20 BF 90   3640            JSR USET
9443- 20 F2 96   3645            JSR SETPARMS
9446- B0 03      3650            BCS NOLIST
9448- 20 E5 90   3655            JSR DIRSRCH
944B- 4C B5 90   3660 NOLIST     JMP RESER
                 3665 ;
944E- AD 49 A6   3670 FORMAT     LDA PARNR
9451- F0 DF      3675            BEQ BUFFERERR2
9453- C9 03      3680            CMP #3        ;CHECK FOR THREE PARMS
9455- B0 16      3685            BCS P3FORMAT
9457- 48         3690            PHA
9458- 20 08 82   3695            JSR PSHOVE
945B- 68         3700            PLA
945C- C9 02      3705            CMP #2        ;CHECK FOR TWO PARMS
945E- B0 08      3710            BCS P2FORMAT
9460- 20 08 82   3715 P1FORMAT:  JSR PSHOVE
9463- A9 00      3720            LDA #$00      ;DEFAULT TO SINGLE DENSITY
9465- 8D 4C A6   3725            STA P2L
9468- A9 00      3730 P2FORMAT   LDA #$00      ;DEFAULT TO 128 BYTES/SECT
946A- 8D 4A A6   3735            STA P3L
946D- AD 4E A6   3740 P3FORMAT   LDA P1L
9470- 20 BF 90   3745            JSR USET
9473- AD 4A A6   3750            LDA P3L
9476- AE 4C A6   3755            LDX P2L       ;INPUT $80 FOR DUBLDEN, ELSE $00
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9479- F0 02      3760             BEQ NOTDUBLD
947B- 09 80      3765             ORA #DENFLAG
947D- 09 60      3770 NOTDUBLD    ORA #SIDFLAG+AVAIL
947F- 48         3775             PHA
9480- 2C 00 A6   3780             BIT IDISK
9483- F0 07      3785             BEQ SETDRV0
9485- 68         3790             PLA
9486- 8D 09 A6   3795             STA DR1DSB
9489- 4C 90 94   3800             JMP DOFORMAT
                 3805 ;
948C- 68         3810 SETDRV0     PLA
948D- 8D 06 A6   3815             STA DR0DSB
9490- A9 E0      3820 DOFORMAT    LDA #MTRFLAG+SELFLAG+VERFLAG
9492- 8D 05 A6   3825             STA IFLAGS
9495- A9 03      3830             LDA #$03       ;INTERLEAVE FACTOR
9497- 8D 02 A6   3835             STA ISECT
949A- 20 B6 91   3840             JSR FIXPTR
949D- A9 07      3845             LDA #7         ;FORMAT DISK COMMAND
949F- 20 00 98   3850             JSR DISKIO     ;WITH [A] = 7 - FORMAT COMMANL
94A2- 20 F1 94   3855             JSR RESPTR
94A5- B0 1C      3860             BCS FORMATERR
94A7- A9 00      3865             LDA #$00       ;SET SIDE 1
94A9- A0 17      3870             LDY #SIDNUM
94AB- 91 FC      3875             STA (WORKPT),Y
94AD- 20 C6 94   3880             JSR FORMATDIR
94B0- B0 11      3885             BCS FORMATERR
94B2- 2C 0C A6   3890             BIT DFLAGS
94B5- 50 0B      3895             BVC SINGLESIDE
94B7- A9 80      3900             LDA #$80       ;SET SIDE 2
94B9- A0 17      3905             LDY #SIDNUM
94BB- 91 FC      3910             STA (WORKPT),Y
94BD- 20 C6 94   3915             JSR FORMATDIR
94C0- B0 01      3920             BCS FORMATERR
94C2- 60         3925 SINGLESIDE  RTS
                 3930 ;
94C3- 4C B5 90   3935 FORMATERR   JMP RESER
                 3940 ;
94C6- 20 B6 91   3945 FORMATDIR   JSR FIXPTR
94C9- A9 00      3950             LDA #$00       ;MARK START OF DIRECTORY AS EMPTY
94CB- A8         3955             TAY
94CC- 91 FE      3960             STA (BUFPT),Y
94CE- A0 17      3965             LDY #SIDNUM
94D0- 11 FC      3970             ORA (WORKPT),Y
94D2- 8D 01 A6   3975             STA ITRACK
94D5- A0 00      3980             LDY #$00       ;TO INITIALIZE DIR TRK AND SEC
94D7- C8         3985             INY
94D8- 98         3990             TYA
94D9- 48         3995             PHA
94DA- C8         4000             INY
94DB- 98         4005             TYA
94DC- 8C 02 A6   4010             STY ISECT      ;SECTOR 2 IS MARKED
94DF- A0 0E      4015             LDY #FILTRK
94E1- 91 FE      4020             STA (DIRPT),Y
94E3- C8         4025             INY
94E4- 68         4030             PLA
94E5- 91 FE      4035             STA (DIRPT),Y
94E7- A9 20      4040             LDA #VERFLAG
94E9- 8D 05 A6   4045 DOWRITE     STA IFLAGS
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94EC- A9 05      4050 DOWRITE2   LDA #5        ;WRITE COMMAND
94EE- 20 00 98   4055 GODISKIO   JSR DISKIO    ;WITH [A] = 4, OR [A] = 5
94F1- 85 F8      4060 RESPTR     STA *TEMP
94F3- 26 F8      4065            ROL *TEMP
94F5- 20 C4 91   4070            JSR ASCPTR
94F8- 20 64 90   4075            JSR POINTNAM
94FB- 18         4080            CLC
94FC- A5 F8      4085            LDA *TEMP
94FE- 6A         4090            ROR A
94FF- 60         4095            RTS
                 4100 ;
9500- 8D 05 A6   4105 DOREAD     STA IFLAGS
9503- A9 04      4110 DOREAD2    LDA #4        ;READ COMMAND
9505- D0 E7      4115            BNE GODISKIO          ;(ALWAYS)
                 4120 ;
9507- A2 01      4125 BMPDD      LDX #2-1      ;SET FOR TWO PASSES
9509- B1 FC      4130 INCIT      LDA (WORKPT),Y
950B- 18         4135            CLC
950C- 69 01      4140            ADC #$01      ;INCREMENT
950E- 91 FC      4145            STA (WORKPT),Y
9510- C8         4150            INY
9511- D1 FC      4155            CMP (WORKPT),Y
9513- F0 12      4160            BEQ NOTND
9515- 90 10      4165            BCC NOTND
9517- E0 00      4170            CPX #$00      ;SECOND TIME AROUND?
9519- F0 0A      4175            BEQ PROBLM
951B- 88         4180            DEY
951C- A9 01      4185            LDA #1        ;****
951E- 91 FC      4190            STA (WORKPT),Y
9520- C8         4195            INY
9521- C8         4200            INY
9522- CA         4205            DEX
9523- 10 E4      4210            BPL INCIT
9525- 38         4215 PROBLM     SEC
9526- 60         4220            RTS
                 4225 ;
9527- 18         4230 NOTND      CLC
9528- 60         4235            RTS
                 4240 ;
9529- 86 EE      4245 SAVEXY     STX *XREG
952B- 84 EF      4250            STY *YREG
952D- A2 26      4255            LDX #INSAVE-SCPBUF+1
952F- BD 01 A6   4260            LDA SCPBUF+1,X
9532- C9 88      4265            CMP #H,RIN    ;POSSIBLY IN "EXECUTE" MODE?
9534- D0 02      4270            BNE SAVEXY1
9536- A2 3A      4275            LDX #SCRA-SCPBUF
9538- BD 00 A6   4280 SAVEXY1    LDA SCPBUF,X
953B- 8D 61 A6   4285            STA INVEC+1
953E- BD 01 A6   4290            LDA SCPBUF+1,X
9541- 8D 62 A6   4295            STA INVEC+2
9544- A9 80      4300            LDA #$80      ;ECHO ON
9546- 8D 53 A6   4305            STA TECHO
9549- 60         4310            RTS
                 4315 ;
954A- C9 20      4320 DELIMITERS CMP #'
954C- F0 0A      4325            BEQ GOTDELIM
954E- C9 22      4330            CMP #'"
9550- F0 06      4335            BEQ GOTDELIM
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9552- C9 2C      4340             CMP #',
9554- F0 02      4345             BEQ GOTDELIM
9556- C9 2D      4350             CMP #'-
9558- 60         4355 GOTDELIM    RTS :          ;ZERO IF DELIMITER FOUND
                 4360 ;
9559- 48         4365 RSTXY       PHA
955A- 20 43 97   4370             JSR VECSWP
955D- 68         4375             PLA
955E- A6 EE      4380             LDX *XREG
9560- A4 EF      4385             LDY *YREG
9562- 60         4390             RTS
                 4395 ;
9563- 20 29 95   4400 NEWINPUT    JSR SAVEXY
9566- 20 1B 8A   4405             JSR INCHR
9569- C9 23      4410             CMP #'#
956B- F0 03      4415             BEQ DISKCMND
956D- 4C 59 95   4420             JMP RSTXY
                 4425 ;
9570- 20 1B 8A   4430 DISKCMND    JSR INCHR
9573- C9 4D      4435             CMP #'M        ;MONITOR COMMAND
9575- F0 41      4440             BEQ MONEXT
9577- 8D 57 A6   4445             STA LSTCOM
957A- 20 42 83   4450             JSR SPACE
957D- 20 5B 91   4455             JSR GETNAM
9580- 20 1B 8A   4460             JSR INCHR
9583- 20 BF 90   4465             JSR USET
9586- B0 53      4470             BCS ERROR50
9588- AD 57 A6   4475             LDA LSTCOM
958B- C9 53      4480             CMP #'S        ;SAVE COMMAND
958D- D0 22      4485             BNE TESTLD
958F- A5 7B      4490             LDA *PROGST
9591- 8D 4E A6   4495             STA P1L
9594- A5 7C      4500             LDA *PROGST+1
9596- 8D 4F A6   4505             STA P1H
9599- A5 7D      4510             LDA *PROGEN
959B- 8D 4C A6   4515             STA P2L
959E- A5 7E      4520             LDA *PROGEN+1
95A0- 8D 4D A6   4525             STA P2H
95A3- 20 FB 92   4530             JSR RBNTRY
95A6- 20 71 81   4535 DISKERR8    JSR ERMSG
95A9- 20 4D 83   4540             JSR CRLF
95AC- A9 0D      4545 BAKJOBASIC  LDA #$0D       ;ASCII FOR CR
95AE- 4C 59 95   4550             JMP RSTXY
                 4555 ;
95B1- C9 4C      4560 TESTLD      CMP #'L        ;LOAD COMMAND
95B3- F0 0F      4565             BEQ LOADBASIC
95B5- 6C 2C A6   4570             JMP (DOSEXT) ← DEFAULTS TO RSTXY
                 4575 ;                          (FOR DOS EXTENSIONS)
95B8- 20 35 80   4580 MONEXT      JSR USRENT
95BB- 20 86 8B   4585             JSR ACCESS
95BE- 20 43 97   4590             JSR VECSWP
95C1- 4C AC 95   4595             JMP BAKTOBASIC
                 4600 ;
95C4- A9 01      4605 LOADBASIC   LDA #1         ;MAKE ONE PARM COMMAND
95C6- 8D 49 A6   4610             STA PARNR
95C9- 20 9E 90   4615             JSR LOADIT
95CC- B0 D8      4620             BCS DISKERR8
95CE- AD 4C A6   4625             LDA P2L
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95D1- 85 7D      4630            STA *PROGEN
95D3- AD 4D A6   4635            LDA P2H
95D6- 85 7E      4640            STA *PROGEN+1
95D8- 4C AC 95   4645            JMP BAKTOBASIC
                 4650 ;
95DB- A9 50      4655 ERROR50    LDA #$50      ;DATA ENTRY ERROR ERROR CODE
95DD- 38         4660            SEC
95DE- B0 C6      4665            BCS DISKERR8          ;(ALWAYS)
                 4670 ;
95E0- C9 30      4675            CMP #$30      ;0
95E2- 90 0F      4680            BCC RNGER2    ;THESE LINES NOT REQUIRED
95E4- C9 38      4685            CMP #$38      ;8
95E6- 60         4690            RTS
                 4695 ;
95E7- 20 FD 91   4700 BMPDIR     JSR SECCNT
95EA- A0 10      4705            LDY #DIRSEC
95EC- 20 07 95   4710 BMPDR1     JSR BMPDD
 5EF- 90 03      4715            BCC MORTRKS2
 5F1- A9 52      4720            LDA #$52      ;DISK FULL ERROR CODE
95F3- 38         4725 RNGER2     SEC
95F4- 60         4730 MORTRKS2   RTS
                 4735 ;
95F5- C0 50      4740 ENTER      CPY #80       ;BUFFER END?
95F7- D0 05      4745            BNE ENMOR
95F9- A2 50      4750 ERROROUT   LDX #$50      ;DATA ENTRY ERROR ERROR CODE
95FB- 6C 0E B0   4755            JMP (ERROR)
                 4760 ;
95FE- A2 00      4765 ENMOR      LDX #$00      ;****
9600- 20 BA 96   4770            JSR SETUPRAE
9603- B0 F4      4775            BCS ERROROUT
9605- AD 01 01   4780            LDA TXST+1
9608- 8D 4F A6   4785            STA P1H
960B- AD 00 01   4790            LDA TXST
960E- 8D 4E A6   4795            STA P1L
9611- 18         4800            CLC
9612- A5 D3      4805            LDA *TXPRES
 614- 69 02      4810            ADC #$02      ;ADD 2 TO GET RAE EOF MARKER
 616- 8D 4C A6   4815            STA P2L
9619- A5 D4      4820            LDA *TXPRES+1
961B- 69 00      4825            ADC #$00      ;HIGH BYTE OF ADDITION
961D- 8D 4D A6   4830            STA P2H
9620- 20 FB 92   4835            JSR RBNTRY
9623- 90 0E      4840            BCC BAKTORAE
9625- B0 77      4845            BCS DRER2     ;(ALWAYS)
                 4850 ;
9627- C0 50      4855 LOAD       CPY #80       ;BUFFER END?
9629- D0 03      4860            BNE LOADRAE
962B- 4C F9 95   4865            JMP ERROROUT
                 4870 ;
962E- A2 00      4875 LOADRAE    LDX #$00      ;****
9630- 20 48 96   4880            JSR LOADRAE2
9633- A2 FF      4885 BAKTORAE   LDX #$FF      ;RESTORE STACK AFTER LOAD
9635- 9A         4890            TXS
9636- 4C 5E B0   4895            JMP RAEHOT
                 4900 ;
9639- 68         4905 CONTONDISK PLA
963A- 68         4910            PLA
963B- 68         4915            PLA
```

```
963C- 68          4920             PLA
963D- A0 00       4925             LDY #$00      ;PARTIAL FIX .CT BUG!!!
963F- 8C 10 01    4930             STY FILENO
9642- 20 FF B4    4935             JSR MVNEXT
9645- 20 FF B4    4940             JSR MVNEXT
9648- 20 BA 96    4945 LOADRAE2    JSR SETUPRAE
964B- B0 AC       4950             BCS ERROROUT
964D- A9 02       4955             LDA #2        ;SET TO TWO PARMS
964F- 8D 49 A6    4960             STA PARNR
9652- AC 46 A6    4965             LDY RAESAVEY
9655- 20 FF B4    4970             JSR MVNEXT
9658- C0 50       4975             CPY #80       ;BUFFER END?
965A- 90 0F       4980             BCC APPEND
965C- AD 00 01    4985             LDA TXST
965F- 8D 4A A6    4990             STA P3L
9662- AD 01 01    4995             LDA TXST+1
9665- 8D 4B A6    5000             STA P3H
9668- 4C 75 96    5005             JMP RAEIN
                  5010 ;
966B- A5 D4       5015 APPEND      LDA *TXPRES+1
966D- 8D 4B A6    5020             STA P3H
9670- A5 D3       5025             LDA *TXPRES
9672- 8D 4A A6    5030             STA P3L
9675- 20 E5 90    5035 RAEIN       JSR DIRSRCH
9678- C9 00       5040             CMP #$00      ;ZERO INDICATES FOUND OK
967A- D0 1D       5045             BNE DRER
967C- 20 6A 92    5050             JSR MOVEADDRS
967F- 20 A2 96    5055             JSR WILFIT
9682- 20 35 92    5060             JSR DOLOAD
9685- 90 02       5065             BCC FIXADDR
9687- B0 15       5070             BCS DRER2     ;(ALWAYS)
                  5075 ;
9689- 38          5080 FIXADDR     SEC
968A- AD 4C A6    5085             LDA P2L
968D- E9 02       5090             SBC #$02      ;SUBTRACT 2 FROM RAE EOF MARKER
968F- 85 D3       5095             STA *TXPRES
9691- AD 4D A6    5100             LDA P2H
9694- E9 00       5105             SBC #$00      ;HIGH BYTE OF SUBTRACTION
9696- 85 D4       5110             STA *TXPRES+1
9698- 60          5115             RTS
                  5120 ;
9699- 48          5125 DRER        PHA
969A- 20 F2 96    5130             JSR SETPARMS
969D- 68          5135             PLA
969E- AA          5140 DRER2       TAX
969F- 6C 0E B0    5145             JMP (ERROR)
                  5150 ;
96A2- AD 4D A6    5155 WILFIT      LDA P2H
96A5- CD 03 01    5160             CMP TXEN+1
96A8- 90 0F       5165             BCC FITSOK
96AA- AD 4C A6    5170             LDA P2L
96AD- CD 02 01    5175             CMP TXEN
96B0- 90 07       5180             BCC FITSOK
96B2- A2 0F       5185             LDX #$0F      ;TEXT FILE OVERFLOW ERROR CODE
96B4- 68          5190             PLA
96B5- 68          5195             PLA
96B6- 6C 0E B0    5200             JMP (ERROR)
                  5205 ;
```

```
96B9- 60        5210 FITSOK     RTS
                5215 ;
96BA- 8C 46 A6  5220 SETUPRAE   STY RAESAVEY
96BD- 20 C4 91  5225            JSR ASCPTR
96C0- 18        5230            CLC
96C1- 98        5235            TYA
96C2- 69 35     5240            ADC #$35      ;5
96C4- 85 FA     5245            STA *ASCPT
96C6- 20 86 BB  5250            JSR ACCESS
96C9- 20 64 90  5255            JSR POINTNAM
96CC- 20 99 91  5260            JSR NMBLANK
96CF- A0 00     5265            LDY #$00      ;ZERO POINTER
96D1- B1 FA     5270 NOT10YET   LDA (ASCPT),Y
96D3- 20 4A 95  5275            JSR DELIMITERS
96D6- F0 0A     5280            BEQ DLIMOK
96D8- 91 FC     5285            STA (WORKPT),Y
96DA- C8        5290            INY
96DB- C0 0A     5295            CPY #11-1     ;TEN CHAR MAX PER NAME
96DD- 90 F2     5300            BCC NOT10YET
96DF- 4C F9 95  5305 NOGOOD     JMP ERROROUT
                5310 ;
96E2- 20 C4 91  5315 DLIMOK     JSR ASCPTR
96E5- AC 46 A6  5320            LDY RAESAVEY
96E8- 20 FF B4  5325            JSR MVNEXT
96EB- C0 50     5330            CPY #80       ;BUFFER END?
96ED- F0 F0     5335            BEQ NOGOOD
96EF- 20 BF 90  5340            JSR USET
96F2- A9 20     5345 SETPARMS   LDA #VERFLAG
96F4- 8D 05 A6  5350            STA IFLAGS
96F7- A9 01     5355            LDA #1        ;RESTORE COMMAND
96F9- 20 00 98  5360            JSR DISKIO    ;WITH [A] = 1
96FC- 20 F1 94  5365            JSR RESPTR
96FF- B0 1A     5370            BCS ERROROUT2
9701- AE 14 A6  5375            LDX NOTRKS
9704- CA        5380            DEX
9705- 8A        5385            TXA
9706- A0 1B     5390            LDY #MAXTRK
9708- 91 FC     5395            STA (WORKPT),Y
970A- A9 01     5400            LDA #$01      ;;;;;
970C- A0 13     5405            LDY #DTXTOT
970E- 91 FC     5410            STA (WORKPT),Y
9710- AD 0E A6  5415            LDA NOSECS
9713- A0 11     5420            LDY #DSXTOT
9715- 91 FC     5425            STA (WORKPT),Y
9717- A0 19     5430            LDY #DMXTOT
9719- 91 FC     5435            STA (WORKPT),Y
971B- 60        5440 ERROROUT2  RTS
                5445 ;
971C- A9 F5     5450 RAELINK    LDA #L,ENTER
971E- 85 F0     5455            STA *ENTVEC
9720- A9 95     5460            LDA #H,ENTER
9722- 85 F1     5465            STA *ENTVEC+1
9724- A9 27     5470            LDA #L,LOAD
9726- 85 F2     5475            STA *LODVEC
9728- A9 96     5480            LDA #H,LOAD
972A- 85 F3     5485            STA *LODVEC+1
972C- A9 96     5490            LDA #H,CONTONDISK
972E- 85 F7     5495            STA *GETVEC+1
```

```
9730- A9 39      5500             LDA #L,CONTONDISK
9732- 85 F6      5505             STA *GETVEC
9734- 4C 06 90   5510             JMP MONENTRY
                 5515 ;
9737- 20 06 90   5520 BASLINK     JSR MONENTRY
973A- A9 00      5525             LDA #$00       ;LO BYTE IS ZERO
973C- 85 87      5530             STA *MEMLIM
973E- AD 2B A6   5535             LDA WRKBUF+1
9741- 85 88      5540             STA *MEMLIM+1
9743- A9 63      5545 VECSWP      LDA #L,NEWINPUT
9745- A0 95      5550             LDY #H,NEWINPUT
9747- 8D 61 A6   5555             STA INVEC+1
974A- 8C 62 A6   5560             STY INVEC+2
974D- 60         5565             RTS
                 5570 ;
974E- 20 4D 83   5575 LISTIT      JSR CRLF
9751- A2 09      5580             LDX #10-1      ;TEN CHARS PER NAME
9753- B1 FE      5585 LISTIT2     LDA (BUFPT),Y
9755- 20 47 8A   5590             JSR OUTCHR
9758- C8         5595             INY
9759- CA         5600             DEX
975A- 10 F7      5605             BPL LISTIT2
975C- A9 2D      5610 LISTIT3     LDA #'-
975E- 20 47 8A   5615             JSR OUTCHR
9761- A2 02      5620             LDX #2         ;TWO BYTES EACH
9763- B1 FE      5625 LISTIT4     LDA (BUFPT),Y
9765- 20 FA 82   5630             JSR OUTBYT
9768- C8         5635             INY
9769- CA         5640             DEX
976A- D0 F7      5645             BNE LISTIT4
976C- C0 10      5650             CPY #16        ;SIXTEEN SETS
976E- 90 EC      5655             BCC LISTIT3
9770- 60         5660             RTS
                 5665 ;
//0000,9771,9771
```

```
0005  ;          CROSS-REFERENCED LABEL LISTING
0010  ;          ------------------ ----- -------
0015
0020             / = EXTERNAL            # = LINE DEFINED
0025
0030  LABEL      ;VALUE                    CROSS-REFERENCES
0035  ------     ;-----                    ----------------
0040  /ACCESS    ;$8B86    #0355    0890    4585    5250
0045  /ASCPT     ;$00FA    #0200    2060    2070    5245    5270
0050  /AVAIL     ;$0020    #0800    3770
0055  /BUFFER    ;$0300    #0250    0980
0060  /BUFPT     ;$00FE    #0220    1985    2000    2025    2035    2095
0065             ;          2110    2485    2495    3095    3125    3170
0070             ;          3180    3200    3215    3225    3960    5585
0075             ;          5625
0080  /BUFST     ;$0E80    #0670    1100
0085  /CRLF      ;$834D    #0335    2320    4540    5575
0090  /DCMVEC:   ;$00EC    #0135    ::::
0095  /DENFLAG   ;$0080    #0790    3765
0100  /DIRCNT    ;$0016    #0575    1630    2260
0105  /DIRCT2    ;$001D    #0610    1655    3475
0110  /DIRECT    ;$0000    #0630    0635    0640    0645    0650    0655
0115  /DIRPT     ;$00FE    #0230    1495    2530    2660    2680    2880
0120             ;          2940    2960    3540    3560    3575    4020
0125             ;          4035
0130  /DIRSEC    ;$0010    #0550    1400    3380    4705
0135  /DIRTRK    ;$0012    #0560    1415
0140  /DISKIO    ;$9800    #0680    1015    1045    3850    4055    5360
0145  /DMXTOT    ;$0019    #0590    5430
0150  /DOSEXT    ;$A62C    #0400    4570
0155  /DRNTRY    ;$0014    #0570    2085    2480
0160  /DSXTOT    ;$0011    #0555    5420
0165  /DTASEC    ;$0018    #0585    2210    2300    2685    2965    3545
0170  /DTATRK    ;$001A    #0595    2665    2945    3525
0175  /DTXTOT    ;$0013    #0565    5405
0180  /ENTVEC    ;$00F0    #0150    5455    5465
0185  /ERMSG     ;$8171    #0310    1110    1300    2725    4535
0190  /ERROR     ;$B00E    #0505    4755    5145    5200
0195  /FILEAH:   ;$000C    #0645    ::::
0200  /FILENO    ;$0110    #0280    4930
0205  /FILNAM    ;$0000    #0635    1490    1775
0210  /FILSAH    ;$000A    #0640    2520
0215  /FILSEC    ;$000F    #0655    2675    2955    3555
0220  /FILTRK    ;$000E    #0650    2655    2935    3535    4015
0225  /FROMPT    ;$00FC    #0215    1740
0230  /FXBFLG    ;$A624    #0385    0995    2890    3460
0235  /GETVEC    ;$00F6    #0165    3270    3360    5495    5505
0240  /INCHR     ;$8A1B    #0345    1780    4405    4430    4460
0245  /INPFLG    ;$00EE    #0140    0940
0250  /INSAVE    ;$A625    #0390    0975    1055    1065    4255
0255  /INVEC     ;$A660    #0480    1050    1060    4285    4295    5555
0260             ;          5560
0265  /LODVEC    ;$00F2    #0155    5475    5485
0270  /LSTCOM    ;$A657    #0475    1505    1570    4445    4475
0275  /MAXTRK    ;$001B    #0600    5390
0280  /MEMLIM    ;$0087    #0110    5530    5540
0285  /MTRFLAG   ;$0080    #0740    1450    3245    3820
0290  /MVNEXT    ;$B4FF    #0515    4935    4940    4970    5325
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```
0295  /NAMBUF     ;$0000    #0545    1935
0300  /NMPNT      ;$00FC    #0210    1075    1085    1940    3120
0305  /OUTBYT     ;$82FA    #0325    5630
0310  /OUTCHR     ;$8A47    #0350    1880    5590    5615
0315  /OUTFLG:    ;$00EF    #0145    ::::
0320  /P1H        ;$A64F    #0465    2595    2635    2825    4505    4785
0325  /P1L        ;$A64E    #0460    2580    2615    2780    2835    3740
0330              ;          4495    4795
0335  /P2H        ;$A64D    #0455    2465    2590    2645    3320    4525
0340              ;          4635    4830    5100    5155
0345  /P2L        ;$A64C    #0450    1175    2455    2535    2575    2630
0350              ;          3090    3330    3725    3755    4515    4625
0355              ;          4815    5085    5170
0360  /P3H        ;$A64B    #0445    2170    2180    2290    2460    2830
0365              ;          3315    5000    5020
0370  /P3L        ;$A64A    #0440    2155    2165    2280    2450    2840
0375              ;          3325    3635    3735    3750    4990    5030
0380  /PARM       ;$8220    #0320    2335
0385  /PARNR      ;$A649    #0435    1150    2555    2765    3670    4610
0390              ;          4960
0395  /PROGEN     ;$007D    #0105    4510    4520    4630    4640
0400  /PROGST     ;$007B    #0100    4490    4500
0405  /PSHOVE     ;$8208    #0315    1170    2605    2610    2800    3695
0410              ;          3715
0415  /PUTVEC:    ;$00F4    #0160    ::::
0420  /RAEBUF     ;$0135    #0285    2055    2065
0425  /RAEHOT     ;$B05E    #0510    4895
0430  /RAESAVEY   ;$A646    #0430    4965    5220    5320
0435  /RIN        ;$887E    #0340    4265
0440  /SCPBUF     ;$A600    #0375    0690    4255    4260    4275    4280
0445              ;          4290
0450  /SCR6       ;$A636    #0410    2585    2625
0455  /SCR7       ;$A637    #0415    2600    2640
0460  /SCRA       ;$A63A    #0420    4275
0465  /SCRB:      ;$A63B    #0425    ::::
0470  /SECLEN     ;$0003    #0805    2230
0475  /SELFLAG    ;$0040    #0745    1450    3245    3820
0480  /SIDFLAG    ;$0040    #0795    3770
0485  /SIDNUM     ;$0017    #0580    1340    3415    3870    3905    3965
0490  /SPACE      ;$8342    #0330    4450
0495  /TECHO      ;$A653    #0470    4305
0500  /TEMP       ;$00F8    #0195    4060    4065    4085
0505  /TOPT       ;$00FE    #0225    1745
0510  /TXEN       ;$0102    #0275    5160    5175
0515  /TXPRES     ;$00D3    #0130    4805    4820    5015    5025    5095
0520              ;          5110
0525  /TXST       ;$0100    #0270    4780    4790    4985    4995
0530  /URCNEW     ;$A62E    #0405    0900    0910    3595
0535  /URCVEC     ;$A66C    #0485    0895    0905    0920    0930
0540  /USRENT     ;$8035    #0305    4580
0545  /VERFLAG    ;$0020    #0750    1025    1450    3345    3445    3580
0550              ;          3820    4040    5345
0555  /VRFLAG     ;$001C    #0605    1375    2995
0560  /WORKPT     ;$00FC    #0205    1345    1380    1405    1420    1635
0565              ;          1650    1660    1810    1895    2090    2105
0570              ;          2265    2490    2505    2670    2690    2950
0575              ;          2970    3000    3300    3310    3390    3410
0580              ;          3420    3480    3530    3550    3875    3910
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0585                ;          3970     4130     4145     4155     4190     5285
0590                ;          5395     5410     5425     5435
0595  /WORKSP       ;$0000   #0540     0545     0550     0555     0560     0565
0600                ;          0570     0575     0580     0585     0590     0595
0605                ;          0600     0605     0610
0610  /WRKBUF       ;$A62A   #0395     0955     1070     1080     1970     1990
0615                ;          5535
0620  /XREG         ;$00EE   #0185     4245     4380
0625  /YREG         ;$00EF   #0190     4250     4385
0630  ADJCNT        ;$91D9   #2125     2205
0635  APPEND        ;$966B   #5015     4980
0640  AR2           ;$908D   #1175     1165
0645  ASCLP         ;$9163   #1780     1850
0650  ASCPTR        ;$91C4   #2055     4070     5225     5315
0655  BACK          ;$9303   #2870     2915
0660  BADSEGMES     ;$9377   #3150     3295     3305
0665  BADVERIFY     ;$93A4   #3270     2990     3255
0670  BAKSP         ;$9183   #1875     1820     1830
0675  BAKTOBASIC    ;$95AC   #4545     4595     4645
0680  BAKTORAE      ;$9633   #4885     4840
0685  BASENTRY:     ;$9000   #0870     ::::
0690  BASLINK       ;$9737   #5520     0870
0695  BLLP          ;$919D   #1940     1955
0700  BMPDD         ;$9507   #4125     4710
0705  BMPDIR        ;$95E7   #4700     1680     3495
0710  BMPDR1        ;$95EC   #4710     2215
0715  BMPNTR        ;$91F5   #2205     2395     3020
0720  BUFFERERR     ;$9231   #2360     2330     2340
0725  BUFFERERR2    ;$9432   #3605     3675
0730  CMPRET        ;$915A   #1755     1735
0735  CMPSUB        ;$914E   #1715     1535
0740  CONTONDISK    ;$9639   #4905     5490     5500
0745  CPLOOP        ;$9150   #1725     1750
0750  CURTRK:       ;$A60D   #0815     ::::
0755  DATAERR1      ;$92C1   #2715     2775     3605
0760  DATAERR2      ;$92C4   #2725     2795
0765  DATAERR3      ;$92C2   #2720     2760
0770  DATAERR4      ;$931B   #2925     2870     2905     3015
0775  DATAERR5      ;$92C7   #2735     2810
0780  DECREMENT     ;$9133   #1630     1545
0785  DELIMITERS    ;$954A   #4320     1800     5275
0790  DFLAGS        ;$A60C   #0770     2225     3890
0795  DFLTBLOK      ;$906F   #1100     0950
0800  DFLTLOAD:     ;$9023   #0945     ::::
0805  DFLTLOOP      ;$9025   #0950     0965
0810  DIFFP2TOP3    ;$9250   #2445     2405     3030
0815  DIRPARMS      ;$93D8   #3380     1440     2305     3045     3280     3500
0820  DIRSRCH       ;$90E5   #1435     1215     2865     3655     5035
0825  DISKCMND      ;$9570   #4430     4415
0830  DISKERR1      ;$9234   #2370     2390     2400     2420
0835  DISKERR2      ;$914B   #1700     1685
0840  DISKERR5      ;$93EB   #3430     3455     3465
0845  DISKERR8      ;$95A6   #4535     4620     4665
0850  DISKPARMS:    ;$9033   #0980     ::::
0855  DLIMOK        ;$96E2   #5315     5280
0860  DOFORMAT      ;$9490   #3820     3800
0865  DOLOAD        ;$9235   #2380     1265     2410     5060
0870  DOREAD        ;$9500   #4105     1455     3250
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0875  DOREAD2      ;$9503    #4110    2385     3050     3285
0880  DOSTORE      ;$932F    #2980    3035
0885  DOWRITE      ;$94E9    #4045    3450     3585
0890  DOWRITE2     ;$94EC    #4050    2985     3185     3350
0895  DR0DSB       ;$A606    #0760    3815
0900  DR1DSB       ;$A609    #0765    3795
0905  DRASAV:      ;$A613    #0840    ::::
0910  DRER         ;$9699    #5125    5045
0915  DRER2        ;$969E    #5140    4845     5070
0920  DRINIT       ;$90D8    #1395    1435
0925  DSKPTR       ;$91A5    #1970    1480     2020
0930  DTAPNT       ;$93EC    #3440    3070     3355
0935  DUPP1INP3    ;$92EE    #2825    2650     2855
0940  ENMOR        ;$95FE    #4765    4745
0945  ENTER        ;$95F5    #4740    5450     5460
0950  EOFASC       ;$9182    #1865    1845     1925
0955  ERROR50      ;$95DB    #4655    4470
0960  ERROROUT     ;$95F9    #4750    4775     4865     4950     5305
0965  ERROROUT2    ;$971B    #5440    5370
0970  FFLAGS:      ;$A612    #0835    ::::
0975  FIRST00      ;$9121    #1570    1500
0980  FITSOK       ;$96B9    #5210    5165     5180
0985  FIXADDR      ;$9689    #5080    5065
0990  FIXPTR       ;$91B6    #2020    1445     3040     3240     3275     3340
0995                ;          3440    3505     3840     3945
1000  FNLSTR       ;$9415    #3525    3510
1005  FORMAT       ;$944E    #3670    3620
1010  FORMATDIR    ;$94C6    #3945    3880     3915
1015  FORMATERR    ;$94C3    #3935    3860     3885     3920
1020  FOUND        ;$912F    #1610    1540
1025  GDSPOT       ;$931C    #2935    2885     2895
1030  GETDTA       ;$921F    #2315    1140     2755
1035  GETNAM       ;$915B    #1765    2325     4455
1040  GODISKIO     ;$94EE    #4055    4115
1045  GOTDELIM     ;$9558    #4355    4325     4335     4345
1050  GOTNAM       ;$9181    #1860    1805
1055  IADDR        ;$A603    #0715    0985     1000     2030     2040     2285
1060                ;          2295
1065  IDISK        ;$A600    #0700    1005     1360     3780
1070  IFLAGS       ;$A605    #0720    1030     3825     4045     4105     5350
1075  INCIT        ;$9509    #4130    4210
1080  INTPRM       ;$920E    #2280    2380     2980
1085  ISECT        ;$A602    #0710    1040     3395     3835     4010
1090  ITRACK       ;$A601    #0705    1010     3425     3975
1095  KPSRCH       ;$9111    #1535    1515
1100  LISTIT       ;$974E    #5575    1520
1105  LISTIT2      ;$9753    #5585    5605
1110  LISTIT3      ;$975C    #5610    5655
1115  LISTIT4      ;$9763    #5625    5645
1120  LOAD         ;$9627    #4855    5470     5480
1125  LOADBASIC    ;$95C4    #4605    4565
1130  LOADIT       ;$909E    #1215    1155     4615
1135  LOADRAE      ;$962E    #4875    4860
1140  LOADRAE2     ;$9648    #4945    4880
1145  LOADX        ;$9099    #1205    1185
1150  MONENTRY     ;$9006    #0890    5510     5520
1155  MONEXT       ;$95B8    #4580    4440
1160  MONLINK      ;$9078    #1130    0915     0925
```

```
1165  MORTRKS      ;$90E8    #1440     1690     2910
1170  MORTRKS2     ;$95F4    #4730     4715
1175  MOVADLOOP    ;$926E    #2530     2550
1180  MOVEADDRS    ;$926A    #2520     1260     5050
1185  MOVPARMS     ;$9360    #3080     3065     3335
1190  MVPLOOP      ;$9364    #3090     3110
1195  NEWINPUT     ;$9563    #4400     5545     5550
1200  NMBLANK      ;$9199    #1930     1770     5260
1205  NODISK       ;$906E    #1090     1020
1210  NOGOOD       ;$96DF    #5305     5335
1215  NOLIST       ;$944B    #3660     3650
1220  NOPRM        ;$9196    #1920     1910
1225  NORELOCAT    ;$92AA    #2650     2565
1230  NOSECS       ;$A60E    #0820     5415
1235  NOT10YET     ;$96D1    #5270     5300
1240  NOTDUBLD     ;$947D    #3770     3760
1245  NOTND        ;$9527    #4230     4160     4165
1250  NOTRKS       ;$A614    #0845     5375
1255  NOVER        ;$9342    #3020     3005
1260  NTCHECK      ;$90FC    #1485     1560
1265  NTDUN        ;$9398    #3230     3220
1270  NXNTRY       ;$938D    #3200     1555     3520
1275  NXTONE       ;$9116    #1545     1525
1280  NXTSEC       ;$9143    #1680     1550
1285  OKNAME       ;$90AF    #1260     1230
1290  P1FORMAT:    ;$9460    #3715     ::::
1295  P2FORMAT     ;$9468    #3730     3710
1300  P3FORMAT     ;$946D    #3740     3685
1305  POINTNAM     ;$9064    #1070     1765     1790     1885     2315     4075
1310               ;          5255
1315  PROBLM       ;$9525    #4215     4175
1320  PTNTRY       ;$91CD    #2085     3060     3290     3470
1325  PWRON        ;$912B    #1590     1580
1330  RAEENTRY:    ;$9003    #0880     ::::
1335  RAEIN        ;$9675    #5035     5005
1340  RAELINK      ;$971C    #5450     0880
1345  RBNTRY       ;$92FB    #2855     2805     4530     4835
1350  READVERIFY   ;$9399    #3240     3010
1355  RESER        ;$90B5    #1275     1145     1190     2735     3660     3935
1360  RESPTR       ;$94F1    #4060     3855     5365
1365  RETURN1      ;$9098    #1195     1210     1220     1250
1370  RETURN2      ;$9376    #3140     3025     3055
1375  RNGER2       ;$95F3    #4725     4680
1380  RSTXY        ;$9559    #4365     1105     4420     4550
1385  S3CHECK      ;$92CA    #2745     1120
1390  S9CHECK      ;$9435    #3615     2705
1395  SAMSEC       ;$9412    #3520     3490
1400  SAVEXY       ;$9529    #4245     4400
1405  SAVEXY1      ;$9538    #4280     4270
1410  SECCNT       ;$91FD    #2225     1475     2125     4700
1415  SECSRCH      ;$90F6    #1475     1460
1420  SETDRV0      ;$948C    #3810     3785
1425  SETPARMS     ;$96F2    #5345     1205     1235     1285     1585     2415
1430               ;          2790     3645     5130
1435  SETUPRAE     ;$96BA    #5220     4770     4945
1440  SHIFT        ;$9205    #2245     2255
1445  SINGLESIDE   ;$94C2    #3925     3895
1450  SIZADJUST    ;$91E0    #2150     2190
```

```
 1455  SMUDGE      ;$9381    #3165    2900
 1460  STEPRT:     ;$A611    #0830    ::::
 1465  STOPTR      ;$925E    #2480    2975
 1470  TESTLD      ;$95B1    #4560    4485
 1475  TESTS3      ;$9075    #1120    1135
 1480  TESTS9      ;$92BE    #2705    2750
 1485  TESTY       ;$917B    #1840    1915
 1490  UCMDVC:     ;$A60F    #0825    ::::
 1495  USERQ       ;$942F    #3595    3630
 1500  USET        ;$90BF    #1310    1180    2785    3640    3745    4465
 1505              ;          5340
 1510  VECSWP      ;$9743    #5545    4370    4590
 1515  WILFIT      ;$96A2    #5155    5055
 1520  WRTNAM      ;$936D    #3115    ::::
 1525  XFER        ;$936F    #3120    3135
//
```

```
0005            .LS
0010 ;      SYMDOS DISK DRIVE INTERFACE
0015
0020 ;      RESIDENT $9800 $9FFF
0025 ;      CHECKSUM $B70B
0030
0035 ;      COPYRIGHT 1982
0040 ;      SYM USERS' GROUP
0045
0050 ;      V 1.0  -  24 JUNE 1982
0055
0060 ;      SET $0200 $54FD $5500 $5FFD
0065
0070 ; Note: ":" following a label indicates that the
0075 ; label is not referenced, but used for info only
0080
0085
0090 ;      PAGES ZERO AND ONE LOCATIONS
0095
0100 WKAREA     .DE $F9
0105 BUFPTR     .DE $FE)      ;TWO BYTES
0110 CMDVEC     .DE $FE}      ;TWO BYTES
0115 STATUS     .DE $FE)
0120 TMOMSK     .DE $FF
0125
0130 PAGE.1     .DE $0100     ;STACK POINTER HIGH BYTE
0135
0140 ;      SUPERMON ADDRESSES
0145
0150 IRQBRK     .DE $800F
0155 SAVER      .DE $8188
0160 RESXAF     .DE $81B8
0165 GETKEY     .DE $88AF
0170 HDOUTM     .DE $8900
0175 HKEYM      .DE $89BE
0180 NBELL      .DE $89CD
0185 BEEPP3     .DE $8975
0190 ACCESS     .DE $8B86
0195
0200 ;      6532 TIMER ADDRESSES
0205
0210 IOT6532    .DE $A400
0215 RDTIMR     .DE IOT6532+$04       ;DISABLES TIMER IRQ
0220 WRTIMR     .DE IOT6532+$17       ;1/1024T RATE, ENABLES IRQ
0225
0230 SCPBFR     .DE $A600
0235
0240            .BA SCPBFR
0245
0250 ;      INPUT/OUTPUT REQUEST BLOCK
0255
A600-       0260 IDRIVE     .DS 1
A601-       0265 ITRACK     .DS 1
A602-       0270 ISECTR     .DS 1
A603-       0275 IADDRS     .DS 2
A605-       0280 IFLAGS     .DS 1
0285
```

```
                0290 ;      IFLAGS DEFINITIONS
                0295
                0300 MTRFLG:     .DE $80
                0305 SELFLG:     .DE $40
                0310 VERFLG      .DE $20
                0315
                0320 ;      DATA FOR TWO POSSIBLE DRIVES
                0325
A606-           0330 DR0DATA     .DS 3
A609-           0335 DR1DATA     .DS 3
                0340
                0345 ;      DATA FOR CURRENT DISK DRIVE
                0350
                0355 CURDATA
A60C-           0360 DFLAGS      .DS 1
A60D-           0365 CURTRK      .DS 1
A60E-           0370 NOSECS      .DS 1
                0375
                0380 ;      DFLAGS DEFINITIONS
                0385
                0390 DENFLG      .DE $80        ;= DOUBLE
                0395 SIDFLG      .DE $40        ;= TWO SIDED
                0400 AVAIL       .DE $20
                0405 SECLEN      .DE $03
                0410
                0415 ;      SYSRAM - LONG TERM STORAGE
                0420
A60F-           0425 UCMDVC      .DS 2
A611-           0430 STEPRT      .DS 1
A612-           0435 FFLAGS      .DS 1          ;ONLY ONE!, $80 = 5 1/4 "
A613-           0440 DRASAV      .DS 1
A614-           0445 NOTRKS      .DS 1
                0450
                0455 ;      SYSRAM - TRANSIENT STORAGE
                0460
A615-           0465 LSCMSV      .DS 1
                0470 FMTWRK      .DI LSCMSV
A616-           0475 STKPTR      .DS 1
A617-           0480 RETRIES     .DS 1          ;(LONG TERM, DEFAULT IS 3)
                0485
                0490 RDADBUF
                0495 FMTPRM
                0500
                0505             .BA FMTPRM
                0510
A618-           0515 NOSPCH      .DS 1
A619-           0520 NOZERO      .DS 1
A61A-           0525 NOPAD5      .DS 1
A61B-           0530 NOPAD2      .DS 1
A61C-           0535 PADCHR      .DS 1
A61D-           0540 DATPAT      .DS 1
A61E-           0545 SECCTR      .DS 1
                0550 TYP1ST      .DI SECCTR
                0555
                0560             .BA RDADBUF
                0565
A618-           0570 IDTRAK      .DS 1
A619-           0575 SIDSAV      .DS 1
```

```
A61A-           0580 IDSECT:     .DS 1
A61B-           0585 CURSCL      .DS 1
A61C-           0590 CRCBYTES:   .DS 2
A61E-           0595 RDADSOFT    .DS 1
                0600
A61F-           0605 SEEKARG     .DS 1
                0610
                0615 ;      SYSRAM - SCRATCH PAD
                0620
                0625 SCR6        .DE $A636
                0630 SCR7        .DE $A637
                0635 SCR8        .DE $A638
                0640 SCR9        .DE $A639
                0645 [illegible] .DE $A67F
                0650 COMSAV      .DE SCR6
                0655 RDWRSOFT    .DE SCR6
                0660 FRMTSOFT    .DE SCR6
                0665 SEEKSOFT    .DE SCR7
                0670 NOPAD1      .DE SCR7
                0675 NOPAD3      .DE SCR8
                0680 LSTCMD      .DE SCR9
                0685
                0690 ;      SYSRAM - VECTORS
                0695
                0700 INVEC       .DE $A660
                0705 OUTVEC      .DE $A663
                0710 SCNVEC      .DE $A66F
                0715 IRQVEC      .DE $A67E
                0720
                0725 ;      1791 REGISTERS
                0730
                0735 STAREG      .DE $F000
                0740 CMDREG      .DE $F000
                0745 TRKREG      .DE $F001
                0750 SECREG      .DE $F002
                0755 DATREG      .DE $F003
                0760
                0765 IOREG       .DE $F100
                0770
                0775 ;      1791 COMMANDS
                0780 ;@ Notice the choice of option flags!
                0785
                0790 C.RESTORE   .DE %00001000
                0795 C.SEEK      .DE %00011000
                0800 C.SEEKVER   .DE %00011100
                0805 C.READSEC   .DE %10000010
                0810 C.WRITSEC   .DE %10100010
                0815 C.RDADDRS   .DE %11000000
                0820 C.CLEARI    .DE %11010000
                0825 C.FORCE1    .DE %11011000
                0830 C.WRITTRK   .DE %11110000
                0835 VERBIT      .DE %00000100
                0840
                0845 ;      1791 STAREG BITS
                0850
                0855 NOTRDY      .DE $80
                0860 WRTPRT      .DE $40
                0865 RNFBIT      .DE $10
```

```
                        0870 SKBIT      .DE $10
                        0875 CRCBIT     .DE $08
                        0880 LSTDAT     .DE $04
                        0885 IPBIT      .DE $02
                        0890 BSYBIT     .DE $01
                        0895
                        0900 ;      1791 STATUS ERROR MASKS
                        0905
                        0910 SKERMA     .DE %10011001
                        0915 RAERMA     .DE %10011111
                        0920 RWERMA     .DE %11011101
                        0925
                        0930 ;      IOREG BITS
                        0935
                        0940 DENSEL     .DE $80
                        0945 HLTSEL     .DE $10
                        0950 SIDSEL     .DE $08
                        0955 MTRSEL     .DE $04
                        0960 DR1SEL:    .DE $02
                        0965 DR0SEL:    .DE $01
                        0970
                        0975 ;      MISCELLANEOUS CONSTANTS
                        0980
                        0985 SOFMAX     .DE $03
                        0990
                        0995            .BA $9800
                        1000            .MC $9000
                        1005            .OS
                        1010
                        1015 ;@ Enter only at this point with disk command code in [A]
                        1020 ;@ See ADDRS table below for command sequence
                        1025
9800- 20 88 81          1030 DISKIO:    JSR SAVER
9803- 08                1035            PHP
9804- 20 86 8B          1040            JSR ACCESS
9807- 20 F9 9D          1045            JSR CHKCMD
980A- B0 5D             1050            BCS DIO.7
980C- 0A                1055            ASL A
980D- F0 71             1060            BEQ DINIT       ;ZERO IS INITIALIZE COMMAND
980F- 8D 36 A6          1065            STA COMSAV
9812- 20 01 9E          1070            JSR CHKDRV
9815- B0 52             1075            BCS DIO.7
9817- 20 75 98          1080            JSR TRIPLE
981A- BD 06 A6          1085 DIO.1      LDA DR0DATA,X
981D- 99 0C A6          1090            STA CURDATA,Y
9820- E8                1095            INX
9821- C8                1100            INY
9822- C0 03             1105            CPY #3          ;MOVE THREE ITEMS
9824- D0 F4             1110            BNE DIO.1
9826- AE 36 A6          1115            LDX COMSAV
9829- E0 02             1120            CPX #$02        ;TYPE 2 RESTORE
982B- F0 07             1125            BEQ DIO.2
982D- A9 20             1130            LDA #AVAIL
982F- 2C 0C A6          1135            BIT DFLAGS
9832- D0 05             1140            BNE DIO.3
9834- 20 7A 9D          1145 DIO.2      JSR STATS
9837- B0 1C             1150            BCS DIO.5
9839- A9 40             1155 DIO.3      LDA #$40        ;8 INCH DOUBLE DENSITY ERROR CODE
```

```
983B- AC 12 A6  1160             LDY FFLAGS
983E- 30 05     1165             BMI DIO.4
9840- AC 0C A6  1170             LDY DFLAGS
9843- 30 24     1175             BMI DIO.7
9845- AC 36 A6  1180 DIO.4       LDY COMSAV
9848- B9 C4 9F  1185             LDA ADDRS-2,Y
984B- 85 FE     1190             STA *CMDVEC
984D- B9 C5 9F  1195             LDA ADDRS-1,Y
9850- 85 FF     1200             STA *CMDVEC+1
9852- 20 72 98  1205             JSR DIOVEC
9855- 48        1210 DIO.5       PHA
9856- 20 0C 9E  1215             JSR DESELECT
9859- 20 75 98  1220             JSR TRIPLE
985C- B9 0C A6  1225 DIO.6       LDA CURDATA,Y
985F- 9D 06 A6  1230             STA DR0DATA,X
9862- E8        1235             INX
9863- C8        1240             INY
9864- C0 03     1245             CPY #3          ;MOVE THREE ITEMS
9866- D0 F4     1250             BNE DIO.6
9868- 68        1255             PLA
9869- 28        1260 DIO.7       PLP
986A- AA        1265             TAX
986B- 18        1270             CLC
986C- F0 01     1275             BEQ DIO.8
986E- 38        1280             SEC
986F- 4C B8 81  1285 DIO.8       JMP RESXAF
                1290
9872- 6C FE 00  1295 DIOVEC      JMP (CMDVEC)
                1300
9875- AD 00 A6  1305 TRIPLE      LDA IDRIVE
9878- 0A        1310             ASL A
9879- 6D 00 A6  1315             ADC IDRIVE
987C- AA        1320             TAX
987D- A0 00     1325             LDY #$00        ;INITIALIZE COUNTER
987F- 60        1330             RTS
                1335
                1340 ;@ Initialize disk system
                1345
9880- 20 7D 9F  1350 DINIT       JSR FREERAM
9883- A9 00     1355             LDA #$00        ;ZERO DRNDATA, N=0, N=1
9885- 8D 06 A6  1360             STA DR0DATA
9888- 8D 09 A6  1365             STA DR1DATA
988B- 20 2E 9E  1370             JSR UPDDRA
988E- 20 CF 9D  1375             JSR DRIVESIZE
9891- A9 03     1380             LDA #SOFMAX
9893- 8D 17 A6  1385             STA RETRIES
9896- A2 9C     1390             LDX #H,IRQRTN
9898- A0 5D     1395             LDY #L,IRQRTN
989A- 8E 7F A6  1400             STX IRQVEC+1
989D- 8C 7E A6  1405             STY IRQVEC
98A0- A2 9D     1410             LDX #H,BADCMD
98A2- A0 FD     1415             LDY #L,BADCMD
98A4- 8E 10 A6  1420             STX UCMDVC+1
98A7- 8C 0F A6  1425             STY UCMDVC
98AA- A9 00     1430             LDA #$00        ;TO FORCE GOOD RETURN AT DIO.8
98AC- F0 BB     1435             BEQ DIO.7       ;(ALWAYS)
                1440
                1445 ;@ Restore command processor
```

```
                        1450
98AE- 20 CC 9C  1455 RESTOR     JSR DRVSEL
98B1- B0 11     1460            BCS SEEK.1
98B3- A0 08     1465            LDY #C.RESTORE
98B5- D0 20     1470            BNE SEEK.4    ;(ALWAYS)
                1475
                1480 ;@ Seek command processor
                1485
98B7- AD 01 A6  1490 SEEK       LDA ITRACK
98BA- 29 7F     1495            AND #$7F      ;DROP SIDE BIT
98BC- 8D 1F A6  1500            STA SEEKARG
98BF- 20 42 9E  1505            JSR CHKTRK
98C2- 90 01     1510            BCC SEEK.2
98C4- 60        1515 SEEK.1     RTS
                1520
98C5- 20 C6 9C  1525 SEEK.2     JSR SETUP.2
98C8- B0 FA     1530            BCS SEEK.1
98CA- A9 20     1535            LDA #VERFLG
98CC- 2C 05 A6  1540            BIT IFLAGS
98CF- F0 04     1545            BEQ SEEK.3
98D1- A0 18     1550            LDY #C.SEEK
98D3- D0 02     1555            BNE SEEK.4    ;(ALWAYS)
                1560
98D5- A0 1C     1565 SEEK.3     LDY #C.SEEKVER
98D7- AE 39 A6  1570 SEEK.4     LDX LSTCMD
98DA- 8E 15 A6  1575            STX LSCMSV
98DD- AE 17 A6  1580            LDX RETRIES
98E0- 8E 37 A6  1585            STX SEEKSOFT
98E3- AD 15 A6  1590            LDA LSCMSV
98E6- 29 20     1595            AND #C.WRITSEC-C.READSEC
98E8- F0 05     1600            BEQ SEEK.6
98EA- A2 00     1605            LDX #$00      ;INITIALIZE COUNTER
98EC- CA        1610 SEEK.5     DEX
98ED- D0 FD     1615            BNE SEEK.5    ;(ALMOST ALWAYS. DELAY IF WRITE)
                1620
98EF- AD 1F A6  1625 SEEK.6     LDA SEEKARG
98F2- 8D 03 F0  1630            STA DATREG
98F5- 8C 39 A6  1635            STY LSTCMD
98F8- AD 11 A6  1640            LDA STEPRT
98FB- 29 02     1645            AND #$02      ;WHY ONLY ONE BIT??????
98FD- 0D 39 A6  1650            ORA LSTCMD
9900- 8D 00 F0  1655            STA CMDREG
9903- BA        1660            TSX
9904- 8E 16 A6  1665            STX STKPTR
9907- 58        1670            CLI
9908- A0 08     1675            LDY #$08      ;ALLOW 2.5 SECONDS
990A- 84 F9     1680            STY *WKAREA
990C- A2 00     1685            LDX #$00      ;FOR IRQ TO OCCUR
990E- 20 42 9D  1690 SEEK.7     JSR DELAY.1
9911- C6 F9     1695            DEC *WKAREA
9913- D0 F9     1700            BNE SEEK.7
9915- 4C 77 9C  1705            JMP TIMOUT    ;ONLY IF NO IRQ
                1710
                1715 ;@ Come here from IRQ handler after type 1 command
                1720
9918- B0 4D     1725 TYP1COMP   BCS TYP1TMO
991A- A9 04     1730            LDA #VERBIT
991C- 2C 39 A6  1735            BIT LSTCMD
```

```
991F- F0 05     1740             BEQ TY1C.1
9921- A2 0C     1745             LDX #$0C      ;15 MSEC DELAY
9923- 20 40 9D  1750             JSR DELAY
9926- A5 FE     1755 TY1C.1      LDA *STATUS
9928- 29 99     1760             AND #SKERMA
992A- F0 70     1765             BEQ TY1C.A
992C- A5 FE     1770 TY1C.2      LDA *STATUS
992E- 8D 1E A6  1775             STA TYP1ST
9931- CE 37 A6  1780             DEC SEEKSOFT
9934- 30 37     1785             BMI TY1C.6
9936- AD 39 A6  1790             LDA LSTCMD
9939- C9 08     1795             CMP #C.RESTORE
993B- F0 25     1800             BEQ TY1C.5
993D- 2C 12 A6  1805             BIT FFLAGS
9940- 30 05     1810             BMI TY1C.3
9942- 20 F7 9B  1815             JSR RDADDR
9945- 90 0D     1820             BCC TY1C.4
 947- AD 37 A6  1825 TY1C.3      LDA SEEKSOFT
 94A- 48        1830             PHA
994B- 20 AE 98  1835             JSR RESTOR
994E- 68        1840             PLA
994F- 8D 37 A6  1845             STA SEEKSOFT
9952- B0 45     1850             BCS TY1C.9
9954- AD 0D A6  1855 TY1C.4      LDA CURTRK
9957- CD 1F A6  1860             CMP SEEKARG
995A- F0 46     1865             BEQ TY1C.B
995C- 8D 01 F0  1870             STA TRKREG
995F- 20 CC 9C  1875             JSR DRVSEL
9962- AC 39 A6  1880 TY1C.5      LDY LSTCMD
9965- D0 88     1885             BNE SEEK.6    ;(ALWAYS)
                1890
                1895 ;@ Come here if timeout IRQ
                1900
9967- A9 38     1905 TYP1TMO     LDA #$38      ;SEEK TIMEOUT ERROR CODE
9969- 85 FF     1910             STA *TMOMSK
996B- D0 BF     1915             BNE TY1C.2    ;(ALWAYS)
                1920
                1925 ;@ Hard Error
                1930
996D- A5 FF     1935 TY1C.6      LDA *TMOMSK
996F- D0 17     1940             BNE TY1C.7
9971- AD 1E A6  1945             LDA TYP1ST
9974- 85 FE     1950             STA *STATUS
9976- A2 3E     1955             LDX #$3E      ;CRC ERROR CODE
9978- A9 08     1960             LDA #CRCBIT
997A- 24 FE     1965             BIT *STATUS
997C- D0 0A     1970             BNE TY1C.7
997E- A2 3A     1975             LDX #$3A      ;SEEK ERROR CODE
9980- A9 10     1980             LDA #SKBIT
9982- 24 FE     1985             BIT *STATUS
9984- D0 02     1990             BNE TY1C.7
9986- A2 3F     1995             LDX #$3F      ;NOT READY ERROR CODE (DEFAULT)
9988- 8A        2000 TY1C.7      TXA
9989- 48        2005             PHA
998A- AD 39 A6  2010             LDA LSTCMD
998D- 49 08     2015             EOR #C.RESTORE
998F- D0 05     2020             BNE TY1C.8
9991- 8D 0C A6  2025             STA DFLAGS
```

```
9994- F0 03     2030             BEQ TY1C.9
9996- 20 AE 98  2035 TY1C.8      JSR RESTOR
9999- 68        2040 TY1C.9      PLA
999A- 38        2045             SEC
999B- 60        2050             RTS
                2055
                2060 ;@ Good completion
                2065
999C- AE 01 F0  2070 TY1C.A      LDX TRKREG
999F- 8E 0D A6  2075             STX CURTRK
99A2- AE 15 A6  2080 TY1C.B      LDX LSCMSV
99A5- 8E 39 A6  2085             STX LSTCMD
99A8- 18        2090             CLC
99A9- 60        2095 RETURN      RTS
                2100
                2105 ;@ Single sector read
                2110
99AA- A9 82     2115 READ        LDA #C.READSEC
99AC- D0 02     2120             BNE RDWRT.1   ;(ALWAYS)
                2125
                2130 ;@ Single sector write
                2135
99AE- A9 A2     2140 WRITE       LDA #C.WRITSEC
99B0- 8D 39 A6  2145 RDWRT.1     STA LSTCMD
99B3- 20 37 9E  2150             JSR CHKSEC
99B6- B0 F1     2155             BCS RETURN
99B8- 20 B0 9C  2160             JSR SETUP.1
99BB- B0 EC     2165             BCS RETURN
99BD- AD 02 A6  2170 RDWRT.2     LDA ISECTR
99C0- 8D 02 F0  2175             STA SECREG
99C3- BA        2180             TSX
99C4- 8E 16 A6  2185             STX STKPTR
99C7- AD 03 A6  2190             LDA IADDRS
99CA- AE 04 A6  2195             LDX IADDRS+1
99CD- 85 FE     2200             STA *BUFPTR
99CF- 86 FF     2205             STX *BUFPTR+1
99D1- AD 39 A6  2210             LDA LSTCMD
99D4- 2C FD 9F  2215             BIT RDMSK
99D7- F0 14     2220             BEQ RDWRT.3
                2225
                2230 ;@ Write a sector
                2235
99D9- 20 A9 9E  2240             JSR DRQTIMER
99DC- A0 00     2245             LDY #$00      ;CLEAR REGISTER
                2250
99DE- 50 FE     2255 WLOOP       BVC WLOOP     ;WAIT HERE FOR DRQ
                2260
99E0- B1 FE     2265             LDA (BUFPTR),Y
99E2- 8D 03 F0  2270             STA DATREG
99E5- C8        2275             INY
99E6- B8        2280             CLV
99E7- D0 F5     2285             BNE WLOOP
99E9- E6 FF     2290             INC *BUFPTR+1
99EB- 50 F1     2295             BVC WLOOP
                2300
                2305 ;@ Read a sector
                2310
99ED- 20 A9 9E  2315 RDWRT.3     JSR DRQTIMER
```

```
99F0- AD 03 F0  2320            LDA DATREG
99F3- A0 00     2325            LDY #$00      ;CLEAR REGISTER
99F5- F0 05     2330            BEQ RLOOP.1   ;(ALWAYS)
                2335
99F7- 50 FE     2340 RLOOP      BVC RLOOP     ;WAIT HERE FOR DRQ
                2345
99F9- AD 03 F0  2350            LDA DATREG
99FC- B8        2355 RLOOP.1    CLV
99FD- 91 FE     2360            STA (BUFPTR),Y
99FF- C8        2365            INY
9A00- D0 F5     2370            BNE RLOOP
9A02- E6 FF     2375            INC *BUFPTR+1
9A04- 50 F1     2380            BVC RLOOP     ;(ALWAYS)
                2385
                2390 ;@ Come here from IRQ handler after 1791 IRQ
                2395 ;@ if read or write command
                2400
9A06- B0 3F     2405 RWCOMP     BCS RWTIMO
9A08- A9 DD     2410            LDA #RWERMA
9A0A- 25 FE     2415            AND *STATUS
9A0C- F0 3F     2420            BEQ RDWRT.8
9A0E- CE 36 A6  2425 RDWRT.4    DEC RDWRSOFT
9A11- 10 03     2430            BPL RDWRT.5
9A13- 4C 5D 9E  2435            JMP HRDERR
                2440
                2445 ;@ Error, so seek out, then in, and retry
                2450
9A16- AD 05 A6  2455 RDWRT.5    LDA IFLAGS
9A19- 48        2460            PHA
9A1A- A9 20     2465            LDA #VERFLG
9A1C- 8D 05 A6  2470            STA IFLAGS
9A1F- AD 01 A6  2475            LDA ITRACK
9A22- 29 7F     2480            AND #$7F      ;DROP SIDE BIT
9A24- 8D 1F A6  2485            STA SEEKARG
9A27- 48        2490            PHA
9A28- F0 05     2495            BEQ RDWRT.6
9A2A- CE 1F A6  2500            DEC SEEKARG
9A2D- 10 03     2505            BPL RDWRT.7   ;(ALWAYS)
                2510
9A2F- EE 1F A6  2515 RDWRT.6    INC SEEKARG
9A32- 20 C5 98  2520 RDWRT.7    JSR SEEK.2
9A35- 68        2525            PLA
9A36- 8D 1F A6  2530            STA SEEKARG
9A39- 68        2535            PLA
9A3A- 8D 05 A6  2540            STA IFLAGS
9A3D- B0 0F     2545            BCS RDWRT.9
9A3F- 20 C5 98  2550            JSR SEEK.2
9A42- B0 0A     2555            BCS RDWRT.9
9A44- 4C BD 99  2560            JMP RDWRT.2
                2565
                2570 ;@ Come here if timeout IRQ
                2575
9A47- A9 37     2580 RWTIMO     LDA #$37      ;READ/WRITE TIMEOUT ERROR CODE
9A49- 85 FF     2585            STA *TMOMSK
9A4B- D0 C1     2590            BNE RDWRT.4   ;(ALWAYS)
                2595
                2600 ;@ Exit point for successful completion
                2605
```

```
9A4D- 18          2610 RDWRT.8    CLC
9A4E- 60          2615 RDWRT.9    RTS
                  2620
                  2625 ;@ Format disk based on parameters specified in the DATA
                  2630
9A4F- 20 AE 98    2635 FMTDSK     JSR RESTOR
9A52- B0 FA       2640            BCS RDWRT.9
9A54- A2 00       2645            LDX #$00      ;START WITH TRACK 0
9A56- 8E 01 A6    2650 FMTD.1     STX ITRACK
9A59- 20 20 9F    2655            JSR SET2SD
9A5C- 20 9E 9A    2660 FMTD.2     JSR FMTTRK
9A5F- B0 3C       2665            BCS FMTD.6
9A61- 20 2D 9F    2670            JSR SIDCHG
9A64- B0 F6       2675            BCS FMTD.2
                  2680
                  2685 ;@ Verify that side was properly selected
                  2690
9A66- 20 20 9F    2695            JSR SET2SD
9A69- 2C 01 A6    2700            BIT ITRACK
9A6C- 10 23       2705            BPL FMTD.5
9A6E- 20 F7 9B    2710 FMTD.3     JSR RDADDR
9A71- B0 2A       2715            BCS FMTD.6
9A73- A9 08       2720            LDA #SIDSEL
9A75- 2D 13 A6    2725            AND DRASAV
9A78- 0D 19 A6    2730            ORA SIDSAV
9A7B- F0 0F       2735            BEQ FMTD.4
9A7D- C9 09       2740            CMP #SIDSEL+$01
9A7F- F0 0B       2745            BEQ FMTD.4
9A81- A9 BF       2750            LDA #$FF-SIDFLG
9A83- 2D 0C A6    2755            AND DFLAGS
9A86- 8D 0C A6    2760            STA DFLAGS
9A89- 20 2D 9F    2765            JSR SIDCHG
9A8C- 20 2D 9F    2770 FMTD.4     JSR SIDCHG
9A8F- B0 DD       2775            BCS FMTD.3
9A91- AE 01 A6    2780 FMTD.5     LDX ITRACK
9A94- E8          2785            INX
9A95- EC 14 A6    2790            CPX NOTRKS
9A98- 90 BC       2795            BCC FMTD.1
9A9A- A9 00       2800            LDA #$00      ;CLEAR ACCUMULATOR
9A9C- 18          2805            CLC
9A9D- 60          2810 FMTD.6     RTS
                  2815
                  2820 ;@ Format a track based on DATA parameters
                  2825
9A9E- 20 42 9E    2830 FMTTRK     JSR CHKTRK
9AA1- B0 FA       2835            BCS FMTD.6
9AA3- 20 A8 9C    2840            JSR SETUP
9AA6- B0 F5       2845            BCS FMTD.6
9AA8- 20 DC 9E    2850            JSR MOVEPARMS
9AAB- 20 41 9F    2855            JSR BLDSEQ
                  2860
                  2865 ;@ Load 1791 registers and begin
                  2870
9AAE- AD 0C A6    2875 FMTT.1     LDA DFLAGS
9AB1- 29 03       2880            AND #SECLEN
9AB3- C9 03       2885            CMP #$03      ;1024 BYTES PER SECTOR?
9AB5- D0 02       2890            BNE FMTT.2
9AB7- A9 04       2895            LDA #$04      ;ALLOW FOR FOUR PAGES
```

```
9AB9- 8D 15 A6  2900 FMTT.2     STA FMTWRK
9ABC- BA        2905            TSX
9ABD- 8E 16 A6  2910            STX STKPTR
9AC0- A9 00     2915            LDA #$00      ;START WITH SECTOR 00
9AC2- 8D 1E A6  2920            STA SECCTR
9AC5- A9 F0     2925            LDA #C.WRITTRK
9AC7- 20 A9 9E  2930            JSR DRQTIMER
9ACA- AD 1C A6  2935            LDA PADCHR
9ACD- 8D 03 F0  2940            STA DATREG
9AD0- 20 BF 9E  2945            JSR DRQT.2
9AD3- 8D 03 F0  2950            STA DATREG
9AD6- B8        2955            CLV
                2960
9AD7- 50 FE     2965 WTLOOP     BVC WTLOOP    ;WAIT HERE FOR DRQ
                2970
9AD9- 8D 03 F0  2975            STA DATREG
9ADC- B8        2980            CLV
9ADD- 2C 12 A6  2985            BIT FFLAGS
9AE0- 30 26     2990            BMI FORM.2
9AE2- AE 1A A6  2995            LDX NOPAD5
9AE5- 20 A2 9E  3000 WTLP.1     JSR WRTCHR
9AE8- CA        3005            DEX
9AE9- D0 FA     3010            BNE WTLP.1
9AEB- AE 19 A6  3015            LDX NOZERO
9AEE- A9 00     3020            LDA #$00      ;WRITE ZEROES
9AF0- 20 A2 9E  3025 WTLP.2     JSR WRTCHR
9AF3- CA        3030            DEX
9AF4- D0 FA     3035            BNE WTLP.2
9AF6- AE 18 A6  3040            LDX NOSPCH
9AF9- F0 08     3045            BEQ FORM.1
9AFB- A9 F6     3050            LDA #$F6      ;WRITE SPECIALS
9AFD- 20 A2 9E  3055 WTLP.3     JSR WRTCHR
9B00- CA        3060            DEX
9B01- D0 FA     3065            BNE WTLP.3
9B03- A9 FC     3070 FORM.1     LDA #$FC      ;WRITE INDEX MARK
9B05- 20 A2 9E  3075            JSR WRTCHR
9B08- AE 37 A6  3080 FORM.2     LDX NOPAD1
9B0B- AD 1C A6  3085            LDA PADCHR
9B0E- 20 A2 9E  3090 WTLP.4     JSR WRTCHR
9B11- CA        3095            DEX
9B12- D0 FA     3100            BNE WTLP.4
                3105
                3110 ;@ Write sectors
                3115
9B14- AE 19 A6  3120 WRTSEC     LDX NOZERO
9B17- A9 00     3125            LDA #$00      ;WRITE ZEROES
9B19- 20 A2 9E  3130 WTLP.5     JSR WRTCHR
9B1C- CA        3135            DEX
9B1D- D0 FA     3140            BNE WTLP.5
9B1F- AE 18 A6  3145            LDX NOSPCH
9B22- F0 0B     3150            BEQ FORM.3
9B24- A9 F5     3155            LDA #$F5      ;WRITE SPECIALS
9B26- 20 A2 9E  3160 WTLP.6     JSR WRTCHR
9B29- CA        3165            DEX
9B2A- D0 FA     3170            BNE WTLP.6
9B2C- A9 FE     3175 FORM.3     LDA #$FE      ;WRITE ADDRESS MARK
9B2E- 20 A2 9E  3180            JSR WRTCHR
9B31- AD 0D A6  3185            LDA CURTRK
```

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9B34- 20 A2 9E  3190             JSR WRTCHR
9B37- A9 08     3195             LDA #SIDSEL
9B39- 2D 13 A6  3200             AND DRASAV
9B3C- F0 02     3205             BEQ FORM.4
9B3E- A9 01     3210             LDA #$01      ;SIDE ONE
9B40- 20 A2 9E  3215 FORM.4      JSR WRTCHR
9B43- AC 1E A6  3220             LDY SECCTR
9B46- B1 FE     3225             LDA (BUFPTR),Y
9B48- 20 A2 9E  3230             JSR WRTCHR
9B4B- AD 0C A6  3235             LDA DFLAGS
9B4E- 29 03     3240             AND #SECLEN
9B50- 20 A2 9E  3245             JSR WRTCHR
9B53- A9 F7     3250             LDA #$F7      ;WRITE CRC BYTES
9B55- 20 A2 9E  3255             JSR WRTCHR
9B58- AE 1B A6  3260             LDX NOPAD2
9B5B- AD 1C A6  3265             LDA PADCHR
9B5E- 20 A2 9E  3270 WTLP.7      JSR WRTCHR
9B61- CA        3275             DEX
9B62- D0 FA     3280             BNE WTLP.7
9B64- AE 19 A6  3285             LDX NOZERO
9B67- A9 00     3290             LDA #$00      ;WRITE ZEROES
9B69- 20 A2 9E  3295 WTLP.8      JSR WRTCHR
9B6C- CA        3300             DEX
9B6D- D0 FA     3305             BNE WTLP.8
9B6F- AE 18 A6  3310             LDX NOSPCH
9B72- F0 08     3315             BEQ FORM.5
9B74- A9 F5     3320             LDA #$F5      ;WRITE SPECIALS
9B76- 20 A2 9E  3325 WTLP.9      JSR WRTCHR
9B79- CA        3330             DEX
9B7A- D0 FA     3335             BNE WTLP.9
9B7C- A9 FB     3340 FORM.5      LDA #$FB      ;WRITE DATA ADDRESS MARK
9B7E- 20 A2 9E  3345             JSR WRTCHR
                3350
                3355 ;③ Write data
                3360
9B81- AD 1D A6  3365             LDA DATPAT
9B84- A0 80     3370             LDY #$80      ;ASSUME 128 BYTE SECTORS
9B86- AE 15 A6  3375             LDX FMTWRK
9B89- F0 03     3380             BEQ WDLOOP
9B8B- CA        3385             DEX
9B8C- A0 00     3390             LDY #$00      ;DO FULL PAGES
9B8E- 20 A2 9E  3395 WDLOOP      JSR WRTCHR
9B91- 88        3400             DEY
9B92- D0 FA     3405             BNE WDLOOP
9B94- CA        3410             DEX
9B95- 10 F7     3415             BPL WDLOOP
9B97- A9 F7     3420             LDA #$F7      ;WRITE CRC BYTES
9B99- 20 A2 9E  3425             JSR WRTCHR
9B9C- AD 1C A6  3430             LDA PADCHR
9B9F- 20 A2 9E  3435             JSR WRTCHR
9BA2- EE 1E A6  3440             INC SECCTR
9BA5- A2 FF     3445             LDX #$FF      ;TIMER COUNT VALUE
9BA7- 8E 17 A4  3450             STX WRTIMR
9BAA- AE 0E A6  3455             LDX NOSECS
9BAD- EC 1E A6  3460             CPX SECCTR
9BB0- F0 0C     3465             BEQ FINAL
9BB2- AE 38 A6  3470             LDX NOPAD3
9BB5- 20 A2 9E  3475 WTLP.A      JSR WRTCHR
```

```
9BB8- CA          3480             DEX
9BB9- D0 FA       3485             BNE WTLP.A
9BBB- 4C 14 9B    3490             JMP WRTSEC
                  3495
                  3500 ;@ Disable IRQ to service final DRQ,
                  3505 ;@ even after the final index pulse
                  3510
9BBE- 78          3515 FINAL       SEI
9BBF- AC 1C A6    3520             LDY PADCHR
9BC2- 50 04       3525 FNL.1       BVC FNL.3
9BC4- 8C 03 F0    3530 FNL.2       STY DATREG
9BC7- B8          3535             CLV
9BC8- AE 04 A4    3540 FNL.3       LDX RDTIMR
9BCB- F0 0E       3545             BEQ FNL.4
9BCD- 70 F5       3550             BVS FNL.2
9BCF- AD 00 F0    3555             LDA STAREG
9BD2- 4A          3560             LSR A
9BD3- B0 ED       3565             BCS FNL.1
9BD5- 8C 03 F0    3570             STY DATREG
9BD8- 4C 7D 9C    3575             JMP IOCOMP
                  3580
9BDB- 4C 77 9C    3585 FNL.4       JMP TIMOUT
                  3590
                  3595 ;@ Come here after 1791 I/O complete
                  3600
9BDE- B0 0F       3605 FMTCMP      BCS FMTTMO
9BE0- A5 FE       3610             LDA *STATUS
9BE2- F0 11       3615             BEQ FMTC.3
9BE4- CE 36 A6    3620 FMTC.1      DEC FRMTSOFT
9BE7- 30 03       3625             BMI FMTC.2
9BE9- 4C AE 9A    3630             JMP FMTT.1
                  3635
9BEC- 4C 5D 9E    3640 FMTC.2      JMP HRDERR
                  3645
                  3650 ;* Come here after timeout
                  3655
9BEF- A9 37       3660 FMTTMO      LDA #$37      ;READ/WRITE TIMEOUT ERROR CODE
9BF1- 85 FF       3665             STA *TMOMSK
9BF3- D0 EF       3670             BNE FMTC.1    ;(ALWAYS)
                  3675
                  3680 ;@ Successful completion
                  3685
9BF5- 18          3690 FMTC.3      CLC
9BF6- 60          3695             RTS
                  3700
                  3705 ;@ Read address
                  3710
9BF7- 20 C6 9C    3715 RDADDR      JSR SETUP.2
9BFA- AD 17 A6    3720             LDA RETRIES
9BFD- 2C 12 A6    3725             BIT FFLAGS
9C00- 10 01       3730             BPL RDAD.1
9C02- 0A          3735             ASL A
9C03- AA          3740 RDAD.1      TAX
9C04- E8          3745             INX
9C05- 8E 1E A6    3750             STX RDADSOFT
9C08- BA          3755 RDAD.2      TSX
9C09- 8E 16 A6    3760             STX STKPTR
9C0C- A9 C0       3765             LDA #C.RDADDRS
```

```
9C0E- 20 A9 9E  3770            JSR DRQTIMER
9C11- AD 03 F0  3775            LDA DATREG
9C14- A2 00     3780            LDX #$00      ;CLEAR REGISTER
9C16- F0 05     3785            BEQ RDAD.3    ;(ALWAYS)
                3790
9C18- 50 FE     3795 RALOOP     BVC RALOOP    ;WAIT HERE FOR DRQ
                3800
9C1A- AD 03 F0  3805            LDA DATREG
9C1D- 9D 18 A6  3810 RDAD.3     STA RDADBUF,X
9C20- B8        3815            CLV
9C21- E8        3820            INX
9C22- D0 F4     3825            BNE RALOOP    ;(ALWAYS)
                3830
                3835 ;@ Come here after 1791 IRQ
                3840
9C24- B0 1B     3845 RDADCOMP   BCS RATMO
9C26- A9 9F     3850            LDA #RAERMA
9C28- 24 FE     3855            BIT *STATUS
9C2A- F0 1B     3860            BEQ RDAD.4
9C2C- 2C 12 A6  3865 RDADC.1    BIT FFLAGS
9C2F- 10 08     3870            BPL RDADC.2
9C31- AD 13 A6  3875            LDA DRASAV
9C34- 49 80     3880            EOR #DENSEL
9C36- 20 2E 9E  3885            JSR UPDDRA
9C39- CE 1E A6  3890 RDADC.2    DEC RDADSOFT
9C3C- 10 CA     3895            BPL RDAD.2
9C3E- 4C 5D 9E  3900            JMP HRDERR
                3905
                3910 ;@ Come here after timeout
                3915
9C41- A9 38     3920 RATMO      LDA #$38      ;SEEK TIMEOUT ERROR CODE
9C43- 85 FF     3925            STA *TMOMSK
9C45- D0 E5     3930            BNE RDADC.1   ;(ALWAYS)
                3935
                3940 ;@ Successful completion
                3945
9C47- AD 18 A6  3950 RDAD.4     LDA IDTRAK
9C4A- 8D 0D A6  3955            STA CURTRK
9C4D- AD 0C A6  3960            LDA DFLAGS
9C50- 29 FC     3965            AND #$FF-SECLEN
9C52- 0D 1B A6  3970            ORA CURSCL
9C55- 8D 0C A6  3975            STA DFLAGS
9C58- 18        3980            CLC
9C59- 60        3985            RTS
                3990
                3995 ;@ Add more commands through this vector
                4000
9C5A- 6C 0F A6  4005 USRCMD     JMP (UCMDVC)
                4010
                4015 ;@ IRQ handler
                4020
9C5D- 08        4025 IRQRTN     PHP
9C5E- 48        4030            PHA
9C5F- 8A        4035            TXA
9C60- 48        4040            PHA
9C61- BA        4045            TSX
9C62- BD 04 01  4050            LDA PAGE.1+4,X
9C65- 29 10     4055            AND #$10      ;MASK FOR B FLAG
```

```
9C67- D0 07      4060            BNE IRQRET    ;IF A BREAK INSTRUCTION
9C69- A9 01      4065            LDA #BSYBIT
9C6B- 2C 00 F0   4070            BIT STAREG
9C6E- F0 0D      4075            BEQ IOCOMP    ;IF NOT BUSY
9C70- 68         4080 IRQRET     PLA :         ;BRK OR NON-DISK IRQ
9C71- AA         4085            TAX
9C72- 68         4090            PLA
9C73- 28         4095            PLP
9C74- 4C 0F 80   4100            JMP IRQBRK    ;LET SYM HANDLE IT
                 4105
                 4110 ;@ Come here if disk IRQ
                 4115
9C77- 20 8B 9E   4120 TIMOUT     JSR CL1791
9C7A- 38         4125            SEC
9C7B- B0 05      4130            BCS IOC.1     ;(ALWAYS)
                 4135
9C7D- A9 00      4140 IOCOMP     LDA #$00      ;CLEAR TMOMSK
9C7F- 85 FF      4145            STA *TMOMSK
9C81- 18         4150            CLC
9C82- AD 00 F0   4155 IOC.1      LDA STAREG
9C85- 85 FE      4160            STA *STATUS
9C87- AE 16 A6   4165            LDX STKPTR
9C8A- 9A         4170            TXS
9C8B- 2C 39 A6   4175            BIT LSTCMD
9C8E- 10 15      4180            BPL IOC.4
9C90- 50 10      4185            BVC IOC.3
9C92- A9 F0      4190            LDA #C.WRITTRK
9C94- 08         4195            PHP
9C95- CD 39 A6   4200            CMP LSTCMD
9C98- F0 04      4205            BEQ IOC.2
9C9A- 28         4210            PLP
9C9B- 4C 24 9C   4215            JMP RDADCOMP
                 4220
9C9E- 28         4225 IOC.2      PLP
9C9F- 4C DE 9B   4230            JMP FMTCMP
                 4235
9CA2- 4C 06 9A   4240 IOC.3      JMP RWCOMP
                 4245
9CA5- 4C 18 99   4250 IOC.4      JMP TYP1COMP
                 4255
                 4260 ;@ Set up for disk access
                 4265
9CA8- A9 20      4270 SETUP      LDA #VERFLG
9CAA- 0D 05 A6   4275            ORA IFLAGS
9CAD- 8D 05 A6   4280            STA IFLAGS
9CB0- AD 17 A6   4285 SETUP.1    LDA RETRIES
9CB3- 8D 36 A6   4290            STA RDWRSOFT
9CB6- AD 01 A6   4295            LDA ITRACK
9CB9- 29 7F      4300            AND #$7F      ;DROP SIDE BIT
9CBB- CD 0D A6   4305            CMP CURTRK
9CBE- F0 06      4310            BEQ SETUP.2
9CC0- 20 B7 98   4315            JSR SEEK
9CC3- 90 01      4320            BCC SETUP.2
9CC5- 60         4325            RTS
                 4330
9CC6- AD 0D A6   4335 SETUP.2    LDA CURTRK
9CC9- 8D 01 F0   4340            STA TRKREG
                 4345
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```
                        4350 ;@ Select and prepare selected drive
                        4355
9CCC- AE Ø0 A6  4360 DRVSEL      LDX IDRIVE
9CCF- E8        4365             INX
9CDØ- 8A        4370             TXA
9CD1- 2C Ø1 A6  4375             BIT ITRACK
9CD4- 1Ø Ø2     4380             BPL DRVSEL.1
9CD6- Ø9 Ø8     4385             ORA #SIDSEL
9CD8- 2C ØC A6  4390 DRVSEL.1    BIT DFLAGS
9CDB- 3Ø Ø2     4395             BMI DRVSEL.2
9CDD- Ø9 8Ø     4400             ORA #DENSEL
9CDF- 2C 12 A6  4405 DRVSEL.2    BIT FFLAGS
9CE2- 1Ø Ø2     4410             BPL DRVSEL.3
9CE4- Ø9 Ø4     4415             ORA #MTRSEL
9CE6- 85 F9     4420 DRVSEL.3    STA *WKAREA
9CE8- AD 13 A6  4425             LDA DRASAV
9CEB- 85 FE     4430             STA *STATUS
9CED- 29 1Ø     4435             AND #HLTSEL
9CEF- Ø5 F9     4440             ORA *WKAREA
9CF1- 2Ø 2E 9E  4445             JSR UPDDRA
9CF4- A5 FE     4450             LDA *STATUS
9CF6- 29 Ø3     4455             AND #SECLEN
9CF8- 85 F9     4460             STA *WKAREA
9CFA- AD 13 A6  4465             LDA DRASAV
9CFD- 29 Ø3     4470             AND #SECLEN
9CFF- C5 F9     4475             CMP *WKAREA
9DØ1- DØ Ø7     4480             BNE DRVSEL.4
9DØ3- A9 2Ø     4485             LDA #AVAIL
9DØ5- 2C ØC A6  4490             BIT DFLAGS
9DØ8- DØ Ø8     4495             BNE DRVSEL.5
9DØA- 2Ø 49 9D  4500 DRVSEL.4    JSR INDEX
9DØD- 9Ø Ø3     4505             BCC DRVSEL.5
9DØF- 4C 81 9E  4510             JMP HRDERR.1
                        4515
9D12- A2 ØE     4520 DRVSEL.5    LDX #$ØE      ;8 INCH HL DELAY TIME (35 MSEC)
9D14- 2C 12 A6  4525             BIT FFLAGS
9D17- 1Ø 15     4530             BPL HDLOD
9D19- A5 FE     4535             LDA *STATUS
9D1B- 29 Ø4     4540             AND #MTRSEL
9D1D- DØ ØF     4545             BNE HDLOD
9D1F- A2 ØE     4550 MOTRON:     LDX #$ØE      ;DELAY PARAMETERS
9D21- AØ Ø4     4555             LDY #$Ø4      ;1 SEC MOTOR TURN ON TIME
9D23- 84 F9     4560             STY *WKAREA
9D25- 2Ø 42 9D  4565 DRVSEL.6    JSR DELAY.1
9D28- C6 F9     4570             DEC *WKAREA
9D2A- DØ F9     4575             BNE DRVSEL.6
9D2C- A2 1E     4580             LDX #$1E      ;5 INCH HL DELAY TIME (75 MSEC)
9D2E- A9 1Ø     4585 HDLOD       LDA #HLTSEL
9D3Ø- 2C 13 A6  4590             BIT DRASAV
9D33- DØ Ø9     4595             BNE HDLOD.1
9D35- 2Ø 4Ø 9D  4600             JSR DELAY
9D38- ØD 13 A6  4605             ORA DRASAV
9D3B- 2Ø 2E 9E  4610             JSR UPDDRA
9D3E- 18        4615 HDLOD.1     CLC
9D3F- 6Ø        4620             RTS
                        4625
                        4630 ;@ Utility delay subroutine
                        4635
```

```
9D40- A0 00     4640 DELAY      LDY #$00     ;DELAY PARAMETER
9D42- 88        4645 DELAY.1    DEY
9D43- D0 FD     4650            BNE DELAY.1
9D45- CA        4655            DEX
9D46- D0 FA     4660            BNE DELAY.1
9D48- 60        4665            RTS
                4670
                4675 ;@ Check for index pulse
                4680
9D49- 20 8B 9E  4685 INDEX      JSR CL1791
9D4C- 30 28     4690            BMI INDEX.4
9D4E- 2C 12 A6  4695            BIT FFLAGS
9D51- 10 25     4700            BPL INDEX.5
9D53- A2 80     4705            LDX #$80     ;DELAY PARAMETERS
9D55- A0 00     4710            LDY #$00
9D57- A9 02     4715            LDA #IPBIT
9D59- 2C 00 F0  4720 INDEX.1    BIT STAREG
9D5C- D0 08     4725            BNE INDEX.2
9D5E- C8        4730            INY
9D5F- D0 F8     4735            BNE INDEX.1
9D61- E8        4740            INX
9D62- D0 F5     4745            BNE INDEX.1
9D64- 38        4750            SEC
9D65- 60        4755            RTS
                4760
9D66- A0 05     4765 INDEX.2    LDY #$05     ;INITIALIZE COUNTERS
9D68- 84 F9     4770            STY *WKAREA
9D6A- 2C 00 F0  4775 INDEX.3    BIT STAREG
9D6D- F0 09     4780            BEQ INDEX.5
9D6F- C6 F9     4785            DEC *WKAREA
9D71- D0 F7     4790            BNE INDEX.3
9D73- 88        4795            DEY
9D74- D0 F4     4800            BNE INDEX.3
9D76- 38        4805 INDEX.4    SEC
9D77- 60        4810            RTS
                4815
9D78- 18        4820 INDEX.5    CLC
9D79- 60        4825            RTS
                4830
                4835 ;@ Provide CURDATA with parameters
                4840
9D7A- AD 01 A6  4845 STATS      LDA ITRACK
9D7D- 48        4850            PHA
9D7E- A9 00     4855            LDA #$00     ;CLEAR DFLAGS
9D80- 8D 0C A6  4860            STA DFLAGS
9D83- 20 2D 9F  4865            JSR SIDCHG
9D86- 20 AE 98  4870            JSR RESTOR
9D89- 90 05     4875            BCC STATS.2
9D8B- A0 31     4880 STATS.1    LDY #$31     ;NOT AVAILABLE ERROR CODE
9D8D- 38        4885            SEC
9D8E- B0 39     4890            BCS STATS.5
9D90- 20 F7 9B  4895 STATS.2    JSR RDADDR
9D93- B0 F6     4900            BCS STATS.1
9D95- A9 80     4905            LDA #DENSEL
9D97- 2C 13 A6  4910            BIT DRASAV
9D9A- D0 08     4915            BNE STATS.3
9D9C- A9 80     4920            LDA #DENFLG
9D9E- 0D 0C A6  4925            ORA DFLAGS
```

```
9DA1- 8D ØC A6  4930              STA DFLAGS
9DA4- 2E Ø1 A6  4935 STATS.3      ROL ITRACK
9DA7- 38        4940              SEC
9DA8- 6E Ø1 A6  4945              ROR ITRACK
9DAB- 2Ø F7 9B  4950              JSR RDADDR
9DAE- BØ ØD     4955              BCS STATS.4
9DBØ- AD 19 A6  4960              LDA SIDSAV
9DB3- FØ Ø8     4965              BEQ STATS.4
9DB5- A9 4Ø     4970              LDA #SIDFLG
9DB7- ØD ØC A6  4975              ORA DFLAGS
9DBA- 8D ØC A6  4980              STA DFLAGS
9DBD- A9 2Ø     4985 STATS.4      LDA #AVAIL
9DBF- ØD ØC A6  4990              ORA DFLAGS
9DC2- 8D ØC A6  4995              STA DFLAGS
9DC5- 2Ø DC 9E  5ØØØ              JSR MOVEPARMS
9DC8- 18        5ØØ5              CLC
9DC9- 68        5Ø1Ø STATS.5      PLA
9DCA- 8D Ø1 A6  5Ø15              STA ITRACK
9DCD- 98        5Ø2Ø              TYA
9DCE- 6Ø        5Ø25              RTS
                5Ø3Ø
                5Ø35 ;@ Determine size of drives
                5Ø4Ø
9DCF- 2Ø 8B 9E  5Ø45 DRIVESIZE    JSR CL1791
9DD2- A9 Ø4     5Ø5Ø              LDA #MTRSEL
9DD4- 2Ø 2E 9E  5Ø55              JSR UPDDRA
9DD7- A9 8Ø     5Ø6Ø              LDA #NOTRDY
9DD9- 2C ØØ FØ  5Ø65              BIT STAREG
9DDC- DØ Ø8     5Ø7Ø              BNE DRVSZ.1
9DDE- A0 03     5075              LDY #$Ø3        ;3Ø MSEC STEPRATE
9DEØ- A9 8Ø     5Ø8Ø              LDA #$8Ø        ;FLAG AS 5 INCH DRIVE(S)
9DE2- A2 23     5Ø85              LDX #35         ;NUMBER OF TRACKS
9DE4- DØ Ø6     5Ø9Ø              BNE DRVSZ.2
9DE6- A0 Ø2     5Ø95 DRVSZ.1      LDY #$Ø2        ;2Ø MSEC STEPRATE
9DE8- A9 ØØ     51ØØ              LDA #$ØØ        ;FLAG AS 8 INCH DRIVE(S)
9DEA- A2 4D     51Ø5              LDX #77         ;NUMBER OF TRACKS
9DEC- 8D 12 A6  5110 DRVSZ.2      STA FFLAGS
9DEF- 8E 14 A6  5115              STX NOTRKS
9DF2- 8C 11 A6  5120              STY STEPRT
9DF5- A9 FB     5125              LDA #$FF-MTRSEL
9DF7- DØ 32     5130              BNE ANDDRA      ;(ALWAYS)
                5135
                5140 ;@ Check for valid command
                5145
9DF9- C9 Ø9     5150 CHKCMD       CMP #$Ø9        ;ONLY EIGHT COMMANDS IMPLEMENTED
9DFB- 9Ø Ø3     5155              BCC OKCMND
9DFD- A9 36     5160 BADCMD       LDA #$36        ;INVALID COMMAND ERROR CODE
9DFF- 38        5165              SEC
9EØØ- 6Ø        5170 OKCMND       RTS
                5175
                5180 ;@ Check for valid drive number
                5185
9EØ1- AE ØØ A6  5190 CHKDRV       LDX IDRIVE
9EØ4- EØ Ø2     5195              CPX #$Ø2        ;ONLY Ø AND 1 ARE ALLOWABLE
9EØ6- 9Ø Ø3     52ØØ              BCC CHKDRV.1
9EØ8- A9 32     5205              LDA #$32        ;INVALID DRIVE ERROR CODE
9EØA- 38        5210              SEC
9EØB- 6Ø        5215 CHKDRV.1     RTS
```

```
                        5220
                        5225 ;@ Deselect current drive, unload head
                        5230
9E0C- A9 00             5235 DESELECT   LDA #$00      ;INITIALIZE REGISTER
9E0E- 2C 12 A6          5240            BIT FFLAGS
9E11- 10 09             5245            BPL DESEL.1
9E13- 2C 05 A6          5250            BIT IFLAGS
9E16- 30 04             5255            BMI DESEL.1
9E18- A9 04             5260            LDA #MTRSEL
9E1A- D0 05             5265            BNE DESEL.2  ;(ALWAYS)
                        5270
9E1C- 2C 05 A6          5275 DESEL.1    BIT IFLAGS
9E1F- 70 15             5280            BVS DESEL.3
9E21- 09 10             5285 DESEL.2    ORA #HLTSEL
9E23- AE 00 A6          5290            LDX IDRIVE
9E26- 1D FE 9F          5295            ORA DRIVENO,X
9E29- 49 FF             5300            EOR #$FF     ;COMPLEMENT
 E2B- 2D 13 A6          5305 ANDDRA     AND DRASAV
                        5310
                        5315 ;@ Update the output port
                        5320
9E2E- 8D 13 A6          5325 UPDDRA     STA DRASAV
9E31- 49 FF             5330            EOR #$FF     ;COMPLEMENT
9E33- 8D 00 F1          5335            STA IOREG
9E36- 60                5340 DESEL.3    RTS
                        5345
                        5350 ;@ Check for valid sector, track, side values
                        5355
9E37- AE 02 A6          5360 CHKSEC     LDX ISECTR
9E3A- CA                5365            DEX
9E3B- EC 0E A6          5370            CPX NOSECS
9E3E- A9 35             5375            LDA #$35     ;INVALID SECTOR ERROR CODE
9E40- B0 1A             5380            BCS CHKEXT
9E42- AD 01 A6          5385 CHKTRK     LDA ITRACK
9E45- 29 7F             5390            AND #$7F     ;DROP SIDE BIT
9E47- CD 14 A6          5395            CMP NOTRKS
'E4A- A9 34             5400            LDA #$34     ;INVALID TRACK ERROR CODE
 E4C- B0 0E             5405            BCS CHKEXT
9E4E- 38                5410 CHKSID:    SEC
9E4F- A9 33             5415            LDA #$33     ;INVALID SIDE ERROR CODE
9E51- 2C 01 A6          5420            BIT ITRACK
9E54- 10 05             5425            BPL CHKOK
9E56- 2C 0C A6          5430            BIT DFLAGS
9E59- 50 01             5435            BVC CHKEXT
9E5B- 18                5440 CHKOK      CLC
9E5C- 60                5445 CHKEXT     RTS
                        5450
                        5455 ;@ Log hard errors
                        5460
9E5D- A5 FF             5465 HRDERR     LDA *TMOMSK
9E5F- D0 27             5470            BNE HRDERR.2
9E61- A2 3D             5475            LDX #$3D     ;LOST DATA ERROR CODE
9E63- A9 04             5480            LDA #LSTDAT
9E65- 24 FE             5485            BIT *STATUS
9E67- D0 1F             5490            BNE HRDERR.2
9E69- A2 3E             5495            LDX #$3E     ;CRC ERROR CODE
9E6B- A9 08             5500            LDA #CRCBIT
9E6D- 24 FE             5505            BIT *STATUS
```

```
9E6F- D0 17      5510              BNE HRDERR.2
9E71- A2 39      5515              LDX #$39      ;RECORD NOT FOUND ERROR CODE
9E73- A9 10      5520              LDA #RNFBIT
9E75- 24 FE      5525              BIT *STATUS
9E77- D0 0F      5530              BNE HRDERR.2
9E79- A2 3B      5535              LDX #$3B      ;WRITE PROTECT ERROR CODE
9E7B- A9 40      5540              LDA #WRTPRT
9E7D- 24 FE      5545              BIT *STATUS
9E7F- D0 07      5550              BNE HRDERR.2
9E81- A9 00      5555 HRDERR.1     LDA #$00      ;CLEAR DFLAGS
9E83- 8D 0C A6   5560              STA DFLAGS
9E86- A2 3F      5565              LDX #$3F      ;NOT READY ERROR CODE (DEFAULT)
9E88- 8A         5570 HRDERR.2     TXA
9E89- 38         5575              SEC
9E8A- 60         5580              RTS
                 5585
                 5590 ;@ Clear 1791 after timeout
                 5595
9E8B- 78         5600 CL1791       SEI
9E8C- A9 D8      5605              LDA #C.FORCE1
9E8E- 8D 00 F0   5610              STA CMDREG
9E91- A0 00      5615              LDY #$00      ;DELAY LOOP INITIAL VALUE
9E93- 88         5620 CL1791.1     DEY
9E94- D0 FD      5625              BNE CL1791.1
9E96- A9 D0      5630              LDA #C.CLEARI
9E98- 8D 00 F0   5635              STA CMDREG
9E9B- 88         5640 CL1791.2     DEY
9E9C- D0 FD      5645              BNE CL1791.2
9E9E- AD 00 F0   5650              LDA STAREG
9EA1- 60         5655              RTS
                 5660
                 5665 ;@ Wait for and service DRQs
                 5670
9EA2- 50 FE      5675 WRTCHR       BVC WRTCHR    ;WAIT HERE FOR DRQ
                 5680
9EA4- 8D 03 F0   5685              STA DATREG
9EA7- B8         5690              CLV
9EA8- 60         5695              RTS
                 5700
                 5705 ;@ Check for time until first DRQ
                 5710
9EA9- 58         5715 DRQTIMER     CLI
9EAA- 8D 39 A6   5720              STA LSTCMD
9EAD- 2C 39 A6   5725              BIT LSTCMD
9EB0- 70 0A      5730              BVS DRQT.1
9EB2- 48         5735              PHA
9EB3- AD 01 A6   5740              LDA ITRACK
9EB6- 0A         5745              ASL A
9EB7- 68         5750              PLA
9EB8- 90 02      5755              BCC DRQT.1
9EBA- 09 08      5760              ORA #$08      ;FORCE SIDE 1 COMPARE
9EBC- 8D 00 F0   5765 DRQT.1       STA CMDREG
9EBF- B8         5770 DRQT.2       CLV
9EC0- A0 06      5775              LDY #$06      ;DELAY PARAMETER
9EC2- 84 F9      5780              STY *WKAREA
9EC4- A2 00      5785              LDX #$00      ;DELAY PARAMETER
9EC6- 70 10      5790 DRQT.3       BVS DRQT.4
9EC8- 88         5795              DEY
```

```
9EC9- D0 FB      5800             BNE DRQT.3
9ECB- 70 0B      5805             BVS DRQT.4
9ECD- CA         5810             DEX
9ECE- D0 F6      5815             BNE DRQT.3
9ED0- 70 06      5820             BVS DRQT.4
9ED2- C6 F9      5825             DEC *WKAREA
9ED4- F0 03      5830             BEQ DRQT.5
9ED6- 50 EE      5835             BVC DRQT.3
9ED8- 60         5840 DRQT.4      RTS
                 5845
9ED9- 4C 77 9C   5850 DRQT.5      JMP TIMOUT
                 5855
                 5860 ;@ Move parameters utility
                 5865
9EDC- 98         5870 MOVEPARMS   TYA
9EDD- 48         5875             PHA
9EDE- A0 00      5880             LDY #$00      ;INITIALIZE COUNTER
9EE0- 2C 0C A6   5885             BIT DFLAGS
9EE3- 10 01      5890             BPL MVP.1
9EE5- C8         5895             INY
9EE6- A2 05      5900 MVP.1       LDX #$05      ;MOVE SIX VALUES
9EE8- B9 D6 9F   5905 MVP.2       LDA FMTTBL,Y
9EEB- 9D 18 A6   5910             STA FMTPRM,X
9EEE- C8         5915             INY
9EEF- C8         5920             INY
9EF0- CA         5925             DEX
9EF1- 10 F5      5930             BPL MVP.2
9EF3- 98         5935             TYA
9EF4- 29 01      5940             AND #$01      ;SAVE ONLY LSB
9EF6- A8         5945             TAY
9EF7- 2C 12 A6   5950             BIT FFLAGS
9EFA- 30 02      5955             BMI MVP.3
9EFC- C8         5960             INY
9EFD- C8         5965             INY
9EFE- B9 E2 9F   5970 MVP.3       LDA GAP1TB,Y
9F01- 8D 37 A6   5975             STA NOPAD1
9F04- AD 0C A6   5980             LDA DFLAGS
9F07- 29 03      5985             AND #SECLEN
9F09- 85 F9      5990             STA *WKAREA
9F0B- 98         5995             TYA
9F0C- 0A         6000             ASL A
9F0D- 0A         6005             ASL A
9F0E- 05 F9      6010             ORA *WKAREA
9F10- A8         6015             TAY
9F11- B9 E5 9F   6020             LDA SECTBL,Y
9F14- 8D 0E A6   6025             STA NOSECS
9F17- B9 F1 9F   6030             LDA GAP3TB,Y
9F1A- 8D 38 A6   6035             STA NOPAD3
9F1D- 68         6040             PLA
9F1E- A8         6045             TAY
9F1F- 60         6050             RTS
                 6055
                 6060 ;@ Set side number bit to 1, if 2 sided
                 6065
9F20- A9 40      6070 SET2SD      LDA #SIDFLG
9F22- 2C 0C A6   6075             BIT DFLAGS
9F25- F0 12      6080             BEQ SDCH.1
9F27- 2E 01 A6   6085             ROL ITRACK
```

```
9F2A- 38          6090              SEC
9F2B- B0 10       6095              BCS SDCH.2    ;(ALWAYS)
                  6100
                  6105 ;@ Return with carry clear if side = 0;
                  6110 ;@ else, set to 0 and return with carry set
                  6115
9F2D- A9 F7       6120 SIDCHG       LDA #$FF-SIDSEL
9F2F- 2D 13 A6    6125              AND DRASAV
9F32- CD 13 A6    6130              CMP DRASAV
9F35- 38          6135              SEC
9F36- D0 01       6140              BNE SDCH.1
9F38- 18          6145              CLC
9F39- 2E 01 A6    6150 SDCH.1       ROL ITRACK
9F3C- 18          6155              CLC
9F3D- 6E 01 A6    6160 SDCH.2       ROR ITRACK
9F40- 60          6165              RTS
                  6170
                  6175 ;@ Build sequence in buffer for track formatting
                  6180
9F41- AE 03 A6    6185 BLDSEQ       LDX IADDRS
9F44- AC 04 A6    6190              LDY IADDRS+1
9F47- 86 FE       6195              STX *BUFPTR
9F49- 84 FF       6200              STY *BUFPTR+1
9F4B- AC 0E A6    6205              LDY NOSECS
9F4E- 88          6210              DEY
9F4F- A9 FF       6215              LDA #$FF      ;INITIAL VALUE
9F51- 91 FE       6220 BLSQ.1       STA (BUFPTR),Y
9F53- 88          6225              DEY
9F54- 10 FB       6230              BPL BLSQ.1
9F56- C8          6235              INY
9F57- A9 01       6240              LDA #$01      ;FIRST SECTOR IS ALWAYS #1
9F59- 91 FE       6245              STA (BUFPTR),Y
9F5B- A2 02       6250              LDX #$02      ;INITIALIZE LOGICAL SECTOR TO #2
9F5D- 98          6255 BLSQ.2       TYA
9F5E- 18          6260              CLC
9F5F- 6D 02 A6    6265              ADC ISECTR
9F62- A8          6270 BLSQ.3       TAY
9F63- 38          6275              SEC
9F64- ED 0E A6    6280              SBC NOSECS
9F67- B0 F9       6285              BCS BLSQ.3
9F69- B1 FE       6290              LDA (BUFPTR),Y
9F6B- 30 04       6295              BMI BLSQ.4
9F6D- C8          6300              INY
9F6E- 98          6305              TYA
9F6F- D0 F1       6310              BNE BLSQ.3    ;(ALWAYS)
                  6315
9F71- 8A          6320 BLSQ.4       TXA
9F72- 91 FE       6325              STA (BUFPTR),Y
9F74- E8          6330              INX
9F75- EC 0E A6    6335              CPX NOSECS
9F78- F0 E3       6340              BEQ BLSQ.2
9F7A- 90 E1       6345              BCC BLSQ.2
9F7C- 60          6350              RTS
                  6355
                  6360 ;@ Frees SCPBUF from being clobbered by
                  6365 ;@ hex keypad I/O routines, if these used
                  6370
9F7D- A2 89       6375 FREERAM      LDX #H,HDOUTM
```

```
9F7F- A0 00      6380              LDY #L,HDOUTM
9F81- EC 65 A6   6385              CPX OUTVEC+2
9F84- D0 0F      6390              BNE FRAM.1
9F86- CC 64 A6   6395              CPY OUTVEC+1
9F89- D0 0A      6400              BNE FRAM.1
9F8B- A2 9F      6405              LDX #H,HDOUT
9F8D- A0 AE      6410              LDY #L,HDOUT
9F8F- 8E 65 A6   6415              STX OUTVEC+2
9F92- 8C 64 A6   6420              STY OUTVEC+1
9F95- A2 89      6425 FRAM.1       LDX #H,HKEYM
9F97- A0 BE      6430              LDY #L,HKEYM
9F99- EC 62 A6   6435              CPX INVEC+2
9F9C- D0 0F      6440              BNE FRAM.2
9F9E- CC 61 A6   6445              CPY INVEC+1
9FA1- D0 0A      6450              BNE FRAM.2
9FA3- A2 9F      6455              LDX #H,HKEY
9FA5- A0 B4      6460              LDY #L,HKEY
 FA7- 8E 62 A6   6465              STX INVEC+2
 FAA- 8C 61 A6   6470              STY INVEC+1
9FAD- 60         6475 FRAM.2       RTS
                 6480
9FAE- 20 B7 9F   6485 HDOUT        JSR OUTDSP
9FB1- 6C 70 A6   6490              JMP (SCNVEC+1)
                 6495
9FB4- 20 AF 88   6500 HKEY         JSR GETKEY
9FB7- 20 88 81   6505 OUTDSP       JSR SAVER
9FBA- 29 7F      6510              AND #$7F      ;DROP PARITY BIT
9FBC- C9 07      6515              CMP #$07      ;CTRL G (BELL)
9FBE- D0 03      6520              BNE NOBELL
9FC0- 4C 75 89   6525              JMP BEEPP3
                 6530
9FC3- 4C D0 89   6535 NOBELL       JMP NBELL+3
                 6540
                 6545 ;@ Command and data tables start here
                 6550
9FC6- AE 98      6555 ADDRS        .SI RESTOR
 FC8- AE 98      6560              .SI RESTOR
 FCA- B7 98      6565              .SI SEEK
9FCC- AA 99      6570              .SI READ
9FCE- AE 99      6575              .SI WRITE
9FD0- 9E 9A      6580              .SI FMTTRK
9FD2- 4F 9A      6585              .SI FMTDSK
9FD4- 5A 9C      6590              .SI USRCMD
                 6595
                 6600 FMTTBL
                 6605
9FD6- E5 40      6610 DATATB:      .BY $E5 $40
9FD8- FF 4E      6615 PADTBL:      .BY $FF $4E
9FDA- 0B 16      6620 GAP2TB:      .BY 11 22
9FDC- 25 4D      6625 GAP5TB:      .BY 37 77 ;ADD 3 FOR ACTUAL LENGTH
9FDE- 06 0C      6630 ZEROTB:      .BY 06 12
9FE0- 00 03      6635 SPCHTB:      .BY 00 03
                 6640
9FE2- 0D 1B 1A   6645 GAP1TB       .BY 13 27 26 ;ADD 3 TO MINI LENGTHS
                 6650
9FE5- 12 0A 05   6655 SECTBL       .BY 18 10 05 02 ;5" SINGLE
9FE8- 02
9FE9- 1E 12 09   6660              .BY 30 18 09 05 ;5" DOUBLE
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9FEC- 05
9FED- 1A 0F 08  6665              .BY 26 15 08 04 ;8" SINGLE
9FF0- 04
                6670
9FF1- 09 13 49  6675 GAP3TB       .BY 09 19 73 254 ;ADD 1 FOR ACTUAL LENGTH
9FF4- FE
9FF5- 0D 17 45  6680              .BY 13 23 69 119
9FF8- 77
9FF9- 1A 2F 59  6685              .BY 26 47 89 223
9FFC- DF
                6690
9FFD- 20        6695 RDMSK        .BY $20
9FFE- 01 02     6700 DRIVENO      .BY $01 $02
                6705
//0000,A000,9800
```

```
0005  ;           CROSS-REFERENCED LABEL LISTING
0010  ;           ---------------- ----- -------
0015
0020              / = EXTERNAL          # = LINE DEFINED
0025
0030  LABEL       ;VALUE                CROSS-REFERENCES
0035  ------      ;-----                ----------------
0040  /ACCESS     ;$8B86     #0190      1040
0045  /AVAIL      ;$0020     #0400      1130     4485     4985
0050  /BEEPP3     ;$8975     #0185      6525
0055  /BSYBIT     ;$0001     #0890      4065
0060  /BUFPTR     ;$00FE     #0105      2200     2205     2265     2290     2360
0065              ;           2375      3225     6195     6200     6220     6245
0070              ;           6290      6325
0075  /C.CLEARI   ;$00D0     #0820      5630
0080  /C.FORCE1   ;$00D8     #0825      5605
0085  /C.RDADDRS  ;$00C0     #0815      3765
0090  /C.READSEC  ;$0082     #0805      1595     2115
0095  /C.RESTORE  ;$0008     #0790      1465     1795     2015
0100  /C.SEEK     ;$0018     #0795      1550
0105  /C.SEEKVER  ;$001C     #0800      1565
0110  /C.WRITSEC  ;$00A2     #0810      1595     2140
0115  /C.WRITTRK  ;$00F0     #0830      2925     4190
0120  /CMDREG     ;$F000     #0740      1655     5610     5635     5765
0125  /CMDVEC     ;$00FE     #0110      1190     1200     1295
0130  /COMSAV     ;$A636     #0650      1065     1115     1180
0135  /CRCBIT     ;$0008     #0875      1960     5500
0140  /DATREG     ;$F003     #0755      1630     2270     2320     2350     2940
0145              ;           2950      2975     3530     3570     3775     3805
0150              ;           5685
0155  /DENFLG     ;$0080     #0390      4920
0160  /DENSEL     ;$0080     #0940      3880     4400     4905
0165  /DR0SEL:    ;$0001     #0965      ::::
0170  /DR1SEL:    ;$0002     #0960      ::::
0175  /FRMTSOFT   ;$A636     #0660      3620
0180  /GETKEY     ;$88AF     #0165      6500
0185  /HDOUTM     ;$8900     #0170      6375     6380
0190  /HKEYM      ;$89BE     #0175      6425     6430
0195  /HLTSEL     ;$0010     #0945      4435     4585     5285
0200  /INVEC      ;$A660     #0700      6435     6445     6465     6470
0205  /IOREG      ;$F100     #0765      5335
0210  /IOT6532    ;$A400     #0210      0215     0220
0215  /IPBIT      ;$0002     #0885      4715
0220  /IRQBRK     ;$800F     #0150      4100
0225  /IRQVEC     ;$A67E     #0715      1400     1405
0230  /LSTCMD     ;$A639     #0680      1570     1635     1650     1735     1790
0235              ;           1880      2010     2085     2145     2210     4175
0240              ;           4200      5720     5725
0245  /LSTDAT     ;$0004     #0880      5480
0250  /MTRFLG:    ;$0080     #0300      ::::
0255  /MTRSEL     ;$0004     #0955      4415     4540     5050     5125     5260
0260  /NBELL      ;$89CD     #0180      6535
0265  /NOPAD1     ;$A637     #0670      3080     5975
0270  /NOPAD3     ;$A638     #0675      3470     6035
0275  /NOTRDY     ;$0080     #0855      5060
0280  /OUTVEC     ;$A663     #0705      6385     6395     6415     6420
0285  /PAGE.1     ;$0100     #0130      4050
0290  /RAERMA     ;$009F     #0915      3850
```

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0295  /RDTIMR      ;$A404    #0215     3540
0300  /RDWRSOFT    ;$A636    #0655     2425     4290
0305  /RESXAF      ;$81B8    #0160     1285
0310  /RNFBIT      ;$0010    #0865     5520
0315  /RWERMA      ;$00DD    #0920     2410
0320  /SAVER       ;$8188    #0155     1030     6505
0325  /SCNVEC      ;$A66F    #0710     6490
0330  /SCPBFR      ;$A600    #0230     0240
0335  /SCR6        ;$A636    #0625     0650     0655     0660
0340  /SCR7        ;$A637    #0630     0665     0670
0345  /SCR8        ;$A638    #0635     0675
0350  /SCR9        ;$A639    #0640     0680
0355  /SECLEN      ;$0003    #0405     2880     3240     3965     4455     4470
0360                ;         5985
0365  /SECREG      ;$F002    #0750     2175
0370  /SEEKSOFT    ;$A637    #0665     1585     1780     1825     1845
0375  /SELFLG:     ;$0040    #0305     ::::
0380  /SIDFLG      ;$0040    #0395     2750     4970     6070
0385  /SIDSEL      ;$0008    #0950     2720     2740     3195     4385     6120
0390  /SKBIT       ;$0010    #0870     1980
0395  /SKERMA      ;$0099    #0910     1760
0400  /SOFMAX      ;$0003    #0985     1380
0405  /STAREG      ;$F000    #0735     3555     4070     4155     4720     4775
0410                ;         5065     5650
0415  /STATUS      ;$00FE    #0115     1755     1770     1950     1965     1985
0420                ;         2415     3610     3855     4160     4430     4450
0425                ;         4535     5485     5505     5525     5545
0430  /TMOMSK      ;$00FF    #0120     1910     1935     2585     3665     3925
0435                ;         4145     5465
0440  /TRKREG      ;$F001    #0745     1870     2070     4340
0445  /VERBIT      ;$0004    #0835     1730
0450  /VERFLG      ;$0020    #0310     1535     2465     4270
0455  /WKAREA      ;$00F9    #0100     1680     1695     4420     4440     4460
0460                ;         4475     4560     4570     4770     4785     5780
0465                ;         5825     5990     6010
0470  /WRTIMR      ;$A417    #0220     3450
0475  /WRTPRT      ;$0040    #0860     5540
0480  ADDRS        ;$9FC6    #6555     1185     1195
0485  ANDDRA       ;$9E2B    #5305     5130
0490  BADCMD       ;$9DFD    #5160     1410     1415
0495  BLDSEQ       ;$9F41    #6185     2855
0500  BLSQ.1        ;$9F51    #6220     6230
0505  BLSQ.2        ;$9F5D    #6255     6340     6345
0510  BLSQ.3        ;$9F62    #6270     6285     6310
0515  BLSQ.4        ;$9F71    #6320     6295
0520  CHKCMD       ;$9DF9    #5150     1045
0525  CHKDRV       ;$9E01    #5190     1070
0530  CHKDRV.1     ;$9E0B    #5215     5200
0535  CHKEXT       ;$9E5C    #5445     5380     5405     5435
0540  CHKOK        ;$9E5B    #5440     5425
0545  CHKSEC       ;$9E37    #5360     2150
0550  CHKSID:      ;$9E4E    #5410     ::::
0555  CHKTRK       ;$9E42    #5385     1505     2830
0560  CL1791       ;$9E8B    #5600     4120     4685     5045
0565  CL1791.1     ;$9E93    #5620     5625
0570  CL1791.2     ;$9E9B    #5640     5645
0575  CRCBYTES:    ;$A61C    #0590     ::::
0580  CURDATA      ;$A60C    #0355     1090     1225
```

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0585  CURSCL      ;$A61B    #0585     3970
0590  CURTRK      ;$A60D    #0365     1855     2075     3185     3955     4305
0595               ;         4335
0600  DATATB:     ;$9FD6    #6610     ::::
0605  DATPAT      ;$A61D    #0540     3365
0610  DELAY       ;$9D40    #4640     1750     4600
0615  DELAY.1     ;$9D42    #4645     1690     4565     4650     4660
0620  DESEL.1     ;$9E1C    #5275     5245     5255
0625  DESEL.2     ;$9E21    #5285     5265
0630  DESEL.3     ;$9E36    #5340     5280
0635  DESELECT    ;$9E0C    #5235     1215
0640  DFLAGS      ;$A60C    #0360     1135     1170     2025     2755     2760
0645               ;         2875     3235     3960     3975     4390     4490
0650               ;         4860     4925     4930     4975     4980     4990
0655               ;         4995     5430     5560     5885     5980     6075
0660  DINIT       ;$9880    #1350     1060
0665  DIO.1       ;$981A    #1085     1110
0670  DIO.2       ;$9834    #1145     1125
0675  DIO.3       ;$9839    #1155     1140
0680  DIO.4       ;$9845    #1180     1165
0685  DIO.5       ;$9855    #1210     1150
0690  DIO.6       ;$985C    #1225     1250
0695  DIO.7       ;$9869    #1260     1050     1075     1175     1435
0700  DIO.8       ;$986F    #1285     1275
0705  DIOVEC      ;$9872    #1295     1205
0710  DISKIO:     ;$9800    #1030     ::::
0715  DR0DATA     ;$A606    #0330     1085     1230     1360
0720  DR1DATA     ;$A609    #0335     1365
0725  DRASAV      ;$A613    #0440     2725     3200     3875     4425     4465
0730               ;         4590     4605     4910     5305     5325     6125
0735               ;         6130
0740  DRIVENO     ;$9FFE    #6700     5295
0745  DRIVESIZE   ;$9DCF    #5045     1375
0750  DRQT.1      ;$9EBC    #5765     5730     5755
0755  DRQT.2      ;$9EBF    #5770     2945
0760  DRQT.3      ;$9EC6    #5790     5800     5815     5835
0765  DRQT.4      ;$9ED8    #5840     5790     5805     5820
0770  DRQT.5      ;$9ED9    #5850     5830
0775  DRQTIMER    ;$9EA9    #5715     2240     2315     2930     3770
0780  DRVSEL      ;$9CCC    #4360     1455     1875
0785  DRVSEL.1    ;$9CD8    #4390     4380
0790  DRVSEL.2    ;$9CDF    #4405     4395
0795  DRVSEL.3    ;$9CE6    #4420     4410
0800  DRVSEL.4    ;$9D0A    #4500     4480
0805  DRVSEL.5    ;$9D12    #4520     4495     4505
0810  DRVSEL.6    ;$9D25    #4565     4575
0815  DRVSZ.1     ;$9DE6    #5095     5070
0820  DRVSZ.2     ;$9DEC    #5110     5090
0825  FFLAGS      ;$A612    #0435     1160     1805     2985     3725     3865
0830               ;         4405     4525     4695     5110     5240     5950
0835  FINAL       ;$9BBE    #3515     3465
0840  FMTC.1      ;$9BE4    #3620     3670
0845  FMTC.2      ;$9BEC    #3640     3625
0850  FMTC.3      ;$9BF5    #3690     3615
0855  FMTCMP      ;$9BDE    #3605     4230
0860  FMTD.1      ;$9A56    #2650     2795
0865  FMTD.2      ;$9A5C    #2660     2675
0870  FMTD.3      ;$9A6E    #2710     2775
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0875  FMTD.4      ;$9A8C    #2770     2735      2745
0880  FMTD.5      ;$9A91    #2780     2705
0885  FMTD.6      ;$9A9D    #2810     2665      2715      2835      2845
0890  FMTDSK      ;$9A4F    #2635     6585
0895  FMTPRM      ;$A618    #0495     0505      5910
0900  FMTT.1      ;$9AAE    #2875     3630
0905  FMTT.2      ;$9AB9    #2900     2890
0910  FMTTBL      ;$9FD6    #6600     5905
0915  FMTTMO      ;$9BEF    #3660     3605
0920  FMTTRK      ;$9A9E    #2830     2660      6580
0925  FMTWRK      ;$A615    #0470     2900      3375
0930  FNL.1       ;$9BC2    #3525     3565
0935  FNL.2       ;$9BC4    #3530     3550
0940  FNL.3       ;$9BC8    #3540     3525
0945  FNL.4       ;$9BDB    #3585     3545
0950  FORM.1      ;$9B03    #3070     3045
0955  FORM.2      ;$9B08    #3080     2990
0960  FORM.3      ;$9B2C    #3175     3150
0965  FORM.4      ;$9B40    #3215     3205
0970  FORM.5      ;$9B7C    #3340     3315
0975  FRAM.1      ;$9F95    #6425     6390      6400
0980  FRAM.2      ;$9FAD    #6475     6440      6450
0985  FREERAM     ;$9F7D    #6375     1350
0990  GAP1TB      ;$9FE2    #6645     5970
0995  GAP2TB:     ;$9FDA    #6620     ::::
1000  GAP3TB      ;$9FF1    #6675     6030
1005  GAP5TB:     ;$9FDC    #6625     ::::
1010  HDLOD       ;$9D2E    #4585     4530      4545
1015  HDLOD.1     ;$9D3E    #4615     4595
1020  HDOUT       ;$9FAE    #6485     6405      6410
1025  HKEY        ;$9FB4    #6500     6455      6460
1030  HRDERR      ;$9E5D    #5465     2435      3640      3900
1035  HRDERR.1    ;$9E81    #5555     4510
1040  HRDERR.2    ;$9E88    #5570     5470      5490      5510      5530      5550
1045  IADDRS      ;$A603    #0275     2190      2195      6185      6190
1050  IDRIVE      ;$A600    #0260     1305      1315      4360      5190      5290
1055  IDSECT:     ;$A61A    #0580     ::::
1060  IDTRAK      ;$A618    #0570     3950
1065  IFLAGS      ;$A605    #0280     1540      2455      2470      2540      4275
1070              ;          4280     5250      5275
1075  INDEX       ;$9D49    #4685     4500
1080  INDEX.1     ;$9D59    #4720     4735      4745
1085  INDEX.2     ;$9D66    #4765     4725
1090  INDEX.3     ;$9D6A    #4775     4790      4800
1095  INDEX.4     ;$9D76    #4805     4690
1100  INDEX.5     ;$9D78    #4820     4700      4780
1105  IOC.1       ;$9C82    #4155     4130
1110  IOC.2       ;$9C9E    #4225     4205
1115  IOC.3       ;$9CA2    #4240     4185
1120  IOC.4       ;$9CA5    #4250     4180
1125  IOCOMP      ;$9C7D    #4140     3575      4075
1130  IRQRET      ;$9C70    #4080     4060
1135  IRQRTN      ;$9C5D    #4025     1390      1395
1140  ISECTR      ;$A602    #0270     2170      5360      6265
1145  ITRACK      ;$A601    #0265     1490      2475      2650      2700      2780
1150              ;          4295     4375      4845      4935      4945      5015
1155              ;          5385     5420      5740      6085      6150      6160
1160  LSCMSV      ;$A615    #0465     0470      1575      1590      2080
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1165  MOTRON:      ;$9D1F    #4550     ::::
1170  MOVEPARMS    ;$9EDC    #5870     2850      5000
1175  MVP.1        ;$9EE6    #5900     5890
1180  MVP.2        ;$9EE8    #5905     5930
1185  MVP.3        ;$9EFE    #5970     5955
1190  NOBELL       ;$9FC3    #6535     6520
1195  NOPAD2       ;$A61B    #0530     3260
1200  NOPAD5       ;$A61A    #0525     2995
1205  NOSECS       ;$A60E    #0370     3455      5370      6025      6205      6280
1210               ;         6335
1215  NOSPCH       ;$A618    #0515     3040      3145      3310
1220  NOTRKS       ;$A614    #0445     2790      5115      5395
1225  NOZERO       ;$A619    #0520     3015      3120      3285
1230  OKCMND       ;$9E00    #5170     5155
1235  OUTDSP       ;$9FB7    #6505     6485
1240  PADCHR       ;$A61C    #0535     2935      3085      3265      3430      3520
1245  PADTBL:      ;$9FD8    #6615     ::::
1250  RALOOP       ;$9C18    #3795     3795      3825
1255  RATMO        ;$9C41    #3920     3845
1260  RDAD.1       ;$9C03    #3740     3730
1265  RDAD.2       ;$9C08    #3755     3895
1270  RDAD.3       ;$9C1D    #3810     3785
1275  RDAD.4       ;$9C47    #3950     3860
1280  RDADBUF      ;$A618    #0490     0560      3810
1285  RDADC.1      ;$9C2C    #3865     3930
1290  RDADC.2      ;$9C39    #3890     3870
1295  RDADCOMP     ;$9C24    #3845     4215
1300  RDADDR       ;$9BF7    #3715     1815      2710      4895      4950
1305  RDADSOFT     ;$A61E    #0595     3750      3890
1310  RDMSK        ;$9FFD    #6695     2215
1315  RDWRT.1      ;$99B0    #2145     2120
1320  RDWRT.2      ;$99BD    #2170     2560
1325  RDWRT.3      ;$99ED    #2315     2220
1330  RDWRT.4      ;$9A0E    #2425     2590
1335  RDWRT.5      ;$9A16    #2455     2430
1340  RDWRT.6      ;$9A2F    #2515     2495
1345  RDWRT.7      ;$9A32    #2520     2505
1350  RDWRT.8      ;$9A4D    #2610     2420
1355  RDWRT.9      ;$9A4E    #2615     2545      2555      2640
1360  READ         ;$99AA    #2115     6570
1365  RESTOR       ;$98AE    #1455     1835      2035      2635      4870      6555
1370               ;         6560
1375  RETRIES      ;$A617    #0480     1385      1580      3720      4285
1380  RETURN       ;$99A9    #2095     2155      2165
1385  RLOOP        ;$99F7    #2340     2340      2370      2380
1390  RLOOP.1      ;$99FC    #2355     2330
1395  RWCOMP       ;$9A06    #2405     4240
1400  RWTIMO       ;$9A47    #2580     2405
1405  SDCH.1       ;$9F39    #6150     6080      6140
1410  SDCH.2       ;$9F3D    #6160     6095
1415  SECCTR       ;$A61E    #0545     0550      2920      3220      3440      3460
1420  SECTBL       ;$9FE5    #6655     6020
1425  SEEK         ;$98B7    #1490     4315      6565
1430  SEEK.1       ;$98C4    #1515     1460      1530
1435  SEEK.2       ;$98C5    #1525     1510      2520      2550
1440  SEEK.3       ;$98D5    #1565     1545
1445  SEEK.4       ;$98D7    #1570     1470      1555
1450  SEEK.5       ;$98EC    #1610     1615
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1455  SEEK.6      ;$98EF    #1625     1600      1885
1460  SEEK.7      ;$990E    #1690     1700
1465  SEEKARG     ;$A61F    #0605     1500      1625      1860      2485      2500
1470              ;          2515     2530
1475  SET2SD      ;$9F20    #6070     2655      2695
1480  SETUP       ;$9CA8    #4270     2840
1485  SETUP.1     ;$9CB0    #4285     2160
1490  SETUP.2     ;$9CC6    #4335     1525      3715      4310      4320
1495  SIDCHG      ;$9F2D    #6120     2670      2765      2770      4865
1500  SIDSAV      ;$A619    #0575     2730      4960
1505  SPCHTB:     ;$9FE0    #6635     ::::
1510  STATS       ;$9D7A    #4845     1145
1515  STATS.1     ;$9D8B    #4880     4900
1520  STATS.2     ;$9D90    #4895     4875
1525  STATS.3     ;$9DA4    #4935     4915
1530  STATS.4     ;$9DBD    #4985     4955      4965
1535  STATS.5     ;$9DC9    #5010     4890
1540  STEPRT      ;$A611    #0430     1640      5120
1545  STKPTR      ;$A616    #0475     1665      2185      2910      3760      4165
1550  TIMOUT      ;$9C77    #4120     1705      3585      5850
1555  TRIPLE      ;$9875    #1305     1080      1220
1560  TY1C.1      ;$9926    #1755     1740
1565  TY1C.2      ;$992C    #1770     1915
1570  TY1C.3      ;$9947    #1825     1810
1575  TY1C.4      ;$9954    #1855     1820
1580  TY1C.5      ;$9962    #1880     1800
1585  TY1C.6      ;$996D    #1935     1785
1590  TY1C.7      ;$9988    #2000     1940      1970      1990
1595  TY1C.8      ;$9996    #2035     2020
1600  TY1C.9      ;$9999    #2040     1850      2030
1605  TY1C.A      ;$999C    #2070     1765
1610  TY1C.B      ;$99A2    #2080     1865
1615  TYP1COMP    ;$9918    #1725     4250
1620  TYP1ST      ;$A61E    #0550     1775      1945
1625  TYP1TMO     ;$9967    #1905     1725
1630  UCMDVC      ;$A60F    #0425     1420      1425      4005
1635  UPDDRA      ;$9E2E    #5325     1370      3885      4445      4610      5055
1640  USRCMD      ;$9C5A    #4005     6590
1645  WDLOOP      ;$9B8E    #3395     3380      3405      3415
1650  WLOOP       ;$99DE    #2255     2255      2285      2295
1655  WRITE       ;$99AE    #2140     6575
1660  WRTCHR      ;$9EA2    #5675     3000      3025      3055      3075      3090
1665              ;          3130     3160      3180      3190      3215      3230
1670              ;          3245     3255      3270      3295      3325      3345
1675              ;          3395     3425      3435      3475      5675
1680  WRTSEC      ;$9B14    #3120     3490
1685  WTLOOP      ;$9AD7    #2965     2965
1690  WTLP.1      ;$9AE5    #3000     3010
1695  WTLP.2      ;$9AF0    #3025     3035
1700  WTLP.3      ;$9AFD    #3055     3065
1705  WTLP.4      ;$9B0E    #3090     3100
1710  WTLP.5      ;$9B19    #3130     3140
1715  WTLP.6      ;$9B26    #3160     3170
1720  WTLP.7      ;$9B5E    #3270     3280
1725  WTLP.8      ;$9B69    #3295     3305
1730  WTLP.9      ;$9B76    #3325     3335
1735  WTLP.A      ;$9BB5    #3475     3485
1740  ZEROTB:     ;$9FDE    #6630     ::::
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